

User Manual



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OA/AK Combi/total Drumfilters

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1. Instructions / General Information About This User Manual

We would first like to congratulate you on your excellent choice of purchasing the **AEM- Drum Filter**. You will be guaranteed to enjoy this easy to use, high quality product for many years.

General Information

We know from experience what a time consuming chore it is to remove or replace the drum or the filtering panels of a conventional drum filter. Realising big improvements could be made, we designed a system that allows the entire drum to be removed from the casing within two minutes, so you can modify it (to create extra throughput, for example) or replace the filtering panels on the drum. This really is the ultimate solution!

The AEM-drumfilter is a PP drum filter with a very practical removable debris bucket and an equally practical and removable drum. The main advantage of using PP is obviously that the customer can adapt the filter to their specific wishes by making the entry and exit points wherever they wish. The material is also very light, so the total weight of the filter is greatly reduced. All of our PP products are double glued and double welded: proven heavy duty connections.

The AEM-drumfilter product range is easy to operate and uses only the highest quality parts to ensure 100% satisfaction for years and years. This trust is also found in our 2 year limited warranty on all parts.

The AEM assures a high throughput and an easily detachable debris bucket, which is very handy for checking the inside of the drum, removing filamentous algae and cleaning the bucket. The debris bucket has two other advantages: thanks to its slant, all debris is accelerated, so even big debris gets no chance to aggregate. On top of this, the discharge water is accelerated even more thanks to the positioning of the drainage at the bottom of the bucket, preventing the build-up of any debris clots.

Flow data mentioned in the “Technical Specifications” are flows that can also be attained in air-lift operated ponds. The indicated flow data is not a maximum so the customer can be sure of a low rinsing frequency even for dense fish populations and high feed volumes.

Service:

Service is very important to us. As koi pond enthusiasts, we know how frustrating it can be when you have to wait a long time for spare parts to be delivered. This is why we strive for a quick return time: when we receive defective parts, the replacement parts will usually be shipped back the same day. To assure this, we make sure that we always have all spare parts for all our devices on stock. If a defective part cannot be fixed quickly enough to be sent back the same day, we will gladly send back a brand new part.



Before starting to use the device, please carefully read the user manual and familiarise yourself with the device. Any maintenance or modifications to the device must always be done in accordance with this manual.

Please always adhere to the safety instructions to ensure correct and safe use at all times.

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Please preserve this manual for later reference and hand it to the new owner if ownership of the device is transferred to another person.

The symbols used in this manual have the following meanings:

 A yellow triangular warning sign with a black border and a black lightning bolt symbol in the center, indicating a risk of electrical shock.	<p>Danger of death or injury due to hazardous electrical currents This symbol indicates an immediate hazard that could cause death or severe injury if proper security measures are not taken into account.</p>
 A yellow triangular warning sign with a black border and a black symbol of a hand being caught between two gears, indicating a risk of mechanical injury.	<p>Danger of injury due to generic dangerous situations This symbol indicates an immediate hazard that could cause injury if proper security measures are not taken into account.</p>

2. Contents

- 1x PP body
- 1x PP drum
- 1x PP debris bucket
- 1x drive motor/control unit
- 1x high pressure pump
- 1x stainless steel 70 micron filter elements
- 1x PVC high pressure rinsing bar with cleaningnozzles

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3. Product Description

The **AEM- Drum Filter** is a maintenance (free) pre-filter system that ensures a healthy and clear pond without having to do daily maintenance.

3.1 Gravity System

The filter system is installed underground (in a filter shaft).

The inlet is located under the pond's surface.

Bottom inlets or skimmers lead the pond water to the inlets 2x (dirty side) which is then fed into the drum.

1x PP outlet ,...A pump, air lift collector or bio filter, installed after the drum, pumps the filtered water back into the pond.

Advantages of the gravitation system:

- ▶ good transport and therefore effective removal of floating particles by using the gravitation principle
- ▶ energy efficient design thanks to limited level differences and low friction losses
- ▶ can be installed inconspicuously in a water garden
- ▶ can be combined with an air-lift system

3.2 Device Construction

System Description

Reservoir lid

OA/AK:

Extern Control box with ore without min. control option

- 1e timer (10 sec.) fore rinsing and waiting time
- water level control

General:

Filter drum with 316 stainless steel filter elements

– Filter elements for large particles down to 70 µm

Rinsing system

– High pressure rinsing system with nozzles

that rinses large particles off the filter elements

Debris gutter

– Catches large particles that are rinsed off the filter elements

High pressure pump for the rinsing system

Guide wheels for the filter drum

PP debris discharge DN 110

PP welded connectors

Drum motor/gearbox

-Directly driving the drum

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OA/AK:

XXXL control box

Control box

- high pressure connector
- drummotor connector
- UVC connector
- Pond pump connector (max. 1000W)
- Main power ON/OFF button
- Power cable
- 230 V
- fuse holder / 5A Fuse
- fuse holder min. control / 10A fuse
- Manual control button
- DMX connector

3.3 Function Description

The OA/AK- Drum filter's main task is to evacuate larger contaminant particles. 70 µm filters separate all sorts of contaminant particles before the water reaches the bio filter. By separating solid particles, a major part of the fish feed residue is filtered out of the water. The drum filter therefore fulfils an important task in supporting the bio filter. The control unit with integrated Timers automatically or with water level control waiting/rinsing time controlled the filtering process. The automatic self-cleaning cycle can be interrupted to perform manual cleaning.

3.4 Intended Use

The OA/AK-Drum Filter and all other parts delivered with the system may only be used under these conditions:

- ▶ Intended for cleaning ponds.
 - ▶ Only for use within indicated technical specifications.
- The following restrictions apply to this device:
- ▶ Use only for water temperatures between +4 °C and +35°C.
 - ▶ Not intended for any other liquids than water.
 - ▶ Not intended for commercial or industrial use.
 - ▶ Not intended for salt water (except salt treatments up to 7 promile)
 - ▶ Do not use without water flow.
 - ▶ Do not use for chemicals, foodstuffs, lightly flammable or explosive materials
-

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4. Safety Instructions

This device is manufactured by **AEM-Products** using current technologies and under strict adherence to currently applicable safety guidelines.

However, the device may present danger to people or goods if it is used in other ways than its intended use, if it is improperly used, or if the security instructions are not followed.

For your security, children below the age of 16, as well as people who may not be aware of the dangers involved or people who have not familiarised themselves with this user manual, may NOT operate this equipment.

Children must be under adult supervision to guarantee that they do not use this device as a toy.

4.1 Dangers Due To Combining Water and Electricity

- ▶ In case of improper mounting / connecting or improper use, the combination of water and electricity can cause electrical shocks that may lead to serious injury or even death.
- ▶ Always disconnect the power to any aquatic equipment before touching the water

4.2 Electrical Installation According To Guidelines

- ▶ Electrical installations must always be in accordance with the currently applicable national guidelines and may only be installed by an electrician.
- ▶ An electrician is a person who is able and authorised, by his or her education, knowledge and experience, to properly execute the tasks assigned to him or her. This includes the ability to recognise possible dangers and to take into account all applicable regional and national norms, rules and regulations.
- ▶ For your own safety, always contact an electrician for any questions or problems.
- ▶ Connecting the device is only allowed if the electrical specifications of the device correspond to those of the power supply. The device's electrical specifications can be found on the information plaque on the device, on the packaging or in this manual.
- ▶ **The device must be electrically secured with a 30mA LC ground fault circuit breaker.**
- ▶ All extension cables and distributors (such as power plugs) must be certified for outdoors use (splash-proof).
- ▶ Power cables may not be thinner than **H07RN-F** rubber tubing. Extension cables must be in compliance with DIN VDE 0620.
- ▶ Always protect all power connectors from moisture.
- ▶ Always connect the device to a properly grounded power outlet that is installed in accordance with all applicable regulations.

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4.3 Safe Use

- ▶ Do not use the device if an electrical cable, electrical connector or casing is damaged.
- ▶ Do not carry, lift or pull the equipment while any electrical cabling is connected.
- ▶ Always place electrical cabling in a safe manner to prevent accidental damage or tripping.
- ▶ Do not open the device's casing or parts if this is not expressly required by the user manual.
- ▶ Only use original parts and accessories for the device.
- ▶ Do not make any technical modifications to the device.
- ▶ Only AEM-Products is authorised to make any repairs.
- ▶ The connectors and cables can be replaced. If the connector is damaged, the device or the parts must be discarded.
- ▶ Always keep the power outlet and connectors dry.
- ▶ Power surges on the power grid may lead to malfunctions of the device. Information about this can be found in the chapter "Solving Problems".
- ▶ Do not inhale spray from the rinsing system. The spray may contain dangerous bacterial contaminations.

5. Placement and Connection

5.1 Placement Planning

Warning! Dangerous electrical tension.

Possible results: Death or heavy injury may result from electrical devices in or around ponds.

Safety Measures:

- ▶ Always use a **30mA** ground fault circuit breaker.
- ▶ Always connect the ground wire in accordance with the manufacturer's regulations.
- ▶ Always adhere to national and regional safety guidelines, rules and regulations.

Tip:

Always use proper transport or sliding mechanisms for transporting and placing the device.

The device's weight exceeds 25 kg

Always carefully plan the placement of the filter system. Careful planning and consideration of the environment will lead to optimal conditions.

Some basic guidelines that must be taken into account:

- ▶ The PP body is very heavy when filled. Choose a proper surface (at least flattened, concrete if possible) to prevent subsiding.

Warning: The surface must be completely flat and level

- ▶ Allow for enough space around the device to be able to execute cleaning and maintenance work.

- ▶ Discharged water must be lead into a sewage system, or far enough away from the pond that it cannot flow back into the pond.

– If you wish to combine the discharge of water and larger particles in one pipe, you must use at least DN 110 piping.

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5.1.1 Gravitation System

System Specific Requirements

Proper positioning and a constant water level in the pond are important requirements for optimal function of the system.

Building the filter shaft:

- ▶ Make sure the bottom is level. **Tip:** add a cement lining to the bottom
- ▶ Secure the sides of the hole against subsidence (masonry, concrete, panelling)
- ▶ Secure the hole from flooding. Make sure rain water is sufficiently evacuated.

Setting up the filter system:

- ▶ Define the maximum water level of the pond.
- ▶ **Construction water level: Water level -2 cm below the top of the discharge gutter, see the sticker on the drum body** (max. tolerance: -1 cm).
- ▶ Keep a constant water level:
- ▶ For the gravitation system to work properly, a constant water level must be maintained in the pond. Tolerances up to 1 cm below the maximum water level are allowed.
 - If the maximum water level in the pond is reached, water will flow into the drum body through the discharge gutter and front basin until the maximum water level is reached.
- ▶ **For problem free operation we advise an automatic filling system and an adjustable overflow system connected to a sewer system.**

Warning: We advise an overflow system directly connected to the pond. Using an overflow on the intake or drain of the drum filter will lead to a varying water level in the pond.

5.2 Connecting the Drum Filter and high pressure pump

5.2.1 Plumbing Instructions

- ▶ Only use adapted piping.
- ▶ Do not use rectangular tubing. Elbows with a maximum angle of 45° are the most efficient.
- ▶ Always use spigot joints with extraction guards.
- ▶ Still water may freeze in frosty weather and may cause the pipes to burst. Always lay the piping and tubing with a slight grade (50 mm/m) so they can be drained.
- ▶ It must be possible to block the inflow from the pond and the return to the pond for maintenance or repair work. Always use proper slide valves for this.

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5.2.2 Connecting Debris Discharge

The larger particles that have collected in the debris gutter will flow out through this outflow DN 110.

▶ Connect a fitting sleeve to the DN 110 PP outflow and connect it to the sewer system.

By removing the rubber fitting ring from the outside of the sleeve, you will create a proper seal that can be easily removed to dismantle the debris gutter. Slide the sleeve downwards in order to dismantle the debris collector bin.

▶ Connect a fitting sleeve to the DN 110 outflow and connect it to the sewer system.

Place all piping with a slight grade to facilitate evacuation.

5.2.3 Connecting and placing the high pressure pump

The Basic and PRO-AEM-drum filter control unit has connection socket for the rinsing pump.

WARNING! Fill up the reservoir before connecting the control unit to mains power.

▶ Placing presure pump

-One the outlet of the (body) drum filter its best to place a T-connector DN 110 one side the pond-pump ore biofilter is placed, one the other side a 32mm valve, then the precurepump is placed.

▶ Connect the connector (230V) for the high pressure pump

- The connector can be placed in the socket on the left (basic) and right for the PRO on the control box.

NOTE: Place the high pressure pump always under pond ore filter water level

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5.3 Connect OA/AK control box

WARNING! Fill up the reservoir before connecting the control unit to mains power.

- ▶ protect the controlbox against sunlight and moisture.
- ▶ protection Ip44
- ▶ warranty expiration when opening the controlbox

5.3.1 Main power

On the bottom of the control/gearbox you can find the main power ON/OFF button.

5.3.2 Main fuse

Next to the main power button (on the left) you can find the main fuseholder

Controlbox standard: fuse 5A

Controlbox with Min. control: fuse 10A

5.3.3 Connecting high pressure pump

The connector of the high pressure pump can be placed in the socket on the left (low) on the controlbox. (Rising pump)

5.3.4 Connecting motor drumfilter

The connector of the motor/drumfilter can be placed in the socket on the right (low) on the controlbox. (motor drumfilter)

5.3.5 connecting pond pump

The connector of the pond pump can be placed in the socket on the right (high) on the controlbox. (Pond pump)

5.3.6 connecting UVC

The connector of the UVC can be placed in the socket on the left (high) on the controlbox. (UVC)

5.3.7 control settings (rinsing time)

The setting off the rinsing time is set on 10 sec.

It is not possible to adjust the time..

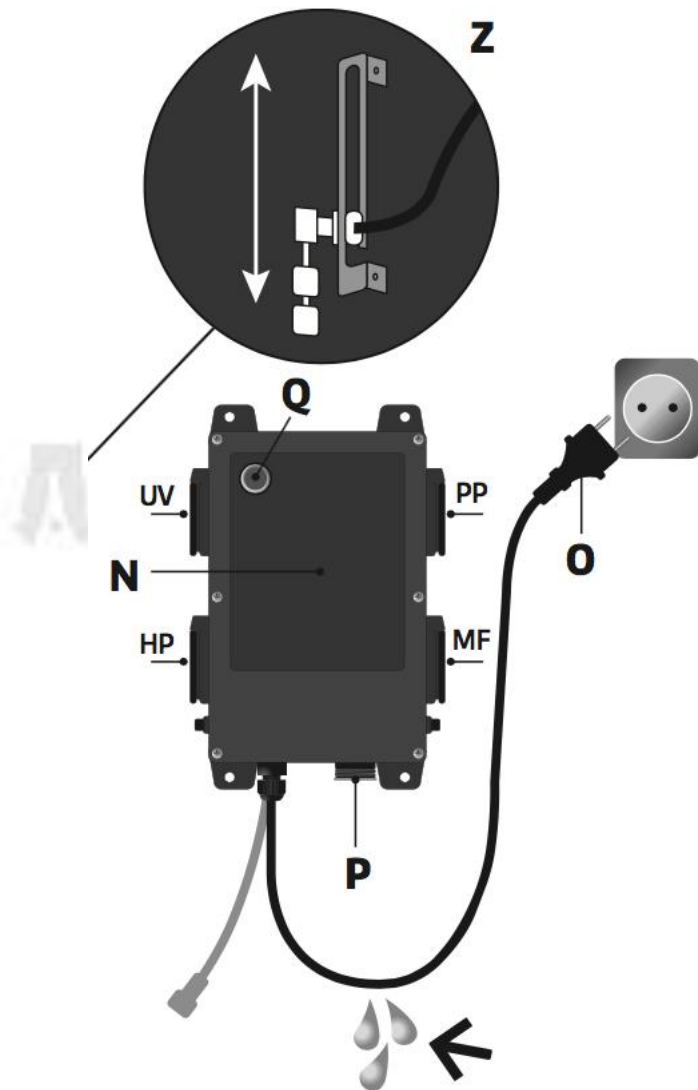
- ▶ **please notice: warranty expiration when opening the controlbox**

NOTE: at the controlbox with min. level control the cycles stops when the control detects min. level. And also the "socket UVC + Pond Pump" shot down

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5.3.8 Connecting DMX conector

next o the main power cabel ther is a cabel with a DMX connector, this connector (male) is connecte to the female on the drumbody. (floater set)



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6. First Use

Thoroughly clean the pond before first use of the OA/AK- drumfilter, so the filter system's rinsing function doesn't get accelerated due to highly turbid water.

For new ponds, this initial cleaning can usually be forgone.

Warning! Dangerous electrical tension!

Possible results: Death or severe injury.

Safety Measures: Before entering the water or before doing any maintenance, repair or modification work to the device, mains power must be switched off and protected against being accidentally switched back on.

Warning! Sensitive electrical components.

Possible results: The device may be irreparably damaged.

Safety Measures:

- ▶ Never connect the device to a power source that can be voltage regulated (dimmed).
- ▶ Never connect the device to a timer.

Warning! The high pressure pump should never run dry!

High pressure pump always places on A moisture free places, not on filterfloor

Possible results: The high pressure pump could be irreparably damaged.

Safety Measures:

- ▶ The high pressure pump must first be filled with water.
- ▶ **Regularly check the water level. While the high pressure pump is in function, it must be always be placed below the water level on the "clean water side" of the casing.**
- ▶ Do not switch on the control unit before the tank is fully filled up with water and all above mentioned instructions have been followed.

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6.1 Sequence for First Use

Follow this procedure to prepare your OA/AK drum filter for first use:

1. Remove the lid from the casing.
2. Remove the slide valves on the inflow and/or outflow to fill the filter system with water.
3. Fill up the pond until the maximum water level is reached.
4. Check the water level in the filter body.
 - Ideal water level: 2cm below the upper side of the debris bucket in the inflow chamber (see: sticker on body)
 - Acceptable variance: - 1cm
 - Correct the system placement if the water level is not within specifications.
5. Check all pipes, tubes and connections for leaks.
 - Expanding joints may initially leak a bit, since they will not be water tight until they have been in contact with water.
6. Replace the lid on the casing.
7. Switch on the control unit. (on the bottom of the control unit ON/OFF button)
8. Switch on the filter pumps and any other connected devices
9. Push ones one the hand button, the drum end high pressure pump will now activate.
10. the system will now automatic do his cycle

Never open the lid before disconnecting the main power

7. Operation cycle OA/AK drumfilter

OA/AK

Set on 10 sec. rinsing/rotating time

▶ **please notice: warranty expiration when opening the controlbox**

7.2 Manual Operation

By pressing the button, you can at any time interrupt the automatic cycle to start a manual rinsing cycle.
By switching off the high pressure pump, you can make the drum spin without rinsing it.

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8. Solving Problems

Problem Possible cause Solution

- No main power on control box
5A Fuse or 10A fuse is burnt though (controlbox with min. level control please new fuse (at ON/OFF button or 1000 watt socket)
- No water flow
Filter pump switched off. Switch on the filter pump, plug it into the power socket.
Inflow to filter system or outflow to pond clogged.
Clean the inflow and/or outflow, Bottom outflow, pipe and/or hose clogged Clean or replace if necessary.
Hose cranked. Check hose, replace if necessary.
- Insufficient water flow.
Insufficient number of inflows or insufficient pump capacity (see specifications for your Type)
Too much pressure loss in the plumbing. Shorten pipes to minimum required length.
The water is extremely turbid. Remove algae and leaves from the pond.
Filter elements are clogged or damaged. Clean or replace the filter elements.
- The water doesn't become clear.
Drum seal incorrectly mounted. Check if the drum seal is fixed properly.
Drum seal is damaged. Replace the drum seal.
- The drum makes unusual sounds.
Particles have collected into clots inside the filter drum.
Remove the clots from the filter drum.
- Some fish are missing
Fish may have swum through the pipes into the filter drum.
- Rinsing gutter clogged.
Large debris such as filamentous algae are stuck in the gutter. Dismantle the gutter and clean it.
- Rinsing system is functional but the drum doesn't rotate.

9. Cleaning and Maintenance

Warning! Dangerous electrical tension!

Possible results: Death or severe injury.

Safety Measures: Before entering the water or before doing any maintenance, repair or modification work to the device, mains power must be switched off and protected against being accidentally switched back on.

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9.1 Regular Maintenance

The filter system is self-cleaning. The following maintenance work needs to be done regularly so the filter system maintains its optimal cleaning potential.

Regular checks (each two weeks)

- ▶ Check the inside of the filter drum for excess debris (such as filamentous algae).
The window in the inflow chamber allows you to look inside the drum.
For a better view, the debris collector bucket must be disassembled.
- ▶ Remove the debris gutter and clean it
- ▶ Check all silicone joints for wear and leakage
- ▶ Perform a manual rinsing cycle (press the manual rinsing button) and check if all moving parts are functioning correctly.
- ▶ Grease the drum edges with silicone. This will allow the drum to turn more easily inside its seal.

9.2 Cleaning the Filter System

- ▶ The entire filter system only needs to be taken off line for maintenance in case it is extremely dirty.
- ▶ Never use any chemical detergents: they will kill the bacteria in the filter.
Follow this procedure to clean the filter system:
 1. Switch off the control unit.
 2. Switch off all other electrical devices in the filter system.
 3. Close the AEM-drumfilter's slide valves (in- and outflow) to prevent any water flow.
 4. Clean the filter system.
 - Thoroughly clean the reservoir and the inflow chamber with running water.
 5. Follow the "First Use" guide for switching the filter system back on.

9.3 Cleaning the Rinsing Bar

Follow this procedure to clean the rinsing bar:

1. Disconnect mains power to the control unit
2. Take the lid off the PP casing
2. Unscrew the stainless steel centring screw of the rinsing bar inside the PP casing.
3. Disconnect the 3-way coupler by unscrewing it. You can now remove the rinsing bar from the PP casing.
4. Clean the rinsing bar with tap water.

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9.4 Disassembling / Assembling the Drum Filter

Follow this procedure:

Disassembling

1. Disconnect mains power to the control unit
2. Take the lid off the PP casing
3. Remove the debris gutter (remove the 8 m6 nuts and the ring seal)
4. Remove the M5 nut in the centre of the drive axle
5. Remove the rinsing bar
6. Push the drum off the axle lock horizontally and carefully extract it from the PP casing.

Assembling

1. Carefully lower the drum into the casing, level and horizontally, and carefully push it through the silicone joint
2. Place the drum back into the centre of the axle lock
3. Tighten the M5 nut (turn the drum by hand until the m5 hole and the nut are aligned)
4. Adjust the silicone joint by hand (do not use any sharp objects) so it is in horizontal position
2. Grease the drum edge / silicone joint (necessary to ensure that the drum can turn freely)

10. Winter Preparations

Filter system is frost-proofed:

The filter can remain in operation as long as a minimum water temperature of +4 °C is maintained.

- ▶ Cover the pond if it has not yet been covered.
- ▶ Place the control unit in a protected location. The control unit's operating temperature is limited to -10 °C.

Filter is not frost-proofed:

Switch off the device when the water temperature drops below +4 °C or at the latest before the first frost sets in.

- ▶ Drain the filter system as completely as possible, clean it thoroughly and check for any damage.
- ▶ Drain all the hoses, tubes and joints as completely as possible.
- ▶ Leave the slide valves open.
- ▶ Cover the drum filter so no rain water can enter it.
- ▶ Protect against frost all elements (plumbing and valves) that are still in contact with water.

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11. Consumables

Filter elements, drum joint, various joints and the high pressure pump's condenser are consumable parts.

► Do not open the high pressure pump. Send it back to AEM-products for repair. It will be immediately replaced. (for general information, see "Service")

12. Discharging Obsolete Device

Please support our effort to strive for a healthy environment by taking into account the following advice! Always discharge the device in accordance with national rules and regulations.

The device should not be discarded in normal municipal waste! Always discard it at a proper recycling station. Permanently disable the device by cutting the cables before discarding it.

13 Technical Specifications

AEM- Drum Filter

Gravitation System/ Airlift

Mains tension Vac	230
Mains frequency Hz:	50
Idle power consumption W:	15
In use power consumption W:	565
Maximum (theoretical) power consumption W:	600
Throughput tension to rinsing pump Vac:	230
Throughput tension to drum motor Vac:	230
Air sound pressure dB(A):	<70

Control/gearbox unit

Length power cable m:	1,5 mtr.
Operating temperature range °C:	+4 ... +35

High pressure pump

Water pressure bar	6.2
Length cable m:	1,5