

SONOREX TECHNIK

Filtration FA



valid for:

Filtration FA 16 and FA 40 with filter aggregate FA 610

Filtration FA 75, FA 110, FA 180, FA 210, FA 220 and FA 320 with filter aggregate FA 620

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General information

The device, the accessories and the preparations are to be used as stated in the Operating Manual or product literature.

The Manual forms part of the scope of delivery and is to be stored in the vicinity of the device for later reference. This also applies if the device changes possession.

Before the device is put into service, this Manual must be read carefully and completely to familiarise the user with all of the device functions.

Follow warnings and safety instructions (Chapter 1.5) at all times while using the device.

The manufacturer assumes no responsibility for safety or the proper functioning of the device in the event of improper handling or a use other than the intended use. In the event of unauthorised alterations/modifications, both the warranty claim and the CE conformity will expire.

If service is required, please contact the authorised dealer or the manufacturer.

Symbols used:






Symbol	Meaning	Explanation
	Danger	Used to mark information that, if not observed, could constitute a risk to life and limb, especially as a result of electric shock.
	Caution	Used to mark information that must be observed and complied with in order to avoid damage to the device or injury to the user.
	Important	Identifies information that is important for implementation.
	Note	Used to mark explanatory information.
	Instructions	Identifies instructions that must be followed in the described sequence.

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Informative annexes

Connecting the oil separator and filter aggregate to an ultrasonic bath

Appendix

Original operating manual horizontal centrifugal pumps with magnetic coupling

1 Product description

Filter aggregate, type SONOREX TECHNIK FA

The exact type specification and serial number are found on the identification plate on the back.

A filtration is comprised of a filter aggregate and a corresponding connection set.

The filter aggregate is available in two sizes (FA 610 and FA 620) depending on the bath volume to be cleaned.

The corresponding connection sets are customised to fit the ultrasonic bath.

Filter aggregate product features:

- Handle (1)
- Control box (2) with user controls
- Ball valve (3)
- Pre-filter (4)
- Fine filter (5)
- Stainless steel stand (6)
- Centrifugal pump (7)
- De-airing screw (8)
- Pressure switch (9)



SONOREX TECHNIK FA 610 filter aggregate

Control box product features:

- On button (9)
- Off button (10)



Example connection set

1.1 Mode of operation

The electrically operated SONOREX TECHNIK filtration provides continuous filtration of cleaning liquid in a connected ultrasonic bath in the SONOREX TECHNIK RM / TM series. This keeps ultrasonic bath cleaning liquid usable for a much longer period. The filtration contains a filter aggregate which is made up of two filters (pre- and fine filter) and a magnetically coupled centrifugal pump on a stand. The pre-filter serves to protect the pump, while the fine filter provides deep-bed filtration.

1.2 Intended purpose

Existing SONOREX TECHNIK RM/TM ultrasonic baths do not require conversion before being equipped with a filtration.

The filtration serves to filter aqueous cleaning agents in bath temperatures of up to 70 °C^{/1} with bath contents measuring at least 13L with preflooded filter aggregate.

The unit is operated from the front on the control box using push buttons. SONOREX TECHNIK filtrations are designed to be free-standing units.

1.3 CE conformity

The filter aggregate satisfies the CE marking criteria of the following European Directives:

- “Low-Voltage Directive”
- “Electromagnetic Compatibility” Directive
- RoHS directive

in their currently valid versions.

A declaration of conformity can be requested from the manufacturer by providing the serial number.

^{/1} The filter cartridges may be used at a maximum permitted temperature of 70 °C.

1.4 Technical data, general

The filter aggregate is interference-free and CE-marked.

Safety: EN 61010-1;

EMC: EN 61326-1

Filter aggregates FA 610 and FA 620:

Stand, fittings: Stainless steel, brass, galvanically coated and PP

Hoses: Stainless steel-reinforced HDPE

Dimensions: 460 × 440 × 680 mm (L × W × H)

Weight: approx. 20 kg

Mains connection: 230 V~ 50 Hz, 0.25 kW

Main cable length 2 m

Max. current consumption: 1.76 A

Fuse: 1 × T 2.5 A

Pre-filter:

Housing: PP

Filter cartridge: Nylon-weave tray insert atop a filter element, fineness of filtration 350 µm (reusable)

Filter cartridge size: FA 610: 9 ¾"

FA 620: 20"

Fine filter:

Housing: PP

Filter cartridge: Single-use wound filter cartridge made of PP, integrally wound, fineness of filtration 25 µm

Filter cartridge size: FA 610: 9 ¾"

FA 620: 20"

Pump:

Design: magnetically coupled centrifugal pump

Material: PP (fibreglass-reinforced), HD charcoal, ceramic, Viton seals (FPM)

Operating temperature: max. 70 °C

Pressure: max. 1.0 bar

Output rate: 6 m³/h, H = 10 m

Protection class: IP 55

For additional information, see pump operating manual (appendix).

Connection:

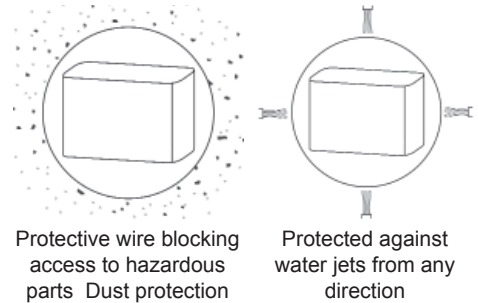
Inlet: G ½

Outlet: G ½

Connection set (APF ...):

EPDM hoses,
Brass hose sockets, galvanically coated
Stainless steel return flow pipe

More detailed information on
the IP 55 protection class
pursuant to DIN EN 60529:



Ambient conditions pursuant to EN 61 010-1

Overtoltage category:	II
Degree of contamination:	1
Permissible relative humidity up to 31 °C:	80%
Permissible relative humidity up to 40 °C:	50%
Permissible ambient temperature:	5 to 40 °C

Condensation not allowed.
For indoor operation only.

1.5 Warnings and safety instructions

General

- In accordance with its intended use and this Operating Manual, the filter aggregate must only be used together with a SONOREX TECHNIK RM/TM ultrasonic bath. Accordingly, the safety instructions as stated in the operating manual for the SONOREX TECHNIK RM/TM ultrasonic bath also apply.
- All safety instructions given in the pump operating manual (appendix) apply as well.
- Do not bring cleaning agents in contact with eyes or skin.
- Avoid ingesting or breathing in cleaning agents.
- Do not operate the filter aggregate without liquids!
- The filter aggregate is designed for use in liquid temperatures of up to 70 °C.
- Only operate the filter aggregate with aqueous cleaning agents.
Do not use any of the following liquids:
 - combustible liquids, solvents (non-aqueous) and non-combustible liquids like TRI, PER, methylene chloride and the like.
 - aggressive cleaning agents such as acids and chemicals that (for example) contain or separate chlorine ions, such as certain disinfectants, washing-up liquids, household cleaners or saline solutions.
- Do not expose the filter aggregate to corrosive influences.
- Device damage resulting from the use of unsuitable cleaning chemicals will void the warranty.
- Keep the filter aggregate and the stand clean and dry.
- Use only the connection material supplied.
- If the device changes ownership, make sure to provide the new owner with the Operating Manual and safety instructions as well.

Operation and transport

- Place the filter aggregate upright on a solid, dry surface. Note the required ambient conditions (Chapter 1.4).
- Only connect the filter aggregate to outlets with a grounded socket.
- Do not allow the unit to run unattended.
- The filter aggregate has a handle for transport purposes.

Damage and defects

- Disconnect the device from mains power immediately if defects are identified.
- Defective or damaged filter aggregates must only be serviced by the manufacturer or by trained, authorised personnel.
- Always replace defective parts with SONOREX original parts or parts of the same quality.
- Replace defective mains cables completely.

2 Preparation

Carefully unpack the filter aggregate and accessories, and ensure that all parts are present and have not been damaged in transit. Any identified damage or defects must be communicated immediately to the responsible forwarding agent and the supplier in writing.

Before operation, the filter aggregate should be allowed to stand for 2 hours at its operating location so that it can adjust to the ambient conditions.

2.1 Scope of delivery

- 1 Filter aggregate, see delivery note
- 1 Connection set APF ...
- 1 Operating Manual

Additional accessories as ordered – see delivery note

The specific filter aggregate and connection set supplied depends on the tank contents to be filtered and the size of the RM / TM ultrasonic bath being connected:

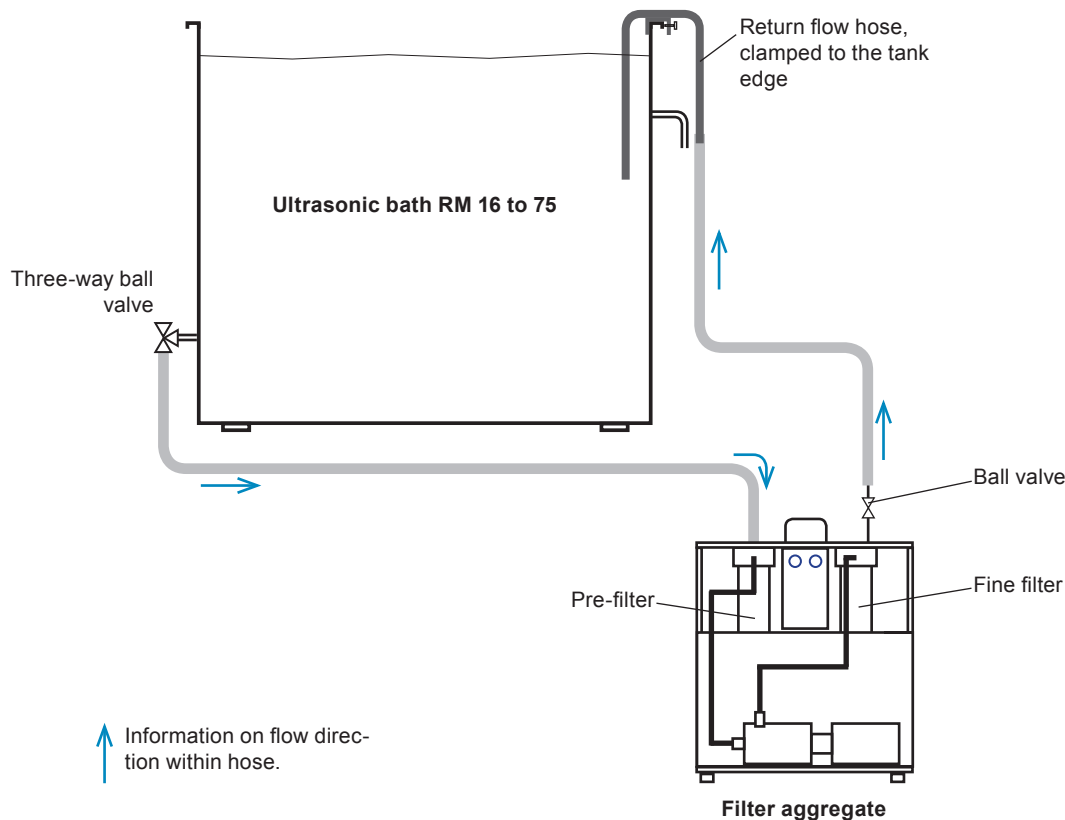
Type	Filter aggregate	Connection set
FA 16	FA 610	APF 16
FA 40	FA 610	APF 40/75
FA 75	FA 620	APF 40/75
FA 110	FA 620	APF 110/180/210
FA 180	FA 620	APF 110/180/210
FA 210	FA 620	APF 110/180/210
FA 220	FA 620	APF 220
FA 320	FA 620	APF 320

2.2 Assembly / Installation



The filter aggregate pump must be below the liquid level in the connected ultrasonic bath. See the following pages for connection information.

2.2.1 Connecting the FA 16, FA 40 or FA 75



Connecting the tank drain with the suction side of the filter aggregate:

1. Before assembly, wrap all external threads with several layers of Teflon tape.
2. FA 16: Screw the hose socket to the three-way ball valve (accessory pack RM 16).
FA 40/75: Screw the G $\frac{3}{4}$ – G $\frac{1}{2}$ reducer and the hose socket to the three-way ball valve.
3. Slide the hose ends onto the hose sockets and secure using hose clamps.

Connecting the tank inlet with the pressure side of the filter aggregate:

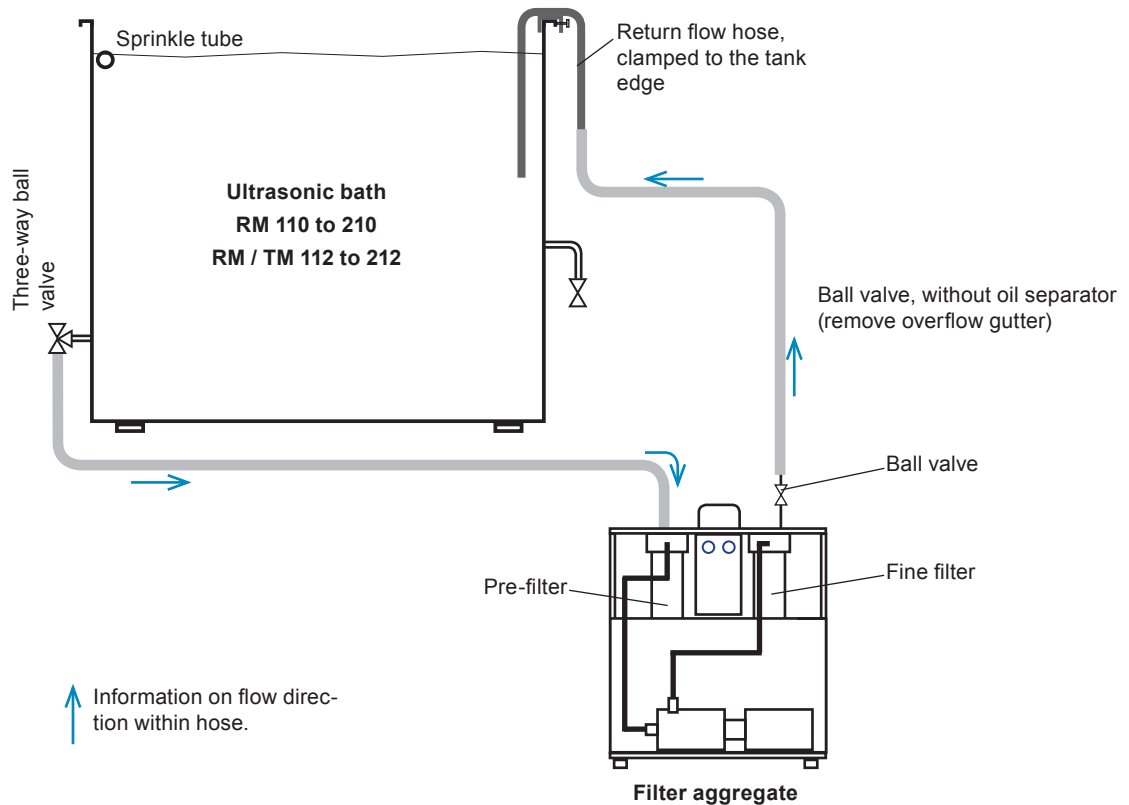
1. Screw the hose socket to the fine filter ball valve.
2. Slide the hose ends onto the hose sockets (return flow and fine filter) and secure using hose clamps.
3. Insert the return flow hose into the bath nearby the overflow gutter (short side or long side at the rear) and secure using 2 clamping screws.



Important:

When a filtration (FA) is being connected to an ultrasonic bath (RM 16 - 75) along with an oil separator (OX), note that they can only be operated in alternation - see appendix.

2.2.2 Connecting the FA 110, FA 180 or FA 210



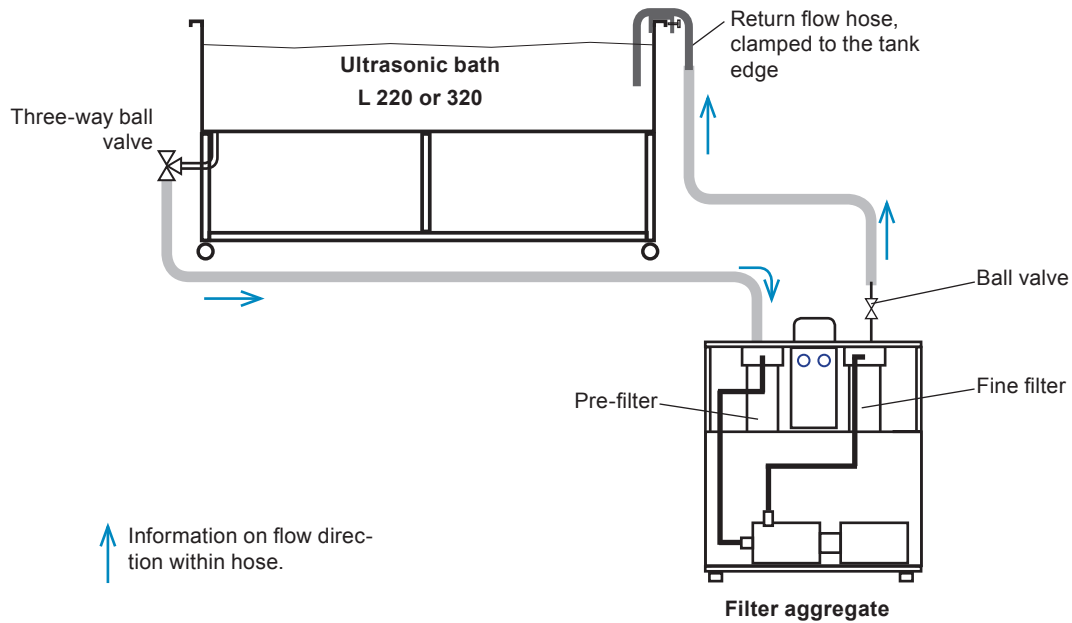
Connecting the tank drain with the suction side of the filter aggregate:

1. Before assembly, wrap all external threads with several layers of Teflon tape.
2. Screw the G 1 – G ½ reducer and the hose socket to the three-way ball valve.
3. Slide the hose ends onto the hose sockets and secure using hose clamps.

Connecting the tank inlet with the pressure side of the filter aggregate:

1. Screw the hose socket to the fine filter ball valve.
2. Slide the hose ends onto the hose sockets (return flow and fine filter) and secure using hose clamps.
3. Insert the return flow hose into the bath nearby the overflow gutter (short side or long side at the rear) and secure using 2 clamping screws.

2.2.3 Connecting the FA 220 or FA 320



Connecting the tank drain with the suction side of the filter aggregate:

1. Before assembly, wrap all external threads with several layers of Teflon tape.
2. Replace the ball valve on the corresponding chamber for the three-way ball valve.
3. Screw the G 1 – G ½ reducer and the hose socket to the three-way ball valve.
4. Slide the hose ends onto the hose sockets and secure using hose clamps.

Connecting the tank inlet with the pressure side of the filter aggregate:

1. Screw the hose socket to the fine filter ball valve.
2. Slide the hose ends onto the hose sockets (return flow and fine filter) and secure using hose clamps.
3. Insert the return flow hose into the tank on the opposite short side of the bath and secure using 2 clamping screws.



Note:

It is not possible to connect an oil separator to the L 220 or the L 320.

2.3 Commissioning

- Insert filter cartridges into the filter housings for the pre- and fine filters / check whether filter cartridges have already been inserted.
- Connect the filter aggregate to the ultrasonic bath, see Chapter 2.2.
- Open the 3-way ball valve on the ultrasonic bath.
- Open the ball valve on the filter aggregate all the way.
- Fill the ultrasonic bath with liquid until the liquid level in the bath is above the overflow gutter.
- De-air the filter aggregate using the de-airing screw, and then reconnect.
- Press the On button (green) on the control box to start the filter aggregate. The green indicator light is continuously illuminated during operation.
- Check the fill level in the ultrasonic bath multiple times and refill if necessary. Make sure that liquid is continuously flowing into the ultrasonic bath.



Do not operate the pump without liquid!

3 Operation

3.1 User controls

The device is operated from the front:

- Press the On button (green) to start the filter aggregate. The green indicator light is continuously illuminated during operation.
- Press the Off button (red) to switch the filter aggregate off.
- Use the ball valve to adjust the flow-through rate.



Note

The filtration can remain connected to mains power while switched off. It can be disconnected from the mains by pulling the mains plug out.



3.2 Device signals

The red Off button is also coupled to a pressure switch. If it illuminates during operation, the fine filter cartridge is blocked and needs to be replaced. See Chapter 5.1.



4 Use

4.1 Instructions for use

Check hose connections

- Check all hose connections between the filter aggregate and the ultrasonic bath for leaks, especially after a longer period of non-use.
- The liquid must not exceed the maximum temperature of 70 °C.



Caution!

Sediment particles can build up within the pre-filter, filling and blocking the filter housing completely, resulting in dry runs that can damage the pump. The pressure switch (on the fine filter) does not monitor clogging of the pre-filter.

4.2 General use

Step 1: Preparation

- Open the 3-way ball valve on the connected ultrasonic bath.
- Open the ball valve on the filter aggregate.

Step 2: Switching on

- Press the On button (green) to switch on the filter aggregate.
- Use the ball valve on the filter aggregate to set the desired flow-through rate.



Note:

Reducing return flow speed can eliminate any whistling noises in the ultrasonic bath.

Step 3: Switching off the filter aggregate



If the cleaning tank is soiled with particles that tend toward sedimentation, make sure to rinse with fresh cleaning agent before switching off the filter aggregate.

Failure to do so can result in pump damage.

- Press the Off button (red) to switch off the filter aggregate.
- For safety reasons, if the filter aggregate is to remain switched off for a longer period, close the 3-way ball valve on the connected ultrasonic bath.

5 Maintenance and cleaning

Regular cleaning and care of the filter aggregate will ensure an optimum lifespan.



CAUTION!

Disconnect the filter aggregate from mains power each time before cleaning or care.



Do not hose down and do not expose to splashed water.

No guarantee is provided for damage caused by the use of unsuitable disinfection agents or detergents.

5.1 Cleaning and care

- Use only commercially available care products without scouring additives - do not use abrasive cleaners.
- Wipe down using only a moist cloth and then allow to dry or wipe dry.

5.2 Storage

If not used for longer periods of time, empty the filter aggregate completely and store it covered in a cool, dry place.

6 Maintenance and repair

6.1 Maintenance

- Keep the filter aggregate clean and dry.
- Replace used cleaning agents in the ultrasonic bath and the filter aggregate - do not refresh by topping up.
- Filter cartridges must be replaced regularly - at the latest when the pressure switch switches off.
The frequency with which the filter will need to be changed depends largely on the type and degree of cleaning tank soiling.

Filter replacement:



Close the 3-way ball valve on the ultrasonic bath before replacing the filter, as otherwise it will be running dry.

Pre-filter: Remove, clean/rinse or replace, depending on the degree of soiling. Rinse the filter housing out thoroughly before replacing or re-inserting the filter cartridge.

Fine filter: If the pressure in the filter housing is too high, the pressure switch will switch the pump off, and the red indicator light on the Off button will illuminate.
 Replace the filter cartridge.
 Rinse the filter housing out thoroughly before replacing the filter cartridge.



After inserting a new filter cartridge and opening the three-way ball valve, check the liquid level in the ultrasonic bath and fill if necessary.
 This is particularly true for small cleaning tanks = small bath volume.

The filter aggregate can then be started again using the green On button - the red indicator light will switch off.

6.2 Troubleshooting

SONOREX TECHNIK filter aggregates are robust constructions designed to offer maximum reliability.

Nevertheless, the possibility of a malfunction due to a defective component can never be ruled out entirely.



Caution!

Repairs must only be performed by authorised, qualified personnel!
 Unauthorised repairs will void the warranty!

Seq. no.:	Malfunction	Possible cause(s)
1	Filter aggregate switches off, red indicator light illuminates.	– Fine filter clogged
		– Return flow throttled too far
		– Return flow blocked, kinked or pinched
2	Filter aggregate switches off, red indicator light does not illuminate.	– Mains power failure
		– Defective fuse
3	Filter aggregate is running, bubbles in inlet, little or no flow volume in return flow.	– Bath drain closed
		– Inlet blocked, improperly sealed, kinked or pinched
		– Pre-filter clogged
4	Filter aggregate running, hoses filled but no flow volume	– Pump blocked, magnetic coupling slipping

6.2.1 Replacing fuses



Caution!

Repair work may only be carried out by authorised, qualified personnel or by the manufacturer. The manufacturer assumes no liability for unauthorised work on the device!



Danger!

Always isolate from mains power before opening!
Risk of electric shock from live parts in the control box!

- Disconnect the filter aggregate from mains power. Close the ball valves (ultrasonic bath and filter aggregate).
- Remove the screws in the control box and open carefully.
- The fuse is inside the locking clip.
- Following inspection, replace only the defective fuse. The fuse rating is listed under Technical Data, see Chapter 1.4.
- Reassemble the control box by following the above instructions in reverse.
- Reconnect the power cable. Re-open the ball valves.

6.3 Customer service

If service is required, please contact your specialist dealer or BANDELIN electronic to order spare parts or before sending in the defective filter aggregate.

6.3.1 Repairs and service

If faults or defects have been discovered and cannot be rectified, stop using the filter aggregate immediately. If this occurs, please contact the supplier or the manufacturer:

BANDELIN electronic GmbH & Co. KG
Heinrichstraße 3-4
12207 Berlin

Repair service:	Email:
Tel.: +49 30 768 80-13	info@bandelin.com
Fax: +49 30 768 802 00 13	

Returns are subject to the General Conditions of Delivery and Payment of BANDELIN electronic GmbH & Co. KG.

In addition, the filter aggregate must be cleaned and decontaminated as described in the next chapter.

6.3.2 Decontamination certificate

If the filter aggregate is sent back to the manufacturer for repairs (with accessories, if applicable), complete the "Certificate of Decontamination" form and affix it in a clearly visible spot on the outside of the packaging.

If this form has not been filled out, we reserve the right to refuse receipt of the package in order to protect our employees.

The form can be downloaded from our website as a PDF file:

www.bandelin.com - Downloads ...

7 Consumable materials

Filter cartridges:

Type	Description	Order No.
EF 1025	10 fine filter, 9 3/4", 25 µm	238
EF 2025	10 fine filter 20", 25 µm	8585

8 Decommissioning

If the filter aggregate is no longer functional, it must be disposed of appropriately. Some components are considered hazardous waste.

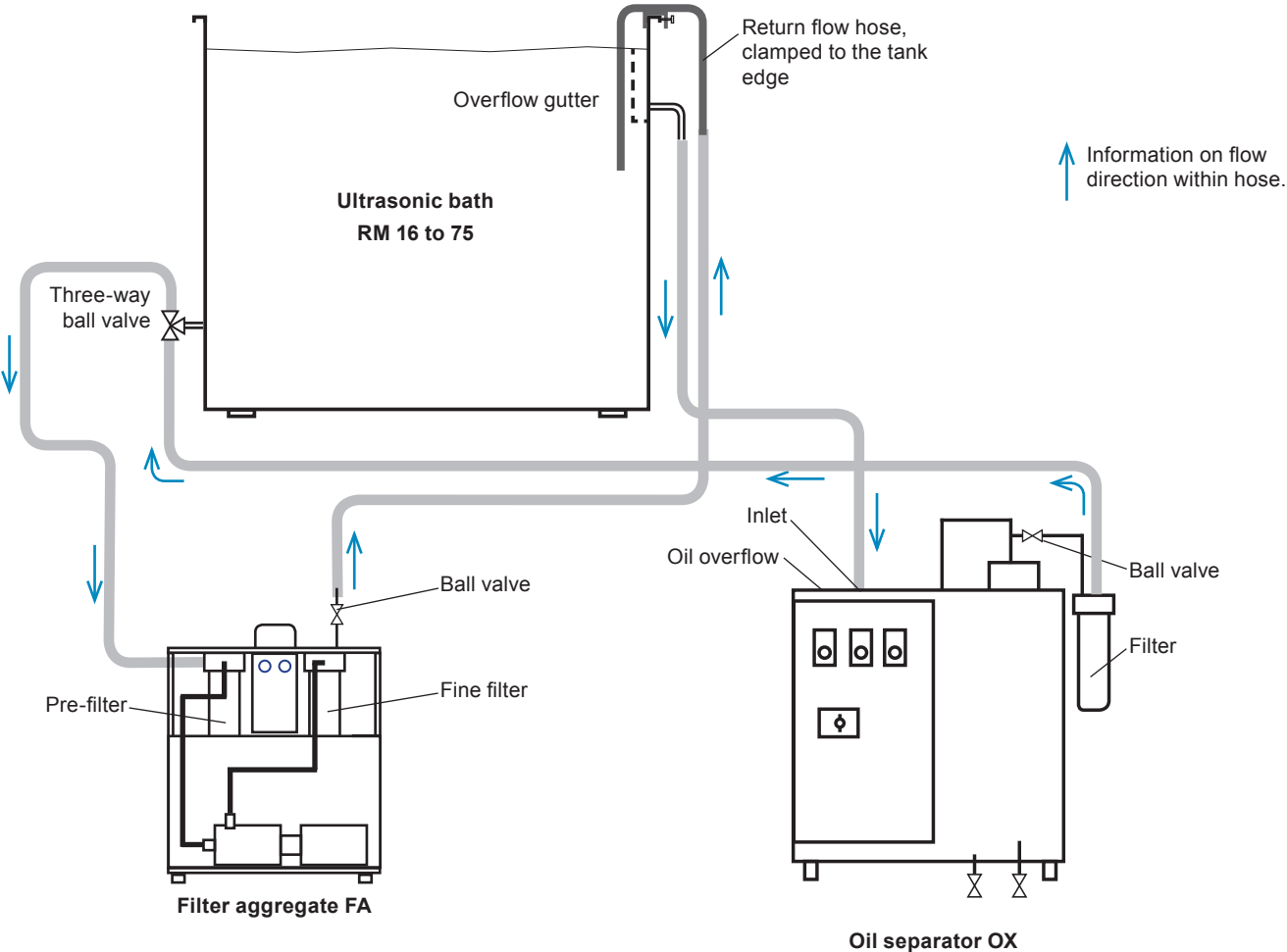


Connecting the oil separator and filter aggregate to an ultrasonic bath

RM 16 to RM 75

When an oil separator is being connected to an ultrasonic bath (RM 16 - 75) along with a filter aggregate, note that they can only be operated in alternation.

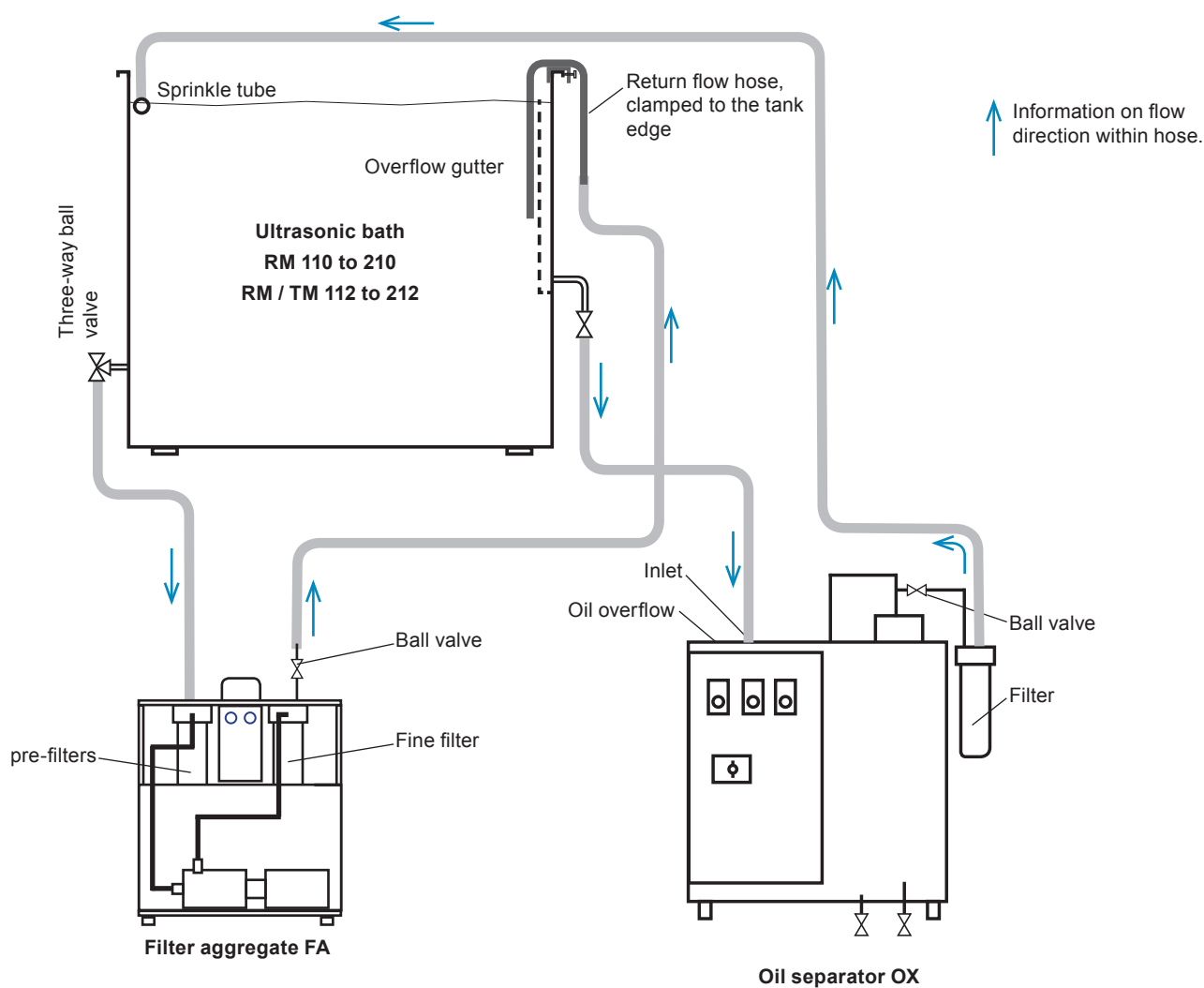
Switch the three-way ball valve accordingly.



RM 110 to RM 212 and TM 112 to TM 212

When an oil separator is being connected to an ultrasonic bath (RM 110 – 210 or RM / TM 112 – 212) along with a filter aggregate, note that the return flow from the filter aggregate is over the tank edge, and the return flow from the oil separator is via the sprinkle tube.

The two accessory devices may be operated simultaneously.



Note:

The enclosed CD contains the Operating Manual in this language and other languages, as well as additional information.