

Operating Instructions

SONOREX TECHNIK

FA Filtration Unit



Valid for:

Filtration units FA 16 and FA 40 with filter unit FA 610

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



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1 About these operating instructions

These operating instructions contain information that is necessary and useful in order to use the device safely and efficiently.

- Read these operating instructions before using the device.
- Pay particular attention to Section **2 Safety**.
- If you pass this device on to someone else, provide these operating instructions with it.
- Should these operating instructions leave any questions unanswered, please contact your specialist dealer or BANDELIN. Notes on service can be found in Section **6.3 Repairs**.

In the event that the translation cannot be understood, the German original version of BANDELIN must be followed.

BANDELIN assumes no responsibility or liability for damage caused by improper handling or use.

Illustrations are exemplary and not to scale. Decorations not included with delivery.

2 Safety

2.1 Using the device

Existing SONOREX TECHNIK RM/TM ultrasonic baths can be retrofitted with a filtration unit without any modifications.

The filtration unit is used to filter aqueous cleaning agents up to a bath temperature of 70 °C and a tank capacity of 13 l or more when the filter unit is pre-flooded.

The device is controlled via push buttons on the front of the switch box.
The SONOREX TECHNIK filtration unit is intended as a floor-standing unit.
Do not allow the unit to run without supervision.

2.2 Keep out of reach of children.

Children may not detect hazards emanating from the device. Therefore, keep the device away from children.

2.3 Risk of electric shock

The device is an electrical device. Failure to follow safety rules can result in a life-threatening electric shock.

- Never let the device become wet. Keep the surface and operating elements clean and dry.
- The filter unit is equipped with a handle for transport.
- Do not shower the device or expose it to splash water.
- Disconnect the device from the mains before any cleaning or maintenance.
- Only connect the device to a socket with an earthed protective contact that matches the protective contact of the mains connector.



Note for unit with type E+F jack:

Combination with K-type sockets (especially common in Denmark) is not permitted.

- If you discover a defect in the device, unplug it immediately. Do not connect any defective device to the mains.
- Only have repairs carried out by qualified personnel or by the manufacturer. See chapter **6.3 Repairs**.
- Position the device in such a way that it is possible to disconnect the mains connection at any time without difficulty.

2.4 Danger due to noise emissions

The continuous sound pressure level that emanates from the device is < 75 dB(A). Only switch the device on if it is found to have no defects during this check of its overall condition. Inform your supervisor if this check of the overall condition of the device reveals defects.

Note: noise can cause hearing damage at a daytime exposure of 85 dB or more, which can lead to noise-induced hearing loss. Hearing protection must be provided from a level of 80 dB; hearing protection must be worn from a level of 85 dB (source: DGUV – German Social Accident Insurance).

2.5 Preventing damage to the device

- The device may only be operated with aqueous cleaning agents up^{/1} to 70 °C.
- Do not operate the device without liquid.

2.6 Interference with wireless communication

The device may interfere with other wireless communication devices in close proximity, such as:

- mobile phones;
- Wi-Fi devices
- Bluetooth devices

If a wireless device malfunctions, increase its distance from the device.

The device complies with the requirements for Class B devices according to EN 55011.

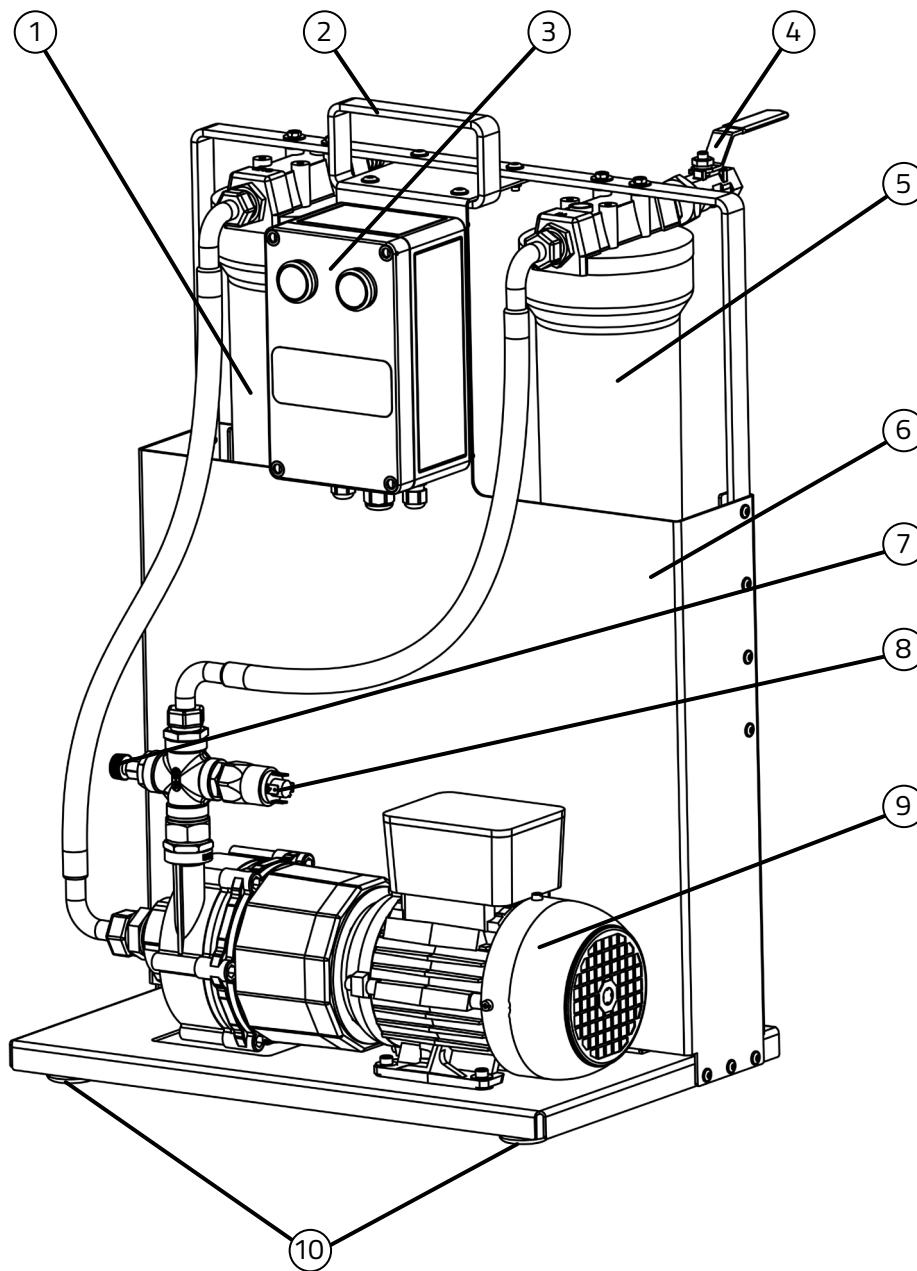
2.7 Safety stickers on the device

- Observe all safety stickers on the device.
- Keep the safety stickers in a readable state. Do not remove them. Replace them when they are no longer legible. Please contact our customer service for this. See chapter **6.3 Repairs**.

^{/1} The maximum permissible operating temperature of the filter candles is 70 °C.

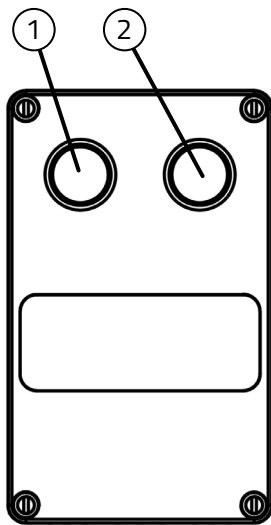
3 Construction and function

3.1 Construction



- 1 Pre-filter
- 2 Handle
- 3 Switch box with control panel
- 4 Ball valve
- 5 Fine filter
- 6 Stainless-steel support
- 7 Vent screw
- 8 Pressure switch
- 9 Centrifugal pump
- 10 Device feet

3.2 Switch box with control panel



- 1 On button
Green pilot lamp; remains permanently lit up during operation
- 2 Off button
Red pilot lamp for switching off the filtration
Lights up in the event of a fault



Information

- The red Off button is simultaneously coupled to a pressure switch.
If this lights up during operation, the filter candle of the fine filter is clogged and must be replaced.

3.3 Function

The electrically operated SONOREX TECHNIK filtration unit enables continuous filtering of the cleaning agent in the connected ultrasonic bath from the SONOREX TECHNIK RM/TM bath series. This significantly increases the service life of the ultrasonic cleaning agent. The included filter unit consists of two filters (pre-filter and fine filter) and a magnetically coupled centrifugal pump on a support. The pre-filter serves to protect the pump, while the fine filter is for deep filtration.

4 Preparation for operation

4.1 Installation site requirements

The installation site of the device must meet the following conditions:

- The installation surface must be horizontal, firm and dry.
- Its load-bearing capacity must be sufficient for the device. For the weight, see chapter **8.1 Technical specifications**.

4.2 Scope of delivery

A filtration system consists of a filter unit and a suitable connection set.

The filter unit is available in two sizes, FA 610 or FA 620, depending on the bath volume to be cleaned.

The corresponding connection kits are assembled to match the ultrasonic bath.

- 1 Filter unit; see delivery note
- 1 APF connection set ...
- 1 Operating instructions

Other accessories, depending on the order – see delivery note

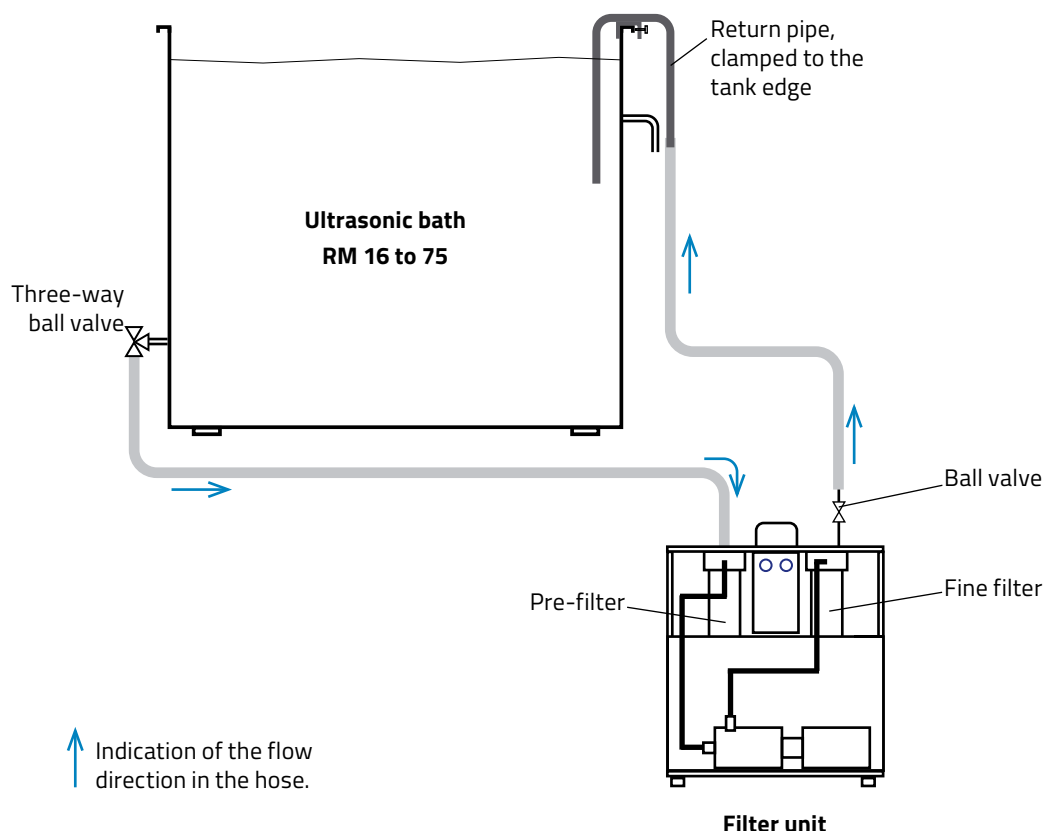
Depending on the bath contents to be filtered and the size of the RM/TM ultrasonic bath to be connected, different filter units with corresponding connection sets are supplied:

| Type | Filter unit | 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 |

4.3 Set-up and connections

The pump of the filter unit must be below the liquid level of the connected ultrasonic bath.
For how to connect, see the following pages.

4.3.1 Connecting the FA 16, FA 40 or FA 75



Connect the tank outlet to the suction side of the filter unit:

1. Wrap all external threads with several layers of Teflon tape before assembly.
2. FA 16: Screw a hose socket onto the three-way ball valve.
FA 40/75: Screw the G $\frac{3}{4}$ – G $\frac{1}{2}$ reducer and a hose socket onto the three-way ball valve.
3. Screw a hose socket onto the pre-filter of the filter unit.
4. Slide the hose ends onto the hose sockets and secure them with the hose clamps.

Connect the tank inlet to the pressure side of the filter unit:

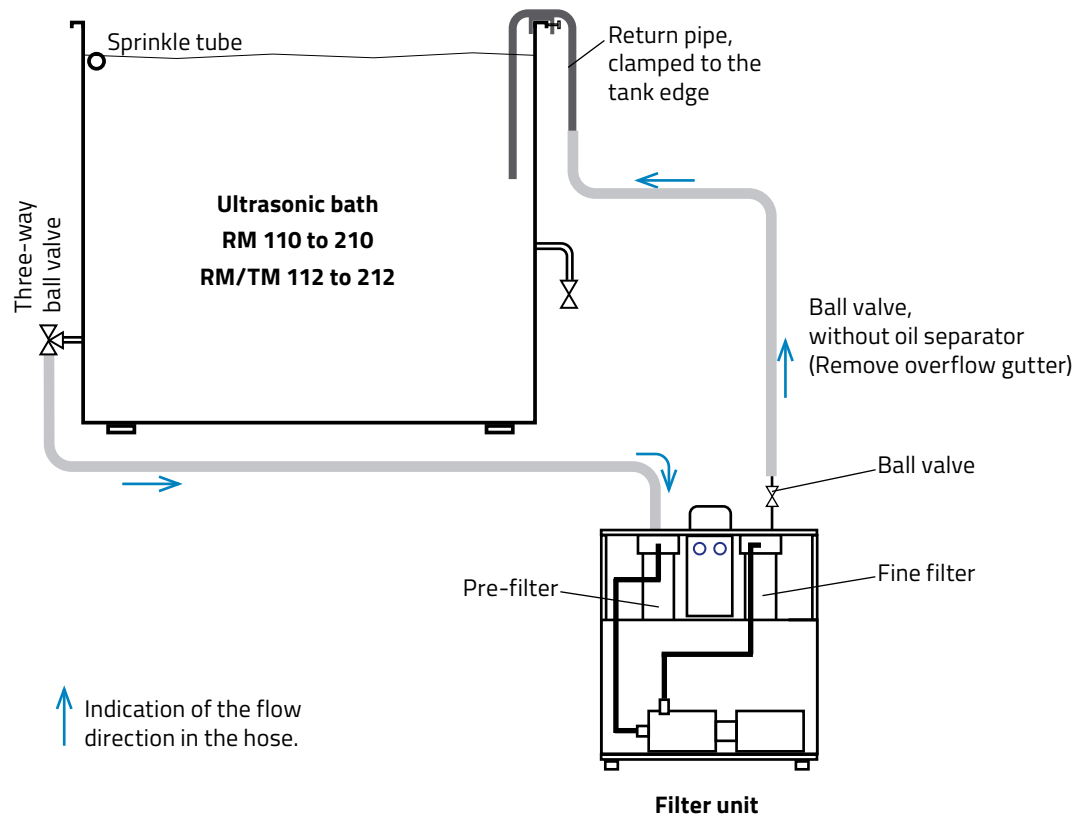
1. Slide the hose ends onto the hose sockets (return pipe and fine filter) and secure them with the hose clamps.
2. Hang the return pipe in the bath near the overflow gutter (narrow side or long side at the back) and secure it with 2 clamping screws.



Information

- If a filtration unit (FA) is connected to an ultrasonic bath (RM 16–75) together with an oil separator (OX), it should be noted that operation is only possible in alternation – see chapter 10 Connecting the oil separator and filter unit to an ultrasonic bath.

4.3.2 Connecting the FA 110, FA 180 or FA 210



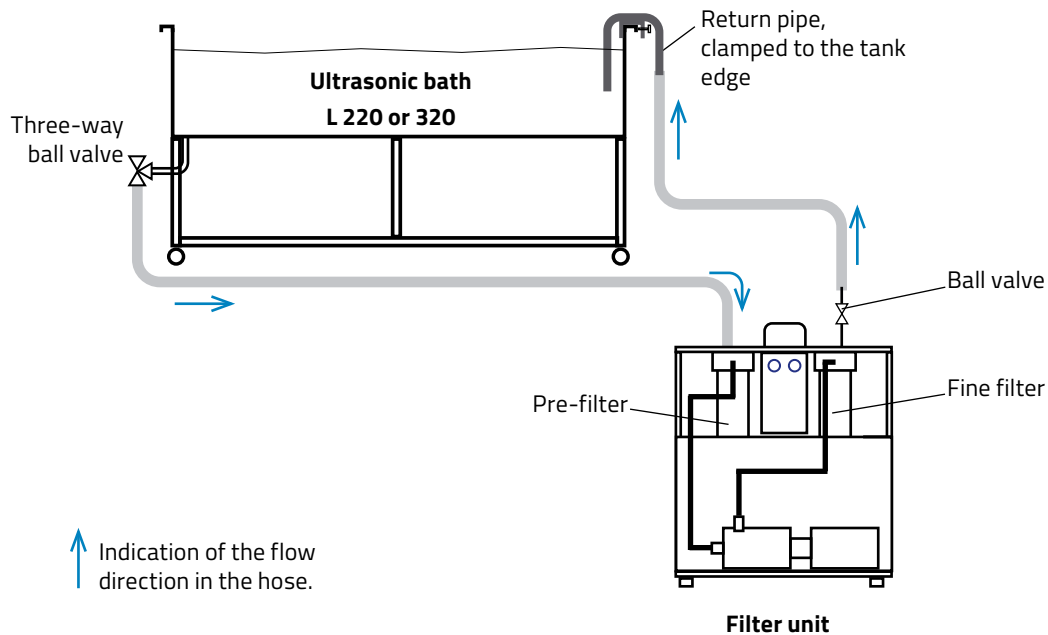
Connect the tank outlet to the suction side of the filter unit:

1. Wrap all external threads with several layers of Teflon tape before assembly.
2. Screw the G 1 – G ½ reducer and a hose socket onto the three-way ball valve.
3. Screw a hose socket onto the pre-filter of the filter unit.
4. Slide the hose ends onto the hose sockets and secure them with the hose clamps.

Connect the tank inlet to the pressure side of the filter unit:

1. Slide the hose ends onto the hose sockets (return pipe and fine filter) and secure them with the hose clamps.
2. Hang the return pipe in the bath near the overflow gutter (narrow side or long side at the back) and secure it with 2 clamping screws.

4.3.3 Connecting the FA 220 or FA 320



Connect the tank outlet to the suction side of the filter unit:

1. Wrap all external threads with several layers of Teflon tape before assembly.
2. Replace the ball valve of the corresponding chamber with the three-way ball valve.
3. Screw the G 1 – G ½ reducer and a hose socket onto the three-way ball valve.
4. Screw a hose socket onto the pre-filter of the filter unit.
5. Slide the hose ends onto the hose sockets and secure them with the hose clamps.

Connect the tank inlet to the pressure side of the filter unit:

1. Slide the hose ends onto the hose sockets (return pipe and fine filter) and secure them with the hose clamps.
2. Hang the return pipe in the bath on the opposite narrow side and secure it with 2 clamping screws.

i Information

- An oil separator cannot be connected to the L 220 or L 320.

5 Operation

5.1 Putting into service

Requirements

- Check whether the hoses are connected without any kinks.
- Check whether there are filter candles in the filter housings of the pre-filter and fine filter; if not, insert them.
- Check whether there are any foreign objects in the device that could get sucked in.
- The mains plug must be plugged into a grounded socket.

Procedure

- Open the three-way ball valve on the ultrasonic bath.
- Open the ball valve on the filter unit.
- Fill the ultrasonic bath with liquid until the liquid level in the tank is above the minimum filling level embossed on the tank.
- Vent the filter unit with the vent screw. Then close it again.
- The filter unit is put into operation via the On button (green) on the switch box. The green pilot lamp remains permanently lit up during operation.
- Adjust the desired flow rate with the ball valve on the filter unit.
- The filling level in the ultrasonic bath must be checked several times and topped up if necessary.



Information

- Reducing the return flow speed can avoid any whistling noises that may occur in the ultrasonic bath.



WARNING

Risk of damage to the pump

- The pump must not be operated without liquid.
- If the cleaning bath is contaminated with substances which tend to sediment, it must be rinsed with clear cleaning agent prior to the filter unit being switched off. Failure to do so may result in damage to the pump. Switch off the filter unit by pressing the Off button (red). If the filter unit is switched off for a prolonged period of time, the three-way ball valve on the connected ultrasonic bath must be closed for safety reasons.

5.2 Troubleshooting

| Ser. no.: | Malfunction | Possible cause(s) |
|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------|
| 1 | Filter unit switches off, red pilot lamp lights up. | - Fine filter is clogged |
| | | - Return flow too restricted |
| | | - Return flow blocked, kinked or pinched |
| 2 | Filter unit switches off, pilot lamp does not light up. | - Power failure |
| | | - Defective fuse |
| 3 | Filter unit runs, bubbles in the inlet, low or no volume flow in the return flow. | - Trank drain is closed |
| | | - Inlet blocked, leaking, kinked or pinched |
| | | - Pre-filter is clogged |
| 4 | Filter unit runs, hoses filled, but no volume flow. | - Pump blocked, magnetic coupling slips through |

6 Maintenance

6.1 Servicing

- Keep the filter unit clean and dry.
- The filter cartridges must be changed regularly, at the latest when the pressure switch switches off.
- The time at which the filter should be changed depends greatly on the type and amount of contamination in the cleaning bath.

Changing the filter:

Before changing the filter, close the three-way ball valve on the ultrasonic bath; otherwise, it will run empty!

Pre-filter: Remove, clean/rinse or replace depending on contamination.

Before the filter cartridge is replaced or re-inserted, the filter housing must be thoroughly rinsed.

Fine filter: If the pressure in the filter housing becomes too high, the pressure switch will switch the pump off – the red pilot lamp of the Off button will light up.

The filter cartridge must be replaced!

Before the filter cartridge is replaced, the filter housing must be thoroughly rinsed.

NOTICE

Risk of damage to the pump

- Once a new filter candle has been inserted and the three-way ball valve has been opened, the liquid level in the ultrasonic bath must be checked and topped up if necessary.
- This is especially true for small cleaning tanks = small bath volume.

The filter unit can then be put back into operation via the green on button – the red pilot lamp will turn off.

6.2 Cleaning and looking after the device

Cleaning the housing

- Wipe the housing with a damp cloth. Wipe it dry with a soft cloth.
- Do not use abrasive cleaning agents; only use care products that are free from abrasive additives.

6.3 Repairs

During the warranty period, contact your specialist dealer or the manufacturer.
Only have repairs carried out by qualified personnel or by the manufacturer.
The manufacturer assumes no liability for unauthorised interventions on the device.



WARNING

Health hazard due to contaminated device

- Decontaminate the device before shipping if it has come into contact with hazardous substances.
-

If the device needs to be repaired, send it to the manufacturer.
Clean and decontaminate the device and the accessories before shipment.
The "Certificate of decontamination" serves the occupational safety and health of our employees in accordance with the German "Infection Protection Act" (Infektionsschutzgesetz) and the Accident Insurance Regulations (UUV) of the employers' liability insurance associations.
Before being returned for inspection/repair, the device and accessories must be cleaned in accordance with the applicable laws and regulations and, if necessary, disinfected with a surface disinfectant that is listed by the VAH (Association of Applied Hygiene).
Please understand that we can only start the work if this certificate is completed in full.
Download the "Certificate of decontamination" form here:

<https://www.bandelin.com/downloads>



Fill out the form and attach it so as to be clearly visible on the outside of the packaging. Acceptance will be refused without a completed form.

Send the unit to the following address:

BANDELIN electronic GmbH & Co. KG
Heinrichstr. 3–4
12207 Berlin
Germany

+49 30 76880-2674
service@bandelin.com

7 Disposal



WARNING

Health hazard due to contaminated device

- Decontaminate the device before disposal if it has come into contact with hazardous substances.
- Also decontaminate accessories before disposal.

Dispose of the device properly as electrical waste if it can no longer be used. Do not dispose of the device in the household waste. Observe local regulations for the disposal of electrical waste.

Dispose of accessories as metal scrap or as plastic waste according to the material used.



8 Information about the device

8.1 Technical specifications

Filter units FA 610 and FA 620:

| | |
|---------------------------|----------------------------------------------------|
| Support; 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 supply: | 230 V~ 50 Hz, 0.25 kW Cable length 2 m |
| Max. current consumption: | 1.76 A |
| Fuse: 1 × T 2.5 A | |
| Degree of protection: | IP 55 |

Pre-filter:

| | |
|---------------------|-----------------------------------------------------------------------------------------------|
| Housing: | PP |
| Filter candle: | Sieve insert made of Perlon fabric on a support candle, grade of filtration 350 µm (reusable) |
| Filter candle size: | FA 610: 9 $\frac{3}{4}$ " FA 620: 20" |

Fine filter:

| | |
|---------------------|-------------------------------------------------------------------------------------------|
| Housing: | PP |
| Filter candle: | Disposable wound filter cartridge made of PP, integrally wound, grade of filtration 25 µm |
| Filter candle size: | FA 610: 9 $\frac{3}{4}$ " FA 620: 20" |

Pump:

| | |
|------------------------|--------------------------------------------------------------------|
| Design: | magnetically coupled centrifugal pump |
| Material: | PP (glass fibre reinforced), HD carbon, ceramic, Viton (FPM) seals |
| Operating temperature: | max. 70 °C |
| Pressure: | max. 1.0 bar |
| Output: | 6 m ³ /h, H = 10 m |
| Degree of protection: | IP 55 |

Connection:

Inlet: G ½

Outlet: G ½

Connection set (APF...):

Hoses made of EPDM

Hose sockets made of brass, galvanically coated

Return pipe made of stainless steel

8.2 Ambient conditions

Ambient conditions

Overvoltage category: II

Degree of contamination: 1

Permissible ambient temperature: 5 to 40 °C

Permissible relative humidity to 31 °C: 80%

Permissible relative humidity to 40 °C: 50%

No dewing.

For indoor operation only.

8.3 CE conformity

The device meets the CE marking criteria of the European Union:

- 2014/35/EC – Low Voltage Directive
- 2014/30/EU – EMC Guideline
- 2011/65/EU – RoHS Directive

The declaration of conformity can be requested from the manufacturer, stating the serial number.

9 Consumables

Filter candles:

EF 1025: 10 fine filters, 9 $\frac{3}{4}$ ", 25 μ m

EF 2025: 10 fine filters, 20", 25 μ m



Pre-filter:

EF 10 VF: 1 pre-filter, 9 $\frac{3}{4}$ ", 350 μ m

EF 20 VF: 1 pre-filter, 20", 350 μ m

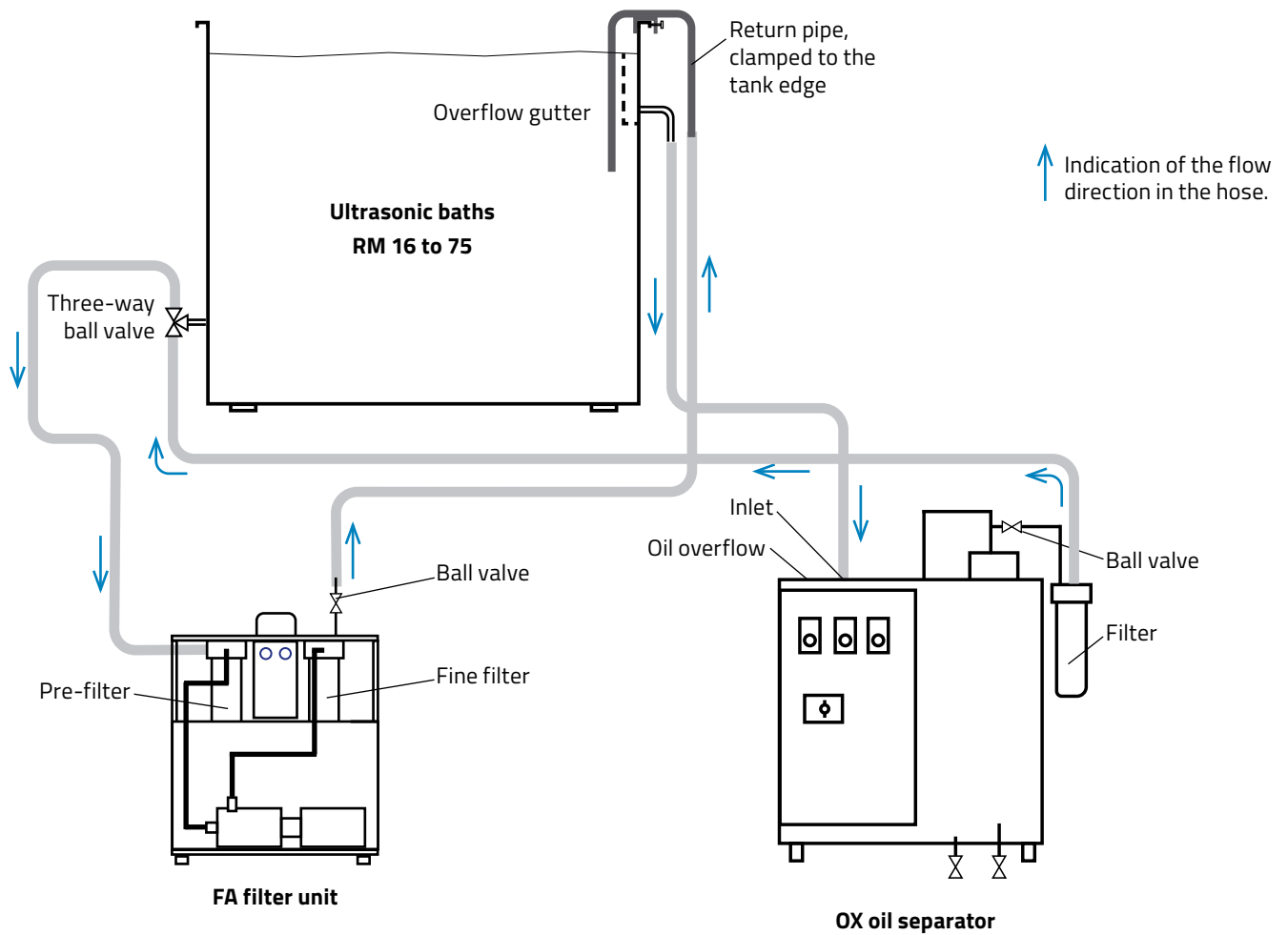


10 Connecting the oil separator and filter unit to an ultrasonic bath

RM 16 to RM 75

If an oil separator is connected to an ultrasonic bath (RM 16–75) together with a filter unit, it should be noted that operation is only possible in alternation.

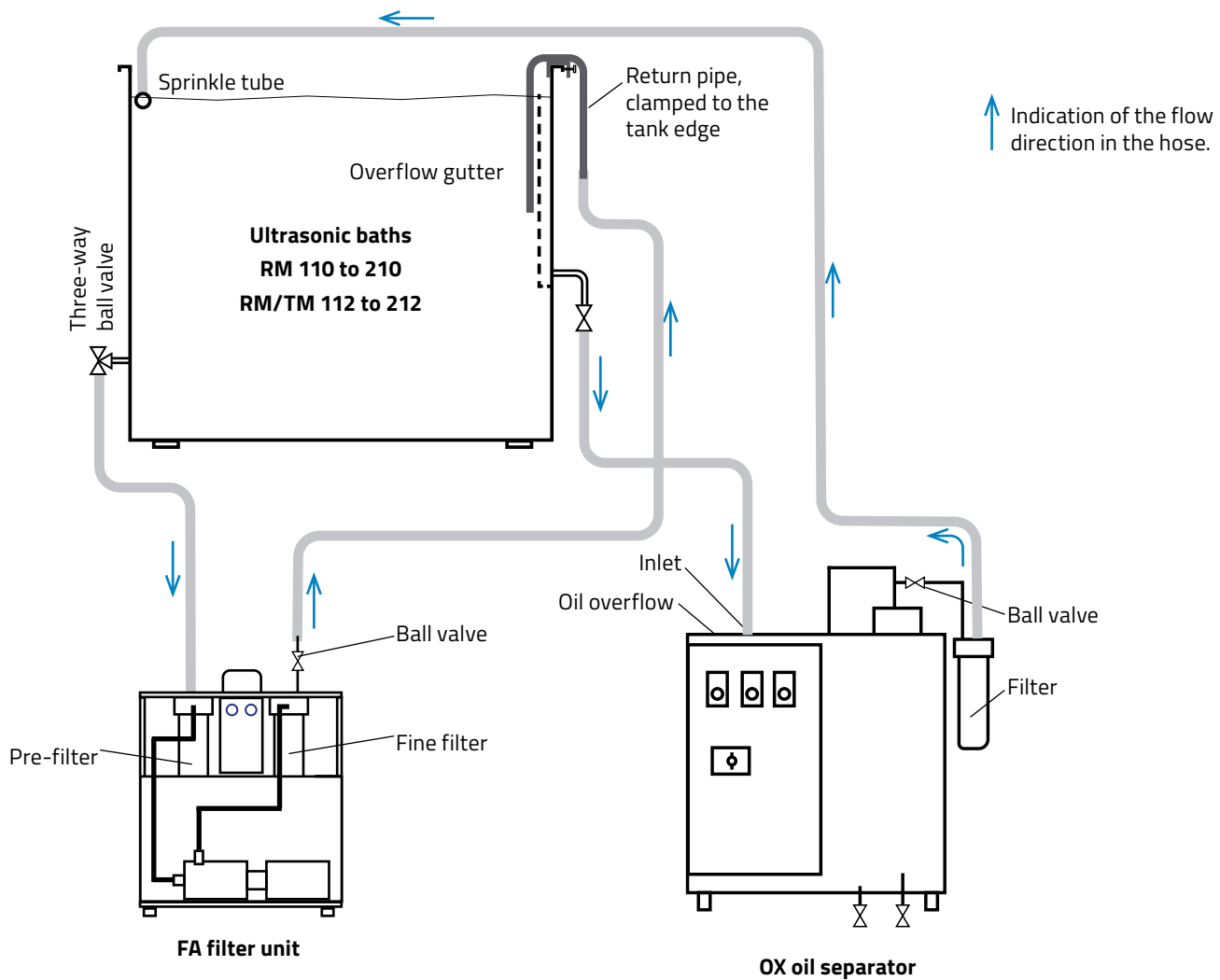
The three-way ball valve must be switched accordingly.



RM 110 to RM 212 and TM 112 to TM 212

If an oil separator is connected to an ultrasonic bath (RM 110–210 or RM/TM 112–212) together with a filter unit, it should be noted that the return flow from the filter unit with the return pipe comes via the tank edge, while the return flow from the oil separator comes via the sprinkle tube.

Both additional devices can be operated simultaneously.



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