

SONOREX TECHNIK OX

OX oil separator



valid for:

Oil separators OX 16, OX 40, OX 75, OX 110, OX 180 and OX 210 with basic unit OX 500

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General

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 possession of the device is transferred elsewhere.

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 will not assume any responsibility for the device's safety or functional ability in the event of improper handling or usage contrary to the intended purpose. Unauthorised alterations/modifications will render both the warranty claim and the CE conformity null and void.

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

Symbols used:






Symbol	Meaning	Explanation
	Danger	Denotes information which, if not observed, could pose a risk to life and limb, especially as a result of electric shock.
	Caution	Denotes information that must be observed and complied with in order to prevent damage to the device or injury to the user. When device parts are labelled with this symbol, the documentation must be referred to.
	Important	Identifies information that is important for execution.
	Note	Identifies 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 manuals for the pump, for the motor, and for the level switch.

1 Product description

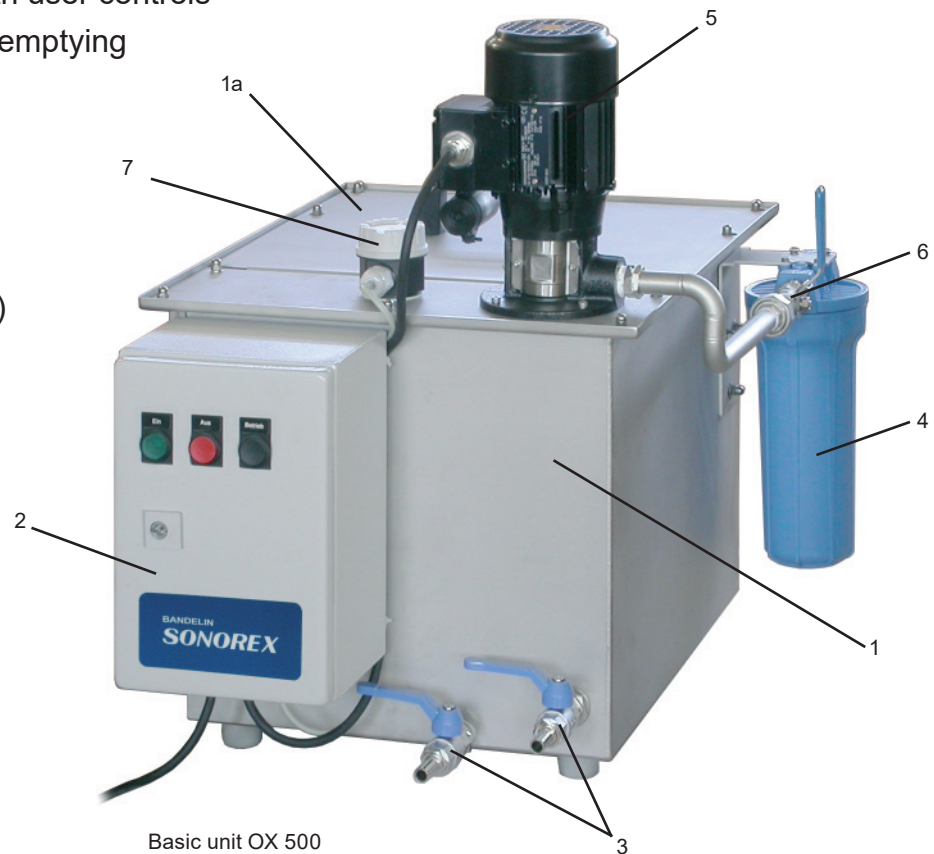
Oil separator, type SONOREX TECHNIK OX ...

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

An oil separator consists of a basic unit and a custom-fabricated connection set for the ultrasonic bath.

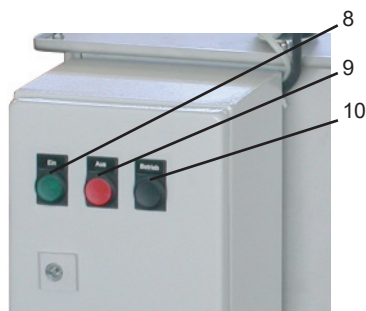
Product features, basic unit:

- Stainless steel housing (1) with stainless steel lid (1a)
- Control box (2) with user controls
- Ball valves (3) for emptying
- Filter (4)
- Pump (5)
- Ball valve (6) to regulate the flow volume
- Level controller (7)



Product features, switch box:

- On button (8)
- Off button (9)
- Operation button (10)



Example of a connection set

1.1 Mode of operation

The electrically-operated SONOREX TECHNIK oil separator provides continuous separation of oil- and grease-based residue from the surface of the connected ultrasonic bath of the SONOREX TECHNIK RM / TM bath series. This keeps the ultrasonic bath cleaning liquid usable for a much longer period.

The basic unit consists of 2 chambers with an immersion pump. The filter is used for filtration of suspended particles.

1.2 Intended purpose

Existing SONOREX TECHNIK RM / TM ultrasonic baths do not require conversion to be equipped with an oil separator.

The oil separator is used to separate oil- and grease-based residue from aqueous cleaning agents at a bath temperature of up to 70 °C^{/1}. The integrated pump is used to circulate the cleaning agent between the oil separator and cleaning tank.

The unit is operated from the front on the control box, using push buttons. The SONOREX TECHNIK oil separator is designed as a free-standing unit.

1.3 CE conformity

The oil separator 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 oil separator is interference-free and CE-marked.

Safety: EN 61010-1

EMC: EN 61326-1

Basic unit OX 500:

Exterior dimensions (L × W × H):	730 × 580 × 700 mm
Material:	stainless steel 1.4404 (AISI 316 L)
Weight, net:	approx. 70 kg
Mains connection:	230 V~ 50 Hz, 0.25 kW
Mains cable length:	2 m
Current consumption:	2.15 A
Chamber volumes (1 and 2):	60 l

Filter:

Housing:	PP
Filter cartridges:	Single-use wound filter cartridges made of PP, filter fineness 25 µm
Filter cartridge size:	9 ¾"

Pump:

Type:	Immersion pump
Connection sockets:	G ¾
Operating temperature:	max. 70 °C
Pressure:	max. 0.25 bar
Flow rate:	1 m³/h, H = 2.5 m
Degree of protection:	IP 55

Connection:

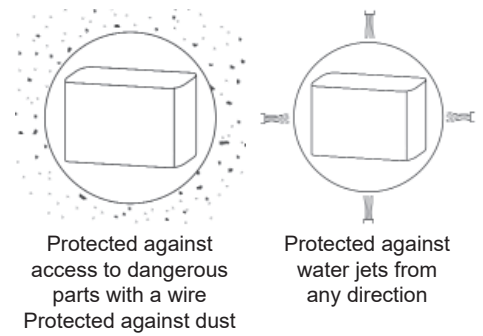
Inflow:	G 1
Return flow:	G ½
Ball valves (emptying):	G ½, made of brass, galvanically coated
Oil overflow:	G ¾

Connection set (AOX ...):

EPDM hoses

Brass hose sockets, galvanically coated

More detailed information on the IP 54 protection rating pursuant to DIN EN 60529:



Ambient conditions pursuant to EN 61 010-1

Overvoltage 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
Altitude:	up to 2000 m above sea level
No condensation allowed.	
For indoor operation only.	

1.5 Warnings and safety instructions

General

- Keep the oil separator out of the reach of children and of persons who have not been instructed in its operation by reference to these instructions.
- In accordance with its intended use and this Operating Manual, the oil separator may 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 in use 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 oil separator without liquids!
- The oil separator is designed for use with liquid temperatures of up to 70 °C.
- The oil separator may only be operated with aqueous cleaning agents.
The following liquids may not be used:
 - combustible liquids, solvents (non-aqueous) and non-combustible liquids such as TRI, PER, methylene chloride and similar.
 - aggressive cleaning agents such as acids and chemicals that e.g. contain or separate chlorine ions, such as certain disinfectants, dish detergents, household cleaners or saline solutions.
- Keep the oil separator clean and dry.
- Do not expose the oil separator to corrosive influences.
- Use only the connection material supplied.

Operation and transport

- Place the oil separator in an upright position on a solid, dry surface.
Note the ambient conditions (Chapter 1.4).
- Regulatory requirements must be observed during setup and operation.
- Only plug the oil separator into an outlet with an earthed socket.
- Do not operate the oil separator unattended.
- Only move the oil separator when it is empty!

Damages and defects

- In the event of defects, disconnect the power plug immediately.
- Repairs may only be conducted by authorised skilled personnel or by the manufacturer.
- Always replace defective parts with SONOREX original parts or parts of the same quality!
- Replace a defective mains cable completely.

2 Preparation

Carefully unpack the oil separator and accessories, and inspect them for completeness and for possible transportation damage. Any identified damage or defects must be communicated immediately and in writing to the transportation company and to the supplier.

Before startup, the oil separator should stand for 2 hours at its operating location so that it can adjust to the ambient conditions.

2.1 Scope of delivery

- 1 Oil separator/basic unit, see delivery note
- 1 Connection set AOX ...
- 1 Operating manual

Additional accessories as ordered – see delivery note

Depending on the size of the RM / TM ultrasonic bath to be connected, suitable connection sets for the basic unit OX 500 will be supplied:

Type	Connection set
OX 16	AOX 16
OX 40	AOX 40/75
OX 75	AOX 40/75
OX 110	AOX 110/180/210
OX 180	AOX 110/180/210
OX 210	AOX 110/180/210

2.2 Assembly / Installation

The oil separator must be set up in an upright position and as close as possible to the ultrasonic bath.

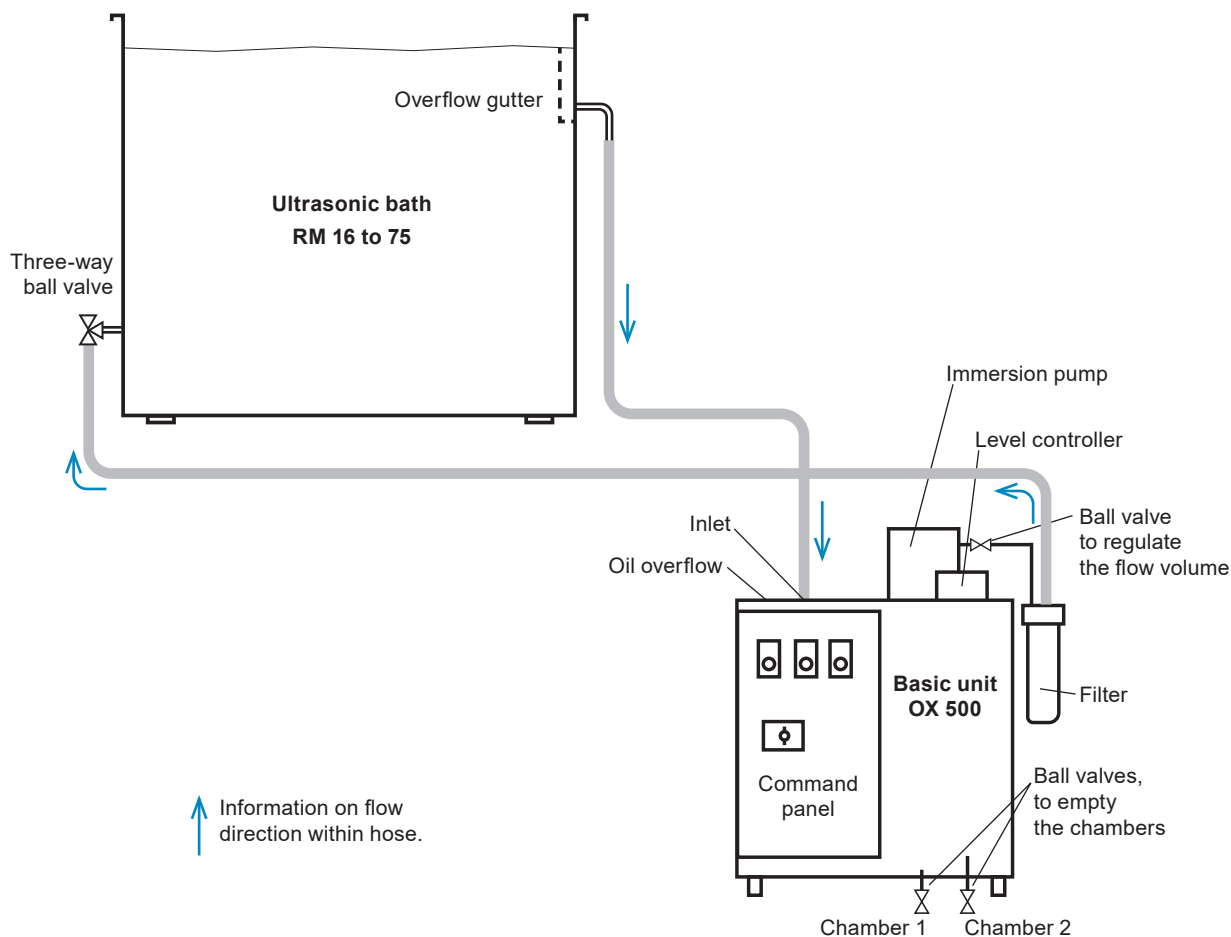


The inlet for the oil separator must be located below the overflow for the ultrasonic bath; if required, the ultrasonic bath should be set up in an elevated position.

The oil separator must be positioned in such a way that disconnection of the power supply is easily possible.

A connection set to connect the oil separator to the ultrasonic bath has been included in the delivery.

2.2.1 Connecting the OX 16, OX 40 or OX 75



Before assembly, wrap all external threads with several layers of Teflon tape.

Connect the tank overflow to the inlet on chamber 1 of the basic unit:

1. Screw on pipe nut G 1 to the overflow stud on the ultrasonic bath.
2. Then, wrap the sleeve with several layers of Teflon tape.
3. Screw elbow G 1 with hose socket G 1 over the sleeve, and tighten with pipe nut G 1.
4. Connect hose 25 mm to the elbow's hose socket and to the basic unit's inlet, and secure with hose clamps.

Connect the tank inlet to the outlet on filter housing G ½:

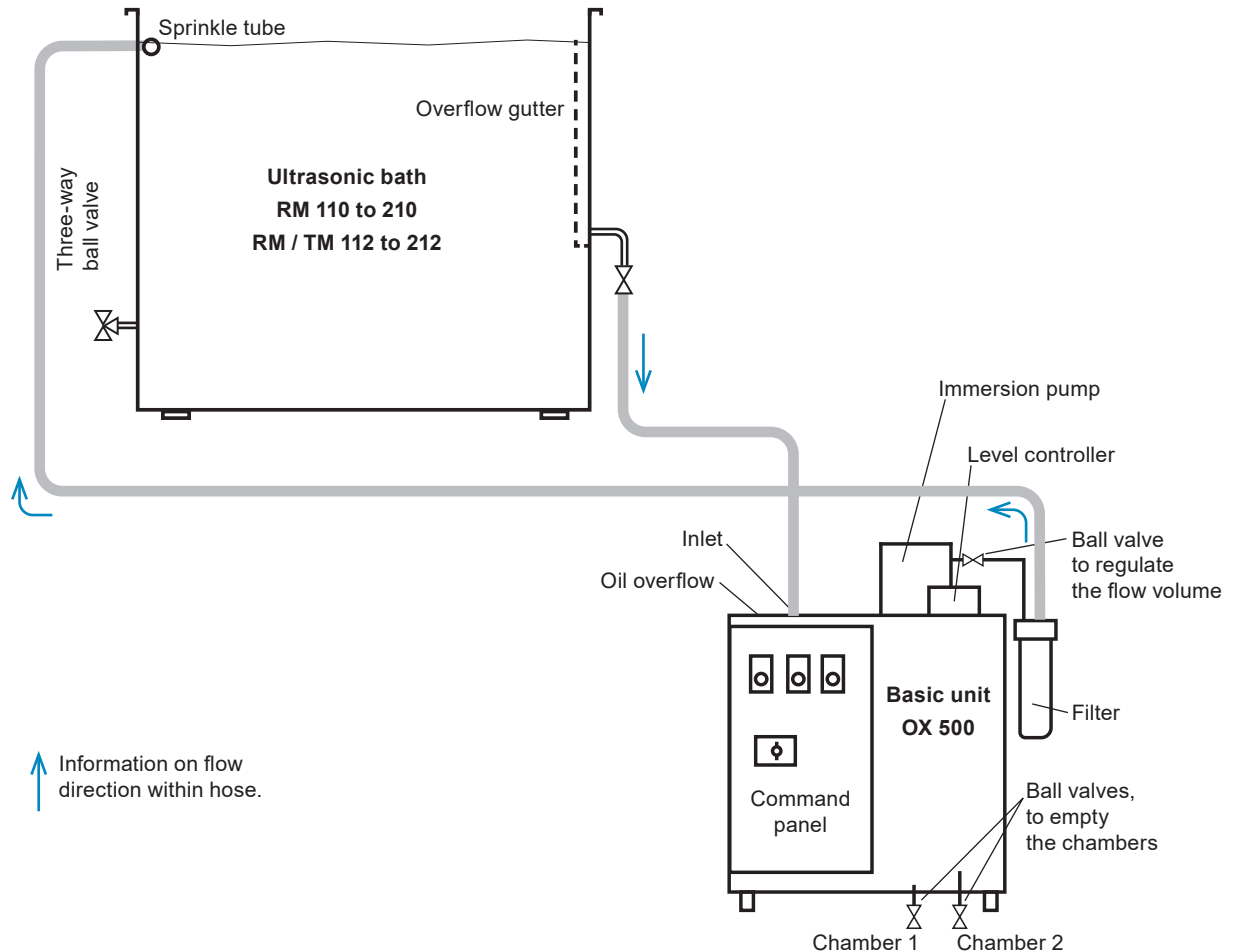
5. Connect hose 13 mm with hose socket G ½ on the filter housing with hose socket G ½, and secure with a hose clamp.
6. Next, connect the hose 13 mm to the ultrasonic bath's three-way ball valve (in the case of OX 40/75, with reducer G ¾ - G ½) and secure with a hose clamp.

With the OX 16, insert the triangle nozzle into the inlet in the tank bottom in such a way that the long, straight side of the nozzle faces the front tank edge.

Affix a hose to the oil overflow G ¾ using a hose clamp and place an oil collection container beneath it.

The hose sockets G ½ are screwed into the ball valves of chambers 1 and 2.

2.2.2 Connecting the OX 110, OX 180 or OX 210



Before assembly, wrap all external threads with several layers of Teflon tape.

Connect the tank overflow to the inlet on chamber 1 of the basic unit:

1. Screw on hexagonal double nipple into the ball valve at the ultrasonic bath's overflow. Screw elbow G 1 and hose socket G 1 onto it.
2. Connect hose 25 mm with the elbow's hose socket and secure with a hose clamp.
3. Connect the hose end to the inlet of the basic unit, and secure with a hose clamp.

Connect the tank inlet to the outlet on filter housing G ½:

4. Connect hose 13 mm with hose socket G ½ on the filter housing with hose socket G ½, and secure with a hose clamp.
5. Next, connect the hose 13 mm with hose socket G ½ at the connection socket of the sprinkle tube, to the cleaning tank.

Affix a hose to the oil overflow G ¾ using a hose clamp and place an oil collection container beneath it.

The hose sockets G ½ are screwed into the ball valves of chambers 1 and 2.

2.3 Commissioning

- Connect the basic unit to the mains power supply.
- Insert filter cartridges into the filter housing, or check whether a filter cartridge is already present.
- Connect the oil separator to the ultrasonic bath, see Chapter 2.2.
- Open the 3-way ball valve on the ultrasonic bath.
- Fully open the ball valve on the basic unit.
- Fill the ultrasonic bath with liquid:
Allow liquid to flow in until the level switches on the pump in chamber 2 of the basic unit (or "OPERATION" is confirmed) and the pump begins to generate a circulation with the ultrasonic bath.
- Taking into account the additional volume of the basic unit (approx. 60 l), add the required amount of cleaning liquid to the ultrasonic bath.
- The flow volume can be regulated with the ball valve on the basic unit. Here, it is important to consider that the ball valve only opens to the point where the speed of the flow of liquid enables the oil to float, but chamber 1 is not flooded.
Check the fill level in the ultrasonic bath several times and refill if necessary.



Caution!

When switching off the oil separator, it is imperative you close the ball valve at the overflow gutter of the ultrasonic bath!
Otherwise, environmental damage may be caused if the oil separator overflows.



OX 16 - OX 75

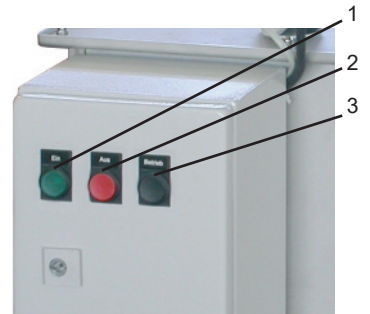
Due to the volume, heating of the liquid on site is necessary when operating with the ultrasonic baths RM 16 - RM 75.

3 Operation

3.1 Operating elements

The device is operated from the front:

- Press the On button (green, 1) to start operation of the oil separator. The green control light will be permanently lit.
- Press the Off button (red, 2) to switch off the oil separator.
- Use the ball valve to adjust the flow-through rate.



Notes

- When switched off, the oil separator can remain connected to the mains. It can be disconnected by pulling the mains plug.
- Device ON (1)
Pump on – normal operation of the oil separator.
The pump runs when the specified minimum fill level in chamber 2 is reached, and the built-in level switch has tripped.
The ball valve on the tank overflow must be open.
- Device OFF (2)
Pump off – the pump for the oil separator is switched off.
The circulation of liquids is stopped. Close the ball valve on the overflow gutter.
- OPERATION (3)
When pressing this button, the pump runs, even if the level in chamber 2 has not yet reached the specified height. Assumes that the minimum level for the pump has been exceeded.

4 Use

4.1 Instructions for use

Check hose connections

- All hose connections between the oil separator and the ultrasonic bath must be checked for leaks.
This is especially important after a longer period of non-use.
- The liquid may not exceed a maximum temperature of 70 °C.



Caution!

Sediment particles can accumulate in the filter, filling and blocking the filter housing, which can result in leaks and damage to the pump. The filter is not monitored for clogs.



If there is insufficient liquid, the level controller will switch the pump off!

Chamber 1: Separation of oils and grease.

Chamber 2: With immersion pump and level controller for collection and return of the cleaned liquid.

4.2 General use

Step 1: Preparation

- Open the 3-way ball valve on the connected ultrasonic bath.
- Open the ball valve on the basic unit.

Step 2 : Switching on

- Switch on the basic unit by pressing the On button (green).
- Use the ball valve on the basic unit to set the desired flow volume.



Note:

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

Step 3 : Switching off the oil separator

If the cleaning bath is soiled with what appears to be sedimentation, the tank must be flushed with fresh cleaning agent before switching off the basic unit. If this is not done, the pump could be damaged.

- Switch off the basic unit by pressing the Off button (red).



Caution!

When switching off the basic unit, make sure to close the ball valve at the overflow gutter of the ultrasonic bath! Otherwise, environmental damage may be caused by the oil separator overflowing.

- For safety reasons, if the oil separator is to remain switched off for a longer period of time, the 3-way ball valve on the connected ultrasonic bath must be closed.

5 Maintenance and cleaning

To achieve an optimum lifespan for the oil separator, cleaning and maintenance are to be conducted regularly.



CAUTION!

Disconnect the oil separator from the mains before each cleaning / maintenance.



Do not spray down.

5.1 Cleaning and care

- Do not use abrasive cleaners, only use commercially-available care products without scouring agents.
- Wipe the housing only from the outside with a moist cloth; if needed, use a suitable surface disinfectant, then allow to dry or rub dry.
- Each chamber is provided with a ball valve for emptying.
An additional cleaning opening for chamber 1 is located in the partition wall between chambers 1 and 2.
- The specifications in the pump appendix are also to be heeded.



5.2 Warehousing / storage



During longer periods of non-use, the oil separator should be completely emptied and stored with a cover in a cool, dry location, see also the pump appendix.

6 Maintenance and repair

6.1 Maintenance

- Keep the oil separator clean and dry.
- Replace used cleaning agents in the ultrasonic bath and in the oil separator, do not refresh by topping up.
- The filter cartridge must be regularly replaced.
The frequency with which the filter is replaced depends largely on the type and degree of soiling of the cleaning tank.

Filter replacement:

Before replacing the filter, close the ball valve on the ultrasonic bath as otherwise it will be running dry!

Filter: Remove and replace depending on soiling.
Rinse out the filter housing thoroughly before inserting the new filter cartridge.

After inserting a new filter cartridge and opening the ball valve, check the liquid level in the ultrasonic bath and top up if necessary.

This applies especially to small cleaning tanks = small bath volume.

The oil separator can then be re-started by using the green On button – the green indicator light will switch on.

6.2 Troubleshooting

The SONOREX TECHNIK oil separator has been robustly constructed and designed to offer high reliability.

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



Caution !

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

Seq. No.:	Malfunction	Possible cause(s)
1	Oil separator switches off.	- Filter clogged
		- Return flow throttled too far
		- Return flow blocked, kinked or pinched

Seq. No.:	Malfunction	Possible cause(s)
2	Oil separator switches off, indicator light is not on.	- Mains power failure
		- Defective fuse
3	Oil separator is running, bubbles in inlet, little or no flow volume in return flow.	- Bath drain closed
		- Inlet blocked, leaky, kinked or pinched
		- Filter clogged
4	Oil separator running, hoses filled but no flow volume.	- Pump blocked – see manufacturer's original assembly and operating manual.
5	Pump leaking	- Replace the seal
6	Pump firmly or mechanically blocked	- See manufacturer's original assembly and operating manual.

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 oil separator.

6.3.1 Repairs and service

If faults or defects have been discovered and cannot be rectified, the oil separator can no longer be used. If this occurs, please contact the supplier or the manufacturer:

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

Repair service:
Tel.: +49 30 768 80-13
Fax: +49 30 768 802 00 13

Email:
info@bandelin.com

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

In addition, the oil separator must be cleaned and decontaminated (if necessary), see the following Chapter.

6.3.2 Decontamination certificate

If the oil separator is sent back to the manufacturer for repairs (with accessories, as the case may be), the form "Certificate of Decontamination" must be filled out and affixed clearly to the packaging on the outside.

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 as a PDF file from our website:

www.bandelin.com – Downloads ...

7 Consumable materials

Filter cartridges:

Type	Description	Order No.
EF 1025	10 fine filters, 9 3/4", 25 µm	238

8 Decommissioning

The device must be disposed of appropriately, not with household waste.

Disposal must be conducted in accordance with the Waste, Electrical and Electronic Equipment Directive 2012/19/EU.

Any supplementary/deviating national regulations must be observed.



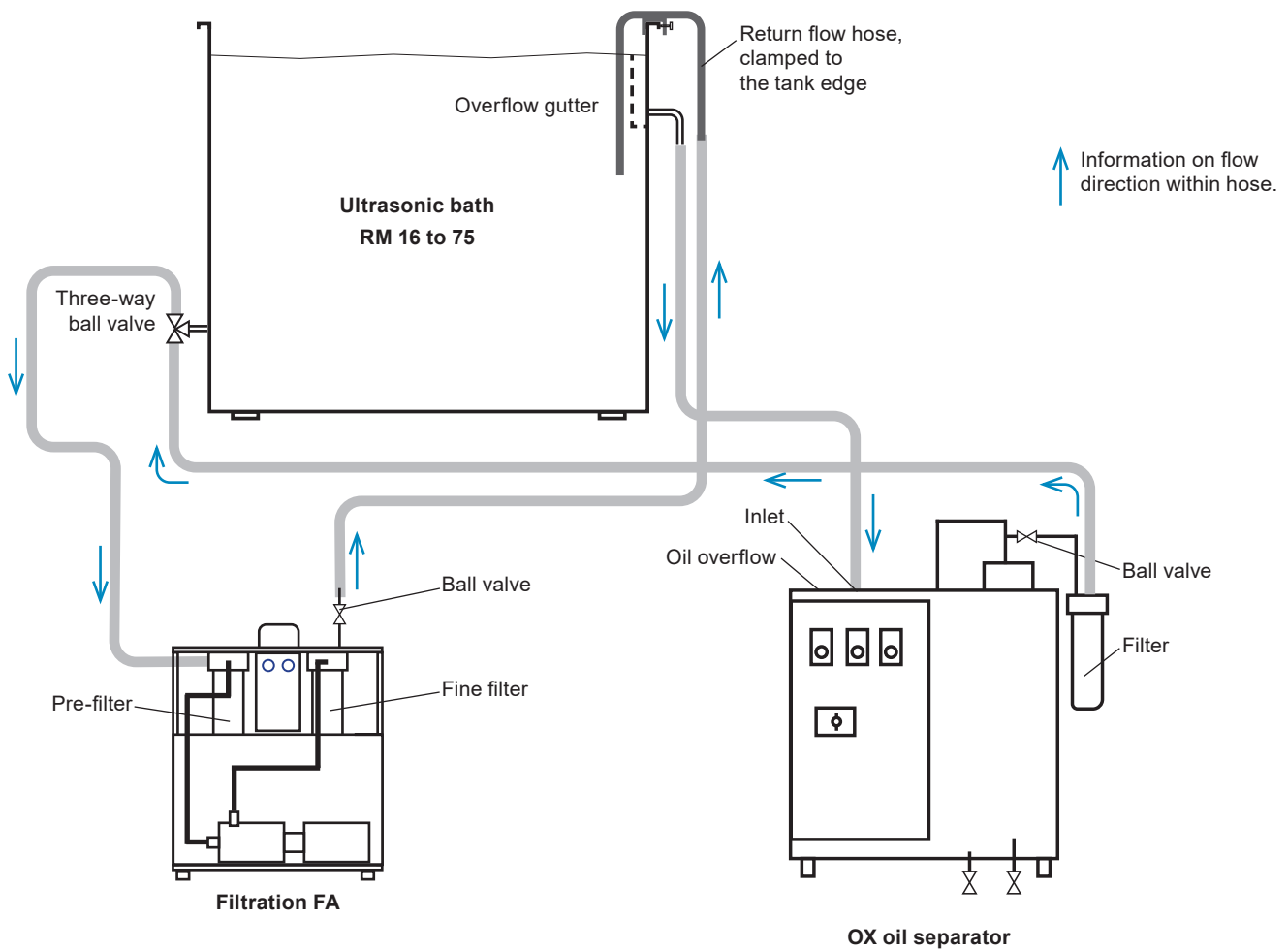
- The device must be decontaminated before disposal. It can then be disposed of as electronic waste. If decontamination is incomplete / cannot be correctly performed, a material safety data sheet noting the liquids used must be affixed to each device.
- Metal accessories such as the lid or basket should be decontaminated and disposed of as metal waste.
- The packaging is recyclable.

Connecting the oil separator and filtration to an ultrasonic bath

RM 16 to RM 75

When an oil separator with a filtration is connected to an ultrasonic bath (RM 16 – 75), it is important to note that they can only operate alternately.

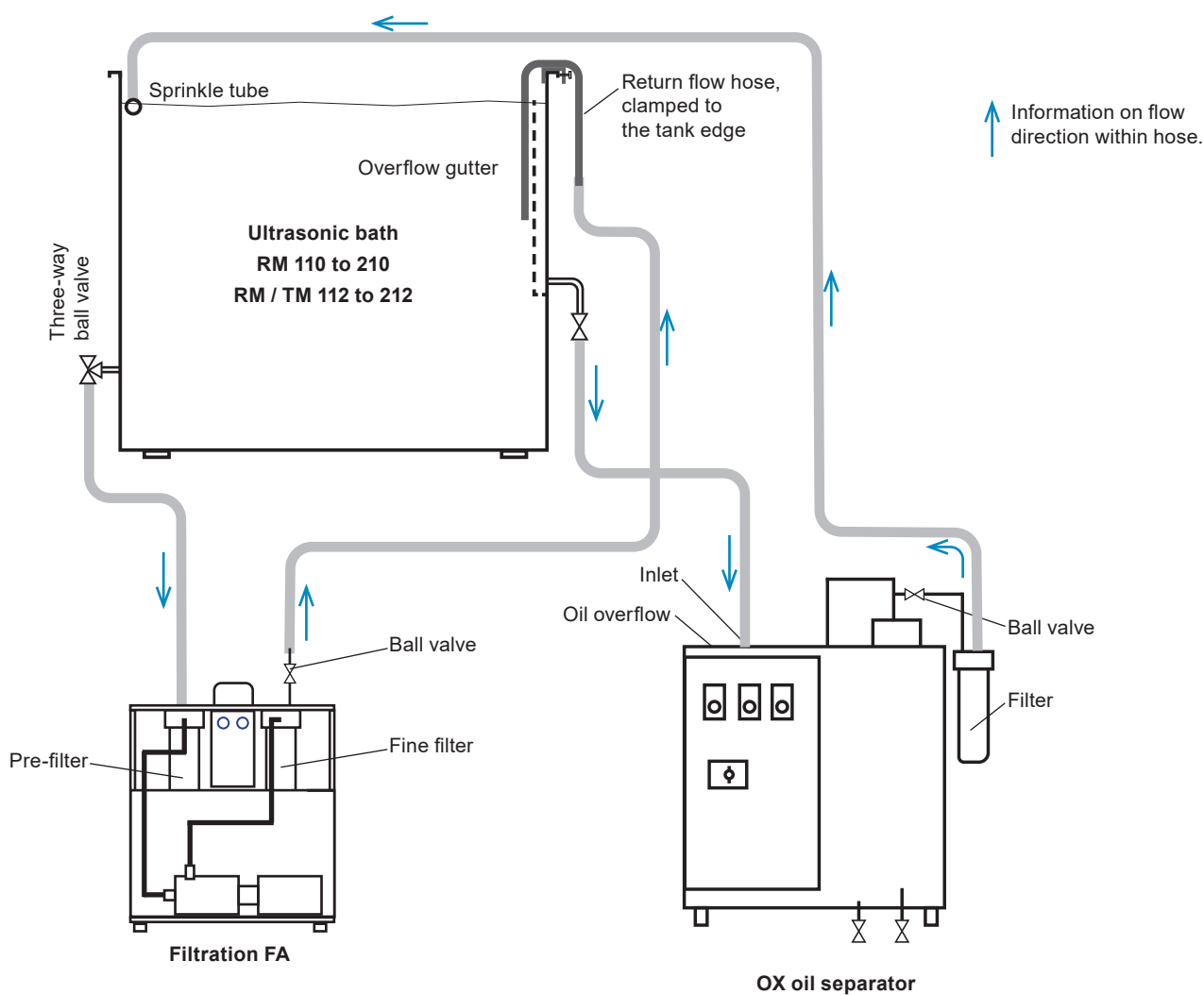
The three-way ball valve should be switched accordingly.



RM 110 to RM 212 and TM 112 to TM 212

When an oil separator with a filtration is connected to an ultrasonic bath (RM 110 – 210 or RM / TM 112 – 212), it is important to note that the return flow from the filter aggregate is via the return pipe 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 and additional information in this language and other languages.