User Manual

MELAdem® 47

Reverse osmosis unit

EN

Dear customer,

We thank you for your confidence demonstrated by the purchase of this MELAG product. As an owner-run and operated family concern founded in 1951, we have a long history of successful specialization in hygiene products for practice-based use. Our focus on innovation, quality and the highest standards of operational reliability has established MELAG as the world's leading manufacturer in the instrument reprocessing and hygiene field.

You, our customer are justified in your demand for the best products, quality and reliability. Providing **"competence in hygiene"** and **"Quality – made in Germany"**, we guarantee that these demands will be met. Our certified quality management system is subject to close monitoring: one instrument to this end is our annual multi-day audit conducted in accordance with EN ISO 13485. This guarantees that all MELAG products are manufactured and tested in accordance with strict quality criteria.

The MELAG management and team.

Contents

1 General guidelines ... 4
Symbols used ... 4
Formatting rules ... 4
Disposal ... 4

2 Product description ... 5
Intended use ... 5
Mode of functioning ... 5
Scope of delivery ... 5
Views ... 6

3 Setup and installation ... 7
Installation location ... 7
Cold water connection ... 7
Assembly ... 8
Connecting the reverse osmosis unit ... 12

4 Commissioning ... 20

5 Maintenance ... 21
Maintenance intervals ... 21
Removing and attaching the cartridge housings ... 22
Replacing the fine filter ... 23
Replacing the activated carbon filter ... 24
Replacing the mixed-bed resin cartridge ... 25

6 Pause times ... 26
Duration of the operating pauses ... 26
Storage and transport ... 26

7 Technical data ... 27

8 Accessories and spare parts ... 28

Glossary ... 29

1 General guidelines

Please read this user manual carefully before commissioning the product. The manual includes important safety instructions. Failure to comply with the safety instructions can result in injury and/or damage to the product. Use the product only for the purpose specified in these instructions. Make sure that you always have access to digital or printed version of the user manual.

Should the manual no longer be legible, is damaged or has been lost, you can download a new copy from MELAG download centre at www.melag.com.

Symbols used

Symbol	Description
	Indicates a dangerous situation, which if not avoided, could entail slight to life-threatening injuries.
	Draws your attention to a situation, which if not avoided, could result in damage to the instruments, the practice fittings or the device.
	Draws your attention to important information.

Formatting rules

Symbol	Description
	Prerequisites for the following handling instruction.
	Refer to the glossary or another text section.
	Information for safe handling.

Disposal

Dispose of this product and spare parts, e.g. seals, that are no longer used properly. Comply with all relevant disposal specification in terms of possibly contaminated waste.

The packaging protects the product against transport damage. The packaging materials have been selected for their environmentally-friendly and recycling properties and can be recycled. Returning the packaging to the material flow reduces the amount of waste and saves raw materials.

2 Product description

Intended use

The water treatment unit with ion exchanger permits the production of demineralised (deionised) water. This requires tap water of drinking water quality.

PLEASE NOTE

The water treatment unit does not provide low-germ water.

The water treatment unit is suitable for the supply of one or more small steam sterilizers with feed water. Furthermore demineralised water can be extracted, e.g. with the delivered removal valve. The water treatment unit is intended for use in the medical field, e.g. in clinics, medical and dental practices and other medical care facilities outside the patient environment.

The water treatment unit MELAdem 47 is not a medical device within the meaning of European Regulation 2017/745 on medical devices.

Mode of functioning

The water treatment unit works on the principle of reverse osmosis (reverse osmosis unit). This process presses water through a semi-permeable RO membrane (osmosis module), reducing the salt content of the cold water by approx. 95 %. The inflowing water is separated into two flows:

- water with a low salt content (permeate)
- water with increased levels of salt (concentrate) which is disposed of via the outflow

An ion exchanger filled with mixed-bed resin is installed after the reverse osmosis unit to achieve the level of water quality necessary for operation of the steam sterilizer, even with poor quality cold water. The ion exchanger reduces the residual salt content of the permeate to a minimum. The permeate thus produced is saved in the pressure tank, which is connected to the steam sterilizer via a hose. The cold water inflow is switched off automatically when the pressure tank filled. All operating runs of the device are automatically controlled via its water pressure.

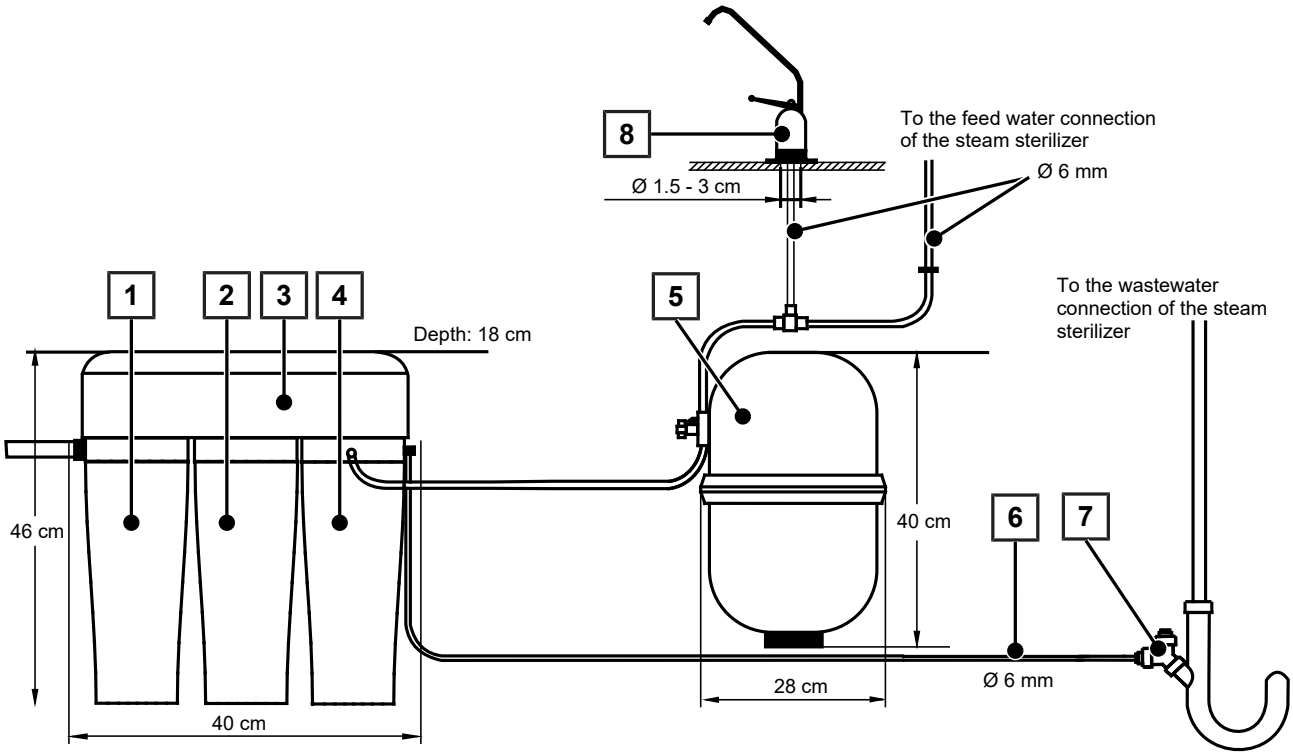
The permeate can be drawn through a separate removal valve for other uses.

Scope of delivery

Please check the scope of delivery before using the product.

- MELAdem 47
- User manual
- Record of installation and setup
- Warranty certificate
- Pressure tank
- Hose (black, 6 mm)
- Removal valve
- Water inlet hose (2.5 m)
- Connection set MELAdem 47 (incl. Filter for MELAdem)
- Filter housing wrench for MELAdem

Views



Pos.	Designation	Description
1	Fine filter (pre-filter)	Holds back all particulate material, rust and other soiling.
2	Activated carbon filter	Removes free chlorine which can destroy the RO membrane in the reverse osmosis unit.
3	Osmosis module	The core of the reverse osmosis unit.
4	Ion exchanger	Performs the demineralisation of the water from the osmosis module.
5	Pressure tank	The permeate is collected here. The steam sterilizer is supplied with ▸feed water from the pressure tank.
6	Outlet hose	The concentrate from the device is fed into the wastewater via the outlet hose.
7	Wastewater connection	The connection set is used to install the outlet hose of the reverse osmosis unit and the outlet hose of the steam sterilizer to the building-side outlet (e.g. sink siphon).
8	Removal valve	▸Demineralised water is extracted for general use at the removal valve.

3 Setup and installation

Comply with the following for safe handling:

- After unpacking the product, check it for transport damage.
- MELAG recommends that the device should only be set up, installed and commissioned by persons authorised by MELAG.
- Install and operate the product in a frost-free environment.

Installation location

- Install the water treatment unit in a clean, frost-free place that can be ventilated.
- The installation location permits a careful installation, operation and maintenance.
- Install the device in the proximity of a sink (e.g. in a sink floor unit) to facilitate connection to the cold water line and the outflow.
- Connect the components in accordance with the installation plan (see Views [▸ Page 6]).
- A cut-off valve with a check valve and a 3/4“ external thread connection is installed in close proximity to the installation location.
- To ensure safe operation of the water treatment unit, the water pressure on the building side is between 2-6 bar.
- The on-site requirements include proximity to an outlet line with a 1” external thread connection (preferably a washing machine connection and then the sink U-trap).
- Make sure that the temperature along the inlet hose does not rise above 40 °C.
- If the room in which the water treatment unit is installed does not have a floor drain, MELAG recommends a leakage water detector (e.g. water stop from MELAG), which shuts off the water supply in the event of damage via a moisture sensor on the floor and with the help of a solenoid valve.

Cold water connection

PLEASE NOTE

MELAG recommends connecting the water treatment unit directly to the drinking water. Connecting water purification systems or filters that work with oxidants (e.g. chlorine) upstream can affect the osmosis module and thus impair the performance of the water treatment unit.

Increased requirements can be placed on the quality of the ▸DI water (e.g. a low endotoxin content) for the ▸reprocessing of certain medical devices such as ophthalmic instruments.

Comply with the following:

- In such cases, an additional filter system is required for the reprocessing of DI water.
- It is possible that the drinking water has been contaminated by the water installation. This includes both the domestic installation and the entire upstream peripherals.
- Arrange for the actual drinking water quality to be tested at the point of use or request an appropriate report (e.g. from the building management) before setting up and installing the water treatment unit.
- Further information is available from the corresponding trade associations and their publications. If in doubt, contact your stockist or the pertinent professional association.

PLEASE NOTE

The yield (capacity) is an approximate guide value that depends on other factors in addition to the water hardness. An upstream softening system with regeneration based on common salt can lead to a reduction in the capacity of the MELAdem 47, regardless of the set initial water hardness.

PLEASE NOTE

In case of increased water demand, e.g. when used with Careclave or when supplying several steam sterilizers, it may be necessary to connect a pressure increase pump (art. no. ME22500) upstream if the line pressure is low.

The inlet of the water treatment unit is connected to a water tap with a ¾" pipe thread. The water inflow tap must be fitted with a backflow preventer and a pipe aerator, to prevent the water from returning to the municipal water system. Close the water tap at night, when it is out of use for several weeks and during repair or maintenance work.

PLEASE NOTE

To prevent water damage, MELAG recommends the use of a leakage water detector e.g. the MELAG water stop.

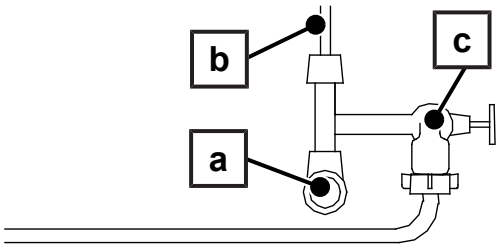
To ensure a standard-compliant connection of the water treatment unit with backflow preventer and a pipe aerator independently of the building-side installation, MELAG recommends:

Method 1

- Installation of a separate water pipe (nominal width DN15 with 1/2" socket) and installation of a water tap with integrated safety combination (pos. a, art. no. ME37310).

Method 2

- Installation of a cold water connection (e.g. a sink) with an angle valve (pos. a) and pipe (pos. b, 10 mm) and the installation of an additional water inflow tap with an integrated safety combination (pos. c, art. no. ME58130) through direct assembly on the angle valve already present.



Assembly

When planning the installation of the device, ensure sufficient space for the modules, a filter change, the cover hood and the pipe connections. The module mounting is fixed in the desired position using the two mounting drillholes.

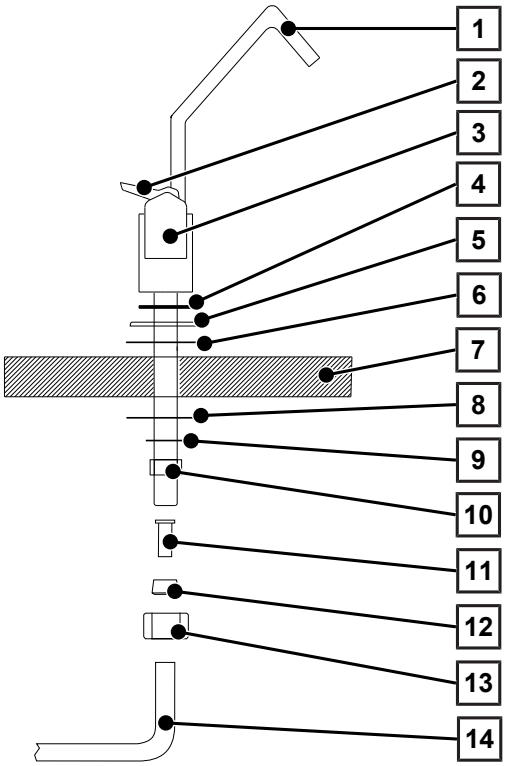
The pressure tank can be installed anywhere in proximity to the steam sterilizer.

Using the manometer included in the scope of delivery, set the primary pressure on the valve on the underside of the container to 0.4-0.5 bar:

1. Primary pressure too high: Reduce the pressure by pushing in the valve tappet.
2. Primary pressure too low: Increase the pressure with the help of an air pump.

Installing the removal valve

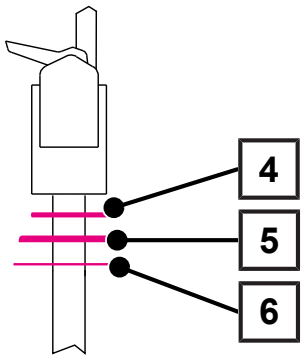
When positioning the removal valve, make sure that the normal water tap remains easily accessible.



1 Removal valve
2 Operating lever
3 Foot
4 Small rubber disc, black
5 Metal disc, white
6 Rubber disc, black
7 Tabletop
8 Bracket disc
9 Toothed lock washer
10 Nut
11 Reinforcing sleeve
12 Crimp
13 Union nut
14 Connection hose, 6 mm (permeate inlet pipe)

1. Drill a hole (Ø 12 mm) at the desired position on the worktop.

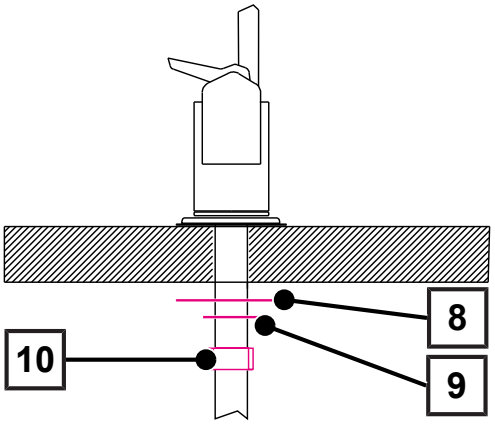
2. Push the small black rubber disc (pos. 4), the white metal disc (pos. 5) and the large black rubber disc (pos. 6) as close as possible to the removal valve from below.



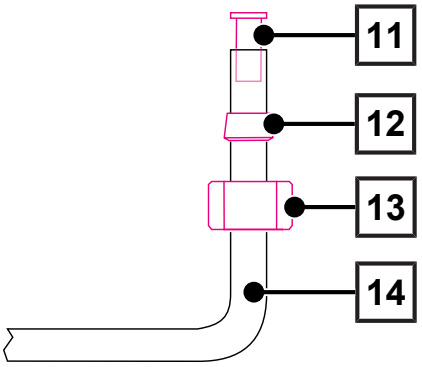
3. Insert the removal valve from above into the hole in the worktop.

4. Position the removal valve so that it is ready for use.

5. Attach the bracket disc (pos. 8), the toothed lock washer (pos. 9) and the nut (pos. 10) to the base of the removal valve. Make sure that the removal valve does not twist when fastening the nut. After fastening the nut, align the removal valve again with a spanner if necessary.

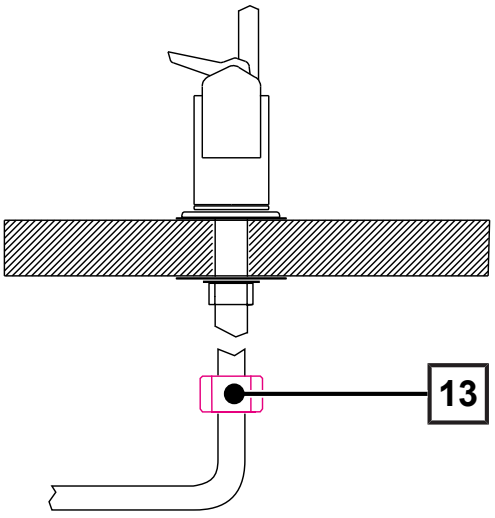


6. Place the union nut (pos. 13), the crimp (pos. 12) and the reinforcing sleeve (pos. 11) on the connection hose (pos. 14). **PLEASE NOTE:** Cut connection hoses that are too long to the desired length or replace connection hoses that are too short with longer hoses (PUR hose (6/4 mm, 2.5 m), art. no. ME28820, not included in delivery).



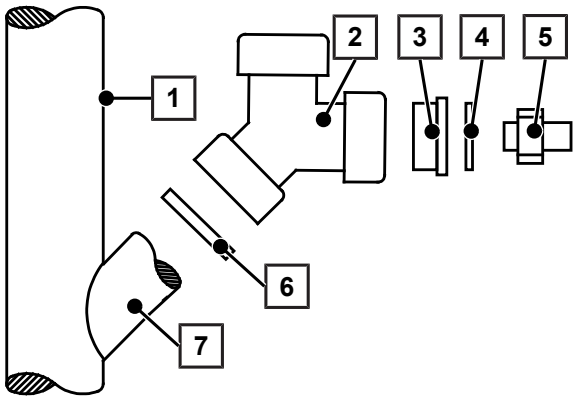
7. Attach the connection hose to the removal valve.

8. Tighten the union nut (pos. 13).



Installing the water discharge

- Install the water discharge using the connection set (included in the scope of delivery) according to the following illustration.
- Install the water discharge preferably directly in front of the sink siphon.
- Use the enclosed copper seal or a Teflon tape (not included in the scope of delivery) to seal the parts.



Pos.	Description	Art. no.
1	Sink U-trap	on-site
2	Double support sleeve for an existing trap	ME37400
3	Wastewater adapter (G1/4” internal thread)	ME56930
4	Copper seal for 1/4“ external thread	ME32050
5	Screw-in fitting 1/4” on hose, 6 mm	ME53450
6	Rubber seal 3/4” for external water supply	ME56950
7	Branch in front of U-trap 1“ external thread	on-site

Installing hose connections between the components

NOTICE

Damage to the water treatment unit.

Hoses must not have any kinks, crimps or other damage.

The connection between the components of the water treatment unit is made by means of a black, pressure-resistant hose (external diameter 6 mm; wall thickness 1 mm; a hose with a length of 6 m is included in the scope of delivery). The required length depends on the local conditions. Cut hoses that are too long to the desired length or replace connection hoses that are too short with longer hoses (hose PUR (6/4 mm), art. no. ME28820, not included in delivery).

1. Connect the hose on the removal valve to the T-piece on the pressure tank.
2. Insert the T-piece into the hose between the water treatment unit and the pressure tank.
3. Connect one end of this hose to the screw connection on the permeate outlet of the water treatment unit (angled screw connection on the ion exchanger housing).
4. Connect the other end of the hose to the free connection on the T-piece of the pressure tank.
5. Connect the feed water supply hose to the free connection of the T-piece between the water treatment unit and the pressure tank.
6. Insert feed water into the filter in the feed water hose.
7. Connect the screw-in fitting on the U-trap to the concentrate outlet of the water treatment unit (on the support plate behind the cartridge housing for the ion exchanger).

Alternatively, you can mount the feed water hose directly on the T-piece of the pressure tank and the hose to the removal valve on the T-piece between the water treatment unit and the pressure tank.

After installing the pressure tank, open the shut-off valve on the pressure tank (vertical position). Close the shut-off valve on the pressure tank for maintenance and to change the filter or mixed-bed resin cartridge in order to keep the stored demineralised water in the pressure tank.

Connecting the reverse osmosis unit

The connection of the MELAdem 47 depends on the device type of the steam sterilizer. The device can be connected directly to the steam sterilizer.

PLEASE NOTE: Stand-alone devices collect the used ▸feed water (wastewater) in the wastewater tank. Hot wastewater can run off the emergency overflow of a Vacuklav 41 B+/43 B+. The steam sterilizer must be connected to the existing siphon of the domestic water inlet or the double-chamber wastewater trap from MELAG. MELAG also makes this recommendation for the Vacuklav 23 B+/31 B+.

When connecting to a stand-alone steam device, additional connection sets are required for supply and wastewater (see Accessories and spare parts [▸ Page 28]).

NOTICE

Ensure that the hoses do not suffer kinking or crushing.

PLEASE NOTE

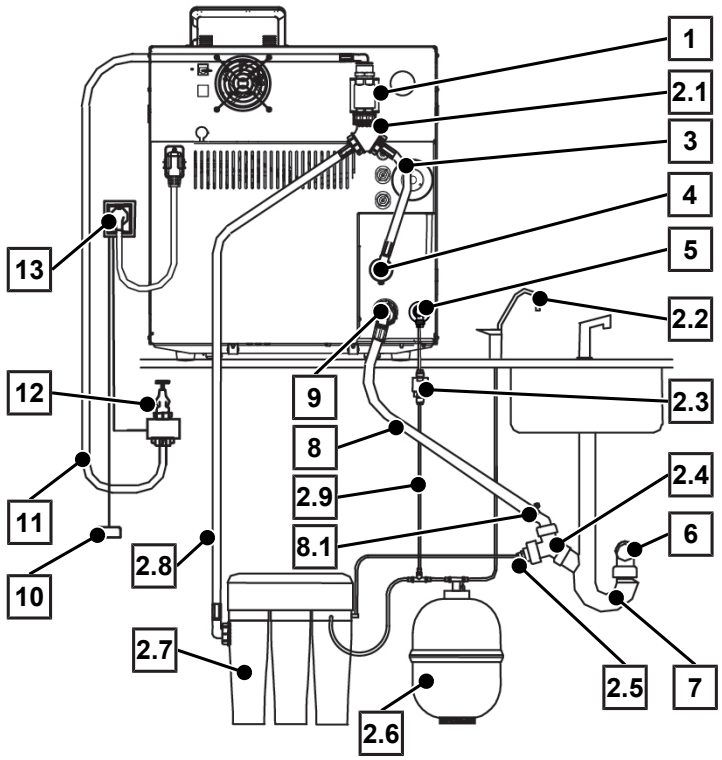
To prevent water damage, MELAG recommends the use of a leakage water detector e.g. the MELAG water stop.

Connecting to a steam sterilizer with a fixed water connection

1. Remove the hose safety combination water inlet at the safety combination EN 1717.
2. Connect the water inlet manifold (Y-piece) with the corresponding seal to the safety combination EN 1717.
3. Connect the hose safety combination water inlet to the water inlet manifold (Y-piece).
4. Connect the MELAdem 47 inlet hose to the free connection of the water inlet manifold (Y-piece).
5. Connect the other end of the MELAdem 47 inlet hose to the inlet of the water treatment unit.
6. Connect the free end of the feed water inlet hose to the feed water connection of the steam sterilizer.

Installation example

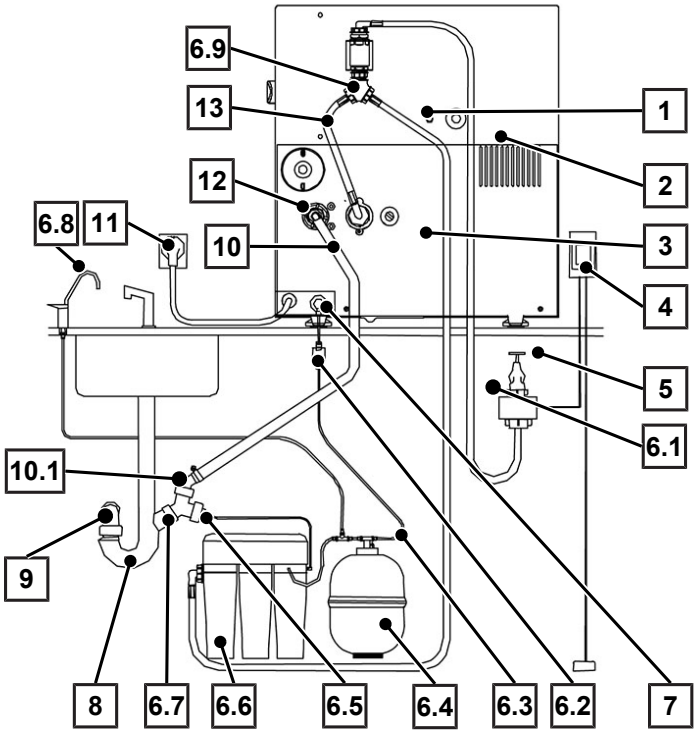
Example 1 – Connection to Vacuklav 40 B+, 44 B+



Pos.	Description	Art. no.	Note
1	Safety combination EN 1717 incl. holder	ME82375	optionally available to order
2	MELAdem 47 reverse osmosis unit	ME01047	included in delivery
2.1	Y-fitting for water supply with seal	ME37315	included in ME01047
2.2	External tap for demineralised water	ME91900	included in ME01047
2.3	Filter for MELAdem	ME48240	included in ME01047
2.4	Double support sleeve for an existing trap	ME37400	included in ME01047
2.5	Wastewater adapter (G1/4” internal thread)	ME56930	included in ME01047
2.6	Pressure tank MELAdem 47 (with shut-off valve and hose)	ME57065	included in ME01047
2.7	MELAdem 47 reverse osmosis unit (without accessories)	ME56740	included in ME01047
2.8	Water inflow hose (2.5 m) (inlet hose MELAdem 47)	ME37220	included in ME01047
2.9	PUR hose (6/4 mm, feed water inlet hose)	ME28820	included in ME01047
3	Hose safety combination to water supply	ME25975	present on device-side (steam sterilizer)
4	Solenoid valve “cooling water”	ME46995	present on device-side (steam sterilizer)
5	Feed water connection	ME37242	optionally available to order
6	Wall outlet NW 40	--	on-site
7	Double-chamber siphon	ME26635	included in delivery (steam sterilizer)
8	Hose for water drain of steam sterilizers, 2 m	ME36585	included in delivery (steam sterilizer)
8.1	Wastewater nozzle for siphon with seal and clamp	ME52615	included in ME36585
9	Connection branch for wastewater hose	ME21334	present on device-side (steam sterilizer)
10	Water stop (leakage water detector with shut-off valve and probe)	ME01056	optionally available to order
11	Water inlet hose (2.5 m, complies with EN 1717)	ME24930	on-site

Pos.	Description	Art. no.	Note
12	Water tap with safety combination	--	on-site
13	Mains connection	--	on-site

Example 2 – Connection to Vacuklav 24 B+, 24 BL+, 30 B+



Pos.	Description	Art. no.	Note
1	Safety combination EN 1717 incl. holder	ME82375	present on device-side (steam sterilizer)
2	Water inlet hose (2.5 m, complies with EN 1717)	ME24930	optionally available to order
3	Solenoid valve cooling water Vacuklav	ME57715	present on device-side (steam sterilizer)
4	Water stop (leakage water detector with shut-off valve and probe)	ME01056	optionally available to order
5	Water tap with safety combination	--	on-site
6	MELAdem 47 reverse osmosis unit	ME01047	included in delivery
6.1	Water inflow hose (2.5 m) (inlet hose MELAdem 47)	ME37220	included in ME01047
6.2	Filter for MELAdem	ME48240	included in ME01047
6.3	PUR hose (6/4 mm, 2.5 m) (inlet hose feed water)	--	included in ME01047
6.4	Pressure tank MELAdem 47 (with shut-off valve and hose)	ME57065	included in ME01047
6.5	Wastewater adapter (G1/4” internal thread)	ME56930	included in ME01047
6.6	MELAdem 47 reverse osmosis unit (without accessories)	ME56740	included in ME01047
6.7	Double support sleeve for an existing trap	ME37400	included in ME01047
6.8	External tap for demineralised water	ME91900	included in ME01047
6.9	Y-fitting for water supply with seal	ME37315	included in ME01047
7	Feed water connection	ME37242	included in delivery (steam sterilizer)
8	Double-chamber siphon	ME26635	on-site
9	Wall outlet NW 40	--	on-site
10	Hose for water drain of steam sterilizers, 2 m	ME36585	included in delivery (steam sterilizer)
10.1	Wastewater nozzle for siphon with seal and clamp	ME52615	included in ME36585
11	Mains connection	--	on-site
12	Connecting branch waste water (Pro-Class)	ME57705	present on device-side (steam sterilizer)

Pos.	Description	Art. no.	Note
13	Hose safety combination to water supply Vacuklav 30 B+ Vacuklav 24 B+, Vacuklav 24 BL+	 ME25975 ME48475	present on device-side (steam sterilizer) -- --

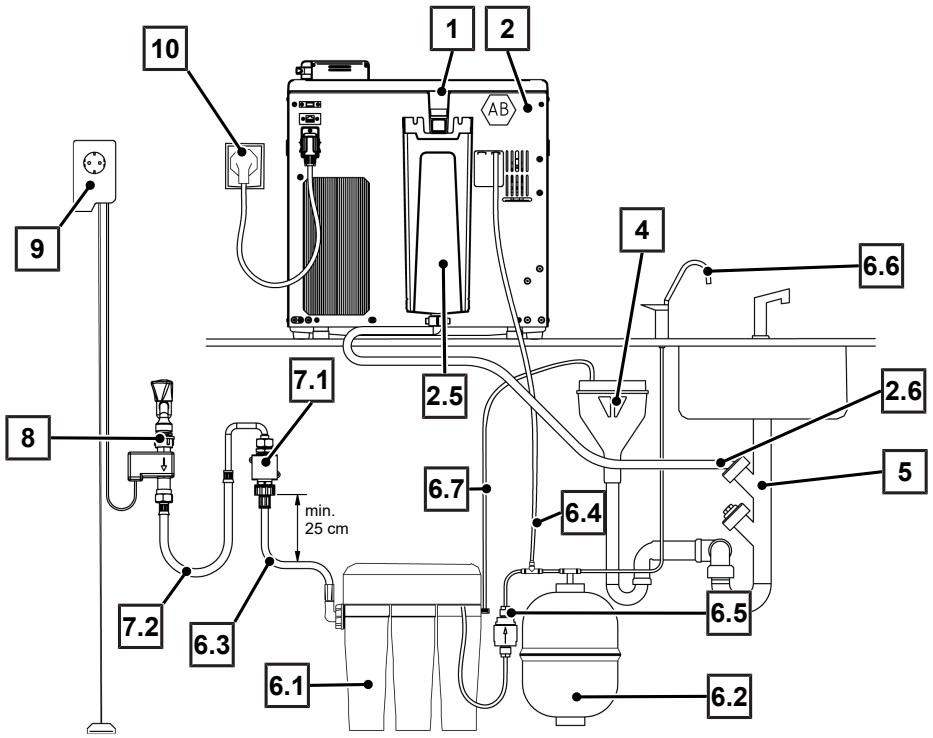
Connecting to a stand-alone steam sterilizer

Installation example

To connect the MELAdem 47 to a Vacuklav 41 B+ *Evolution*, 43 B+ *Evolution*, 23 B+ or 31 B+, install the feed water inlet connection for a hose diameter of 6x1 mm (see technical manual of the steam sterilizer). MELAG recommends mounting the safety combination according to the following installation examples for compliant operation according to EN 1717.

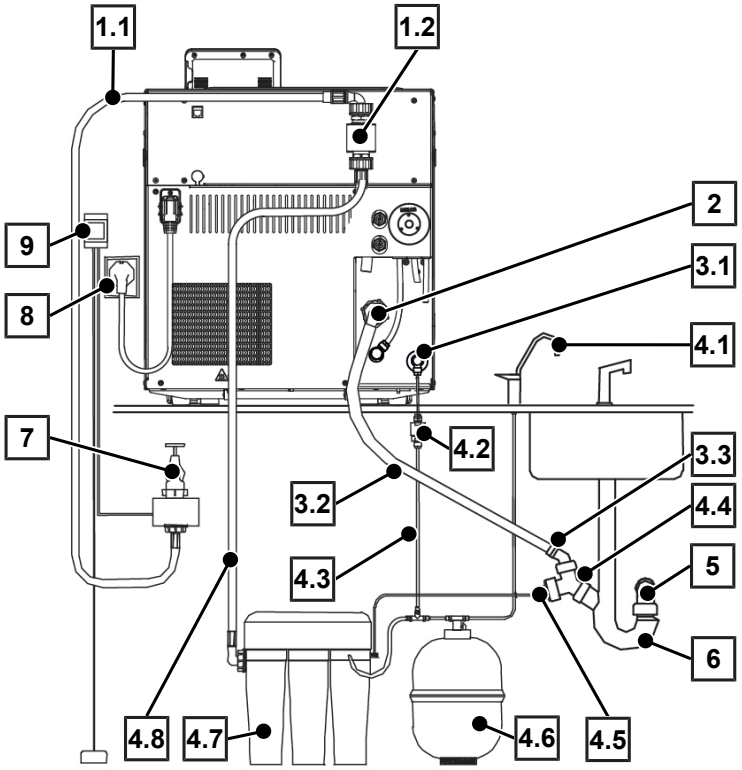
1. Connect the MELAdem 47 inlet hose to the safety combination EN 1717.
2. Connect the other end of the MELAdem 47 inlet hose to the inlet of the water treatment unit.
3. Connect the free end of the feed water inlet hose to the feed water connection of the steam sterilizer.

Example 1 – Connection to Vacuclave 118/123



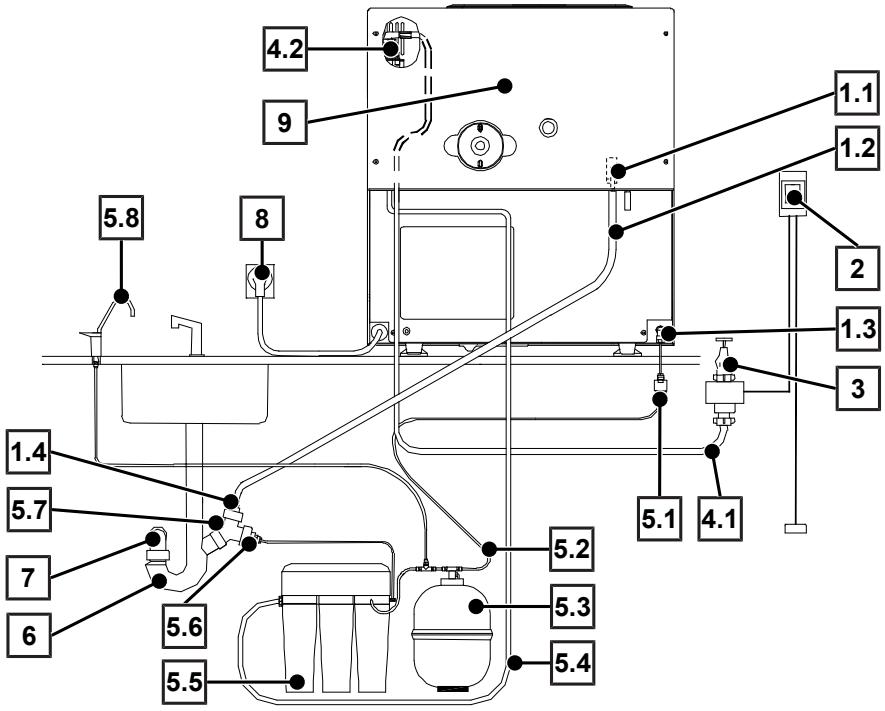
Pos.	Description	Art. no.	Note
1	Emergency overflow	--	present on device-side (steam sterilizer)
2	Water connection set for Vacuclave 100/300/SteriHero	ME09040	optionally available to order
2.1*)	Solenoid valve, external water inflow	ME80057	included in ME09040
2.2*)	Inflow fitting, feed water	ME80068	included in ME09040
2.3*)	Seal pressure release nozzle tank	ME21247	included in ME09040
2.4*)	KL backup	ME21248	included in ME09040
2.5	Wastewater funnel	ME22913	included in ME09040
2.6	Hose for water drain of steam sterilizers, 2 m	ME36585	included in ME09040
4	On-site protection (free outlet according to EN 1717)	--	on-site
5	Wastewater connection vented to the top (washing machine connection)	--	on-site
6	MELAdem 47 reverse osmosis unit	ME01047	included in delivery
6.1	MELAdem 47 reverse osmosis unit (without accessories)	ME56740	ME01047
6.2	Pressure tank MELAdem 47 (with shut-off valve and hose)	ME57065	included in ME01047
6.3	Water inflow hose (2.5 m)	ME37220	included in ME01047
6.4	PUR hose (6/4 mm, 1.5 m)	ME28820	included in ME01047
6.5	Filter for MELAdem	ME48240	included in ME01047
6.6	External tap for demineralised water	ME91900	included in ME01047
6.7	PUR hose (6/4 mm, 1.5 m) (concentrate line)	ME28820	included in ME01047
7.1	Safety combination HD with wall mount incl. hose, 2.5 m	ME70686	optionally available to order
7.2	Water inlet hose (2.5 m, complies with EN 1717)	ME24930	included in ME70686
8	Water tap 3/4” with safety combination	ME37310	on-site
9	Water stop (leakage water detector with shut-off valve and probe)	ME01056	optionally available to order
10	Mains connection	--	on-site
*) concealed behind rear wall of device			

Example 2 – Connection to Vacuklav 41 B+/43 B+



Pos.	Description	Art. no.	Note
1	Mounting set EN 1717 for MELAdem	ME49600	optionally available to order
1.1	Water inlet hose (2.5 m, complies with EN 1717)	ME24930	included in ME49600
1.2	Safety combination EN 1717 incl. holder	ME82375	included in ME49600
2	One way drain	--	present on device-side (steam sterilizer)
3	Water connection set for Premium-Class (41 B+/43 B+)	ME09034	optionally available to order
3.1	Feed water connection of Euroklav/Vacuklav	ME25655	included in ME09034
3.2	Hose for water drain of steam sterilizers, 2 m	ME36585	included in ME09034
3.3	Cold water adapter 3/4” to 1/4” (direct connection water hose)	ME09037	included in ME09034
4	MELAdem 47 reverse osmosis unit	ME01047	included in delivery
4.1	External tap for demineralised water	ME91900	included in ME01047
4.2	Filter for MELAdem	ME48240	included in ME01047
4.3	PUR hose (6/4 mm, feed water inlet hose)	ME28820	included in ME01047
4.4	Double support sleeve for an existing trap	ME37400	included in ME01047
4.5	Wastewater adapter (G1/4” internal thread)	ME56930	included in ME01047
4.6	Pressure tank MELAdem 47 (with shut-off valve and hose)	ME57065	included in ME01047
4.7	MELAdem 47 reverse osmosis unit (without accessories)	ME56740	included in ME01047
4.8	Water inflow hose (2.5 m) (inlet hose MELAdem 47)	ME37220	included in ME01047
5	Wall outlet NW 40	--	on-site
6	Double-chamber siphon	ME26635	optionally available to order
7	Water tap with safety combination	--	on-site
8	Mains connection	--	on-site
9	Water stop (leakage water detector with shut-off valve and probe)	ME01056	optionally available to order

Example 3 – Connection to Vacuklav 23 B+/31 B+



Pos.	Description	Art. no.	Note
1	Water connection set for Pro-Class	ME09033	optionally available to order
1.1	Add-on kit for wastewater	ME26695	included in ME09033
1.2		ME36581	included in ME09033 / ME26695
1.3	Feed water connection of Euroklav/Vacuklav	ME25655	included in ME09033
1.4	Wastewater nozzle for siphon with seal and clamp	ME52615	included in ME09033 / ME26695
2	Water stop (leakage water detector with shut-off valve and probe)	ME01056	optionally available to order
3	Water tap with safety combination	--	on-site
4	Mounting set (EN 1717) for MELAdem	ME25410	optionally available to order
4.1	Water inlet hose (2.5 m, complies with EN 1717)	ME24930	included in ME25410
4.2	Safety combination EN 1717 incl. holder	ME82375	included in ME25410
5	MELAdem 47 reverse osmosis unit	ME01047	included in delivery
5.1	Filter for MELAdem	ME48240	included in ME01047
5.2	PUR hose (6/4 mm, 2.5 m) (inlet hose feed water)	--	included in ME01047
5.3	Pressure tank MELAdem 47 (with shut-off valve and hose)	ME57065	included in ME01047
5.4	Water inflow hose (2.5 m) (inlet hose MELAdem 47)	ME37220	included in ME01047
5.5	MELAdem 47 reverse osmosis unit (without accessories)	ME56740	included in ME01047
5.6	Wastewater adapter (G1/4” internal thread)	ME56930	included in ME01047
5.7	Double support sleeve for an existing trap	ME37400	included in ME01047
5.8	External tap for demineralised water	ME91900	included in ME01047
6	Double-chamber siphon	ME26635	optionally available to order
7	Wall outlet NW 40	--	on-site
8	Mains connection	--	on-site
9	Back part cover for Vacuklav 23 B+ / 31 B+	ME66790	present on device-side (steam sterilizer)

4 Commissioning

NOTICE

Unsupervised operation of water consuming devices, including this water treatment unit follows at the operator's risk. Do not operate the water treatment unit for a long period unsupervised, e.g. over night. This could void the insurance cover for the building. MELAG accepts no liability for any damage that may occur due to unsupervised operation.

- In your absence, switch off the water shut-off valve or the central water shut-off.

✓ The cold water tap (tap water tap) is closed.

1. Loosen the hose screw connection from the reverse osmosis unit on the pressure tank.
2. Place the hose end in a drain or bucket.
3. Remove the cartridge housing (see Removing and attaching the cartridge housings [▸ Page 22]).
4. Remove the mixed-bed resin cartridge.
5. Screw the empty cartridge housing into the housing of the water treatment unit (see Removing and attaching the cartridge housings [▸ Page 22]).
6. Remove the housing cover of the reverse osmosis unit.
7. Open the cold water tap.
8. Let the cold water run through the device for approx. 20 min to remove preservatives and dust residues.
9. After flushing close the cold water tap.
10. **PLEASE NOTE:** The cartridge housing is full to the brim with water! Unscrew and remove the ion exchanger cartridge housing.
11. Pour off the water in the cartridge housing.
12. Return the mixed-bed resin cartridge (see Replacing the mixed-bed resin cartridge [▸ Page 25]).
13. Screw the cartridge housing back on.
14. Screw the hose fitting from the reverse osmosis unit back onto the pressure tank.
15. Open the cold water tap.
16. Check that the device and the hose connections are tight.
17. Open the pressure tank shut-off valve completely.

PLEASE NOTE

Filling the pressure tank for the first time takes 1.5-2 h depending on the cold water pressure. Only then can you remove a larger volume of the ▸demineralised water produced.

18. Check the water quality of the ▸feed water at the removal valve with a ▸conductivity meter if there is no internal automatic conductivity measurement in the steam sterilizer.
19. Mount the housing cover on the reverse osmosis unit. The unit now works fully-automatically.

5 Maintenance

Maintenance intervals

Interval	Measure
Daily	Check the permeate with a ▸conductivity meter or using a steam sterilizer with inbuilt conductivity measurement.
Every 12 months	▪ Maintain the water treatment unit as part of steam sterilizer maintenance. ▪ Replace the fine filter (pre-filter). ▪ Replace the activated carbon filter. ▪ Check the hoses and screw connections for leaks, swelling, crushing, kinks or age-related brittleness. ▪ Check the primary pressure of the empty pressure tank. Given poor local water quality, halve the intervals.
Every 6 years	Replace all the hoses on the water treatment unit
As required	With poor ▸conductivity: Replace the mixed-bed resin cartridge in the ion exchanger. The mixed-bed resin cartridges have an expiry date: Replace the mixed-bed resin cartridges at the latest when the date expires.

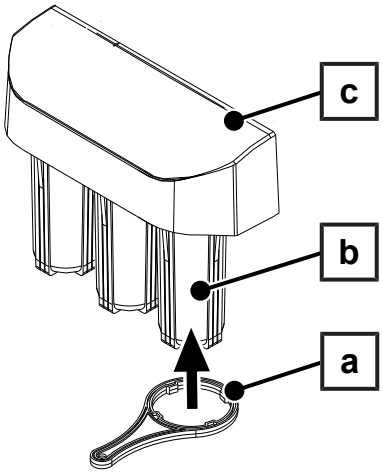
Comply with the following for safe handling:

- Close the water intake upon detecting a leak. Check all hoses and hose connections for leaks.
- Only use original MELAG consumables and spare parts. The use of foreign parts may result in damage and loss of warranty.

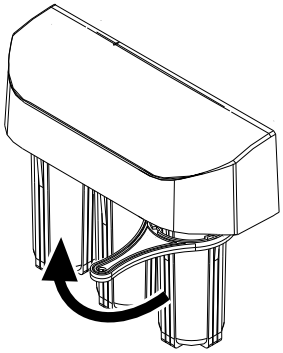
Removing and attaching the cartridge housings

Removing the cartridge housing

1. Close the cold water inflow and the pressure tank shut-off valve.
2. Take a little water from the removal valve to depressurise the unit.
3. Guide the container key (pos. a) from bottom to top over the cartridge housing (pos. b).



4. Turn the container key clockwise to open the cartridge housing.



5. Remove the container key as soon as the cartridge housing can be turned easily.
6. Turn the cartridge housing by hand from the housing (pos. c) of the water treatment unit.

Attaching the cartridge housing

1. Screw the cartridge housing (pos. b) into the housing (pos. c) of the water treatment unit by hand.
2. Guide the container key (pos. a) from bottom to top over the cartridge housing.
3. Turn the container key anti-clockwise to tighten the cartridge housing.
4. Remove the container key and store it safely.

Replacing the fine filter

PLEASE NOTE

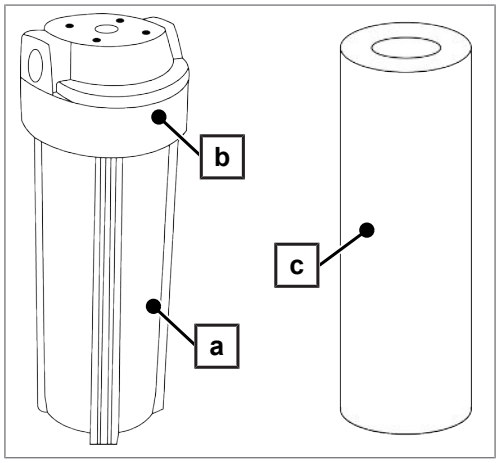
Only use original MELAG consumables and spare parts. The use of foreign parts may result in damage and loss of warranty.

Video tutorial

See also “Replacing the MELAdem 47 cartridges”.

Replace the cartridge of the mechanical fine filter (pre-filter) once a year. If there is a high pressure loss, filling the pressure tank takes more time. This can be caused by a high turbidity content in the cold water. In this case, replace the cartridge of the fine filter as required.

1. Remove the cartridge housing (pos. a) from the container cover (pos. b), see Removing and attaching the cartridge housings [▸ Page 22].



2. Pour off the water. **PLEASE NOTE:** The cartridge housing is full to the brim with water.
3. Remove the fine filter cartridge (pos. c) from the cartridge housing (pos. a).
4. Remove the sealing ring from the cartridge housing (pos. a).
5. Clean the sealing ring and then grease it a little (e.g. with Grease for seals/O-rings, not included in the scope of delivery).
6. Rinse out the cartridge housing (pos. a) with tap water.
7. Place the sealing ring in the cartridge housing (pos. a).
8. Insert the new fine filter cartridge (pos. c) in the cartridge housing (pos. a).
9. Reattach the cartridge housing, see Removing and attaching the cartridge housings [▸ Page 22].
10. Open the cold water inflow and the pressure tank shut-off valve.
11. Check that all parts are secure and that the unit is free from leaks.

Replacing the activated carbon filter

PLEASE NOTE

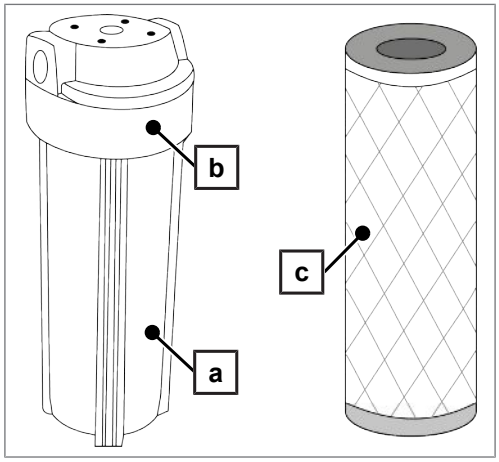
Only use original MELAG consumables and spare parts. The use of foreign parts may result in damage and loss of warranty.

Video tutorial

See also “Replacing the MELAdem 47 cartridges”.

Replace the cartridge of the activated carbon filter once a year or when replacing the fine filter.

1. Remove the cartridge housing (pos. a) from the container cover (pos. b), see Removing and attaching the cartridge housings [▸ Page 22].



2. Pour off the water. **PLEASE NOTE:** The cartridge housing is full to the brim with water.
3. Remove the activated carbon filter (pos. c) and flush the cartridge housing with tap water.
4. Remove the sealing ring from the cartridge housing (pos. a).
5. Clean the sealing ring and then grease it a little (e.g. with Grease for seals/O-rings, not included in the scope of delivery).
6. Rinse out the cartridge housing (pos. a) with tap water.
7. Place the sealing ring in the cartridge housing (pos. a).
8. Insert the new activated carbon filter (pos. c) in the cartridge housing (pos. a).
9. Reattach the cartridge housing, see Removing and attaching the cartridge housings [▸ Page 22].
10. Open the cold water inflow and the pressure tank shut-off valve.
11. Check that all parts are secure and that the unit is free from leaks.

Replacing the mixed-bed resin cartridge

PLEASE NOTE

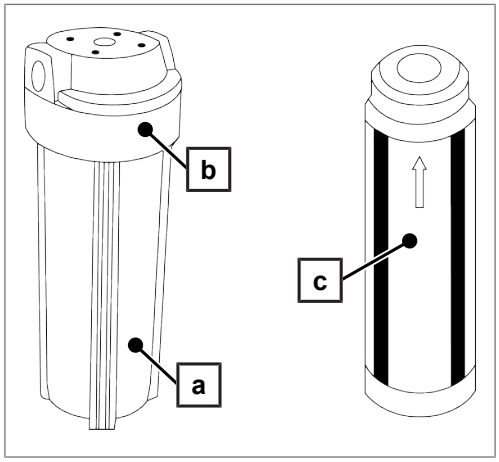
Only use original MELAG consumables and spare parts. The use of foreign parts may result in damage and loss of warranty.

Video tutorial

See also “Replacing the MELAdem 47 cartridges”.

When the mixed-bed resin is exhausted (poor permeate quality), replace the mixed-bed resin cartridge.

1. Remove the cartridge housing (pos. a) from the container cover (pos. b), see Removing and attaching the cartridge housings [▸ Page 22].



2. Remove and replace the mixed-bed resin cartridge (pos. c). When inserting a new cartridge, ensure that the flat seal of the mixed-bed resin cartridge is pointing upwards (arrow direction).
3. Remove the sealing ring from the cartridge housing (pos. a).
4. Clean the sealing ring and then grease it a little (e.g. with Grease for seals/O-rings, not included in the scope of delivery).
5. Rinse out the cartridge housing (pos. a) with tap water.
6. Place the sealing ring in the cartridge housing (pos. a).
7. Insert the new mixed-bed resin cartridge (pos. c) in the cartridge housing (pos. a).
8. Reattach the cartridge housing, see Removing and attaching the cartridge housings [▸ Page 22].
9. Open the cold water inflow and the pressure tank shut-off valve.
10. Check that all parts are secure and that the unit is free from leaks.

6 Pause times

Comply with the following for safe handling:

- Close the water tap or the central water shut-off during longer breaks in operation (e.g. overnight, at the weekend or on holiday).
- Replace the mixed-bed resin cartridges after operating pauses of four weeks and longer before restarting.

Duration of the operating pauses

Depending on the length of the pause, perform the following measures:

Duration of the operating pause	Measure
Up to 2 weeks	▪ Interrupt the cold water inflow.
Up to 4 weeks	▪ Interrupt the cold water inflow. ▪ Empty the pressure tank.
As of 4 weeks	▪ Interrupt the cold water inflow. ▪ Empty the pressure tank. Before re-commissioning: ▪ Replace the fine filter, activated carbon filter and mixed-bed resin cartridge. ▪ Rinse the water treatment unit and the pressure tank.

Storage and transport

Comply with the following for safe handling:

- Store and transport the product frost-free.
- Avoid strong shocks/vibrations.
- Store the product protected from moisture.

7 Technical data

Product type	**MELAdem 47**
Product dimensions (H x W x D)	46 x 40 x 18 cm
Total unit weight with filters	approx. 6 kg
Pressure tank	
Height	40 cm
Diameter	approx. 28 cm
Volume	approx. 10.5 l (with 0.4-0.5 bar primary pressure, final pressure approx. 4 bar)
Empty weight	3.8 kg
Osmosis module	
RO membrane	TFC bacteria resistant, wound module
Retention RO membrane	nominal salt retention approx. 95 %
Filter	
Fine filter I	particle fine filter
Fine filter II	activated carbon filter
Afterfilter I	ion exchanger, contents approx. 0.7 l
Cold water	
Cold water	tap water
Bacteriological quality	drinking water
Length inflows/outlets	approx. 2.5 m feed line (3/4″) | approx. 6 m pressure line (6 x 1 mm)
Iron content	max. 0.1 mg/l
Total salt content	max. 1500 mg/l
Water pressure min./max.[1)]	2-6 bar
Water temperature min./max.	5-35 °C
pH value min./max.	4.0-10.0
Permeate	
Capacity	190 l/day (value at 4.5 bar/25 °C) | 127 l/day (value at 4.5 bar/15 °C) | 103 l/day (value at 4.5 bar/10 °C)
Conductivity	approx. 20-30 µS/cm at 600 µS/cm cold water | < 1 µS/cm at 600 µS/cm cold water and non-exhausted ion exchanger
Production	20-25 %

[1)] Water pressure that is too low can be increased with the optionally available MELAG pressure increase pump.

8 Accessories and spare parts

You can obtain the specified articles and an overview of further accessories from your stockist.

Category	Article	Art. no.
Accessories and consumables	Mixed-bed resin cartridge	ME37470
	Fine filter	ME37450
	Activated carbon filter	ME37460
	Container for mixed-bed resin	ME37440
	Grease for seals/O-rings	ME24371
	Pressure increase pump for MELAdem 47	ME22500
	PUR hose (6/4 mm, 10 m)	ME28820
Spare parts	Seal inside the MELAdem cartridge housing	ME51990
	Filter housing wrench for MELAdem	ME61050
Connecting sets for connecting to a steam sterilizer	Water connection set for Vacuclave 100/300/SteriHero	ME09040
	Connection set wastewater Vacuclave 100s/300s/ SteriHero	ME09041
	Water connection set for Premium-Class for: Vacuklav 41 B+ (*Evolution*)/43 B+ (*Evolution*)	ME09034
	Water connection set for Pro-Class for: Vacuklav 23 B+/31 B+	ME09033
	Water connection set for Euroklav for: Euroklav 23 S+/23 VS+/29 VS+	ME09031

Glossary

Conductivity
is the ability of a conductive chemical substance or mixture of substances to conduct or transfer energy or other substances or particles in space.

Demineralised water
Water without the minerals usually found in normal spring or tap water; is produced through ion exchange of normal tap water. It is used here as feed water.

DI water
Demineralised water (DI water) is water (H2O) without the salts found in normal spring and tap water, which are dissolved as anions and cations.

Feed water
Feed water is required to produce steam for sterilization. Guide values for water quality in accordance with EN 285 / EN 13060 – Appendix C

Reprocessing
Reprocessing is a measure to prepare a new or used healthcare device for its intended purpose. Reprocessing includes cleaning, disinfection, sterilization and similar procedures.

MELAG Medizintechnik GmbH & Co. KG

Geneststraße 6-10
10829 Berlin
Germany

Email: info@melag.com
Web: www.melag.com

Original instructions

Your stockist

BA_MELAdem47_EN.pdf | Rev. 7 - 23/2310 | Modification date: 2023-08-30