

User Manual

MELAdem[®] 56 MELAdem[®] 56 M

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.

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1 General guidelines




Please read this user manual carefully before commissioning the product. The manual includes important safety 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	Explanation
	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	Explanation
	Prerequisites for the following handling instruction.
	Refer to the glossary or another text section.
	Information for safe handling.

Disposal

MELAG products are synonymous for long-term quality. When you eventually need to decommission your MELAG product after many years of operation, dispose of it and any spare parts that are no longer used, such as seals, 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.

Dispose of spare parts that are no longer used, e.g. seals, properly.

2 Safety



When using the product, comply with the following safety instructions as well as those contained in subsequent chapters. Use the product only for the purpose specified in these instructions. Failure to comply with the safety instructions can result in injury and/or damage to the product.

Setup, installation and commissioning

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

Storage and transport

- Store and transport the product frost-free.
- Avoid strong shocks/vibrations.
- Store the product protected from moisture.
- Damage to the housing and the inside of the product as a result of using unsuitable transport packaging. Only transport the product in its original packaging or other suitable packaging.

Daily operation

- Never operate the product unattended. Unsupervised operation can result in damage to the product or the equipment and is at your own risk. In such a case, MELAG does not accept any liability.

Leaks

- Close the water intake upon detecting a leak. Check all hoses and hose connections for leaks.
- The device may only be opened and repaired by [authorised technicians](#). The guarantee and warranty are forfeited as soon as the device is opened by anyone other than a member of a MELAG-authorized technical customer service.

Consumables and spare parts

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

3 Product description

Intended use

The reverse osmosis unit with ion exchanger permits the production of ▶**demineralised** (de-ionised) water. This requires tap water of drinking water quality.



PLEASE NOTE

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

The MELAdem 56 is suitable exclusively for the feed water supply of a single Cliniclave 45 or Cliniclave 45 D. The MELAdem 56 M is suitable exclusively for the feed water supply of a single Cliniclave 45 M or Cliniclave 45 MD. The reverse osmosis units are 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 reverse osmosis units MELAdem 56 and MELAdem 56 M are not a medical device within the meaning of European Regulation 2017/745 on medical devices.

Mode of functioning

The units function according to the reverse osmosis principle. This process presses water through a semi-permeable RO membrane (osmosis module), reducing the salt content of the cold water by some 95 %. The inflowing water is separated into two flows:

1. Water with a low salt content (permeate)
2. Water with increased levels of salt (concentrate) which is disposed of via the outflow

The produced permeate is stored in the pressure tank, which is connected to the steam sterilizer via a hose. When the pressure tank is filled, the pump and thus the cold water supply is deactivated. All operating runs of the reverse osmosis unit are automatically controlled via its water pressure. In this way, even with poor cold water quality, a water quality necessary for the operation of the steam sterilizer is achieved.

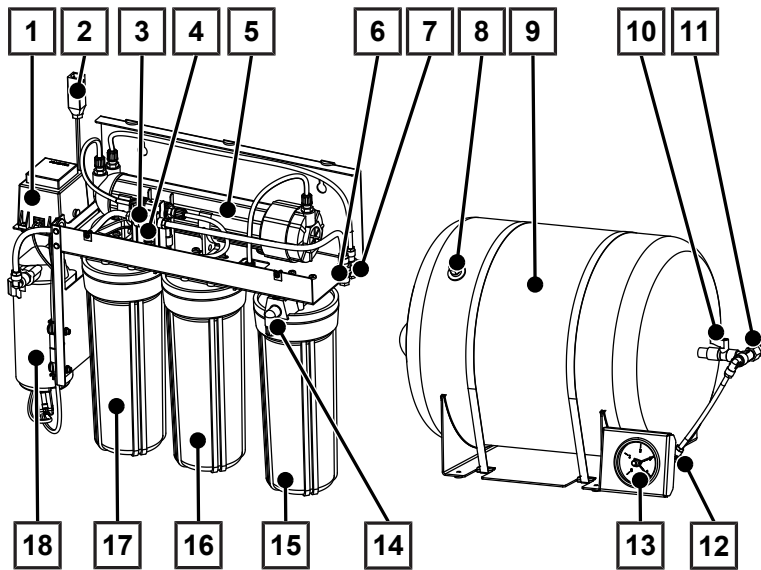
Scope of delivery

Please check the scope of delivery before using the product.

Standard scope of delivery

- MELAdem 56 with separate pressure tank or MELAdem 56 M with integrated pressure tank
- User manual
- Record of installation and setup
- Warranty certificate
- Connection set MELAdem 56 or connection set MELAdem 56 M
- Filter housing wrench for MELAdem (container key)

Views MELAdem 56



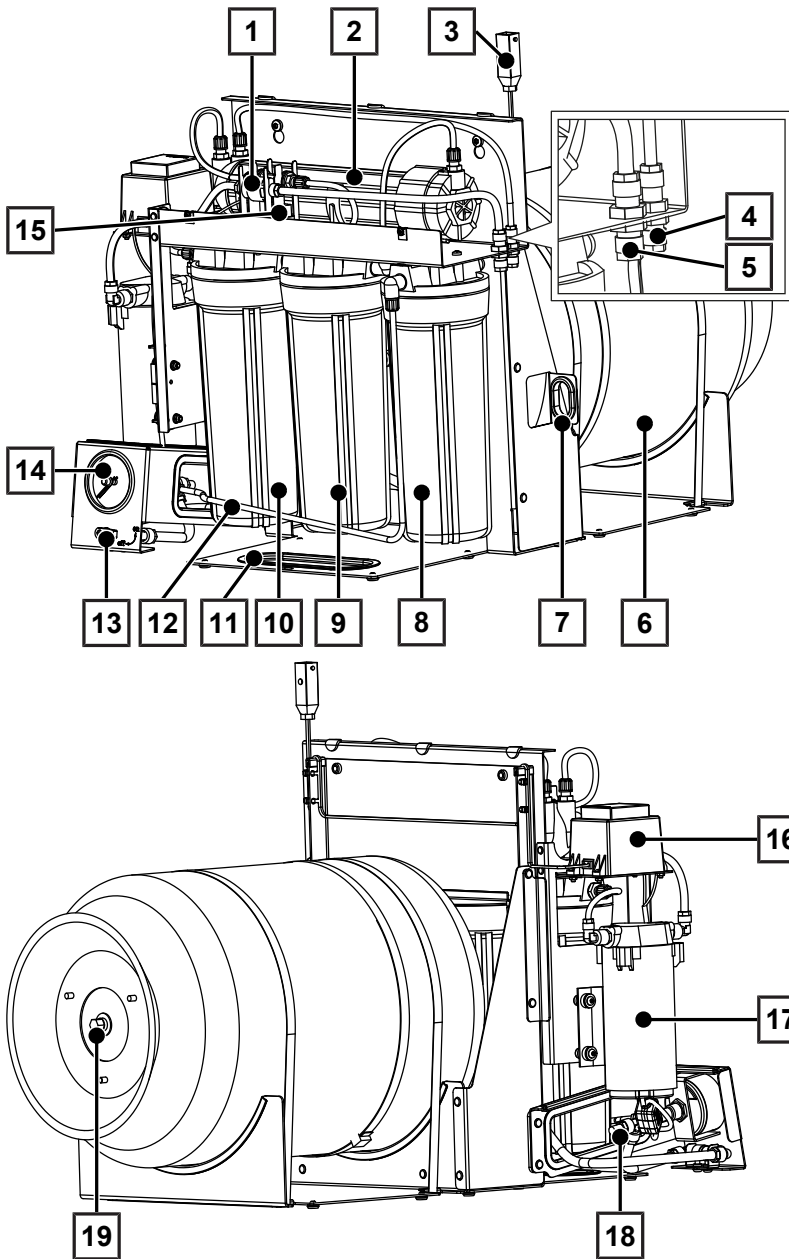
Pos.	Designation	Description
1	Power supply	Supplies the pump with current.
2	Power connector	Supplies the power supply with current.
3	Dirt filter	Filters the through flowing water to protect the pump.
4	Pressure switch	Controls the power supply of the pump. Prevents e.g. a too high pressure increase in the pressure tank.
5	Osmosis module	The core of the reverse osmosis unit.
6	Connection for inlet hose	Via the inlet hose (length: 0.7 m, Ø 8/6 mm) the reverse osmosis unit is supplied with cold water from the steam sterilizer.
7	Connection for outlet hose	Through the outlet hose (length: 0.7 m, Ø 6/4 mm) the concentrate is discharged via the steam sterilizer into the wastewater.
8	Valve	Serves for measuring and setting the primary pressure in the pressure tank.
9	Pressure tank	The permeate is collected here. The steam sterilizer is supplied with feed water from the pressure tank.
10	Shut-off valve	Serves for closing the pressure tank.
11	Feed water connection to the steam sterilizer	The feed water hose (length: 1.3 m, Ø 10/8 mm) supplies the steam sterilizer with feed water from the pressure tank.
12	Connection at the pressure tank	The permeate line (length: 1 m, Ø 6/4 mm) connects the ion exchanger to the pressure tank. The steam sterilizer is supplied with fresh feed water.
13	Manometer	Displays the current feed water pressure in the pressure tank.
14	Connection at the ion exchanger	Connection for the permeate line (length: 1 m, Ø 6/4 mm) from the pressure tank to the ion exchanger.
15	Ion exchanger	Performs the demineralisation of the water from the osmosis module.
16	Activated carbon filter	Removes free chlorine which can destroy the RO membrane in the reverse osmosis unit.
17	Fine filter (pre-filter)	Holds back all particulate material, rust and other soiling.
18	Pump	Generates the necessary water pressure.



PLEASE NOTE

The connections are located at the floor trough of the Cliniclave 45/Cliniclave 45 D.

Views MELAdem 56 M



Pos.	Designation	Description
1	Dirt filter	Filters the water flowing through to protect the pump.
2	Osmosis module	The core of the reverse osmosis unit.
3	Power connector	Supplies the power supply with current.
4	Connection for outlet hose	Through the outlet hose (length: 2 m, Ø 6/4 mm) the concentrate is discharged via the steam sterilizer into the wastewater.
5	Connection for inlet hose	Via the inlet hose (length: 2 m, Ø 8/6 mm) the reverse osmosis unit is supplied with cold water from the steam sterilizer.
6	Pressure tank	The permeate is collected here. The steam sterilizer is supplied with feed water from the pressure tank.
7	Conduit	Serves for passing through the concentrate line and cold water line.
8	Ion exchanger	Performs the demineralisation of the water from the osmosis module.
9	Activated carbon filter	Removes free chlorine which can destroy the RO membrane in the reverse osmosis unit.
10	Fine filter (pre-filter)	Holds back all particulate material, rust and other soiling.

Pos.	Designation	Description
11	Recessed grip	Acts as a carry aid for transport purposes.
12	Permeate line	The permeate line (Ø 6/4 mm) runs from the ion exchanger to the pressure tank.
13	Shut-off valve	Serves for closing the pressure tank.
14	Manometer	Displays the current feed water pressure in the pressure tank.
15	Pressure switch	Controls the power supply of the pump. Prevents e.g. a too high pressure increase in the pressure tank.
16	Power supply	Supplies the pump with current.
17	Pump	Generates the necessary water pressure.
18	Feed water connection to the steam sterilizer	The feed water hose (length: 2 m, Ø 10/8 mm) supplies the steam sterilizer with feed water from the pressure tank.
19	Valve	Serves for measuring and setting the primary pressure in the pressure tank.



PLEASE NOTE

The connections are located at the floor trough of the Cliniclave 45 M/Cliniclave 45 MD.

4 Setup and installation

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.
- 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.

Space requirements

The reverse osmosis unit is installed in the floor unit of the steam sterilizer.

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.

Note 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.

Connection of the reverse osmosis unit

The installation described here refers to the connection of the reverse osmosis unit to a fully installed and operational Cliniclave. If the reverse osmosis unit is installed together with the Cliniclave, proceed according to the installation instructions in the technical manual of the steam sterilizer. The work steps are coordinated there to save work and time.



WARNING

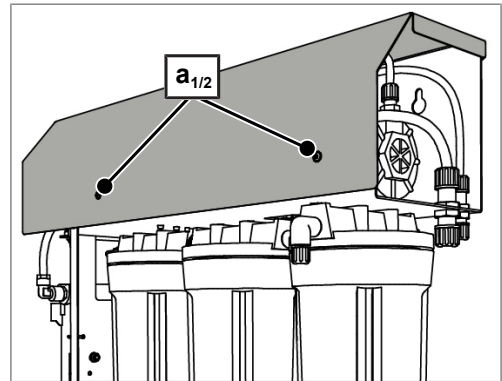
Danger of electrical shock!

A voltage of 230 V is present at the cable socket for connecting the MELAdem 56/56 M in the floor unit when the steam sterilizer is switched on.

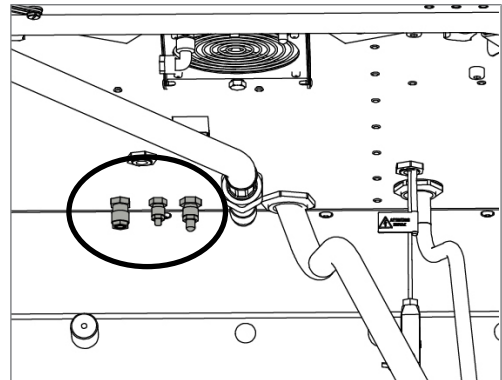
Connection of the MELAdem 56

! NOTICE
 Ensure that the hoses do not suffer kinking or crushing.

1. Switch off the steam sterilizer at the power switch.
2. Measure the primary pressure at the pressure tank with the delivered manometer. The target pressure is 0.6 bar. Should the primary pressure of an empty pressure tank exceed this value, reduce the pressure by pressing in the valve tappet. Given insufficient pressure, increase this pressure using e.g. an air pump with Schrader valve.
3. Loosen the screws (TX20, pos. a_{1/2}) on the cover of the osmosis module and pull the cover upwards. Proceed with caution.

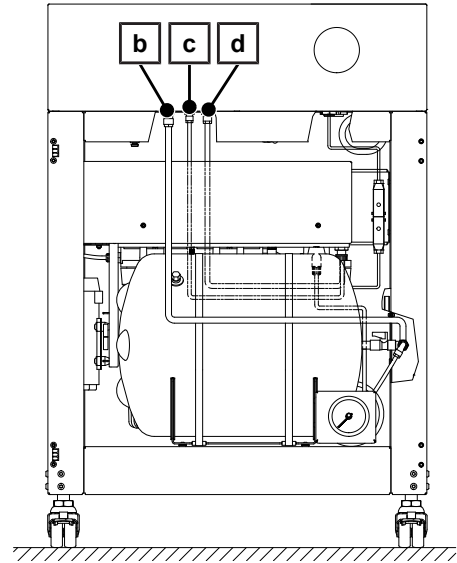


4. Work carefully to remove the closure caps from the hose connections on the underside of the steam sterilizer. To do so, disconnect the union nuts.

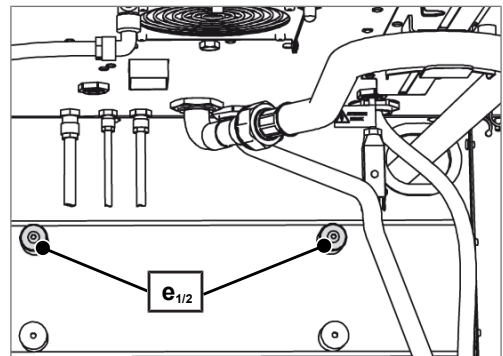


5. Remove the closure caps from the reverse osmosis unit connections. Keep the closure caps from steam sterilizer and reverse osmosis unit. The closure caps are required for transport or decommissioning.

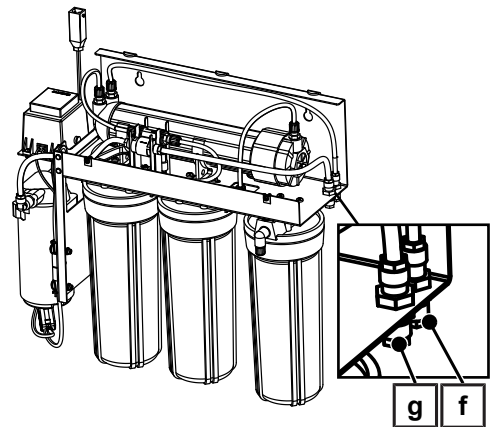
6. Connect the feed water hose (pos. b), the outlet hose (0.7 m, pos. c) and the inlet hose (pos. d) onto the connections on the floor trough of the steam sterilizer.



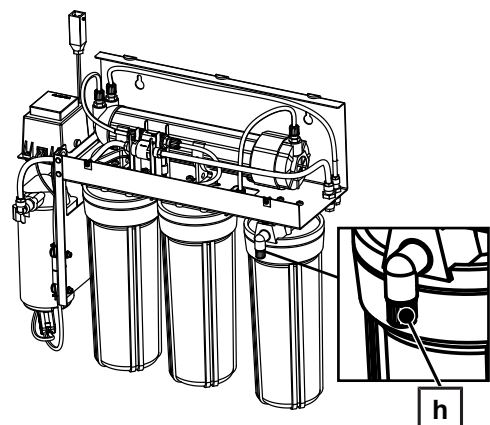
7. Hang the reverse osmosis unit on the screws of the spacers (pos. e_{1/2}) on the rear wall in the floor unit. Ensure that the inlet hose and the power cable of the steam sterilizer not become jammed behind the reverse osmosis unit.



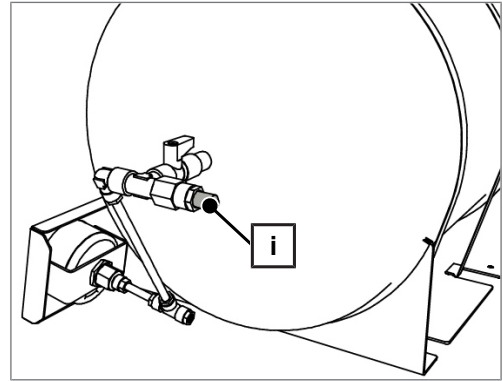
8. Connect the inlet hose (pos. g) and the outlet hose (0.7 m, pos. f) with the connections of the reverse osmosis unit.



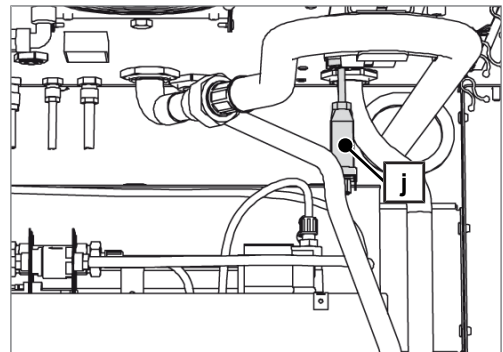
9. Connect the permeate line (1.0 m, pos. h) to the reverse osmosis unit.



10. Remove the closure cap (pos. i) and connect the feed water hose to the pressure tank.

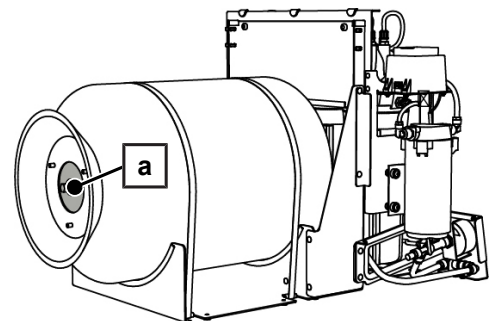


11. Connect the power plug of the reverse osmosis unit to the cable socket (pos. j) on the underside of the steam sterilizer and fold over the safety latch.

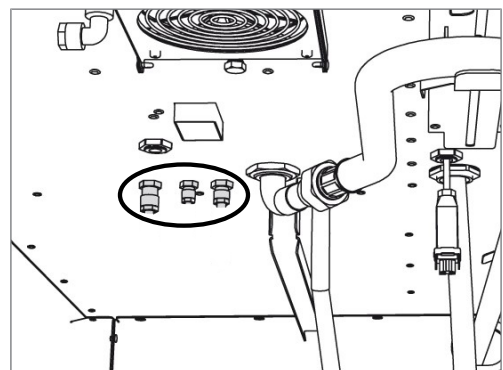


Connection of the MELAdem 56 M

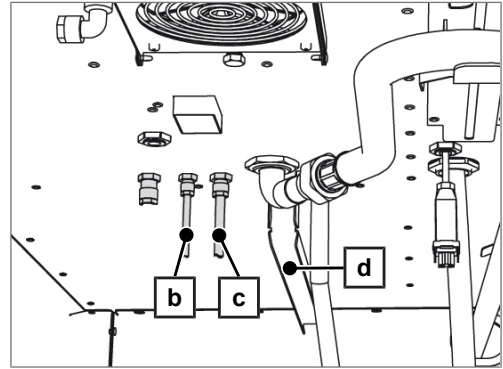
1. Switch off the steam sterilizer at the power switch.
2. Remove the valve cap (pos. a) on the rear side of the pressure tank and measure the primary pressure using the delivered manometer. The target pressure is 0.6 bar. Should the primary pressure of an empty pressure tank exceed this value, reduce the pressure by pressing in the valve tappet. Given insufficient pressure, increase this pressure using e.g. an air pump with Schrader valve.



3. Remove the closure caps from the steam sterilizer hose connections at the floor trough and the reverse osmosis unit and keep them. The closure caps are required for transport or decommissioning.

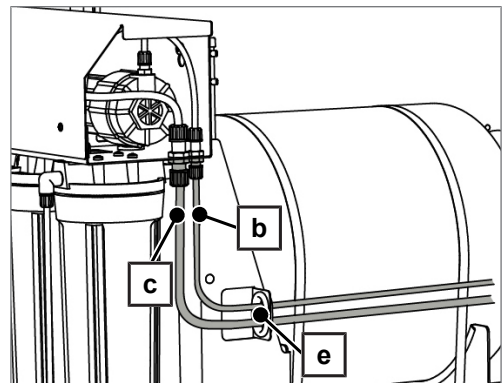


4. Connect the outlet hose (pos. b) and the inlet hose (pos. c) onto the connections on the floor trough of the steam sterilizer.

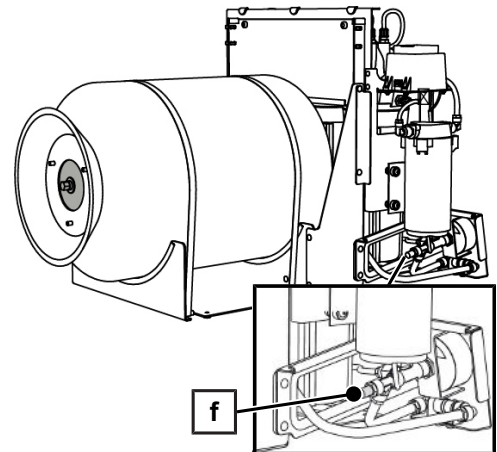


5. **Cliniclave 45 M:** Place the hoses over the bracket (pos. d) in the rear area of the steam sterilizer towards the front and out of the floor unit.

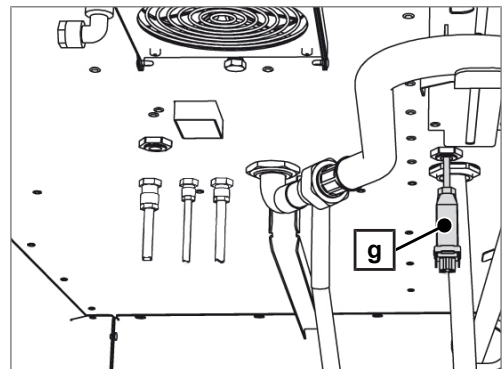
6. Lead the wastewater hose (pos. b) and the inlet hose (pos. c) through the duct (pos. e) on the right-hand side of the reverse osmosis unit and connect them to the corresponding connections on the osmosis module.



7. Remove the cap on the free screw connection (pos. f) behind the manometer and connect one end of the feed water hose to the screw connection.



8. Connect the reverse osmosis unit power connector to the steam sterilizer power connection (pos. g) at the underside and fold over the safety latch.



9. Slide the reverse osmosis unit into the floor unit of the steam sterilizer.

5 Commissioning

Rinsing and checking the reverse osmosis unit



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 steam sterilizer is switched off.
- 1. Remove the ion exchanger filter container (see [Removing and attaching the filter containers](#) [▶ page 19]).
- 2. Remove the mixed-bed resin cartridge.
- 3. Screw the empty filter container into the housing of the water treatment unit (see [Removing and attaching the filter containers](#) [▶ page 19]).
- 4. Hold the free end of the permeate line in a 5 l bucket or similar.
- 5. Switch on the steam sterilizer at the power switch.
- 6. Operate the reverse osmosis unit for approx. 20 min in order to remove all preservatives and dust residue.
- 7. Switch off the steam sterilizer at the power switch.
- 8. Unscrew and remove the ion exchanger filter container. **PLEASE NOTE:** The filter container is full to the brim with water!
- 9. Pour off the water in the filter container.
- 10. Return the mixed-bed resin cartridge (see [Replacing the mixed-bed resin cartridge](#) [▶ page 22]).
- 11. Screw the ion exchanger filter container back on.
- 12. Switch on the steam sterilizer.
- 13. Run water from the free end of the permeate line into a measuring cup for 2 min.
- 14. Switch off the steam sterilizer.
- 15. Check the amount of feed water being pumped. This must amount to min. 260 ml.
- 16. Enter the value in the record of installation and setup.
- 17. Check the conductivity of the water in the measuring cup with a conductivity meter (e.g. MELAtest 60). The conductivity should not exceed 5 µS/cm.
- 18. Enter the value in the record of installation and setup.
- 19. Connect the permeate line at the pressure tank.
- 20. Close the pressure tank shut-off valve.
- 21. Switch on the steam sterilizer. The pump should stop pumping at a pressure of 4 ± 0.2 bar (after 30 s at the latest).
- 22. Switch off the steam sterilizer.
- 23. Open the pressure tank shut-off valve briefly for pressure release.
- 24. Place the pressure tank in the floor unit.
- 25. Switch on the steam sterilizer.
- 26. Check that the unit and the hose connections are tight.
- 27. Open the pressure tank shut-off valve completely.
PLEASE NOTE: The first filling of the pressure tank lasts 2-2.5 h. It is possible to operate the steam sterilizer as soon as the manometer on the pressure tank shows a pressure of over 2 bar.
- 28. Mount the housing cover on the reverse osmosis unit. Now the unit works fully automated.

Rinsing and checking the MELAdem 56 M



NOTICE

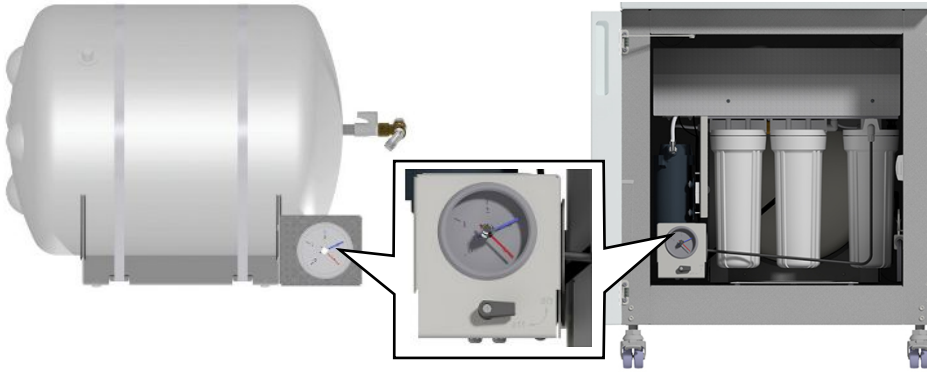
Unsupervised operation of water consuming devices, including this water treatment unit follows at the operator's risk. Do not operate the water treatment unit for a long period unsupervised, e.g. over night. This could void the insurance cover for the building. MELAG accepts no liability for any damage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

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

- ✓ The steam sterilizer is switched off.
- 1. Close the pressure tank shut-off valve.
- 2. Remove the ion exchanger filter container (see [Removing and attaching the filter containers](#) [▶ page 19]).
- 3. Remove the mixed-bed resin cartridge.
- 4. Screw the empty filter container into the housing of the water treatment unit (see [Removing and attaching the filter containers](#) [▶ page 19]).
- 5. Hold the free end of the feed water hose in a bucket with at least 5 l capacity.
- 6. Switch on the steam sterilizer at the power switch.
- 7. Operate the reverse osmosis unit for approx. 20 min in order to remove all preservatives and dust residue.
- 8. Switch off the steam sterilizer at the power switch.
- 9. Unscrew and remove the ion exchanger filter container. **PLEASE NOTE:** The filter container is full to the brim with water!
- 10. Pour off the water in the filter container.
- 11. Return the mixed-bed resin cartridge (see [Replacing the mixed-bed resin cartridge](#) [▶ page 22]).
- 12. Screw the ion exchanger filter container back on.
- 13. Switch on the steam sterilizer.
- 14. Run water from the free end of the permeate line into a measuring cup for 2 min.
- 15. Switch off the steam sterilizer.
- 16. Check the amount of feed water being pumped. This must amount to min. 260 ml.
- 17. Enter the value in the record of installation and setup.
- 18. Check the conductivity of the water in the measuring cup with a conductivity meter (e.g. MELAtest 60). The conductivity should not exceed 5 µS/cm.
- 19. Enter the value in the record of installation and setup.
- 20. Connect the free end of the feed water hose to the connection of the steam sterilizers floor trough.
- 21. Switch on the steam sterilizer. The pump should stop pumping at a pressure of 4 ± 0.2 bar (after 30 s at the latest).
- 22. Switch off the steam sterilizer.
- 23. Open the pressure tank shut-off valve briefly for pressure release.
- 24. Switch on the steam sterilizer.
- 25. Check that the unit and the hose connections are tight.
- 26. Open the pressure tank shut-off valve completely.
PLEASE NOTE: The first filling of the pressure tank lasts 2-2.5 h. It is possible to operate the steam sterilizer as soon as the manometer on the pressure tank shows a pressure of over 2 bar.

Checking the operating pressure

- Perform regular checks of the pressure on the pressure tank manometer before first program start. With daily operation, the pressure tank is still sufficiently full from the previous day.
- The blue pointer shows the current pressure of the water treatment unit.
- The red pointer is used to check the maximum pressure of the water treatment unit.



left: Pressure tank MELAdem 56 | right: MELAdem 56 M

Pressure in the pressure tank (blue indicator)	Meaning	Measure
3-4 bar	Recommended operating pressure	--
< 2.5 bar	Little feed water in the pressure tank	Leave the steam sterilizer switched on so that the water treatment unit can produce feed water.
< 1 bar	No or insufficient feed water in the pressure tank	Leave the steam sterilizer switched on so that the water treatment unit can produce feed water. A warning or malfunction message is displayed.

6 Maintenance

Maintenance intervals

Interval	Measure
Daily	<ul style="list-style-type: none"> Check the permeate with a conductivity meter or with the built-in conductivity measurement of the steam sterilizer. Check the pressure in the pressure tank via the manometer.
Every 12 months	<ul style="list-style-type: none"> Maintain the water treatment unit as part of steam sterilizer maintenance. The maintenance instructions of the water treatment unit is integrated in the maintenance instructions of the steam sterilizer. Replace the fine filter (pre-filter). Replace the activated carbon filter. Clean the filter insert of the dirt 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. <p>Given poor local water quality, halve the intervals.</p>
Every 6 years	Replace all the hoses on the water treatment unit
As required	<p>With poor ▶conductivity: Replace the mixed-bed resin cartridge in the ion exchanger.</p> <p>The mixed-bed resin cartridges have an expiry date: Replace the mixed-bed resin cartridges at the latest when the date expires.</p>

Operating pauses

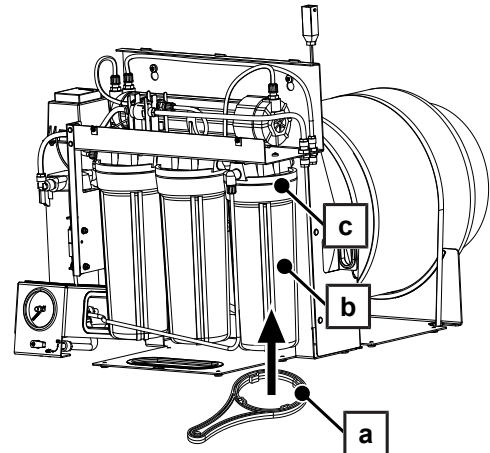
Depending on the length of the pause, perform the following measures:

Duration of the operating pause	Measure
Up to 2 weeks	<ul style="list-style-type: none"> Interrupt the cold water inflow.
Up to 4 weeks	<ul style="list-style-type: none"> Interrupt the cold water inflow. Empty the pressure tank.
As of 4 weeks	<ul style="list-style-type: none"> Interrupt the cold water inflow. Empty the pressure tank. <p>Before re-commissioning:</p> <ul style="list-style-type: none"> Replace the fine filter, activated carbon filter and mixed-bed resin cartridge. Rinse the water treatment unit and the pressure tank.

Removing and attaching the filter containers

Removing a filter container

1. Start the program **Conductivity meas.** for depressurising the unit.
2. Switch off the steam sterilizer and close the pressure tank shut-off valve.
3. Guide the container key (pos. a) from bottom to top over the filter container (pos. b).



Place the filter key on the MELAdem 56 M

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

Attaching a filter container

1. Screw the filter container (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 filter container.
3. Turn the container key anti-clockwise to tighten the filter container.
4. Remove the container key and store it safely.

Replacing the fine filter

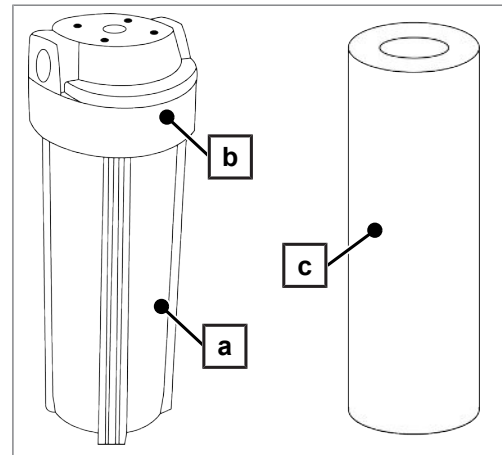


PLEASE NOTE

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

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 filter container (pos. a) from the container cover (pos. b), see [Removing and attaching the filter containers](#) [▶ page 19].



2. Pour off the water. **PLEASE NOTE:** The filter container is full to the brim with water.
3. Remove the fine filter cartridge (pos. c) from the filter container (pos. a).
4. Remove the sealing ring from the filter container (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 filter container (pos. a) with tap water.
7. Place the sealing ring in the filter container (pos. a).
8. Insert the new fine filter cartridge (pos. c) in the filter container (pos. a).
9. Reattach the filter container, see [Removing and attaching the filter containers](#) [▶ page 19].
10. Switch off the steam sterilizer and open 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

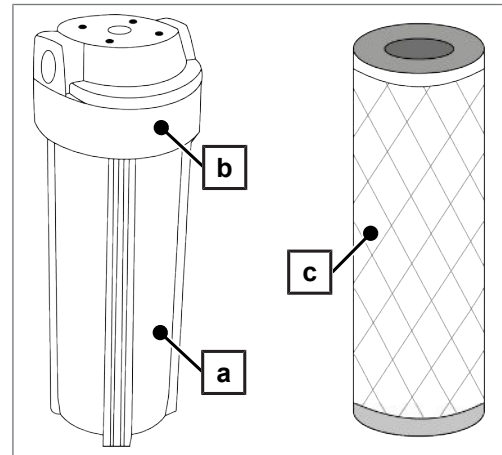


PLEASE NOTE

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

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

1. Remove the filter container (pos. a) from the container cover (pos. b), see [Removing and attaching the filter containers](#) [▶ page 19].



2. Pour off the water. **PLEASE NOTE:** The filter container is full to the brim with water.
3. Remove the activated carbon filter (pos. c) and flush the filter container with tap water.
4. Remove the sealing ring from the filter container (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 filter container (pos. a) with tap water.
7. Place the sealing ring in the filter container (pos. a).
8. Insert the new activated carbon filter (pos. c) in the container (pos. a).
9. Reattach the filter container, see [Removing and attaching the filter containers](#) [▶ page 19].
10. Switch off the steam sterilizer and open 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

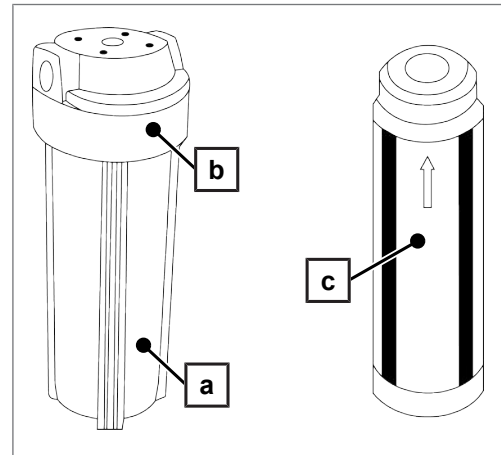


PLEASE NOTE

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

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

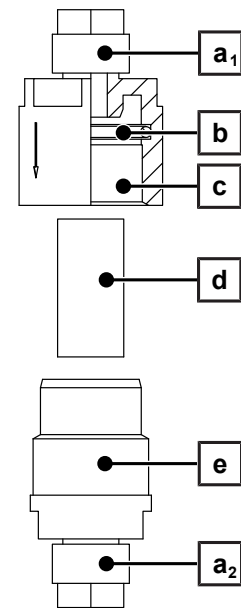
1. Remove the filter container (pos. a) from the container cover (pos. b), see [Removing and attaching the filter containers](#) [▶ page 19].



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 filter container (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 filter container (pos. a) with tap water.
6. Place the sealing ring in the filter container (pos. a).
7. Insert the new mixed-bed resin cartridge (pos. c) in the filter container (pos. a).
8. Reattach the filter container, see [Removing and attaching the filter containers](#) [▶ page 19].
9. Loosen the permeate line at the pressure tank.
10. Switch off the steam sterilizer and open the pressure tank shut-off valve.
11. Collect the leaking water from the permeate line in a cup for 5 min.
12. Switch off the steam sterilizer.
13. Determine the ▶conductivity of the water (< 5 $\mu\text{S}/\text{cm}$).
14. Connect the permeate line at the pressure tank.
15. Check that all parts are secure and that the unit is free from leaks.

Cleaning the filter insert of the dirt filter

1. Switch off the steam sterilizer at the power switch.
2. Close the pressure tank shut-off valve.
3. Start the program **Conductivity meas.** for depressurising the unit.
4. Loosen the screws (TX20) from the cover of the osmosis module and pull the cover upwards. Proceed with caution.
5. Remove the dirt filter from the bracket. Loosen both hose connections (pos. a_{1/2}).
6. Open the filter housing (pos. c and e).
7. Remove the filter insert (pos. d) and the sealing ring (pos. b) from the filter housing.
8. Check the filter housing (pos. c and e) for soiling and rinse out if necessary.
9. Insert the filter insert (pos. d) and sealing ring (pos. b) into the filter housing. Replace a worn sealing ring.
10. Grease the seal face at the lower filter housing (pos. e) with the appropriate grease (Grease for the O-ring in the filters).
11. Screw on the filter housing (pos. c and e).
12. Connect the dirt filter to the hoses and tighten the hose connection (pos. a_{1/2}). Ensure that the arrow points in the flow direction of the pump.
13. Insert the dirt filter in the bracket.
14. Switch on the steam sterilizer at the power switch.
15. Open the pressure tank shut-off valve.
16. Check that the unit and the hose connections are tight.
17. Mount the housing cover on the reverse osmosis unit.



7 Technical data

Product type	MELAdem 56	MELAdem 56 M
Product dimensions (H x W x D)	44.4 x 50 x 17.3 cm	48.1 x 50 x 70 cm
Total unit weight with filters	approx. 18 kg (incl. pressure tank)	approx. 26 kg (incl. pressure tank)
Pressure tank		
Height	44 cm	47 cm
Diameter	30.5 cm	31.8 cm
Volume	approx. 13 l	approx. 21 l
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	potable water	
Iron content	max. 0.1 mg/l	
Total salt content	max. 1500 mg/l	
Water temperature min./max.	5-35 °C	
pH value min./max.	4.0-10.0	
Permeate		
Capacity	max. 380 l/day (value at 25 °C)	
Conductivity	approx. 20-30 µS/cm at 600 µS/cm cold water approx. < 1 µS/cm at 600 µS/cm cold water and non-exhausted ion exchanger	
Production	20-25 %	
Electrical connection		
Power supply	230 V/50 Hz 0.2 A	
Max. electrical power	40 W	

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
	Osmosis module (100 gpd, incl. drain hose concentrate)	ME37483
	Dirt filter	ME46115
	Grease for the O-ring in the filters (grease for dirt filter)	ME24521
	Grease for seals/O-rings	ME24371
Spare parts	Filter housing wrench for MELAdem (container key)	ME61050
	Seal conductivity sensor cell/dirt filters	ME45920

Glossary

Authorised technician

The term “authorised technician” refers to an employee of a customer service provider or stockist who has been trained and authorised by MELAG to perform maintenance and installation work on MELAG devices. Only they may carry out this work.

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.



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Original instructions

Responsible for content: MELAG Medizintechnik GmbH & Co. KG
We reserve the right to technical alterations

Your stockist