

Operating Manual

MELAdem[®] 53

MELAdem[®] 53 C

Ion exchanger



Dear Dr.

We should like to extend our thanks for the expression of trust in our company which you have displayed through 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 treatment 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 systems is subject to close monitoring: one instrument to this end is our annual multi-day audit conducted in accordance with ISO 13485 and ISO 9001. This guarantees that all MELAG products are manufactured and tested in accordance with strict quality criteria.

The MELAG management and team.

General notes

Please read this operating manual carefully before commissioning the mixed-bed resin cartridge. The operating manual includes important safety information. The functionality and value-retention of this mixed-bed resin depends on the care accorded to it.

Please store this operating manual carefully and in close proximity to your mixed-bed resin cartridge. It represents a component of the product.

User group



This operating manual is addressed to doctors, their assistants and service departments.

Validity

This operating manual applies to the water treatment unit MELAdem 53/MELAdem 53 C.

About this manual

Symbols used

Symbol	Explanation
	Draws your attention to a situation, which if not avoided, can result in damage to the water treatment unit.
	Draws your attention to important information.

Formatting rules

Symbol	Explanation
see Chapter 2	Reference to another text section or diagram within this manual.

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Safety Instructions

When operating the mixed-bed resin cartridge, please observe the following safety instructions as well as those contained in subsequent chapters.

Maintenance

- Use only original replacement parts for maintenance.

Leaks

- The water intake is to be closed upon the discovery of leaks. Check all hoses and hose connections for leaks.

Chapter 1 – Performance Specifications

Intended Use

This mixed-bed resin cartridge works according to the ion exchange procedure. It is used for the complete demineralization of water (DI water) of drinking water quality.

The MELAdem 53/MELAdem 53 C must always be operated with the MELAtherm 10 washer-disinfector. Optionally, further devices can be connected, e.g. one or more steam sterilizers.

Mode of functioning

The mixed-bed resin cartridge is filled with a cation and anion resin which removes the salts dissolved in water using the so-called adsorption process.

The mixed-bed resin is exhausted after absorbing a certain amount of salt and must be replaced and regenerated (see [Chapter 4 – Maintenance](#)).

The capacity of a mixed-bed resin cartridge depends on the hardness of the local water supply (see [Technical Data](#)).

Chapter 2 – Device Description

Scope of delivery

Standard scope of delivery

- 2x mixed-bed resin cartridges (1 reserve)
- 1x MELAG transport packaging
- 1x Operating Manual
- 1x Connecting bend for the DI water connection
- 1x Bleed valve for decompression
- 1x Black rubber seal, 3 mm
- 4x Black rubber seal, 2 mm (2x as a reserve)
- 1x Water inflow hose, 2.5 m with a 180° arch and flat seal, green
- 1x Safety combination HD in accordance with EN 1717 with a mount and a green flat seal
- 1x Water inflow hose 80 cm
- 1x Sealable bag with cable tie
- 1x Water inflow distributor, Y-piece
- 1x Spanner (SW30)

Optionally

- Water distributor for the connection of multiple devices in parallel
- A leak detector (water stop) for the avoidance of water damage following leaks

Views of the device

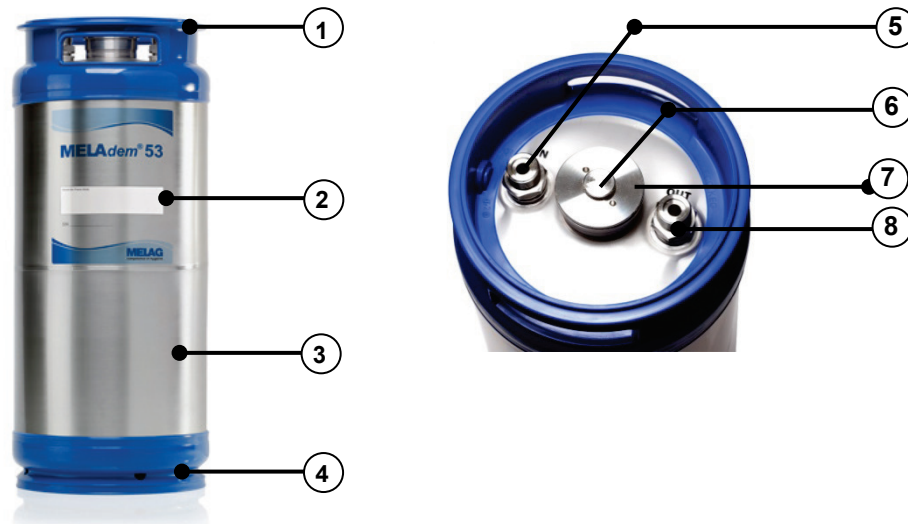


Fig. 1: Views of the device

- (1) Polypropylene head-ring
- (2) Label für die Seriennummer und Praxisadresse
- (3) 20 l stainless steel mixed-bed resin cartridge
- (4) Polypropylene foot ring
- (5) Connection to the cold water pipe of the local drinking water supply (raw water IN)
- (6) Ventilation screw
- (7) Screw connection opening
- (8) Connection to the MELAtherm 10 DI water inflow hose (clean water OUT)

Chapter 3 – Commissioning

Removing from the packaging

1. Remove the two mixed-bed resin cartridges included in the scope of delivery from the packaging.
2. Store one of the two mixed-bed resin cartridges included in the scope of delivery as a reserve in accordance with the storage conditions specified on page 20.
3. Retain the MELAG transport packaging (1 folded box, 2 foam inserts) in a safe and dry location. These are required when returning the mixed-bed resin cartridge for regeneration.
4. Note the serial number of the mixed-bed resin cartridge on the label for control purposes. The serial number is located on the type plate on the rear of the mixed-bed resin cartridge.

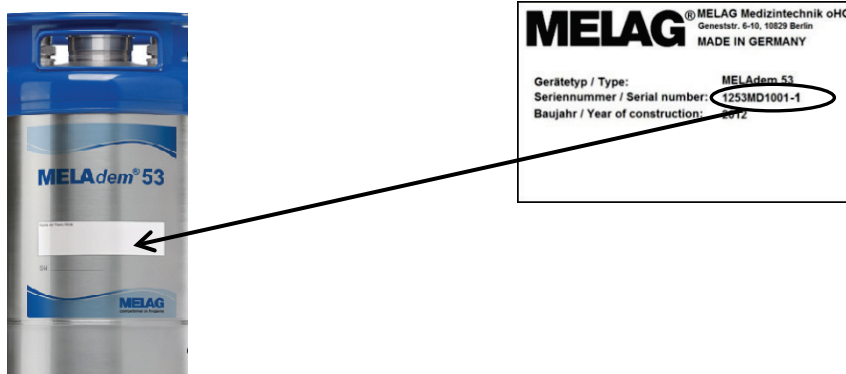


Fig. 2: Label for entering the serial number

Requirements of the set-up location

The following conditions must be given:

- ✓ *The installation location is clean and frost-free.*
- ✓ *The mixed-bed resin cartridge is installed in a perpendicular position.*
- ✓ *The installation location is freely accessible for the installation, operation and regular replacement of the mixed-bed resin cartridge.*
- ✓ *The hose connections must be freely accessible.*

Space requirements

The space requirement of the mixed-bed resin cartridge corresponds to its dimensions plus a minimum of 25 cm for the safety combination EN 1717 and free access to the hose connections. If the MELAtherm 10 is to be installed as an installation device, this should be placed in an adjacent floor unit.

Requirements for connection to the water pipe

Installation of a cut-off valve with a back-flow preventer and a 3/4" external thread connection in the proximity of the installation location. In order to provide a standard-conform connection for the mixed-bed resin cartridge with back-flow preventer and pipe aerator independent of the on-site installation, we recommend one of the following connections:



PLEASE NOTE

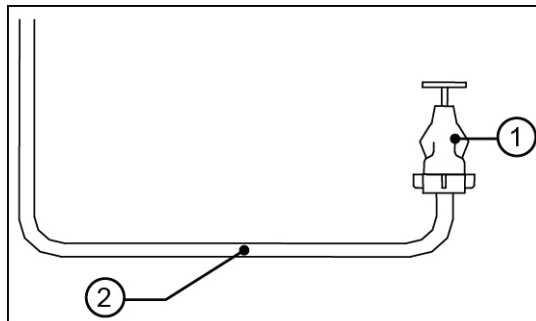
To prevent water damage, we recommend the use of a leak detector e.g. the MELAG water stop (order no. 01056).

Connection to the cold water supply

The water flow pressure of the on-site tap should be a minimum of 1.5 bars and may not exceed 10 bars.

Alternative connection 1

If a separate water connection (nominal width DN15 with 1/2" collar) is present / installed, a water tap with a back-flow preventer and a pipe aerator is installed.

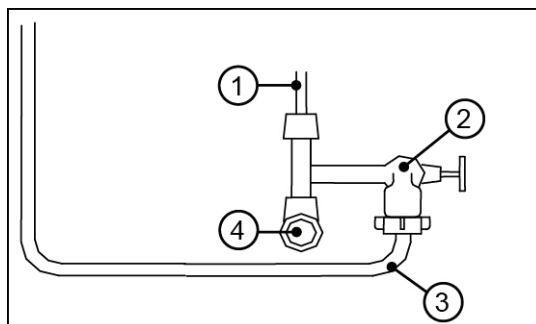


- (1) Tap with back-flow preventer and pipe aerator (order no. 37310)
- (2) Cold water inflow hose

Fig. 3: Installation with back-flow preventer and pipe aerator

Alternative connection 2

If a cold water connection with an angle valve and a \varnothing 10 mm duct is present / installed, an additional water tap with an integrated back-flow preventer and pipe aerator will be fitted directly to an existing angle valve.



- (1) \varnothing 10 mm cold water supply (to the mixer tap)
- (2) Additional water tap with an integrated back-flow preventer and pipe aerator
- (3) Cold water inflow hose
- (4) Existing angle valve

Fig. 4: Installation with an angle valve

Protection with a safety combination in accordance with EN 1717

The connection of consumers to the drinking water system must be performed in accordance with EN 1717 so as to protect the drinking water supply from pollution. To this end, fit a safety combination of a backflow preventer and a pipe aerator to the connection in accordance with EN 1717 part 4. The safety combination included in the scope of delivery should be mounted on the wall, 25 cm over the mixed-bed resin cartridge (see Fig. 6).

Connecting the MELAdem 53/MELAdem 53 C

1. Unscrew the yellow caps from the connection fitting before connecting the hoses.



PLEASE NOTE

The yellow caps must be retained to seal the connection fitting during transport e.g. when replacing the exhausted mixed-bed resin cartridge.

Fasten the caps in the sealable bag (included in the scope of delivery) to the head-ring of the mixed-bed resin cartridge using the cable ties (see Fig. 5).



Fig. 5: Example depiction using the MELAdem 53

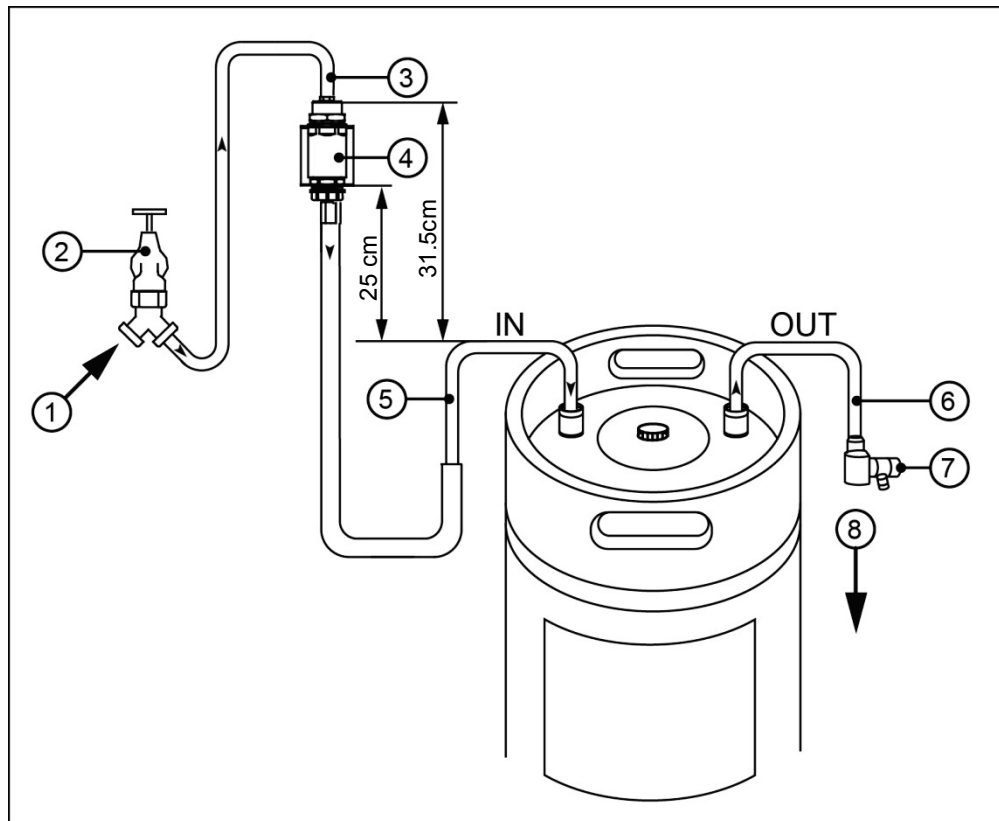


Fig. 6 Connecting the mixed-bed resin cartridge

- (1) Cold water inflow hose connection of the MELAtherm 10
- (2) Water tap (on-site)
- (3) Connecting bend with long inflow hose
- (4) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with EN 1717
- (5) Connection bend with short inflow hose (IN)
- (6) Connection bend for DI water connection (OUT)
- (7) Bleed valve for decompression of the mixed-bed resin cartridge
- (8) Connection of the DI water inflow hose of the MELAtherm 10

Proceed as follows to connect the mixed-bed resin cartridge (see **Fig. 6**):

1. Mount the safety combination HD (4) 25 cm over the mixed-bed resin cartridge on the wall in accordance with EN1717
2. Connect the connecting bend of the long water inflow hose (3) to the safety combination HD (4) (above). Then connect the other end to the drinking water supply using a spanner.
3. Connect the short water inflow hose (5) to the safety combination (4) (below) using the green flat seal.
4. Connect the connecting bend of the short water inflow hose (5) with the 2 mm thick black rubber seal to the connection fitting "IN" of the mixed-bed resin cartridge. Use the open-end wrench.
5. Connect the connecting bend for DI water (6) with the 2 mm thick black rubber seal to the connection fitting "OUT". Use the open-end wrench.
6. Connect the DI water inflow hose of the MELAtherm 10 to the connecting bend just mounted.

Commissioning

The mixed-bed resin cartridge must be de-aerated before initial commissioning und after the change as followed (see Fig. 1):

1. Turn on the cold water tap.
2. Open the ventilation screw (6) a little (see fig. below pos. 2) and wait until water emerges.



PLEASE NOTE

When releasing the ventilation screw (6), ensure that the screw connection opening (7) does not work loose.

3. Tighten the ventilation screw (6) as soon as the first drops of water emerge from it.
4. Finally check the hose connections for leaks.

The mixed-bed resin cartridge is now ready to operate.

Installation example

Example 1 – MELAtherm 10 with the MELAdem 53 C

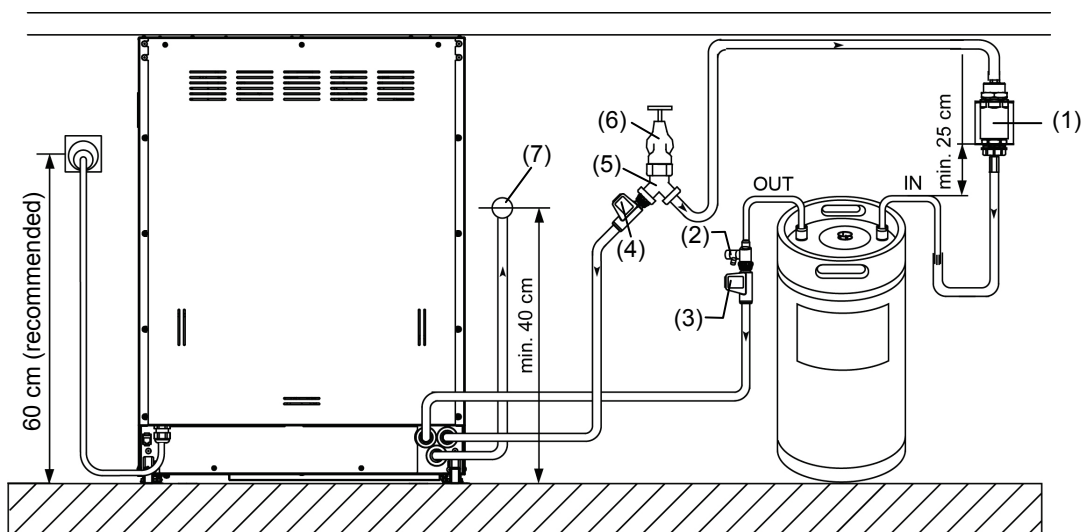


Fig. 7: Installation example 1 with MELAtherm 10 and the MELAdem 53 C

- (1) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with DIN EN 1717
- (2) Bleed valve for decompression of the DI cartridge
- (3) DI water inflow hose of the MELAtherm 10
- (4) Cold water inflow hose of the MELAtherm 10
- (5) Y-piece (included in the scope of delivery of the mixed-bed resin cartridge)
- (6) Water tap (on-site)
- (7) Effluent connection (on-site)

Example 2 – MELAtherm 10 with the MELAdem 53 and MELAjet

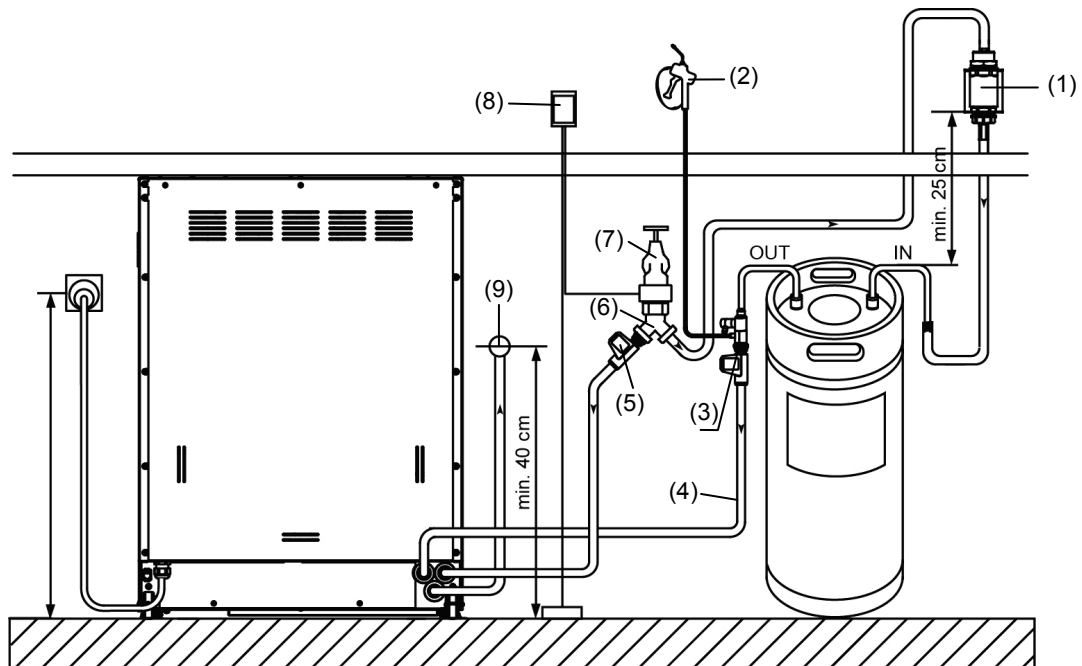


Fig. 8: Installation example 2 with MELAtherm 10 and the MELAdem 53 and MELAjet

- (1) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with EN 1717
- (2) MELAjet spray pistol
- (3) Water branch for feed water supply (order no. 37241)
- (4) DI water inflow hose of the MELAtherm 10
- (5) CW inflow hose of the MELAtherm 10
- (6) Y-piece (included in the scope of delivery of the mixed-bed resin cartridge)
- (7) Water tap (on-site)
- (8) Leak detector (water stop) with cut-off valve and sensor (order no. 01056), recommended for a permanent water supply
- (9) Effluent connection (on-site)

Example 3 – MELAtherm 10 with Vacuklav 40 B+/44 B+¹ and MELAdem 53

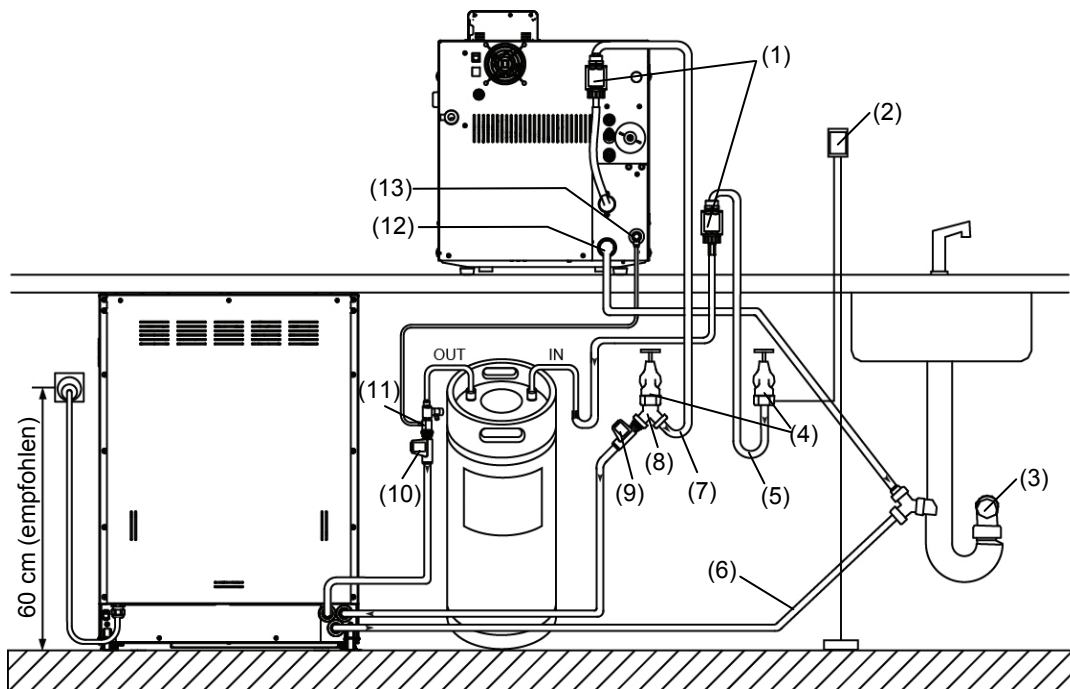


Fig. 9: Installation example 3 with MELAtherm 10, Vacuklav 40 B+/44 B+ and the MELAdem 53

- (1) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with EN 1717²
- (2) Leak detector (water stop) with cut-off valve and sensor optional (order no. 01056), recommended for a permanent water supply
- (3) Wall outlet (on-site)
- (4) Water tap (on-site)
- (5) CW inflow hose of the mixed-bed resin cartridge
- (6) Effluent hose of the MELAtherm 10
- (7) Cooling water inflow hose to the steam sterilizer
- (8) Y-piece (included in the scope of delivery of the mixed-bed resin cartridge)
- (9) CW inflow hose of the MELAtherm 10
- (10) DI water inflow hose of the MELAtherm 10
- (11) Water branch (order no. 37241)
- (12) Cooling water outflow 3/4"
- (13) Steam sterilizer feed water connection



PLEASE NOTE

When using a Cliniklav 25, the mixed-bed resin cartridge must be connected to the steam sterilizer reservoir.

¹ Other MELAG steam sterilizers (with a permanent water supply) can also be connected

² Please observe the fitting height of the safety combination EN 1717, see example 1

Example 4 – MELAtherm 10 with Vacuklav 41 B+/43 B+¹ and MELAdem 53²

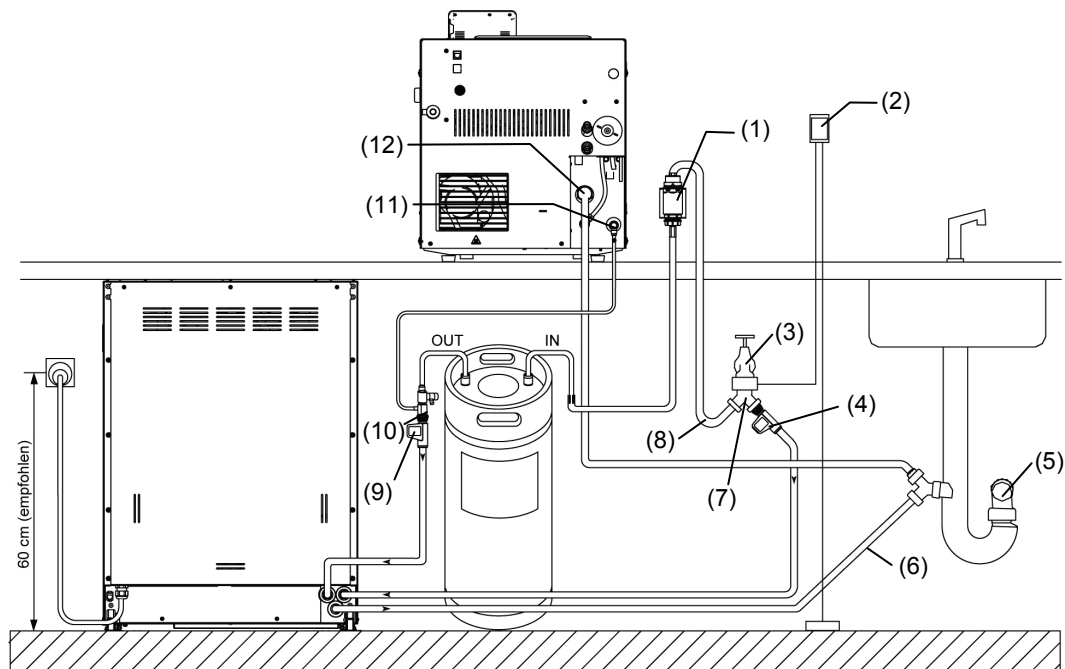


Fig. 10: Installation example 4 with MELAtherm 10, Vacuklav 41 B+/43B+ and the MELAdem 53

- (1) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with EN 1717³
- (2) Leak detector (water stop) with cut-off valve and sensor optional (order no. 01056), recommended for a permanent water supply
- (3) Water tap (on-site)
- (4) CW inflow hose of the MELAtherm 10
- (5) Wall outlet (on-site)
- (6) Effluent hose of the MELAtherm 10
- (7) Y-piece (included in the scope of delivery of the mixed-bed resin cartridge)
- (8) Cold water inflow hose of the mixed-bed resin cartridge
- (9) DI water inflow hose of the MELAtherm 10
- (10) Water branch for feed water supply (order no. 37241)
- (11) Steam sterilizer feed water connection
- (12) One-way discharge

¹ Other MELAG autoclaves (stand-alone) can also be connected in a similar fashion

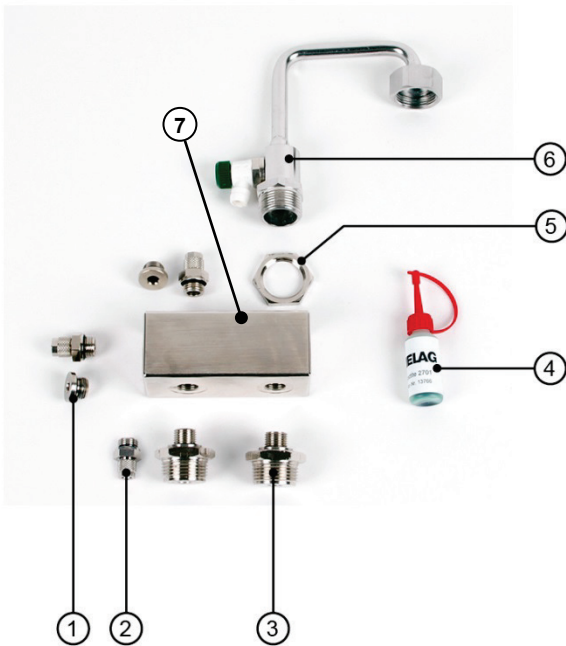
² The MELAdem 53 C can be connected in a similar fashion.

³ Please observe the fitting height of the safety combination EN 1717, see example 1

Water distributor for connecting further devices

We recommend the MELAG water distributor for the connection of further devices (order no. 69005). The water distributor is connected to the output side of the mixed-bed resin cartridge on the connecting bend (see Fig. 11). An additional washer - disinfector can be connected to the free connections e.g. a MELAtherm 10 and max. three steam sterilizers.

The following tools are required to make the connection: Open-end wrench 16 mm; 27 mm; 30 mm; 32 mm AF; Allen key 6 mm.



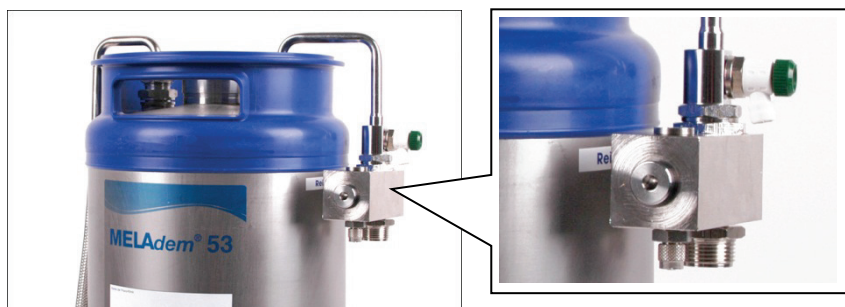
- (1) Sealing screw
- (2) A straight screwed coupling with O-Ring, for Ø 6 mm PUR hose for connecting a MELAjet spray pistol.
- (3) Restricted fitting G 3/4" – G1/4" zum Anschluss des MELAtherm 10
- (4) Threadlocker LOCTITE 2701
- (5) Hexagonal nut
- (6) Connecting bend with bleed valve (included in the scope of delivery of the MELAdem®53)
- (7) Distributor block

Fig. 11: Water distributor

Installing the water distributor

The water distributor must be fitted in accordance with the number of devices present in the practice. Proceed as follows (Fig. 11):

1. Screw the hexagonal nut (5) 15to the connecting bend (6).
2. Apply the threadlocker Loctite 2701 (4) to at least one of the connecting bend threads (6).
3. Screw the connecting bend in the distributor block (7) in accordance with the local conditions and then counter the screw thread of the connecting bend with the hexagonal nut (5) .
4. The full drying time of the threadlocker Loctite 2701 until commissioning of the mixed-bed resin cartridge amounts to 10 minutes.
5. Select the screw connections (1) and (3) which correspond to the housing which are to be connected to the water distributor.
6. Unused openings are to be fitted with a sealing screw (1).



Installation example

Example 5 – MELAtherm 10 with Vacuklav 41 B+/43 B+¹, MELAquick 12+ and MELAdem 53

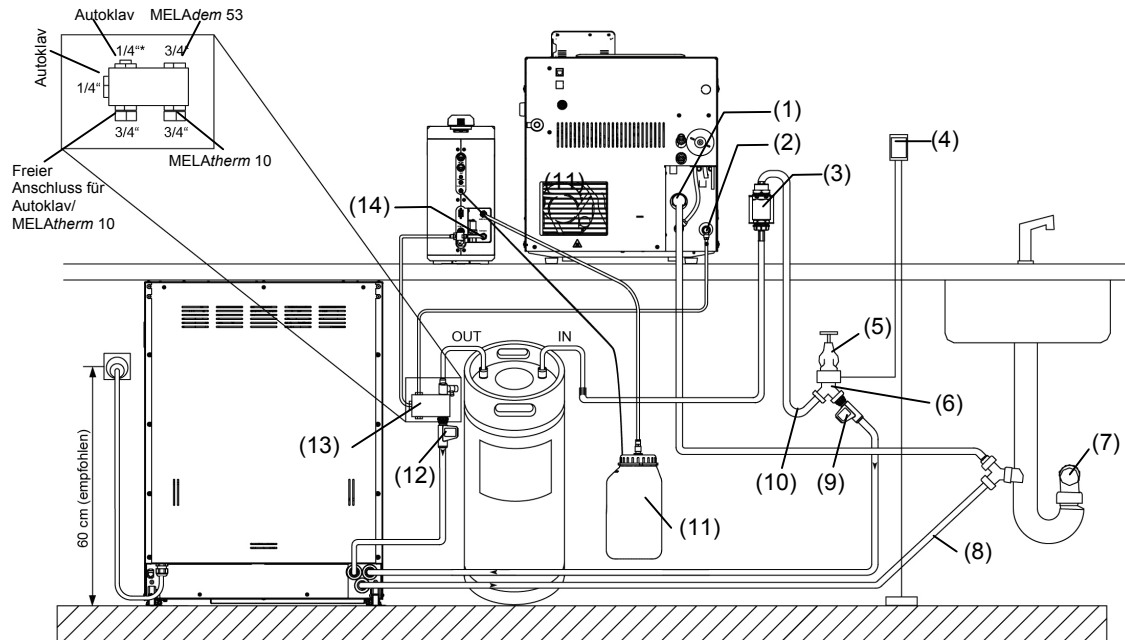







Fig. 12: Installation example 5 with MELAtherm 10, Vacuklav 41 B+/43B+, MELAquick 12+ and the MELAdem 53

- (1) One-way discharge
- (2) Feed water connection of the Vacuklav 41 B+/43 B+
- (3) Safety combination HD consisting of a backflow preventer and a pipe aerator in accordance with EN 1717²
- (4) Leak detector (water stop) with cut-off valve and sensor optional (order no. 01056), recommended for a permanent water supply
- (5) Water tap (on-site)
- (6) Y-piece (included in the scope of delivery of the mixed-bed resin cartridge)
- (7) Wall outlet (on-site)
- (8) Effluent hose of the MELAtherm 10
- (9) Cold water inflow hose of the MELAtherm 10
- (10) Cold water inflow hose of the MELAdem 53
- (11) Waste water container MELAquick 12+
- (12) DI water inflow hose of the MELAtherm 10
- (13) Water distributor (order no. 69005)
- (14) Steam sterilizer feed water connection (MELAquick 12+)

¹ Other MELAG autoclaves (stand-alone) can also be connected in a similar fashion

² Please observe the fitting height of the safety combination EN 1717, see example 1

Combination with other MELAG devices

Alternative 1	Additionally-required components	Order. No.:
	1x water branch	37241
MELAdem 53/ MELAdem 53 C	MELAtherm 10	MELAjet
Alternative 2	Additionally-required components	Order. No.:
	2x water inflow distributor, Y-piece ¹	37315
	1x water distributor set	69005
MELAdem 53	MELAtherm 10	MELAtherm 10
Alternative 3	Additionally-required components	Order. No.:
	1x distributor water inflow, Y-piece ¹	37315
	1x water branch or	37241
	1x water distributor set	69005
	5 m PUR hose, Ø 6 mm	28820 (running meter)
MELAdem 53/ MELAdem 53 C	MELAtherm 10	steam sterilizer (fixed water supply)*
*Premium-Plus-Class, Pro-Class and other steam sterilizers with fixed water connection		
Alternative 4	Additionally-required components	Order. No.:
	1x water branch or	37241
	1x water distributor set	69005
	5 m PUR hose, Ø 6 mm	28820 (running meter)
MELAdem 53/ MELAdem 53 C	MELAtherm 10	steam sterilizer (Stand-Alone)
*Premium-Plus-Class, Pro-Class, S-Class and other Stand-Alone steam sterilizers		
Alternative 5	Additionally-required components	Order. No.:
	1x water distributor set	69005
	1x 5 m PUR hose, Ø 6 mm Depending on the additional devices to be connected, you will require further parts e.g. distributor, water inflow, Y-piece or a water branch.	28820 (running meter)
MELAdem 53	MELAtherm 10	

¹ Required if only one on-site water connection is available.

Chapter 4 – Maintenance

Daily checks

Check the mixed-bed resin cartridge and its connections for leaks and any damage on a daily basis.

Replacing the mixed-bed resin cartridge

The MELAtherm 10 and MELAG steam sterilizers check the conductivity of the DI water and issue a warning if the water quality is bad. When connecting other devices (e.g. those from other manufacturers) not equipped with internal conductivity measuring, the conductivity should be checked regularly using an external monitor.

As soon as device issues an error message triggered by an insufficient conductivity value, the mixed-bed resin cartridge. Use the second (reserve) mixed-bed resin cartridge for the replacement. The replacement can be performed independently or by your stockist or an authorized MELAG customer services agent.

Proceed in the following manner to replace the mixed-bed resin cartridge (Fig. 6):

1. Turn off the cold water tap.
2. To do so, hold a small receptacle under the bleed valve on the connecting bend for DI water (OUT) (6) and open the bleed valve (7).
3. Wait until no further water leaves the bleed valve (7).
4. Shut the bleed valve (7)
5. Unscrew the connecting bend of the cold water inflow hose (IN) (5) and that of the DI water connection fitting (OUT) (6) using the spanner. Be prepared for an outflow of residual water.

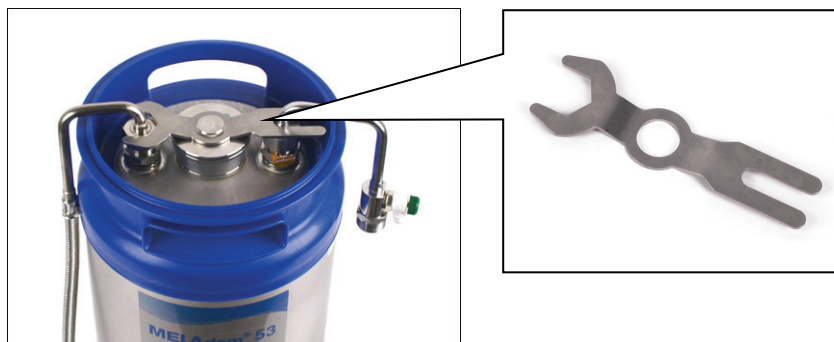


Fig. 13: Using the open-end wrench, unscrew the cold water inflow hose connecting bend (IN) and the DI water connection fitting (OUT)

6. Empty the mixed-bed resin cartridge by placing it upside down in a small receptacle with a capacity of c. 400 ml. Wait until the end of the water discharge.
7. Screw on the yellow caps to the connection fitting of the cold water connection (Raw water IN) and the connection fitting DI water (OUT) (Pure water OUT) of the exhausted mixed-bed resin cartridge.
8. Pack the empty mixed-bed resin cartridge in its MELAG packaging.



Fig. 14: Screw on the yellow caps to the connection fitting

9. Connect the new/regenerated mixed-bed resin cartridge as shown in **Chapter 3 – Commissioning, Fig. 6** on page 10.

Regenerating the exhausted mixed-bed resin cartridges

To allow the mixed-bed resin cartridge to regenerate, please complete the regeneration form¹ and send it to your stockist or depot (mail or fax). Please include a copy of the completed form when dispatching your mixed-bed resin cartridge. MELAG will commission your stockist or depot to perform the regeneration.

The mixed-bed resin cartridge will be collected from your practice. Pack the exhausted mixed-bed resin cartridge in the MELAG transport packaging and keep this ready for collection.

Your mixed-bed resin cartridge will be filled with new mixed-bed resin and returned to the practice².

After the cartridge has been filled, check the serial number on the name plate to ensure that it is the same cartridge as you despatched.



Fig. 15: Aligning the serial number

¹ You will find the regeneration form in the download area of the MELAG website.

² This applies to Germany only. In all other areas, the regenerated mixed-bed resin cartridge will be returned to your stockist.

Chapter 5 – Operating Pauses

Operating pauses

When making longer operating pauses, e.g. over-night or a weekend or during a holiday, switch off the water shut-off valve or the central water shut-off valve, otherwise the insurance cover of the building can be invalidated.

Transport and storage



WARNING

Incorrect storage and transport can result in damage to the mixed-bed resin cartridges and mixed-bed resin filling. Should the storage temperature be exceeded over the long-term, this can result in a loss of quality of the mixed-bed resin.








- Comply with the specifications regarding storage and transport of the mixed-bed resin cartridges.
-

- ▶ Empty the mixed-bed resin cartridge in accordance with the work steps outlined on page 18.
- ▶ Retain the yellow caps for transport purposes.
- ▶ Please use exclusively MELAG packaging for its transport.
- ▶ Store and transport the mixed-bed resin cartridge in a temperature of between 2-20°C.
- ▶ If stored in a cool (max. 20 °C) and dry atmosphere, the mixed-bed resin cartridge can be stored for at least 6 months from the date of purchase.
- ▶ Protect the mixed-bed resin cartridge (contains water) against frost.








Technical Data

Model name	MELAdem 53	MELAdem 53 C
Dimensions (DxH)	24 cm x 57 cm (c. 61.5 cm inc. connecting bend)	24 cm x 45 cm (c. 49 cm inc. connecting bend)
Weight (with mixed resin)	18 kg (per mixed-bed resin cartridge)	14 kg (per mixed-bed resin cartridge)
Amount of resin	20 l	15 l
Exterior connection	G 3/4"	G 3/4"
Capacity per cartridge (depends on the water hardness and the conductivity of the local water)	at 10 °dH: 2800 l at 20 °dH: 1200 l at 25 °dH: 700 l	at 10 °dH: 2100 l at 20 °dH: 960 l at 25 °dH: 650 l
Max. through-flow volume	800 l/h	800 l/h
Resulting water quality	1 – 5 µS/cm	1 – 5 µS/cm
Admissible entry temperature of the water	5 °C - max. 40 °C	5 °C - max. 40 °C
minimal water pressure	1.5 bars	1.5 bars
Maximum water pressure	10 bars	10 bars

Appendix A – Accessories

Optional accessories	Figure	Order. No.:
Tap with back-flow preventer and pipe aerator		37310
Tap with back-flow preventer and pipe aerator for fitting to an existing angle valve		58130
Water inflow distributor, Y-piece		37315
Water branch for feed water connection		37241
PUR hose, black, Ø 6 mm, serial metre		28820
Water distributor for the connection of multiple devices in parallel		69005
Leak detector (MELAG Water stop)		01056
MELAJet spray pistol		27300

Appendix B – Spare parts

Spare parts	Figure	Order. No.:
Rubber seal, 3 mm, black (on the hose of the safety combination)		56950
Rubber seal, 2 mm, black (connections to the mixed-bed resin cartridge)		52400
Flat seal, green (to the cold water inflow hoses)		54920
Screw caps yellow with seal		58140
Water inflow hose EN1717; 2.5 m		24930
Water inflow hose MELAdem 53/MELAdem 53 C; 0,8 m		24932
Connecting bend G3/4" with bleed valve		70405
Spanner SW30 for MELAdem 53/MELAdem 53 C		15530

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Subject to technical alterations

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Specialist dealer:

