

Operating manual

Water Treatment System

MELAdem[®] 40

Dear Doctor:

Thank you very much for the trust which you have shown by purchasing this water treatment system from MELAG.

For more than 50 years now, MELAG — a medium-sized family-owned and -operated business — has specialised in the production of sterilization equipment for medical practice. During this period, MELAG has succeeded in becoming a leading manufacturer of sterilization equipment. More than 365,000 MELAG sterilization units sold throughout the world testify to the exceptional quality of our products — which are manufactured exclusively in Germany.

This water treatment system was manufactured and tested according to strict quality criteria. Before placing this unit into operation, please thoroughly read this Operating Manual. The long-term functional effectiveness and the preservation of the value of your water treatment system will primarily depend on regular maintenance of this unit.

The staff and management of MELAG

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1 Method of operation of the system

MELAdem[®]40 is a water treatment system that operates according to the ion-exchange process. It is used for the complete demineralization of tap water. The cartridges contained in the filter chamber are filled with mixed-bed resin. The cartridges are disposed of after they have become depleted: they are completely exchanged upon every replacement. The MELAdem[®]40 reduces the content of salt in untreated water by approx. 95 ... 99% (depending on the degree of depletion of the mixed-bed resin). All operational processes in the MELAdem[®]40 system are controlled by means of the pressure in the tap-water line.

MELAdem[®]40 can be directly connected to a MELAG autoclave (for example, the MELAG Vacuklav[®], Vacuquick[®] or Euroklav[®] models) to automatically supply the autoclave with demineralized water. The MELAdem[®]40 can, however, also be used as a completely separate water-treatment system. The flow limit of 2 l/min must not be exceeded, however.

The MELAdem[®]40 may be installed onto the wall, in a lower cabinet, or directly at an autoclave.

If the room in which the MELAdem[®]40 water treatment system is to be installed does not have an open drain in the floor (to catch overflow), we recommend using a MELAG Waterstop valve (MELAG art-no. 01056). In the event of leaks or overflow during operation, the moisture sensors of the Waterstop valve, installed on the floor, will activate a solenoid valve to shut off the tap-water supply.

IMPORTANT: If the MELAdem[®]40 water treatment system is out of operation, the user should close off the supply of the tap water system.

2 Design of the system

The MELAdem[®]40 mixed-bed resin system is delivered in pre-assembled form. Please see *Figure 1* for a description of the individual components of the MELAdem[®]40.

IMPORTANT: It is absolutely necessary to ensure the correct flow direction of the water. Please see *Figure 2* for the position of the incoming water feed and the outgoing supply points for the MELAdem[®]40.

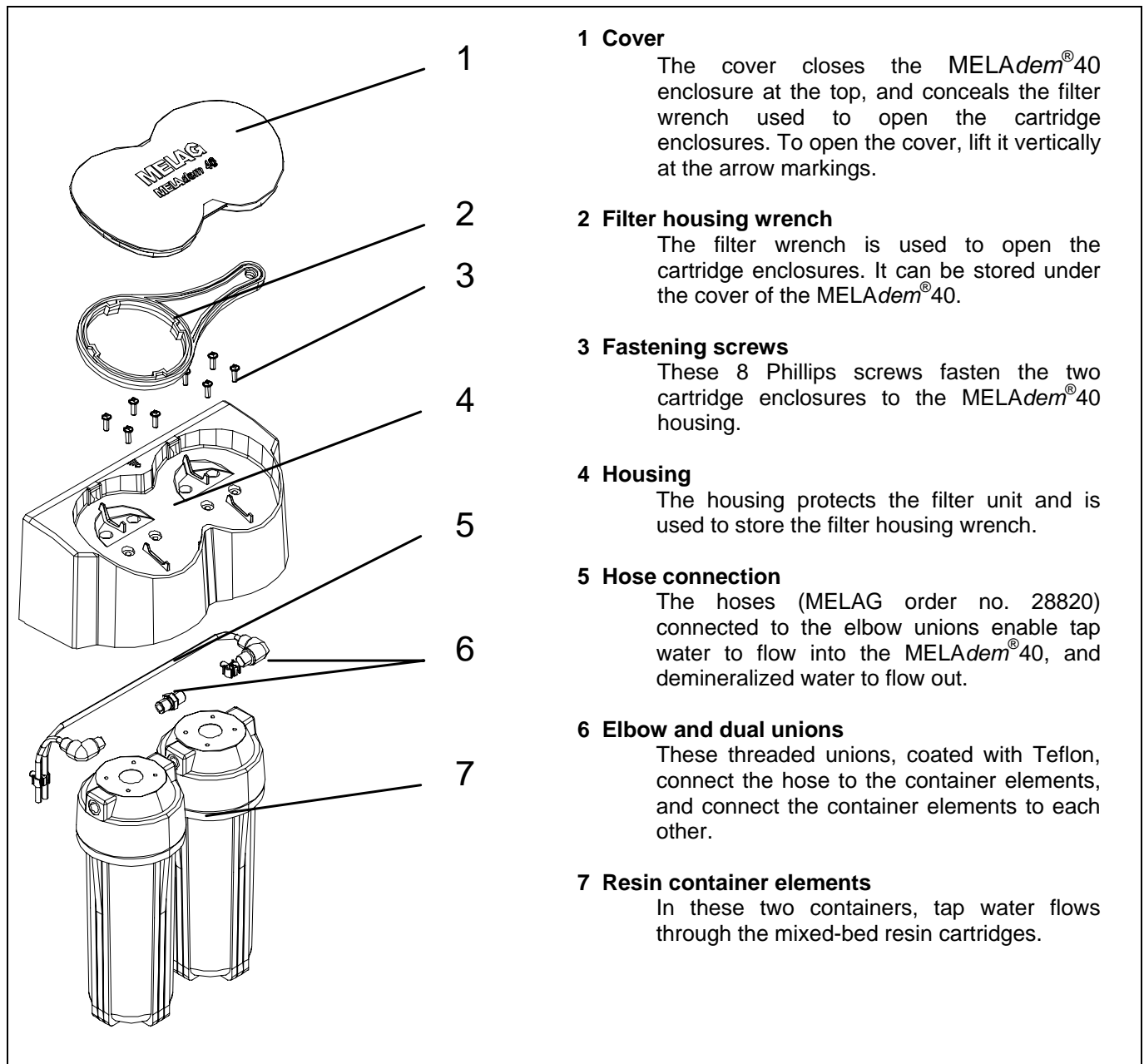


Figure 1: View of the interior of the MELAdem[®]40

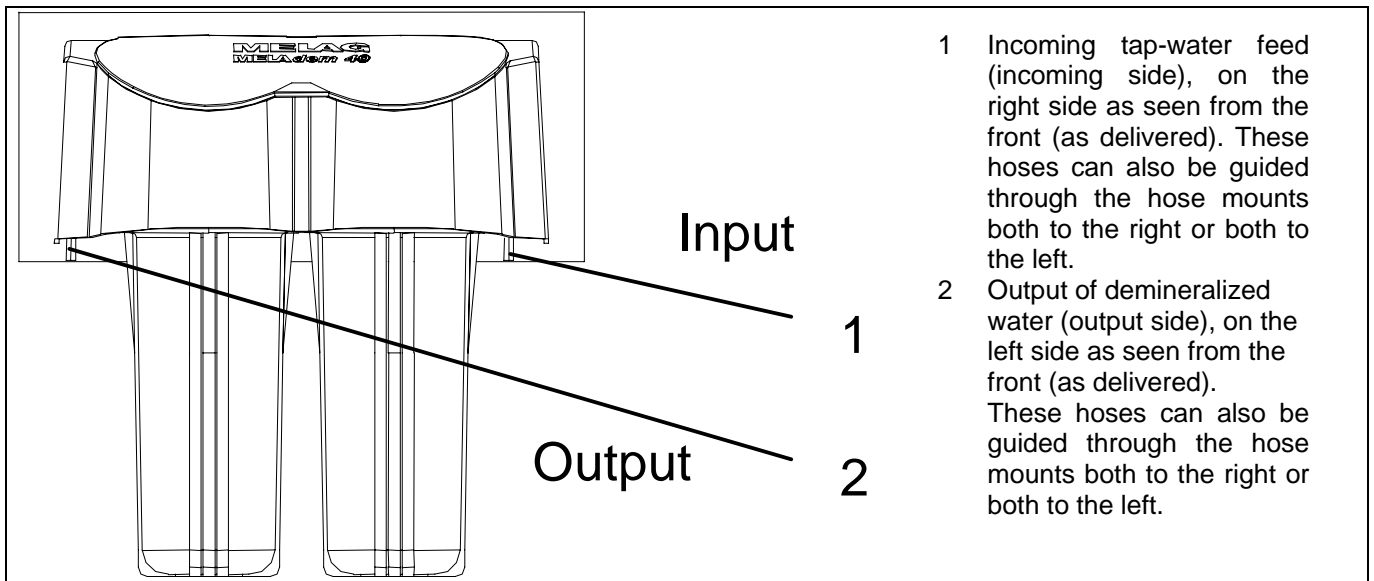


Figure 2: Incoming and outgoing positions of the hoses

3 Installation and connection of the system

3.1 Possible ways of installing and connecting the MELAdem®40

The MELAdem®40 can be installed separately onto a wall, in a lower cabinet, or directly to an autoclave. There are also different ways of connecting the MELAdem®40, depending on the type of autoclave which it feeds. We will include the required accessory parts for your particular mode of connection, in accordance with the information in your order. Please now consult the list in Section 7 below – “7 Consumables and spare parts” – and check to make sure that you have received all the parts in this list.

In this section (3) – “3 Installation and connection of the system” – you need to pay attention only to the information which applies to your case. The **GUIDE TO INSTALLATION** in the table below will help you find the information you need.

Important! Please pay attention to the following instruction: Before you set up the MELAdem®40 and connect it, please be sure by all means to read the other sections of this Operating Manual for the MELAdem®40, and be careful to follow the general instructions and warnings given there.

GUIDE TO INSTALLATION		
Type of installation	PLEASE SEE THE FOLLOWING SECTION FOR YOUR TYPE OF INSTALLATION / CONNECTION	PAGE
Wall installation	3.3 Installation of the MELAdem®40 to a wall	6
Vacuklav®40/44-B	3.4 Installation of MELAdem®40 to the Vacuklav®40-B/44-B	7
Vacuquick®14-B	3.5 Installation of MELAdem®40 to the Vacuquick®13-B / Vacuquick®14-B	9
Other MELAG Autoclaves	3.6 Installation of the MELAdem®40 onto other MELAG	11
Type of connection		
Tap water line	3.7.2 Connection to tap-water mains	11
Vacuklav®40/44-B	3.8 Connection of the MELAdem®40 to the Vacuklav®40-B / 44-B	15
Vacuquick®14-B	3.9 Connection of MELAdem®40 to the Vacuquick®14-B	16
Vacuklav®41/43-B	3.10 Connection of MELAdem®40 to the Vacuklav®41-B / Vacuklav®43-B	17
Vacuklav®13-B	3.11 Connection of the MELAdem®40 to the Vacuquick®13-B	18

The MELAdem®40 water treatment system must be installed in a clean place which is not subject to frost, and which can be properly ventilated. The connection of the components must be in accordance with the connection diagram (see the proper sections of this Operating Manual). The place of installation must be such that the MELAdem®40 water treatment system can be properly assembled and installed, operated, and later serviced and repaired.

3.2 Pressure of tap water

In order to ensure proper functioning of the system, the pressure of the tap water from the building mains must be at least 1.5 bar. The maximum tap-water pressure may not be more than 10 bar.

3.3 Installation of the MELAdem[®]40 to a wall

Important! Be sure to use mounting systems which are suitable for your type of wall. The mounting bolts must conform to the following specifications:

- Minimum diameter of the mounting bolts: M4
- Recommended and maximum diameter of the bolts: M5
- Maximum diameter of the bolt heads (flat heads): 12 mm

Use the inner (close-standing) mounting rails for the MELAdem[®]40 (see Fig. 3, no. 1). The interval between the holes drilled in the walls must be 118 mm (please use enclosed template for drilling). Make sure that the wall can carry the weight of the system (approx. 2.4 kg). Be sure to choose the proper fastening material, in accordance with the wall: for example, bolt anchor plugs with a diameter of 6 mm.

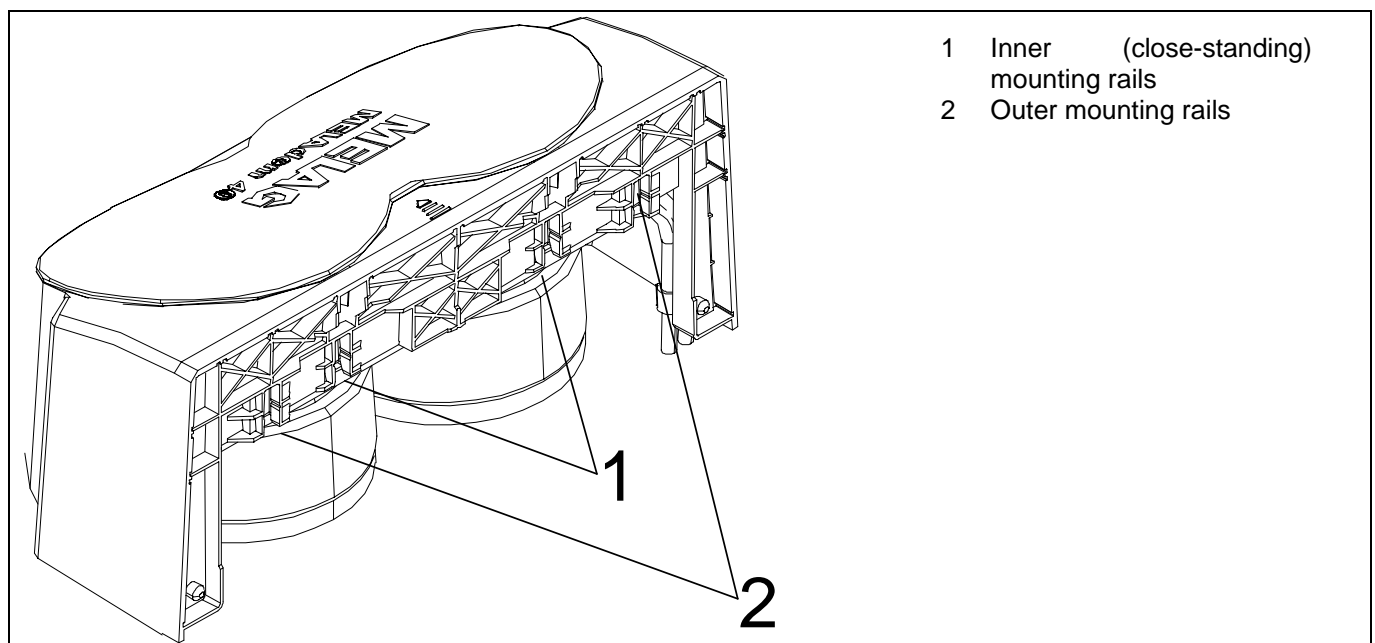


Figure 3: Types of Installation of MELAdem[®]40

Steps to follow for installation of MELAdem[®]40

1. **Note:** There are two modes of fastening the MELAdem[®]40: an inner and an outer mounting. If the mounts are to be fastened to the wall, be sure to use the inner mounting mode (rails 1 above) !
2. Use the enclosed drilling template to mark the points for drilling. **Important:** Be sure to mount the MELAdem[®]40 at the required height. Drill the holes in the wall. Warning: be careful of any cables or electric lines that may be in the wall !
3. Place the bolt anchor plugs into the drilled holes, and fasten the mounts to the wall (article no. 37106) by screwing in the bolts.
4. Hang the MELAdem[®]40 in place.

3.4 Installation of MELAdem[®]40 to the Vacuklav[®]40-B/44-B

To install the MELAdem[®]40 to the Vacuklav[®]40-B or to the Vacuklav[®]40-B or Vacuklav[®]44-B, the mounting fixtures have already been attached to the autoclave enclosure at the MELAG factory. If, however, these mounting fixtures are not yet on your unit, or if you wish to attach the MELAdem[®]40 to the left side of the autoclave, then please follow the instructions in Section 3.6 below. These instructions tell you how to attach the mounting fixtures yourself.

These mounting fixtures are concealed under cover pieces that can easily be removed by hand (see Figure 4). There is a notch at the lower side of these cover pieces that helps you in removing the covers. Use a flat tool or your fingernail to remove the cover pieces.

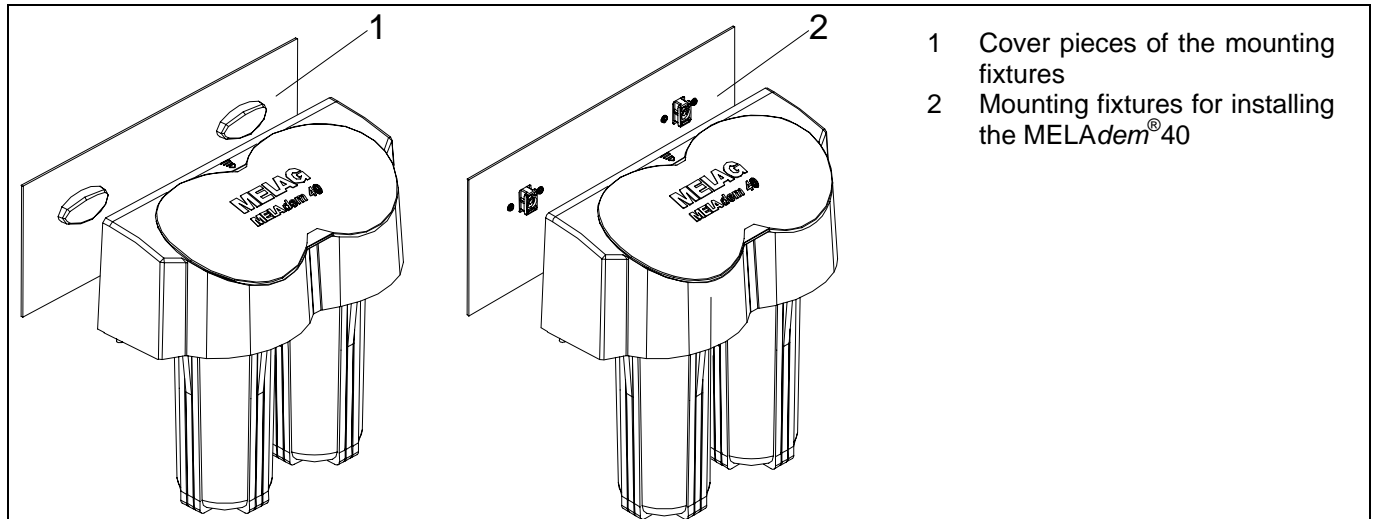


Figure 4: Removal of the cover pieces before mounting the MELAdem[®]40

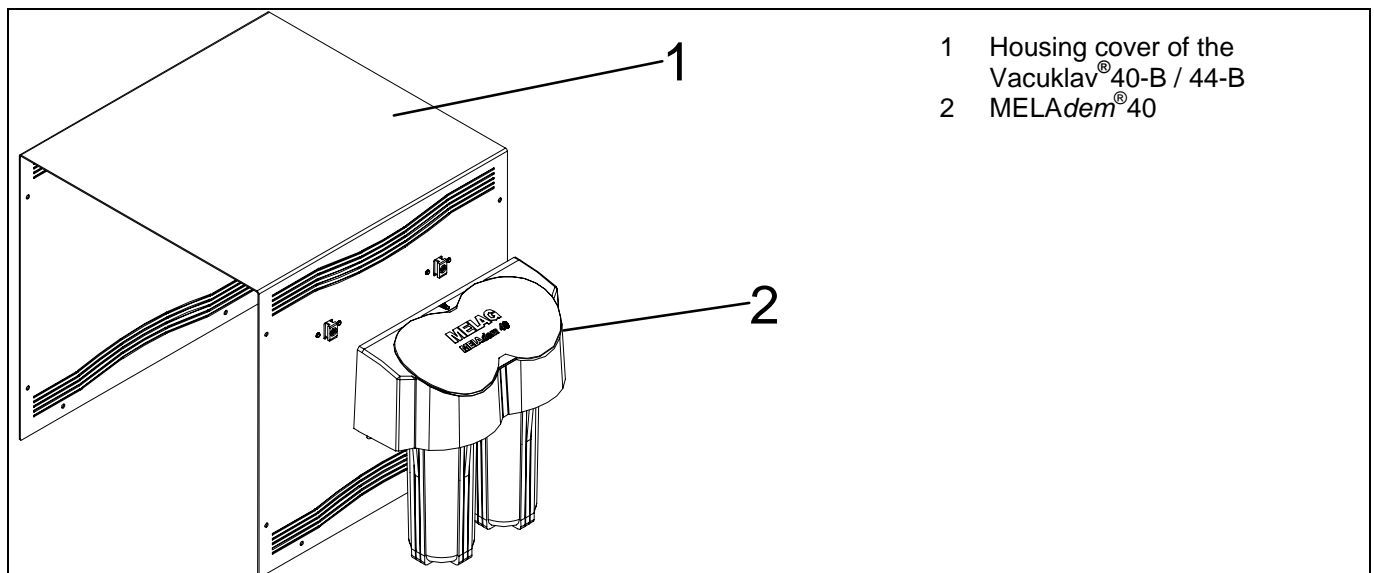


Figure 5: Position for hanging the MELAdem[®]40 to the Vacuklav[®]40-B / Vacuklav[®]44-B

Steps to follow for installation of MELAdem[®]40

1. **Important note:** Since the mounting fixtures are already attached to the unit, it is not necessary to remove the housing from the autoclave !
2. Remove the cover pieces from the mounting fixtures, as described above .
3. Hang the MELAdem[®]40 down into the mounting fixtures by sliding it vertically from above, and push it downward until it locks firmly into place (see Figure 5). The final position is shown in Figure 6 below.

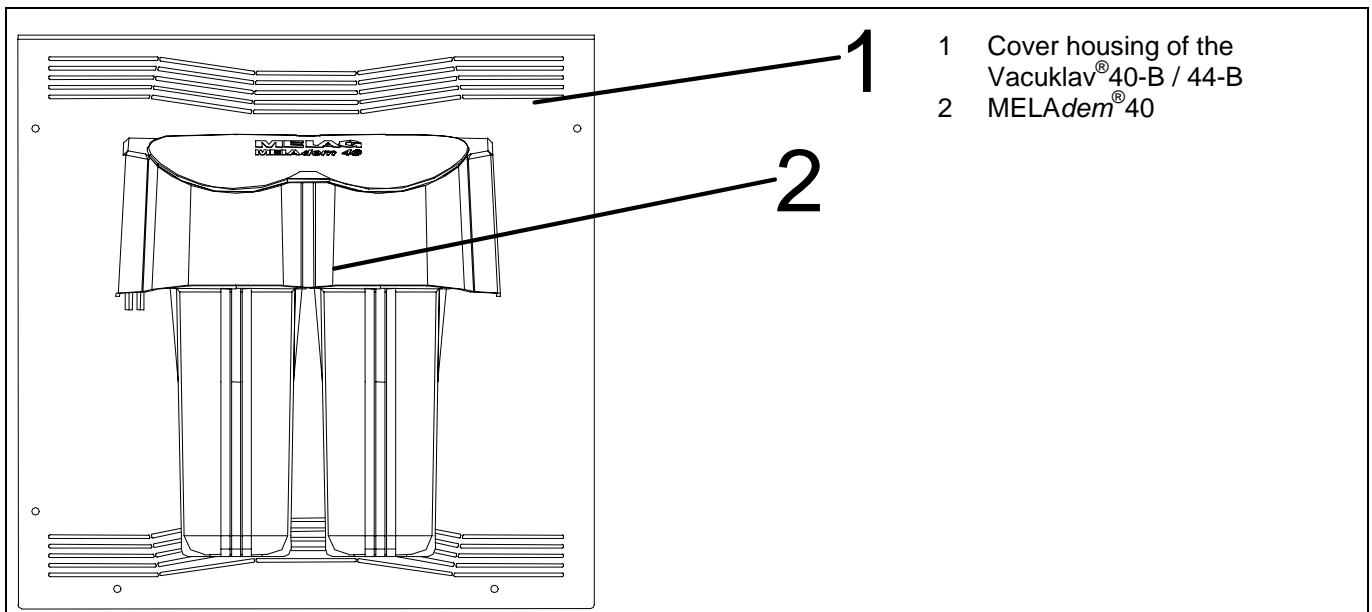


Figure 6: Correct position of MELAdem[®]40 on the housing of Vacuklav[®]40-B / Vacuklav[®]44-B

3.5 Installation of MELAdem[®]40 to the Vacuquick[®]13-B / Vacuquick[®]14-B

The MELAdem[®]40, together with the Vacuquick[®]13-B / Vacuquick[®]14-B, are delivered with an adapter plate. This plate mounts the MELAdem[®]40 at a height that enables easy exchange of the cartridges. The overall height of the autoclave remains the same, since the MELAdem[®]40, together with the adapter plate, does not extend beyond the display.

The holes (2 x 4.2 mm) between the top air slots are necessary for mounting of the MELAdem[®]40. If your unit does not have these holes, please read in Section 3.6 for a description of an alternative manner of mounting.

Steps to follow for installation of MELAdem[®]40

1. **Warning:** First switch off the unit and pull out the power plug.
2. Remove the housing cover of the autoclave.
3. Press the mounting fixtures (article no. 37106) into the adapter plate (article no. 79780).
4. Use the centrally drilled holes in the mounting fixtures and the already provided holes in the enclosure to fasten the metric screws (M4, 20 mm) from the inside with tooth lock washer and nuts.
5. **Note:** The adapter plate will be pressed against the mounting fixtures, and will lock the position of the MELAdem[®]40 in correct position, only after you have hung the MELAdem[®]40 in place by vertically sliding it down securely until it locks.
6. Replace the housing cover of the autoclave.
7. Hang in the MELAdem[®]40 vertically from above, and slide it downward, until the housing of the MELAdem[®]40 locks into the mounting fixtures. See Figure 9 for the final position.

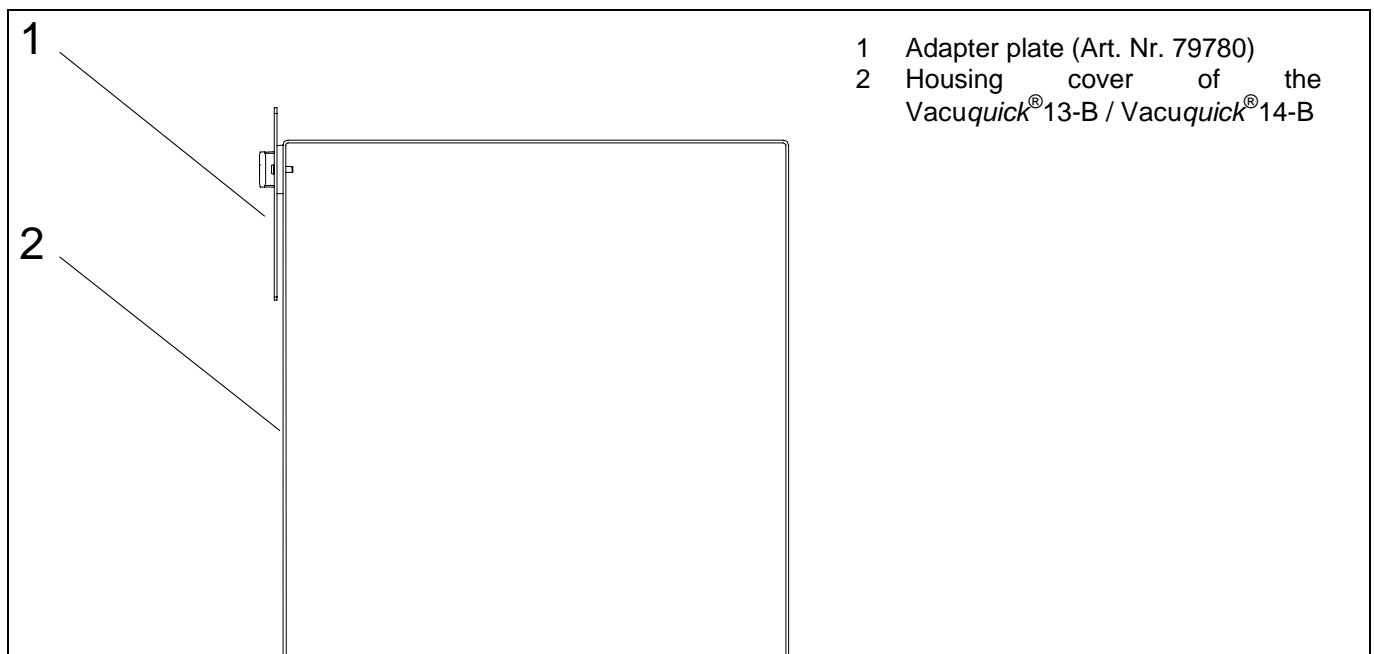


Figure 7: Housing from the rear, with mounting fixtures and adapter plate in final position

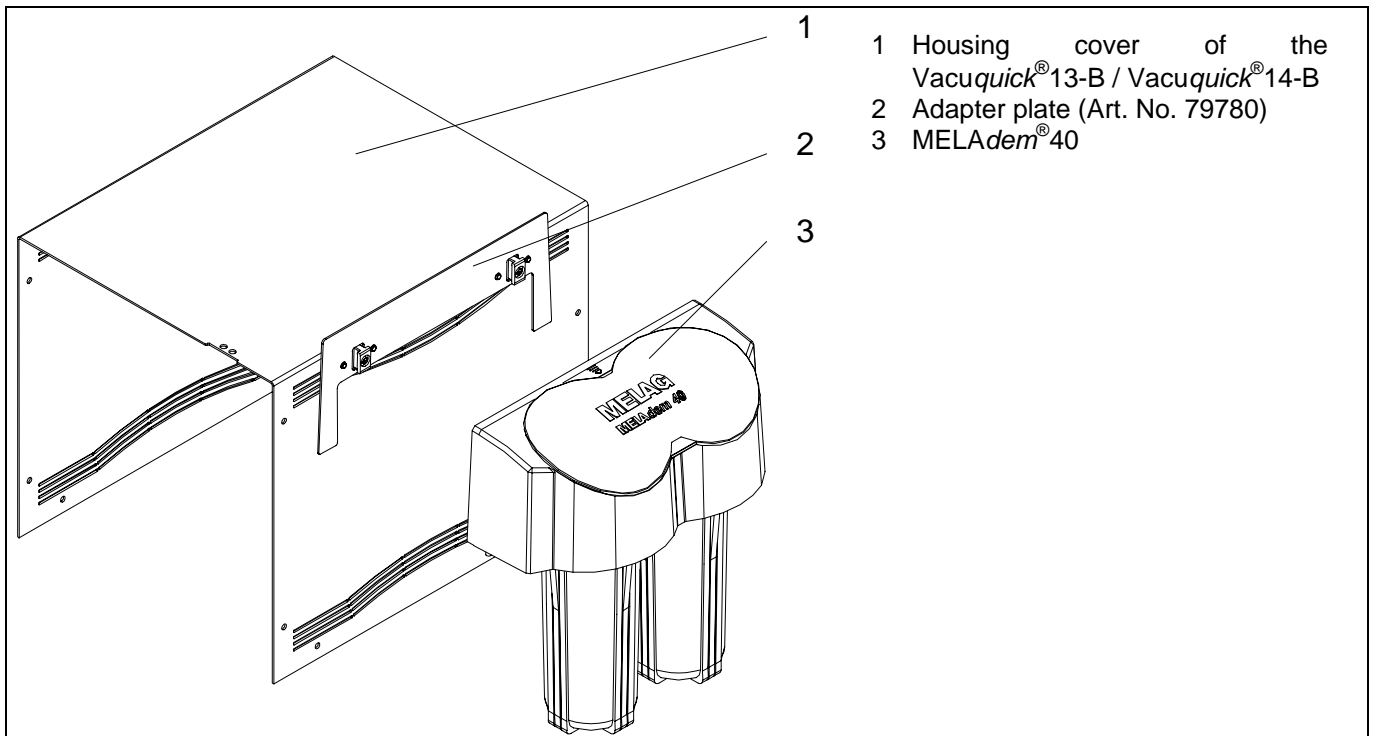


Figure 8: MELAdem® 40 before attachment to the adapter plate

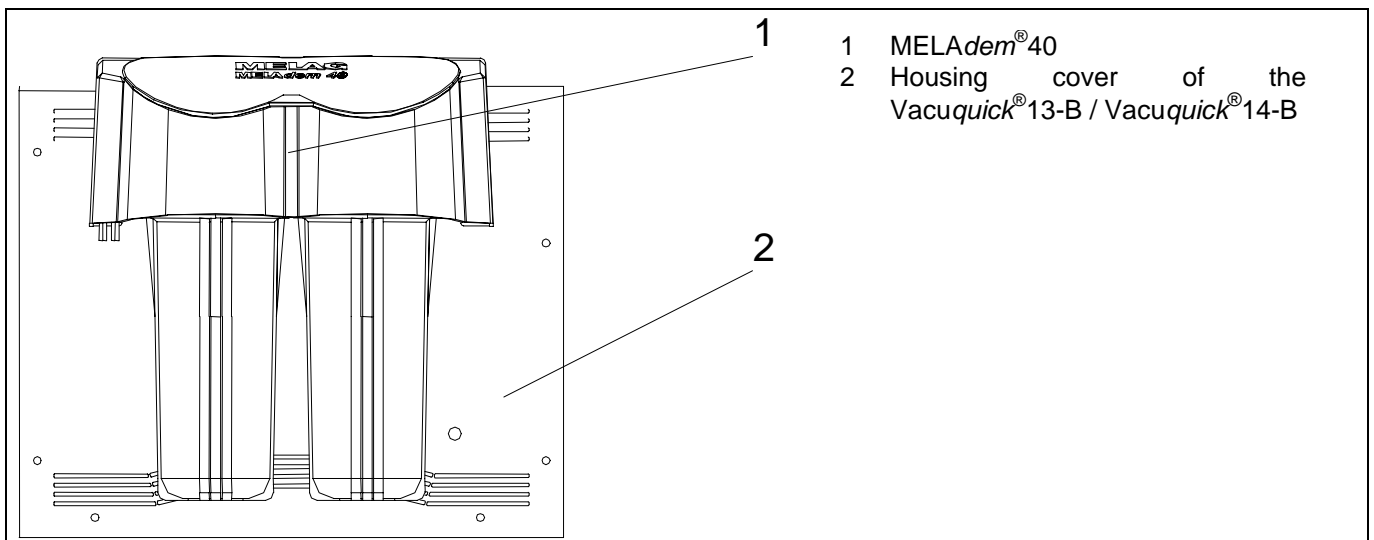


Figure 9: Correct position of the MELAdem® 40 to the Vacuquick® 13-B / Vacuquick® 14-B

3.6 Installation of the MELAdem®40 onto other MELAG autoclaves

The mounting fixtures into which the MELAdem®40 is hung can be directly attached to the autoclave housing for any other MELAG autoclaves. The procedure is similar to wall installation. The horizontal interval of the 4.2 mm holes in the housing is always 118 mm. A drilling template is provided along with the equipment: please use it to ensure that the height is correct. The sequence of installation is as follows:

Steps to follow for installation of MELAdem®40 :

1. **Warning:** First switch off the unit and pull out the power plug.
2. Remove the housing cover of the autoclave.
3. Place the drilling template onto its correct position, and drill 2 x 4.2 mm holes in the unit housing.
4. Use the centrally drilled holes in the mounting fixtures (see Fig. 10) to fasten the metric screws (M4, 20 mm) from the inside with tooth lock washers and nuts.
5. Replace the housing cover of the autoclave.
6. Hang in the MELAdem®40 vertically from above, and slide it downward, until the housing of the MELAdem®40 locks into the mounting fixtures.

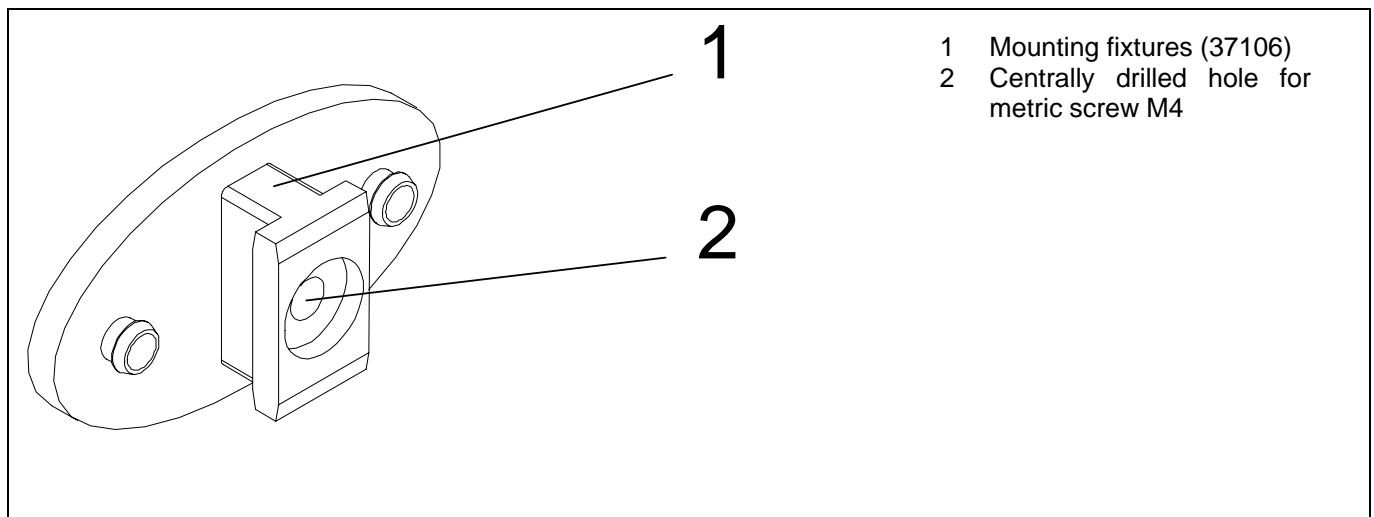


Figure 10: Mounting fixture for MELAdem®40

3.7 Connection of MELAdem®40 directly to the tap-water mains

3.7.1 Conformity with the hygienic stipulations of EN 1717

You must connect your MELAdem®40 to the tap-water mains in accordance with EN 1717, in such a manner that your system will not contaminate the drinking-water network.

For protection of a drinking-water network to which an autoclave is connected, EN 1717, Part 4, stipulates that a combination of the following two units on the rear wall of the autoclave must be installed: a return-flow inhibitor (non-return valve) together with a backsiphonage preventer. In many buildings, this protective equipment is already installed. To be sure, please consult your plumbing and installation specialists!

3.7.2 Connection to tap-water mains

In the building where the MELAdem[®]40 is installed, there must be a stop valve with a return-flow inhibitor (non-return valve) and with a 3/4" outside-thread connection, in the vicinity of the installation point. In order to support you to conform to the official stipulations in your installation of your MELAdem[®]40, regardless of the facilities in your building, we recommend one of the two models described below in Figure 11.

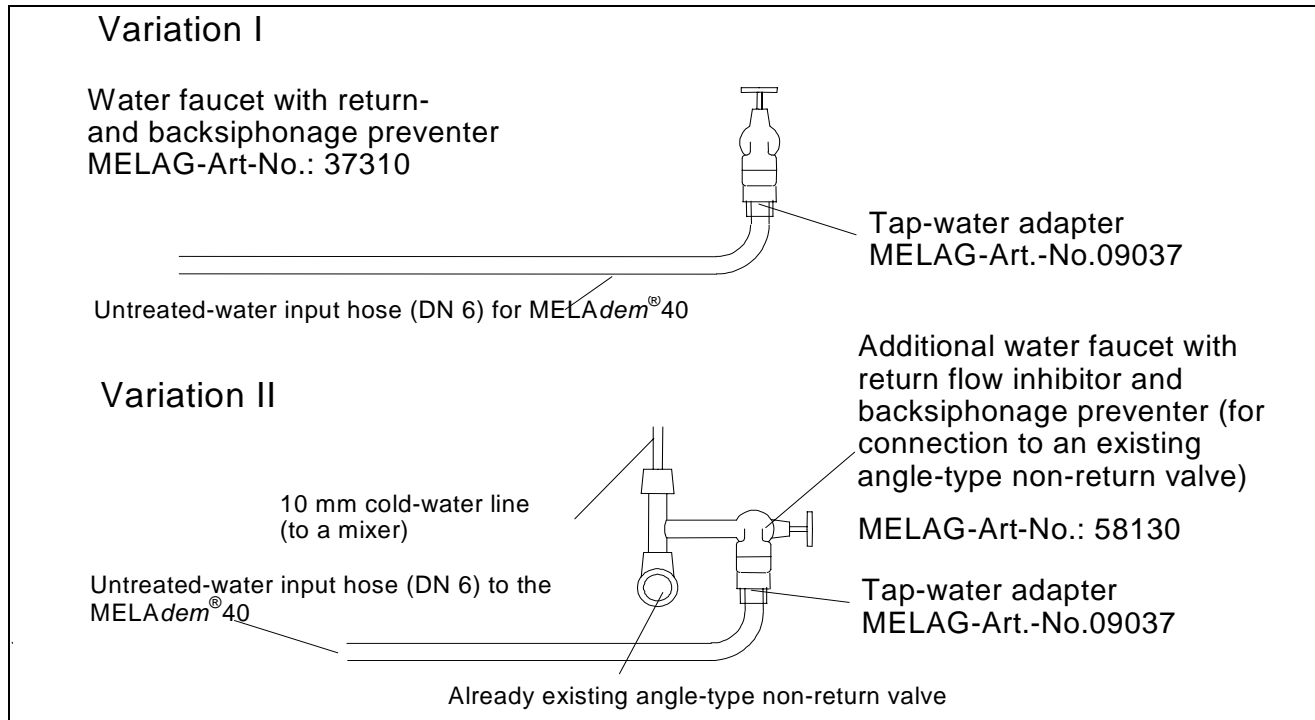


Figure 11: Two possibilities of connecting MELAdem[®]40 directly to the tap-water mains

Variation I: A separate water line (DN 15 nominal pipe size, with 1/2" coupling) already exists, or will be especially installed. Installation of a water faucet with integrated safety combination (MELAG article no. 37310).

Variation II: Cold-water connection (for example, for a sink) with an angle-type non-return valve and hose (10 mm) already exists, or will be especially installed. Installation of an additional water faucet with integrated safety combination (MELAG article no. 58130), by direct installation to an existing angle-type non-return valve.

Instructions on the hose connections for the MELAdem[®]40

Use a hose-cutter, or a sharp knife, to cut 2 pieces in the required lengths from the hose included in the delivery (article no 28820).

At the plastic fast-screw connections, use a plastic union nut to connect the hoses to the MELAdem[®]40 at the incoming water feed (this is the right connection, as seen from the front, when the printing "MELAdem[®]40" is visible). At the output water feed, this is the left connection, as seen from the front, when the printing "MELAdem[®]40" is visible. The first step is to slide the union nut onto the end of the hose. Then shove the hose until it will go no farther onto the socket of the fast-screw connections, on the right and left connections of the MELAdem[®]40. Then shove the union nuts up to the threads and screw them on finger-tight.

Make the connection of the free end of the hose to the water input, or to the consumer (depending on the installation variation selected: see Fig. 11). Use a metal fast-screw connection for this purpose. The first step here is to shove the metal union nuts onto the ends of the hoses, then push the hoses until they will go no farther onto the socket of each of the metal fast-screw connection. Then tighten the metal union nuts finger-tight, and then screw them about 1/4 turn more with an open-end (engineer's) wrench.

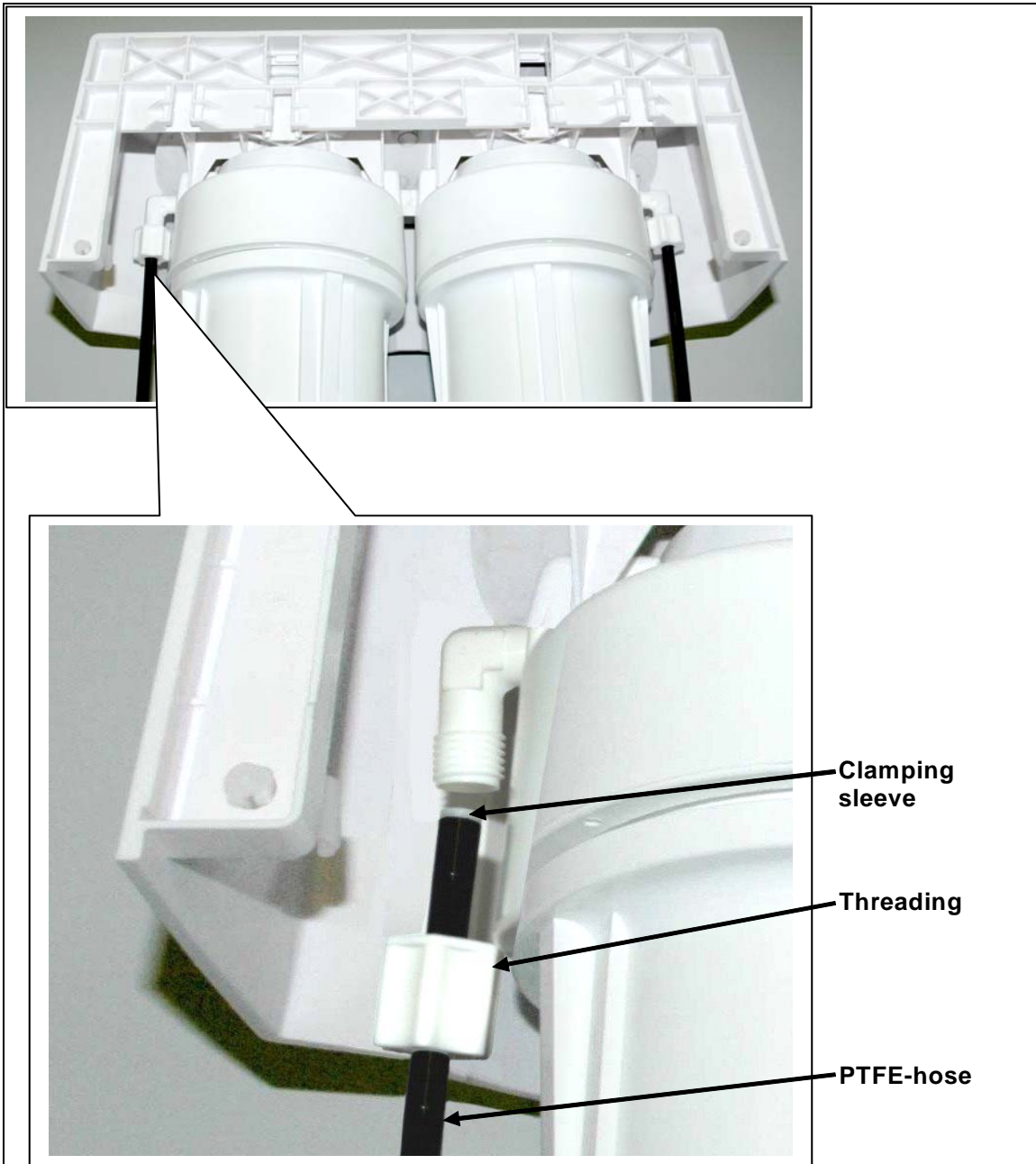


Figure 12: Threading connections of the hoses of MELAdem[®]40

The connection of the hoses at the MELAdem[®]40 to the tap water supply and to the autoclave (depends to the installation variation as mentioned in the guide to installation in chapter 3.1) is made with plastic threaded connections. The connection of the free hose ends to the water supply and the consuming device (depending on the installation version) is made by means of metal quick bolts. The metal nuts are put on the hose ends which then are pushed until touch on the respective metal quick bolts. The nuts are now screwed up by hand and finally tightened with a quarter turn by means of a wrench.

3.7.3 Connection of the water quality monitor (optional)

If the autoclave that you will connect to the MELA*dem*[®]40 does not have its own conductivity measurement unit, you can install a separate unit to monitor the conductivity of the demineralised water. This conductivity measurement unit consists of a measuring cell for the water conductivity that is installed in the supply hose, and of a measurement monitor. MELAG autoclaves from the Vacuklav[®], Euroklav[®] und Vacuquick[®] lines do not need the optional conductivity measurement unit, since they have such a unit already installed in the devices.

Installing the measuring cell

1. Insert the conductivity measuring cell into the treated-water output hose of the MELA*dem*[®]40. This measuring cell is a T-piece with a conductivity sensor screwed in.

Setting the conductivity monitor:

2. Unscrew the screw on the reverse side of the conductivity monitor.
3. Remove the cover of the conductivity monitor.
4. Set the 8-position selection switch to 20 $\mu\text{S}/\text{cm}$. Each of the 8 positions represents one specific conductivity value in $\mu\text{S}/\text{cm}$, as follows:

Schalter	1	2	3	4	5	6	7	8
Limit value in $\mu\text{S}/\text{cm}$	100	50	20	10	5	2,5	1	0,5

5. Slide switch 3 into the ON position. This corresponds to a conductivity of 20 $\mu\text{S}/\text{cm}$. **IMPORTANT:** Only one (1) switch may be in the ON position.
6. Remove the protective plastic cover from the 9-volt battery (delivered with the rest of the equipment). Connect the battery to the battery plug.
7. Replace the cover of the conductivity monitor and screw the screw back in.

Attachment of the conductivity monitor

8. Attach the conductivity monitor to an easily accessible and well-visible place. To do this, peel off the cover strip from the adhesive tape on the reverse of the conductivity monitor. Remember that the maximum length of the connection lead is only 0.8 m.
9. Connect the cable lead of the measuring cell to the socket of the conductivity monitor (at the bottom). Use the cable strap to bind together any surplus length of the lead.

3.8 Connection of the MELAdem[®]40 to the Vacuklav[®]40-B / 44-B

The connection between the components of the system is provided by the hose delivered with the equipment (outside diameter = 6 mm; hose-wall thickness = 1 mm; MELAG article no. 28820).

Important: do not allow the plastic hose to be twisted or curled or mashed (compressed).

The MELAdem[®]40 is connected to the autoclave according to the following diagram.

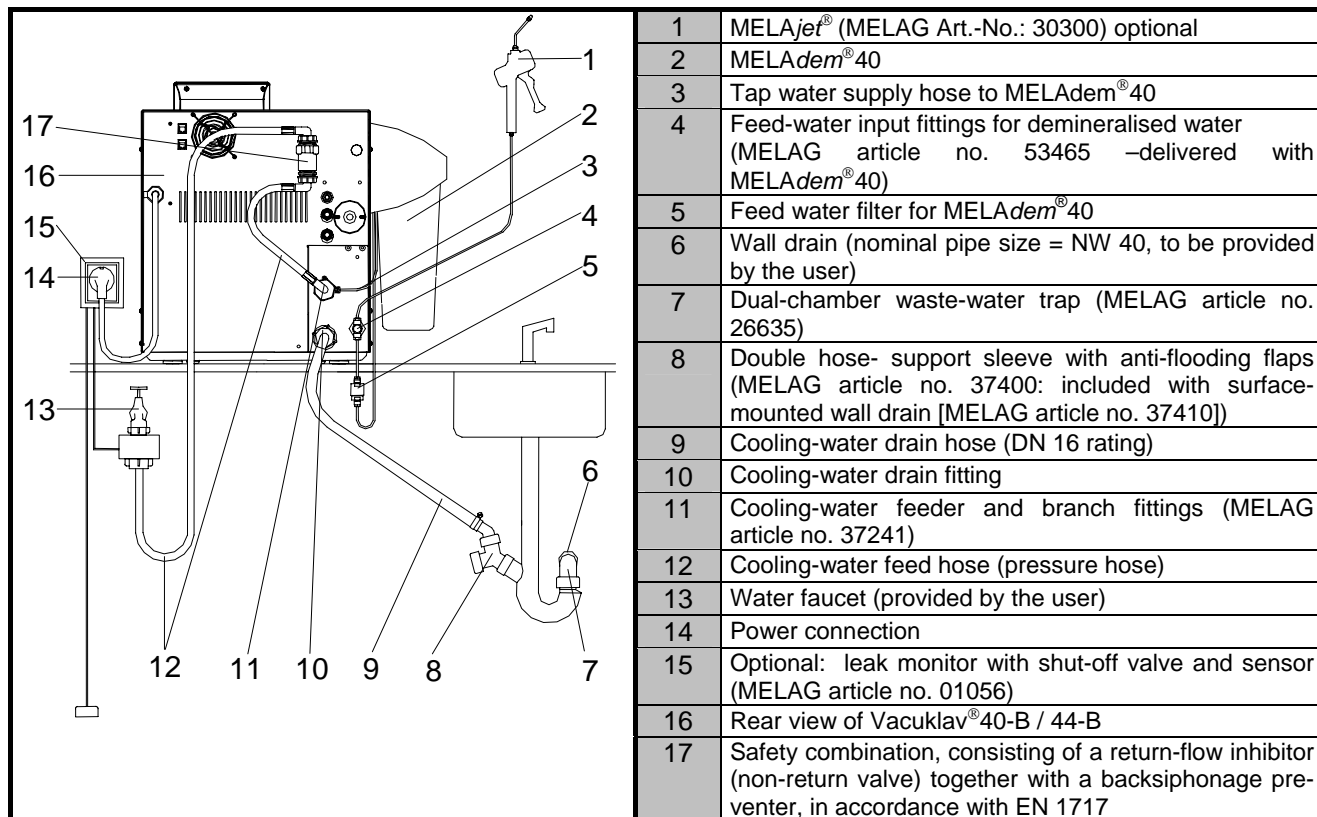


Figure 13: Connection of MELAdem[®]40 to the Vacuklav[®]40-B / 44-B

Steps to follow for installation of MELAdem[®]40

1. Make sure that the MELAdem[®]40 has been correctly attached to the autoclave, and that the mixed-bed-resin cartridges are properly installed.
2. Close the tap water line.
3. **Important Note:** Start the Vacuum Test program. Stop this program after it has run approx. 20 seconds. This will dispel the remaining water pressure in the system.
4. Unscrew the cooling-water feed hose (12) from the unit.
5. Screw the cooling-water branch fitting (11) into the unit. Screw the cooling-water feed hose (12) onto the cooling-water branch fitting (11).
6. Now attach the plastic hoses (3) to the MELAdem[®]40 (2). Attach the feed hose (11) to the MELAdem[®]40 to the left elbow fitting. Attach the output hose (3), from the MELAdem[®]40 to the autoclave, to the right elbow fitting of the MELAdem[®]40.
7. Attach the MELAdem[®] feed-water filter (5) in-line to the plastic hose.
8. Make sure that all line connections are tight, and that there are no leaks.
9. Open the tap water line.

If MELAdem[®]40 is installed directly to the water tap, we recommend using a MELAG Waterstop valve (MELAG art-no. 01056). In the event of leaks or overflow during operation, the moisture sensors of the Waterstop valve, installed on the floor, will activate a solenoid valve to shut off the tap water supply.

With the spray pistol MELAJet[®] (1) instruments can be cleaned or rinsed after disinfection with demineralized water before sterilization.

3.9 Connection of MELAdem[®] 40 to the Vacuquick[®] 14-B

The connection between the components of the system is provided by a pressure-proof hose (outside diameter = 6 mm; hose-wall thickness = 1 mm; delivered with the equipment; MELAG article no. 28820).

Important: do not allow the plastic hose to be twisted or curled or mashed (compressed).

The MELAdem[®] 40 is connected to the autoclave according to the following diagram.

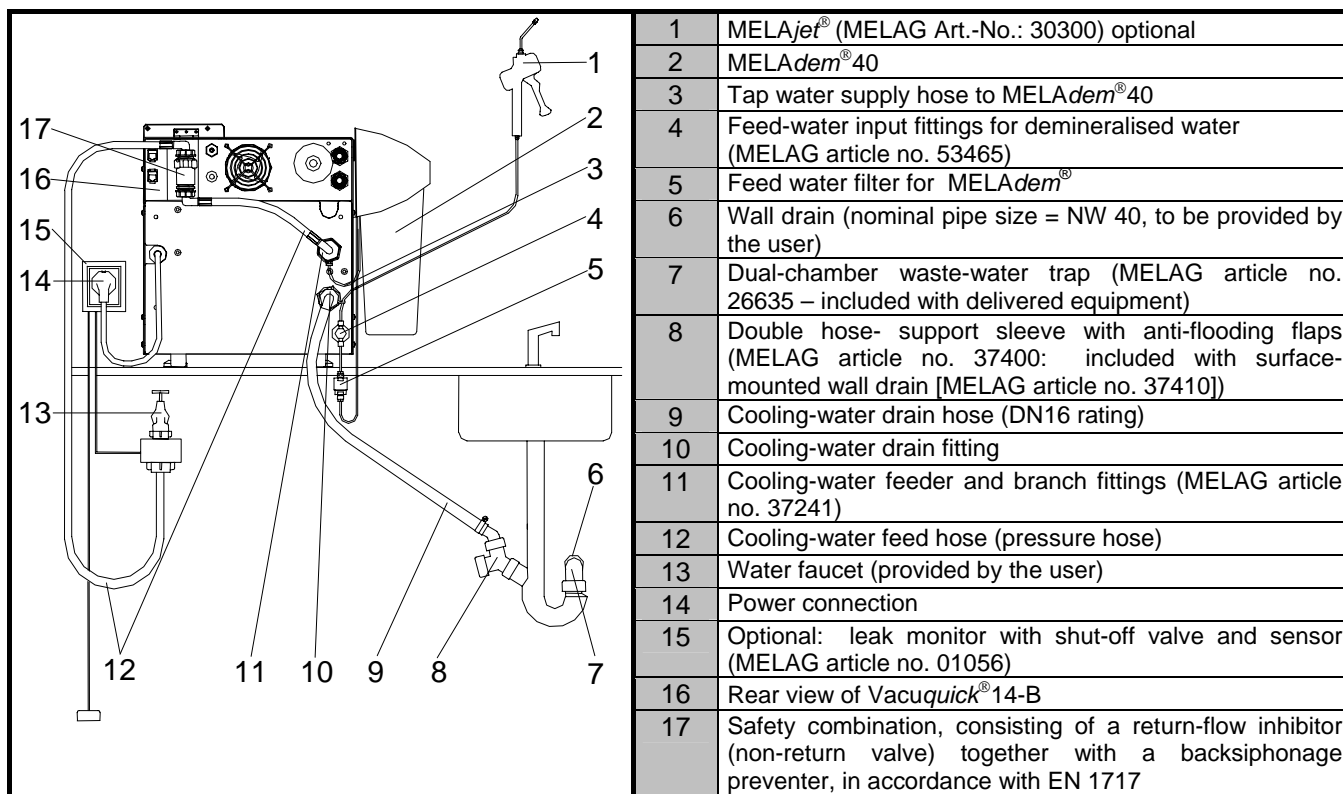


Figure 14: Connection of MELAdem[®] 40 to the Vacuquick[®] 14-B

Steps to follow for installation of the MELAdem[®] 40:

1. Make sure that the MELAdem[®] 40 has been correctly attached to the autoclave, and that the mixed-bed-resin cartridges are properly installed.
2. Close the tap water line.
3. **Important Note:** Start the Vacuum Test program. Stop this program after it has run approx. 20 seconds. This will dispel the remaining water pressure in the system.
4. Unscrew the cooling-water feed hose (12) from the unit.
5. Screw the cooling-water branch fitting (11) into the unit. Screw the cooling-water feed hose (12) onto the cooling-water branch fitting (11).
6. Now attach the hose to the MELAdem[®] 40 (2). Attach the feed hose (3) to the MELAdem[®] 40 to the left elbow fitting. Attach the output hose, from the MELAdem[®] 40 to the autoclave, to the right elbow fitting of the MELAdem[®] 40.
7. Attach the MELAdem[®] feed-water filter (5) in-line to the plastic hose.
8. Make sure that all line connections are tight, and that there are no leaks.
9. Open the tap water line.

If MELAdem[®] 40 is installed directly to the water tap, we recommend using a MELAG Waterstop valve (MELAG art-no. 01056). In the event of leaks or overflow during operation, the moisture sensors of the Waterstop valve, installed on the floor, will activate a solenoid valve to shut off the tap water supply.

With the spray pistol MELAJet[®] (1) instruments can be cleaned or rinsed after disinfection with demineralized water before sterilization.

3.10 Connection of MELAdem[®]40 to the Vacuklav[®]41-B / Vacuklav[®]43-B

The connection between the components of the system is provided by a pressure-proof hose (outside diameter = 6 mm; hose-wall thickness = 1 mm; delivered with the equipment; MELAG article no. 28820).

Important: do not allow the plastic hose to be twisted or curled or mashed (compressed).

The MELAdem[®]40 is connected to the autoclave according to the following diagram.

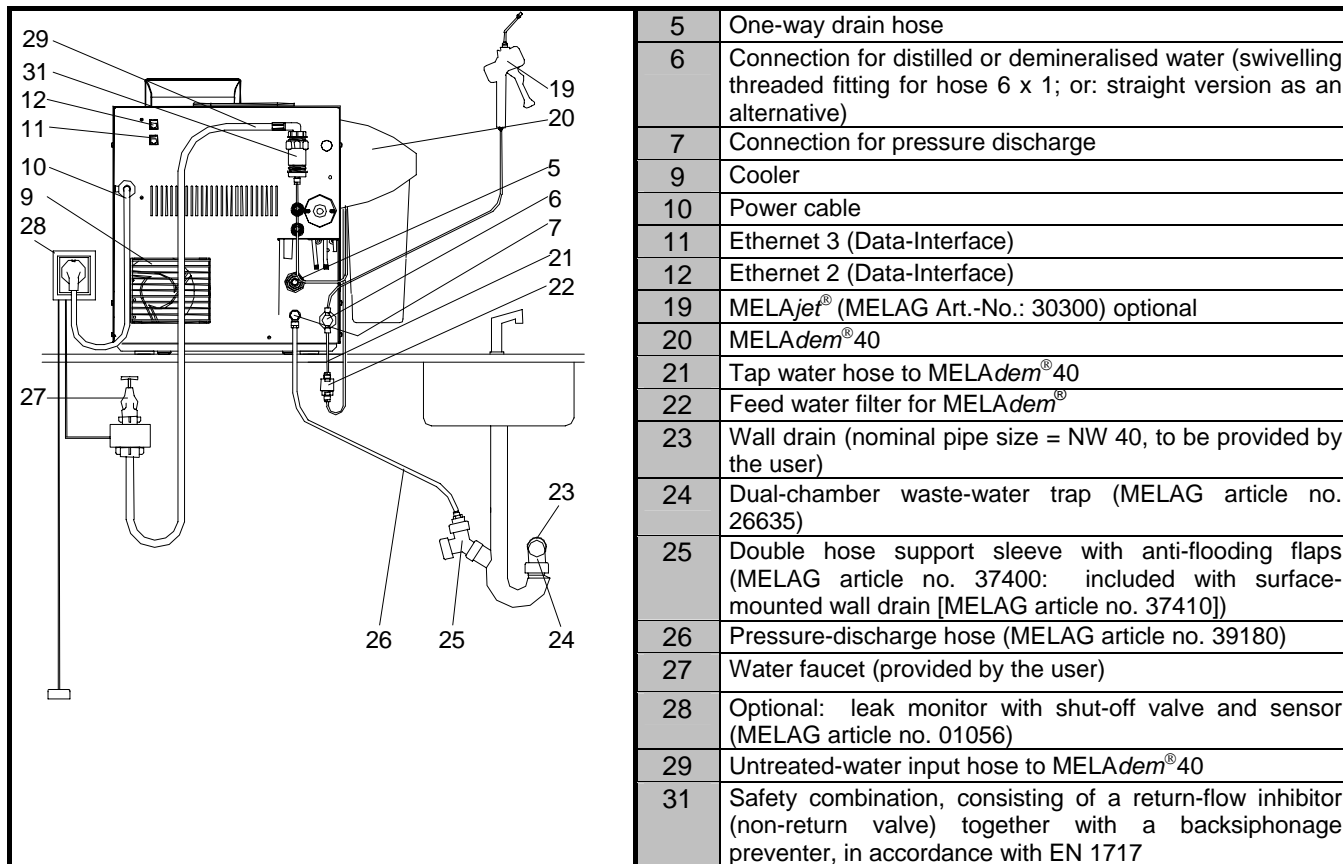


Figure 15: Connection of MELAdem[®]40 to the Vacuklav[®]41-B / Vacuklav[®]43-B

Important: Before connecting a water-treatment unit to an autoclave, be sure to empty the water-storage tank of the autoclave.

The simplest installation: disconnect the feed hose for demineralised water from the water-storage tank connection, and directly connect the MELAdem[®]40 to the feed-water input (6).

Because of the different hose diameters, please replace the feed-water fitting (6, found on the unit with standard configuration) by the following: articles no. 53430 and 21140 (also the 2 copper seals, article no. 42360, delivered with the water-connection set, article no. 42360). In this example, the drain water (used feed water) is forced by pressure directly through the one-way drain hose (MELAG article no. 39180), and into the wastewater trap.

If MELAdem[®]40 is installed directly to the water tap, we recommend using a MELAG Waterstop valve (MELAG art-no. 01056). In the event of leaks or overflow during operation, the moisture sensors of the Waterstop valve, installed on the floor, will activate a solenoid valve to shut off the tap water supply.

With the spray pistol MELAjet[®] (1) instruments can be cleaned or rinsed after disinfection with demineralized water before sterilization.

Steps to follow for installation of the MELAdem[®]40:

1. Close the tap water line.
2. Connect the untreated-water input hose (29) of the MELAdem[®]40 to the tap-water network (27).
3. Screw the untreated-water input hose (29) to threaded connection (31). If you are using the MELAjet[®] Pistol, please use the MELAjet[®] T-fitting (MELAG article no. 53465).
4. Now connect the plastic hose to the fast screw connections.
5. Make sure that all lines are tight, and that there are no leaks.
6. Open the tap water line.

3.11 Connection of the MELAdem[®]40 to the Vacuquick[®]13-B

The connection between the components of the system is provided by the pressure-proof hose delivered with the equipment (outside diameter = 6 mm; hose-wall thickness = 1 mm; MELAG article no. 28820).

Important: do not allow the plastic hose to be twisted or curled or mashed (compressed).

The MELAdem[®]40 is connected to the Vacuquick[®]13-B / Vacuquick[®]14-B as shown in the following diagram.

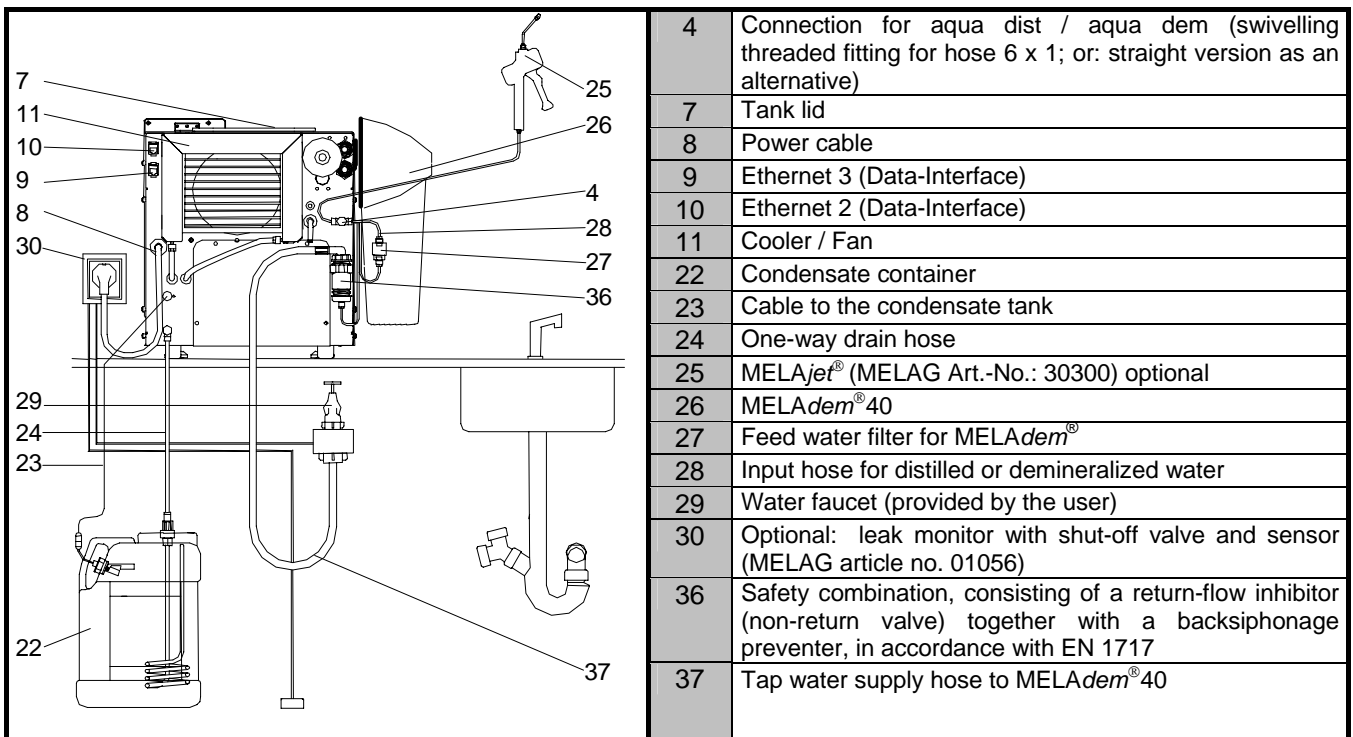


Figure 16: Connection of MELAdem[®]40 to the Vacuquick[®]13-B

Important: Before connecting a water-treatment unit to an autoclave, be sure to empty the water-storage tank of the autoclave.

The simplest installation: disconnect the feed hose for demineralised water from the water-storage tank connection, and directly connect the MELAdem[®]40 to the feed-water input (6).

Because of the different hose diameters, please replace the feed-water fitting (6, found on the unit with standard configuration) by the following: articles no. 53430 and 21140 (also the 2 copper seals, article no. 42360, delivered with the water-connection set, article no. 42360). In this example, the drain water (used feed water) is forced by pressure directly through the one-way drain hose (MELAG article no. 39180), and into the wastewater trap.

If MELAdem[®]40 is installed directly to the water tap, we recommend using a MELAG Waterstop valve (MELAG art-no. 01056). In the event of leaks or overflow during operation, the moisture sensors of the Waterstop valve, installed on the floor, will activate a solenoid valve to shut off the tap water supply.

With the spray pistol MELAJet[®] (1) instruments can be cleaned or rinsed after disinfection with demineralized water before sterilization.

Steps to follow for installation of the MELAdem[®]40:

1. Close the tap water line.
2. Connect the untreated-water input hose (37) of the MELAdem[®]40 to the tap-water faucet (29).
3. Screw the untreated-water input hose (37) of the MELAdem[®]40 to threaded connection (36). If you are using the MELAJet[®] Pistol, please use the MELAJet[®] T-fitting (MELAG article no. 53462).
4. Now connect the plastic hose (28) to the fast screw connections.
5. Make sure that all lines are tight, and that there are no leaks.
6. Open the tap water line.

4 Putting into operation

First carefully install the components. This includes the following: Install the new mixed-bed-resin cartridges by following the instructions for exchanging the cartridges (see Section 5.1.1 below). Then hook up the threaded hose connections. Then place the MELAdem[®]40 into operation by carrying out the following steps:

- Open the tap water line and check if the MELAdem[®]40 has no leaks and that all hoses are connected tight.
- The first filling of the MELAdem[®]40 takes approx. 5 minutes (depending on water pressure from the tap). This first filling is necessary to provide enough treated water for the autoclave or another consumer (for example, a MELAJet[®]).
- Before first putting into operation, and after changing the mixed-bed-resin cartridges, be sure to run one empty sterilization cycle with the autoclave, before the first full run with instruments in the machine.

5 Maintenance instructions

Be sure to perform the following maintenance work, in the time intervals given below, to assure satisfactory functioning of the system:

Interval	Maintenance work
Daily	Check the demineralised water with a conductivity measuring unit, the conductivity monitor, or by the built-in conductivity measuring unit in an autoclave
Once a week	Check if the cartridge housings are fixed tight, if necessary tighten the housings (see <i>Figure 19</i>)
6 months	Check the hoses and threaded connections to make sure that they do not leak. Check the hoses to make sure that they are not kinked (twisted), and that they are not mashed (compressed). Make sure the hoses have not become brittle with age.
As needed	Exchange the resin in the container element after you have used approx. 120 litres of demineralised water from the unit. The exact amount will depend on the quality of the tap water. If the MELAdem [®] 40 is connected to an autoclave with a conductivity sensor (e.g., from the Vacuklav [®] / Euroklav [®] / Vacuquick [®] lines), then the indicator on the autoclave display will show when the resin in the cartridge must be exchanged.

5.1 Exchanging the mixed-bed-resin cartridges

5.1.1 Complete exchange of the mixed-bed-resin cartridges

When the mixed-bed resin becomes exhausted, the output water quality will become poor. Exchange both of the mixed-bed-resin cartridges as follows:

- Close off the supply of tap water (i.e., turn off the faucet)
- **Important for pressure release:** If the system is connected to an autoclave from the Vacuklav[®] / Euroklav[®] / Vacuquick[®] lines, start the program "Vacuum test". Then interrupt the program after approx. 20 sec. by pressing the Start/Stop button. These measures will release the water pressure remaining in the systems. If the water-treatment system is not connected to an autoclave, then normal delivery of the water to the MELAjet[®] will release the water pressure.
- Remove the cover of the MELAdem[®] 40 to gain access to the filter wrench.
- Remove the wrench from the MELAdem[®] 40 (see Figure 17).

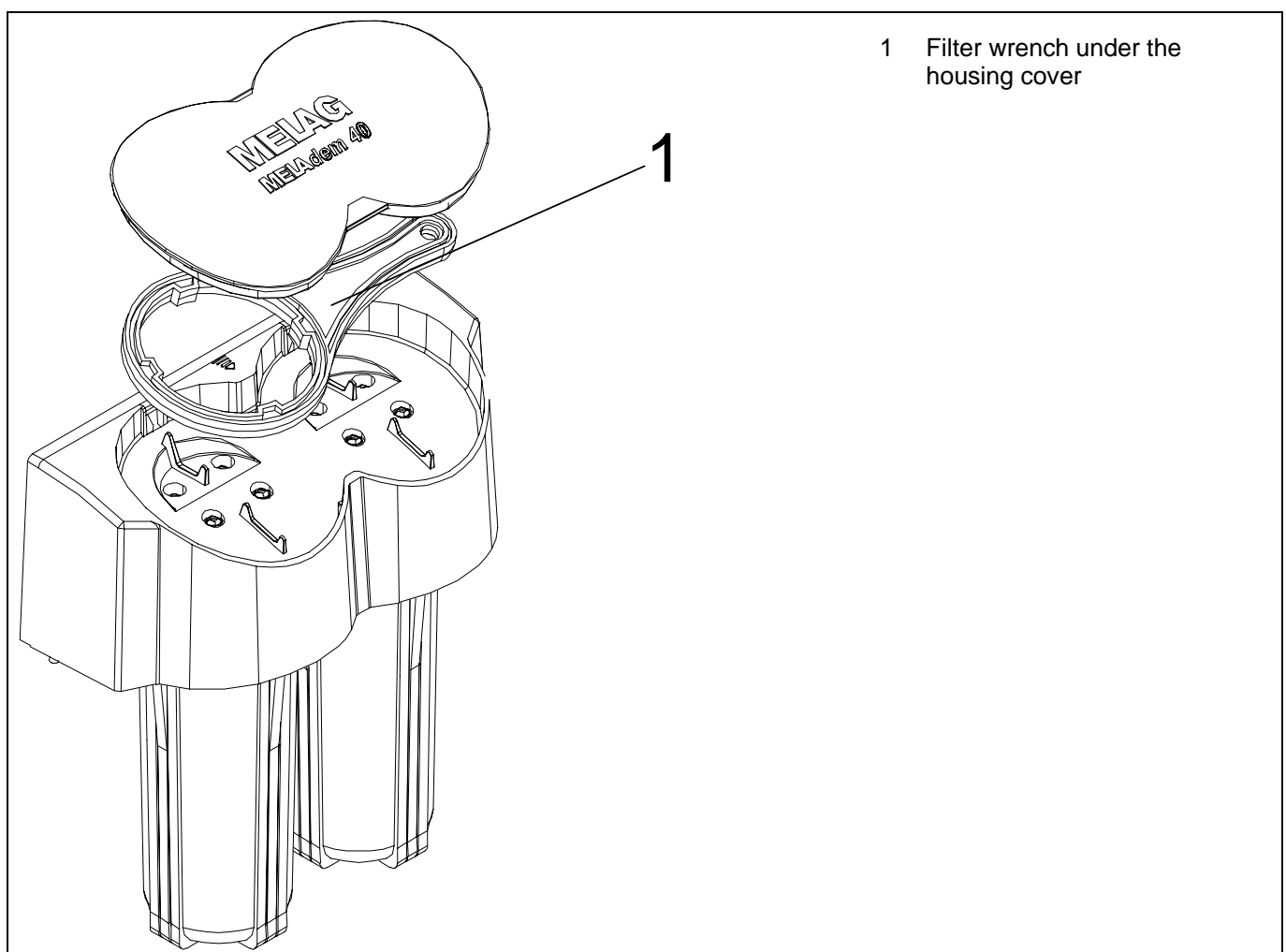


Figure 17: Removing the filter wrench

- Slide the wrench from the bottom onto the filter enclosure, and move it up toward the top as far as will go. Allow it to lock into place there. Open each of the container elements by turning the wrench clockwise (as seen from above): see Figure 18). As soon as the container elements can be easily turned, you can remove the wrench and unscrew the elements by hand for the last turns..
- Now pull the container elements off, toward the bottom. **Caution: the container elements can be completely full of water.** Then remove the depleted mixed-bed-resin cartridges. You can dispose of them as normal domestic waste.
- Rinse out the container elements thoroughly under flowing water.

- Remove the new cartridges from their plastic bags and place them vertically standing into the container elements
- Replace the filter wrench in the compartment under the cover of the MELAdem[®]40

5.1.2 Safe and water-tight closing of the cartridge housings

If you screw the cartridge housings (1) of the filters into the MELAdem[®]40 check if the complete system is water-tight. Take care for the hoses, the threaded connections and the MELAdem[®]40 housing.

For fastening the cartridge housings you must only use the wrench (2) delivered with MELAdem[®]40.

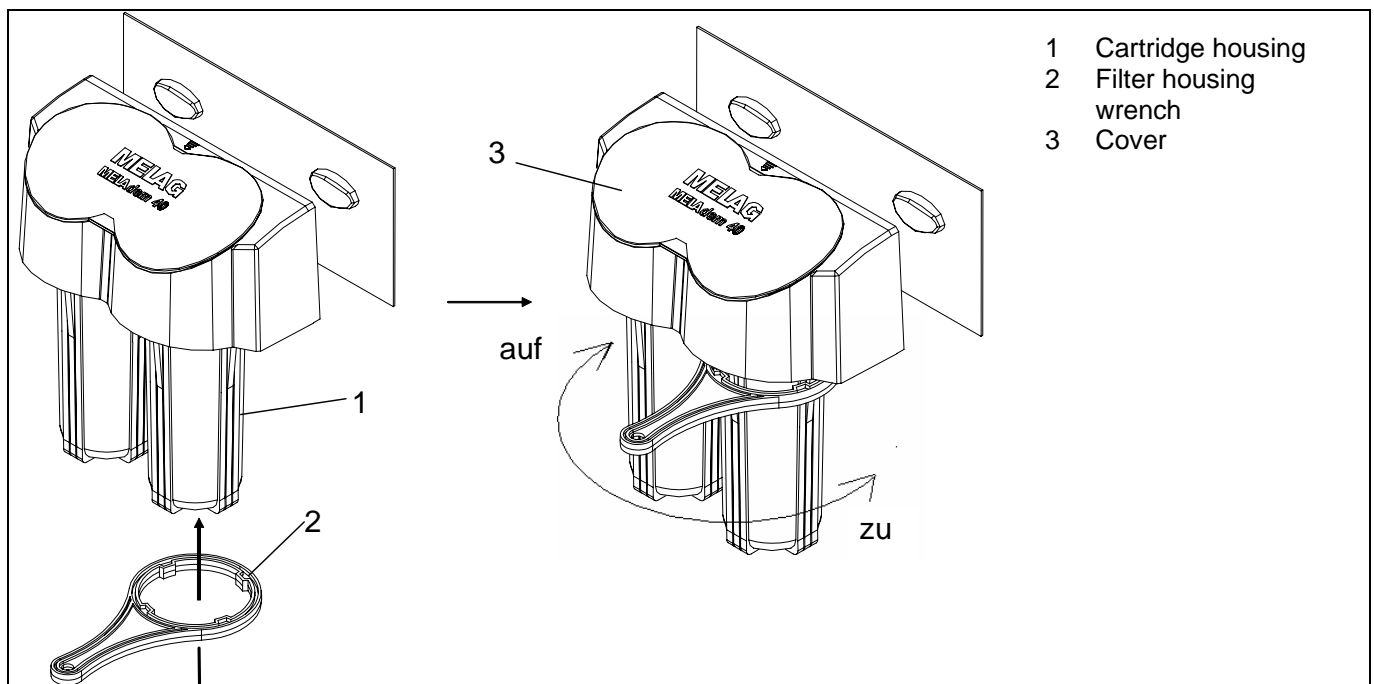


Figure 18: How to use the cartridge housing wrench

The safe and water-tight closing of the cartridge housings (1) has to be done as following:

- Screw the container elements finger-tight, and then use the filter wrench to fully tighten the cartridge housings anti-clockwise, as seen from above until the marks show to each other as shown in *Figure 19*. Do not change the housings from one side to the other otherwise the marks on the housings will not be in the correct place.
- Replace the filter wrench in the compartment under the cover (3) of the MELAdem[®]40.
- Check to make sure that all parts are tight.
- Open the tap water line.
- Check if the system is water-tight.
- Your MELAdem[®]40 is now ready for operation again.

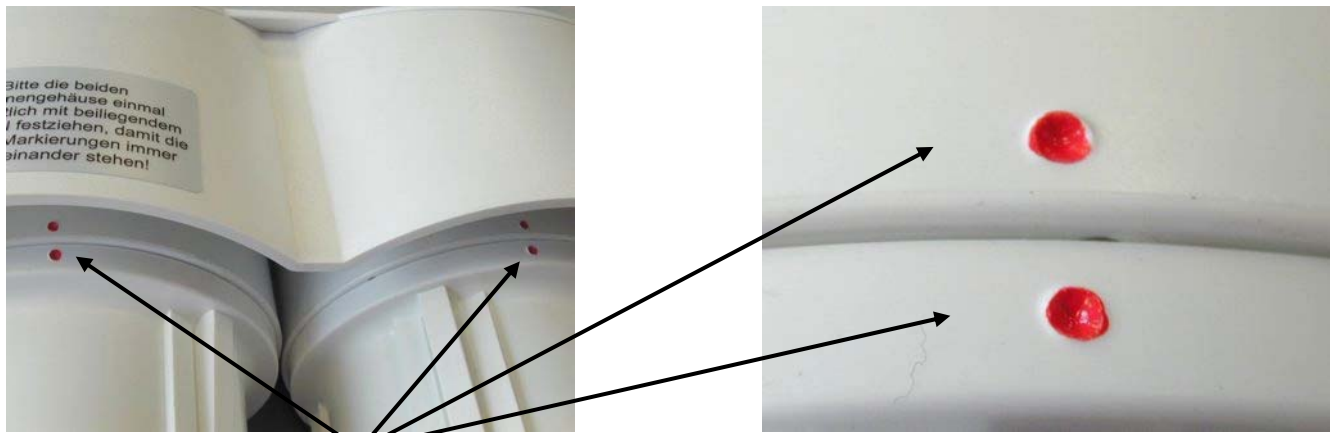


Figure 19: Markings at the housing of MELAdem® 40 and at the cartridge housings

5.1.3 Exchange of the mixed-bed-resin cartridges

When the mixed-bed resin has become depleted, and the quality of the output water is poor, a new cartridge is always placed into the second position. The same as the description in the above section, the first steps of work are as follows:

- Close the tap water line !
- **Important for pressure release:** If the system is connected to an autoclave from the Vacuklav® / Euroklav® / Vacuquick® lines, start the program "Vacuum test". Then interrupt the program after approx. 20 sec. by pressing the Start/Stop button. These measures will release the water pressure remaining in the systems. If the water-treatment system is not connected to an autoclave, then normal delivery of the water to the MELAjet® will release the water pressure.
- Remove the cover of the MELAdem® 40 to gain access to the filter wrench.
- Remove the wrench from the MELAdem® 40.
- Slide the wrench from the bottom onto the filter enclosure, and move it up toward the top as far as will go. Allow it to lock into place there. Open each of the container elements by turning the wrench clockwise (as seen from above): see Figure 18. As soon as the container elements can be easily turned, you can remove the wrench and unscrew the elements by hand for the last turns.
- Now pull the container elements off, toward the bottom. **Caution: the container elements can be completely full of water.** Then remove both of the mixed-bed-resin cartridges. You can dispose of the first cartridge as normal domestic waste.
- Rinse out the empty container elements thoroughly under flowing water.
- Replace the both new cartridges (MELAG article no. 61026) into the both cartridge housings.

For closing the MELAdem® 40 you must take care for the following points:

- Screw the container elements finger-tight, and then use the filter wrench to fully tighten the container elements (anti-clockwise, as seen from above).
- Replace the filter wrench in the compartment under the cover of the MELAdem® 40.
- Check to make sure that all parts are tight.
- Open the tap water line and
- Test to see if the system is water-tight.
- Your MELAdem® 40 is now ready for operation again.

6 Technical data

Incoming untreated water	Tap water
Bacteriological quality	Pure water
Capacity	app. 120 l for 700 µS/cm tap water quality
Max capacity of float	For max. 2 Litres / min not higher than 40 µS/cm
Tap water pressure min/max.	1.5 bar to 10 bar
Tap water temperature min/max.	5°C to 40°C
Tap water PH-value min/max.	5.0 bis 9.0
Maximum permissible salt content in untreated water	1500 ... 2000 mg/l
Capacity of resin	Inhoud app. 2 x 0.7 Litres (1.4 Litres)
Dimensions of MELAdem®40	H: 350 mm B:315 mm T:155 mm
Total weight of MELAdem®40 (filled)	app. 2.4 kg

7 Consumables and spare parts

Consumables		
61026	1	2 Cartridges, filled with ion exchange resin
Spare parts		
61050	1	Filter housing wrench
37475	1	Clamping sleeve for fixing hoses at the MELAdem®40
Connection sets and fittings for the various models		
09031	1	Connection set MELAdem®40 to the Euroklav®
09033	1	Connection set MELAdem®40 to the Vacuklav®23-B / 31-B / 41-B / 43-B / Vacuquick®13-B
37241	1	Connector for MELAdem®40 to the Vacuklav®24-B / 30-B / 40-B / 44-B / Vacuquick®14-B
09037	1	Tap water adapter MELAdem®40 for direct connection to water faucet
Optional accessories		
45008	1	Conductivity monitor
01060	1	MELAtest®60
37310	1	Water faucet with integrated safety combination set
58130	1	Water faucet ¾" with integrated safety combination set, for direct installation to an existing angle-type non-return valve
30300	1	MELAJet®
37106	1	2 Mounting fixtures to connect MELAdem®40 to an autoclave or at the wall