

Maintenance instructions

MELAtherm[®] 10

Washer-Disinfector

EN

This device is to be maintained exclusively by a qualified service technician trained by MELAG and working in accordance with the valid directives.

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Contents

General guidelines	3	Circulation pump cover.....	11
Symbols used	3	Condensate pump	12
Maintenance intervals	3	Exhaust hoses	12
Safety instructions.....	3	Electrical connections.....	12
Note on complaints.....	3	Metering system	13
Tools and resources	4	Process agent inlet fittings	13
Contents of the maintenance set (art. no. ME70021 [50 Hz], ME70048 [60 Hz]).....	4	Optional works.....	14
Optionally required articles	4	Stainless steel cable ties on the flow heater	14
Additionally applicable documents.....	5	Edge guard kit.....	14
Preparations	6	Aquapal hose for steam condenser nozzle	14
Outputting and evaluating the logs	6	Function check	15
Checking the software version.....	6	Set degree of water hardness	15
Rinsing the metering system.....	6	Water supply	15
Measuring the conductivity of the DI water	6	Suction lances	15
Removing the housing parts of the device.....	6	Float switch floor trough	15
Statitic check/functionality.....	7	Ascertaining the supply rates / calibrating the pump values with water.....	15
Water supply	7	Trial run with determination of actual metered quantities..	16
Rinse arms	7	Determining the density of the process agents	16
Pump sump, non-return valve and sieves.....	8	Determining the metering quantities of the process agents	17
Descaling	8	Converting the detemined metering quantities of the process agents.....	17
Non-return valve for air distributor	9	Checking the metered quantity actual / target.....	18
Door mechanism.....	9	Assembly and set-up of the device.....	18
Cleaning the device interior	9	Electrical test in accordance with EN 50678 (VDE 0701) or national standard	18
Washing chamber.....	10	Resetting the maintenance counter.....	18
Door gasket and drip tray.....	11	Parameter changes.....	18
Checking the components for the reprocessing.....	11		
Basis basket.....	11		
HEPA and pre-filter	11		

General guidelines

Please note the following:

- Repair work is not part of the maintenance.
- Comply with the sequence prescribed in the maintenance instructions to ensure safe working.

Symbols used

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

Maintenance intervals

Maintenance is to be performed after every 1000 cycles or after 24 months at the latest. A freely-accessible device has a maintenance time of approx. three to four hours plus a test run plus any work not foreseen by the maintenance plan.

Safety instructions



When carrying out maintenance work at the device, comply with the following safety instructions as well as those contained in subsequent chapters. Failure to comply with the safety instructions can result in injury or damage to the device.

- Its maintenance may be performed only by authorised technicians.
- Comply with the relevant safety regulations during operation of electrical devices without housing parts. These actions must be performed by a qualified electrician (in accordance with VDE 0105-100 or IEC 60050).
- Determine the absence of voltage at all poles.
- Should it be necessary to remove the housing parts in order to perform maintenance work, take care with any sharp edged sheet metal parts. Comply with the working safety regulations and wear suitable protective gloves.
- Avoid contact between the process agents and skin at all costs. MELAG recommends wearing protective goggles, gloves and a white coat when working on the metering system. If the agents come into contact with the skin, rinse with a lot of water immediately. Remove soiled clothing immediately. Should the process agents come into contact with eyes, rinse with purified water and consult a doctor. If possible, take the safety data sheet of the process agent concerned. The safety data sheets for MEtherm can be found on the MELAG website: <https://www.melag.com/sds>

CAUTION

Warning of injury

Lifting and carrying the device incorrectly can cause spinal damage, crushing injuries and bruising.

- Comply with the safety regulations that apply to you.

Note on complaints

If reasons for complaints are found during maintenance, these must be reported directly and immediately to MELAG.

Reasons for complaints can be:

- repeated occurrence of the same malfunction message despite remedial measures
- unidentifiable performance impairments

Complaints must be reported to MELAG Customer Service by email (hotline@melag.de) or by telephone (+49 (0)30 75 79 110), quoting the serial number of the device.

Tools and resources

- Multi-tool, rinse arm support/salt container (art. no. ME72470)
- Measuring device for electrical test in accordance with EN 50678 (VDE 0701)
- Current meter (clip-on ammeter)
- Voltage meter
- Electronic scales, load 10 kg (concentration 0.1 g)
- Hand vacuum cleaner
- Spirit
- Test set for water hardness (art. no. ME71000)
- Measuring jug/bucket approx. 5 l
- Standard tool set incl. insulated safety tools

Contents of the maintenance set (art. no. ME70021 [50 Hz], ME70048 [60 Hz])

Article	Art. no.	Article	Art. no.
Sliding disc for rinse arm socket (2 pcs.)*)	ME21948	Metering pump hose for rinse aid	ME68800
HEPA filter drying fan	ME51240	2x Metering pump hose for cleaning agent/neutraliser	ME68900
O-ring of salt container	ME51266	Set of process agent hoses, 5.3 m	ME75670
O-ring for supply nozzles metering/washing chamber	ME63610	Brush for process agent inlet fittings	--
Sliding disc for rinse arm socket (2 pcs.**)*)	ME64240	Inspection flap seal, 2 mm	--
Prefilter drying fan	ME68130	2x Conductivity sensor seal	--
*) for sliding onto O-ring; newer variant **) for screwing on; older version			

Optionally required articles

Article	Art. no.	Article	Art. no.
Water stop (leakage water detector with shut-off valve and probe)	ME01056	Seal for conductivity sensor cell (10 pcs.)	ME68925
Installation set "KIWA"	ME09038	Pump for condensate/collection tank, 230 V/50 Hz	ME69280
Edge protection	ME21677	Measuring turbine cleaning agent / neutraliser	ME69290
Cover circulation pump	ME21842	Non-return valve air distributor with seal	ME69340
Repair tool receptacles (flat terminal sleeves)	ME21916	Seal with clip for pump sump	ME69350
Knurled screw for rinse arm socket (with O-ring)	ME21947	Float flap for steam condenser	ME69360
Hose Aquapal for steam condenser nozzle	ME21971	Seals for steam condenser	ME69370
Hose set exhaust	ME30126	Nozzle water inlet steam condenser	ME69380
4x Hose clamp, 40-60 mm	ME36131	Nozzle for steam condensing	ME69395
Micro switch door/collection tank/aqua-stop/MELAseal	ME47580	Filter inserts for water hoses	ME69510
Fine sieve with magnet	ME50580	Water supply hose 2 m, cold water	ME69530
Seal for salt container/rinse arm socket	ME51262	Water supply hose 2 m, DI water	ME69540
Seal for EN 1717 safety combination	ME54920	Coarse sieve	ME69550
Rubber seal 3/4" for external water supply	ME56950	Bracket upper rinse arm, with sensor	ME69570
Silicone hose 14/10 mm (1 m)	ME58332	Bracket lower rinse arm, with sensor	ME69580
Non-return valve pump sump	ME61540	Rinse arm bearing bush with screws (bearing bush)	ME69590

Article	Art. no.	Article	Art. no.
Float switch floor trough	ME62246	Door gasket	ME70700
Air distributor, complete	ME63120	Set for decalcification	ME72000
Silicone insert for universal adapter green (16 mm)	ME63500	Citric acid E330 (0.5 kg)	ME73000
Silicone insert for universal adapter blue (20 mm)	ME63501	Wastewater collector	ME79575
Silicone insert for universal adapter white (22 mm)	ME63502	Metal filter disc	ME80350
Ceramic filter disc (10 pcs.)	ME64375	Cleanfinity filter	ME84630

Additionally applicable documents

The following maintenance record is a part of these maintenance instructions.

- Maintenance record (doc. WP_10DT_EN - Rev. 8)
- Current software versions (doc. AS_023-20)
- Programming the control electronics (doc. AS_008-17)
- What to consider before setup? (doc. CL_001-19)
- Standard decalcification of the steam condenser (doc. AS_002-20)
- Alternative decalcification of the steam condenser (doc. AS_013-22)
- Replacing the air distributor (doc. AS_062-10)
- Replacing the non-return valve pump sump (doc. AS_063-10)
- Replacing components in the process agent drawer (doc. AS_101-11)
- Replacing the upper and lower rinse arm bracket (doc. AS_014-18)
- Replacing the exhaust hoses (doc. AS_006-14)
- Instructions for upgrading the edge guard (doc. AS_013-18)
- Instructions for upgrading the circulation pump cover (doc. AS_004-18)
- Blade receptacles: Handling and repairing (doc. AS_017-18)
- Manufacturer's recommendation for electrical test during initial commissioning, after maintenance or repair (doc. ME_001-16)
- Manufacturer's recommendation for renewed performance qualification after replacing components (doc. ME_004-20)
- Resetting the maintenance counter (doc. AS_025-15)

Preparations

Outputting and evaluating the logs

1. If necessary, switch the device on.
2. Output all logs incl. status log for diagnosis purposes.
3. Evaluate the logs to detect any maintenance-relevant malfunctions.
4. Attach the logs to the maintenance record for documentation.

Checking the software version

PLEASE NOTE

It may be necessary to revalidate the device after performing a software update.

1. Check whether the current device software version has to be updated with a MELAG-recommended software update, see the separate instructions "Current software versions" (doc. AS_023-20).
2. If necessary, perform a software update in accordance with a separate set of instructions "Programming the control electronics" (doc. AS_008-17).

Rinsing the metering system

The following must be fulfilled or present:

✓ *Measuring jug/Bucket (min. 5 l)*

1. Remove all process agent containers and the collection tray from the drawer.
2. Remove the cover of the metering pumps.
3. Fill a measuring jug/bucket with 5 l lukewarm water and place it in or next to the drawer. Carefully place all the suction lances together in the measuring jug or bucket.
4. Working in the **DIAGNOSIS+SERVICE > DCOUT DC outputs** menu, actuate all metering pumps one after another for 30 s each.
5. After that remove the suction lances out of the water and trigger all metering pumps one after the other again for 30 s. In this way the metering system is rinsed with water and emptied afterwards.
6. Finally, perform the **Rinsing** program in order to remove process agent residues from the washing chamber.

Measuring the conductivity of the DI water

1. If a water treatment unit is installed, then run the **Conductivity DI** program.
2. Determine the value of the DI water conductivity (if 15 µS/cm or higher, a warning message is issued in the program run).

Removing the housing parts of the device

There must be sufficient space to perform the maintenance work. If necessary, move the device. To this end, note the information regarding the space requirement for the device, see the separate instructions "What to consider before setup?" (doc. CL_001-19).

WARNING

Warning of electric shock

In order to perform the following work steps, it is necessary to remove the housing parts of the device. The device remains fully operative. Failure to comply with the following safety information can result in serious injuries and danger to life.

- Comply with the relevant safety regulations when operating an electrical appliance without housing parts.
- Before opening the device, switch it off and remove the power plug.
- Determine the absence of voltage at all poles.

The following must be fulfilled or present:

- ✓ *Torx key (TX20)*
- 1. Remove the housing parts.
- 2. Plug the power plug in the socket and switch on the device.

Statistic check/functionality

Water supply

1. If a water treatment unit is installed, check it for leaks.
2. Check the connections for water supply into the device as well as the hoses on the sides visually for leaks.
3. **Applies to the Netherlands only:**
Check the CA backflow preventer for leaks. Replace the CA backflow preventer (art. no. ME09038, not included in the maintenance set if it drips.
4. The outlet hose must be free of kinks and installed in an arch at a minimum height of 40 cm over the lower edge of the device (without floor unit).
5. The inlet hoses must be installed without kinks. The customer-side water cut-off valves must be fully functional.
6. If the water stop is used (art. no. ME01056, not included in the maintenance set), clean the inlet screen and check the function of the aqua stop.
7. Clean the filter screens in the aqua stop valves of the inlet hose (art. no. ME69510, not included in the maintenance set) or replace if necessary (including the seals).

Rinse arms

The following must be fulfilled or present:

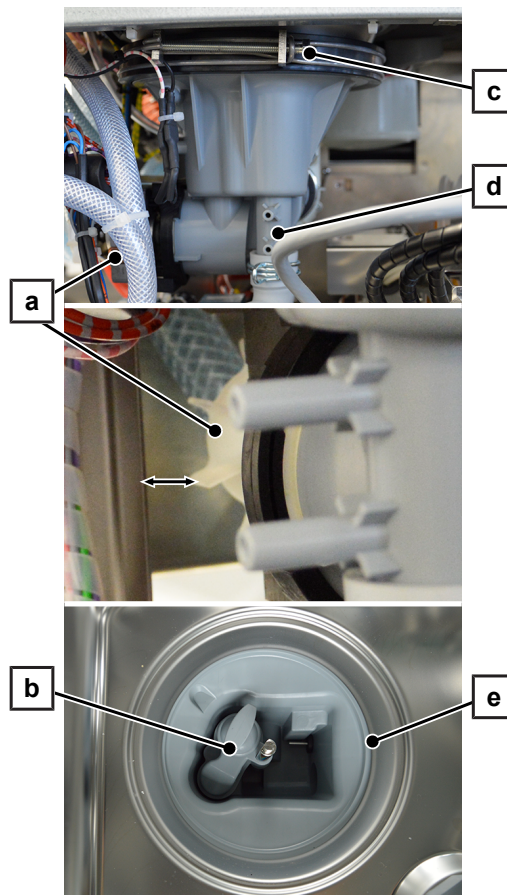
- ✓ *Multi-purpose tool rinse arm brack / salt container*
 - 1. Check the conduit screws of the rinse arm brackets for stability (below: rinse arm cap, above: rinse arm flange) and tighten where necessary (using MELAG multi-purpose tool).
 - 2. Check the rinse arms for blockage and soiling and remove if necessary.
 - 3. Check the magnets for correct position in every rinse arm and the rotation speed monitoring DIN 4 and DIN 5.
 - 4. Check the plastic parts of the rinse arm brackets for wear. Pay special attention to the white plastic ring under the (upper / lower) water routing bushing in older devices (before 201710-DTA1749 or 201710-DTB3251). If any signs of wear are evident, replace the rinse arm brackets (art. no. ME69570 and ME69580, not included in the maintenance set), see the separate instructions "Replacing the upper and lower rinse arm bracket" (doc. AS_014-18).
 - 5. Replace the sliding discs (art. no. ME64240/ME21948) on the knurled screws of the rinse arms.
 - 6. Check the rinse arms for ease of movement.
 - 7. Check the play of the rinse arms.
 - ➡ When (lightly) depressed on one side, the lower rinse arm may not be allowed to collide with the screw cap of the salt container.
 - ➡ When pushed up (lightly) on one side, the upper rinse arm may not be allowed to rub on the washing chamber
- NOTICE! Warning of material damage.** Do not use force under any circumstances!
If necessary, replace the rinse arm bushings (bearing bushings, art. no. ME69590, not included in the maintenance set) or the complete rinse arms.

Pump sump, non-return valve and sieves

The following must be fulfilled or present:

✓ *Lint-free cloth*

1. Remove the coarse and fine sieve.
 - The message "535: Fine sieve not recognised" is displayed. If the message is not displayed, check the sieve monitoring.
2. Check the sieves for damage and replace if necessary (art. no. ME50580 and ME69550, not included in the maintenance set).
3. Check the pump sump for correct and firm seating. If necessary, align the pump sump and tighten with the clamping ring (pos. c).
 - The space between the impeller (pos. a) of the drain pump and the housing sheet plate is good.
 - The connections of the condensate and collection tank pump (pos. d) face the left side of the device.
 - The pump sump is centred and even in the washing chamber (pos. e).
4. Remove the non-return valve (pos. b) from the pump sump drain, check it for damage and clean it.
5. If necessary, replace the non-return valve (pos. b, art. no. ME61540, not included in the maintenance set), see the separate instructions "Replacing the non-return valve pump sump" (doc. AS_063-10).
6. Check the pump sump for soiling and foreign objects and clean if necessary.



Descaling

- Descale the steam condenser, see the separate instructions "Standard decalcification of the steam condenser" (doc. AS_002-20) or "Alternative decalcification of the steam condenser" (doc. AS_013-22).

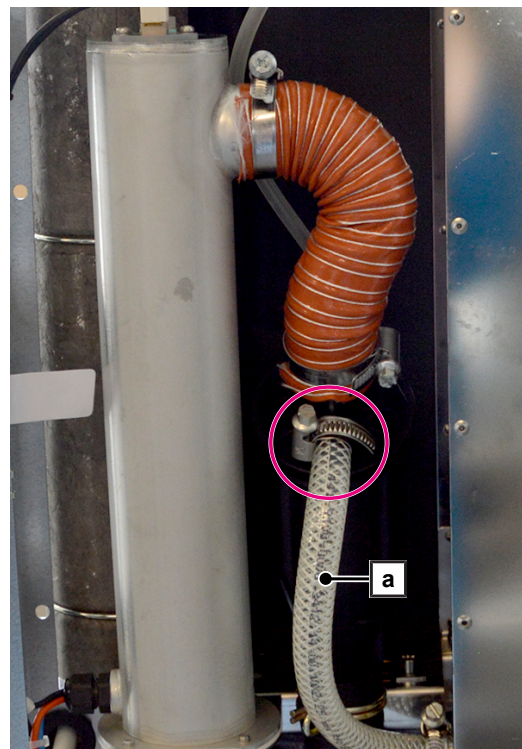
PLEASE NOTE

Even if the steam condenser only has small visible limescale deposits, these may be present in places that cannot be seen. If descaling is not carried out, these limescale deposits can lead to malfunctions.

Non-return valve for air distributor

The following must be fulfilled or present:

- ✓ *Measuring jug*
- 1. Remove the hose (pos. a) from the outlet of the non-return valve.
- 2. Start the **Rinsing** program.
- 3. If necessary, collect any water that may leak using the measuring jug.
 - ➔ If more than 15 ml of leaked water is collected, replace the air distributor (art. no. ME63120, not included in the maintenance set), see the separate instructions "Replacing the air distributor" (doc. AS_062-10).
- 4. Fit the hose (pos. a) to the outlet of the non-return valve.



Door mechanism

1. Close the door and switch off the device.
2. Check the door emergency release.
3. Check the door locking motor for damage and secure fixing in the bearing bushes.
4. Check the door mechanism for damage.
5. Check the door the for ease of movement.

Cleaning the device interior

The following must be fulfilled or present:

- ✓ *Lint-free cloth or Hand vacuum cleaner*
- 1. Check the floor trough for any traces of fluid. Should this be the case, rectify the cause and remove the traces of liquid.
- 2. Remove dust from the inside of the device if necessary. In particular, the fans and the housing cooling slots must remain clean in order to ensure the long-term performance of the device.

Washing chamber

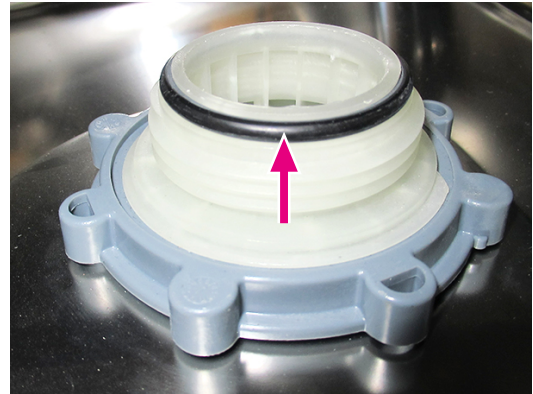
The following must be fulfilled or present:

- ✓ *Soft, lint-free cloth without abrasive elements*
- ▶ Check the washing chamber for discolouration and soiling and clean if necessary.

Salt container

The following must be fulfilled or present:

- ✓ *Multi-purpose tool rinse arm brack / salt container*
- 1. Check the salt container conduit screw connections for stability and tighten where necessary (using MELAG multi-purpose tool).
- 2. Replace the O-ring (art. no. ME51266) of the salt container.

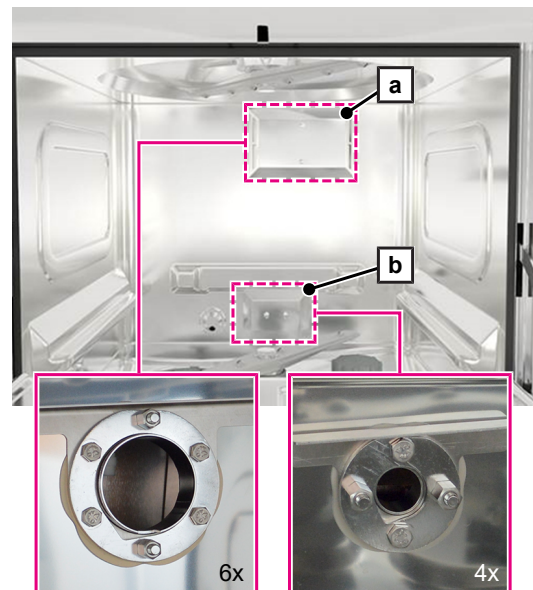


Screw connection for steam condenser

The following measure applies to devices with serial numbers up to 202010-DTA1432 and 202010-DTB3421.

The following must be fulfilled or present:

- ✓ *Open-end spanner (8 mm)*
- ✓ *Torque spanner (if present)*
- 1. Unscrew the cap nuts on the splash guards (pos. a and b) and remove the splash guards.
- 2. Check all screw connections on the steam condenser for tightness and re-tighten if necessary (6 Nm using a torque wrench or by hand until tight).
 - ➡ If a leak is detected during the test run, replace the seals on the steam condenser (art. no. ME69370, not included in the maintenance set).
- 3. Refit the splash guards (pos. a and b).



Door gasket and drip tray

The following must be fulfilled or present:

- ✓ *Lint-free cloth*
- ✓ *Spirit*
- 1. Check the door gasket for damage. If necessary, clean with spirit or replace. To do so, remove the chamber door in order to check the lower sealing area. A leaking door gasket can cause frequent running of the tank pump.
- 2. In case of visible damage, replace the door gasket (art. no. ME70700, not included in the maintenance set), see the separate instructions "Replacement of the door gasket" (doc. AS_064-10).
- 3. The hinge unlocking mechanism must be easy to operate and easy to lock.
- 4. With the door open, check the drip tray underneath in front of the door gasket and the two outflows for soiling/blockage and clean if necessary (e.g. heavy soiling).

Checking the components for the reprocessing

- ▶ Check the plastic parts of the reprocessing components (e.g. inserts, hoses and silicone bars as well as instrument holders) for wear and replace if necessary.

Basis basket

1. Check the plastic basket corners for damage and correct position.
2. Replace the O-ring (art. no. ME63610) on the injector rail coupling.
3. When using a basis basket with injector rail, remove the adapters, check for blocking and damage and re-fit everything.
4. When using an injector rail with adapters for handpieces and contra angles, check for firm seating of the instruments and replace the silicone inserts if necessary.
5. Check the ceramic filter discs (art. no. ME64375, not included in the maintenance set) and replace them if necessary; see User manual Components for MELAtherm® 10/MELAtherm® 10 Evolution.
PLEASE NOTE: The standard replacement interval is 20 cycles or 2 weeks.
6. When using metal filter discs (art. no. ME80350, not included in the maintenance set), check them for damage and replace if necessary, see User manual Components for MELAtherm® 10/MELAtherm® 10 Evolution.
7. When using a Cleanfinity filter (art. no. ME84630, not included in the maintenance set), check the filter for damage and replace it if necessary, see User manual Components for MELAtherm® 10/MELAtherm® 10 Evolution.
8. Check the stainless steel sealing cap for fixed seating and tighten where necessary.

HEPA and pre-filter

- ▶ Replace the HEPA filter (art. no. ME51240) and the pre-filter (art. no. ME68130), see the user manual.

Circulation pump cover

! PLEASE NOTE

The circulation pump cover is installed on the works side from serial number 201810-DTA1798 or 201810-DTB3351.

! PLEASE NOTE

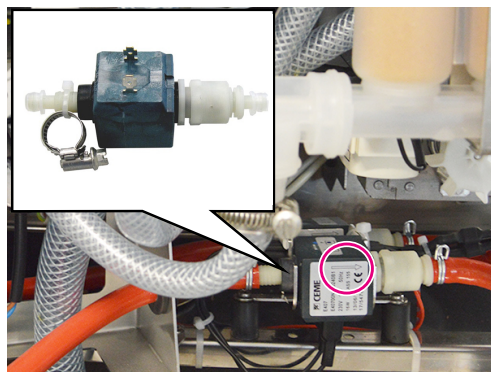
If the cover of the circulation pump cover needs to be retrofitted, the exhaust hoses can also be checked as a part of this procedure and changed if necessary, see [Exhaust hoses](#) ▶ page 12].

- ▶ If the circulation pump cover (art. no. ME21842, not included in the maintenance set) is missing, fit one. Refer to the separate set of instructions „Upgrading the circulation pump cover“ (doc. AS_004-18).

Condensate pump

If the condensate pump 50 Hz (art. no. ME69280, not included in the maintenance set) does not work properly after descaling or during the test run, replace the pump.

1. Where required, activate the condensate pump (ACOUT5) in the Diagnosis menu in order to pump out any existing descaling solution.
2. Switch off the device and disconnect the power plug.
3. Replace the oscillating piston pump 50 Hz for emptying the steam condenser.
Mind the correct flow direction from the steam condenser to the waste water collector, see the arrow on the pump (see circle marking).

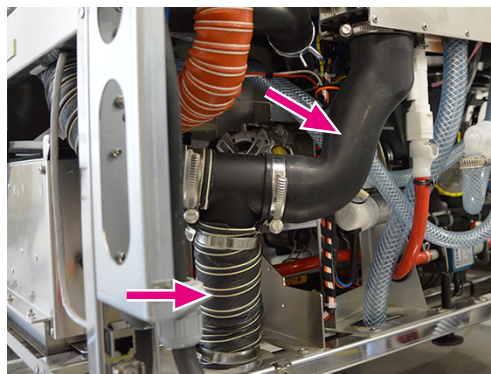


Exhaust hoses

! PLEASE NOTE

The hoses are installed on the works side from serial number 201910-DTA1776 and 201910-DTB3417.

1. If the new exhaust hoses (art. no. ME30126, not included in the maintenance set) are already in place, check them for damage and replace if necessary.
2. If the black exhaust hoses are not in place, replace them. Refer to the separate set of instructions "Replacing the exhaust hoses" (doc. AS_006-14).
3. Devices built up to and including 2014 may be equipped with incompatible hose clamps. If this is the case, replace the 4 hose clamps (art. no. ME36131, not included in the maintenance set).



Electrical connections

1. Check the stainless steel insulation from the flow heater for stability.
2. Check all fastening elements, cable connections and components for stability, especially those mentioned in the maintenance record.
3. Check that the Flat terminal sleeves (particularly those listed in the maintenance record) are securely fitted and repair them if necessary, see the separate instructions "Blade receptacles: Handling and repairing" (doc. AS_017-18).

Metering system

1. Check the power cable and the process agent hoses on the side of the drawer for damage and the correct path.
2. Check the metering pumps for visible damage. Traces from leaked process agents must be investigated for their origin, and removed after rectifying the cause.
3. Replace the metering pump hoses (art. no. ME68800, ME68900), see the separate instructions "Replacing components in the process agent drawer" (doc. AS_101-11). Re-fit the cable ties in the metering pumps for the cleaning agent and neutraliser on the left-hand side of the pressure side of the metering pump hose.
4. Replace the process agent hoses (art. no. ME75670) fitted inside the device, see the separate instructions "Replacing components in the process agent drawer" (doc. AS_101-11).
PLEASE NOTE: Before connecting the hoses to the washing chamber clean the inlet fittings for process agents, see [Process agent inlet fittings](#) [► page 13].
5. Switch on the device.
6. Check the float switches of the suction lances for their correct function: Working in the **DIAGNOSIS+SERVICE > DIN Digital inputs** menu, check the switching function by lifting the suction lances.
7. MEtherm 61 rinse aid can be metered to a maximum of 0.3 ml/l. Thus, the pre-set metering concentration corresponds to the maximum concentration. If the set metering concentration is higher, adapt to the maximum allowed concentration.
8. Re-fit the metering pump covers before the [Trial run with determination of actual metered quantities](#) [► page 16] in order to reveal any leaks in the metering pump hoses after their re-installation.

Process agent inlet fittings

NOTICE

Warning of damage to the hoses

Do not kink or damage the hoses while loosening and connecting.

1. Remove the clamp from the cleaning agent inlet fitting and pull the process agent hose off the inlet fitting.



2. The channel of the inlet fitting has a right-angled deflection to the bottom. Bend the front end of the brush lightly. Slide the brush into the channel until the bended end reaches the vertical part of the channel.



3. Clean the channel by sliding the brush with careful pressure through the channel.



4. Fit the process agent hose and the clamp on the inlet fitting again.
5. Repeat step 1 to 4 for the process agent hoses neutraliser and rinse aid.

Optional works

Stainless steel cable ties on the flow heater

- ▶ Check the stainless steel cable ties on the flow heater for stability.

Edge guard kit

PLEASE NOTE

The devices are equipped with the edge guards on the works side from the serial number 201810-DTA1568 and 201810-DTB3221.

- ▶ Fit the edge guard kit (art. no. ME21677, not included in the maintenance set), see the separate instructions "Upgrading the edge guard" (doc. AS_013-18).

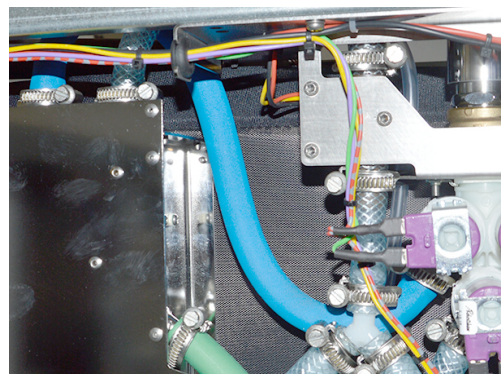
Aquapal hose for steam condenser nozzle

PLEASE NOTE

The hose is installed on the works side from serial number 201910-DTA1274 or 201910-DTB3137.

Deposits can cause leaks on the hose fitting of the condenser nozzle. The better form-stability of the Aquapal hose ensures lasting leak-tightness.

- ▶ In case of leaks, replace the hose between the solenoid valve and the hose fitting of the condenser nozzle on the steam condenser with the blue Aquapal hose (art. no. ME21971, not included in the maintenance set).



Function check

WARNING

Warning of electric shock

In order to perform the following working steps, it is necessary to operate the device without the housing parts. Failure to comply with the relevant safety regulations can result in serious injuries and danger to life.

- Comply with the relevant safety regulations during operation of an electrical appliance without housing parts.

Set degree of water hardness

- ▶ Ascertain the current degree of hardness of the cold water connection through titration (e.g. art. no. ME71000) or inquiry at the local water supplier. Correct the set degree of hardness in **SETUP MENU > Water °dH** if necessary.

Water supply

1. Check the aqua stop valve for leaks.
Working in the Diagnosis menu, switch the cold water solenoid valve (DCOUT 4) for approx. 2 s (never longer than 2 min). Water must not run into the washing chamber.
2. Check the 3-ways valve for leaks.
Working in the Diagnosis menu, switch the aqua stop cold water solenoid valve (DCOUT 8) for approx. 2 s (never longer than 2 min). Water must not run into the washing chamber.
3. Check the DI water flow.
4. Check the cold water flow.

Suction lances

- ▶ Check the filter sieve of the suction lance for cleaning agent and neutraliser for clogging or soiling and clean if necessary.

Float switch floor trough

1. Check the function of the float switch floor trough by lifting the float disc in the floor trough manually.
→ The message "509: Emergency overflow - Stop water supply" is displayed.
2. Check the float for ease of movement and damage.
3. Check the microswitch for corrosion.

Ascertaining the supply rates / calibrating the pump values with water

The following must be fulfilled or present:

- ✓ *Measuring jug/Bucket*
- ✓ *Precision scales*

1. Place the precision scales in or next to the process agent drawer and place the measuring jug/bucket (filled with lukewarm water) containing the suction lances on it.
2. Start the **Time metering 60s** program.
→ The program stops after the metering system has been de-aerated.
3. Determine the total weight of the measuring jug/bucket or if possible, set the scales to zero using the tare key.
4. Ascertain the delivery volume per minute of the cleaning agent using the 4 key.
Enter the weight change in grammes in the maintenance record.
5. Ascertain the delivery volume per minute of the neutraliser using the 4 key.
Enter the weight change in grammes in the maintenance record.
6. Ascertain the delivery volume per minute of the rinse aid using the 4 key.
Enter the weight change in grammes in the maintenance record.

The use of water means that the weight (in g) corresponds to the actual volume (in ml). The ascertained feed rates can be used 1:1 as ml.

7. Check the feed rates in **SERVICE MENU > CALIBRATION > CAL Pump values** and correct if necessary.

PLEASE NOTE

The decimal point is not displayed.
Example: the value 740 corresponds to 74.0 ml.

8. Remove the measuring jug/bucket and fit the suction lances to the corresponding process agent containers.
9. Start the **Air removal** program.

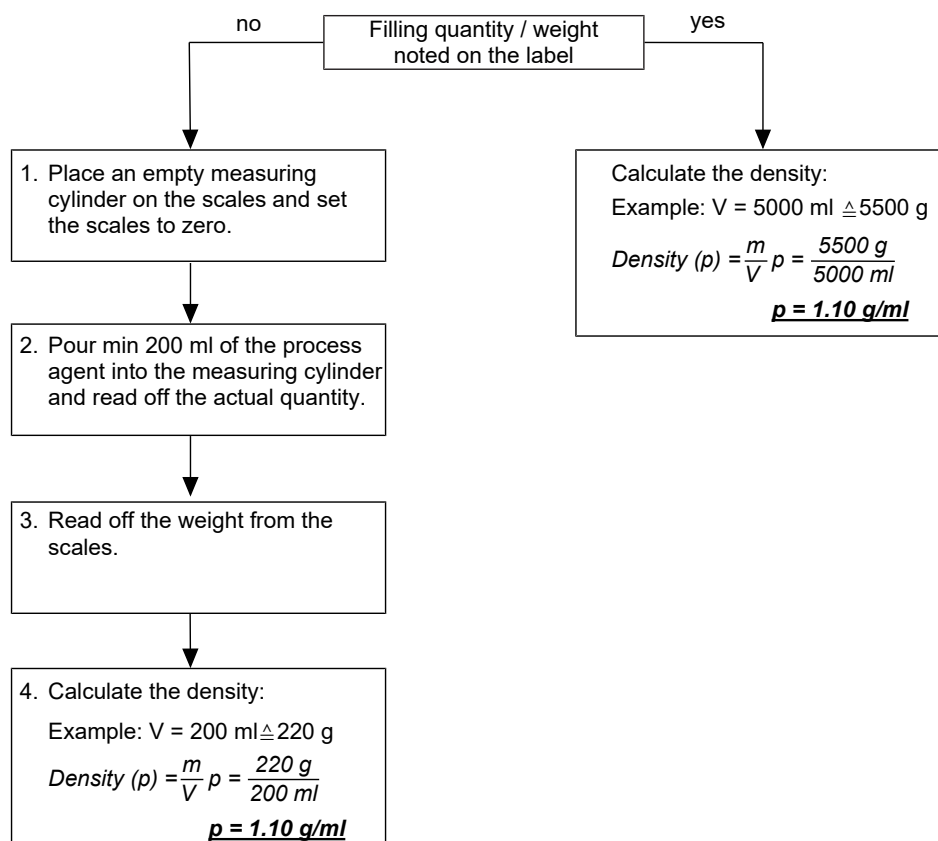
Trial run with determination of actual metered quantities

Determining the density of the process agents

Density of MEtherm		Different units for the density of the process agents
MEtherm 51	1.06 g/ml	The different units can be used 1:1. Label: kg/l Safety data sheet: g/cm ³ MELAG document: g/ml
MEtherm 55 C	1.17 g/ml	
MEtherm 61	0.99 g/ml	

The density and filling level with the corresponding weight are indicated directly on the label of the MEtherm process agents. Alternatively, the density of the cleaning agent, neutraliser and rinse aid (not for ophthalmology) can be ascertained.

The following overview shows the determination of the density of a process agent. The procedure for all process agents is the same.



Determining the metering quantities of the process agents

After determining the density, determine the metering quantity in grams. During an ongoing reprocessing program, the quantities of process agents used are determined.

PLEASE NOTE

In order to reduce the program run time, the program can be aborted as soon as the drying temperature has been reached.

1. Place the cleaning agent container on the scales and determine the total weight. If possible, reset the scales to zero using the tare key.
2. Start the device with basis basket in the program preferred by the practice.
PLEASE NOTE: In the ophthalmology the **Ophthalmo-Program**.
3. During the following program check all connections, chamber conduits and joints are for leaks.
4. During the running program determine the voltage and current draw of all coils in the flow heater during the heating process (preferably with a clip-on ammeter) and enter all data in the maintenance record.
 ↳ The cleaning agent's metering pump starts audibly as soon as the **Cleaning** partial cycle is shown on the display and the metering temperature is reached. When the pump noise stops, the metering has ended.
5. Note the weight change in grams after metering the cleaning agent.
6. Remove the container with the cleaning agent from the scales.
7. Place the neutraliser container on the scales and determine the total weight. If possible, reset the scales to zero using the tare key.
 ↳ The neutraliser's metering pump starts audibly as soon as the **Neutralising** partial cycle appears on the display. When the pump noise stops, the metering has ended.
8. After the neutraliser has been metered, note the weight change in grams.
9. Remove the container with the neutraliser from the scales.

PLEASE NOTE

The rinse aid must not be used in the **Ophthalmo-Program**.

10. Place the rinse aid container on the scales and determine the total weight. If possible, reset the scales to 0 using the tare key.
 ↳ The rinse aid's metering pump starts audibly as soon as the **Disinfecting** is shown on the display and the metering temperature is reached. When the pump noise stops, the metering has ended.
11. Note the weight change in grams after metering the rinse aid.

PLEASE NOTE

The exhaust hose must be re-installed before the end of disinfection (5 min holding time) in order to avoid steam and hot air emission.

Converting the determined metering quantities of the process agents

Based on the determined density and the metering quantities in grams it is possible to convert the metering quantity of the process agents to millilitres.

The following example shows the conversion of the metered quantity in millimetres. The procedure for all process agents is the same.

$$\text{Metering quantity [ml]} = \frac{\text{Metering quantity [g]}}{\text{Density [g/ml]}}$$

Example:

For example, the cleaning agent weighed 30.8 g in the Universal-Program. => Metering quantity = 30.8 g
The ascertained density of the cleaning agent is 1.1 g/ml.

$$\text{Metering quantity} = \frac{30.8 \text{ g}}{1.1 \text{ g/ml}} = \underline{\underline{28 \text{ ml}}}$$

- Enter the determined values in the maintenance record.

Checking the metered quantity actual / target

1. Read off the metering nominal values from the program log and compare these to the previously determined metering quantities.
→ A maximum deviation of ± 10 % is permissible.
2. Should larger deviations occur, adjust the feed rate of the corresponding metering pump.
3. Finally, check the actual metered quantity in the corresponding partial cycle, see [Determining the metering quantities of the process agents](#) [► page 17].

The following example shows how to determine the percentage deviation between the nominal and actual value of the metered quantity. The procedure for all process agents is the same.

$$x = \left(\frac{V(\text{actual})}{V(\text{target})} - 1 \right) \times 100$$

Example:

Calculated metering quantity: V (actual) = 28 ml

Metering quantity acc. to log printout: V (target) = 27.8 ml

$$\left(\frac{28 \text{ ml}}{27.8 \text{ ml}} - 1 \right) \times 100 \implies \underline{x = 0.7 \%}$$

The check of the metering quantity reveals a deviation of 0.7 %.

4. Read off the nominal value of the process agent from the program log.
5. Compare the nominal value with the calculated actual value and determine the percentage deviation.
6. Enter the determined values in the maintenance record.

Assembly and set-up of the device

1. After completing the work, close the device and make it ready for operation.
2. When aligning the device in the installation location, make sure that the process agent hoses, the inlet hoses and the outlet hose have been installed correctly.

! PLEASE NOTE

To avoid the process agent hoses and the mains cable from becoming trapped, leave the drawer open whilst fitting the housing parts.

Electrical test in accordance with EN 50678 (VDE 0701) or national standard

1. The measuring devices to be used for these tests conform to VDE 0413 or EN 61557. Test and calibrate these measuring devices regularly.
2. After closing the device, perform an electrical test according to EN 50678 (in Germany VDE 0701). Comply with the applicable national specifications.
3. Provide the test protocol to the practice.

! PLEASE NOTE

For more information, see "Manufacturer's recommendation for electrical test during initial commissioning, after maintenance or repair".

Resetting the maintenance counter

- Reset the maintenance counter once the work has been completed, see separate instructions "Resetting the maintenance counter" (doc. AS_025-15).

Parameter changes

- If parameters are changed within the scope of maintenance works, note these in the maintenance record and include a printout of the status log.