Operating Instructions

Eco 1000

V18

IMO GmbH Gässlesweg 6 D-75334 Straubenhardt Tel.: +49 (0) 07082 49180 www.imo-ag.com info@imo-ag.com

Table of contents

Dear Customer,

We appreciate your interest in our product and thank you for the trust you have placed in us.

Please observe the safety instructions listed below before commissioning your Öko 1000 circuit board washing machine.

1. Safety-related information

The Öko 1000 cleaning system may only be connected to a power supply that is protected by a maximum 16A fuse!
Please refer to the type plate for the mains voltage.

The system should be installed by personnel who are familiar with the installation of such or similar systems. Our technicians will be happy to assist you.

Please only use cleaning agents that you have purchased from us. Our cleaning agents are specially formulated for the washing requirements of this PCB washing machine. If you still wish to use a different cleaning agent, please obtain our approval first. Unauthorized cleaning agents can destroy the machine, which will also void the warranty.

Please ensure that your items are suitable for this cleaning process. We accept no liability for damage relating to process, material, and temperature compatibility on the washed circuit boards and components.

Glass tube microfuses cannot be cleaned. Please insert these components after cleaning.

Regularly check the edge of the lower metal sieve in the interior for rust spots. These can be caused by iron parts and lead to contact corrosion in the stainless steel sheet.

If you do not dry the unit after cleaning, you must start a separate drying cycle every day after work to prevent corrosion damage (rust) to the drying turbine.

To allow the interior to dry completely, the door should always be left slightly open when the system is not in use.

Only place loads on the open door with the support grate (and items to be washed) extended, max. 15 kg. Do not use as a work surface or seat, do not stand on it: risk of tipping!

To prevent water damage, the cleaning system can only be operated in conjunction with the external solenoid valve supplied.

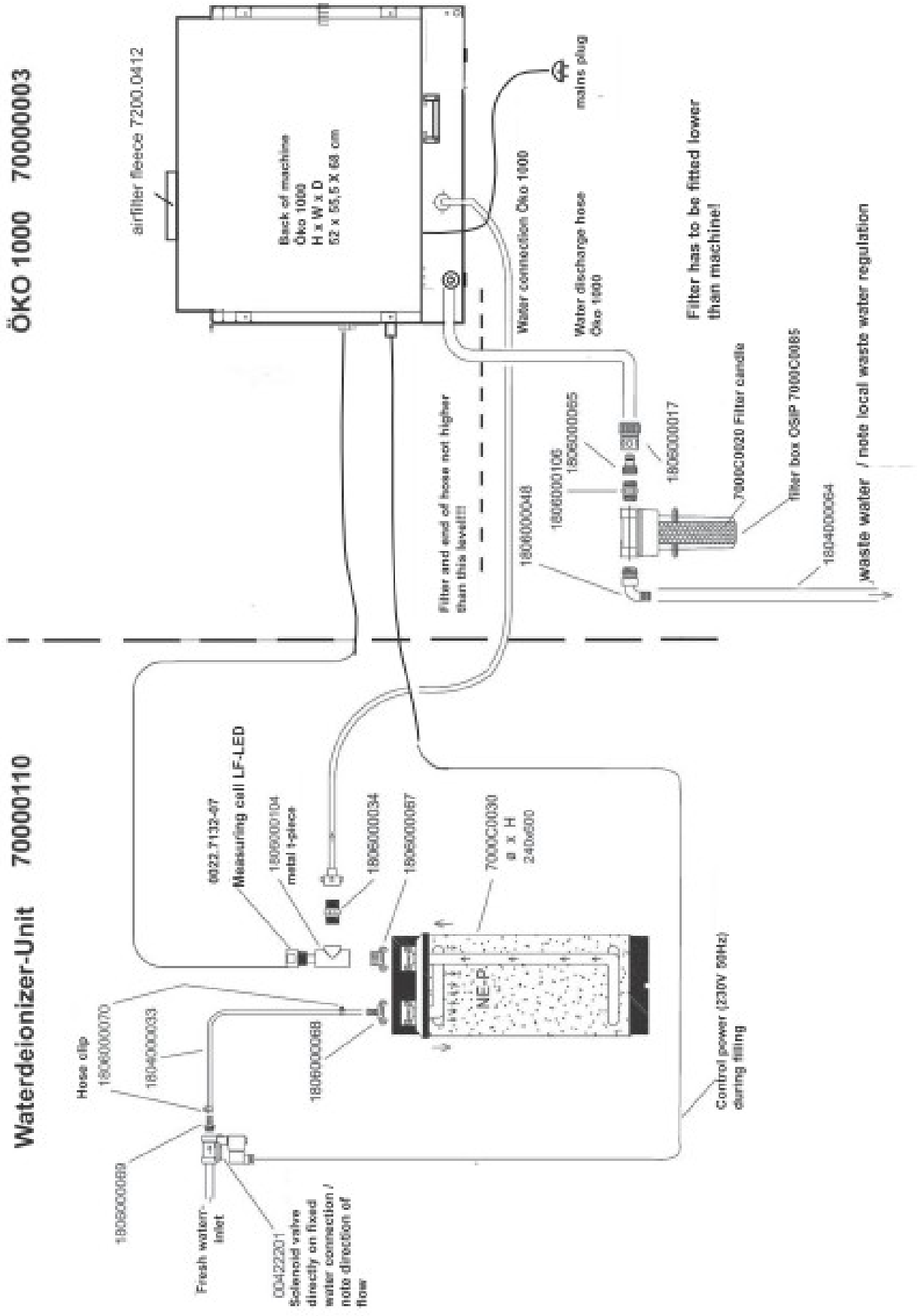
We wish you every success in cleaning your products.

If you have any questions, please feel free to contact us at any time.

IMO GmbH

2. Schedule of connection Öko 1000

NE water deionizer with conductivity measurement



3. Starting up

3.1 Connecting the Öko 1000 PCBwashing machine

Set up the Öko 1000 circuit board cleaning system horizontally and securely.

Fresh water:
Connect according to the connection diagram on page 4.
The water pressure should be at least 2 bar and no more than 8 bar.
Connection to a pressureless water heater is not permitted!

Waste water:
Connect according to the connection diagram on page 4.
The waste water filter and waste water connection must be located lower than the bottom edge of the machine.
The local wastewater regulations must be observed!

Electrical connection:
Only connect the cleaning system to 220 V - 230 V 50 Hz alternating current via a properly installed grounded outlet. For special versions that deviate from these specifications, can be found on the type plate.

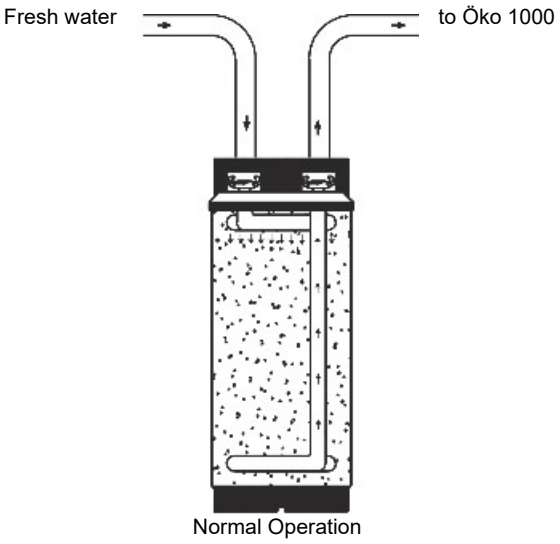
3.2 Installation of the filter cartridge

Install the supplied filter cartridge **at a maximum height of the bottom edge of the machine or lower** on the wall. (See connection diagram).

3.3 Ventilation of the water desalination cartridge

Please note that when a new desalination cartridge is put into operation, it vents itself. This can lead to error messages, which should be ignored. The program will abortitself and must then be restarted. This process must be repeated until the cleaning program runs through (usually 5-10 times).
For faster venting, temporary operation in the reverse flow direction is also possible. To do this, swap the "inlet" and "outlet" connections.
After several filling processes of the system , the connections must be reinstalledin the correct positions.

Residual venting can be carried out at the vent valve in the cover.

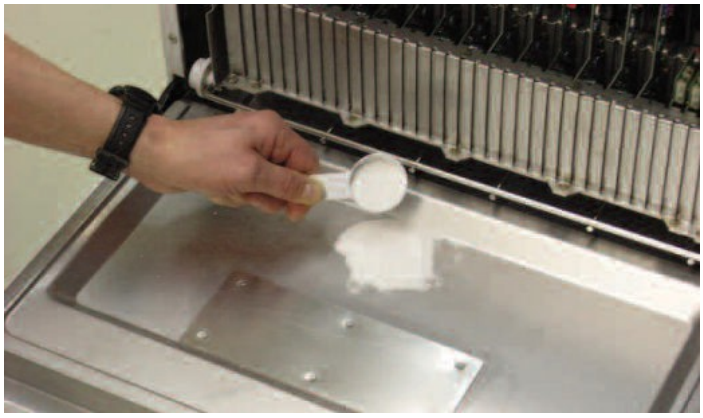


Normal Operation

3.4 Cleaner dosing

Powder:

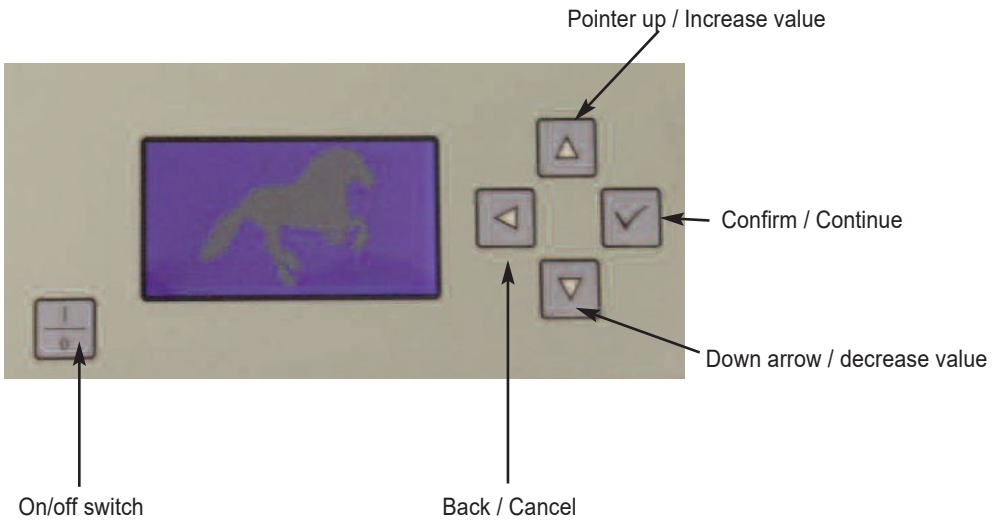
Dispense powdered cleaning agents as shown before starting the cleaning process or when prompted by the system onto the open front flap.



Liquid cleaner:

As shown, dispense directly into the wash room before starting the cleaning process or when prompted by the system.

3.5 Front panel controls



The following wash programs are preset, but can also be changed:

Program 1:

For cleaning printed circuit boards in general, also suitable for removing "no clean" flux residues . Followed by drying.

Cleaner: Component A, approx. 100 ml and Mix3, approx. 40g

Program 2:

For cleaning printed circuit boards containing only colophony-based Flux with subsequent drying.

Cleaner: Mix 3, approx. 40g

Program 3:

For cleaning lightly soiled items, e.g., degreasing and dusting followed by drying.

Cleaner: Mix 3, approx. 40g

Program 4:

Drying only

3.6 Cleaning

1 Preparation

- Open front flap
- Place the washing frames equipped with printed circuit boards in the washing room
- Dose the cleaning agent (see section 3.4)

2 Cleaning

- Close the front flap
- Press the ON button to the left of the display
- Select "Start program."
- Use the UP/DOWN buttons to select the desired program
- Confirm the selected program with the ENTER button
- The machine starts working and the program steps are shown on the display
- When prompted by the machine, dispense the second cleaning agent. To do this, open the front flap by pulling on the door handle.
- Completion message at the end of the cleaning program

3 Remove the laundry

- Open the front flap
- Remove the washing frames equipped with printed circuit boards from the washing chamber.
  Caution: The items to be washed are hot!
- Leave the front flap slightly open.

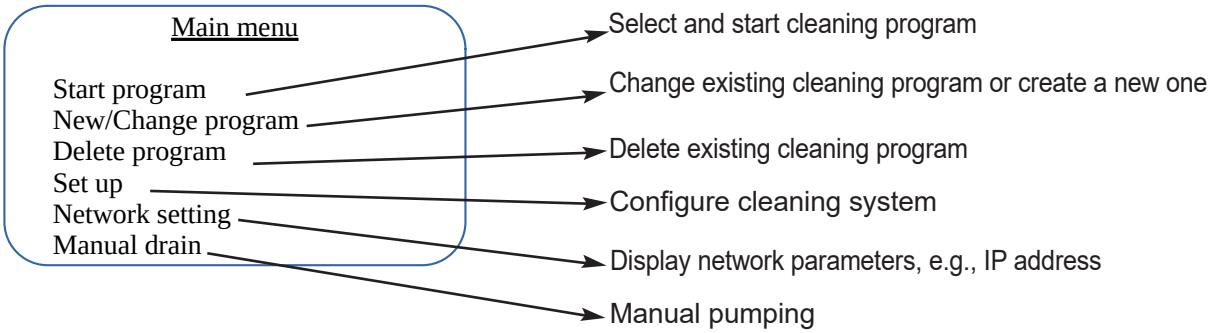
Please note:
The device only operates when the front flap is completely closed. Opening the front flap immediately interrupts the program sequence. This is indicated by a corresponding message on the display. During the heating phases, the elapsed cleaning or rinsing time is displayed as '--'. Once the target temperature values have been reached, the programmed time runs down.
The elapsed time is displayed.

4. Operating overview

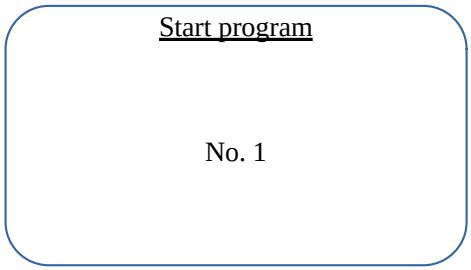
Function of Keys:

- On/Off switch
- Increase value / Move pointer up
- Decrease value / Move pointer down
- Cancel / return to previous menu item
- Confirm / select menu item

4.1 Main menu

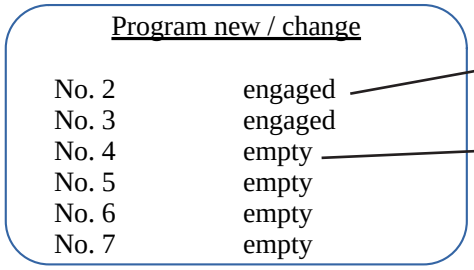


4.2 Start program



Select the existing cleaning program with ▲ or ▼ and press ✔ to start

4.3 Program new / change



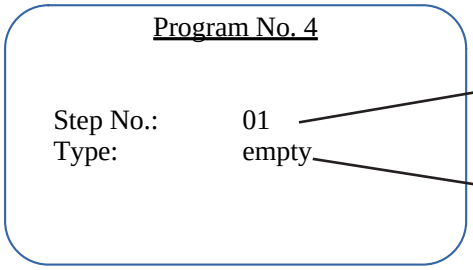
Existing cleaning program:
Change possible

Empty memory space:
New cleaning program can be added

Use ▲ / ▼ to select the number of the program to be created / changed.

Use ☑ to enter edit mode

Note: Program numbers 1 to 20 are possible.



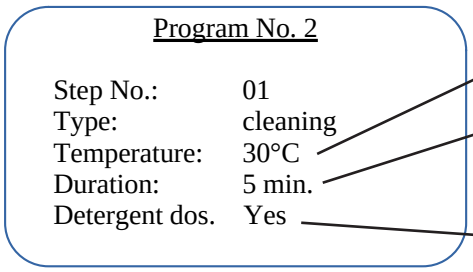
By selecting ☑ and using ▲ / ▼ to scroll through the individual program steps.

Note: If the current step is empty, you cannot scroll further.

Type of program step; can be changed by selecting ☑.

Note: Possible program step types are
clean, rinse, dry, empty (deleted)

Program step type "clean"



Desired water temperature in the range from 20°C to 70°C

Running time between 5 and 40 minutes after the water has been heated to the desired temperature

Addition of cleaner: Yes/No is switched ☑. If "Yes" is set, the program stops and displays a reminder message for manual dosing of cleaner.

Program No. 2

Step No.: 02
Type: rinsing

Temperature: 30°C
Duration: 2 min.
EC-Limit: 40µS

Program step type "rinse"

Desired water temperature in the range from 20°C to 70°C

Runtime in the range of 2 to 20 minutes after the water has been heated to the desired set temperature.

Conductivity limit value in the range from 10 to 200 µS or "none" (conductivity measurement for this rinse cycle off).

Note: If an EC - limit value is specified, the same limit value is assigned to each subsequent rinse cycle. If there is a previous rinse cycle with an EC - limit value, there is a previous there is a previous.

Program No. 2

Step No.: 03
Type: drying

Temperature: 90°C
Drying grade: 5
Run after: 10 min.

Program step type "dry"

Desired air temperature at the fan outlet in the range from 50°C to 100°C.

Desired degree of dryness of the warm air in the range from level 1 to 6. At level 6, drying continues until the lowest residual moisture is reached.

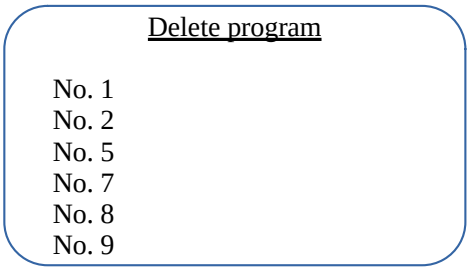
Time in the range of 0 to 600 minutes during which, after the air has reached the desired dryness, further drying continues in order to completely dry out components such as sockets.

Note: The drying step cannot be followed by another program step.

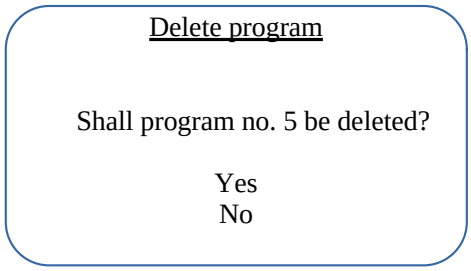
Rules for program creation:

- No further program step can follow a drying step.
- There must be no empty (deleted) program steps between two program steps.
- A rinse step with an EC - limit value cannot be followed by a cleaning step. Conversely, an EC – limit value cannot be assigned to a rinse step before a cleaning step.
- If an EC - limit value is assigned to a rinse step, this limit value also applies to all subsequent rinse steps.
- If the EC-limit value of a rinse step is reached, every further rinse step of the program is skipped, as sufficient cleaning has already been achieved.
- A maximum of 10 program steps are possible.

4.4 Delete program

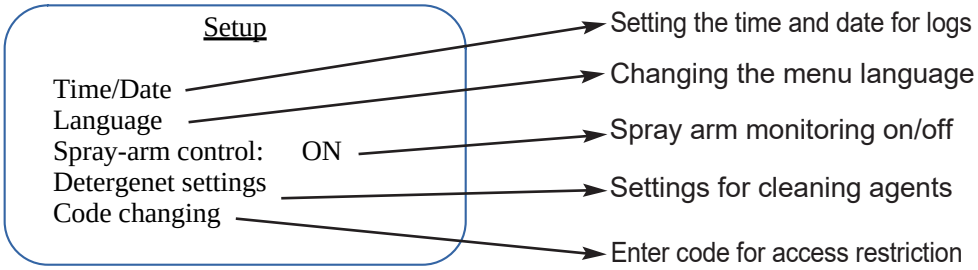


Use ▲ and ▼ to select a program from the list of available cleaning programs and confirm with ☑ to confirm.

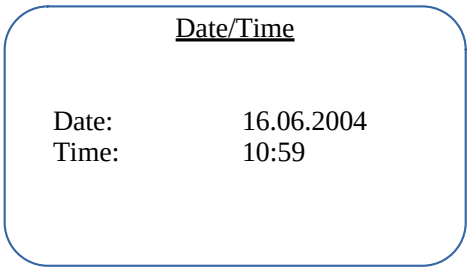


Confirm the deletion process by selecting "Yes".

4.5 Setup



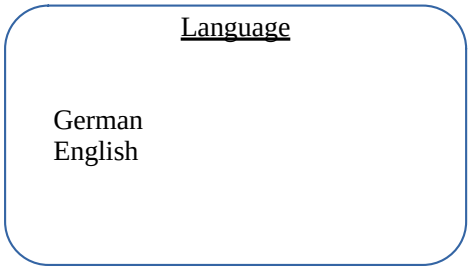
4.5.1 Set date/time



Use ▲/ ▼ and ☑. Select date or time.

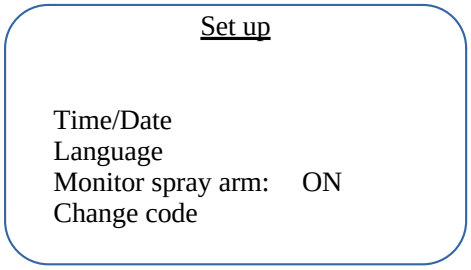
Use ▲/ ▼ to change the value (day/month/year or hour/minute) and use ☑ to move to the next value.

4.5.2 Change menu language



Use ▲ and ▼ to select the desired language and confirm with ☑ to confirm.

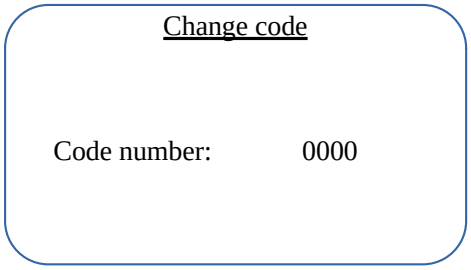
4.5.3 Spray arm monitoring on/off



Use ▲ / ▼ to select the entry "Spray arm control" and switch with ☑ to switch.

Note: The spray arm monitoring should generally always remain switched on, as otherwise the foam regulation or blockage detection for the lower spray arm will not function.

4.5.4 Change code



The code number can be used to restrict access to the cleaning system functions. This function is disabled with the code number '0000'.

The code number protects the following functions:

New/change program

Delete program

Change code

4.6 Network settings

After connecting the system to the company network, the ÖKO1000 obtains an IP address via the DHCP system.

This address and other network parameters are displayed here. For more

information on network connection, see section 6 (page 20).

5. Program sequence

5.1 Cleaning step

Program No. 2:

1: cleaning

Water: 0.7 Liter
Temperature: 20°C / 50°C
Duration: --min. / 20 min.
Dosage 1: Component A 0.5%

Water is being filled:
The amount of water filled is displayed.

Program No. 2:

1: cleaning

Temperature: 20°C / 50°C
Duration: --min. / 20 min.
Dosage 1: Component A 0.5%

Water is heated.
The current water temperature and the target temperature are displayed.

Program No. 2:

1: cleaning

Temperature: 50°C / 50°C
Duration: 14min. / 20 min.
Dosage 1: Component A 0.5%

Water is circulated, the cleaning time is running:

The time that has already elapsed and the target duration are displayed.

Program No. 2:

1: cleaning

Temperature: --°C / 50°C
Duration: --min. / 20 min.
Dosage 1: Component A 0.5%

Cleaning step completed, the water is pumped out.

5.2 Rinsing step

Program No. 2:

2: rinsing

Water:	0.7 Liter
Temperature:	20°C / 40°C
Duration:	--min. / 10 min.
EC-Value:	---µS / 30µS

Water is being filled:
The amount of water filled is displayed.

Program No. 2:

2: rinsing

Temperature:	23°C / 40°C
Duration:	--min. / 10 min.
EC-Value:	---µS / 30µS

Water is being heated:
The current water temperature and the target temperature are displayed.

Program No. 2:

2: rinsing

Temperature:	40°C / 40°C
Duration:	8 min. / 10 min.
EC-Value:	---µS / 30µS

Water is being circulated; rinsing time is running:
The time that has already elapsed and the target duration are displayed.

Program No. 2:

2: rinsing

Temperature:	--°C / 40°C
Duration:	--min. / 10 min.
EC-Value:	13µS / 30µS

Water conductivity is measured: If "none" has been specified as the limit value, this part is omitted.

If the measured value is lower than the setpoint value, all subsequent flushing steps are omitted.

If the measured value is greater than the set target value, the next rinsing step is performed. If no further rinsing steps have been programmed, an error message is displayed. The cleaning program must be repeated, as the cleaning result is likely to be unsatisfactory.

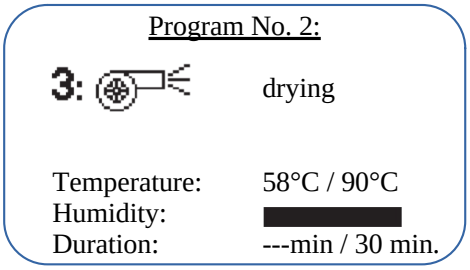
Program No. 2:

2: rinsing

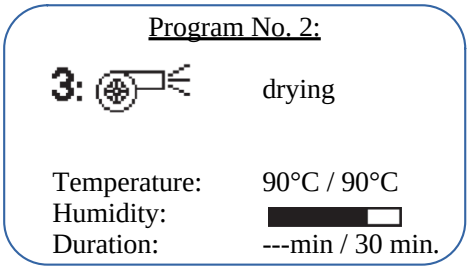
Temperature:	--°C / 40°C
Duration:	--min. / 10 min.
EC-Value:	--µS / 30µS

Rinse step completed, the water is pumped out.

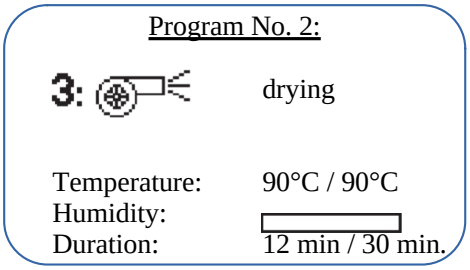
5.3 Drying step



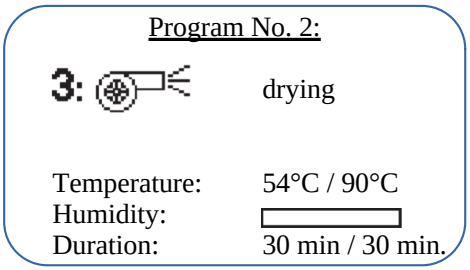
Air is heated:
The current air temperature and the target temperature are displayed.



Drying process in progress:
Once the target temperature has been reached , the residual moisture bar decreases as drying progresses.



Desired degree of dryness reached, post-drying in progress:
If a post-drying time has been set (duration greater than zero), this time now elapses with reduced turbine power.
The time that has already elapsed and the set target duration are displayed.



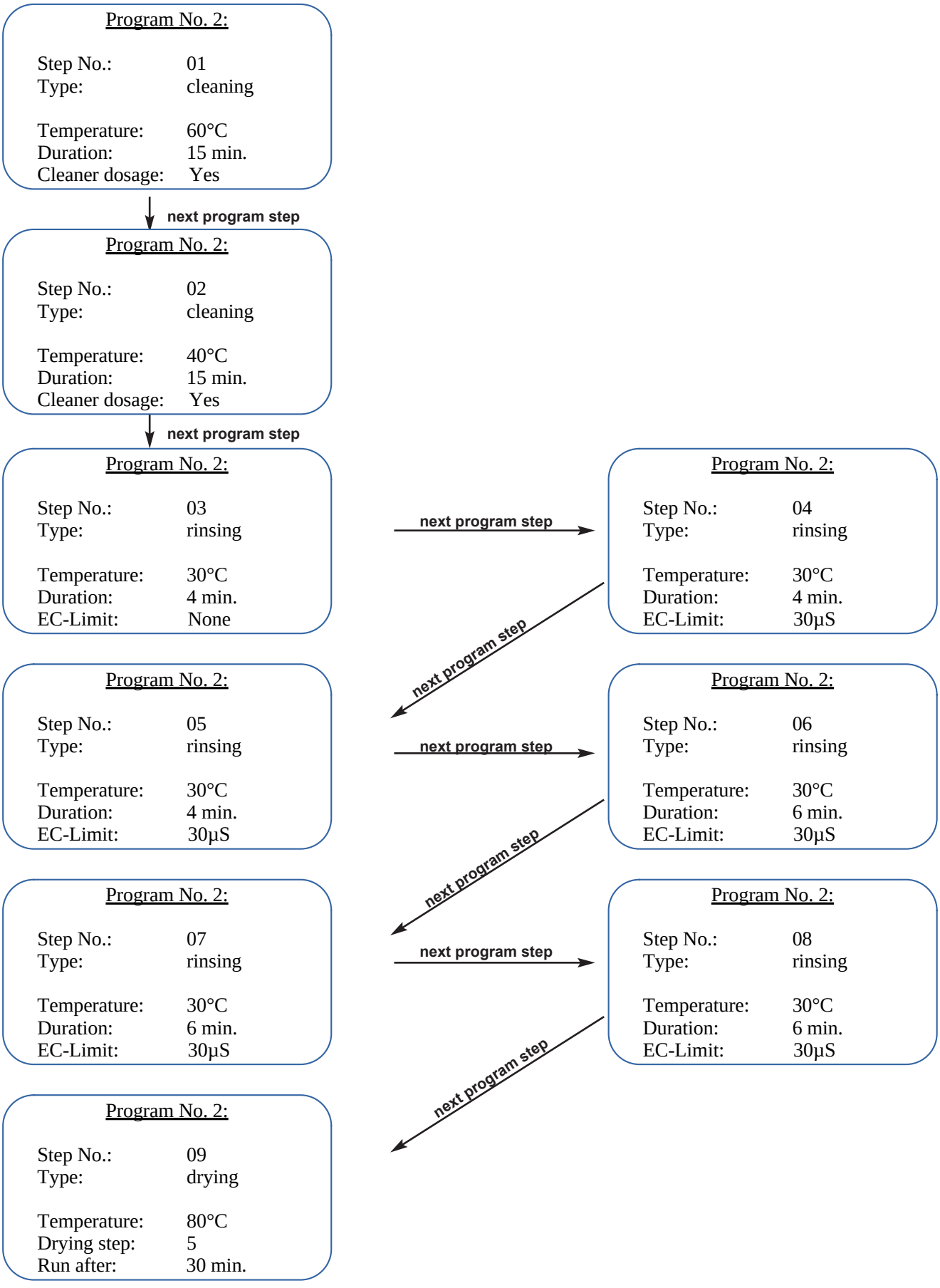
Cooling phase:
The interior of the machine is cooled to 50°C. The turbine runs at reduced power.

5.4 End of program

End of program:
If enabled in the setup, the cleaning program log is printed.

Opening the door or pressing the button switches off the system.

5.5 Program example



5.6 Notes and Maintenance

5.6.1 Foaming

ATTENTION: Heavy foaming reduces cleaning effectiveness! If heavy foaming occurs during washing, please contact us.

Excessive foaming can be recognized by the following:

Visually, if a layer of foam is visible after opening the door or if foam escapes from the machine.
Acoustically, by uneven running (repeated idling) of the circulation pump.

5.6.2 Replacing the filter cartridge

The wash water and rinse water are passed through the filter cartridge to filter out solid particles.

The filter cartridge must be replaced if the lye is not completely pumped out within the specified time, which can be observed through the filter cartridge housing.

5.6.3 Replacing the air filter

The air required for drying is drawn in through a **filter fleece (item no.: 7200.0412)** via a channel at the top of the machine.
This filter must be checked for contamination at regular intervals and cleaned or replaced if necessary.

5.6.4 Cleaning the dirt trap

Clean the dirt trap approx. 4 times a year to remove any metal shavings that have accumulated.

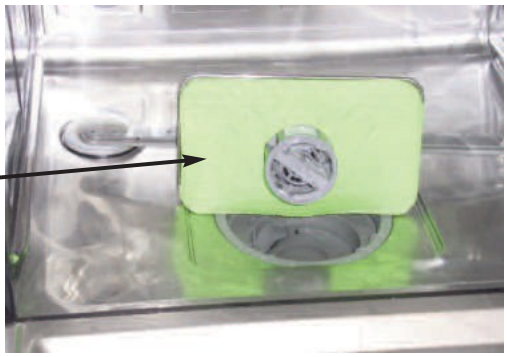
Dirt trap

5.6.5 Cleaning the screen insert

At regular intervals (approx. 4 times per year) remove the screen insert in the washroom (by turning the plastic insert) and clean the space underneath with an industrial vacuum cleaner to remove solder residue.

Wash out the **filter mat**, on which additional solder residues collect, in a bucket of water and replace it with a new one when worn

Filter mat: Item no.: 7000C2014



6. Network connection

There is a USB and RJ45 Ethernet LAN socket on the left side panel, at the rear, at the bottom .

The USB port is intended for future firmware updates.

The LAN socket is used to connect the ÖKO 1000 to the company network. You can then access various system data using a standard browser.

After connecting the system to the company network, the ÖKO 1000 obtains an IP address via the DHCP system.

This IP address can be displayed on the ÖKO 1000 screen. To do this, select "Network Settings" from the main menu .

By entering this IP address in the address field of a browser on a computer connected to this network, you can access the programs you have created, system settings , and the logs of the last 20 cleaning cycles.

The logs are sorted by date and can also be conveniently output as a .pdf file .

Settings or changes to programs cannot be made via the network , but must be made on the system itself.

7. Error messages

Message	Cause	Solution
A1 Internal inlet valve defective	- Machine-side inlet valve is leaking - Inlet hose has been extended	- Valve must be replaced - Use inlet hose in original length
A2 External inlet valve defective	- External inlet valve is leaking - Inlet hose has been extended - Air in the water desalination unit	- Valve needs to be replaced - Use inlet hose in original length - Vent the water desalination cartridge (see page 5)
A3 Inlet valve defective or inlet blocked	- Inlet valve on machine side or inlet side defective - Inlet valve on the inlet side not connected - Water supply shut off - Inlet hose kinked	- Valve must be replaced - Connect power cable for inlet valve - Open the water tap - Check inlet hose and remove kink
S1 NTC water short circuit	- Water below the machine - NTC defective - Defect on ground circuit board	- Find and eliminate the cause of moisture; allow machine to dry - Contact customer service - Contact customer service - If the error occurs repeatedly, please contact us
S2 NTC water interruption	- NTC defective - Supply line to NTC defective - Circuit board base defective	- If the error occurs repeatedly, please contact us
S3/S5 NTC air short circuit	- NTC on the exhaust/intake side of the drying system is defective - Circuit board drying defective	- If the error occurs repeatedly, please contact us.

Message	Cause	Solution
S4/S6 NTC air interruption	- NTC on the exhaust/intake side of the drying system is defective - Plug or cable to one of the NTCs is defective - Circuit board drying defective	- If the error occurs repeatedly, please contact us
S9 Maximum water temperature exceeded	- Control for water heating defective - NTC water defective - Bottom circuit board defective	- If the error occurs repeatedly, please contact us
S10 Maximum air temperature exceeded	- Control for air heating defective - NTC on the outlet side of the drying system is defective - Plug or supply cable to one of the NTCs is defective - Drying circuit board defective	- If the error occurs repeatedly, please contact us
S12 Spray arm blocked	- Spray arm worn; particles in the spray arm hub - Spray arm caught in hanging cables or similar - Water circulation is impeded - Water loss due to waste water hose ending too low (see also Troubleshooting S15)	- Check whether the spray arms can be turned easily - Check the filters for contamination and clean if necessary - Ensure the correct amount of detergent is used - Do not stack laundry too tightly - Use a different flux
S13 Too much foam in the machine	- Too much foaming detergent used - See also error S12	- Use activator - See also error S12

Message	Cause	Solution
S15 Water loss	- Scooping parts in the laundry - Dirt trap and/or filter insert dirty - Water indicator defective - Circulation pump does not start	- Load the laundry so that the water can drain off the items easily - Clean the dirt trap and filter insert - Circulation pump or condenser defective Pump blocked - If the error occurs repeatedly, please contact us
S16 Water leak	- Water circuit leaking - Water leakage at the bottom of the machine - Excessive foaming	- Switch off the machine, disconnect it from the power supply, and tilt it *slightly backward* so that any water that has leaked out can drain away. Check the machine for water leaks, eliminate any leaks, or prevent foam formation. - Perform a reset and restart the program.
S17 Heater fuse for air has tripped	- The overtemperature fuse has tripped. -Turbine defective - Air filter dirty	- Unplug the power cord! Remove rear shaft cover and switch temperature fuse back on at top of heating unit - Check whether the turbine starts up - Check the air filter and replace if necessary - The air intake and exhaust openings inside the machine must not be covered by the laundry. - If the error occurs repeatedly, please contact us
S20 Ion exchanger exhausted	- Ion exchange cartridge depleted	- Connect new or regenerated ion exchanger cartridge

Message	Cause	Solution
T1 Filling time exceeded	- Insufficient water pressure - Water inlet hose defective - Water shut-off valve may not be fully open	- Check water supply and water pressure - Restart program
T2 Water heating time exceeded	- Water heater defective - Water temperature sensor faulty	- Remove the laundry and restart the program without laundry - If the error occurs repeatedly, please contact us
T3 Air heating time exceeded	- Air heating defective - Air temperature sensor faulty	- Remove the laundry and restart the program without laundry - If the error occurs repeatedly, please contact us
T4 Drain time exceeded	- Waste water hose blocked - Filter cartridge worn out - Drain pump defective	- Switch off the machine - Check the drain hose and filter cartridge, replace if necessary - Restart the program - If the error occurs repeatedly, please contact us
T5 Maximum drying time exceeded	- Air outlet openings covered by laundry	- Position laundry correctly
Please close the door	- Front flap is not completely closed.	- Close front flap

8. Function of the connection plugs

External solenoid valve
This connector suppliesthe solenoid valve in the water inlet, upstream of the ion exchanger cartridge, with mains voltage as required. Max. load up to 1A.
For safety reasons, the system cannot be operated without this valve.

External brine pump
If necessary, an additional pump can be connected here to increase the delivery head of the wastewater. Mains voltage is applied to the plug during pumping.
Max. load capacity up to 1A.

External fault message
If a malfunction occurs in the system, mains voltage is applied to this connection. Max. load capacity up to 1A. The error message is shown on the display.

External EC measurement
The conductivity meter of the water desalination unit is connected here, if available.

8. Technical information

The water is heated in a continuous-flow heater, so there is no unsightly radiator in the interior. The water system and floor pan make it virtually impossible for water to escape. This ensures a high level of protection against water damage.
The consistent 6-sided insulation ensures particularly quiet operation.

Washing temperature		20°C - 70°C +/-2°C
Washing time per wash cycle		5 - 40 min
Rinse temperature		20°C - 70°C +/-2°C
Rinse duration per rinse cycle		2 - 20 min
Temperature / warm air drying (due to heat radiation and output, the internal temperature is approx. 80% of the preselected drying temperature)		50°C - 100°C +/-5°C
Duration of warm air drying (it is also possible to create cleaning-only or drying-only programs)		0 - 600 min
Power Please refer to the type plate for special designs		230V AC / 50Hz
Cable connection		1.6 kW
Operating noise:		Cleaning/rinsing approx. 50dB(A) / drying approx. 65dB(A)
Water consumption per load		approx. 3.5 L. deionized water
Circuit board size (with washing frame)	max.:	340 mm x 240 mm
Interior dimensions	H x W x D	25 x 49 x 42 cm
External dimensions	H x W x D	52 x 55.5 x 68 cm
Weight		approx. 40 kg