User Guide

Öko 1000

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Dear Customer,

we are glad because of your interest in our products.
Thank you for the confidence you have shown us.

Please attend technical safety instructions on this page, before startup of your new cleaning machine for circuit boards Öko 2000.

1. Safety Instructions

The washing machine ÖKO 2000 must only be connected to a supply protected by a fuse rated not more than 16A! Please see for the power supply voltage at the type label on the machine.

The installation of the machine should be arranged from employees, who are familiar with installation of such or similar machines. Our technicians will like to help you.

Please only use cleanser, which you have bought at our company.
Our cleansers are coordinated especially at the cleaning requirements of that cleaning machine for circuit boards. If you anyway should want to use an other cleanser, please obtain an O.K. from our technicians. If you use external cleanser and you didn't get O.K. from us, you will loose guarantee for your machine, because such cleanser can destroy the machine.

Please make sure, if your laundry is suitable for such cleaning processes. We assume no liability for damages because of process, material and temperature compability on cleaned circuit boards and components.

Please clean LC-displays only with Mix 2. Heat-sink do not clean with Mix 2!
You can't clean glas-tube fuses! Those components please fit after cleaning process.

Please regulary check the boarder of the bottom metal filter for traces of rust. These may be caused by pieces of iron and may lead to contact corrosion on the stainless steel.

If you do not dry after cleaning process, you have got to start every day after work a separat drying process. So your can avoid damages of corrosion (rust) at the drying turbine.

The opened door to charge only with max. 15 kg (with extended grate and laundry)
Don't use as work disk or seating. Don't stand on it, there is danger of tilting!

To avoid water damage, the cleaning machine can be put into operation only in connection with the external solenoid valve.

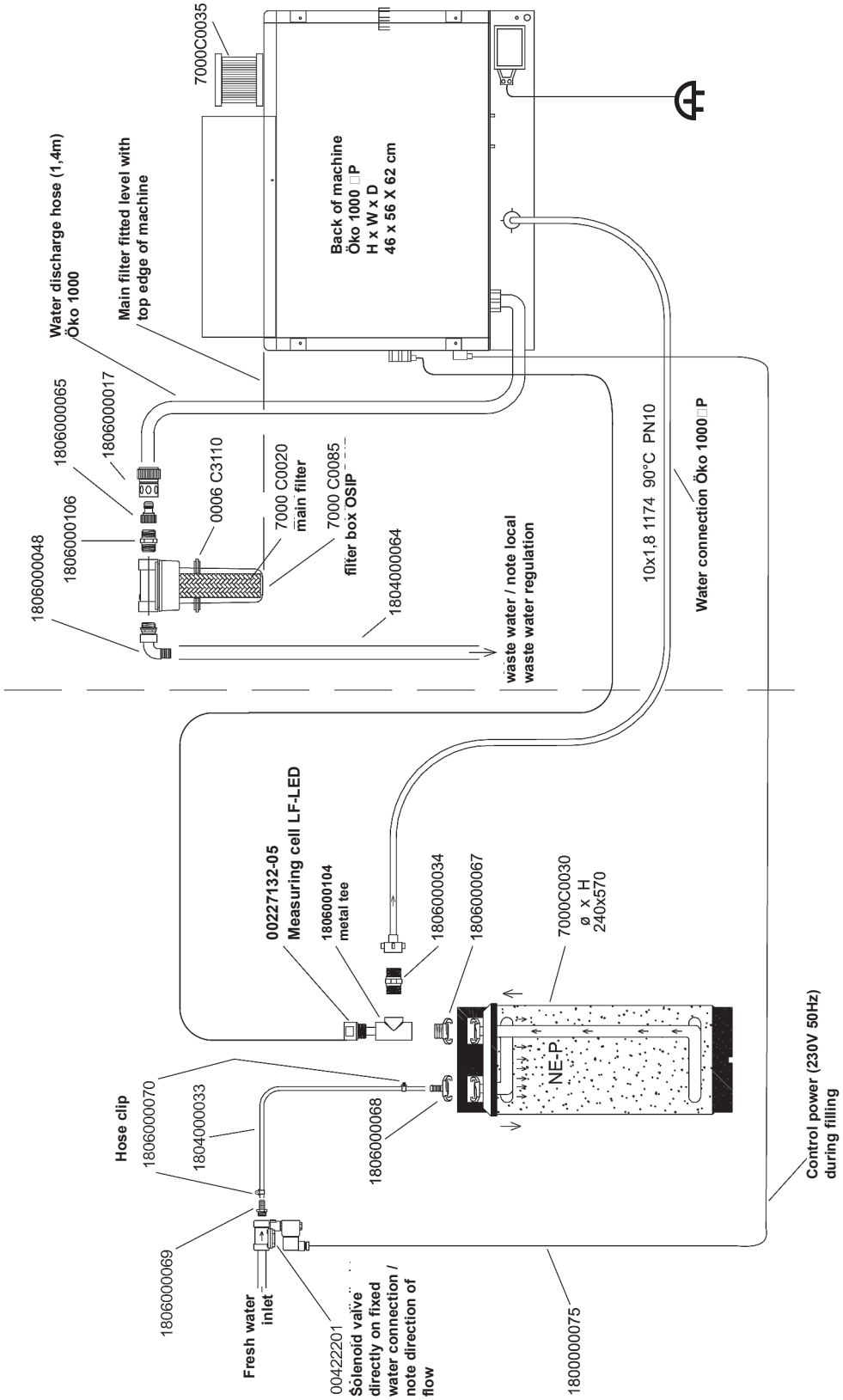
Now we wish you success at cleaning of your products.

If you have questions, you can get in contact with us anytime.

IMO GmbH

2. Schedule of connection Öko 1000

NE water deionizer with conductivity measurement



3. Starting up

3.1 Connecting up the circuit board washing machine

The circuit board washing machine ÖKO1000 must be set up in a horizontal position.

Water supply: Connect up according to the connection diagram page 5.
The water pressure should be at least 2 bar and not more than 8 bar.
The machine must not be connected to a no-pressure water heater.

Drain: Connect up according to the connection diagram page 5.
The local waste water regulations have to be observed!

Elect. connection: The washing machine must only be connected to a 220V - 230V AC supply though a correctly installed mains socket.

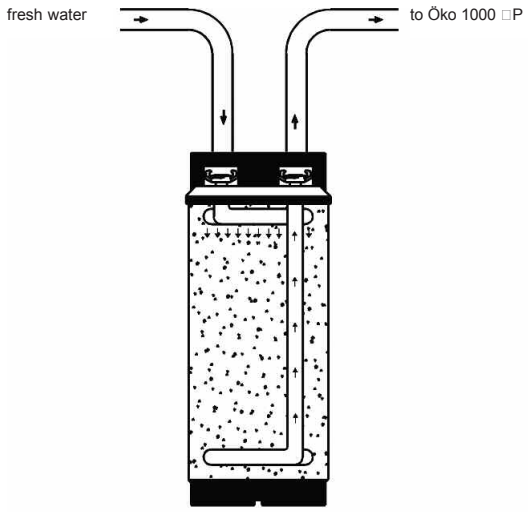
3.2 Installation of the filter unit

The supplied filter unit has to be mounted on the wall **at or above the top of the machine** (see connection diagram).

3.3 Removing the air from the deioniser cartridge

Please notice, by starting up of a new deioniser cartridge the air inside is removing by itself. This can causes error messages, which you have to disregard.
The program interrupts and is to start again. This procedure is to retry till the cleaning progam runs through (normal case 5-10 times).

The remaining air can be removed at the vent valve in the cover.



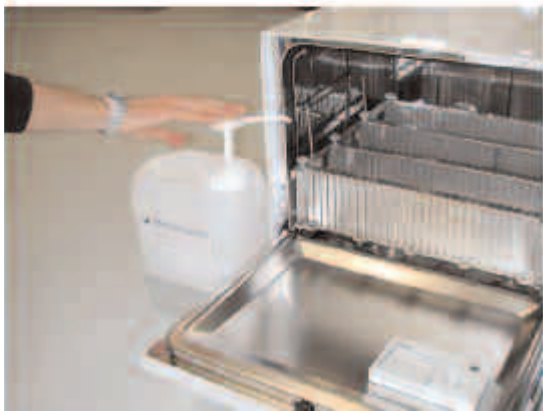
Normal operation

3.4 Cleaning agent dosage

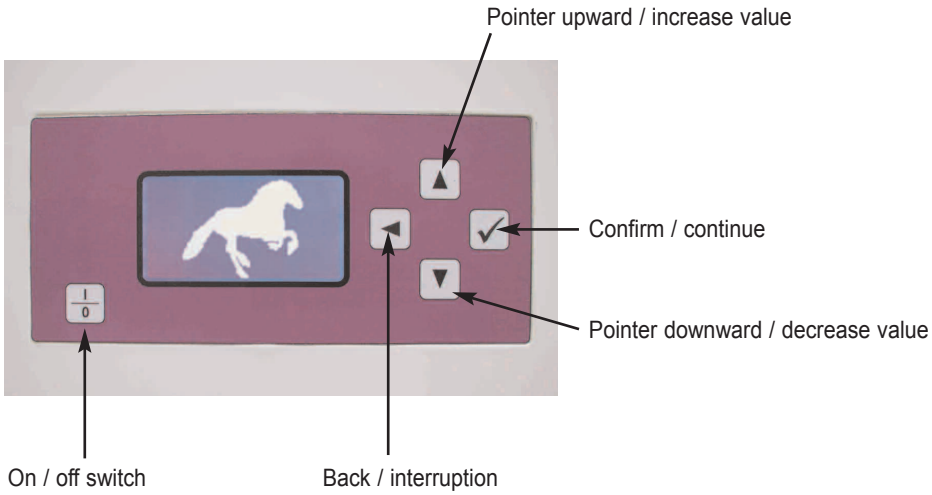
Powder:

Place the powder at the position indicated before start of the cleaning process or after invitation of the equipment directly in the internal space.

Liquid components are as well as shown at the picture indicated before start of the cleaning process or after invitation of the equipment directly in the internal space.



3.5 Operating Controll Front Panel



Following washing programs are setted ex work, but can be altered if required:

Program 1:

For cleaning pcb-boards generally, also to eliminate “no clean”-flux,
with drying afterwards.

Cleaner: component A, approx. 100ml and component B2, approx. 40g

Program 2:

For cleaning pcb-boards with only colophony flux and drying afterwards.

Cleaner: Mix 2, ca. 40g

Program 3:

For cleaning hardly dirty laundry, f.e to decrease and dedusty and afterwards drying.

Cleaner: Mix 3, ca. 40g

Program 4:

Only drying

3.6 Cleaning

1. Preparation

- Open the front door
- Dosage of the cleaning agent (see item 3.4)
- Place the frames carrying the circuit boards into the washing space

2. Cleaning

- Close the front door
- Press ON-button
- Switch on ÖKO 1000
- Select “start program”
- Use pointer up / pointer down to select the required program
- Confirm the required program with “ENTER”
- Machine begins to run; the program sections are indicate on the display
- by invitation of the machine, indicate the second cleaner
- Finish message after the end of the cleaning program

3. Removing the washed load

- Switch off the machine
- Open the front door
- Remove the wash frames with the circuit boards from the wash space

  Warning: washed load is hot!
- Close the front door

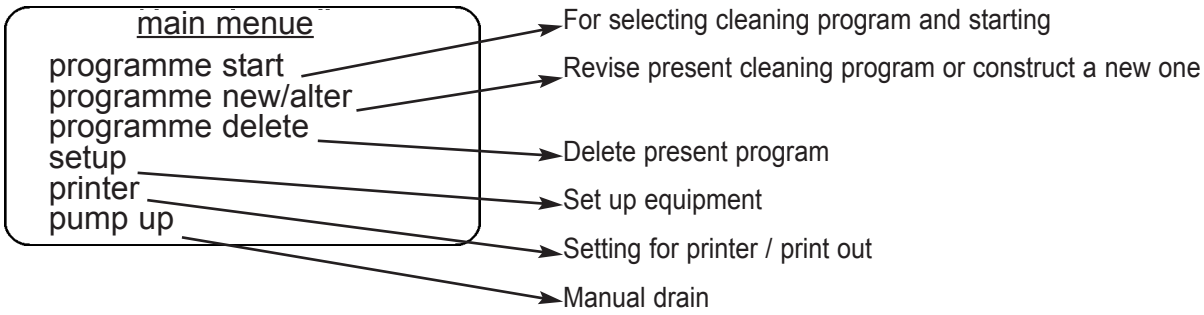
Please note:
The machine works only when the front door is closed properly. To open the front door immediately interrupts the program sequence. This is indicated by flashing on display. During the heating-up phase the display shows the elapsed time of cleaning or rinsing as follows: ‘--’ . After the temperature has reached its debit, the programed time starts. The elapsed time is shown on the display.

4. Operating summary

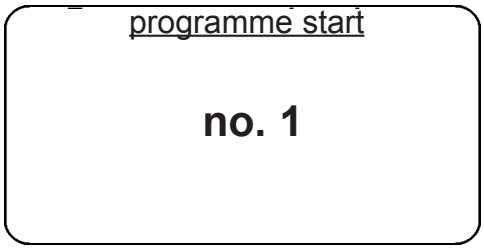
Function of keys

- I/0 On/Off switch
- ▲ To increase value / use pointer up
- ▼ To decrease value/ use pointer down
- ◀ Interruption / return to menue item
- ✔ Confirmation / select menue item

4.1 Main menue

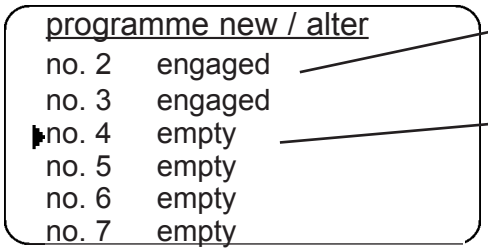


4.2 Start Program



Select ▲ or ▼ to choose stored programs and press ✔ to start.

4.3 Program new / alter



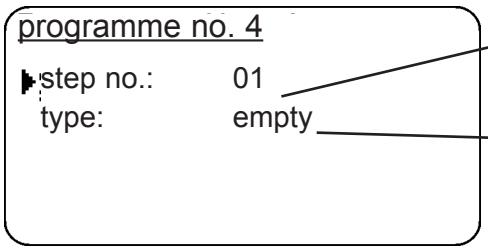
Present cleaning program:
Can be altered

Empty storage space:
Inclusion of a new cleaning program is possible

Press ▲ / ▼ to select number of new program / to alter existing program

Use ✔ for editing mode

Attention: Numbers of program 1-20 possible.

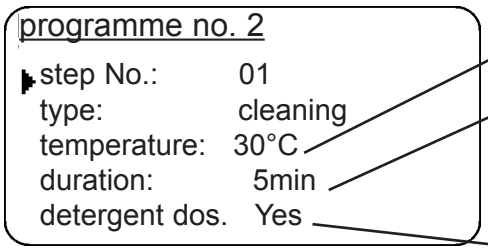


By selecting ✔ and using ▲ / ▼ several pages can leaf through.
Attention: If the actually step is emtpy, it can't be paged down.

Type of programm step: can be altered by selecting ✔

Attention: possible types of programm:
cleaning rinsing drying empty (cleared)

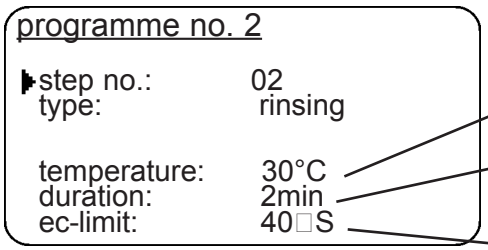
Type of program step 'cleaning':



Required water temperature in the range of 20°C up to 70°C.

Current time in the range of 5 up to 40 minutes, after the required temperature of water and required dosage of detergent.

Addition of cleaner: yes / no is switched by ✔.
If ' yes' is adjusted, program stops and gives message for manual dosage of cleaner.



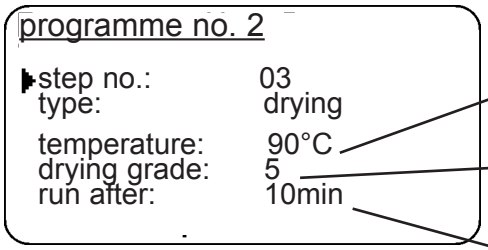
Step of program 'rinsing'

Required temperature of water between 20 and 70°C

Running time between 2 and 20 minutes after heating water of required temperature.

EC-limit between 10 and 200□S or 'without'
(Measurement for conductivity for this step of rinsing)

Indication: If a conductivity limit is indicated, so it will be assinged the same ec-limit to all following rinsing processes.
If a preceding rinsing process exists with an ec-limit , then this can't be changed in the current rinsing process.



Step of program 'drying'

Required air-temperature at the air outlet of blower
range between 50 and 100°C.

Required drying level of the warm air within the range of stage 1 to 10.
At stage 10 you get a drying with the lowest rest of humidity.

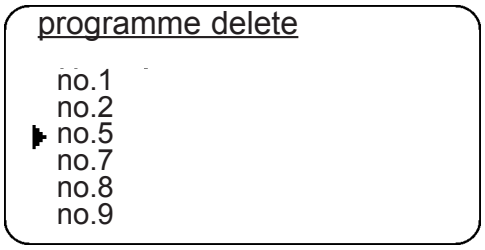
Time within the range of 0 to 600 minutes, in which after reaching dry level of air drying continues, for example for drawing parts such as socket contacts drying completely.

Indication: After step of 'drying' no further step program possible.

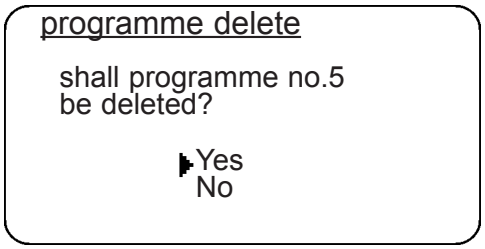
Rules of program-construction:

- No further step of program after 'drying' possible.
- Between two program steps no empty (deleted) program step may be.
- After rinsing with EC-limit no cleaning step can follow. In the reversal conclusion also EC-limit can not be assigned to a rinsing step before a cleaning step.
- If an EC-limit is assigned to a rinsing step, all following rinsing steps have the same EC-limit, (the cleaning is adequate).
- If an EC-limit of a rinsing step is abode, so each further rinsing step will be overleaped, because enough cleaning is reached.
- Maximal 20 program steps are possible.

4.4 Programme delete

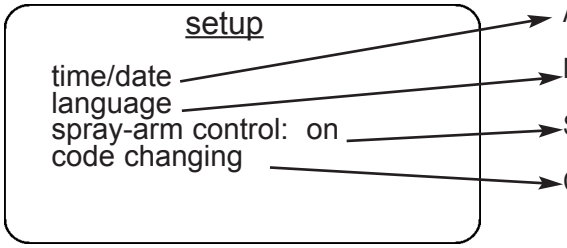


Select ▲ and ▼ to choose program from settled list of cleaning program and ✔ confirm.



Select "YES" to confirm cancellation.

4.5 Setup



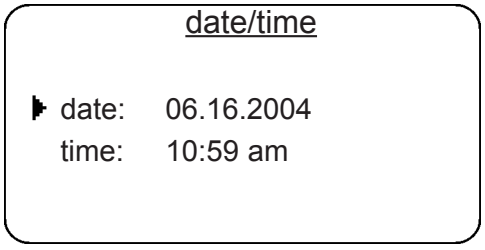
Adjustment of time and date for journal

Modification of language

Spray-arm-control on / off

Code-input for access control

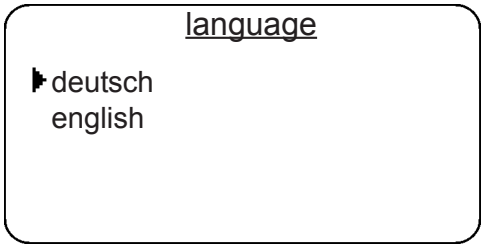
4.5.1 Date / time setting



Select ▲ / ▼ and ✔ to choose time respect. date

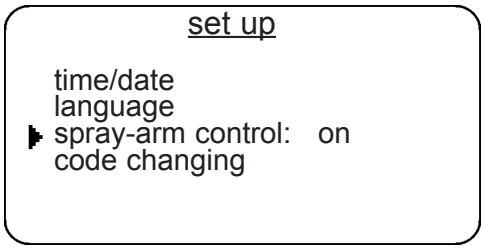
Select ▲ / ▼ to change input (day/month/year resp.h/min).
Enter ✔ to go on.

4.5.2 change Language



Select ▲ and ▼ for the required language and use ✔ to confirm.

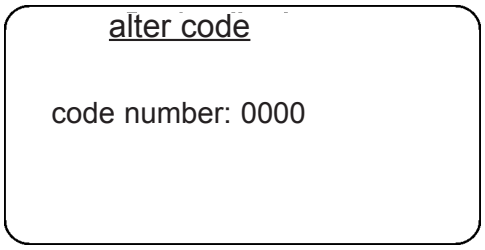
4.5.3 Spray-arm control on / off



Select ▲ / ▼ to choose “spray-arm control” and enter ✔ to shift.

Indication: Spray-arm-control should be regularly be activate, otherwise the regulation of foam and resp. regocnition-blockade of the lower spray-arm don’t work.

4.5.4 Alter Code



By using a code-number you can make an access restriction of the equipment. Code-no. 0000 this function is switched off.

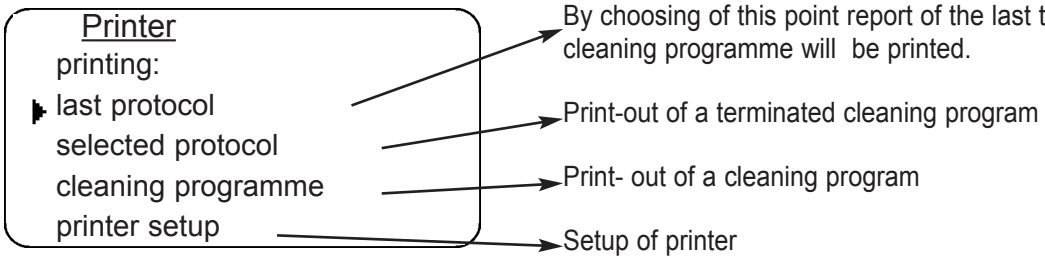
The following fuction will be protected with the code-number:

programme new/alter

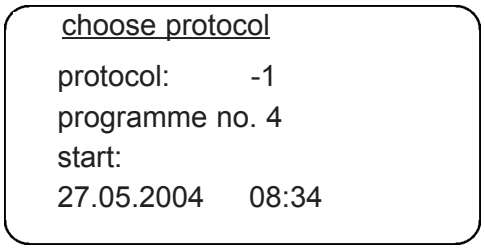
programme delete

changing of code

4.6 Printer



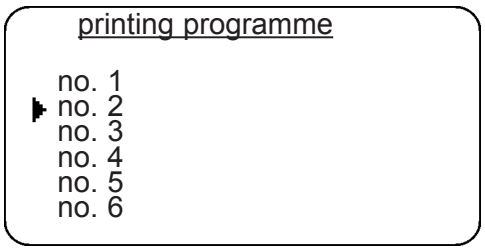
4.6.1 Print report



Choose ▲ and ▼ to select the required report. As higher the number after the “report”, as older the report. Down below date and time of the journalized program start are shown.

Enter ✔ to print report.

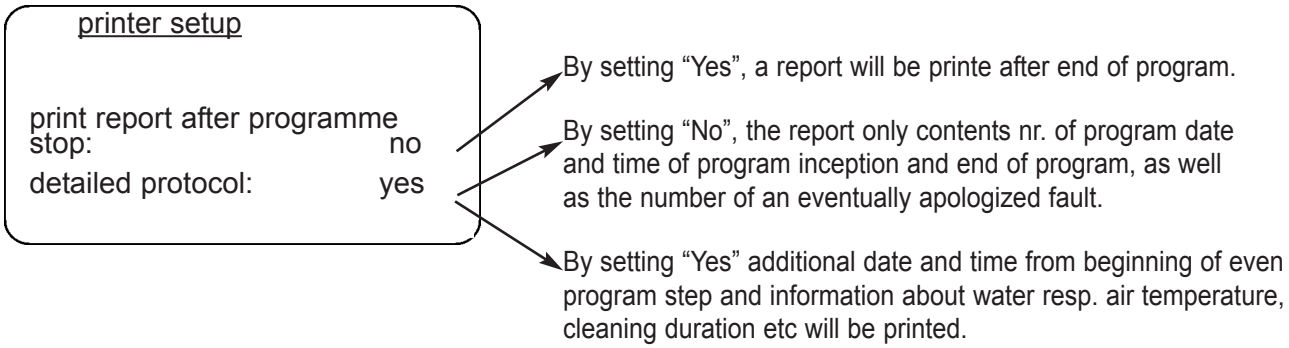
4.6.2 Printing cleaning programm



Choose the required cleaning program from register and use ▲ and ▼ to select.

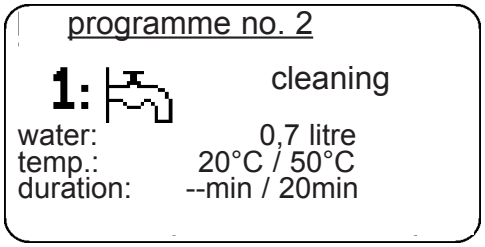
Enter ✔ to start print-out.

4.6.3 Printer Setup

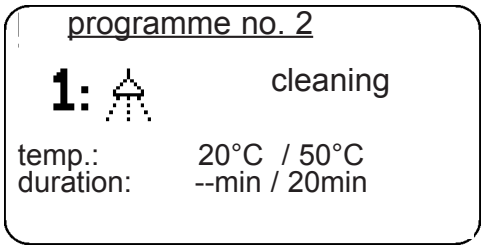


5. Program flow

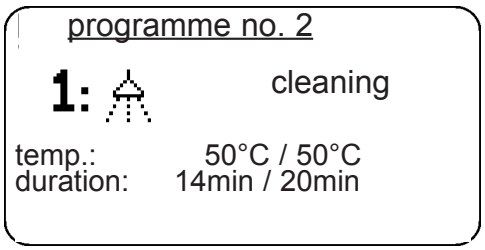
5.1 Step of cleaning



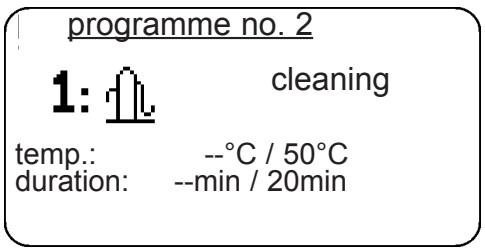
Water will be filled.
The filled-in quantity of water is shown.



Water will be heated.
The updated water temperature and the target temperature are shown.



Water will be circulated, time of cleaning runs.
The exhausted time and the target duration is shown.



End of cleaning step, water is drained.

5.2 Step of rinsing

programme no. 2
2: rinsing
water: 0,7 litre
temp.: 20°C / 40° C
duration: ---min./ 10 min.
Ec-value: ---□S / 30□S

Water is filled:
The filled-in quantity of water is shown.

programme no. 2
2: rinsing
temp: 23°C / 40° C
duration: --min./ 10min.
Ec-value: --□S / 30□S

Water is heated.
The actually temperatur of water and the target temperature is shown.

programme no. 2
2: rinsing
temp.: 40°C / 40°C
duration: 8 min./ 10 min.
Ec-value: --□S / 30□S

Water is be circulated, rinsing time runs.
The exhaused time and the target duration are indicated.

programme no. 2
2: rinsing
temp.: --°C / 40°C
duration: --min./ 10 min.
Ec-value: 13□s / 30□S

Conductivity of water is measured:
If there is no limit quoted, this part is dropped.

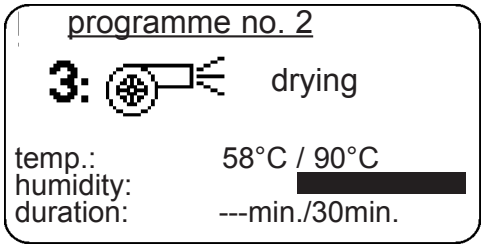
If the value of measure is smaller than the desired adjusted value, all following rinsing-steps been void. If the value of measure is higher than the desired adjusted value, the next rinsing step goes on.

If there is no further rinsing step programmd, an error message is issued. The rinsing program must be repeated, because an inadequate result is to apprehend.

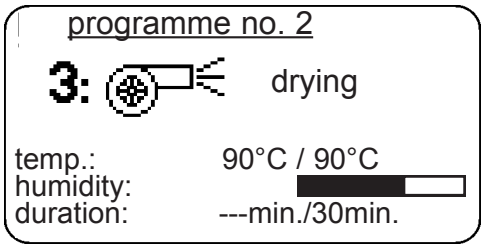
programme no. 2
2: rinsing
temp.: --°C / 40°C
duration: --min./ 10min.
Ec-value: --□S / 30□S

End of rinsing step, water is drained / pumped out.

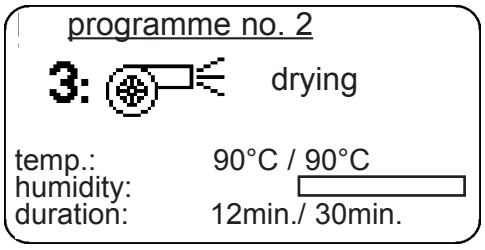
5.3 Step of drying



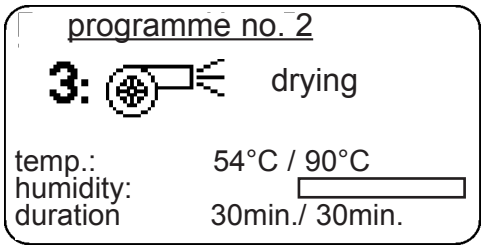
Air is heated:
The updated air temperature and the target temperature is indicated.



Drying step runs:
After reaching of the target temperature beam of humidity get shorter by proceeding of dryness..



Required dryness is reached, afterward drying runs.
In case of an after drying time appointed (duration higher than 0) this time runs with reduced capacity of turbine.
The exhausted time and the adjusted duration are indicate.



Phase of cooling down:
The internal space is cooling down to 50°C.
Turbine runs with reduced capacity.

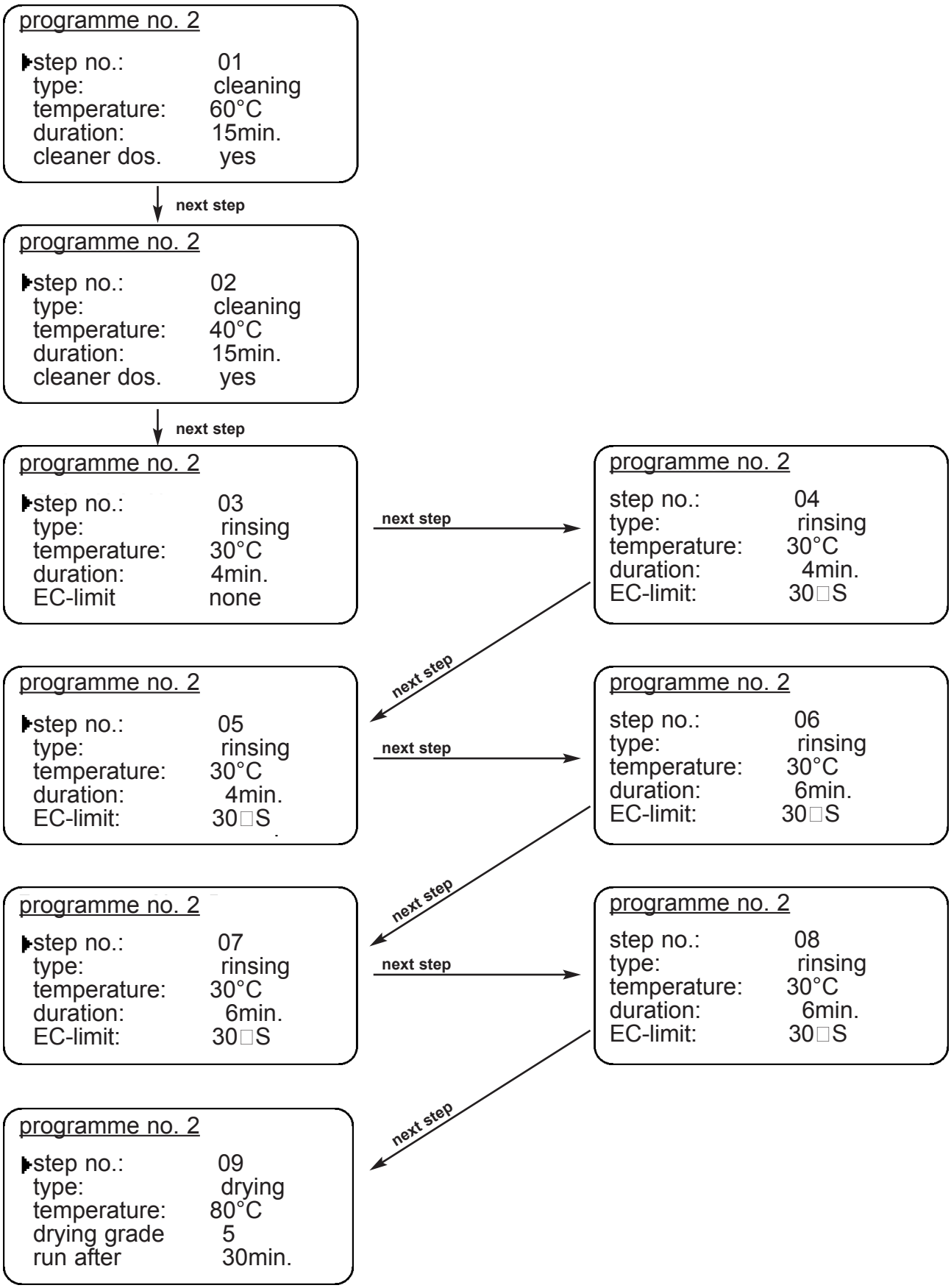
5.4 Programmende

End of program.

Provided, that report is activate in Setup, it will be printed.

By opening the door or entering of ⏻-key the equipment switched of.

5.5 Example of program



5.6 Indication and maintenance

5.6.1 Foaming

ATTENTION: Heavy foaming effects an inadequately cleaning!

If a heavy foaming occurs by washing, don´t hesistate to contact us.

Heavy foaming will be recognized as follows:

Optical, after opening the door foam runs out of the machine, or a “foaming-carpet” is visible.
Acustical, unbalancedurch run (strobe idling) of the circulation pump.

5.6.2 Changing of spare cotton filter

For filtering particle the suds and rinsing water will be laded through the spare cotton filter.

The spare cotton filter is to change, if the suds is not pumped up in the provided time.
(Look at the filter box). **spare cotton filter (art.-no.: 7200C0020).**

5.6.3 Changing of airfilter

The required air for dryness will be sucked by an **airfilter (art.-no.: 7000C0035)** and a **particlefilter (art.-no.: 7200C0140)**.
These filters shall be controlled regularly of contamination and have to replace if required.

5.6.4 Cleaning of dirt trap

Dirt trap should be cleaned of accumulated cutting four times a year.

Dirt trap

5.6.5 Cleaning of screen insert

In regularly intervalls (about four times a year) the screen insert is to remove from washing space (by turning of the plastic insert) and the space below is to clean with an industry-sucker from residues of tin solder.

Wash out **filter map** from rest of tin-solder in a bucket with water.

filter map: Art.-No.: 7000C2012

7. Error messages

Message	Causes	Solution
A1 Defect of internal lead valve	- Machine-lateral inlet valve is leaky - Inlet hose was extended	- Valve has to be replaced - Use inlet hose in original lenght
A2 Defect of external lead valve	- External inlet valve is leaky - Inlet hose was extended	- Valve has to be replaced - Use inlet hose in original lenght
A3 Defect of inlet valve or inlet blocked	- Defect of machine-lateral or inlet-lateral inlet valve - Inlet valve isn't connected - Water-inlet locked - Inlet hose buckled	- Valve has to be replaced - Connect electric cable for inlet-lateral valve - Open water tap - Control inlet hose and eliminate the buckle
S1 Short circuit of NTC water	- Water below the machine - NTC defect - Defect of bottom mainboard	- Look for cause for humidity and eliminate; let machine dry - Contact customer service - Contact customer service - If the error repeats, please contact us
S2 Interruption of NTC water	- NTC defect - Defect of inlet to NTC - Defect of bottom mainboard	- If the error repeats, please contact us
S3/S5 Short circuit of NTC air	- Defect of NTC on the blowing out side/ sucking in side of drying unit - Defect of dryness mainboard	- If the error repeats, please contact us

Message	Causes	Solution
S4/S6 NTC air break	- Defect of NTC at blowing out/sucking in side of drying machine - Defect of plug or rather feed cable to one of the NTCs - Defect of mainboard drying	- If the error repeats, please contact us
S9 Maximum temperature of water exceeded	- Defect of control for heating water - Defect of NTC water - Defect of mainboard bottom	- If the error repeats, please contact us
S10 Maximum temperature of air exceeded	- Defect of control for heating air - Defect of NTC at blowing out side of drying machine - Defect of plug or rather feed cable to one of the NTCs - Defect of mainboard drying	- If the error repeats, please contact us
S12 Sprayarm blocked	- Wareout of spray arm; particle in spray arm-hub - Spray arm got caught in down-hanging cables - Water circulation is obstructed	- Check if the spray arms are easy to rotate - Check filters for impurity if necessary clean them - Secure correct detergent dosing quantity - Don't stack the cleaning goods to closely - Use other flux
S13 Too much foam in machine	- Dosaged too strongly foaming cleaner - See also errors S12	- Use Activator - See also errors S12

Message	Causes	Solution
S15 Loose of water	- Waste water mounted too deep - Drawing parts with cleaning goods - Dirt trap / screen insert soiled - Water indicator defect	- Pass waste water hose according to instruction - Bring in cleaning goods so, that water can run off well from parts - Clean dirt trap / screen insert - If error repeats, please contact us
S16 Discharge of water	- Water circulation leaky - Discharge of water at bottom of machine - Too strong foaming power	- Switch off the machine, tear net apart and tip it back easy, so that discharged water can run off. - Check machine for discharged water, eliminate leackages, or evite foaming power - Arrange reset, start program new
S17 Released safty of heating for air	- The temperature rise safty device responded - Defect of turbine - Air filter messy	- Pull power plug! Remove rear sewer cover and switch on the temperature safe above at the heater housing - Check, wether turbine starts - Check air filter and possible replace - The air openings and air blow-out ports in machine interior may not be covered by cleaning goods - If error repeats, please contact us
S20 Ion exchanger is exhausted	- Ion exchanger used up	- Attache new or regenerized ion exchanger patrone

Meldung	Ursache	Lösung
T1 Fill time is overshot	- Water pressure is to less - Water inlet hose is defect - Possibily existing water shunt-off valve is not completely open	- Check water inlet and water pressure - Start program again
T2 Warm-up time of water is overshot	- Heating water defect - Temperature survey water is incorrect	- Take out washload. Start program again without washload. If the error repeats, please contact us.
T3 Warm-up time of air overshot.	- Heating air defect - Temperature survey is incorrect	- Take out washload. Start program again without washload. - If the error repeats, please contact us.
T4 Pumping off time overshot	- Waste water hose plugged - Spare cotton filter used up - Leach pump defect	- Switch off machine - Check waste water hose and spare cotton filter, change them if required - Start program again - If the error repeats, please contact us
T5 Maximum drying time overshot.	- Air discharge openings by washload covered.	- Check location of washload
Close the door	- Front flap is not completely closed - ON-button is not pressed	- Close front flap - Press ON-button

8. Function of the connector plugs

External solenoid valve
Over this plug the solenoid valve is supplied with mains voltage when it's needful, before deioniser cartridge. Without this valve, the machine won't work because of reasons for safety.

External leach pump
Here, you can connect, if necessary, another pump, for exalt the discharge head of waste water.
At the plug is mains voltage while draining. Current: max. 7A.

External error message
On this connection is mains voltage while breakdown of the machine .

External conductivity measurement
Here, your can connect the conductivity measurement of the deioniser cartridge.

printer connection
RS/232 interface. Here you can adjust a serial printer for output of cleaning protocols and cleaning programs.

adjustment of interfaces

baudrate: 9600 baud

1 start- / 1 stop-bit

8 databits

No parity

no handshake

Pinbelegung

Pin	Funktion
2	R x D
3	T x D
5	GND
7	RTS
8	CTS

9. Technical information

The water is heated in a through-flow heater; as a result there are no inconvenient heater bars Inside the chamber. The water protection system and the bottom-pan ensure that leakage of water is virtually impossible. This gives a high degree of protection agains water damage. Very quit operation is achieved through comprehensive 6-sided sound insulation.

washing temperature		20°C - 70°C
washing time per washing process		5 - 40 min.
rinsing temperature		20°C - 70°C
rinsing time per rinsing process		2 - 20 min.
temperature / warm air drying (Due to heat losses through radiation and conduction the the chamber temperature is approx. 80% of the slected drying temperature).		50°C - 100°C
duration / extra drying (Wash-only and dry-only programs can be operated)		0 - 600 min.
power supply		230V AC / 50Hz
power consumption		2,9kW
running noise level		approx. 55db (A)
water consumption per filling		approx. 3l deionised water
circuit board size (by using basket)	max.:	390mm x 262mm
internal space dimensions	H x W x D	27 x 42 x 39 cm
overall dimensions	H x W x D	54 x 56 x 63 cm
weight		approx. 40kg