# Operating Manual
# Ultrasound Cleaning Device
# **ACS**921

CE

**Version: 05-2023-EN**
**Date: 20 Sept 2023**

**Manufacturer:**
**Greiner Vibrograf AG**
**Mittelstrasse 2**
**CH-4900 Langenthal**

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# 1 General instructions

## 1.1 Information about this operating manual

This is the **original operating manual** for the product **ACS 921** by Greiner Vibrograf AG.

The version and language are shown on the title page.

## 1.2 Information on customer service

If you have any questions about the product or would like to request a service relating to the product, please do not hesitate to contact our Customer Service.

Contact:

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info@greinervibrograf.ch
www.greinervibrograf.ch

## 1.3 Intended use

The **ACS 921** is a **cleaning device** that cleans watch parts with the addition of cleaning fluid. Other uses are not permitted. The installation and operating conditions specified in this operating manual must be adhered to.

## 1.4 Improper use

Only the cleaning fluids listed in Section 4.5 may be used.
Greiner Vibrograf AG accepts no liability whatsoever for the use of other products.

# 2 Safety instructions

## 2.1 Symbols

| | |
|---|---|
| | **Symbol – Read operating manual** |
| | **General information** |

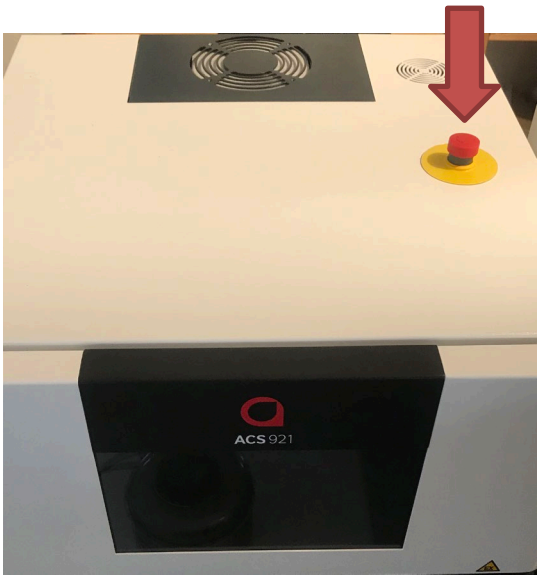
## 2.2 Safety instructions and warnings

| | |
|---|---|
| | **General hazard** |
| | **Electrical voltage warning** |
| | **Warning of hot surfaces** |

## 2.3 Binding instructions

| | |
|---|---|
| | **Use eye protection** |
| | **Use hand protection** |

## 2.4 Emergency stop system




The **ACS 921** cleaning device is equipped with an EMERGENCY STOP switch. This is located at the top of the housing (see arrow).

It is used to quickly bring the mechanical parts of the **ACS 921** to a standstill in the event of a hazard or to avert a hazard.

Pressing EMERGENCY STOP immediately stops any movement of the **ACS 921** and interrupts an active process.

The **ACS 921** cannot be operated again until the EMERGENCY-STOP switch has been unlocked.

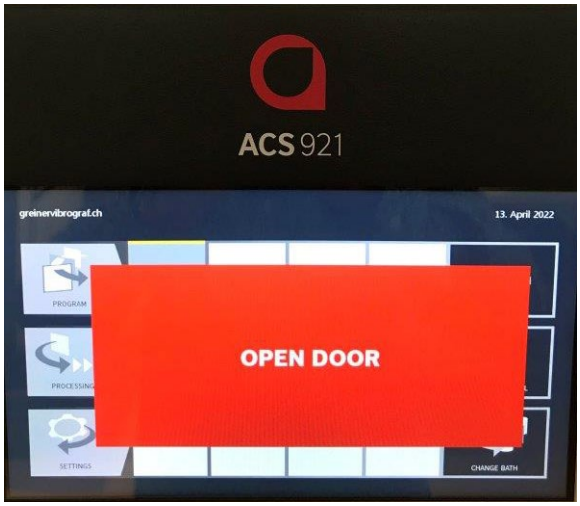
To do this, return the switch to its original position by turning it in the direction of the arrow.

An interrupted process does not start automatically (restart protection). The process must be restarted manually.

## 2.5 Door monitoring system

The **ACS 921** is equipped with a door monitoring system. A sensor installed at the bottom right of the housing serves this purpose. The control system of the **ACS 921** checks the sensor for proper functioning before each start-up.

If the door is opened during the cleaning process, an active process is stopped immediately and the message **DOORS OPEN** appears on the display.

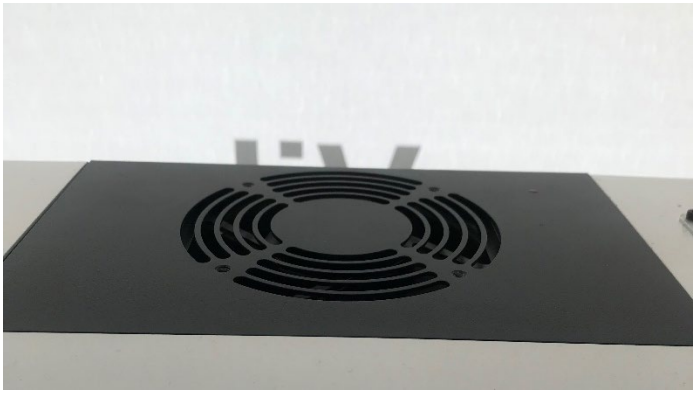



As soon as the door is closed again, the active process continues at the same point.

## 2.6 Venting system

### 2.6.1 Device venting

The **ACS 921** is equipped with a venting system. This is activated when powering up and starting up (also after standby mode). This ensures that the interior of the ACS 921 is always vented before the cleaning process begins. The venting system also remains switched on during the cleaning process, thus ensuring safe operation.

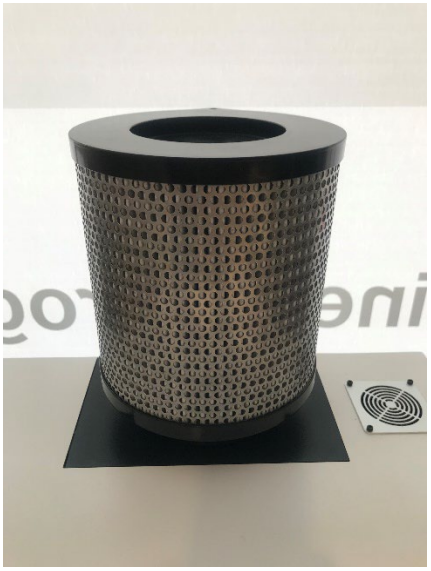


Venting outlet on top of device housing

**Please note: The room in which the device is used must have a ventilation system**.

If this is not the case, the exhaust air must not be fed directly into the room. In this case, Greiner Vibrograf AG offers the relevant accessories as explained below:

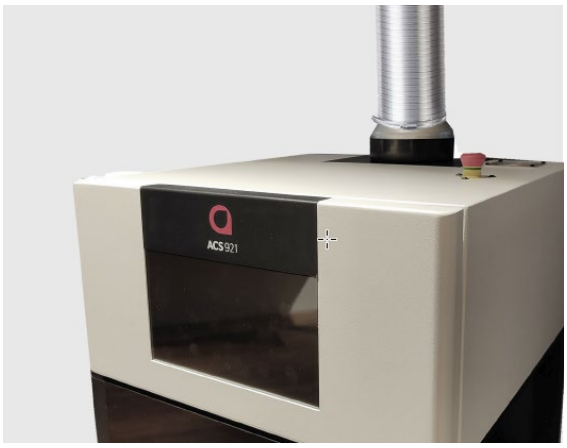
### 2.6.2 Venting via activated carbon filter



An activated carbon filter (accessory) can be mounted directly on the air outlet using a connection flange.

If an activated carbon filter is used, it must still be activated in the settings. When this is activated, the device knows when the next filter change is due and sends a message to the user.

### 2.6.3 Venting with hose connection




A hose (nominal diameter 100 mm) can be connected directly by means of a connection flange and a matching transition piece: this then conducts the exhaust air into the atmosphere through a room opening.

Flexible suction pipe, Ø 100 mm

All accessories described in Section 2.6 including article numbers can be found in Section 9.2 Accessories or on the website at:

www.greinervibrograf.ch/Filter-Serie-ACS (in German)

# 3 Function, set-up and commissioning

## 3.1 Description of function

- The **ACS 921** is a cleaning device that is primarily intended for use with watch parts.
- The **ACS 921** has six process positions which are distributed every 60° on a turntable.
- Five cleaning baths, one with ultrasound function and one drying position.
- The watch parts are fitted into the matching plastic or metal baskets.
  (for details of original accessories, see Section 9.2).
- The baskets can then be inserted into the basket holder provided for this purpose.
- After this, the basket holder is snapped into the operating position by means of a bayonet lock.
- Next, select the desired programme on the display and press the start button.
- The handling of the cleaning baths and their fluids and the creation of programmes are described in more detail in **Section 4 Operation**.

## 3.2 Setting up

- Remove the **ACS 921** and the accessories supplied from their packaging and position them at the designated set-up location.

**Due to the weight of the device, this must be done by two people!**

- Keep the packaging for any returns in case repairs are required.
- The outlet opening of the venting fan (top) must not be covered.
- If the installation room cannot be sufficiently ventilated or cannot be ventilated at all, we recommend using an activated carbon filter, which can be ordered as an accessory. It is also possible to connect an exhaust air hose with a connecting piece (accessory). (see Section 2.6)

**In any case, room ventilation is very important and it is the responsibility of the operator of the ACS 921 to ensure people are protected!**

- The inlet opening of the heater fan (rear) must not be covered.
- Remove the packaging material from the **ACS 921**.
- Check the **ACS 921** and accessories for completeness. (other accessories can be ordered through Customer Service)
- Connect the **ACS 921** to the mains using the connection cable supplied.
  Please note the power input specifications!

## 3.3 Commissioning

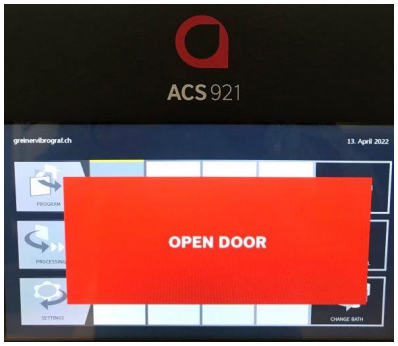
Switch on the **ACS 921** using the power switch at the bottom rear (on the rear wall of the device).

The **ACS 921** now performs an initialisation process:

1. The interior of the device is ventilated. The following appears on the display: VENTING PROCESS
2. The spin motor is initialised. The following appears on the display: SPIN MOTOR INITIALISATION
3. The lift motor is initialised. The following appears on the display: LIFTMOTOR INITIALISATION
4. The turntable is initialized. The following appears on the display: TURNTABLE INITIALISATION

This initialisation process is performed when the **ACS 921** is switched on via the mains switch. Doors may not be opened or left open during the initialisation process.

If the **ACS 921** is started with the open door, the message **OPEN DOOR** appears on the display. The process is not continued until the door is closed again.




The **ACS 921** is now ready to start.
After a certain time (adjustable), the **ACS 921** goes into **standby mode:**
The next time the device is started from standby mode by touching the touch screen, only the VENTING PROCESS is carried out.

The device is then ready to start again.

**Before starting a cleaning programme, the device checks the door can be securely closed. In order to confirm the process, the door has to be opened and closed again. Only once this safety check has been carried out can the relevant cleaning programme be started by pressing the start button again.**

## 3.4 Insert the liquid container and position the turntable

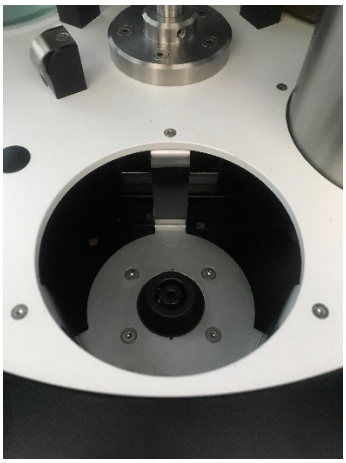
### 3.4.1 Inserting the liquid container

Proceed as for changing the bath according to Section 4.3.9

**Please note:** **Before inserting the containers, check that they are filled correctly.**

**Please note:** **During insertion, so that no fluid is drained.**

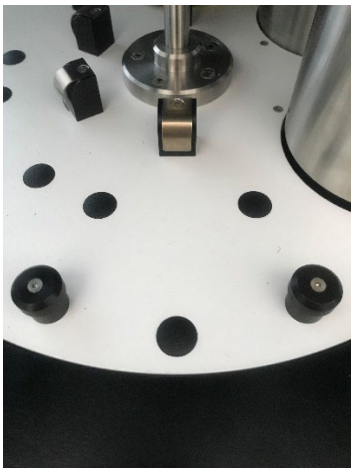
**Important!** **Bath 1 is always the ultrasound bath and may only be fitted with the relevant container.**



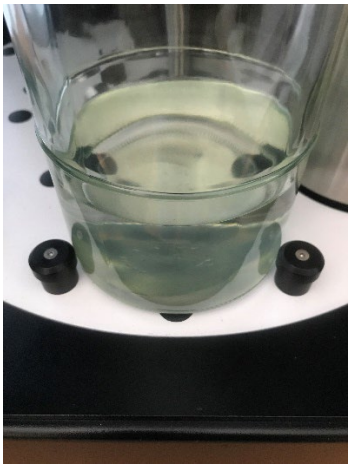
Position 1 without container

Position 1 with container (ultrasound bath)

Baths 2 to 5 are cleaning baths or rinsing baths. Here, too, only use the original glasses provided for the purpose.



Position 2 without container

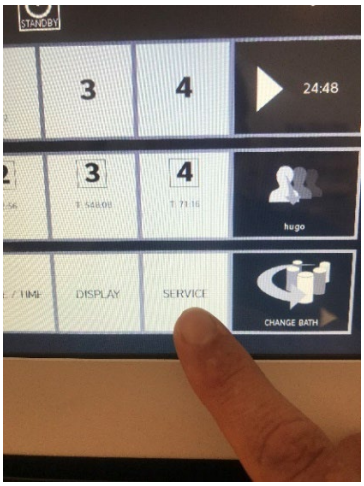


Position 2 with container (original glass)

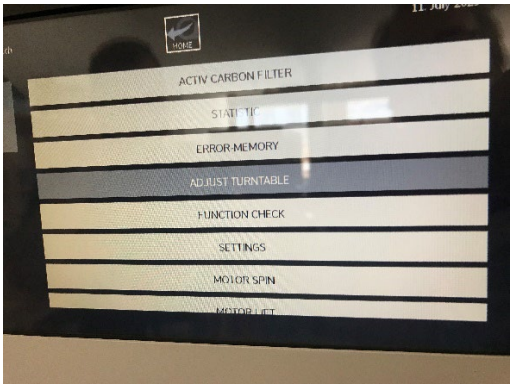
### 3.4.2 Position the turntable (if necessary)

The turntable is very easy to set to the exact position using the menu.

1. To do so, press **SERVICE** and log in with the user login.



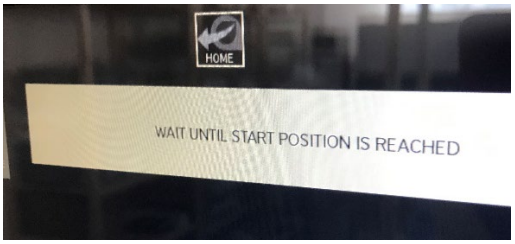

2. SELECT ADJUST TURNTABLE




3. The following message appears: WAIT UNTIL THE START POSITION IS REACHED

   Recommendation: So that the correct position can be set more easily and quickly, we recommend using the centering aid, which is available as an accessory.
   This is simply used instead of the basket holder.

   Centering aid Art.No: 17192




4. Open the door and set the turntable to the correct position as accurately as possible. If the position is OK, press **NEXT STEP**, and the lift slowly moves down.

5. The following message appears: Caution: lift is moving down slowly

6. The exact position can now be checked again and readjusted if necessary.

7. If the position is OK, it still has to be saved by pressing **NEXT STEP**

8. The positioning process is now complete

## 3.5 Inserting baskets

1. Lift the spin flange cover (Figure 1)
2. Snap the basket holder into place at three points with the bayonet fastener (Fig. 2+3) To do this, push the basket holder upwards and turn it anticlockwise.
3. Release the basket holder in the snap-in position – the process is now complete.

Fig. 1

Fig. 2

Fig. 3

To remove the baskets, simply proceed in the reverse order.

## 3.6 Holder systems

**Basket holder upper part D=80mm**

(Standard)

Art.Nr: 17138

**Insert holder with bracket**

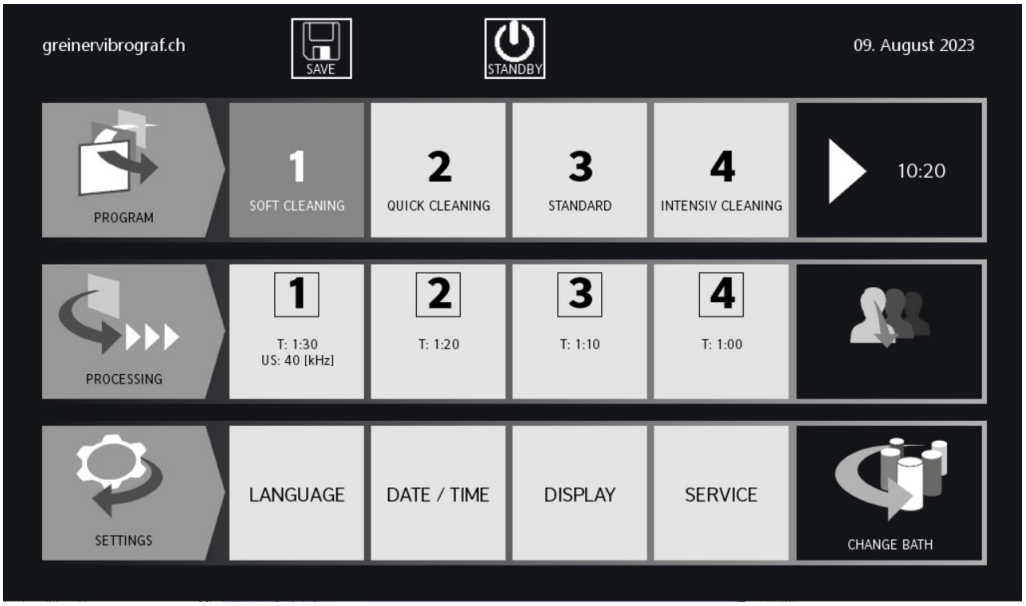
(Optionally available for additional accessories)

Art.Nr: 17191

To change, loosen the two threaded pins on the shaft and pull the holder down.
Important during assembly: Pay attention to alignment, the two threaded pins must be on the two surfaces of the axle are aligned and then tightened.

# 4 Screen

The **ACS 921** features a large 10” touchscreen.
This screen is used to perform all functions and settings.
After starting up the **ACS 921**, the following **main menu** is always displayed:




The **main menu** is divided into three areas:

### 4.1.1 PROGRAMME:

This is where previously configured and saved individual programmes are stored**. A maximum of 20 programmes can be saved.** A name can be set for each programme.

The total time of the selected programme is displayed in the far right area.

The arrow triangle is the start button for the previously selected programme.

### 4.1.2 PROCESS:

The individual process steps (1-6) and their duration are displayed here. Each process step can be modified or adapted individually. To do this, hold down the display field for at least two seconds and the next menu level appears.

The **USER** can make settings in the field on the far right.

### 4.1.3 SETTINGS

Here you can set the language, date and time, display and service.

The **BATH CHANGE** field on the far right indicates the status of the individual baths. Flashing means that a change of bath is necessary. Changing the bath is described in more detail in Section 4.3.6.

## 4.2 Settings

**Important!** Most function keys have to be pressed for at least two seconds to go to the next setting level.

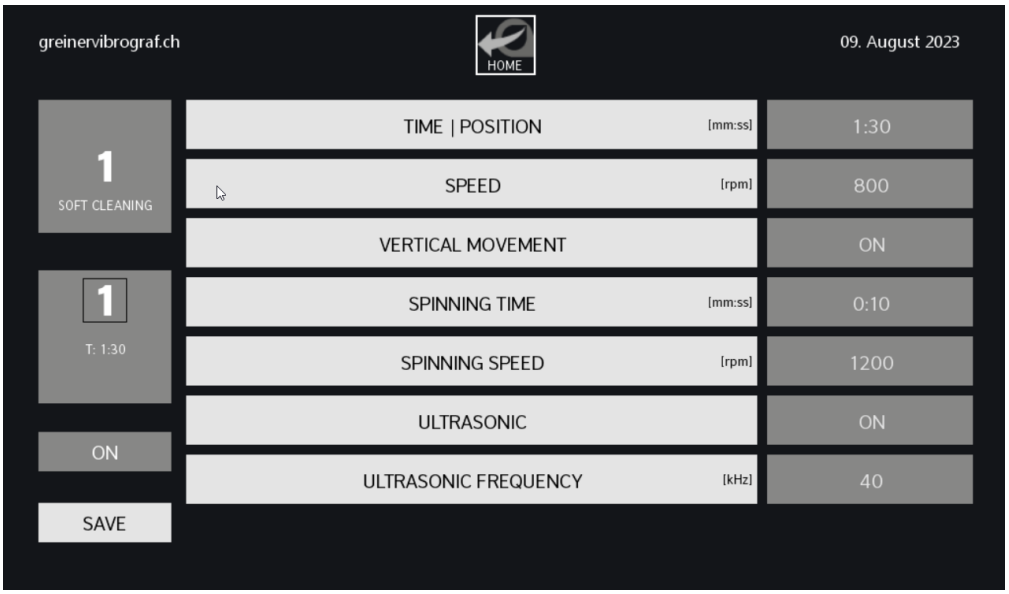
### 4.2.1 Process no. 1 (ultrasound bath)

**Process no. 1** is a cleaning bath, with or without ultrasound. The following screen menu shows the individual process parameters that can be changed. The setting can be changed by tapping the field highlighted in grey.

**Process no. 1** can be activated or deactivated using **ON/OFF**.

Important! New settings have to be confirmed with **SAVE**. This automatically takes the user back to the main menu.

At the top in the middle is the **HOME** button which is used to return to the main menu.




The following is a detailed explanation of the individual setting options for **Process no. 1**:

**TIME/POSITION** Process duration in minutes and seconds

**SPEED** Speed in revolutions per minute during the ultrasound process

**VERTICAL MOVEMENT** Vertical movement during the cleaning process ON or OFF

**SPINNING TIME** Switch-on time of the SPIN drive in minutes and seconds

**SPINNING SPEED** Speed of SPIN drive in revolutions per minute

**ULTRASONIC** Ultrasound ON or OFF

**ULTRASONIC FREQUENCY** Ultrasound frequency 40 or 80 kHz or combined 40/80 kHz

### 4.2.2 Process nos. 2—5 (Cleaning and Rinsing)

**Process nos. 2—5** can be used either as a cleaning or rinsing bath. The following screen menu shows the individual process parameters that can be changed. The setting can be changed by tapping the field highlighted in grey.

**Process nos. 2—5** can be activated or deactivated using **ON/OFF**.

Important! New settings must be confirmed with **SAVE**. This automatically takes the user back to the main menu.

At the top in the middle is the **HOME** button which is used to return to the main menu

The following is a detailed explanation of the individual setting options for **Process nos. 2—5**:

**TIME/POSITION** Process duration in minutes and seconds

**ROTATION/OSCILLATION** Rotation of the basket or back and forth movement (oscillation)

**VERTICAL MOVEMENT** Vertical movement during the cleaning process ON or OFF

**SPINNING TIME** Switch-on time of the SPIN drive in minutes and seconds

**SPINNING SPEED** Speed of SPIN drive in revolutions per minute

### 4.2.3 Process no. 6 (Drying)

**Process no. 6** is a drying process. The following screen menu shows the individual process parameters that can be changed. The setting can be changed by tapping the field highlighted in grey.

**Process no. 6** can be activated or deactivated using **ON/OFF**.

Important! New settings have to be confirmed with **SAVE**. This automatically takes the user back to the main menu.

At the top in the middle is the **HOME** button which is used to return to the main menu

The following is a detailed explanation of the individual setting options for **Process no. 6**:

**TIME/POSITION** Process duration in minutes and seconds

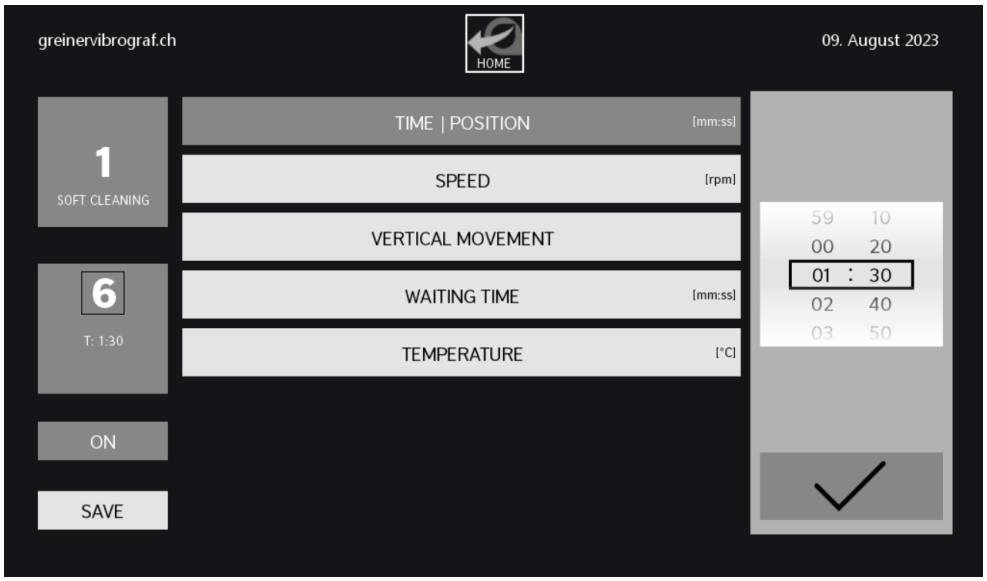
**SPEED** Speed in revolutions per minute during drying process

**VERTICAL MOVEMENT** Vertical movement during the drying process ON or OFF

**WAITING TIME** Waiting time in minutes and seconds at the end of drying

**TEMPERATURE** Drying temperature 30—60 °C or switched off (OFF)

Example of how to set the time: scroll the dial until the desired setting appears in the frame.
The new setting is confirmed and accepted by tapping the checkmark:




## 4.3 Programs

### 4.3.1 Create a program.

1. Select the desired or free program number (press and hold down for two seconds)
2. Name program (enter name)
3. Define processes as described in Section 4.2
4. Total process time is displayed at the top right.

### 4.3.2 Standard programs (pre-installed)

Four programs are pre-installed on the device ex works. These can be applied as they are, adapted or overwritten.

The setting parameters of the predefined programs are as follows:

**Program name:** GVL STANDARD
**Total process time:** 36:30 min

| | Pos. 1 | Pos. 2 | Pos. 3 | Pos. 4 | Pos. 5 | Pos.6 |
|---|---|---|---|---|---|---|
| Time/position (min:sec) | 05:00 | 04:00 | 02:00 | 01:30 | 01:30 | 10:00 |
| Spin speed (rpm) | 20 | 300 | 300 | 300 | 300 | 50 |
| Vertical movement (on/off) | Off | On | Off | Off | Off | Off |
| Rotation/oscillation | - | Red | Red | Red | Red | - |
| Oscillation mode (1 – 5) | - | - | - | - | - | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Wind-out time (min:sec) | 02:30 | 01:30 | 01:30 | 01:00 | 01:00 | - |
| Wind-out speed (rpm) | 800 | 800 | 800 | 800 | 800 | - |
| Ultrasound (on/off) | An | - | - | - | - | - |
| Ultrasound frequency (kHz) | 40 | - | - | - | - | - |
| Drying waiting time (min:sec) | - | - | - | - | - | 03:00 |
| Drying temperature (C°) | - | - | - | - | - | 60 |

**Program name:** **GVL QUICK**
**Total process time:** **11:30 min**

| | Pos. 1 | Pos. 2 | Pos. 3 | Pos. 4 | Pos. 5 | Pos.6 |
|---|---|---|---|---|---|---|
| Time/position (min:sec) | 01:00 | 01:00 | 01:00 | 01:00 | 01:00 | 01:00 |
| Spin speed (rpm) | 10 | - | - | - | - | 50 |
| Vertical movement (on/off) | Off | On | Off | Off | Off | Off |
| Rotation/oscillation | - | Osc | Osc | Osc | Osc | - |
| Oscillation mode (1 – 5) | - | 4 | 4 | 4 | 4 | - |
| Wind-out time (min:sec) | 00:30 | 00:30 | 00:30 | 00:30 | 00:30 | - |
| Wind-out speed (rpm) | 1000 | 1000 | 1000 | 1000 | 1000 | - |
| Ultrasound (on/off) | An | - | - | - | - | - |
| Ultrasound frequency (kHz) | 40 | - | - | - | - | - |
| Drying waiting time (min:sec) | - | - | - | - | - | 01:00 |
| Drying temperature (C°) | - | - | - | - | - | 60 |

**Program name:** **GVL SOFT**
**Total process time:** **25:00 min**

| | Pos. 1 | Pos. 2 | Pos. 3 | Pos. 4 | Pos. 5 | Pos.6 |
|---|---|---|---|---|---|---|
| Time/position (min:sec) | 01:00 | 02:00 | 02:00 | 01:30 | 01:30 | 08:00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Speed (rpm) | 10 | 300 | 300 | 300 | 300 | 50 |
| Vertical movement (on/off) | Off | Off | Off | Off | Off | Off |
| Rotation/oscillation | - | Red | Red | Red | Red | - |
| Oscillation mode (1 – 5) | - | - | - | - | - | - |
| Wind-out time (min:sec) | 01:00 | 01:30 | 01:30 | 01:00 | 01:00 | - |
| Wind-out speed (rpm) | 500 | 500 | 500 | 500 | 500 | - |
| Ultrasound (on/off) | On | - | - | - | - | - |
| Ultrasound frequency (kHz) | 80 | - | - | - | - | - |
| Drying waiting time (min:sec) | - | - | - | - | - | 01:00 |
| Drying temperature (C°) | - | - | - | - | - | 50 |

**Prograe name:** **GVL INTENSIVE**
**Total process time:** **28:00 min**

| | Pos. 1 | Pos. 2 | Pos. 3 | Pos. 4 | Pos. 5 | Pos.6 |
|---|---|---|---|---|---|---|
| Time/position (min:sec) | 05:00 | 02:00 | 02:00 | 01:30 | 01:30 | 05:00 |
| Speed (rpm) | 20 | - | - | - | - | 50 |
| Vertical movement (on/off) | On | On | On | On | On | On |
| Rotation/oscillation | - | Osc | Osc | Osc | Osc | - |
| Oscillation mode (1 – 5) | - | 5 | 5 | 5 | 5 | - |
| Wind-out time (min:sec) | 00:30 | 01:30 | 01:30 | 01:30 | 01:00 | - |
| Wind-out speed (rpm) | 1000 | 1000 | 1000 | 1000 | 1000 | - |
| Ultrasound (on/off) | On | - | - | - | - | - |
| Ultrasound frequency (kHz) | 40/80 | - | - | - | - | - |
| Drying waiting time (min:sec) | - | - | - | - | - | 03:00 |
| Drying temperature (C°) | - | - | - | - | - | 60 |

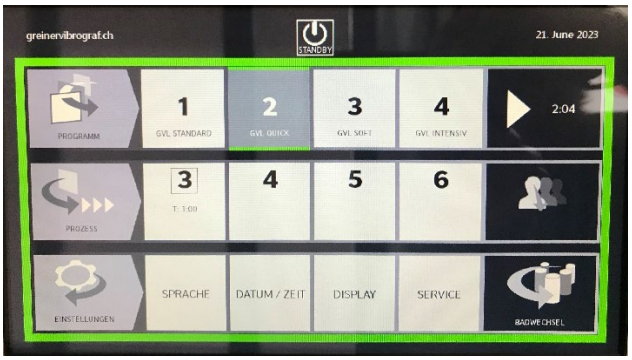
### 4.3.3 Start a program

1. Select program number
2. Press Start

The safety function of the door switch is checked before each programme starts. The door has to be opened and closed again. Then press Start again
The program runtime starts, and the time counts backwards to 0:00 (min/sec).

The selected program appears in grey with a yellow border.

The end of the program is visually marked by a green frame. This disappears as soon as the door is opened.

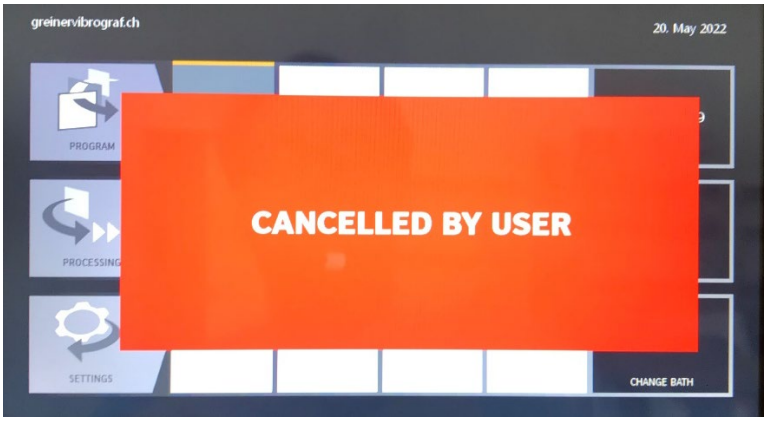



### 4.3.4 Quit a program.

The user can quit a program that has been started at any time.

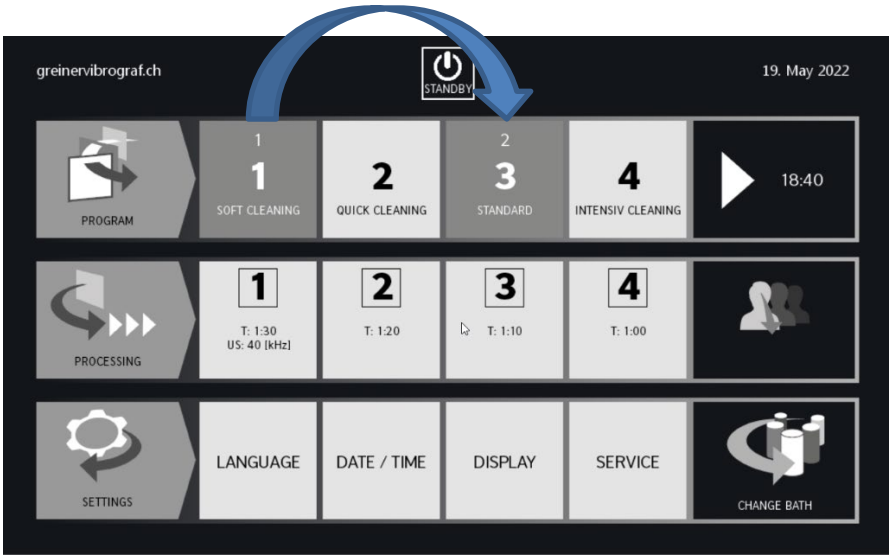
To do this, the Start button must be pressed again for more than two seconds.

The following message appears on the display: “CANCELLED BY USER” and the current process is stopped. The basket is now simply wound out, so the device may take a moment to return to the starting position.



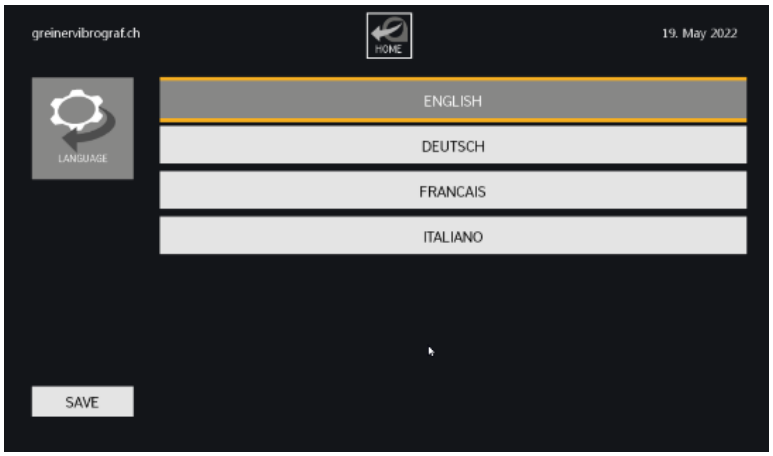

### 4.3.5 Linking programs

If required, two programs can be linked together. To do this, select the first program, then select the second program, holding down the button for at least two seconds. Now the two selected programs are linked. In this example Programme 1 and 3



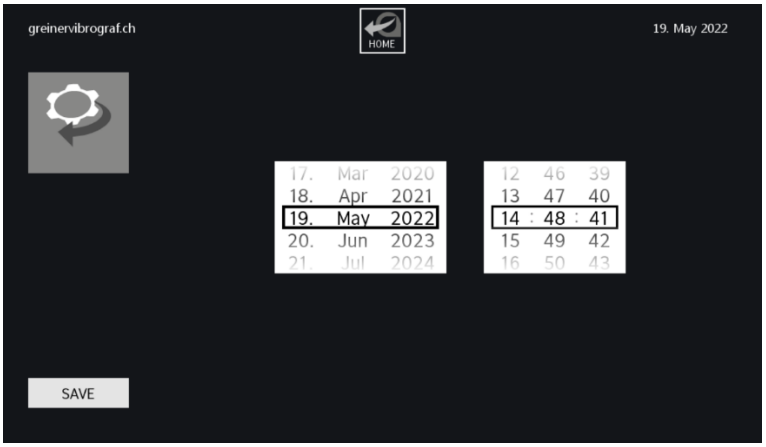

### 4.3.6 Language

The language can be selected here. There are four languages to choose from:




### 4.3.7 Date Time

Default setting for date and time using the scroll-up/down menu.
Set and confirm with SAVE.

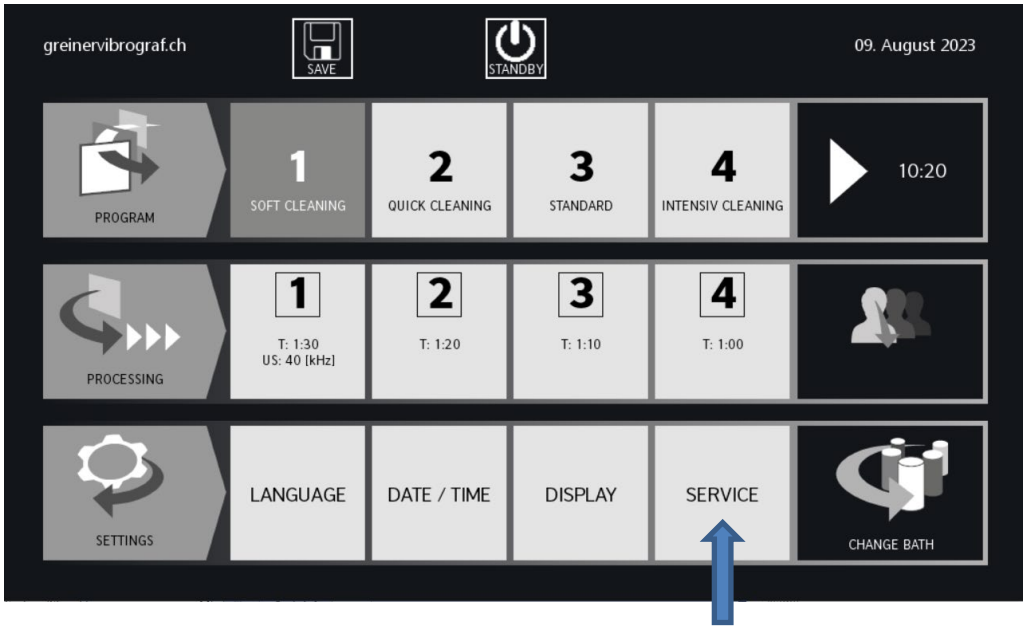


### 4.3.8 Display

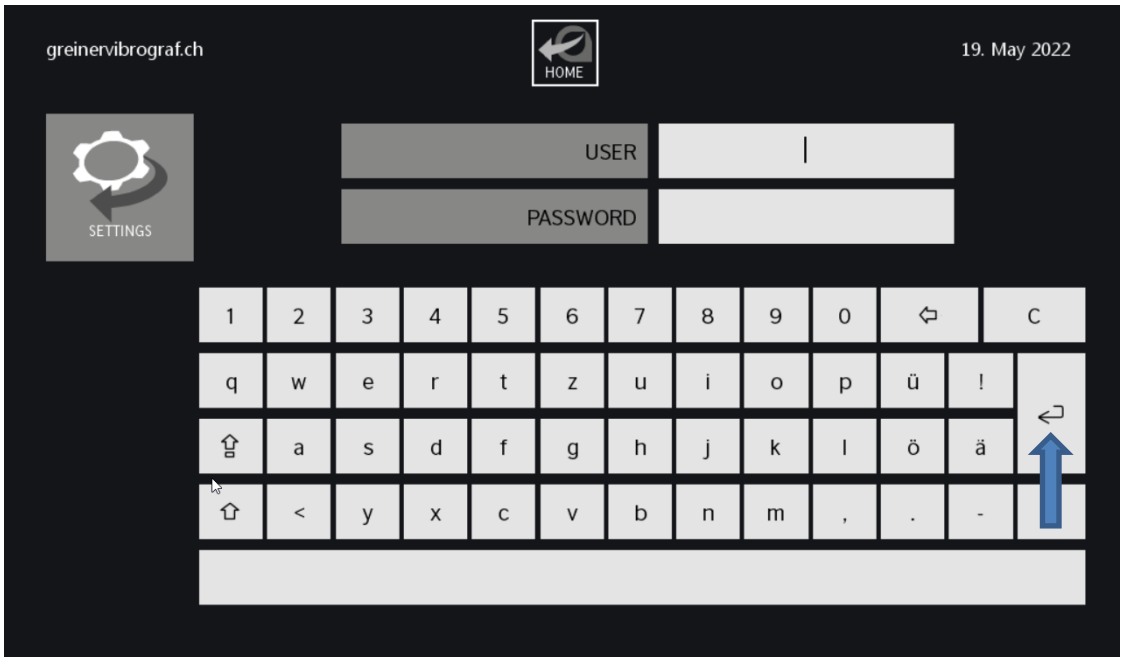
Here you can set the parameters for the display.

This includes the brightness, the time until the screen saver turns off and the screen saver appears, and the brightness of the screen saver.

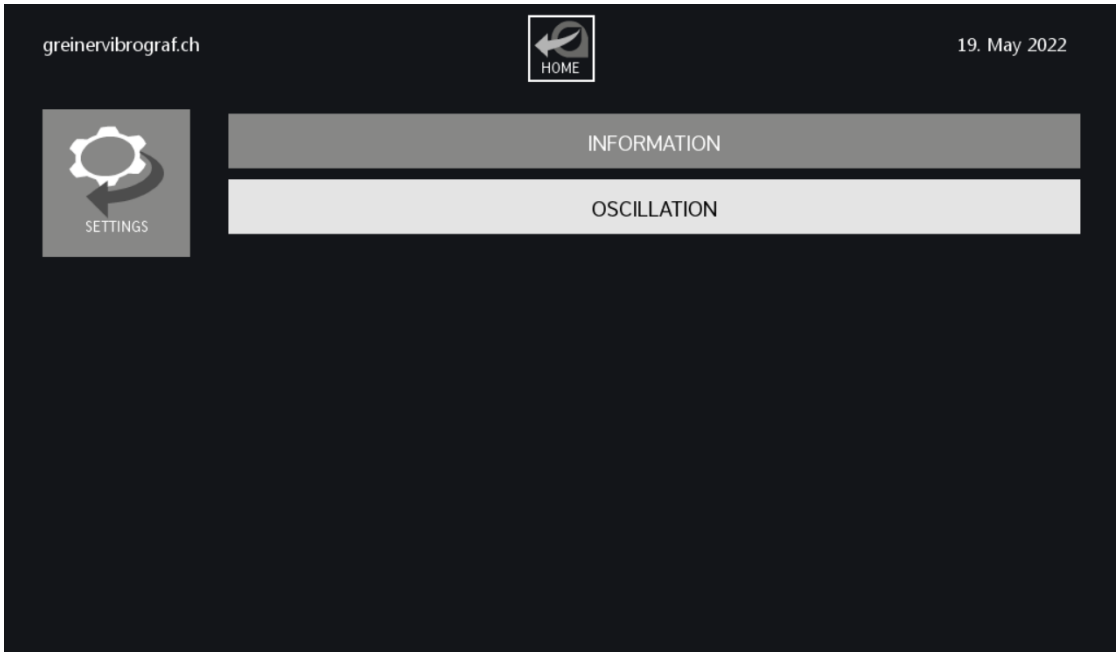
### 4.3.9 Service




Press and hold down **SERVICE** for two seconds. The following image appears:

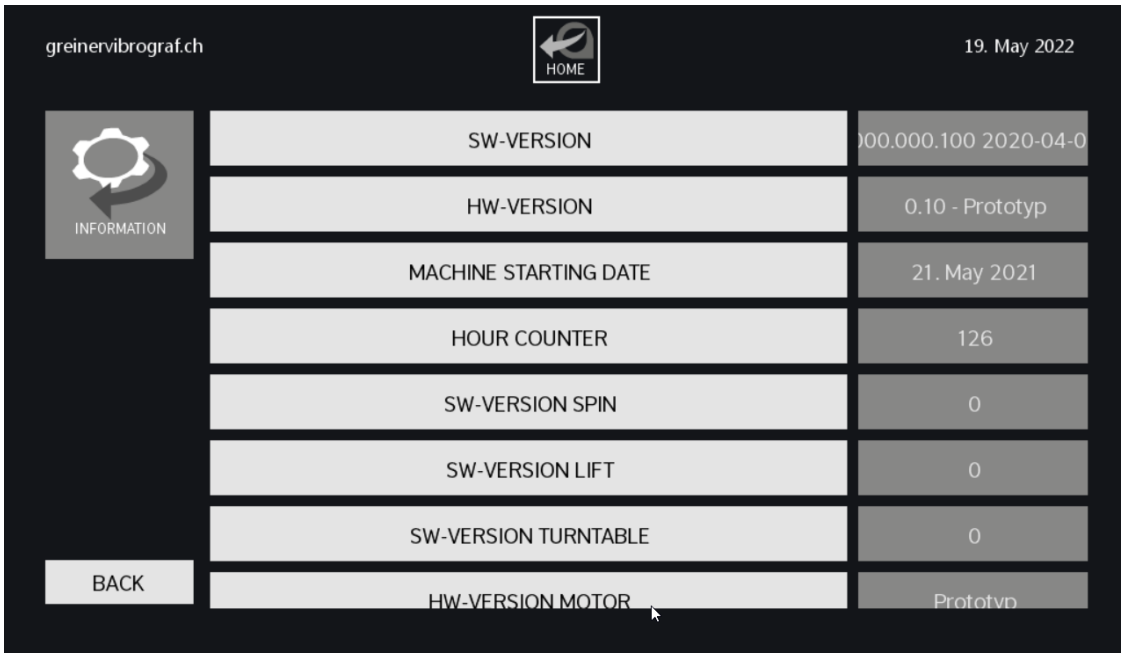



**USER** and **PASSWORD** are only accessible to authorized users.
However, every user can access the following information without a password by double-clicking the Enter key:




Here you can choose between **Information** and **Oscillation**

**Information** shows the following:




Oscillation window for the settings Oscillation 1—5

Here you can define the oscillation parameters for each process step

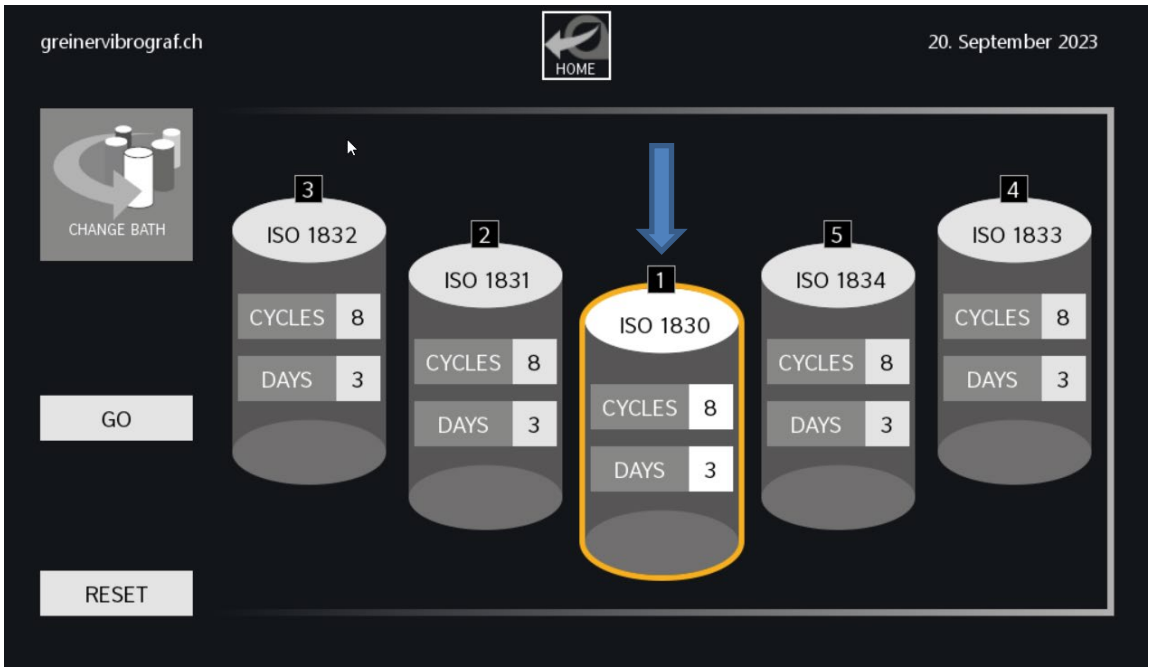
The following settings are stored by default: SPEED (rpm) STOP TIME (s) ROTATION TIME (s)

| | | | |
|---|---|---|---|
| OSCILLATION 1 | 100 | 0 | 2 |
| OSCILLATION 2 | 200 | 0 | 2 |
| OSCILLATION 3 | 300 | 0 | 2 |
| OSCILLATION 4 | 400 | 0 | 2 |
| OSCILLATION 5 | 400 | 0 | 1 |

### 4.3.10 BATH CHANGE

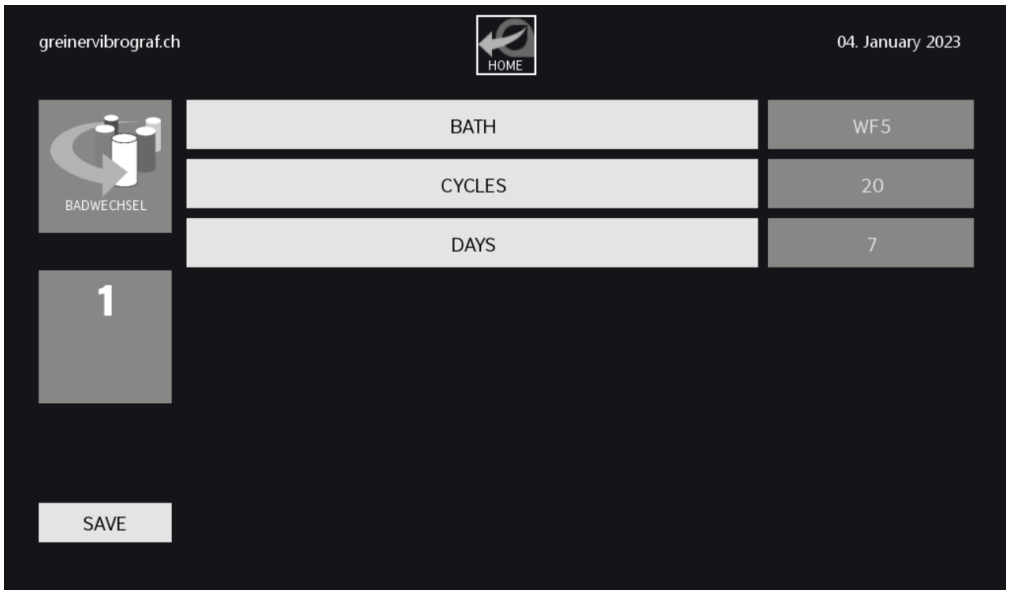
Button at the bottom right of the main menu. If it flashes, one or more of the baths must be changed.

If the **BATH CHANGE** button is pressed for more than two seconds, the following screen appears:




The five baths that can be individually configured are now shown, whereby Bath 1 is always the ultrasound bath. Each one shows which liquid is present (e.g. WF5). The name of the cleaning fluid can be changed by tapping the bath number.

The following image appears: These are now the settings for Bath 1




**BATH** shows which fluid is currently being used. This can be overwritten by tapping (two seconds).

Press the **SAVE** button to save the changed settings.

**CYCLES** and **DAYS:** This means that the bath should be changed no later than after 20 cycles or seven days.

If no bath change is carried out, minus figures are displayed in relation to the setting.

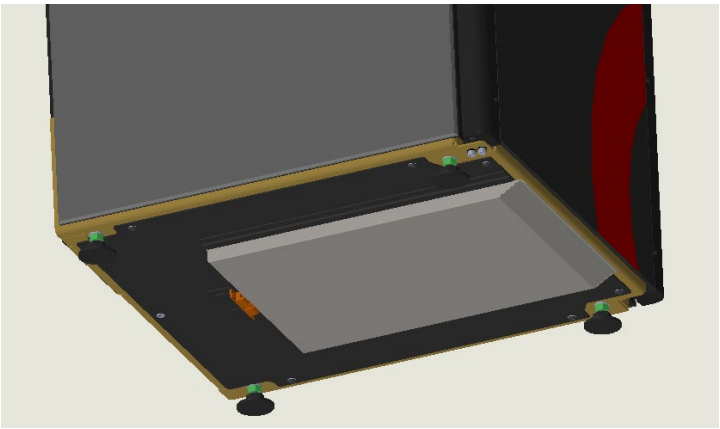
In order to change a bath, select the bath number and press GO. The turntable brings the container to the front position. The door has to be closed for this procedure. Then open the door, remove the container, dispose of the old liquid properly and refill it. After this, re-insert the container and press RESET. Select the next bath number, press GO and repeat the process until all baths have been changed (if necessary).

### 4.3.11 Procedure in the event of unwanted spillage of liquids

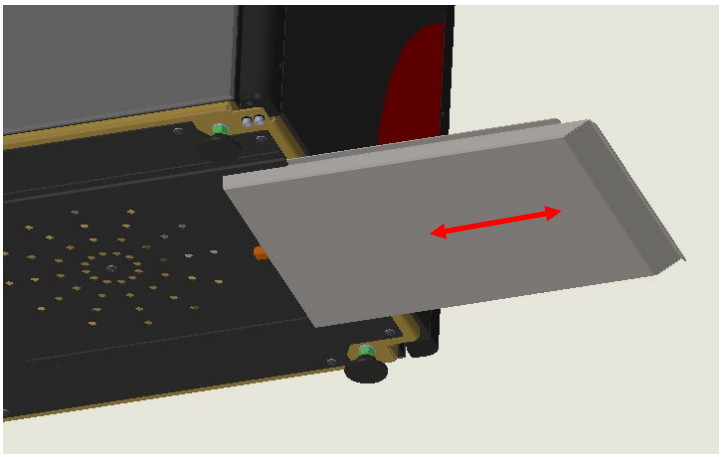
Fluids may also be spilled unintentionally, even if handled with care. In such cases, the device has a drip tray located directly under the base. This drip tray can be pulled out very easily.

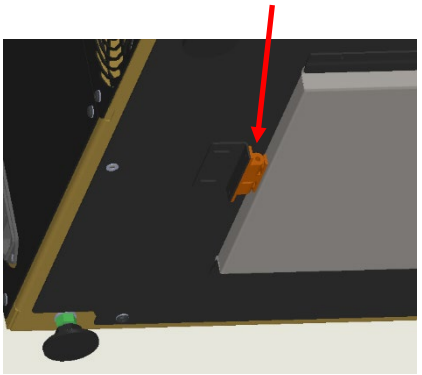
Please observe the relevant regulations for disposing of cleaning fluids

Drip tray in park position with stop



Pull out the drip tray and dispose of the liquid, re-insert the drip tray as far as it will go.

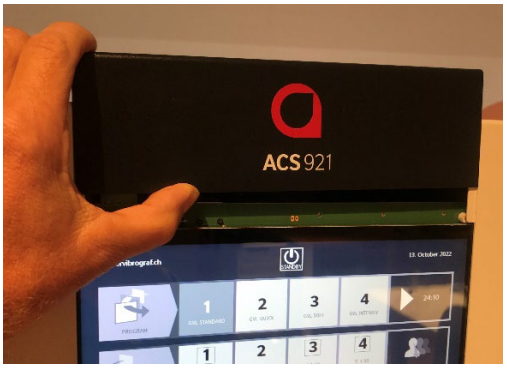




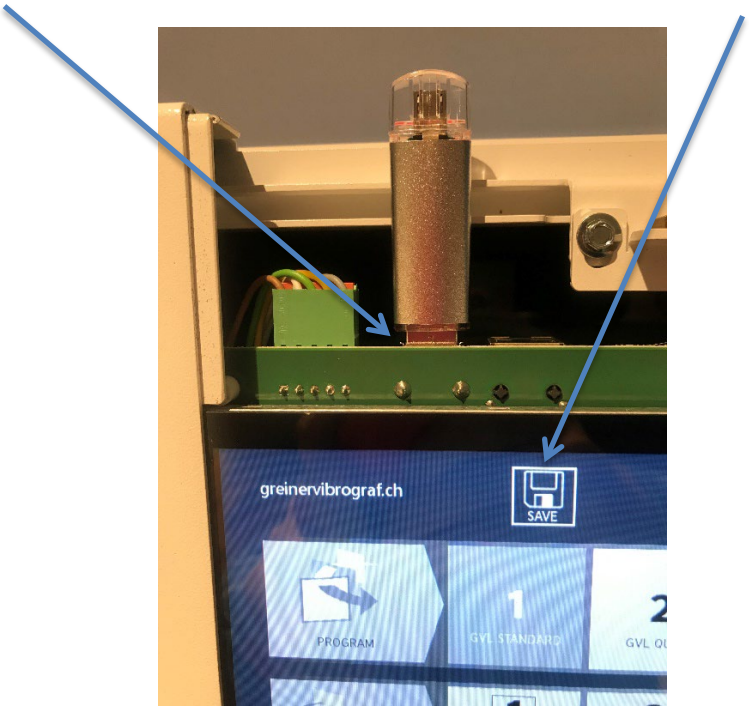
### 4.3.12 Using the USB connector socket

The device has a USB connector socket. It is located under the cover directly above the display. The black cover must be removed before the connector socket can be used.

To do this, it has to be moved upwards/extended vertically.




Then insert the **USB stick from above** and the **SAVE** icon appears on the display.




Now press **SAVE** and the following functions are available on the display:

**SW update MMI:**To do this, an up-to-date SW version must first be loaded onto the stick.

**Back-up of all data:** Backs up all device settings.

**Load formulas:** If formulas (programmes) already exist, they can be uploaded to the device.

**Load users:** Known users can be uploaded.

Tap the desired function and execute. This can take a moment to complete, as indicated by a time bar.

After this, remove the USB stick and insert the cover from top to bottom.

## 4.4 Baths and containers

### 4.4.1 Position and baths

| Position | Description |
|---|---|
| Position 1 | Cleaning bath (with or without ultrasound)<br>Ultrasound selectable at 40 kHz or 80 kHz or combined 40/80 kHz |
| Position 2 | Cleaning bath |
| Position 3 | Cleaning bath or rinsing bath |
| Position 4 | Cleaning bath or rinsing bath |
| Position 5 | Cleaning bath or rinsing bath |
| Position 6 | Drying at max. 60 °C/cooling position/loading position for baskets |

### 4.4.2 Containers

**Ultrasound container** **Glass container**

Fill glasses up to the mark with the appropriate cleaning or rinsing solution (max. 0.55 l).

The ultrasound tray also has a marking; the maximum capacity is 0.55 l.

Never use the ultrasonic container without or with too little cleaning liquid. Otherwise, overheating with consequential damage may occur.

## 4.5 Cleaning fluids

The following **Original Greiner Vibrograf Cleaning Fluids** are recommended for use:

### 4.5.1 Greiner Vibrograf WF5

Art. no.: 13556
Container: 5 l canister

**WF5** is an anhydrous cleaning agent. Designed for cleaning watch components and small mechanical parts. The **WF5** is a more advanced version of the tried-and-tested WF4. In the new formulation, the service life was improved by a factor of 2 while maintaining the same cleaning power.

**Advantages:** Excellent cleaning power, oxidized metal surfaces are brightened

**Use:** The **WF5** is used undiluted and cold in the first cleaning bath, ideally with ultrasound. We recommend a cleaning cycle time of approx. three to five minutes, depending on the degree of soiling of the parts to be cleaned.

### 4.5.2 Greiner Vibrograf GS500

Art. no.: 13504
Container: 500 ml bottle

**GS500** is a special cleaner for steel, non-ferrous and precious metals, ceramics and glass. It offers a high grease-dissolving capacity and removes polishing, sanding and lapping residues. Eliminates the oxidation of non-ferrous and precious metals and also has an anti-rust effect.

**Advantages:** Fat-solvent, phosphate-free, biodegradable, toxic class-free

**Use:** Dilute the concentrate 1:20 with cold demineralised water. Shake vigorously until an even emulsion is formed. Do not heat above 60 °C.

### 4.5.3 Greiner Vibrograf S-3

Art. no.: 13565
Container: 5 l canister

**S-3** is a ready-to-use rinsing solution for watch and precision mechanical parts. It is used as a rinsing solution after
use of a cleaning solution.

**Advantages:** Water-free rinsing solution, fast-drying, residue-free surfaces

**Use: S-3** is used cold and undiluted as a rinsing solution. A cleaning cycle time of approx. three minutes per rinse bath is recommended. Best results are obtained with two to three consecutive flush baths.

### 4.5.4 Isopropyl alcohol

Art. no.: IPA.005.E
Container: 5 l canister

Isopropylalkohol 70% 5 lt

**ISOPROPYL ALCOHOL** is used as a cleaning and rinsing solution for watch parts and other precision mechanics parts.

**Advantages:** Fast-drying, residue-free surfaces

**Application:** undiluted e.g. 70%

### 4.5.5 Recommendations

**Cleaning** When cleaning metal parts, especially in the watchmaking industry, the cleaning fluid **WF-5** is recommended for use in Position 1.

**Rinsing** For rinsing in Positions 2, 3 and 4, we recommend use of the rinsing liquid **S-3 or ISOPROPYL ALCOHOL 70%**

**When using other products, the following criteria have to be met:**

**Ultrasound bath**: only liquids with a flash point above **25°C**

**Glass trays:** only liquids with a flash point above **12°C**

**In any case, the safety data sheet of the respective product must always be observed!**

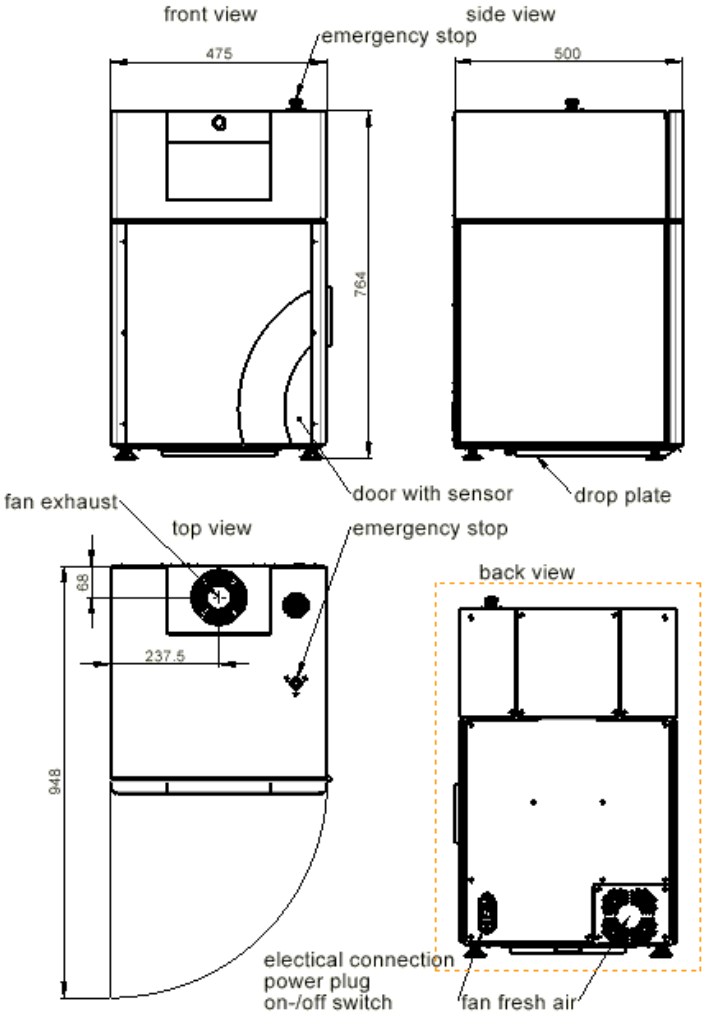
**When handling all of the liquids described above, it is imperative to ensure eye protection by using protective goggles and gloves!**

# 5 Technical data

## 5.1 Technical data

| | |
|---|---|
| Power consumption | 3.5 amperes (230 V, standard), 7.4 amperes (110 V, on request) |
| Output | 815 W |
| Ultrasound | 40 kHz/80 kHz 60 W |
| Fan output | 175 $m^3/h$ |
| Heating temperature | max. 60 °C |
| Net weight | 70 kg (without packaging) |
| Weight with glasses | 75kg<br>(4 × glasses; 600 g + 4 × 1⁄2 l, 1 × US tray; 1,100 g + 1 × 1⁄2 l)<br>Plus baskets |
| Noise emissions | 51 dBA (< 70 dBA) |

## 5.2 Dimensions



# 6 Service and maintenance, malfunction

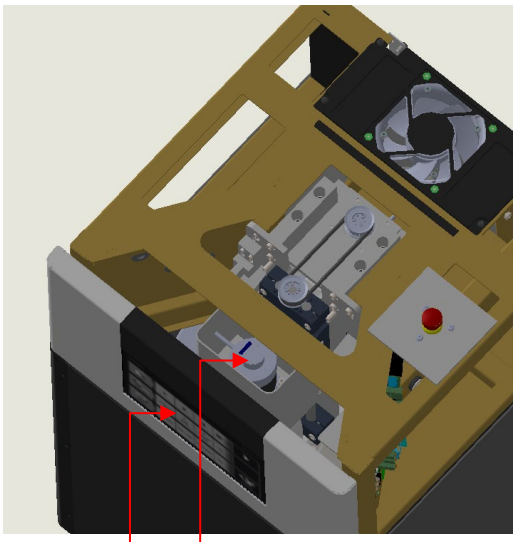
## 6.1 Service and maintenance

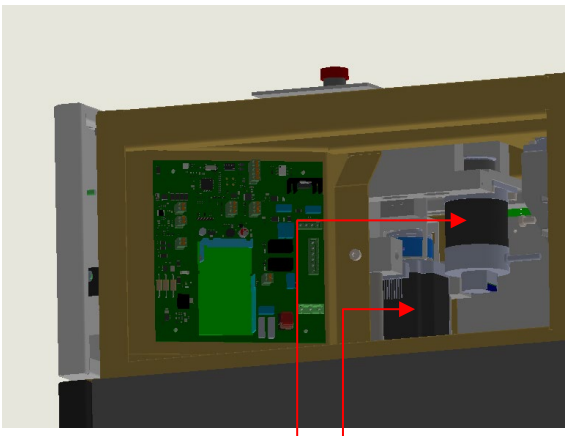
## 6.2 Fault messages, troubleshooting, fault journal

### 6.2.1 Fault messages

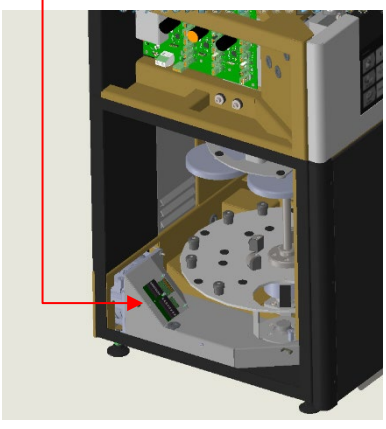
Fault messages are displayed immediately when the event occurs and have to be analysed by the user first.

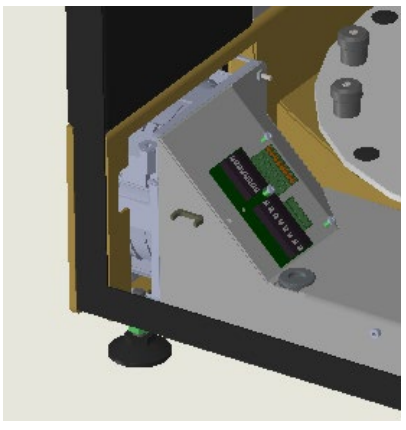
Location of modules and motors:





Module number:
0000: MMI
1000: Spin motor
2000: Lift motor
3000: Turntable motor
4000: Fan module





The fault number is always made up of the module number + detail fault number!

Example: Module 1 (1000), fault #6 = **fault number 1006 – spin motor blocked**

| Fault number | | Description | Detailed text | Reset action |
|---|---|---|---|---|
| Mod-ule | no. | | | |
| | 0 | No fault | | |
| 1, 2, 3 | 1 | Overvoltage | The voltage in the motor circuit is too high | Check the voltage on the power supply unit of the motors (48V) |
| 1, 2, 3 | 2 | Undervoltage | The voltage in the motor circuit is too low or not present | Check the voltage on the power supply unit of the motors (48V)<br>Fuse may be defective |
| 1, 2, 3 | 3 | Excess current | Motor current is too high | Check motor cables for short circuits<br>Replace motor<br>Replace motor card |
| | 4 | | | |
| | 5 | | | |
| 1, 2, 3 | 6 | Motor blocked | The motor is mechanically blocked | Check the motor can run freely<br>Check motor position (mechanical stop) |
| 2, 3 | 7 | Safety switch reached | The lift reaches the upper limit switch in the initialised state | Check position of limit switch<br>Switch mechanically fixed<br>Reset the motor by resetting the fault message |
| 1, 2 | 8 | Encoder initialisation fault | | Check encoder wiring and restart device |
| 1, 2 | 9 | Motor blocked at start-up | | Check the relevant motor by hand and restart the device |
| 1, 2 | 10 | Internal library fault | Programme sequence fault | Restart device |
| 1, 2 | 11 | Internal library fault | | |
| 1, 2 | 12 | Internal library fault | | |

| Fault number | | Description | Detailed text | Reset action |
|---|---|---|---|---|
| Module | no. | | | |
| 1, 2 | 13 | Internal library fault | | |
| 1, 2 | 14 | Internal library fault | | |
| 1, 2, 3 | 15 | Not initialized | | |
| | 16 | | Motor is not initialized and is receiving new default settings | Restart device |
| | 17 | | | |
| | 18 | | | |
| | 19 | | | |
| 1, 2, 3 | 20 | Incorrect speed specification | | |
| 1, 2, 3 | 21 | Incorrect position specification | Incorrect default settings in the programme sequence | Check programme data |
| 1, 2, 3 | 22 | Incorrect acceleration specification | Incorrect default settings in the programme sequence | |
| 1, 2, 3 | 23 | Internal software fault | Incorrect default settings in the programme sequence | |
| 1, 2, 3 | 24 | Internal software fault | POSITION_WRONG_VALUES | |
| 1, 2, 3 | 25 | Internal software fault | MC_FAULT | |
| 1, 2, 3 | 26 | Internal software fault | STP_STALLED | |
| | 27 | | STP_SPEED_TO_HIGH | |
| | 28 | | | |
| | 29 | | | |
| 1, 2, 3, 4 | 30 | Memory fault | Unable to delete flash | Restart the device via the mains cable (wait 10 minutes after pulling it out). |
| 1, 2, 3, 4 | 31 | Memory fault | Unable to write flash | |

| | | | | |
|---|---|---|---|---|
| 1, 2, 3, 4 | 32 | Memory fault | Incorrect flash address | If fault appears again --> replace fan module electronics |
| **Fault number** | | **Description** | **Detailed text** | **Reset action** |
| **Module** | **no.** | | | |
| 4 | 33 | Door switch short-circuit | | Check door switch wiring, replace door switch if necessary |
| 4 | 34 | Door switch interruption | | |
| 4 | 35 | Internal hardware fault | ADC not working correctly | |
| 4 | 36 | Memory fault | Unable to write flash | |
| 4 | 37 | Heating temperature sensor interruption | | Check sensor connection, measure sensor |
| 4 | 38 | Interruption of temperature sensor 2 | | |
| 4 | 39 | Short-circuit heating temperature sensor | | |
| 4 | 40 | Short-circuit temperature sensor 2 | | |
| | | | | |
| 0 | 100 | Emergency stop circuit interrupted | Emergency stop button activated | Check emergency stop button and possibly the wiring |
| 0 | 101 | Fault in ultrasound generator | Internal fault in ultrasound generator | Switch device off (10 minutes) and back on, replace alternator if necessary |

**Every fault message must be acknowledged by the user!**

### 6.2.2 Fault memory

All faults are recorded in the internal fault memory, in the chronological order of the event.

The fault code (3 or 4-digit number) appears first, then the description of the fault

# 7 Declaration of conformity

The manufacturer / distributor

**Greiner Vibrograf AG**
**Mittelstrasse 2**
**CH-4900 Langenthal**

hereby declares that the following product

| | |
|---|---|
| Product name: | cleaning machine |
| Model name: | ACS921 |
| Serial number: | 51230 |
| Trade name: | ACS921 |
| Year of construction: | 2023 |

complies with all relevant provisions of the applicable legal regulations (hereinafter) - including the amendments in force at the time of the declaration. The manufacturer is solely responsible for issuing this declaration of conformity. This declaration only relates to the machine in the condition in which it was placed on the market; parts and/or interventions subsequently carried out by the end user are not taken into account.

The following legislation has been applied:

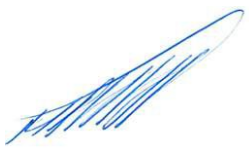
**Machinery Directive 2006/42/EC**
**Low Voltage Directive 2014/35/EU**
**EMC Directive 2014/30/EU**

The following harmonized standards were applied:

| | |
|---|---|
| EN ISO 12100-1:2011-03 | Safety of machines - general design principles |
| EN 12921-1/3:2010-02 | Surface cleaning machines |
| EN 60204-1:2019-06 | Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005 (Modified)) |
| EN ISO 13849-1:2015 | Safety of machinery - Safety-related parts of controls - Part 1: General principles for design (ISO 13849-1:2015) |
| EN ISO 13849-2:2012 | Part 2: Validation |
| EN ISO 14118:2018 | Safety of machinery - Prevention of unexpected start-up (ISO 14118:2017) |
| EN ISO 14120:2016-05 | Separating protective devices |
| EN 61800-3:2019-04 | Variable speed electric drive systems<br>Part 3: EMC requirements |

Name and address of the person authorized to compile the technical documentation:
Michael Kläfiger.

Place: Langenthal
Date: 04.01.2023



Michael Kläfiger (CEO)

Notified Body:

SUVA Bereich Technik
Akkreditierte Zertifizierungsstelle SCESp 0008
Europäisch notifiziert, Kenn-Nr. 1246
Postfach 4358
CH-6002 Luzern

Type Examination Certificate Nr: E 7313.d

# 8 Type-examination certificate

## Type-examination certificate no. E 7313.e

| | |
|---|---|
| **Object:** | metal-cleaning installation |
| **Mark:** | Greiner Vibrograf |
| **Type designation:** | ACS921 |
| **Technical details concerning safety:** | Technical documentation from 2 June 2023<br>Ultrasonic bath: only cleaning liquids with a flash point above 25°C<br>Glass baths: only cleaning liquids with a flash point above 12°c |
| **Manufacturer's address:** | Greiner Vibrograf AG<br>Mittelstrasse 2<br>CH-4900 Langenthal |
| **Address of applicant:** | Greiner Vibrograf AG<br>Mittelstrasse 2<br>CH-4900 Langenthal |
| **Special conditions, enclosures:** | no enclosure |
| **Expireson:** | 30 June 2028 |

**Place and date:**
Lucerne, 6 June 2023

Suva
Accredited Certification Body SCESp 0008
Technology Seetor

**The Safety Engineer**
Ivo Maurer

**Head of Certification**
Guido Schmitter

# 9 Disposal

We do our utmost to keep recycling costs to a minimum in order to pass on the resulting benefits to our customers and society as a whole.

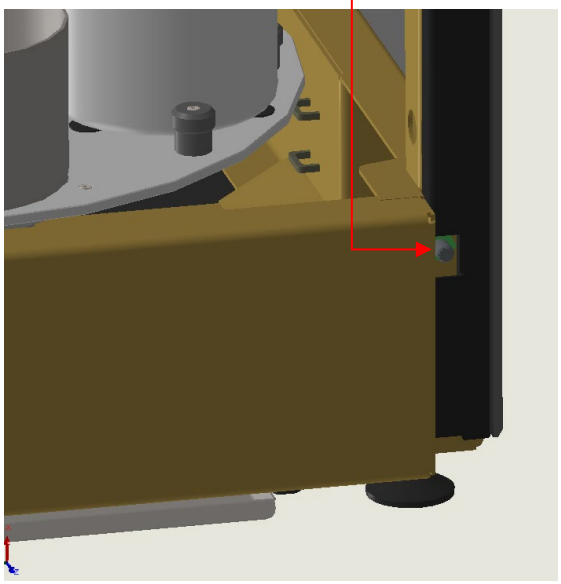
For this reason, if you ever have to part with this appliance, please do not dispose of it in a rubbish bin, but send it to the appropriate collection point for waste electrical appliances.

# 10 Appendix

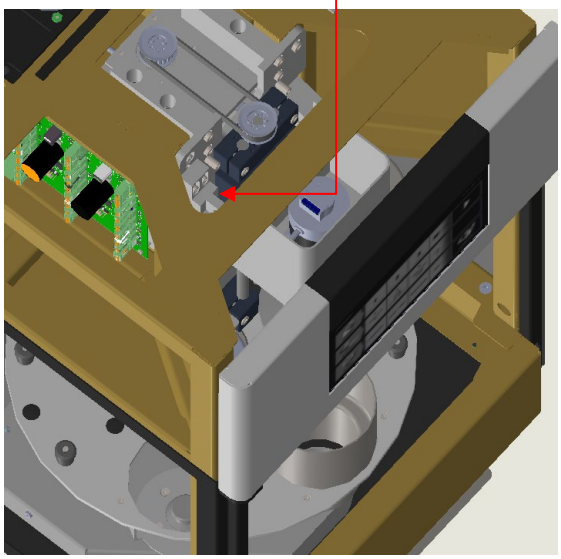
## 10.1 Spare parts

### 10.1.1 Sensors

Door monitoring sensor
Art. no. 9007.07A.001

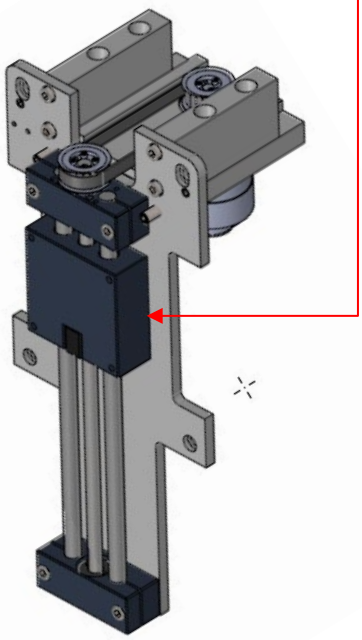


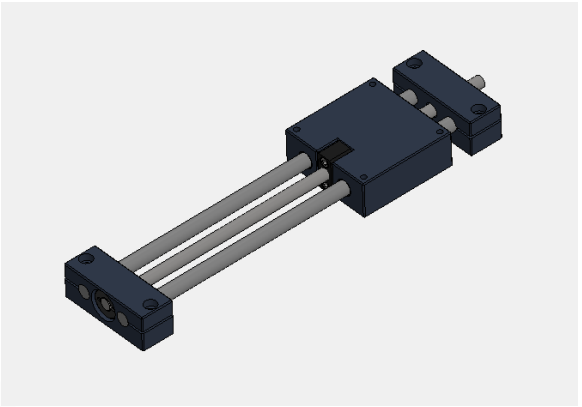
Lift limit switch
Art. no. 9007.07A.002



### 10.1.2 Actuators

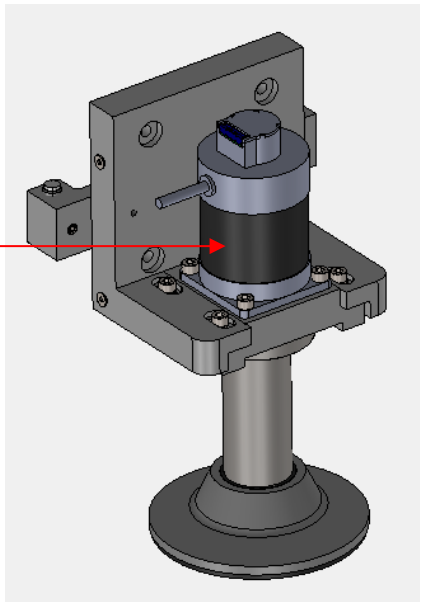
Special linear unit
Art. no. 0422.400.001

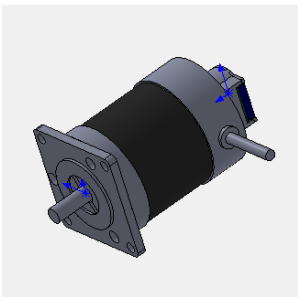




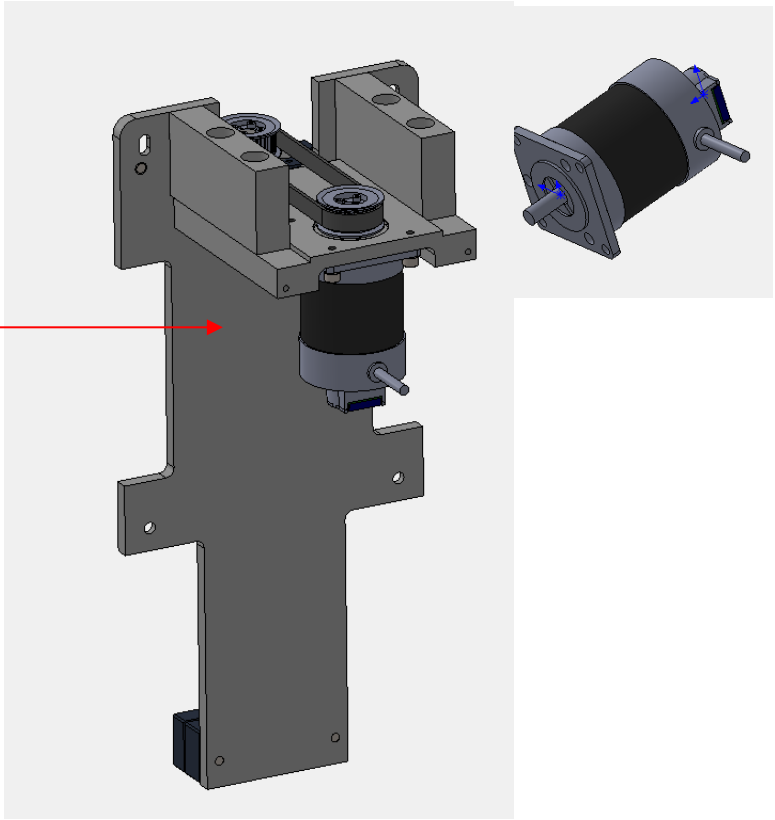
### 10.1.3 Motors

Spin motor
Art. no. DB59-K2V35141

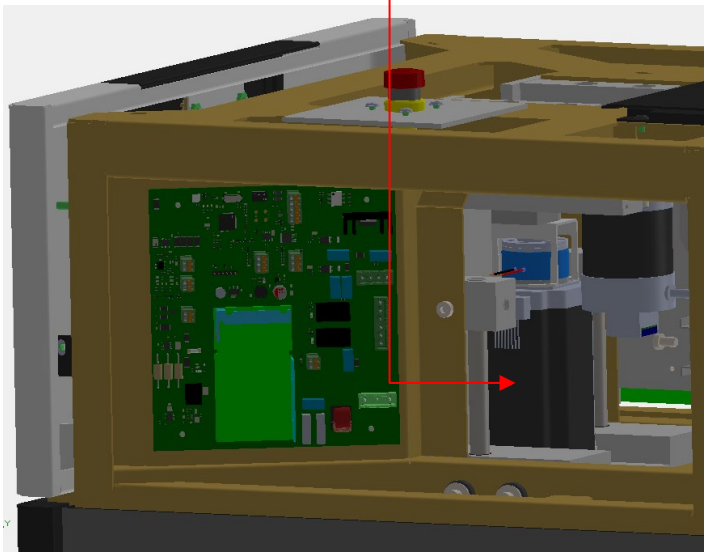


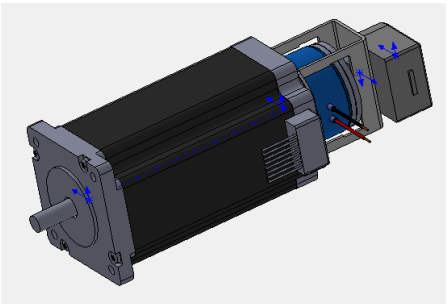


Lift motor
Art no. DB59-K2V35141



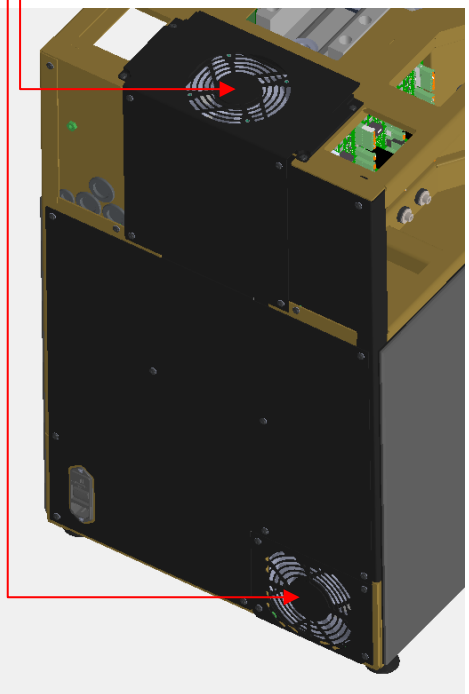
Turntable stepper motor with transmitter and brake
Art. no. ST6018-K2V35140

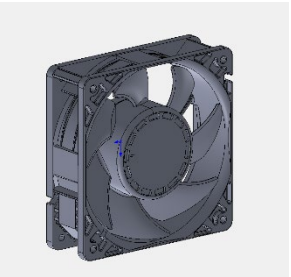




### 10.1.4 Fan

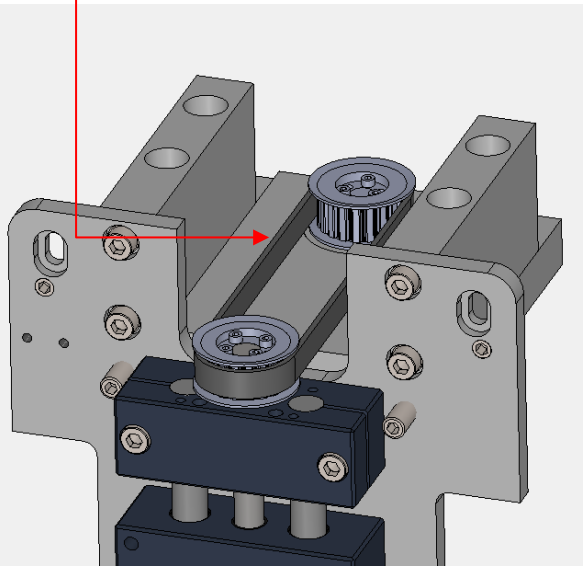
Fan
Art. no. 9650.01A.003

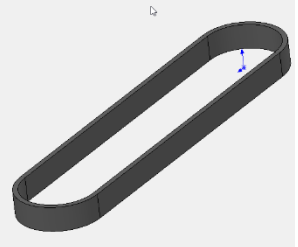




### 10.1.5 Drive belt

Lift drive belt
Art. no. 7314.00A.005





For all other spare parts, please contact Greiner Vibrograf AG Customer Service

## 10.2 Original accessories

### 10.2.1 Activated carbon filter

See on our website at:

www.greinervibrograf.ch/Filter-Serie-ACS

### 10.2.2 Baskets

See on our website at:

www.greinervibrograf.ch/Koerbe-Zubehoer

### 10.2.3 Cleaning fluids

See our website at:

www.greinervibrograf.ch/Reinigungsfluessigkeiten