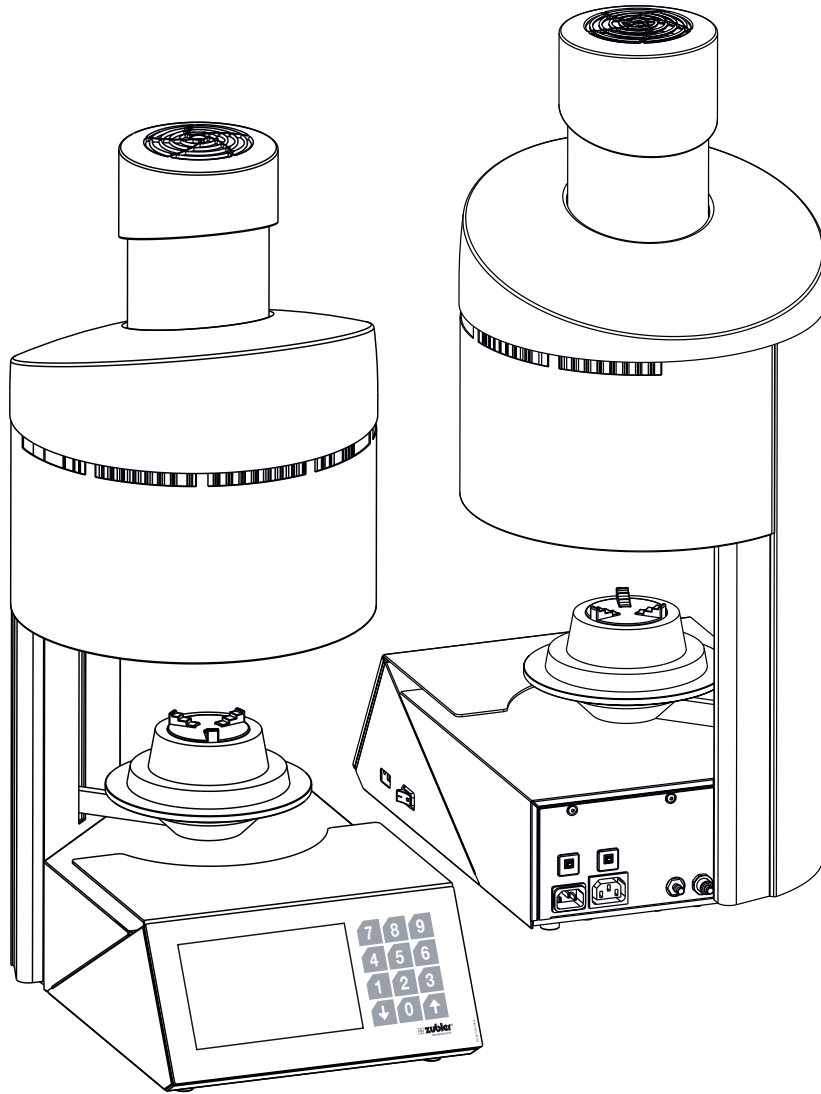


VARIO PRESS 330 series





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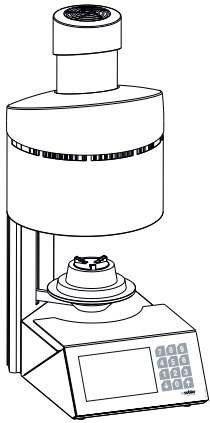
0. Introduction

Dear Sir or Madam,

We are appreciative of your decision in favor of the Vario Press 330 pressing furnace. We hope you enjoy working with it! Further technological development

has been achieved with the cooperation of experienced dental technicians. Our focus is to achieve the goal of building furnaces of the highest quality and sustain-

ability. Performance and economy are basic requirements. To ensure success, please read these operating instructions carefully.



0.1 Declaration of conformity

We, Zubler Gerätebau GmbH

Buchbrunnenweg 26

89081 Ulm-Jungingen

www.zubler.de

declare that the product "VARIO PRESS 330" complies with the provisions of the following EC directives:

2006/42/EC Machinery Directive

2014/35/EU Low Voltage Directive

2014/30/EU EMC Directive

2011/65/EU RoHS.

If the product is modified without our agreement, this declaration loses its validity.

0.2 General

The correct processing of modern ceramic materials places increasing demands on dental technicians. We have taken this into account and combined the latest technology and future-oriented processes in the VARIO ovens. The software installed in the VARIO series allows you

to carry out individual pressing and firing for all dental ceramics available on the market. The use of the highest quality materials increases the service life of the furnace and offers you reproducible results at the highest level. It is now our desire that you use the VARIO furnaces to

produce top-quality dental ceramics for years to come. Therefore we will inform you about changes to the software or additions to the processing options. We are sure that you will have much success with the ceramic furnace and congratulate you on the choice you have made.

0.3 Intended use

- The VARIO series ovens are used exclusively for the firing and pressing of dental ceramics and is only intended for these applications.
- The user is liable for damage resulting from other use.
- When working frequently with temperatures above 1075°C, the service life of the heating chamber is reduced.
- The manufacturer's warranty provisions apply.
- Intended use also includes observing all the information in these operating instructions.
- Repairs may only be carried out by authorized service centers.
- Do not operate the control panel with wet or damp fingers.
- Please unpack the oven with care and transport with two people. Always lift by the base, never by the oven cavity or lift table.
- Do not operate the control panel with hard and/or pointed objects.
- Never operate the furnace without the firing insulation base or press insulation base.
- Do not put your hands between the oven table and the oven chamber during operation. There is a risk of crushing and burns.
- Never place items or hands under the lift table when in use. The oven table must not be obstructed during the opening process.
- The cooling slots must not be covered, otherwise air circulation may not be optimal and the device may overheat.
- No liquids or objects may get into the device or into the ventilation slots, as this could cause a short circuit.
- The oven table has an electric drive and must be operated with the opening and closing button. Do not open or close the oven table by hand.

0.4 Safety instructions

- Position the oven in the up-right position. A clearance of 200-300 mm must be maintained above and on all sides of the oven. Immediately adjoining walls surrounding the device must be made of non-flammable material. The area should be well ventilated.
- In accordance with fire codes, install an appropriate, recommended, multi-purpose, dry foam fire extinguisher near the oven and ensure your employees are trained in its proper use.
- Never wear loose or loose fitting clothing when operating the oven. Be careful when reaching for objects around the oven. Flammable material can ignite if it comes into contact with a hot surface of the device and cause serious burns to the user.
- Do not set up the furnace and vacuum pump in the immediate vicinity of heat sources (e.g. preheating furnaces, sintering furnaces).
- Furnace soldering reduces the service life of the thermocouple and heating muffle.
- Make sure the oven is professionally installed according to our instructions and the chosen electrical connection is properly grounded.
- For 230/240 V, use the grounded mains cable H05VV-F3G1.0 with a non-heating device socket and Schuko plug.
- For 100/120V use the grounded mains cable SJT3xAWG14 with a non-heating device socket.
- The electrical service must be carried out carefully and ensure that the oven is connected to the existing mains with sufficient voltage. Consult a qualified electrician to ensure the power rating is adequate and will not overload an existing circuit.
- Do not use an extension cord with the oven. Ask your electricity supplier about the electrical connection values that apply to your local network.
- In the event of undervoltage, the temperature rise may be slower.
- Hoses and fittings should be checked periodically for proper fit, wear and damage and replaced or re-tightened as necessary.
- All cables and hoses should be located away from walkways and passageways.
- During use, such as when opening the heating chamber, high temperatures may radiate outside the oven chamber.
- Do not touch the surface parts, the heating elements or the inner surface of the oven. The hot surfaces can cause serious burns.
- Immediately after the firing process, do not leave the firing chamber unattended, close it as soon as possible.
- If the furnace is left under vacuum for a long time when it is switched off, the lift plate O-ring may stick easily.
- Only clean the device with a dry or slightly damp cloth. Do not use solvents! Always disconnect the power plug from the outlet before doing this work.
- When the heating chamber heats up, the heating coil may oscillate.
- In the event of defects or damage that no longer ensures safe operation, the device must be secured against unintentional use.
- Before performing any recommended and authorized routine maintenance or service, turn the oven off and disconnect the power plug from the outlet, to avoid risk of electric shock, injury or death. Allow the oven to cool to room temperature.
- Do not attempt to open, repair, or replace any part of your oven until you have read the manual and the repair or replacement is specifically recommended therein. Any unauthorized attempt to repair, replace or open any part of your oven could pose a safety hazard and void your warranty. All service work, whether during or outside the warranty period, may only be carried out by our customer service.
- In the event of service, only original spare parts are to be used.
- Unauthorized modifications to the hardware or software can cause serious safety damage as well as void your right to warranty.
- Never leave children or visitors unattended near an operating oven. Children should never be allowed to stand on or climb up on a surface on which a oven is placed. Objects that could be of interest to children should never be placed near the oven. There is a serious risk of injury.
- Keep the original packaging materials for your VARIO oven and vacuum pump. Only use the original packaging to transport these parts. Improper transport will void the warranty.

1. Installation

1.1 Setting up the device

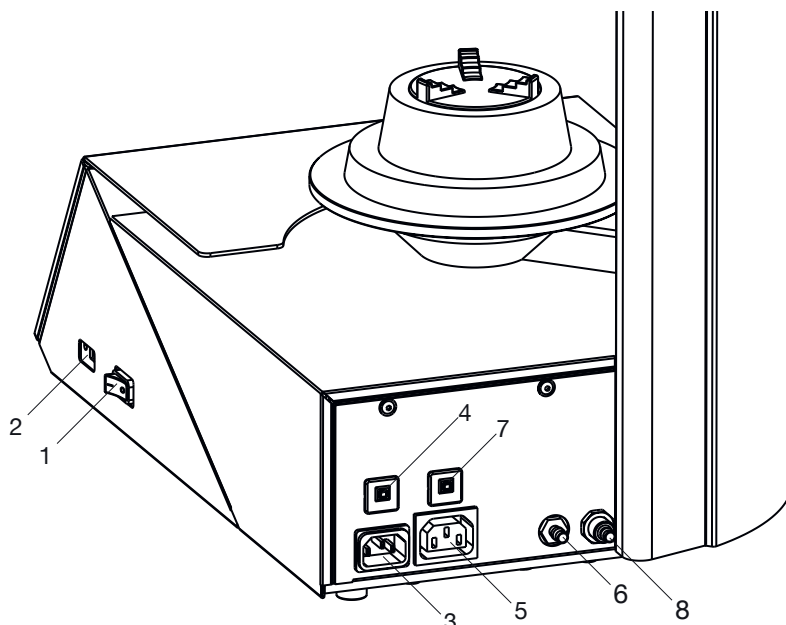
- Place the oven on a stable and level work station
- Set up the vacuum pump near the oven (remove the rubber cover from the brass nozzle)
- Keep the original box and packaging material for warranty claims and service
- Have the firing or pressing insulation base ready for the further procedure.
- Power connection:
 - The ceramic oven requires 230V/50Hz or 115V/60Hz.
 - Do not use extension cords
 - Connect oven to a dedicated electrical outlet.
 - The main switch should be in the "0" position.
 - Connect the oven to the power supply using the supplied power cord.

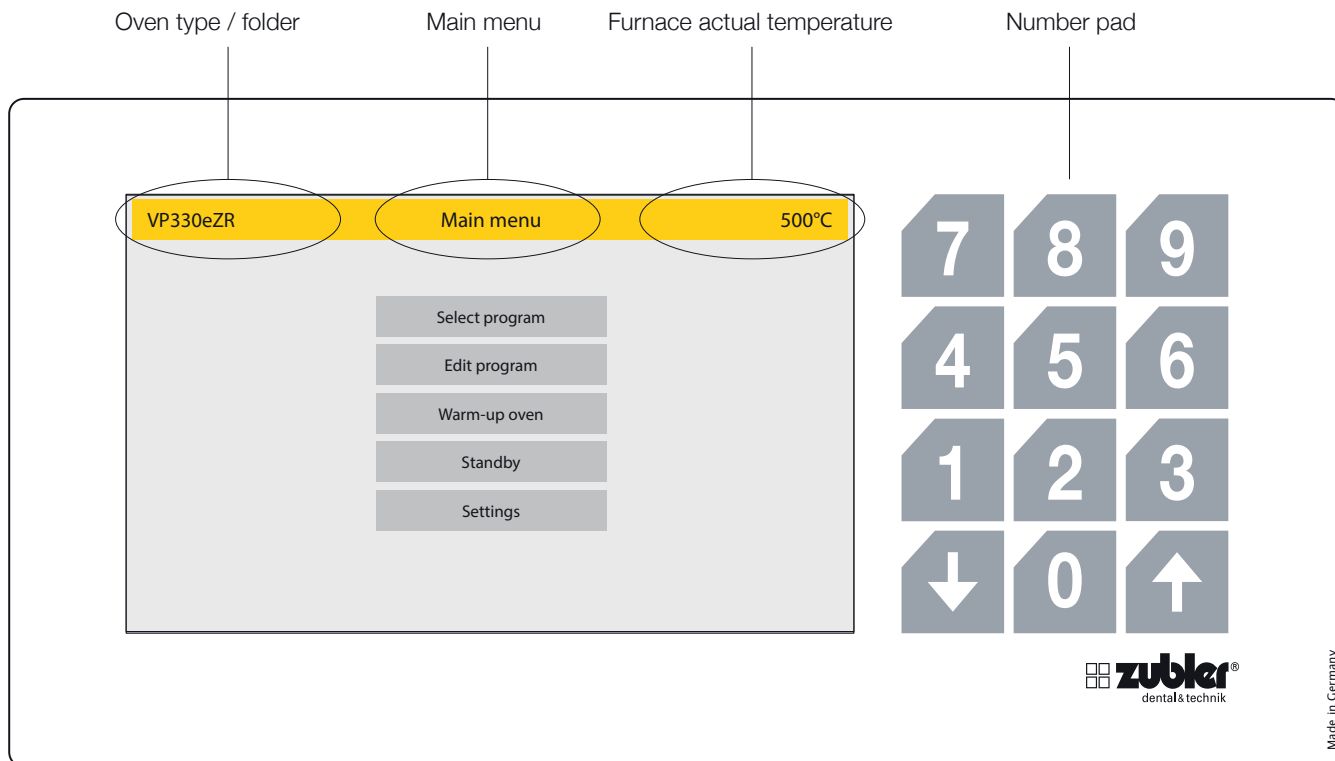
Switch on the furnace at the main switch.

1.2 Initial installation

- After switching on for the first time, instructions for the first steps are shown on the display. After that, the initial installation cycle runs automatically. The oven is only ready for operation after a complete set-up (2.5.10, 2.5.11).
- Remove any remaining packaging
- Initial setup program
 - 1 Setting the language
 - 2 Put on the firing or press insulation base
 - 3 Brightness
 - 4 Volume
 - 5 Connection vacuum pump
 - 6 Compressed air connection
 - 7 Set date and time
 - 8 Setting the unit (°C / °F)
 - 9 Idle temperature
Standby temperature
 - 10 Loading programs via USB
 - 11 Press sensor test
 - 12 Vacuum test
 - 13 Drying program, (process time 20 min)

1	Main switch
2	USB port
3	Power cord connection
4	Main fuse automat
5	Power cord connection "vacuum pump"
6	Connection for the vacuum hose
7	Fuse automat "vacuum"
8	Connection compressed air supply 5 bar (0,5 MPa)





1.3 Display

The display of the VARIO furnaces is a full-touch display including an additional number block

The number block is only active when numerical values can be entered.

The "UP" and "DOWN" arrows are active when they can be used. In the top position only the **down** arrow is active, in the lower plate position only the **up** arrow is active. In this way, the proper functioning of the lift and the end positions can be checked.

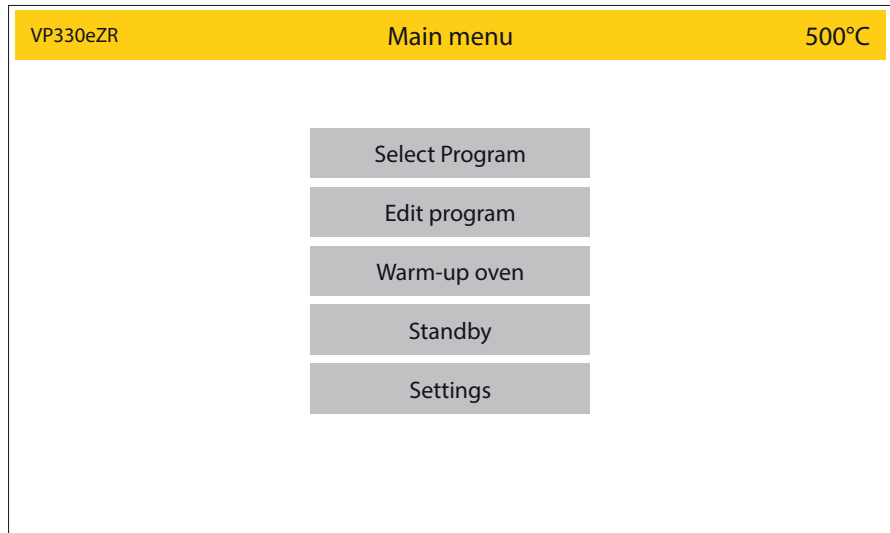
1.4 Diagnostic program

When you switch on the device, the oven starts a diagnostic program to check the function of various sensors. At the same time, the firing chamber is heated to operating temperature. If there is a fault/defect in basic functions, the oven will display a corresponding error message. The total duration of this process is about 20 minutes, with the option of bypassing this step using the red **Abort** function field. This gives you direct access to the main menu.

2. Operation

Selection of the menu parameters

After the furnace is switched on, the main menu with five options appears on the display. Selecting an option takes you directly to it.

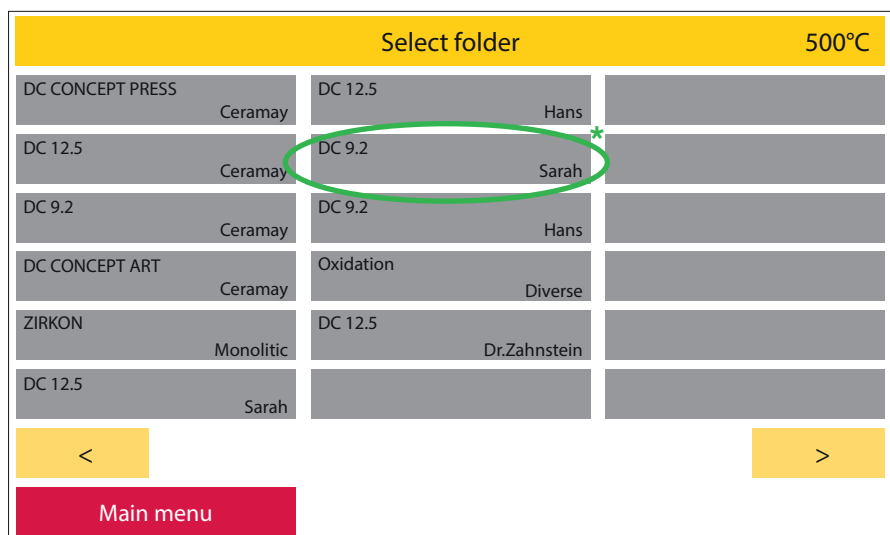


Display, Status: Main menu

Image 08.1

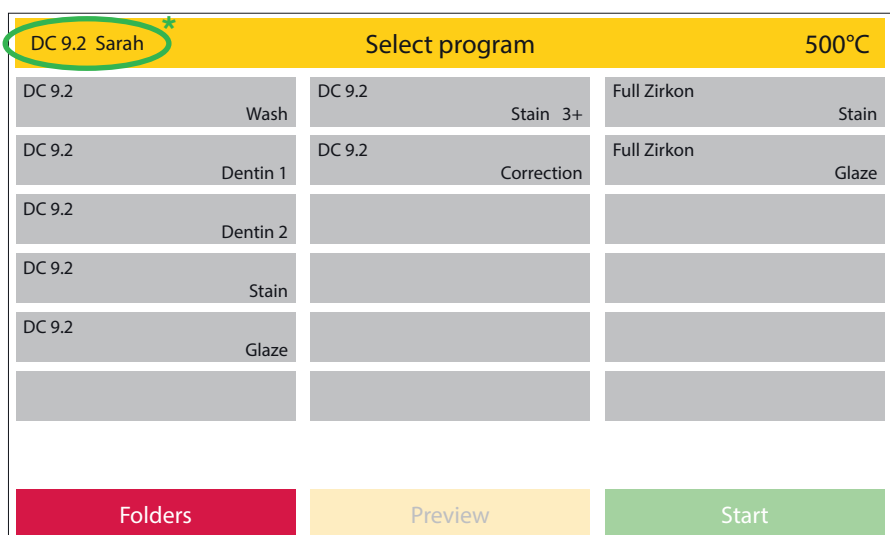
2.1 Program Selection

- The Folder Menu contains a list of customizable Program Folder buttons. This menu will be recognizable by the prompt at the top of the page "Select Folder". Each Program Folder button contains the programs for the listed specific porcelain, or process you desire. Folder Buttons are dark grey, while program buttons are light grey. Example: All DC 9.2 Programs will be in the DC 9.2 Folder. The red **Main menu** button takes you back to the main menu.
- Once a folder has been opened, the Program buttons in that folder are displayed. This menu will be recognizable by the prompt at the top of the page in yellow "Select Program". Press the desired program button. The press the "Preview" button to view/change parameters or press the "Start" button to start the selected program. The parameters can be changed individually for this one program sequence (see also point 2.1.1).



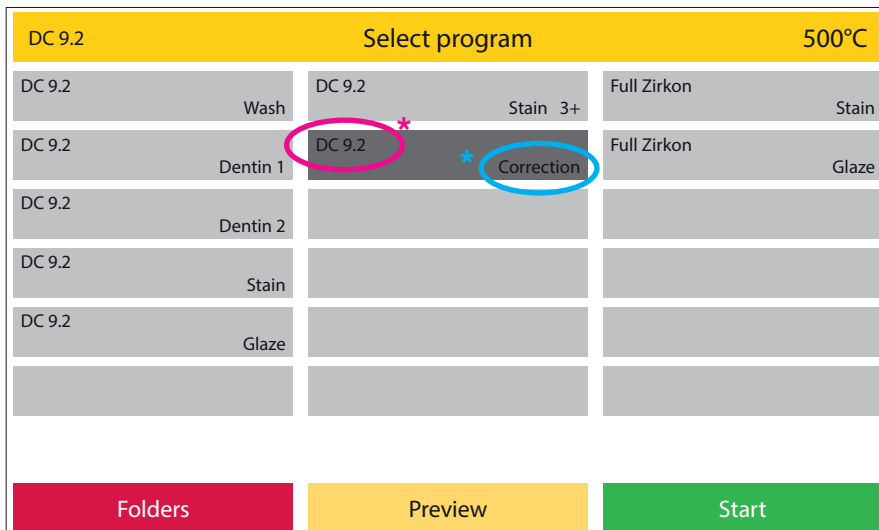
Display, Status: Select program / folder overview

Image 08.2



Display, Status: Select program / select a folder / program overview

Image 08.3

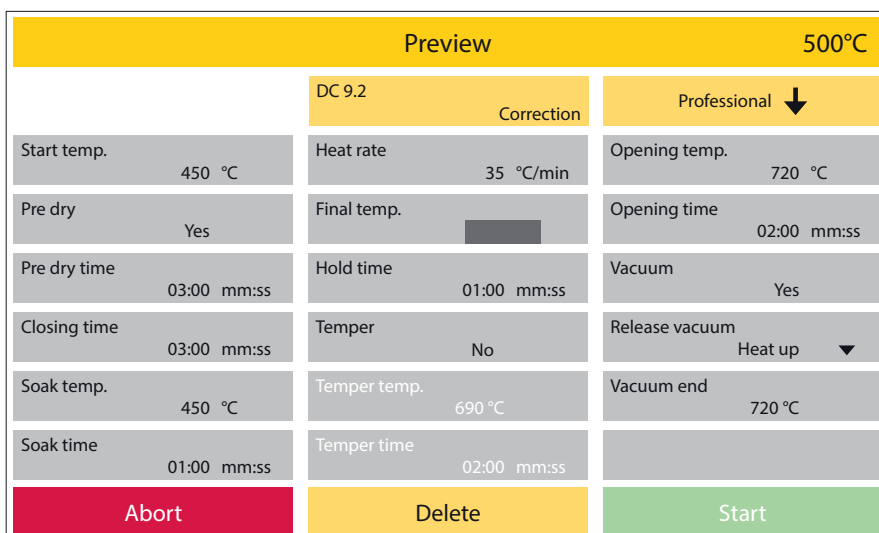


Display, Status: Select program / select a folder / program selected

Image 09.1

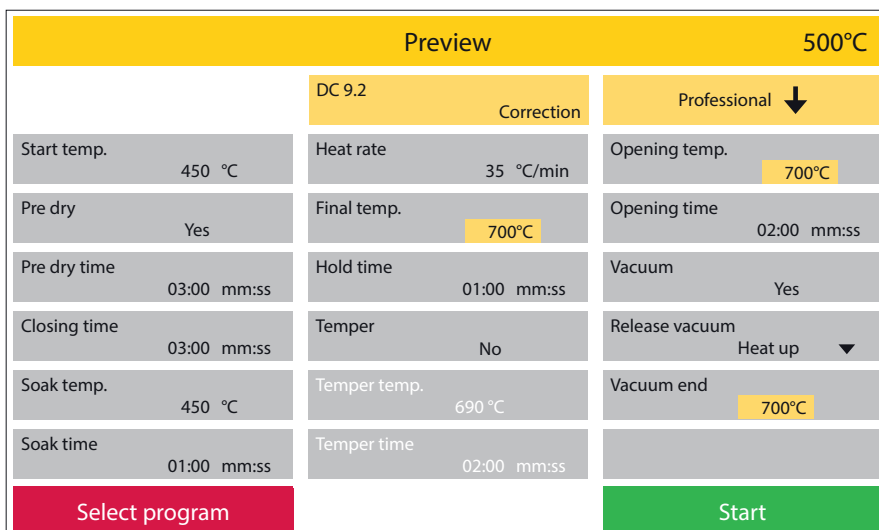
2.1.1 Preview - change program

- When changing program parameters in the "Preview" mode, changes are temporarily saved for the next program run and return to the previous parameters upon completion. This is not saved permanently in the program. Parameters can only be changed and saved permanently via **Edit program** in the main menu.
- Select the desired parameter to change and enter the values using the number field that is now active.
- When changing parameters the green "Start" button changes to "OK". Please confirm your input by activating this field. The original parameter is restored by pressing the **Abort** function field.
- If a value is entered that follows the correction of subsequent parameters, these are high-lighted in yellow (image 09.3).



Display, Status: Select program / select a folder / select a program / Preview / final temp. selected

Image 09.2



Display, Status: Select program / select a folder / select a program / Preview / final temp changed and confirmed

Image 09.3

2.1.2 Start program

- As soon as a program is started using the green **Start** button, the program sequence is displayed once as a graph and as a list of parameters. The currently active parameter is highlighted in a darker shade of grey in the program slider, while parameters that have already been processed recede into the background (image 10.2). In the graph, the active parameter is also highlighted in a darker shade of grey. In this way, the program status can be seen at a glance, even from a greater distance from the device. The parameter slider provides more detailed information. As already described, the active parameter is highlighted in a darker shade of grey. If a subsequent parameter is controlled, the parameter bar scrolls accordingly. Subsequent parameters can be checked by dragging the process bar to the appropriate positions with a "swiping motion".
- The vacuum status is displayed in %.

Display, Status: Select program / select a folder / select a program / Preview

Image 10.1

Display, Status: A running firing program

Image 10.2

2.1.3 Change program during a program run

- Parameters can be changed during a program run via the program **Edit program** button. As with the program preview (image 10.2), these changes only apply to the current brand. After the end of the process, the initial values are valid again.
- Only values that the oven has not yet started or completed can be changed. Values that you can no longer change are optically pushed back into the back-ground. Press the green **OK** function field to activate changes and **Continue**, you get back to the parameter slider and the graph.
- Press programs cannot be changed while the program is running.

Edit program			500°C
	DC 9.2	Correction	Professional ↓
Start temp.	450 °C	Heat rate	35 °C/min
Pre dry	Yes	Final temp.	720°C
Pre dry time	03:00 mm:ss	Hold time	01:00 mm:ss
Closing time	03:00 mm:ss	Temper	No
Soak temp..	450 °C	Temper temp.	690 °C
Soak time	01:00 mm:ss	Temper time	02:00 mm:ss
	Opening temp.		720 °C
	Opening time		02:00 mm:ss
	Vacuum		Yes
	Release vacuum		Heat up ▼
	Vacuum end		720 °C
Abort		Delete	OK

Display, Status: Select program / select a folder / select a program / Start / Edit program

Image 11.1

2.1.4 Program abort

- If you want to end a program prematurely or cancel it, you can do this by pressing the red **Abort** function field. In this case, the program abort must be confirmed again by a security prompt (image 11.2).

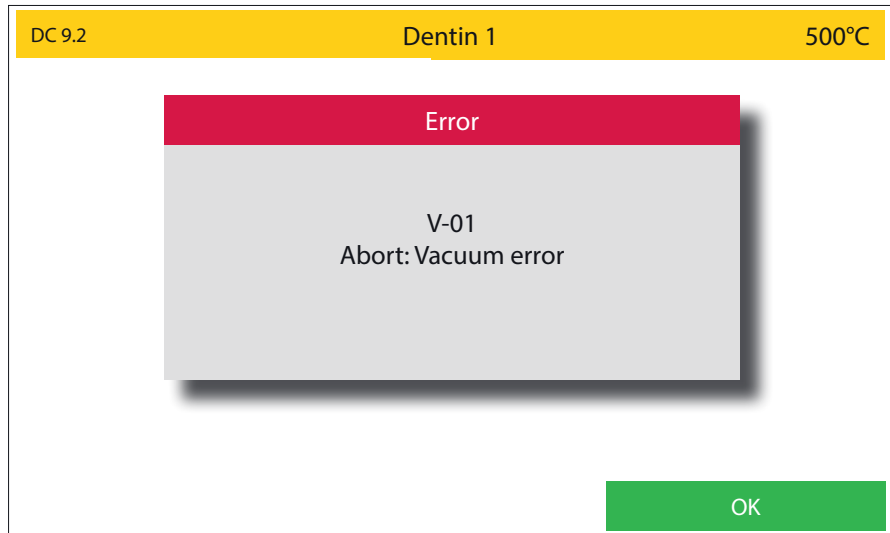
DC 9.2	Dentin 1	500°C
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <div style="background-color: #d62728; color: white; padding: 5px; text-align: center; font-weight: bold;">Abort</div> <div style="text-align: center; padding: 20px 0;">Should the program really be aborted?</div> </div>		
No		Yes

Display, Status: Program abort, abort confirmation

Image 11.2

2.1.5 Functional error during program execution

- In the event of a functional error, the oven interrupts the work process and displays a window with an error message in plain text and an error code.
- This error message and the program termination must be confirmed with the green **OK** button.
- The error message that was displayed last can be called up later under **Settings, Last error messages**.

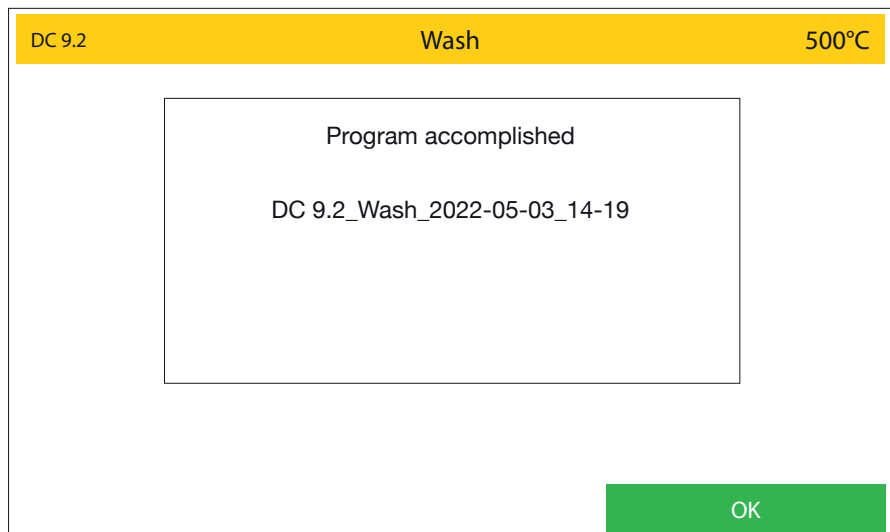


Display, Status: Error message during a running program

Image 12.1

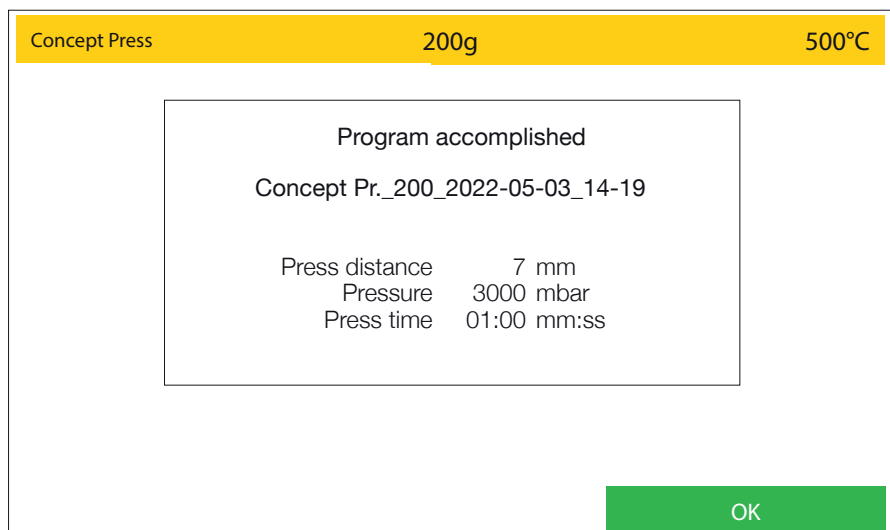
2.1.6 End program

- The end of a program is indicated by an acoustic signal and visually by a text window. The name of the completed program, the time and the date at the end of the process are given in the text window (image 12.2).
- In the case of pressing programs, the pressing time actually required, the pressing pressure used and the pressing path covered are also specified.
- A code is generated (image 12.3) for documentation or quality assurance. This consists of the serial number of the furnace, the date YYYYMMDD - time (24-hour system). The complete program data can be called up under **Settings - Data transfer - Export protocol files** (image 12.2). The last 50 program sequences are saved here. Older program sequences are overwritten. The log data should therefore be backed up at regular intervals.



Display, Status: Accomplished firing program

Image 12.2



Display, Status: Accomplished pressing program

Image 12.3

2.1.7 Program overview and parameter assignment

Professional	Ceramic firing program type with optional tempering function
Professional TTC	Ceramic firing program type with optional, linear, cooling rates - controlled temperature feedback
2-Step	2 - phase firing program (two heating stages including holding time)
2-Step TTC	2-phase firing program with optional, linear, cooling rates - controlled temperature feedback

Parameter	Types of burning program			
	Professional	Professional TTC	2-Step	2-Step TTC
Start temperature	●	●	●	●
Pre dry	●	●	●	●
Pre dry time	●	●	●	●
Closing time	●	●	●	●
Soak temperature	●	●	●	●
Soak time	●	●	●	●
Heat rate	●	●	-	-
Final temperature	●	●	-	-
Hold time	●	●	-	-
Heat rate 1 and 2	-	-	●	●
Final temperature 1 and 2	-	-	●	●
Hold time 1 and 2	-	-	●	●
Temper	●	-	-	-
Temper temperature	●	-	-	-
Temper time	●	-	-	-
TTC (Time Temperature Cooling)	-	●	-	●
TTC cool rate	-	●	-	●
Opening temperature	●	●	●	●
Opening time	●	●	●	-
Vacuum	●	●	●	●
Release vacuum / Heat up / Hold time / Cooling	●	●	●	●
Vacuum end	●	●	●	●

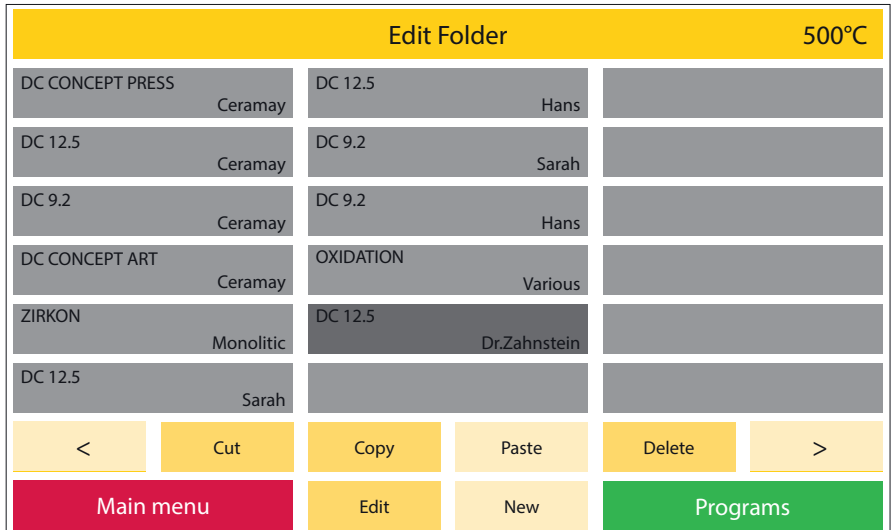
Parameter	Types of press program		
	Press	I-Press	Advanced Press
Start temperature	●	●	
Heat rate	●	●	
Final temperature	●	●	Preset press program for lithium disilicate press ceramic (preinstalled, not changeable)
Hold time	●	●	
Press time	-	-	
Max. press time	-	●	
Pressure	●	●	
Opening time	●	●	

2.1.8 Explanation of terms

Start temperature	The temperature in the firing chamber at which the program begins.
Pre dry	Selecting "YES" activates the pre-drying program.
Pre dry time	Enter a time value. In this section, the lift looks for a predetermined position over the entire period, depending on the radiated heat of the heating chamber, in which the object is thus pre-dried at a constant temperature.
Closing time	Specifies the time from the open to the fully closed lift
Soak temperature	At this temperature, the firing object remains in the closed firing chamber to warm it up to the starting temperature. This serves to evenly "burn through" a ceramic work. Soak temperature = Vacuum start.
Soak time	Indicates the dwell time of the object in the heating chamber before the temperature rises and before the vacuum pump is switched on.
Heat rate	Respective temperature increase in °C °F/min to reach the final temperature.
Heat rate 1-2	Respective temperature increase in °C °F/min to reach the final temperature.
Final temperature	The temperature at which the ceramic is fired.
Final temperature 1-2	The respective final temperature at which the ceramic is fired.
Hold time	Residence time of the ceramic at the final temperature.
Hold time 1-2	Dwell time of the ceramic at the final temperature.
Temper	The tempering program is activated by selecting "Yes" .
Temper temperature	The ceramic is tempered at this temperature, i.e. thermally treated with pinpoint accuracy at a constant temperature.
Temper time	Indicates the duration of the thermal treatment with the heating chamber closed.
TTC	Activates linear cooling to the desired temperature using temperature gradients
TTC Cool rate	Cooling in °C °F/min to reach the opening temperature. Recommendation: heating rate = cooling rate
Opening temperature	Indicates the temperature at which the oven opens. When using TTC, the opening temperature must be below the end temperature. The linear cooling in TTC mode takes place until this temperature is reached. Recommendation: opening temperature = starting temperature or Tg of the ceramic used.
Opening time	The time it takes for the lift to fully open.
Vacuum	Activation or deactivation of the vacuum function (is a 2nd holding time at a lower temperature in relation to the final temperature) itDetermines the time at which the firing chamber is ventilated.
Release vacuum	Limits the time to vent the heating chamber. You can choose from: During the heat up phase: Release vacuum: Heat up During the hold time at final temperature; Release vacuum: Hold time During the cool down period; Release vacuum: Cooling
Vacuum end	Defines exactly when the heating chamber is ventilated. A time or temperature value must be entered here, depending on which phase vacuum was selected.
Press time	Determines the duration of the actual pressing process
Press pressure	Determines the amount of press pressure used in mbar. (VP300 low pressing pressure corresponds to 3000mbar with the VP330 VP300 high pressing pressure corresponds to 4500mbar with the VP330)
Maximum pressing time	Limits the maximum pressing time before the pressing process is automatically stopped.
Save	Save the program

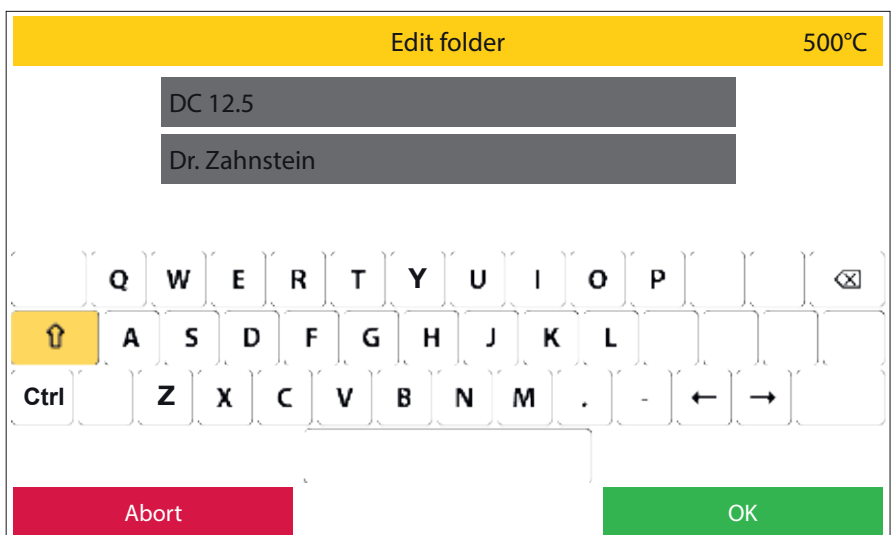
2.2 Edit folder/program

- In the **Edit program** area, folders or programs can be created, edited, copied or deleted. A basic distinction is made between two "levels". The "folder level" and the "program level". For visual orientation, the "folder level" is kept in a darker shade of grey, the "program level" in a lighter shade of grey. These structures can be freely named by the customer. So the folder structure e.g. material or technician - are created related.
- If a folder function field is selected in **Edit program** mode, this is optically highlighted. The corresponding function fields are now active in the lower area of the display (image 15.1). If a free folder function field was selected, this can now be named using the **New** function field. If a folder function field that has already been described is selected, the field and its content can be copied, moved, edited or even deleted. Corresponding function fields are activated as soon as the function is available.
- If a described folder function field was selected, a green **Programs** and a red **Main menu** function field become active, among other things. By pressing the **Programs** field, you get to the program level, by pressing the **Main menu** field, you get back to the main menu.



Display, Status: Edit program / existing folder selected

Image 15.1



Display, Status: Edit program / folder selected / Edit or New

Image 15.2

1 New

The **New** function field is activated as soon as an empty program or folder function field has been selected. If the **New** field is now pressed, the oven opens two lines of text and a keyboard field for entering the desired name. Up to 12 characters or letters can be used per line of text. Letters can be represented in both upper and lower case (image 16.1).

2 Cut

Using the cut function, you can move individual programs or entire folders, including their contents. To do this, the desired program or folder is selected first. This field (program or folder function field) is now highlighted for checking purposes. Now the desired function field **Cut** is selected. The oven now hides all other function fields except for **Paste**. The target storage location must now be selected (in the case of programs, this can also be in a different folder). By clicking on the **Paste** field, the program or the folder and its contents are moved to the desired position.

3 Copy

Here the folder/program is copied to the clipboard. The folder remains unchanged in the same position. the procedure is the same as described under point 2 "**Cut**".

4 Paste

The folder / program from the clipboard is inserted at the activated position. Only free program fields can be activated.

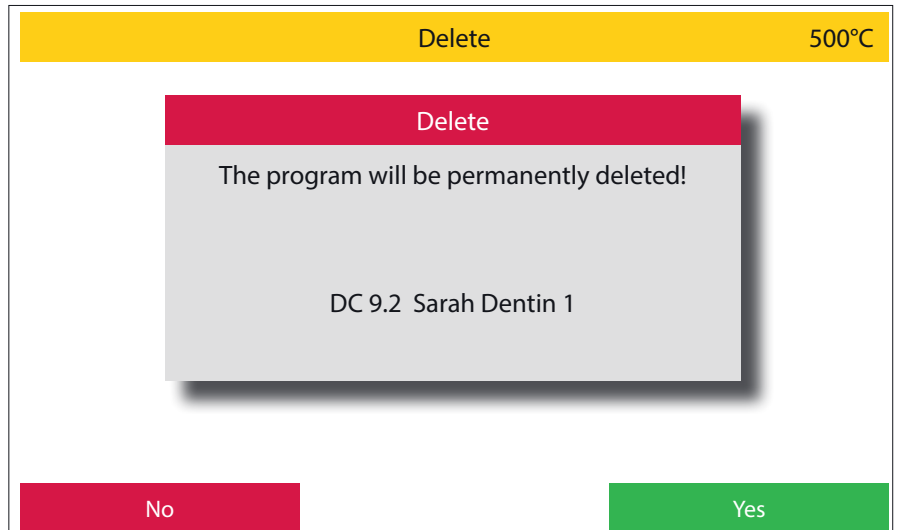
DC 9.2 Sarah		Edit program		500°C	
DC 9.2	WASH	DC 9.2	Stain 3+	Full Zirkon	Stain
DC 9.2	Dentin 1	DC 9.2	Correction	Full Zirkon	Glaze
DC 9.2	Dentin 2	DC 9.2	Dentin 1 6+	Full Zirkon	Stain 3+
DC 9.2	Stain	DC 9.2	Dentin 2 6+	Full Zirkon	Glaze 3+
DC 9.2	Glaze	DC 9.2	Stain 6+	Full Zirkon	Stain 6+
DC 9.2	Dentin 1 3+	DC 9.2	Glaze 6+	Full Zirkon	Glaze 6+
<	Cut	Copy	Paste	Delete	>
Folders		Edit	New		

Display, Status: Edit program / folder selected / Programs / existing program selected

Image 16.1

5 Delete

After pressing the **Delete** function field, a security query appears, which you must confirm with **Yes** or **No**.



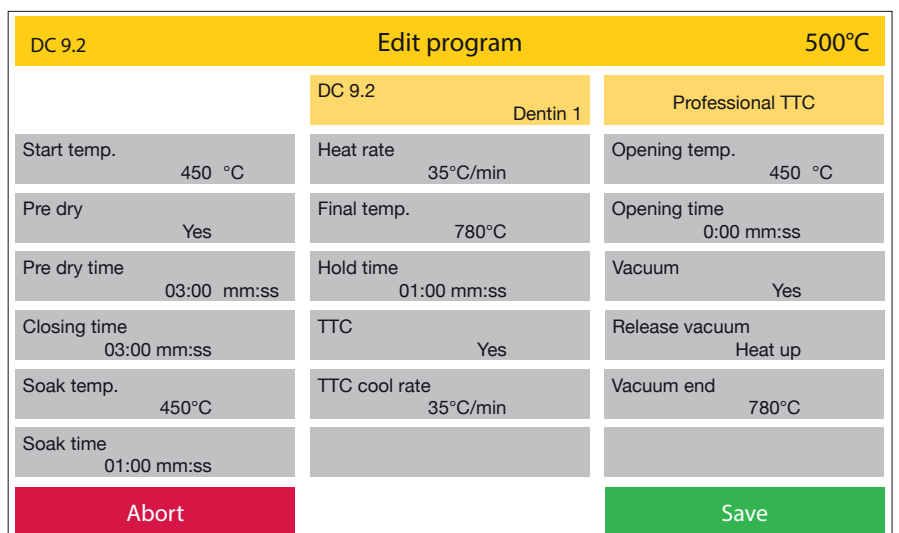
Display, Status: Edit program / folder selected / Programs / existing program selected / Delete Image 17.1

6 Edit

The name can be changed for existing programs or folders. The number block is active. With programs, additional parameters can be changed and saved permanently. If parameters are changed that have a direct influence on the following parameters (e.g. the opening temperature when the final temperature is lowered), these parameters are adjusted accordingly after the **OK** field has been clicked and highlighted in yellow. These values are accepted and saved with **Save**, and the initial values are called up again with **Abort**.

7 Next / Previous

With the forwards **>** and backwards **<** keys you can switch to the next page with further groups or programs. The buttons are only active if there is also another page.



Display, Status: Edit program / select a folder / Programs / existing program selected / Edit Image 17.2

8 Name programs / folders

If a new program or a new folder is to be created, a name must first be entered.

Two lines of text, each with a maximum of 12 characters or letters, are available for this purpose (image 18.1). When programs are created, the second step is to select the program type. To do this, as shown in the diagram on the right, activate the arrow in the program type. A list with all available program types opens. After the desired program type has been selected, the oven offers the parameters required for this type. These parameters can now be programmed at will. To do this, select the respective parameter and enter the desired value using the number field that is now active. A green **OK** field is now activated with which this value can be confirmed. The initial value is called up again by pressing the red **Abort** field. If all parameters are named accordingly, they can finally be saved with the green **Save** field.

The screenshot shows the 'Edit program' screen with a yellow header bar containing the text 'Edit program' and '500°C'. Below the header, there are two input fields for the program name. The first field contains 'DC 9.2' and the second field contains 'Dentin 1'. A virtual keyboard is displayed below the input fields, with a yellow arrow key highlighted. At the bottom of the screen, there are two buttons: a red 'Abort' button on the left and a green 'OK' button on the right.

Display, Status: Edit program / select a folder / Programs / select a free program field / New Image 18.1

The screenshot shows the 'Create program' screen with a yellow header bar containing the text 'Create program' and '500°C'. Below the header, there are two input fields for the program name: 'DC 9.2' and 'Dentin 1'. To the right of these fields is a dropdown menu showing a list of program types: 'Professional TTC', 'Professional', 'Professional TTC', '2-Stepp', '2-Stepp TTC', 'Press', 'I-Press', and 'Advanced'. Below the input fields and dropdown menu, there are two columns of parameter settings. The left column contains: Start temp. (450 °C), Pre dry (Yes), Pre dry time (03:00), Closing time (03:00 mm:ss), Soak temp. (450°C), and Soak time (01:00 mm:ss). The right column contains: Heat rate (35°C/min), Final temp. (780°C), Hold time (01:00 mm:ss), TTC (Yes), and TTC cool rate (35°C/min). At the bottom of the screen, there are two buttons: a red 'Abort' button on the left and a green 'Save' button on the right.

Display, Status: Edit program / select a folder / Programs / New (after the name is entered) Image 18.2

The screenshot shows the 'Create program' screen with a yellow header bar containing the text 'Create program' and '500°C'. Below the header, there are three input fields for the program name: 'DC 12.5', 'Dentin 1', and 'Professional'. Below the input fields, there are three columns of parameter settings. The left column contains: Start temp. (450 °C), Pre dry (Yes), Pre dry time (03:00 mm:ss), Closing time (03:00 mm:ss), Soak temp. (450 °C), and Soak time (00:30 mm:ss). The middle column contains: Heat rate (55 °C/min), Final temp. (820 °C), Hold time (01:00 mm:ss), Temper (No), Temper temp. (690 °C), and Temper time (02:00 mm:ss). The right column contains: Opening temp. (820 °C), Opening time (00:00 mm:ss), Vacuum (Yes), Release vacuum (Heat up), and Vacuum end (820 °C). At the bottom of the screen, there are two buttons: a red 'Abort' button on the left and a green 'OK' button on the right.

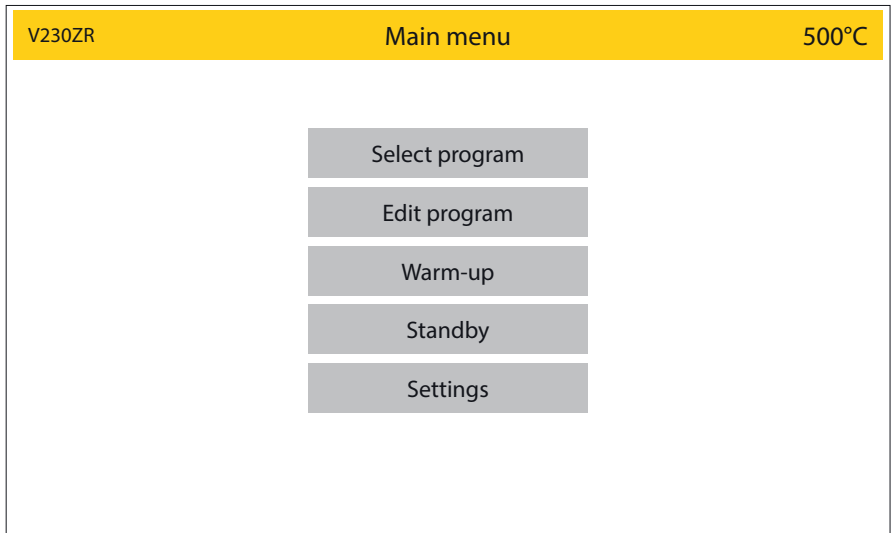
Display, Status: Edit program / select a folder / Programs / New (after the name is entered) Image 18.3

2.3 Warm-up

- If you select Warm-up, the device starts a program to heat up to the operating temperature. The furnace is preheated to 900°C and held for 10 minutes. The heating chamber is then heated through homogeneously. This guarantees optimal firing or pressing results from the first firing/first pressing. **This process can last up to 20 minutes.**

2.4 Standby

- If standby is selected, the furnace opens the firing chamber or leaves the chamber open and cools down to the standby temperature selected under **Settings**. The display is largely switched off, only the text "Standby" is shown. The **Standby** temperature can be set up under **Settings** between 20°C and 100°C. Once this temperature has been reached, the furnace closes the heating chamber and remains there until the display is touched.
- The oven then opens the lift again and heats up to the set **Idle** temperature. When open, this is limited to 400°C.

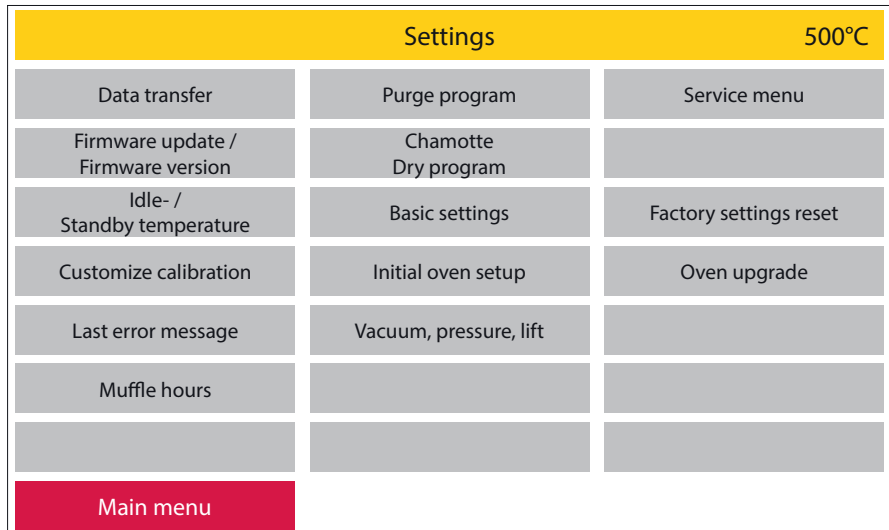


Display, Status: Main menu

Image 19.1

2.5 Settings

Settings take you to the "Service level" of the menu. Various basic settings can be adjusted here, service programs can be carried out and data can be transferred (software, program and log data). Pressing the red **Main menu** field takes you back to the Main Menu.



Display, Status: Settings

Image 20.1

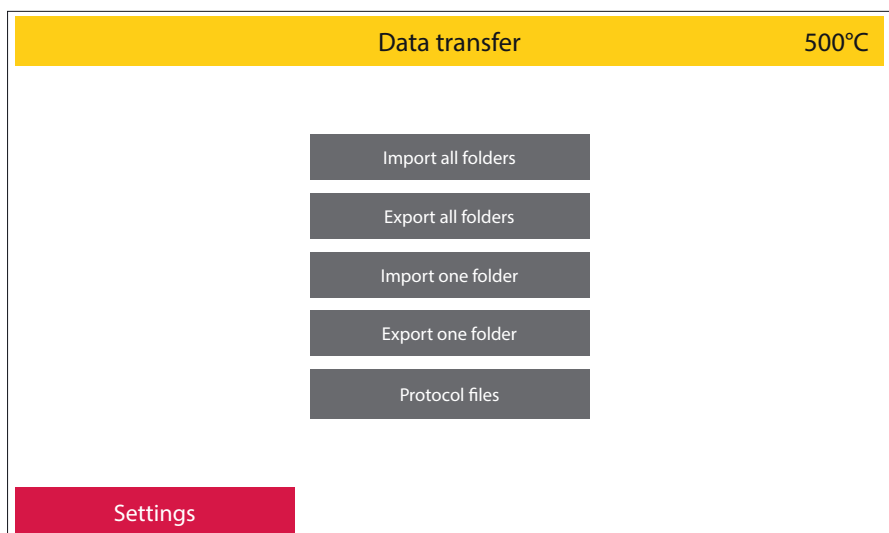
2.5.1 Data transfer

Included with your Zubler ceramic furnace a USB data stick (flash drive) is enclosed.

With the help of this USB stick you can transfer program datas (from the oven to USB or from USB to oven) or log datas for quality assurance to save. When the oven detects the USB stick, all active function fields are highlighted (image 20.2).

When using a third-party data medium, problems may arise during data transfer. If the USB stick is not recognized, all function fields remain inactive.

Pressing the red **Settings** control panel takes you back to the settings area.



Display, Status: Settings / Data transfer

Image 20.2

1 Import all folders

- If there is already a corresponding folder on the USB stick, this will be recognized by the oven and the **Import all folders** function field will be activated (dark grey background) (image 20.2).
- If this field is now activated, the furnace opens a list with all the corresponding data. Select the desired data record, the green **Import** function field is activated. The required data record is loaded by pressing this button (image 20.3).

All folders and programs on the furnace will be overwritten!

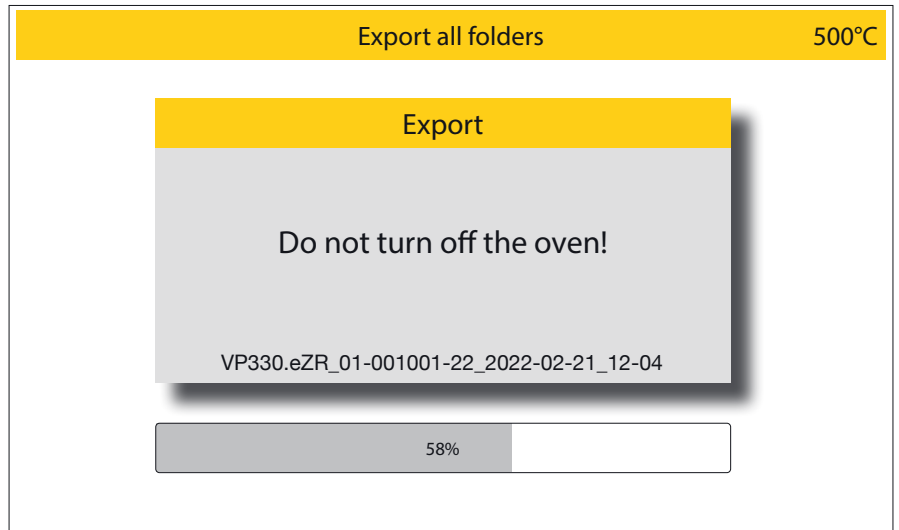


Display, Status: Settings / Data transfer / Import all folders / one folder selected

Image 20.3

2 Export all folders

- When the **Export all folders** function field is activated, all folders on the furnace are saved from the furnace to the USB memory and can be transferred to another furnace.
- The furnace creates the file name as model name of the furnace, serial number of the furnace, date and time (image 21.1).



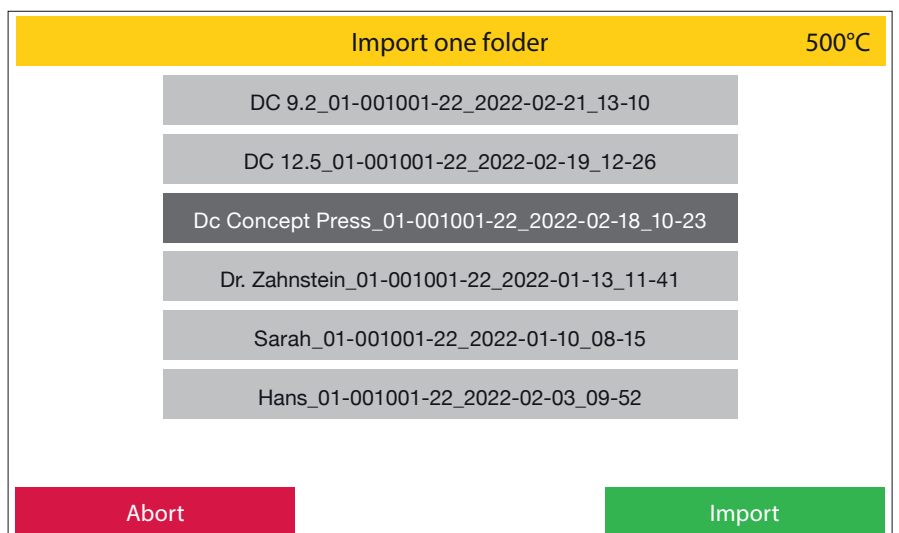
Display, Status: Settings / Data transfer / Export all folders

Image 21.1

3 Import one folder

Individual folders can be copied from the USB memory.

- To do this, select the desired folder and the folder menu will open (image 21.2). Please choose a free folder location here, this will be highlighted and the green **Import** function field will be activated. To complete the process, please press this button.

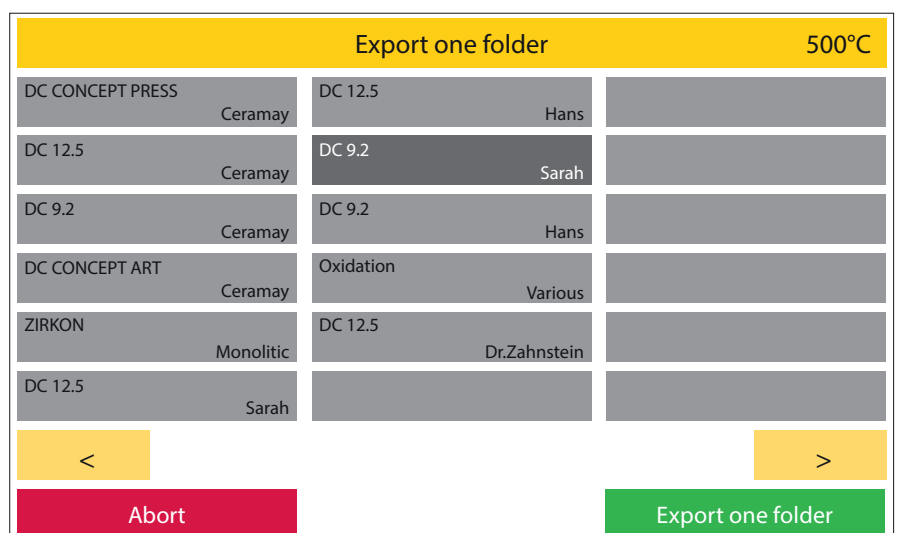


Display, Status: Settings / Data transfer / Import one folder

Image 21.2

4 Export one folder

- A single folder can be saved from the furnace to the USB memory here.
- If **Export one folder** is selected, the oven opens the folder menu. As soon as the folder to be backed up is selected, the green function field **Export** is activated. Please activate this field to save the folder and its contents.
- The furnace (Image 21.3) creates a folder file which it names with the folder name to be saved, serial number of the furnace, date and time.



Display, Status: Settings / Data transfer / Export one folder / DC 9.2 Sarah is chosen

Image 21.3

5 Export protocol files

For documentation and quality assurance, the last 50 program runs and results can be downloaded with a csv file.

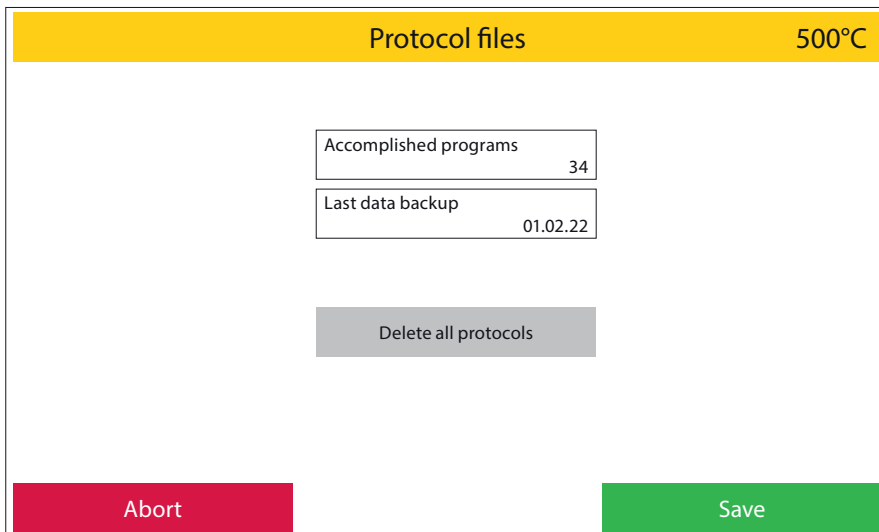
After 50 program sequences have been saved, the furnace overwrites the previous log data, starting with the oldest, in subsequent work processes.

Log data that is exported is deleted from the oven memory in the process.

Here, too, the furnace generates a file name composed of the word protocol, serial number of the furnace, date and time of the storage time (image 22.2).

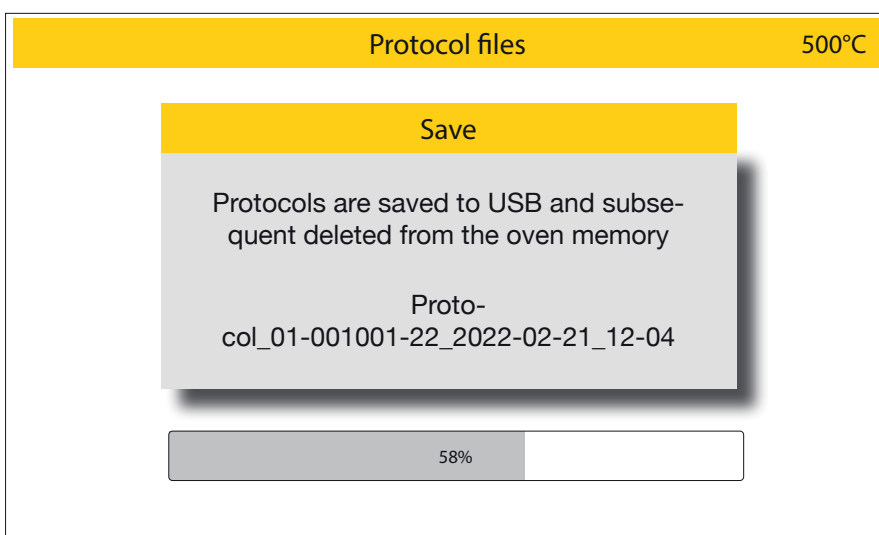
Delete all protocol files

All protocol datas in the oven memory can be deleted here.



Display, Status: Settings / Data transfer / Protocol files

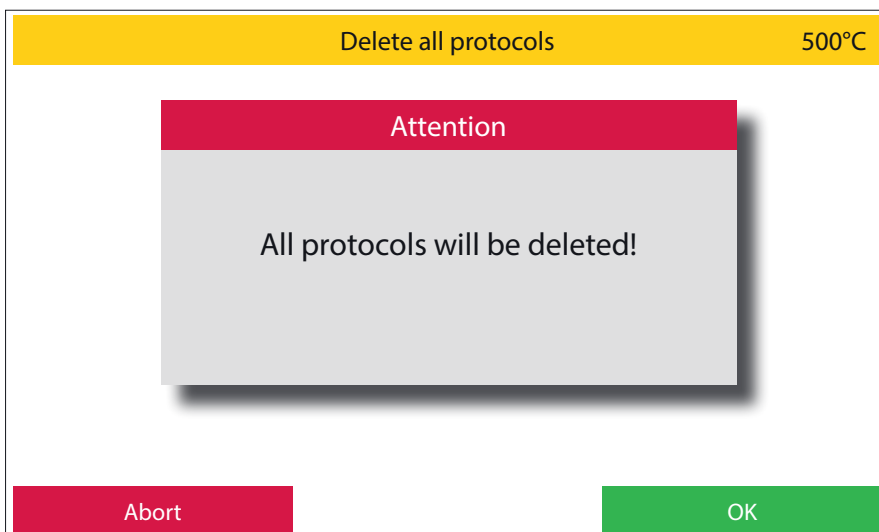
Image 22.1



Display, Status: Settings / Data transfer / Protocol files / Delete all protocols

Image 22.2

- After selecting **Delete all protocols**, a warning window appears. This process must then be confirmed by pressing the green **OK** field or revised with **Abort** (image 22.3).



Display, Status: Settings / Data transfer / Protocol files / Delete all protocols

Image 22.3

2.5.2 Firmware update / Firmware version

1 Firmware version and Firmware update.

The firmware versions of the relative components are displayed here.

A firmware update can be installed on the furnace from the USB memory.

If the USB stick and the firmware stored on it are recognized by the oven, the green function field **Update firmware** is activated. If this is pressed, the furnace displays a list of all firmware versions stored on the USB stick.

- If a Firmware update / Firmware version is now selected (image 23.1), the green Import function field is activated. Please press this to start the update (image 23.2).

Firmwareupdate / Firmwareversion		500°C
Firmware Display Board 00-00-24	Firmware Presseinheit 201	I/O Board number of series 123456789-1234-1
Firmware Date 2022-03-18 15:10	Firmware Press Kernel 102	
Firmware I/O Board 00-00-27	Hardware Version Press C	
Firmware Date 2022-03-18 15:10		

Display, Status: Settings / Data transfer / Firmwareversion / Firmwareupdate

Image 23.1

Display, Status: Settings / Firmware update / Firmware version / Update firmware

Image 23.2



It is important to ensure that the oven is not switched off or disconnected from power during the firmware update. Loss of power during the firmware update will result in the complete loss of the firmware on your oven.

A restoration can only be carried out by the manufacturer!

Display, Status: Settings / Firmware update / Firmware version / Update firmware / software has been chosen /

Image 23.3

2.5.3 Idle- / Standby temperature

Both the **Idle** and the **Standby temperature** can be set up in this area. The **idle temperature** is the temperature that the oven idles at between programs. This is to maintain the oven at operating temperature. A temperature of 40°C - 700°C can be set.

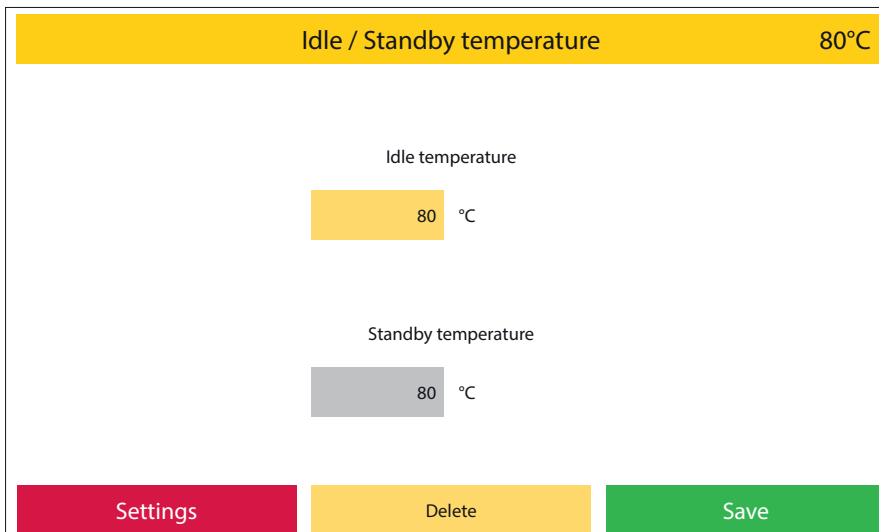
The **Standby temperature** is the temperature that the oven assumes when no longer in use for a certain period of time and there is no reason to maintain the operating temperature.

This is the case if:

-30 minutes after a program has ended, the oven is no longer operated. The oven then cools down to the set standby temperature and then closes the chamber.

-4 hours with the lift closed without the oven being operated

-2 hours with the lift open outside of a completed program. The oven cools down to the set standby temperature and then closes the heating chamber. The standby temperature can be set between 20°C and 100°C.



Display, Status: Settings / Idle / Standby temperature

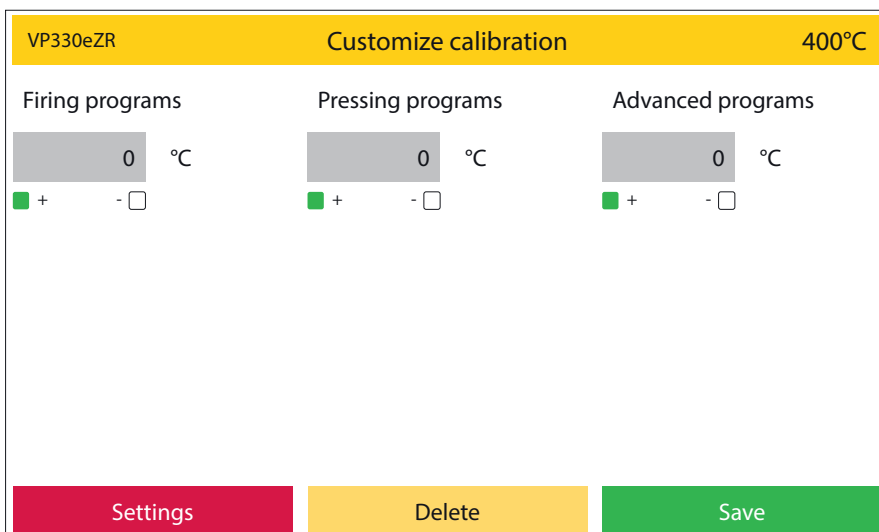
Image 24.1

2.5.4 Custom calibration

With the customize calibration, the basic temperature calibration of the oven can be carried out independently in the ranges

- Firing programs
- Press programs
- Advanced pressing programs

be readjusted. Using a numeric keypad values can be entered. If (+) is activated, the temperature in the program by the entered value elevated. If (-) is activated, the temperature in the program will be lowered by the entered value. By selecting the field to be changed, the stored values can be removed by pressing the delete button. The values are saved with the **Save** button.

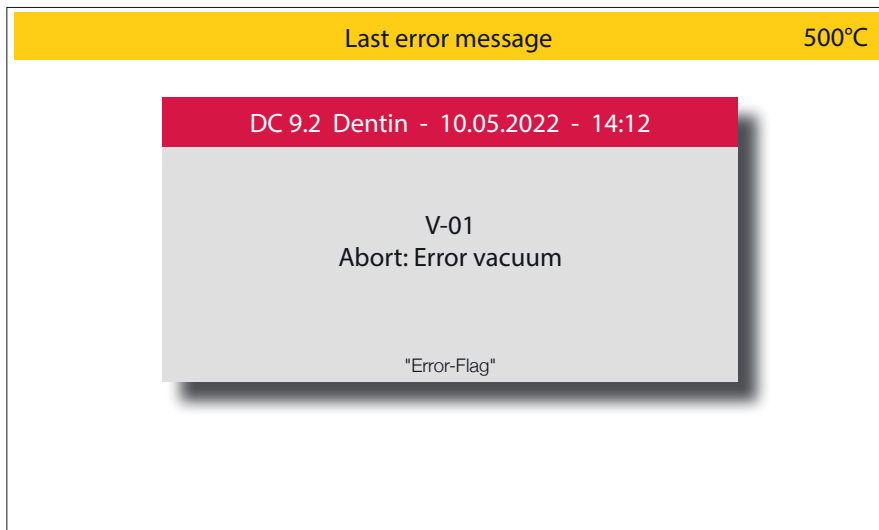


Display, Status: Settings / Customize calibration

Image 24.2

2.5.5 Last error message

The last error message displayed by the oven can be called up again here. This is retained until the oven displays an error message again and is then updated in the process (image 25.1).

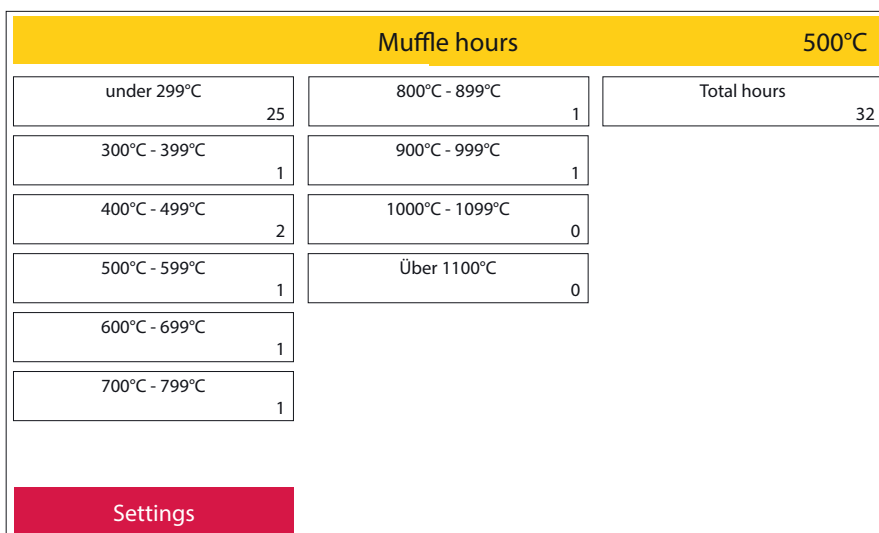


Display, Status: Settings / Last error message

Image 25.1

2.5.6 Muffle operating hours

The operating hours in the individual temperature ranges can be viewed here. The information relates to the amount of time in the respective temperature range in hours (image 25.2).



Display, Status: Settings / Muffle hours

Image 25.2

2.5.7 Start cleaning program

If you suspect the heating chamber is contaminated, run the cleaning program. Impurities are burned out at a very high temperature (1150°C). Never use additives such as activated carbon (graphite pellets) to clean the heating chamber!

2.5.8 Chamber drying program

(duration: approx. 30 minutes.)

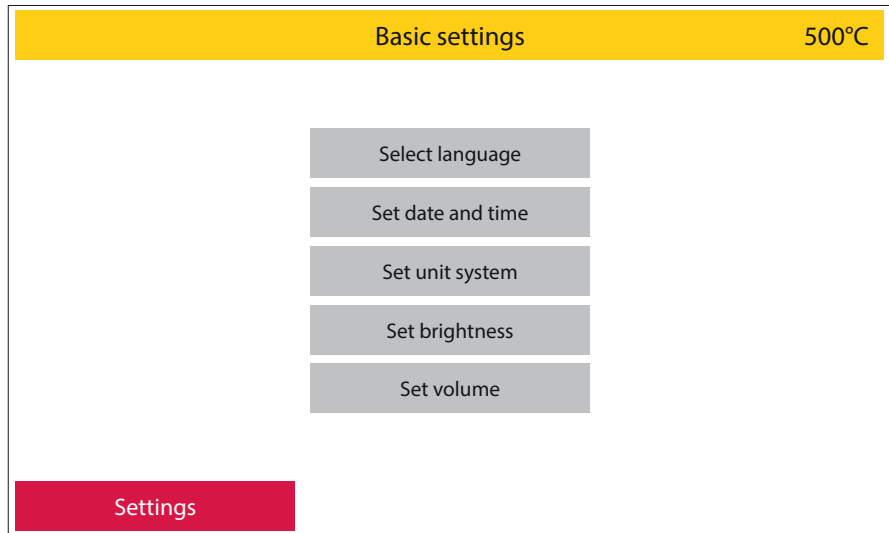
This program is designed to dry the heating chamber insulation.

It is recommended to let this program run after a long vacation period or if the device has not been used for a longer period of time. Here, the furnace holds at 600°C. The heating chamber is not completely closed during this program. The program is part of the initial installation process.

2.5.9 Basic settings

In this area, specific display settings can be made.

These are:

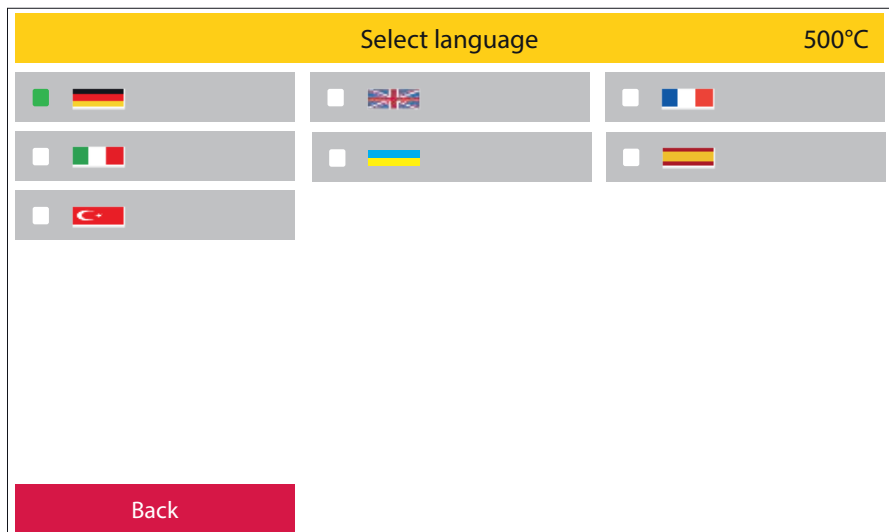


Display, Status: Settings / Basic settings

Image 26.1

1 Select language

Selection of the menu language. To do this, select the desired national language by activating the red **Back** button you'll get back to the **Basic settings**. (image 26.2).



Display, Status: Settings / Basic settings / Select language

Image 26.2

2 Set date and time

Date and time can be set here. Select with the arrow keys, activate the green **Save** function field to save.

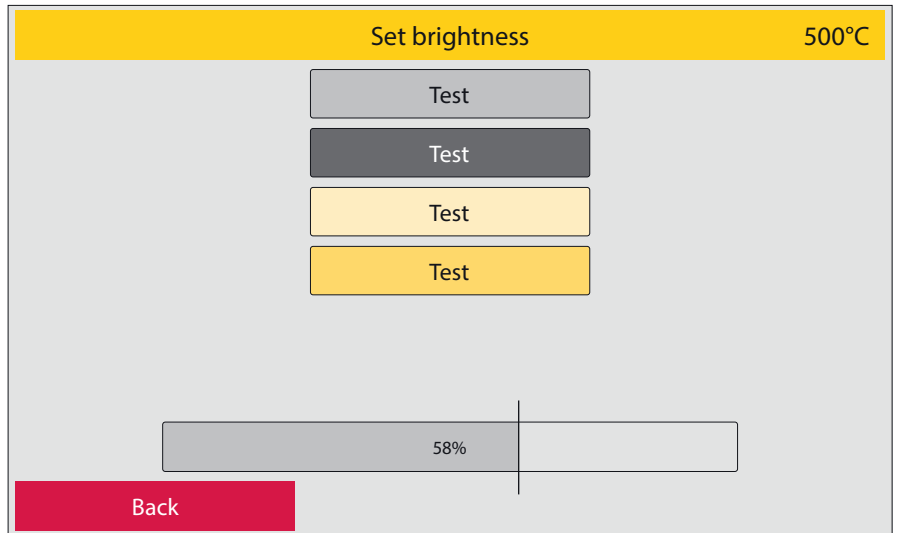
Return to the basic settings menu using the red **Back** function field.

3 Set unit system

Choice between metric (°C) and imperial system (°F). Select the desired system and confirm the selection with the green **Save** button or exit the area without making any changes with the red **Abort** button.

4 Set brightness

Setting the display brightness using the slider. 4 test color patches are used for orientation. Activate the slider until the display shows the desired values. With the red **Back** function field you'll return to the **Basic settings** level (image 27.1).



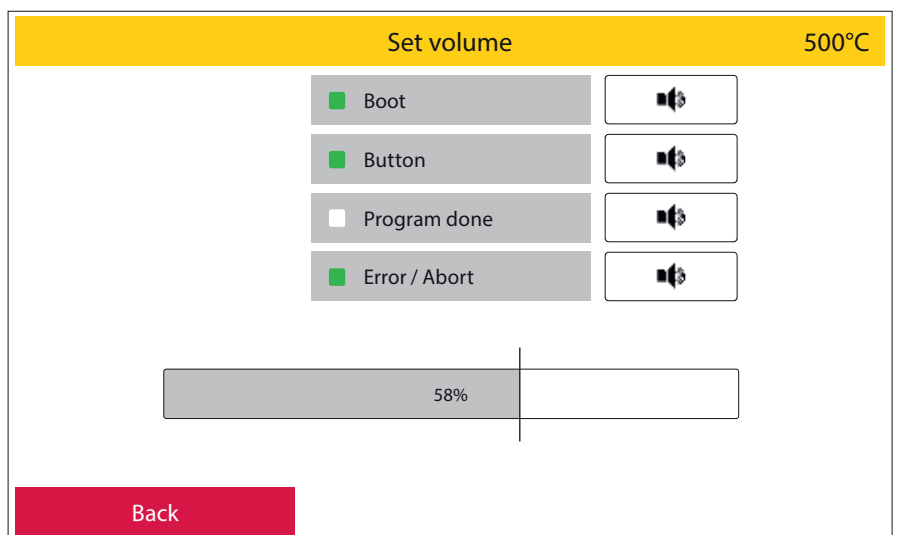
Display, Status: Settings / Basic settings / Set brightness

Image 27.1

5 Set volume

In this area, warning and action tones can be activated or deactivated and their volume can be adjusted.

As with setting the display brightness, a slider is available for this purpose. The volume for each section can be checked by pressing the loudspeaker field. With the red **Back** function field, you'll return to the **Basic settings** level (image 27.2).



Display, Status: Settings / Basic settings / Set volume

Image 27.2

2.5.10 Initial setup

You will be guided through all the parameters that have to be set up during initial commissioning. In addition, the oven points out all the cables and hose connections that need to be set up. The function fields marked in green must be confirmed.

When starting up the device for the first time, this process must be completed in order to access the main menu.

2.5.11 Vacuum, pressure, lift

This area is divided into further sub-areas.

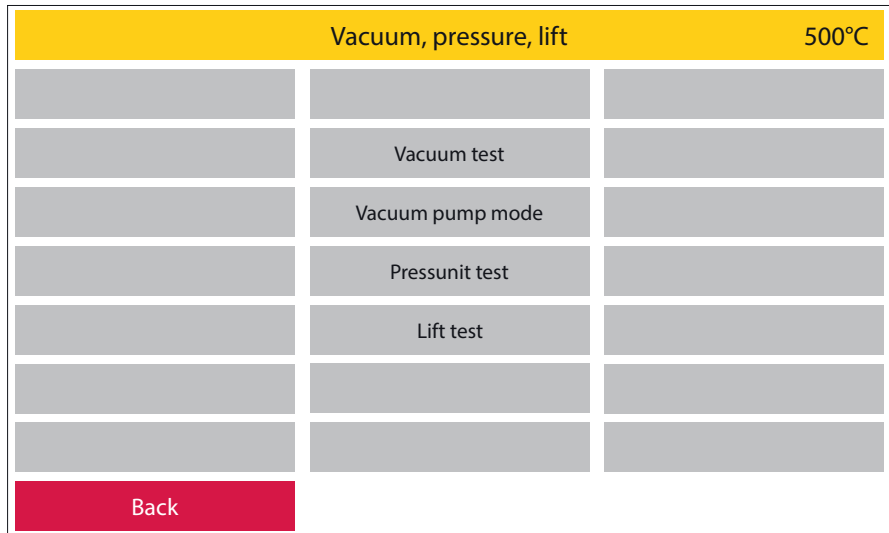
These are:

1 Vacuum test

The oven starts the vacuum test by pressing the green function field **Start**. The device determines the maximum vacuum level that can be achieved at the location. After a test period of 2 minutes, this value appears on the display as vacuum start value. The furnace now automatically sets the lower vacuum limit. This is the point at which the vacuum pump kicks in when cycled and provides full vacuum again is chosen as vacuum function

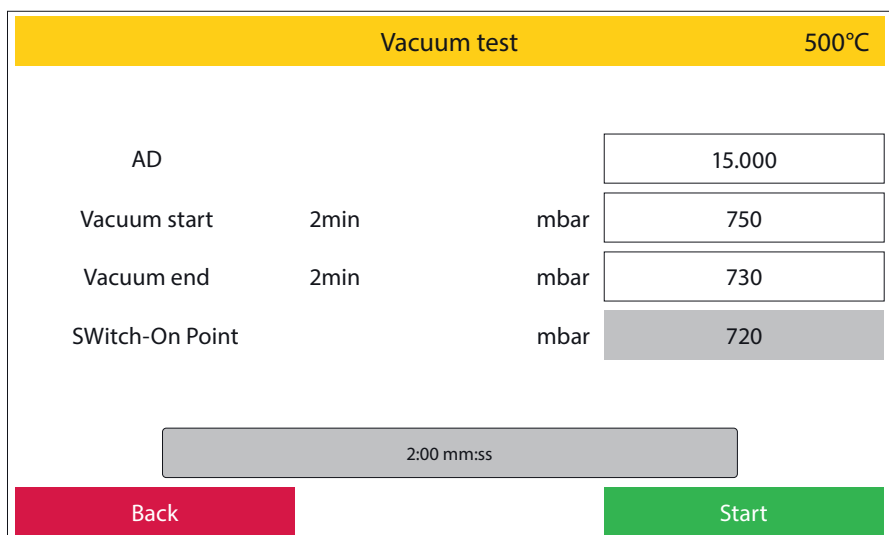
This value is described as **Switch On Point (SWOP)**. If there is the wish to set that value manually, just activate the **Set SWOP** funktion field and set your desired value.

During the test phase, this can be canceled by pressing the red **Abort** button. Outside of the test phase, this menu area can be exited with the red **Back** field.



Display, Status: Settings / Vacuum, pressure, lift

Image 28.1



Display, Status: Settings / Vacuum, pressure, lift / Vacuum test

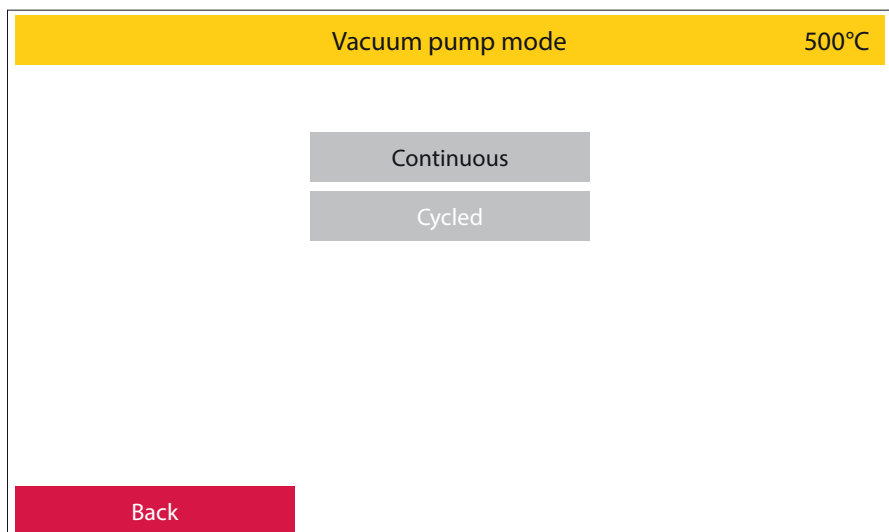
Image 28.2

2 Vacuum pump mode

The mode of operation of the vacuum pump can be selected here. There are two options to choose from (image 28.3):

Continuous - the vacuum pump runs from the switch-on point to the switch-off point, regardless of the readings of the vacuum sensor.

Cycled - the vacuum pump is switched on when required. After reaching the maximum vacuum value, the pump switches off. If the vacuum level now drops to the minimum value determined in the vacuum test, the vacuum pump switches on again. This mode of operation protects the vacuum pump and ensures a longer service life.



Display, Status: Settings / Vacuum, pressure, lift / Vacuum pump mode

Image 28.3

3 Lift test

The function of the lift system can be checked during the lift test.

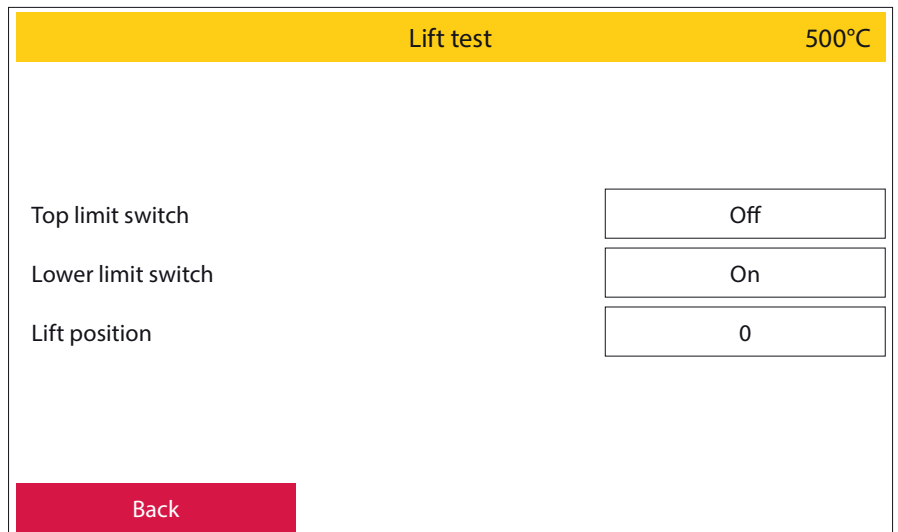
Three values are displayed for this:

Top limit switch: when the lift is completely closed, this position is named **On**. If the lift opens, the information changes to **Off**

Lower limit switch: when the lift is fully open, this position is described as **On**. If the lift is closed, the information changes to **Off**

Lift position: this is described with a code. When the lift is completely closed, the numerical value 100 is displayed; when the lift is completely open, the value is 0.

Corresponding intermediate values are displayed on closing.



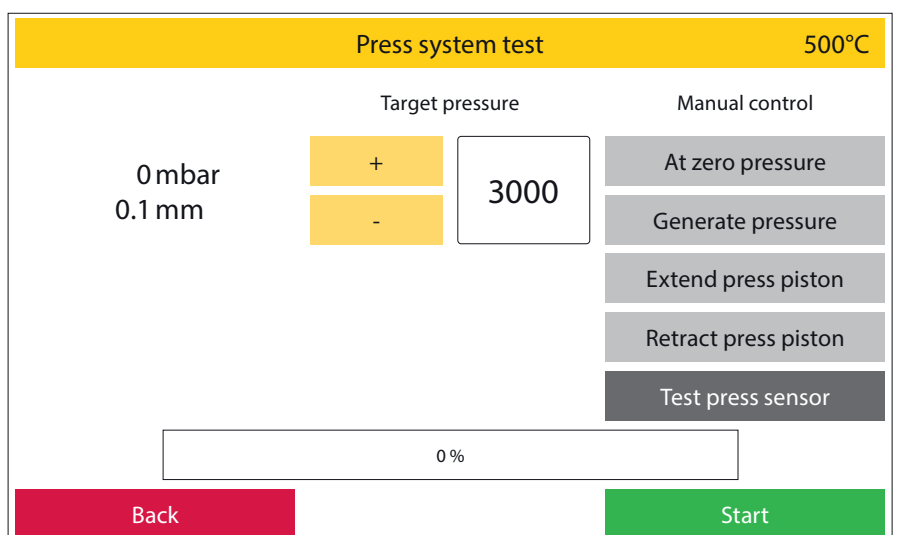
Display, Status: Settings / Vacuum, pressure, lift / Lift test

Image 29.1

4 Press system test

In this menu area, all press sensors connected in series can be run and their function checked. A process bar indicates whether all sensors are functioning in the green progress bar. If a sensor is not recognized, the green progress bar will show interruptions.

Furthermore, it can be checked here whether the selected pressure is being maintained correctly and whether the pressing unit can be moved freely.



Display, Status: Settings / Vacuum, pressure, lift / Press system test

Image 29.2

2.5.12 Service menu


Password protected service area for customer support

2.5.13 Restore factory settings

All settings are reset to the factory settings here.

This area can be protected by assigning a password.

This cannot be undone.

 All programs on the oven will be deleted.

2.5.14 Oven Upgrade

Your Zubler oven is available in various versions which differ in their functionality. If, after purchasing the device, you wish to switch to a different furnace version (if the device hardware allows this), this can be attained by activating it in the software.

To do this, you request a basic code under this menu item, which you send to your dealer or to us at Zubler Gerätebau GmbH. You will then receive an activation code which you can enter in this menu area. You confirm this code with the green **OK** button and the oven then switches to the desired device version.

 The activation code can only be used for one day at a time.

3. Data

3.1 Technical Data

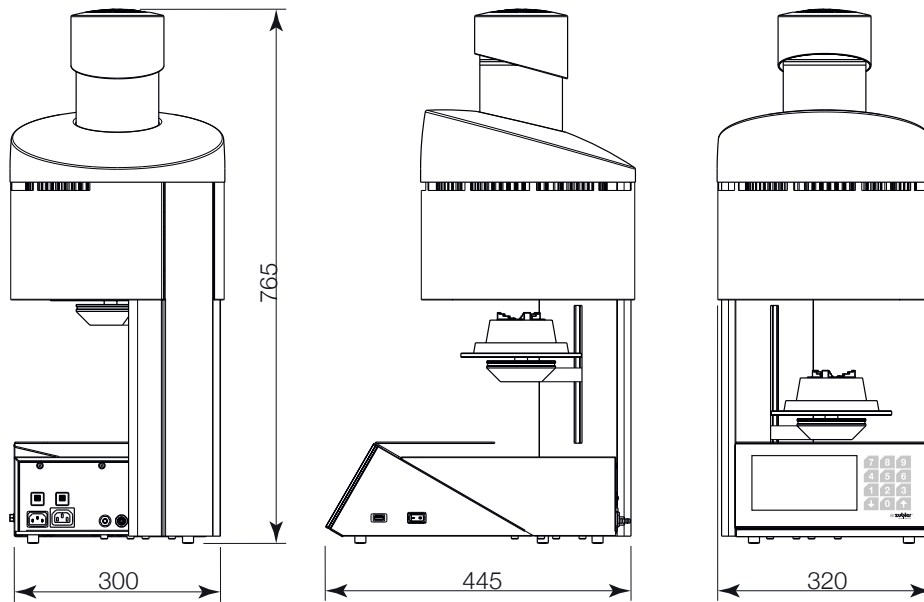


Image 30.1

Width	320mm
Height	765mm
Depth	445mm
Weight	30kg
Voltage	115V AC / 230V AC \pm 5%, 50-60Hz
Power consumption	1600VA
Idle temperature	20°C - 700°C
Temperature	20°C - 1200°C
Colour display	152 x 92mm
Touch	230 x 92mm
Programs	1000
Pressure	3,0 - 5,0bar

3.2 Scope of delivery

1x Power Cord
1x USB flash drive
1x Muffle tongs
1x Firing tray
1x Press tray including press insert (centering disc)
1x Compressed air hose
1x Pressure reducer (water separator) with mounting bracket
1x Long tweezer
1x Fine filter
1x Vacuum hose
1x Connection cable "furnace - vacuumpump"
1x User manual
1x Honeycomb tray inclusive 5 pins
1x Flexring system 100gr. with muffle base 13mm
1x Flexring system 200gr. with muffle base 13mm

3.3 Spare parts , accessories

Filter for water seperator	896/0052
Filter for vacuum pump	896/0051
Press tray (without press insert)	898/ 108
Press insert (centering disc)	898/ 109
Firing tray	898/ 110
Tweezers long	898/ 106
Muffle tongs	898/4136
Vacuum pump 220-240V	898/052
Vacuum pump 100-120V	898/053
Power cord (EU)	012/00304
Power cord (US/JPN)	012/00303
Power cord (AUS)	012/0021
Power cord (UK)	012/0026
Power cord (CHE)	012/00304
Connection cable "furnace - vacuumpump" 220-240V	012/00306
Connection cable "furnace - vacuumpump" 100-120V	012/00305
USB-Stick	896/0234

4. Status messages

Error indication		Cause	Remedy
H-01	Abort: Heating system error	the oven does not heat up.	<ul style="list-style-type: none"> - please contact your for oven service dealer or service company. - Replace heating spiral - Exchange the power relay for the heating
V-01	Abort: Vacuum error	the vacuum level is not increasing	<ul style="list-style-type: none"> - check whether the vacuum hose is the pump and the power cord for the pump connected to the furnace and the pump - check whether the sealing ring of the heating chamber and lift plate are clean - carry out a vacuum test (see page 26) if the vacuum pump fails starts please check the fine-wire fuse on the vacuum pump (small fuse compartment below the power connector on the vacuum pump, a fuse is active here 2nd fuse is provided as a spare) - all the points mentioned do not lead to success, please contact your service partner
L-01	Abort: Fan error	the fan to cool the Press unit has failed or does not output a speedometer signal	<ul style="list-style-type: none"> - check if during one program sequence the fan is running. Is this not the case please contact your service partner - when the fan is running the speedometer signal malfunction. Since the fan is otherwise functional has a the speedometer signal can be temporarily bypassed. To do this, it is needed to enter a password. Please contact in that matter your service partner.
P-01	Abort: Press pressure error	- the press unit is supplied with no or rather too low pressure	<ul style="list-style-type: none"> - check if the air compressor is in function - please check the incoming pressure of the furnace (external pressure reducer) Here 0,5 MPa (5 bar) should be set. - make sure that the compressed air hose is not squeezed
P-02	Abort: Press system error	<ul style="list-style-type: none"> - one or more Press sensor positions are failed - Press unit does not extend - no incoming pressure present 	<ul style="list-style-type: none"> make sure that the compressor is switched on and operational - check if the compressed air quick coupling with the compressed air supply is connected (the external pressure reducer from the furnace should in this case indicate an incoming pressure of 5 bar) - in case of defective press sensors there is the possibility to bypass them.. Please contact your service partner in that matter

5. Warranty

5.1 Filter element for vacuum pump P3



The filter element prevents components of the insulation material of the heating chamber dissolved in the condensate or extremely fine dust from entering the vacuum pump. We recommend replacing this filter element after 3 years at the latest.

5.2 Cleaning the heating chamber

see point 2.5.7

5.3 Checking the water separator



Please check the container for water separation after the press furnace has been put into operation at short intervals, about every 4 weeks. Accumulated water must be drained by loosening the screw plug. If water accumulations occur regularly, the compressed air quality in your laboratory should be improved by using more powerful air dryers. Normally, no water separation is to be expected with dried compressed air. After 3 months, a six-monthly check is sufficient.

5.4 Filter element for compressed air supply

The service life of the filter element for compressed air depends on the compressed air quality in your laboratory. The filter element must be replaced after 2 years at the latest, even if high-quality compressed air treatment is available. A dirty filter element can lead to a reduction in the set maximum pressure and the pressing pressure. Replacing the filter element: - Disconnect the pressure reducer unit from the laboratory's compressed air supply - Unscrew the water collection tank and clean it with a damp cloth - Loosen the filter clamping screw - Pull off the filter - Insert the new filter, fasten it and screw the water collection tank back on

Fuses:

VARIO PRESS 330 press ceramic furnaces have the following safeguards:

Two 16 ampere circuit breakers:

Above the power connection for the oven: automatic circuit breaker for the entire device

Above the power connection for the vacuum pump: automatic circuit breaker for the vacuum area

6. Guarantee

If used properly, Zubler grants you a 12-month guarantee on all parts of the device. Exceptions to this are: Firing and press insulation bases, press centering plates, cracks or ruptures in the firing chamber insulation.

Zubler guarantees professional repairs with original spare parts. A guarantee period of 6 months is granted for every repair carried out by a specialist dealer or by Zubler, provided that all maintenance work required for the unrestricted function of the device has been commissioned.

Warranty claims cannot be asserted for:

- Improper use
- Use outside the prescribed operating conditions
- Disregard of operating and connection regulations
- Unrecognizable regular cleaning, maintenance and annually prescribed effectiveness test
- Repairs that were not carried out by a specialist dealer or by Zubler
- Use of spare parts from other manufacturers

7. Disposal instructions



7.1 Disposal of insulation materials (burning and press base)

All materials must be disposed of in accordance with country-specific regulations.

7.2 Disposal of the device

The device must be disposed of by a specialist company. The specialist company must be informed of any hazardous residues in the device.

7.2.1 Disposal instructions for EU countries

In order to preserve and protect the environment, prevent environmental pollution and improve the recycling of raw materials, the European Commission issued a directive according to which manufacturers can take back electrical and electronic devices so that they can be properly disposed of or disposed of to be recycled.

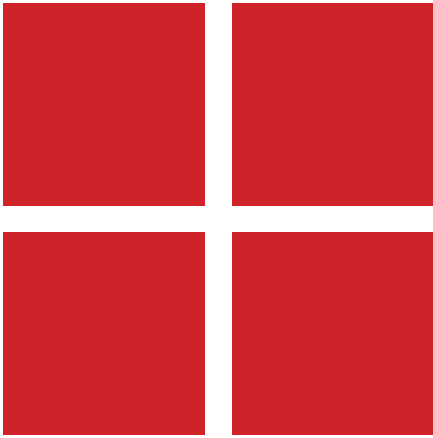
Devices marked with this symbol must therefore not be disposed of with unsorted municipal waste within the European Union.

Please check with your local authorities for proper disposal.

7.2.2 Special information for customers in Germany

Zubler electrical devices are devices for commercial use. These devices may not be handed in at municipal collection points for electrical devices, but will be taken back directly by Zubler. For information about the current return options, please go to: www.zubler.de





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