Programat® CS3



Operating Instructions

Valid from
software V3.2

CE

ivoclar vivadent®
passion vision innovation

Dental Service

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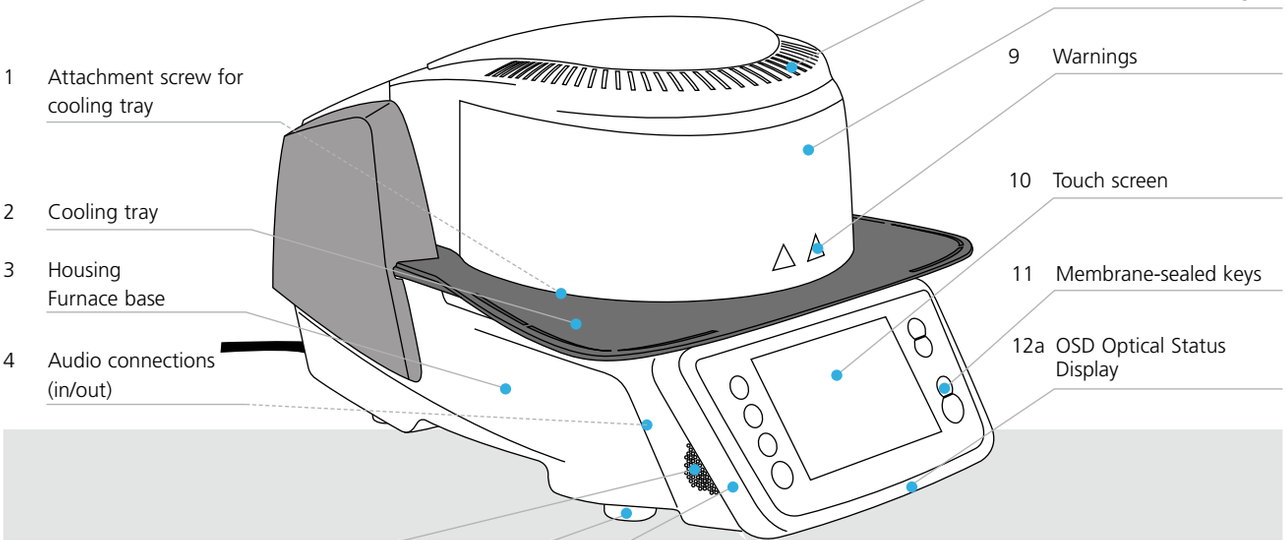
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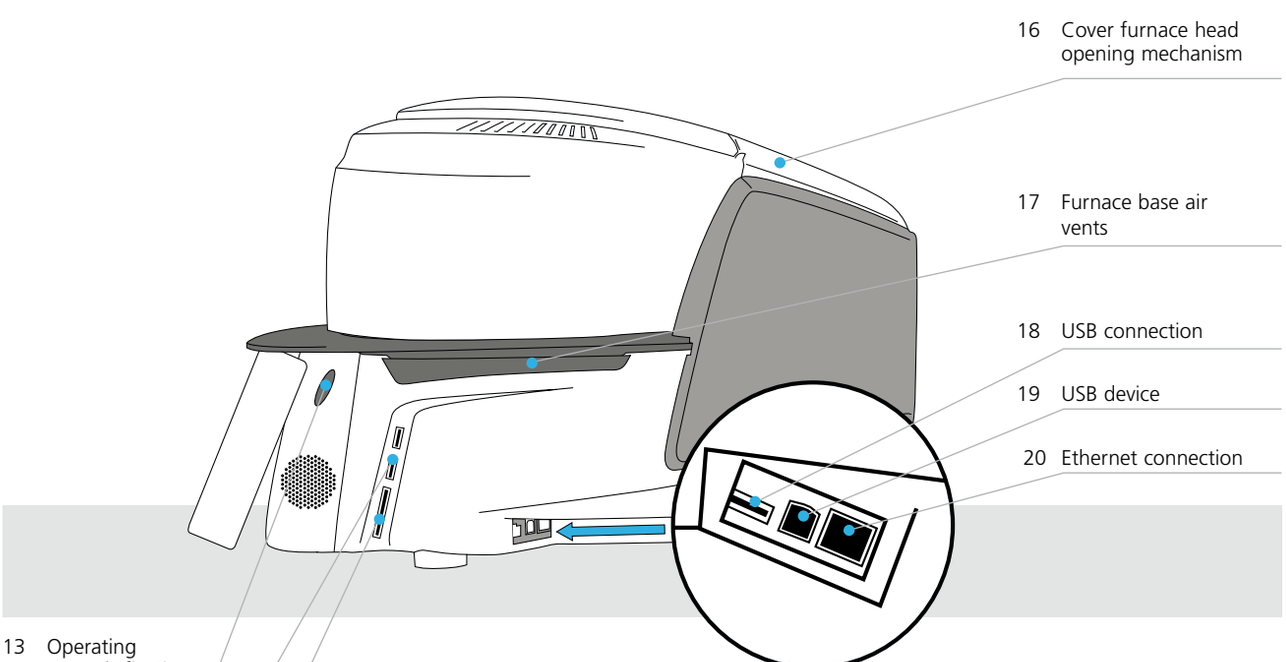
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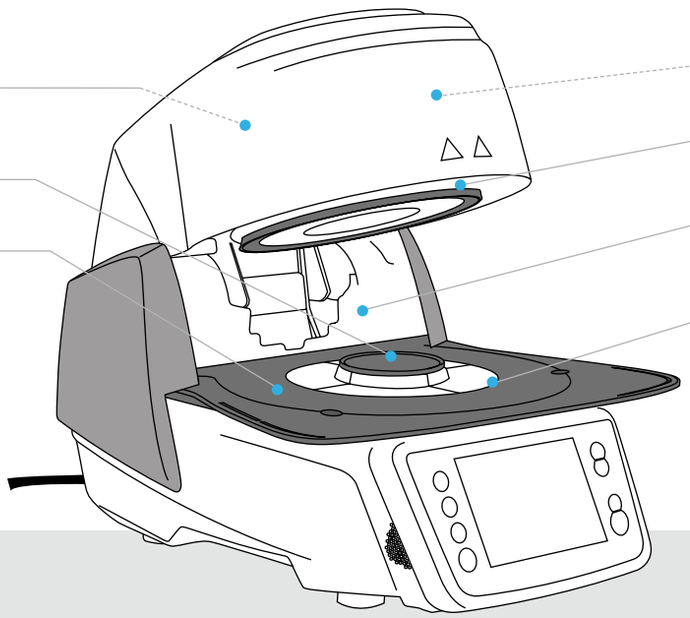
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Dental Service

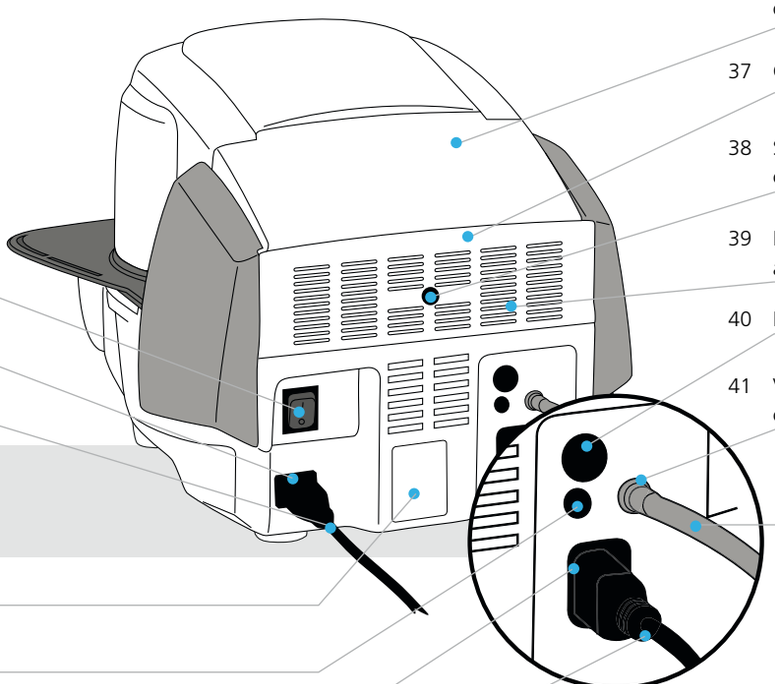
List of Parts



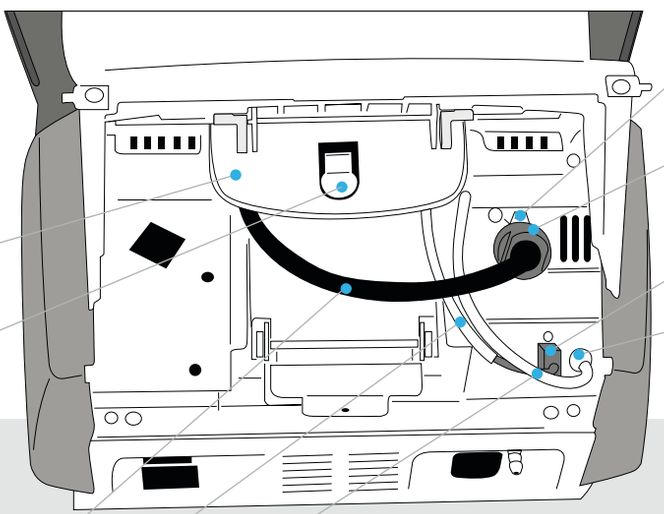




21 Insulation
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23 Firing plate holder
24 Frame plate
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26 Furnace head seal
27 Cover
28 Sealing surface



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50 Heater plug socket

51 Thermocouple plug

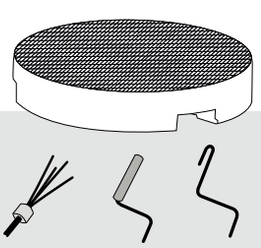
52 Thermocouple socket

53 Furnace head vacuum connection

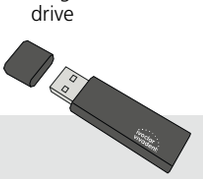
60 USB download cable

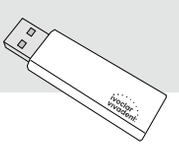


61 Programat Firing Tray Kit 2



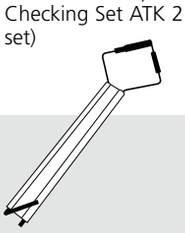
62 Programat USB flash drive



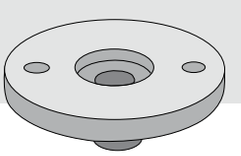


64 Programat WLAN flash drive

63 Automatic Temperature Checking Set ATK 2 (test set)



65 IPS e.max CAD Speed Crystallization Tray



1. Introduction / Signs and Symbols

1.1 Introduction

Dear Customer

Thank you for having purchased the Programat® CS3. It is a state-of-the art furnace for dental applications. The furnace has been designed according to the latest industry standards. Inappropriate use may damage the equipment and be harmful to personnel. Please observe the relevant safety instructions and read the Operating Instructions carefully.

We hope you enjoy working with the Programat CS3.

1.2 Signs and symbols contained in these Operating Instructions

The signs and symbols in these Operating Instructions facilitate the finding of important points and have the following meanings:

Symbol	Note
	Risks and dangers
	Important information
	Contraindication
	Burn hazard
	Risk of crushing
	The Operating Instructions must be read.

1.3 Notes regarding the Operating Instructions



Device concerned: Programat CS3
Target group: Dentists, dental technicians

These Operating Instructions facilitate the correct, safe and economical use of the Programat CS3. Should you lose the Operating Instructions, extra copies can be ordered at a nominal fee from your local Ivoclar Vivadent Service Centre or downloaded from **www.ivoclarvivadent.com**.

1.4 Note on the different voltage versions

The furnace is available with different voltage versions.

– 100 V / 50–60 Hz
– 110–120 V / 50–60 Hz
– 200–240 V / 50–60 Hz

In the Operating Instructions, the furnace is described in the 200-240 V voltage version. Please note that the voltage range shown on the images (e.g. rating plate) may differ depending on the voltage version of your furnace.

1.5 Notes on the images in the Operating Instructions

All images and illustrations in these Operating Instructions are used for exemplification and the details are not authoritative for the construction of the furnace. They are symbols, which may slightly differ from the original, e.g. due to simplification.

2. Safety First

This chapter is especially important for individuals who work with the Programat CS3 or who have to carry out maintenance or repair work. This chapter must be read and the corresponding instructions followed!

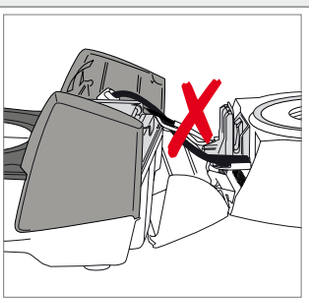
2.1 Indications

The Programat CS3 must only be used to fire and crystallize dental ceramic materials and it should be used for this purpose only. Other uses than the ones stipulated, e.g. cooking of food, firing of other materials, etc., are contraindicated. The manufacturer does not assume any liability for damage resulting from misuse. The user is solely responsible for any risk resulting from failure to observe these Instructions.

Further instructions to assure proper use of the furnace:
- The instructions, regulations and notes in these Operating Instructions must be observed.
- The instructions, regulations and notes in the material's Instructions for Use must be observed.
- The furnace must be operated under the indicated environmental and operating conditions (see Chapter 9.3)
- The Programat CS3 must be properly maintained.

Risks and dangers

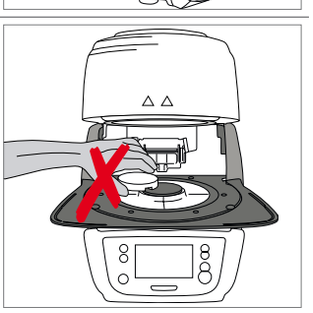
The furnace head should not be removed from the furnace base as long as the furnace head is connected by means of the cables.



Make sure that no liquids or other foreign substances enter the furnace.



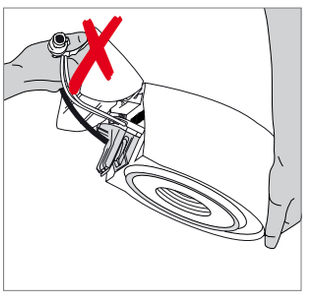
Burn hazard: Never place objects in the firing chamber by hand, since there is a burn hazard. Always use the tongs (accessories) supplied for this purpose.
Never touch the hot surface of the furnace head, as there is a burn hazard.



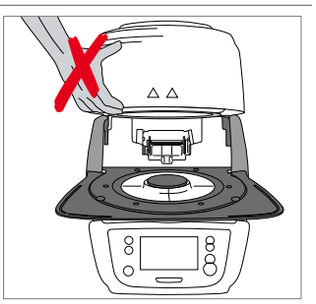
Do not carry the furnace by the cooling tray.



Do not carry the furnace head by the cables, since the cables and connections may be damaged.



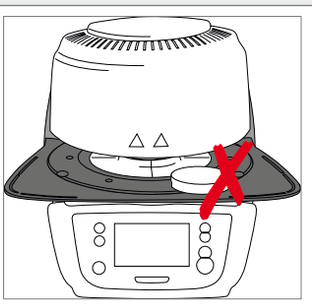
The furnace head has an electric drive and must be operated by means of the electronic controls. Never open the furnace head by hand, since the mechanism will be damaged.



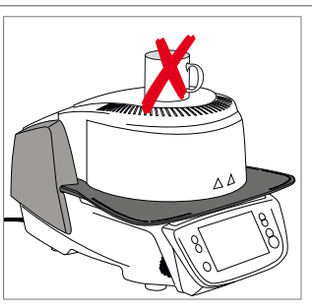
The furnace must not be operated if the quartz tube or the insulation in the firing chamber are damaged. There is a risk of electric shock upon contact with the heating wire. Avoid damage of the insulation by contact with the investment tongs or firing tongs.

Contraindication

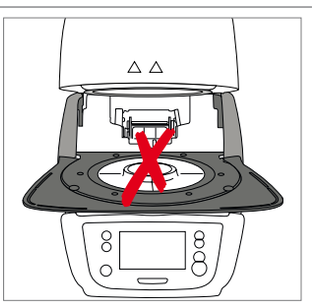
Firing trays must not be placed in the area surrounding the firing table, since this will obstruct the closing of the furnace head.



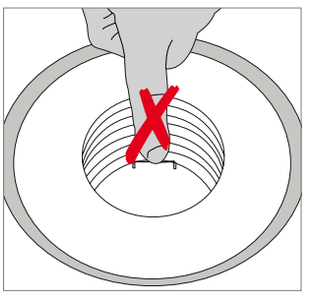
Foreign objects must not be placed on the furnace head or the air vents. Make sure that no liquids or other foreign objects enter the air vents, since this may result in an electrical shock.



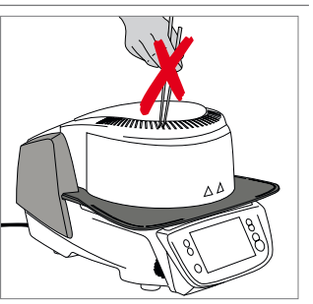
Never use the furnace without a firing table.



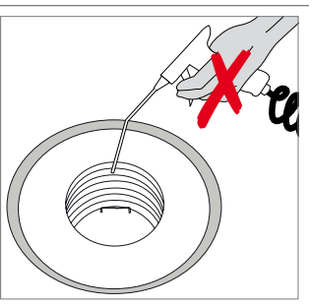
Do not touch the thermocouple and the quartz tube in the firing chamber. Avoid contact with the skin (grease contamination), as the parts may be prematurely damaged.



Do not insert any foreign objects into the air vents. There is a risk of electrical shock.

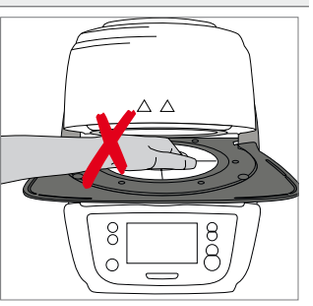


This product contains ceramic fibres and may release fibre dust. Do not use compressed air, or blow on the furnace thus distributing the dust in the environment and observe the additional notes on page 13.

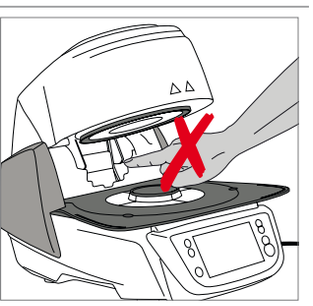


Risk of crushing / burn hazard

Never reach under the furnace head with the hand or other parts of the body, since there is a risk of crushing and a burn hazard.



Never reach inside the rear cover with the hand or particularly with the fingers. There is a risk of crushing.



2.2 Health and safety instructions

This device has been designed according to EN 61010-1 and has been shipped from the manufacturer in excellent condition as far as safety regulations are concerned. To maintain this condition and to ensure risk-free operation, the user must observe the notes and warnings contained in these Operating Instructions.

- The user must especially become familiar with the warnings and operating conditions to prevent injury to personnel or damage to materials. The manufacturer is not responsible for damage resulting from misuse or failure to observe the Operating Instructions. Warranty claims cannot be accepted in such cases.
- Before switching on the furnace, make sure that the voltage indicated on the rating plate complies with your local power supply.
- The mains socket must be equipped with a residual current operated device (FI).
- The power plug acts as a circuit breaker and may only be connected with an easy-to-access power socket with protective contact.
- Use only the power cord originally supplied with the furnace. It must not be replaced by insufficiently rated ones.
- Place the furnace on a fire-proof table. Observe local regulations, (e.g. distance to combustible substances or objects, etc.).
- Always keep the air vents at the rear of the furnace free from obstruction.
- Do not touch any parts that become hot during operation of the furnace. Burn hazard!
- When removing hot components from the firing chamber (e.g. firing table, firing tray), make sure to place them on a fire-proof surface.
- Clean the furnace only with a dry, soft cloth. Do not use any solvents! Disconnect power before cleaning and allow the furnace to cool down!
- The furnace must be cool before it is packed for transportation.
- Use original packaging for transportation purposes.
- Before calibration, maintenance, repair or change of parts, the power must be disconnected and the furnace has to be cool if it has to be opened.
- If calibration, maintenance or repair has to be carried out with the power connected and furnace open, only qualified personnel who are familiar with the risks and dangers may perform the procedures.
- After maintenance, the required safety tests (high voltage resistance, protective conductor, etc.) have to be carried out.
- Make sure that only fuses of the indicated type and rated current are used.
- If it is assumed that safe operation is no longer possible, the power must be disconnected to avoid accidental operation. Safe operation is no longer possible if
  - if the furnace is visibly damaged.
  - if the furnace does not work.
  - if the furnace has been stored under unfavourable conditions over an extended period of time.
- Use only original spare parts.
- The temperature range for faultless operation is +5°C to + 40°C (41°F to 104°F).
- If the furnace has been stored at very low temperatures or high atmospheric humidity, the head has to be opened and the furnace dried or left to adjust to room temperature for approx. 4 hours (do not connect the power yet).
- The furnace is tested for use at altitudes of up to 2000 m above sea level.
- The furnace may only be used indoors.
- Before leaving the factory, the furnace functions were tested for several hours. It is therefore possible that these tests have caused slight discolouration of the insulation. Nevertheless, your Programat CS3 is still a brand new furnace.

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Any disruption of the protective conductor either inside or outside the furnace or any loosening of the protective conductor may lead to danger for the user in case of malfunction. Deliberate interruptions are not tolerated.



Materials developing harmful gases must not be fired!

Warnings regarding the dismounting of the heating muffle



This product contains ceramic fibres and may release fibre dust. Fibre dust has proved to be carcinogenic in animal experiments. The heating muffle may only be dismounted by a qualified After Sales Service Centre. Information regarding the Safety Data Sheet is also available from your After Sales Service Centre.

Disposal:



The apparatus must not be disposed of in the normal domestic waste. Please correctly dispose of old furnaces according to the corresponding EU council directive. Information regarding disposal may also be found on the respective national Ivoclar Vivadent homepage.

3. Product Description

3.1 General aspects

The Programat CS3 is a modern crystallization, glaze and ceramic furnace for the dental field. It was specifically developed for use in the dental office. The firing chamber may be heated up to max. 1200°C (2192°F) by means of a heating element. Furthermore, the firing chamber has been designed in such a way that a vacuum may be created with a vacuum pump. Electronic components with the corresponding software monitor and control the firing programs. Additionally, the set and actual temperatures are continuously compared.

The Programat CS3 consists of the following components:
- Furnace base with electronic controls
- Furnace head with firing chamber
- Cooling tray
- Firing table
- Power cord and hose for vacuum pump

3.2 Hazardous areas and safety equipment

Description of the hazardous areas of the furnace:

Hazardous area	Type of risk
Firing chamber	Burn hazard
Opening/closing mechanism	Risk of crushing
Electrical components	Risk of electrical shock

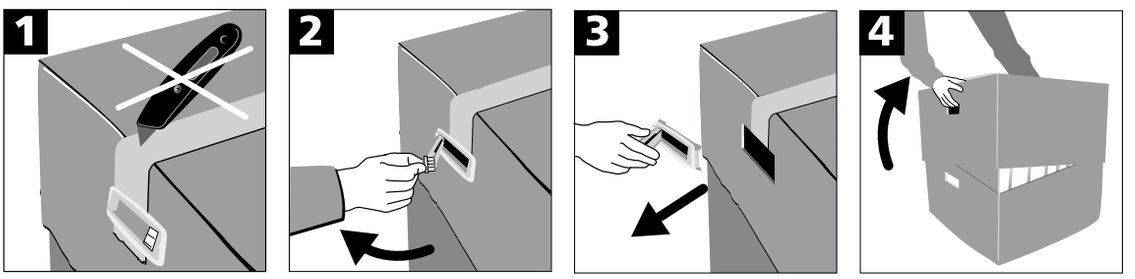
Description of the safety equipment of the furnace:

Safety equipment	Protective effect
Protective conductor	Protection from electrical shock
Electrical fuses	Protection from electrical shock
Furnace housing and end caps	Protection from electrical shock, burning and crushing

4. Installation and Initial Start-Up

4.1 Unpacking and checking the contents

Remove the furnace components from their packaging and place them on a suitable table. Please observe the instructions on the outer packaging.



There are no special transportation grips on the furnace. Support the bottom of the furnace to carry it. Check the delivery for completeness (see delivery form in Chapter 9) and transportation damage. If parts are damaged or missing, contact your local Ivoclar Vivadent Service Centre.

We recommend keeping the original packaging for future service and transportation purposes.

4.2 Selecting the location

Place the furnace on a flat table using the rubber feet. Make sure that the furnace is not placed in the immediate vicinity of heaters or other sources of heat. Make sure that air may properly circulate between the wall and the furnace. Also ensure that there is enough space between the furnace and the user, as the furnace releases heat during the opening of the furnace head.

The furnace should neither be placed nor operated in areas where there is an explosion hazard.

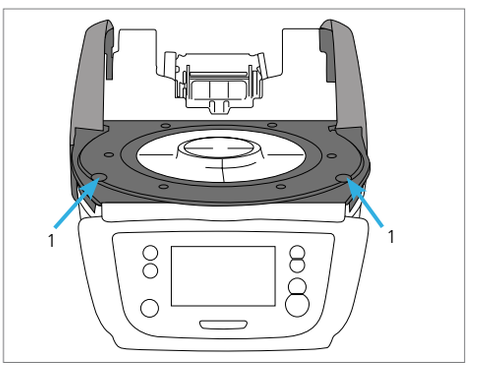
4.3 Assembly

Assembling the furnace is very easy and involves only few steps. Before you start assembling the furnace, make sure that the voltage indicated on the rating plate (32) complies with the local power supply. If this is not the case, the furnace must not be connected.

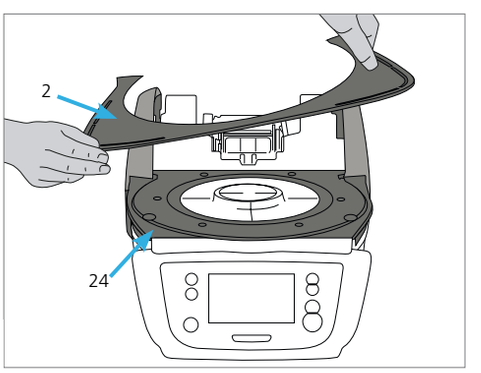
Step 1:

Assembling the cooling tray (2)

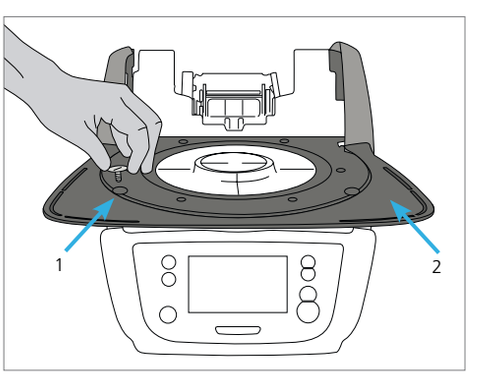
Remove to two attachments screws (1) for the cooling tray.



Place the cooling tray (2) on the frame plate (24). Make sure that the cooling tray is correctly positioned on the frame plate.



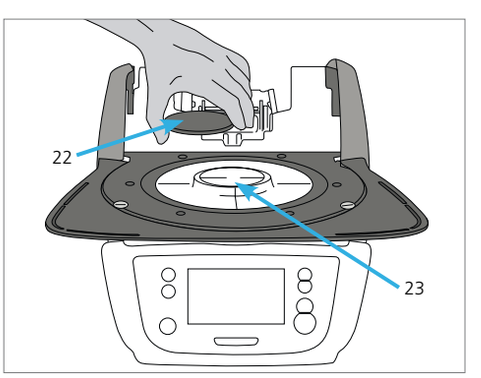
Secure the cooling tray (2) with the two attachment screws (1).



Step 2:

Mounting the firing plate

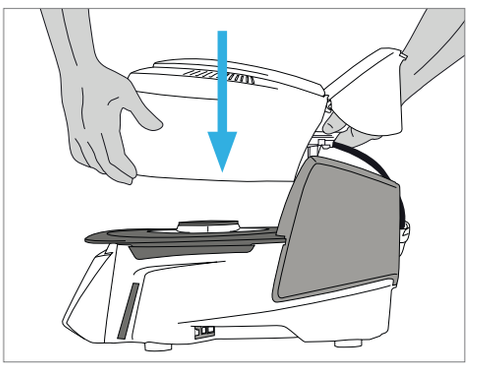
Place the firing plate (22) on the firing plate holder (23). If placed correctly, the bottom of the firing plate is automatically centered in the firing plate holder.



Step 3:

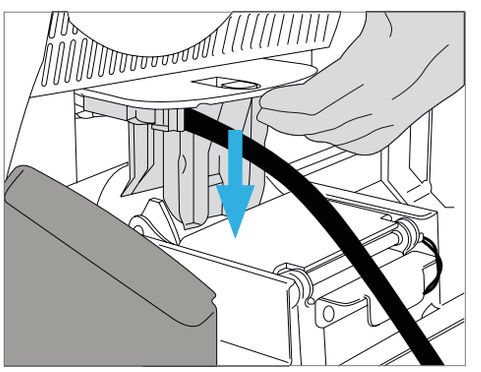
Mounting the furnace head

The complete furnace head is best mounted with the rear panel of the furnace pointing towards the user. Lift the furnace head with both hands (see picture) and carefully position it on the furnace head mounting.





Position the furnace head mounting as shown in the picture until the furnace head audibly snaps into place. Make sure that the firing plate or the insulation is not damaged by mounting the furnace head.

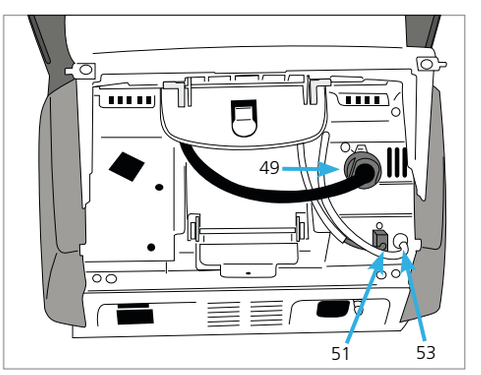


Step 4:

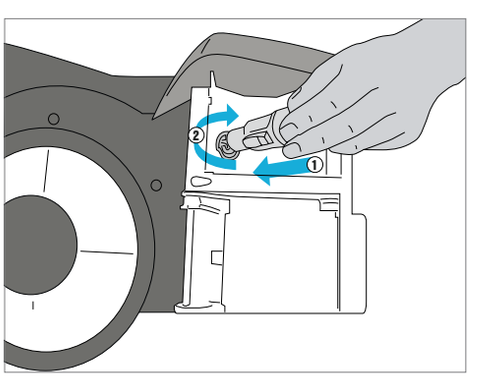
Connections

Connect the cables of the furnace head with the furnace base. Proceed as follows:

– Connect the vacuum hose (53)
– Insert the thermocouple plug (51) (make sure that the polarity of the plug is correct)
– Insert the heater plug (49)



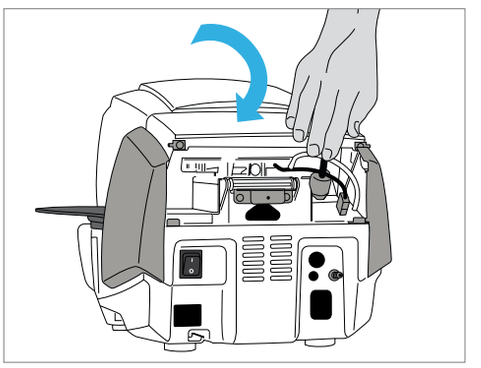
1 Insert the heater plug in the intended socket.
2 Secure the heater plug by rotating it 45° until it snaps into place.



Step 5:

Hinging on the hood

Once all cables are properly connected to the furnace base, the hood (16) can be hinged over the connections until it snaps into place.

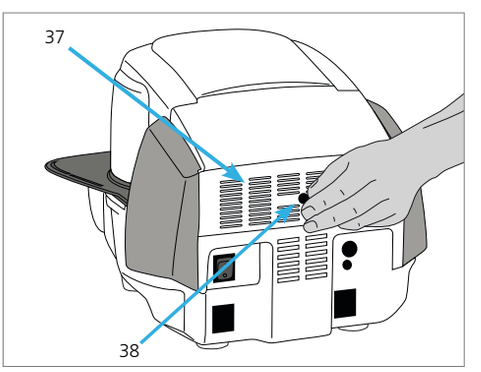


Step 6:

Mounting the connection cover

Mount the connection cover (37) and secure it with the fastening screw (38). When mounting the connection cover, make sure that the catch springs on the sides snap into place.

The furnace may only be operated with the hood and the connection cover mounted.



Step 7:

Establishing additional connections

Power connection

Please make sure that the voltage indicated on the rating plate complies with the local power supply. Subsequently, connect the power cord (31) with the power socket of the furnace (30).

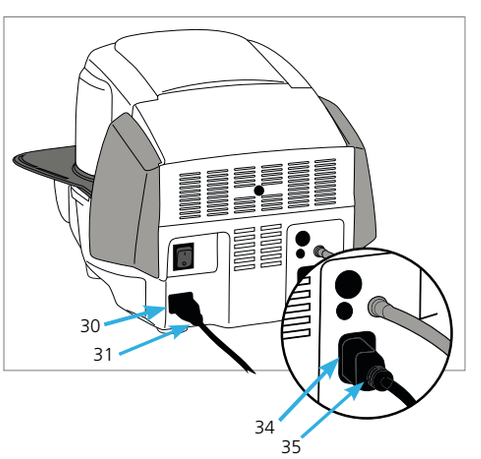
The furnace may only be used with the supplied power cord!

Vacuum pump connection

Connect the vacuum pump plug (35) with the vacuum pump socket (34).

We recommend using a vacuum pump from Ivoclar Vivadent, since these pumps are especially coordinated with the furnace. If other pumps are used, please observe and do not exceed the maximum power consumption.

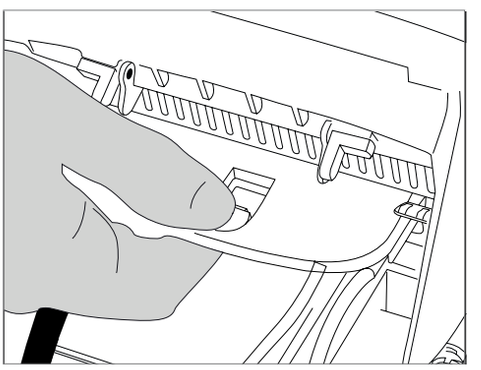
Do not shorten the vacuum hose! The minimum length of the vacuum hose is 1.6 m.



4.4 Removing the furnace head

Before the hood and the connection cover are removed, the furnace has to be switched off and the power cord disconnected from the power socket.

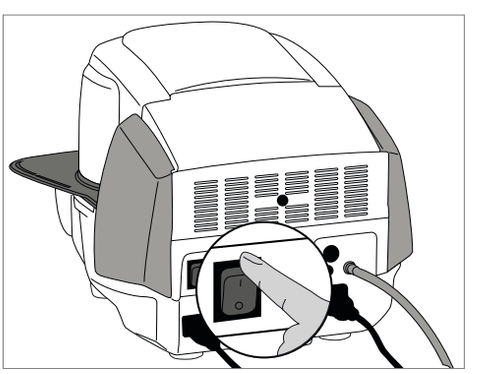
1 Loosen and remove the knurled screw (38) of the connection cover (37)
2 Remove connection cover (37).
3 Open the hood (36).
4 Release the heater plug (49) and disconnect it with 45° anti-clockwise rotation.
5 Remove thermocouple plug (51)
6 Disconnect the vacuum hose (53)
7 Press the leaf spring (44) with a finger, lift off the furnace head at the same time and remove it.





Make sure the furnace head has completely cooled down before it is removed (fire hazard).

4.5 Initial start-up



1 Connect the power cord with the wall socket.
2 Put the On/Off switch (29) at the rear of the furnace on position I.

4.5.1 Basic settings upon initial start-up

Upon the initial start-up of the new furnace, a number of basic settings are required. These settings will be stored and will not appear anymore upon following starting procedures.

Step 1:

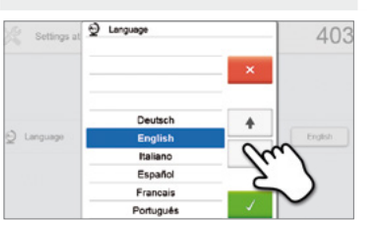
Language selection

The first setting is the language selections. The touch buttons (display keys) can be operated by tapping the display.

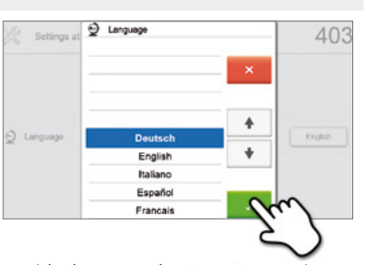
Step 1



Step 2



Step 3



Select the desired language using the **[arrow up/down]** buttons. Confirm the entry with the green button. By pressing the **[Continue]** button, you will reach the next entry screen.

Step 2:

Select the temperature unit

Select the desired temperature unit.

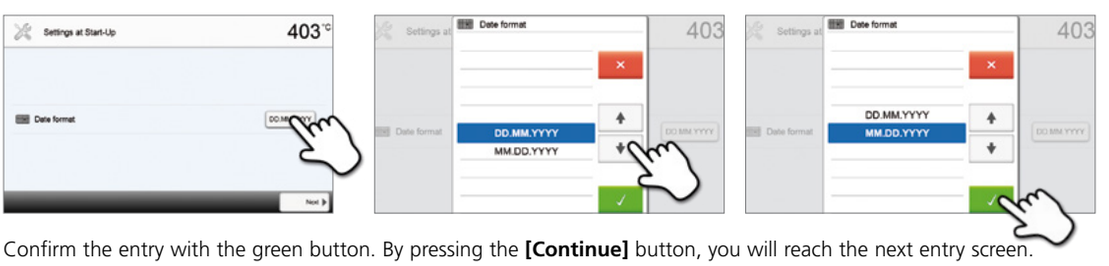


By pressing the **[Continue]** button, you will reach the next entry screen.

Step 3:

Select the date format

Select the date format.



Confirm the entry with the green button. By pressing the **[Continue]** button, you will reach the next entry screen.

Step 4:

Enter the date

Set the date (day, month, year).



Confirm the entry with the green button. By pressing the **[Continue]** button, you will reach the next entry screen.

Step 5:

Enter the time

Set the time (hours, minutes, seconds).

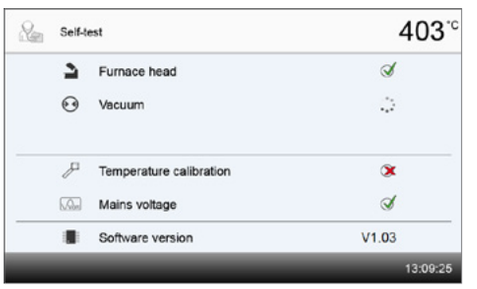


Confirm the entry with the green button. By pressing the **[Continue]** button, you will reach the next entry screen.

The initial start-up and entry of the basic settings are now complete. The furnace will now automatically conduct a self-test. The performance of all furnace components is automatically checked.

4.5.2 Start screen and self-test

Immediately after switching on, the display shows the start screen for a few seconds. Subsequently, the furnace conducts an automatic self-test. The performance of all furnace components is automatically checked.



The following functions are checked:

Function		
Furnace head test		Furnace head test in progress
		The furnace head test was successful.
		The furnace head test failed. Please note the error message on the display.
Vacuum test		Vacuum test in progress
		The vacuum test was successful.
		The vacuum test failed. Please note the error message on the display.

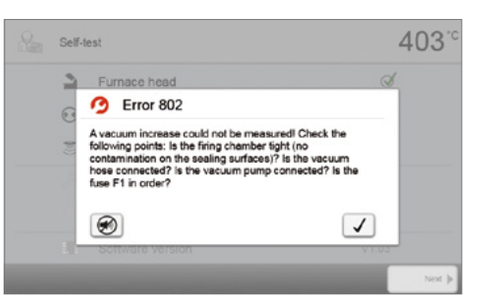
The following information is displayed:

Information		
Temperature calibration		Temperature calibration of the furnace is not required.
		Some time has passed since the last calibrations. Conduct a calibration.
Power supply		The power supply voltage is in the acceptable range.
		The power supply is outside the acceptable range.
Software version		The currently installed software version is displayed.

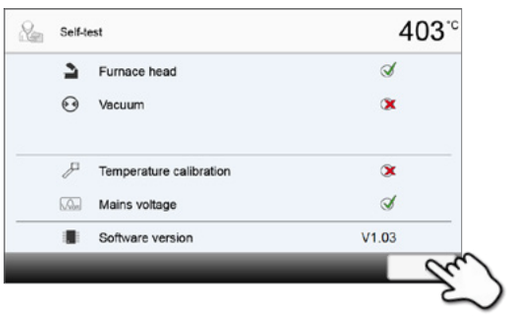
If the self-test was successful, the home screen is displayed.

If the program recognizes a malfunction during the test, a corresponding error message with the corresponding rectification information appears in the display.

The acoustic signal and the error message can be acknowledged with the corresponding buttons.



Press the **[Continue]** button to acknowledge the self-test.



Before the first firing, the firing chamber should be dehumidified using the dehumidification program (see Chapter 5.4 for details).

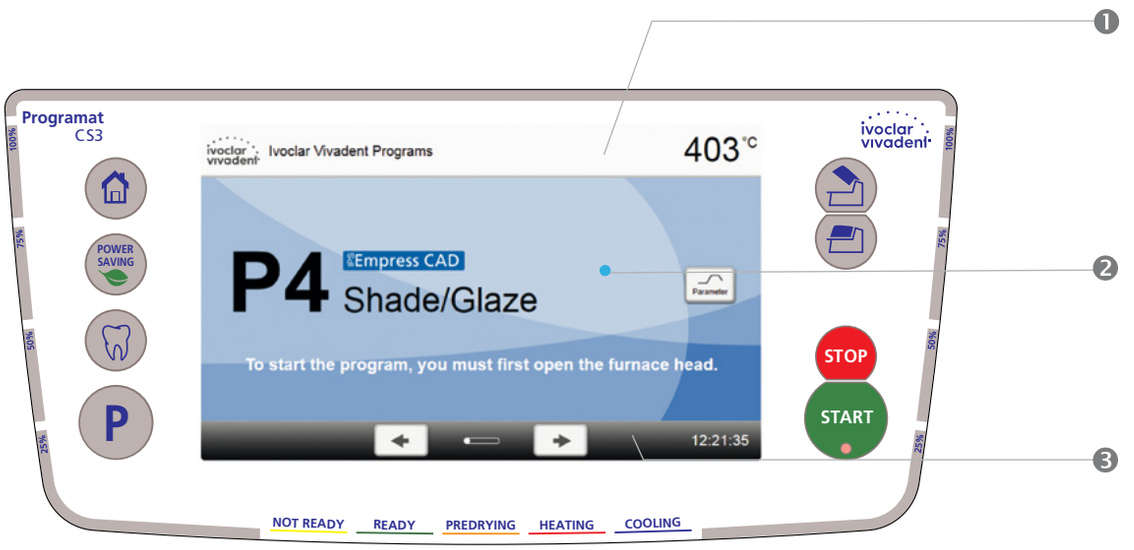
Please note that the furnace may require a certain acclimation time after having been set-up. This is particularly true if the furnace was exposed to substantial temperature changes (water condensation).

5. Operation and Configuration

5.1 Introduction to the operation

5.1.1 Control unit

The Programat CS3 is equipped with a widescreen colour display. The furnace can be intuitively operated by means of the membrane-sealed keypad and the touch screen. The touch buttons can be actuated by slightly tapping the display with the fingertip and the furnace runs the desired function.



The user interface in the display is divided into three sections:

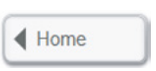
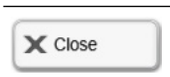
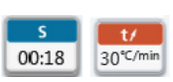
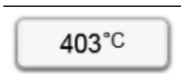
1 **Information bar** (e.g. indication of the current furnace temperature, the selected program, etc.)
2 **Main screen** (e.g. editing firing programs, changing the settings, etc.)
3 **Navigation bar** (e.g. scrolling, scrolling in higher levels, etc.)

5.1.2 Description of the key functions

Key	Function
	**Home** Switch to home screen (main menu)
	**Program key** Press once: Display of the currently selected program. Press twice: Switch to the program selection via numbers
	**Digital Shade Assistant key** The Digital Shade Assistant (DSA) can be started and ended with this key.
	**Power-saving key** Power-saving function activated (only possible with the furnace head closed and the furnace on idle). The display shows the power-saving icon. Pressing any key ends the power-saving function.
	**Open furnace head** **Quick cooling with the furnace head open:** If the furnace head is completely open and the OPEN FURNACE HEAD key is pressed again, the quick cooling function is activated, e.g. the vacuum pump is switched on for 5 minutes. This function can be stopped at any time by pressing STOP, CLOSE FURNACE HEAD or START. This function can be activated any time when the furnace head is open.
	**Close furnace head**

	**STOP** A program in progress can be paused by pressing the STOP key and stopped by pressing STOP twice. Movement of the furnace head can be stopped at any time by pressing STOP. The acoustic signal can be confirmed by pressing the STOP key.
	**START (Start LED)** Starts the selected program. The green LED indicates that a program is active. If the program is paused (1x STOP), the Start LED flashes until renewed pressing of START results in the program being resumed.

5.1.3 Description of the most important touch buttons

Button	Function
	**Scroll left / Scroll right** With these buttons, for example, you can scroll to page 2 of the home screen.
	**Back with note** With this button, you can change to the "next higher" menu level. The button indicates to which screen you change, e.g. to the home screen
	**Close** With this button, you can close sub-menus.
	**Confirm your entries** This button is used to confirm an entry. If the button appears pale green, no entry has been made yet or the value entered is not in the acceptable range.
	**Cancel entry** The entry can be cancelled with this button; changed values are not saved.
	**Program parameter button** Pressing these buttons allows you to change program parameters. A selection list or numeric pad for entering the values appears. The upper half of the button itself shows the parameter in question (e.g. Closing time), while the lower half shows the entered value (e.g. 00:18).
	**On/Off button** This button is used to switch functions on or off.
	**Parameter button** On pressing these buttons, a selection list or numeric pad appears for entering the parameters.

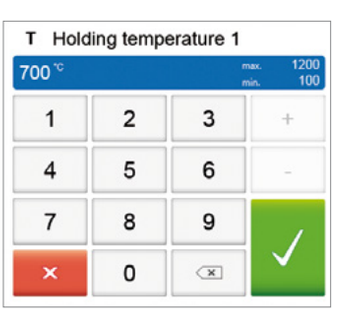
5.1.4 Description of the numeric pad and selection list

– **Numeric pad**

The numeric pad enables the entering and changing of parameters, e.g. in firing programs or set-up menus. Additionally, the currently set value is indicated, as well as the minimum and maximum values.

An entry must be confirmed with the green button. As soon as the entry has been confirmed, the numeric pad is closed. If the button appears pale green, the value entered is not within the acceptable range.

The numeric pad can be closed with the red button, without any parameters being changed.



– **Selection list**
  In the selection list, the desired parameter can be selected by using the up/down arrows. An entry must be confirmed with the green button. After that, the selection list is closed.
  The selection list can be closed with the red button, without any parameters being changed.



5.1.5 Explanation of the program screen

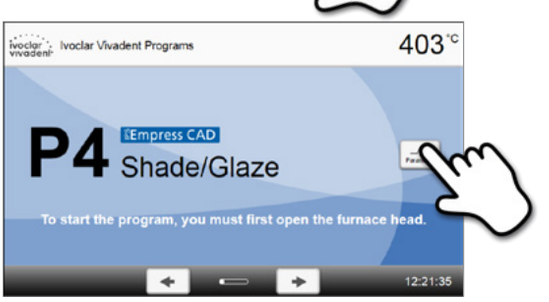
After the furnace is switched on, the display shows the program screen. Programs can be selected, started, and edited from this screen.

The programs can be selected by pressing the **[arrow]** buttons. The main screen indicates the program number, program name and a help text.

The circles between the arrows indicate the number of pages.
The current page is marked with a light dot.



The **[Parameters]** button is used to switch to the program parameter screen. Firing programs can be edited in this screen



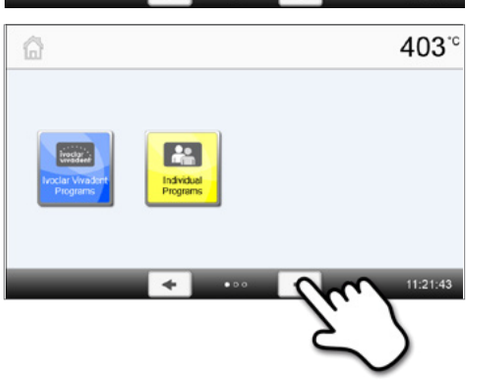
5.1.6 Description of the home screen

With the Home key, you can change to the home screen. All functions of the Programat can be selected from this screen.

By pressing a selection button, you will reach the corresponding menu (e.g. firing programs, settings, calibration, etc.)



The next page of the home screen can be accessed with the **[arrow]** button, where additional functions are available.
The circles between the arrows indicate the number of pages.
The current page is marked with a light dot.



5.1.7 Description of the speaker sounds

– **Upon closing the furnace head below 100 °C**



There is a risk of crushing upon closing the furnace head. If the furnace head is closed below 100°C, the user is notified of this risk by an acoustic signal.

– **After the self-test is completed**
To inform the user that automatic self-test has been successfully completed, the selected melody is played.

– **Furnace head open and temperature below 560°C / 680°F**
To inform the user that the temperature in the open furnace head has dropped below 560°C / 1112°F, the selected melody is played (5 seconds). This is the earliest possible time that the object can be removed from the furnace (the removal temperature depends on the material used. The corresponding Instructions for Use have to be observed).

– **Furnace head open and temperature below 360 °C / 680°F**
To inform the user that the temperature in the open furnace head has dropped below 360°C / 680°F, the selected melody is played. If the first playback (10 seconds) is not acknowledged with the STOP key, a second playback sounds after 5 minutes (for 5 minutes) to signal that the furnace head is cooling down. After that, no further signal is played. If one of the two playbacks is acknowledged with the STOP key, the signal transmitter is switched off and no further signals will be sounded.

– **For error messages**
Error messages are acoustically supported with the "error melody" (endless beep). The signal transmitter may be switched off with the STOP key, while the error message still remains visible. If the error message is acknowledged with the corresponding button, the signal transmitter is also switched off.

5.1.8 Optical Status Display (OSD)

The Optical Status Display (OSD) (12) shows the most important statuses of the furnace. The following activities are indicated:

Shade	Activity
Yellow	The furnace is performing the self-test or is not ready for use, as the recommended temperature range for a program start has not yet been reached.
Yellow (flashing)	Information, note or error message
Green	The furnace is ready for use; the currently selected program can be started.
Orange	Program is closing the furnace head or is in predrying mode
Red	Program is heating up or is in holding time mode
Blue	Program is in long-term cooling or is opening the furnace had

Progress display:
During an active process, the progress of the program is also shown by the OSD. This is done by stage-to-stage lighting up of the lateral OSD (12b).

5.1.9 User code

For safety reasons, a user code is required for certain settings. The user code ex factory is as follows:

1234

The user code can be individually changed. See Chapter Settings 5.4.1 for details.

5.2 Firing programs and programming options

5.2.1 Program structure

The furnace offers two program types:

a. **Programs for Ivoclar Vivadent materials**
b. **30 free, individually adjustable programs**

All programs are equivalent and therefore full-fledge programs.

a) Programs for Ivoclar Vivadent materials (See chapter Program structure 10.1)

When the furnace is delivered ex works, the Ivoclar Vivadent programs already contain the recommended material parameter settings and are write-protected. Consequently, it is not possible to accidentally overwrite the programs.

In case of software updates, individually changed parameters in Ivoclar Vivadent programs might be reset to the factory settings or changed!

b) Free, individually adjustable programs

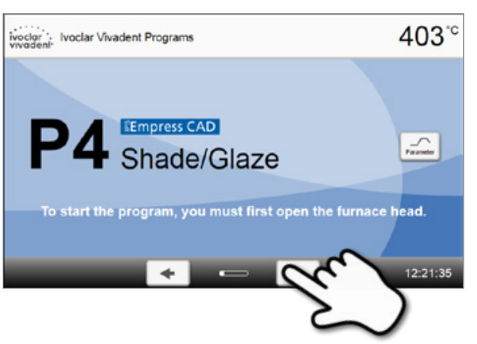
The programs are designed in such a way that they can be either used as conventional, one-stage programs, or as two-stage programs, if required. The programs can be individually named.

In case of software updates, individually changed parameters in free programs are NOT reset to the factory settings or changed!

5.2.2 Program selection

After the furnace is switched on, the display first shows the program screen and the last selected program.

The programs can be selected by pressing the **[Arrow]** buttons.

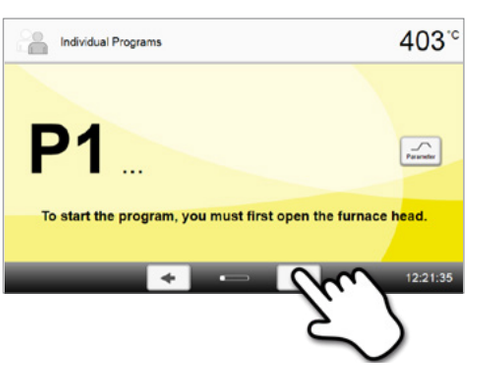


In order to switch to an individual program, open the home screen by pressing the **[Home]** key. The program selection requires only few steps:

1. Select program type



2. Select the program



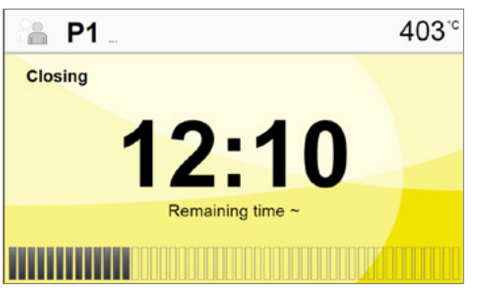
Quick program selection

Pressing the P key switches to the program screen of the current program. When the program screen is shown, pressing the P key again switches to the quick program selection by means of number entry.

5.2.3 Starting and stopping programs / the operation indicator

Once the program is started by pressing START, the progress screen appears.

The following information is displayed:

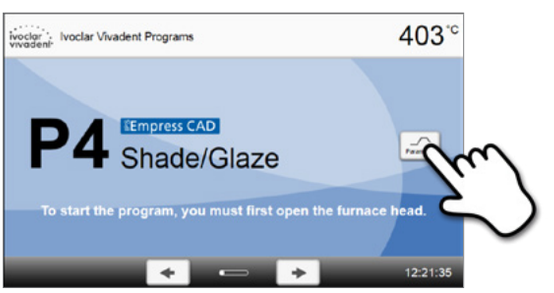


– **Information bar:**
  In the information bar in the upper margin of the display, program name and the current furnace temperature are indicated.
– **Main area:**
  The approximate remaining time and a program status bar are shown in the main area.

A program can only be started if the furnace head is open.

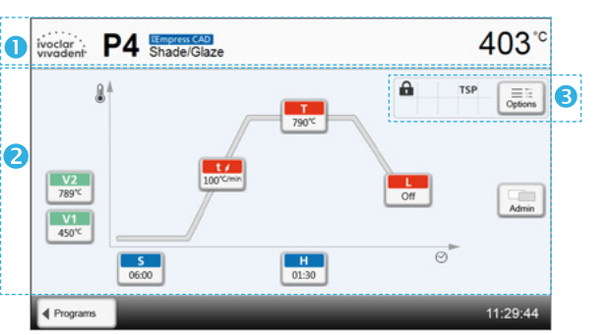
5.2.4 Editing programs

If the **[Parameters]** button is pressed while the program screen is displayed, the program parameter screen opens. Firing programs can be edited in this screen.



For Ivoclar Vivadent programs, the write-protection must be deactivated first, before any parameters can be changed.

The following information is shown in program parameter screen:



1. Information bar:
– Program designation
– Current furnace temperature

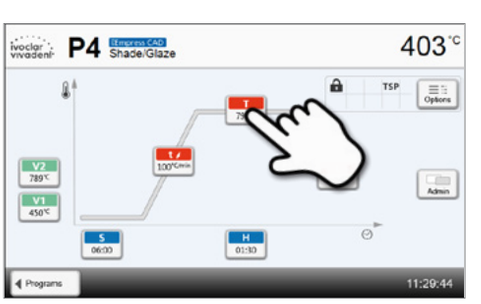
2. Firing curve:
– Closing time, holding time
– Temperature increase, holding temperature, long-term cooling
– Vacuum on, vacuum off

3 Program options:
In addition to the parameters shown in the firing curve, several other options are available that can be activated by pressing the **[Options]** button. The icons in the grid show the activated options.

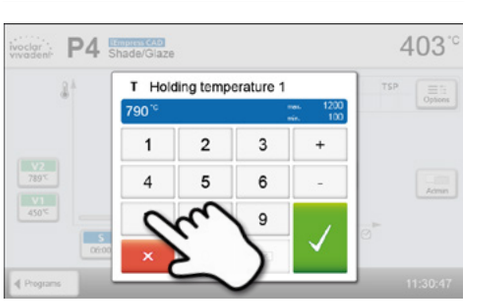
Editing parameters
Parameters are entered or edited in two steps.

e.g. Setting the holding temperature:

1. Press the [T] button



2. Enter the desired holding temperature and confirm with the green button



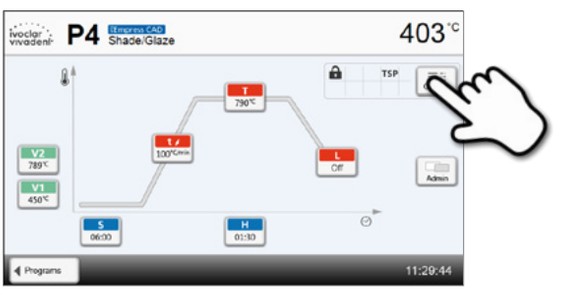
The holding temperature has been successfully changed. All other parameters shown in the firing curve can be changed / edited in the same way.

Changing program options

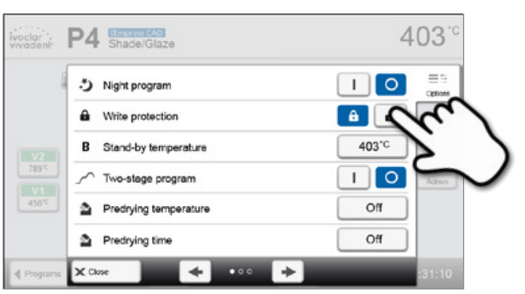
Pressing the Options button opens the menu for advanced program options:

Example 1: Deactivating the write-protection

1. Press the [Options] button.



2. Press the [Deactivate write-protection] button.

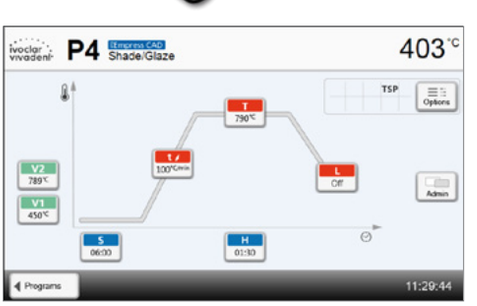


3. Press the [Close] button to leave the Options menu.



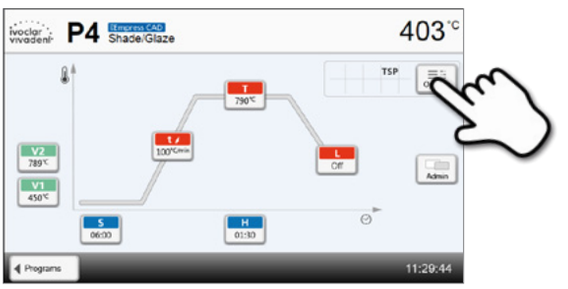
4 The write-protection was successfully deactivated.

The lock symbol is no longer shown in the display next to the Options button.



Example 2: Changing the predrying temperature

1. Press the [Options] button.



2. Press the [Pre-drying temperature] button.



3. Enter the desired predrying temperature and confirm with the green button.



4. The predrying temperature was successfully changed.
Press the **[Close]** button to leave the Options menu.

The program screen now shows the symbol "predrying active" next to the Options button.

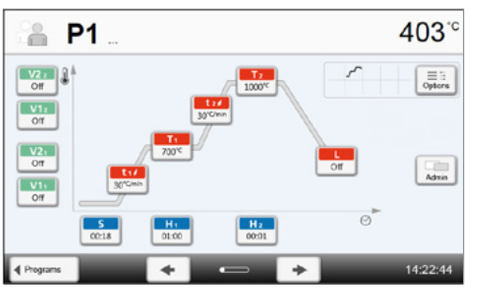


Two-stage programs

A two-stage program permits firing procedures on two temperature levels with different parameters (e.g. Holding time Stage 1, Holding time Stage 2) to be conducted.

The function "Two-stage program" can be selected in the Options menu.

The screen now shows the symbol "two-stage program" next to the Options button.



Automatic plausibility check of the parameters

The furnace is equipped with an automatic plausibility check function. The parameters are checked upon each program start. In case of contradictory parameter combinations, the program stops automatically and the respective note is shown.

5.2.5 Adjustable parameters in the program screen

S	**S – Closing time** The closing time controls the duration of the furnace head closing process. *Value range: 00:18–30:00 (mm:ss)*
t/	**t – Temperature increase rate** (for two-stage programs: t_1) The temperature increase rate defines by how many degrees per minute the furnace heats up. *Value range °C: 10-140°C/min; Value range °F: 18-252°F/min*
T	**T – Holding temperature** (for two-stage programs: T_1) The holding temperature defines the temperature at which a firing process is conducted. *Value range °C: 100-1200°C; Value range °F: 212-2192°F*
H	**H – Holding time** (for two-stage programs: H_1) The holding time indicates how long an object is fired at the holding temperature. *Value range: 00:00-60:00 (mm:ss)*
V1	**Vacuum on** (for two-stage programs: $V1_1$) The parameter defines the temperature at which the vacuum is activated. *Value range °C: Off or 1-1200°C; Value range °F: 0 or 34–2192°F*
V2	**Vacuum off** (for two-stage programs: $V2_1$) The parameter defines the temperature at which the vacuum is deactivated. • **Holding time without vacuum**: If V2 is set one degree lower than the holding temperature, the vacuum is ended before the holding time. • **Holding time with vacuum**: If V2 corresponds to the holding temperature, the vacuum is maintained during the entire holding time. • **Long-term cooling with vacuum**: If V2 is set one degree higher than the holding temperature, the vacuum is maintained during long-term cooling. *Value range °C: Off or 1-1200°C; Value range °F: 0 or 34–2192°F*
L	**Long-term cooling** If long-term cooling is activated, the furnace cools to the set temperature (L) at the end of the holding time with the furnace head closed. *Value range °C: Off or 50-1200°C; Value range °F: 0 or 122–2192°F*
t L	**Cooling rate** Can only be set if long-term cooling "L" is activated. The cooling rate defines by how many degrees per minute the furnace cools down. *Value range °C: Off or 1–50°C/min; Value range °F: Off or 2–90°F*
t 2/	**t2 – Temperature increase rate Stage 2** This parameter defines for the second temperature level by how many degrees per minute the furnace heats up. *Value range °C: 10-140°C/min; Value range °F: 18-252°F/min*
T 2	**T2 – Holding temperature Stage 2** The holding temperature for the second temperature level defines the temperature at which a firing process is conducted. *Value range °C: 100-1200°C; Value range °F: 212-2192 °F*
H 2	**H2 – Holding time Stage 2** The holding time for the second temperature level indicates how long an object is fired at the holding temperature. *Value range: 00:00-60:00 (mm:ss)*
V1 2	**Vacuum on Stage 2** The parameter defines the temperature at which the vacuum for the second temperature level is activated. *Value range °C: Off or 1-1200°C; Value range °F: 0 or 34–2192°F*
V2 2	**Vacuum off Stage 2** The parameter defines the temperature at which the vacuum for the second temperature level is deactivated. If $V2_2$ corresponds to the holding temperature, the vacuum is maintained during the entire holding time. *Value range °C: Off or 1-1200°C; Value range °F: 0 or 34–2192°F*

5.2.6 Adjustable parameters in the Options menu

In addition to the parameters shown in the firing curve, several other options are available that can be activated by pressing the **[Options]** button. Active options are shown with icons in the grid next to the Options button.

The following firing program options are available:



Night program
If this function is active, the furnace head remains open after the firing process and the heater is switched off. No acoustic signals are sounded. Once the temperature drops below 100°C (212°F), the furnace head closes, the heater remains switched off and the furnace cools down to room temperature.

Advantages of the night function:
After a power failure, the night program is always resumed. The program is resumed at the position, at which the power failure occurred. After a longer power failure, the furnace head does not heat up to stand-by temperature and the object is protected at room temperature with the furnace head closed.

If the night program function is switched on, it is active only for the next program cycle.

Setting option: On/Off



Program write-protection
If the program write-protection is activated the program parameters and program options cannot be changed. This is to prevent accidental changes to the program.

Setting option: On/Off

B

Stand-by temperature
The stand-by temperature is the temperature to which the furnace heats up immediately after switching on. The temperature is maintained with the furnace head closed and when no firing process is active.

Programat furnaces are programmed to a stand-by temperature of 403°C/757°F in the factory. The temperature can be individually set for each program.

Value range °C: 100-700°C; Value range °F: 212–1292 °F



Two-stage program
If this function is activated, the selected program can be programmed on two temperature levels.

Setting option: On/Off



Predrying temperature Stage 1
In a program with activated predrying in Stage 1, the desired "predrying temperature" is set (heating or cooling) after the start with the furnace head open. Once this temperature is reached, predrying is conducted during the "predrying holding time". Once this time has elapsed, the furnace closes within the desired closing time.

The predrying temperature for Stage 1 can be set as follows:

Value range °C: OFF or 100–700°C; Value range °F: OFF or 212– 1292°F



Predrying holding time Stage 1
This parameter defines the duration of the predrying process for Stage 1 once the desired predrying temperature has been reached.

Value range Off or 00:00–60:00 (min:ss)



Predrying temperature Stage 2
Pre-drying for Stage 2 is only available if Stage 2 has also been activated. The parameters are set in the same way. At this stage, the furnace head is half open.

Value range °C: OFF or 100–700°C; Value range °F: OFF or 212–1292°F



Pre-drying holding time Stage 2
This parameter defines the duration of the predrying process for Stage 2 once the desired predrying temperature has been reached.

Value range Off or 00:00–60:00 (min:ss)

TSP	**Thermo Shock Protection (TSP)** The TSP function protects the dental-lab work during the closing process. For this purpose, TSP gauges the temperature of the firing chamber in the furnace head upon the start of the firing program. If required, the closing path within the set closing time S is adjusted. *Setting option: On/Off*
	**Pre-vacuum** If a firing program is conducted with pre-vacuum, the vacuum pump is switched on at the end of the closing time (as soon as the furnace head is closed) and run until the pre-vacuum time has elapsed. The heating phase begins after the pre-vacuum time is over. The value V1 is ignored upon the start of a program with individually activated pre-vacuum. The vacuum remains switched on until V2 is reached. V2 must be higher than the stand-by temperature B. *Setting option: Off or 01:00–05:00 (min:ss)*
Hv	**Vacuum holding time** With this function, the vacuum share of the holding time can be individually set. Example: H (holding time) = 02:00 (mm:ss). If a vacuum share of 50 % is desired, the parameter "Vacuum holding time (Hv)" has to be set to 01:00 (min/ss). *Setting option: Off or 00:01–60:00 (min:ss)*
	**Quick opening of the furnace head** If the option "quick opening of the furnace head" is activated, the furnace head opens at maximum speed at the end of the holding time. *Setting option: On/Off*
	**Extraction system** If this function is activated, any vapours are extracted during the closing process by means of the vacuum pump. *Setting option: On/Off*

5.2.7 Pausing the active program

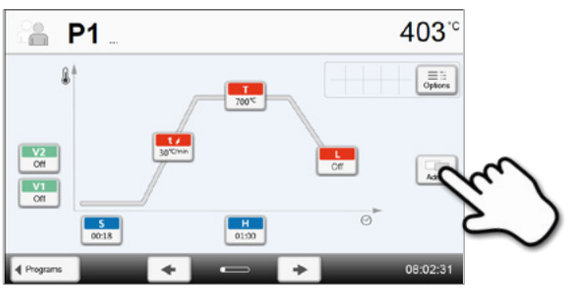
Press STOP once to pause a running program (green LED flashes when the program is paused). Press the STOP key twice to completely stop the program or press START to continue.

If the program is paused, the display shows a flashing "Pause".

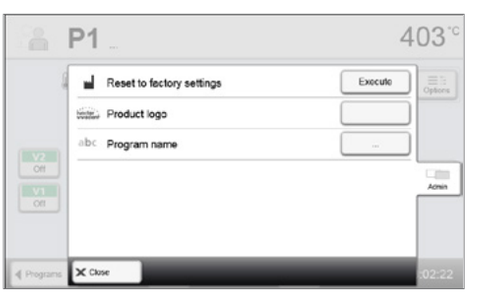
If a program is aborted prematurely, "Vacuum release" is displayed during the flooding of the firing chamber.

5.3 Managing programs

Press the button [Manage] in the program view to open the managing program menu.



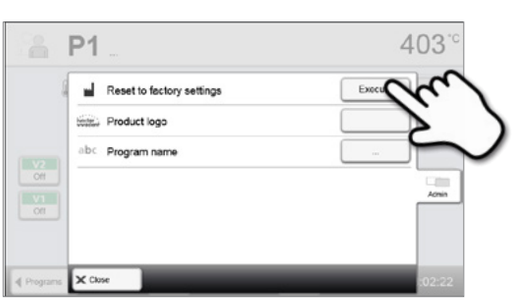
The following functions are available:
- Reset program to factory settings
- Select product logo
- Rename program



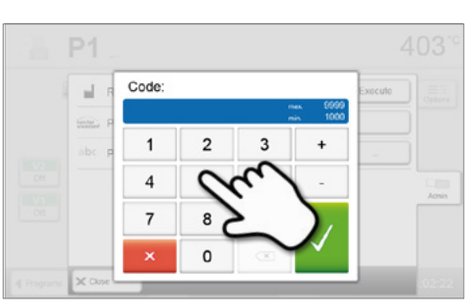
5.3.1 Resetting program to factory settings

This function is used to reset a changed program to factory settings.

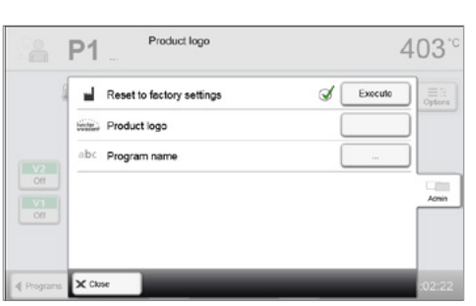
1. **Press the corresponding [execute] button in the Manage menu.**



2. **Enter the user code to confirm that the program is reset to factory settings.**



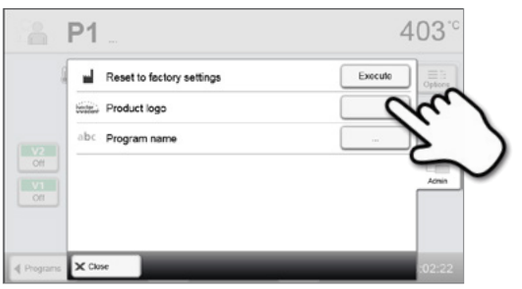
3. **The program has successfully been reset to factory settings.**



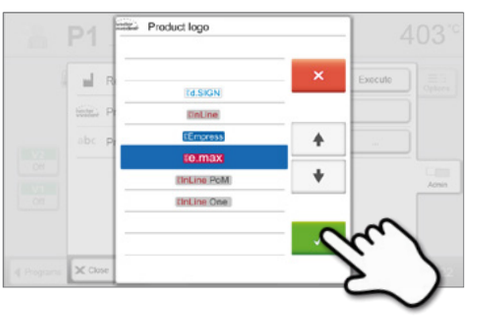
5.3.2 Selecting product logo

The product logo for the current group can be selected.

1. Press the corresponding button in the Manage menu.



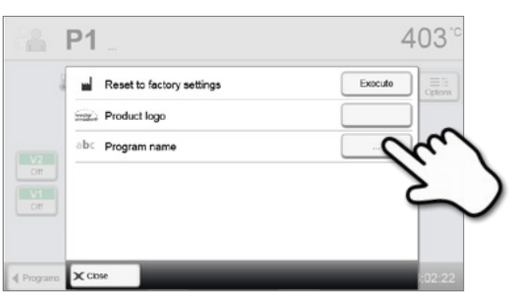
2. Select the desired product logo. Confirm the entry with the green button.



5.3.3 Renaming program

The current program can be renamed.

1. Press the corresponding button in the Manage menu to change the program name.



2. Enter the desired program name. Confirm the entry with the green button.



5.4 Advanced functions of the furnace

5.4.1 Settings

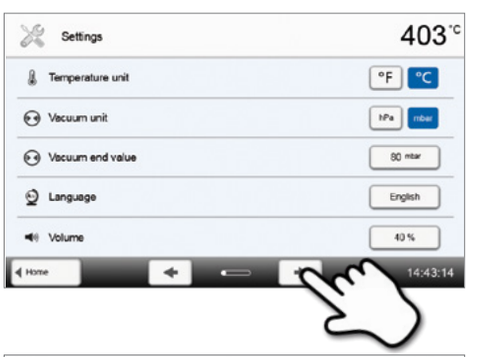
To reach the Settings menu, scroll to page 2 in the home screen and press the **[Settings]** touch button.

Example: Changing the brightness of the display

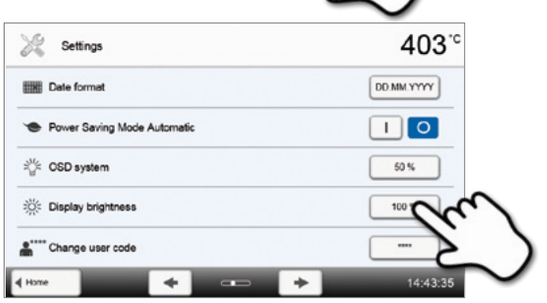
1. Open Settings
Scroll to page 2 in the home screen and press the **[Settings]** button.



2. Open display brightness
The **[Arrow]** buttons are used to scroll through the Settings menu. Press the button until the setting "Display brightness" appears in the display.

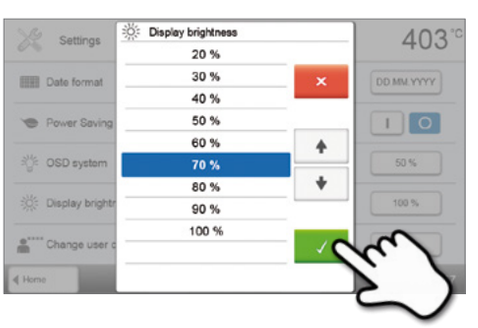


3. Changing the display brightness
Press the touch button in the line "Display brightness".



4. Select the desired display brightness
in percent and confirm the entry with the green button or cancel the entry by pressing the red button.

The setting was changed.



To return to the home screen, press either the touch button **[Home]** in navigation bar or the HOME key on the membrane-sealed keypad.

The following settings can be changed in the Settings menu:



Temperature unit
You can choose between °C and °F.

Setting option: °C / °F



Vacuum unit
You can choose between mbar and hPa.

Setting options: mbar / hpa



Vacuum quality
Setting the final vacuum value. This value defines the negative pressure in the furnace head at which the furnace has reached a vacuum quality of 100 %.

Setting option: 0-200 mbar



Language
Select the desired operating language.

Setting option: German, English, Italian, French, Spanish, Portuguese, Swedish, Dutch, Turkish, Russian, Polish, Croatian, Trad. Chinese, Mandarin Chinese, Finnish, Norwegian, Slovenian, Czech, Slovakian, Hungarian, Indian (Hindi), Japanese, Korean, Arabic, Iranian (Farsi)



Volume
Select the desired volume of the acoustic signals

Setting option: Off / 10–100 % in 10-% steps



Melody
Select the desired melody for the acoustic signal.

Setting option: Melody 1 to 20



Time
Setting the current time

Setting options: hh:mm:ss



Date
Setting the current date

Setting options: according to the set date format



Date format
Setting the date format

Setting options: dd:mm:yyyy; mm:dd:yyyy



Automatic power-saving mode
If the power-saving mode is activated and the furnace head closed, this function is automatically started after 30 minutes, if the furnace is on stand-by and no key is pressed during that time.
The display shows the power-saving icon. Pressing any key ends the automatically activated power-saving function.

Setting option: On / Off



Optical Status Display (OSD)
Here, the OSD can be switched on or off

Setting option: Off / 10–100 % in 10-% steps



Display brightness
Setting the display brightness

Setting option: 20–100 % in 10-% steps



User code
The user code can be individually changed.



It is recommended to make a note of the changed user code and keep it separately. If forgotten, the user code may only be reset with the help of After Sales Service.

Setting option: 1000 to 9999



Protocolling
If this function is activated, the program data are saved in a protocol entry after every firing procedure. The following protocol settings are available:

Inactive: Protocolling is not active

Printer: At the end of the program, the parameters used are logged and saved in the furnace. Additionally, the protocols are printed on a connected USB printer.

PC: At the end of the program, the parameters used are logged and saved in the furnace. If the furnace is connected to the PrograBase Software, the saved table entries are synchronized with the connected laptop/PC. Protocols can be edited, saved and printed by means of the PrograBase software.

Table: At the end of the program, the parameters used are logged and saved in the furnace. The data can be viewed via the Diagnosis menu.

Setting option: Inactive / Printer / PC / Table



Laboratory name
The laboratory name can be entered here. It is automatically added to the protocols.

Setting option: Laboratory name entry



Calibration interval
Setting for the notification as to when the next calibration should be conducted.

Setting option: 1 / 3 / 6 / 12 months



Set heating muffle firing hours to zero
If this function is executed, the heating muffle firing hours are set to "zero". This function can only be executed by entering the user code.

Setting option: execute



Set vacuum pump hours to zero
If this function is executed, the vacuum pump hours are set to "zero". This function can only be executed by entering the user code.

Setting option: execute



Reset to factory settings
If this function is executed, all programs and settings are reset to the status before the initial start-up. This function can only be executed by entering the user code.

Setting option: execute



Loading and individual start screen
This function is used to load an individual start screen from a USB flash drive. Once an individual start screen has been loaded, it will be shown for a few seconds when the furnace is switched on the next time.



Loading individual tune
This function is used to load an individual tune. This melody is played a speaker sound as described in Chapter 5.1.7



Timer
With this menu item, the timer can be set.

Setting option: Off / Monday to Sunday on-time and off-time



Setting up a WLAN connection
A WLAN connection can be set-up with this function. See Chapter 5.4.8 for details.



Testing push notifications
Here, push notifications for communicating with the Programat app can be tested. The Programat app must be linked to the furnace to test push notifications. If the network has been set up correctly, a push notification will appear on the Programat app. If no notification appears on the app, please check the network settings.



Touch mode
Setting the sensitivity of the touch screen. Select "Special" in case of malfunctions when operating the touch screen.

Setting option: Normal / Special



Keypad tone
Here, the keypad tone can be activated.

Setting option: On/Off

5.4.2 Information

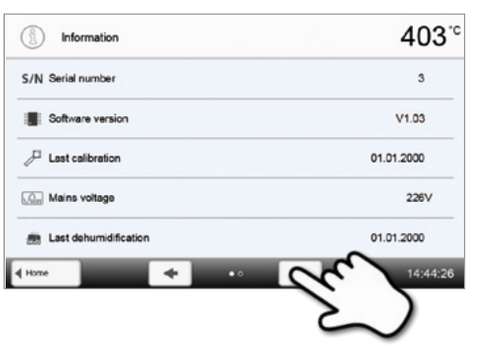
To reach the screen for the furnace information, scroll to page 3 in the home screen and press the **[Information]** touch button.

Example: Displaying information

1. Opening information
Scroll to page 3 in the home screen and press the **[Information]** button.



2. Reading the information
The information is displayed on several pages. The **[Arrow]** buttons are used to scroll to the next information page.



To return to the home screen, press either the touch button **[Home]** in navigation bar or the HOME key on the membrane-sealed keypad.

The following information can be read off

S/N	**Serial number** Serial number of the furnace
	Software version Currently installed software version of the furnace. Software updates are available from *www.ivoclar-vivadent.com/downloadcenter*.
	Last calibration Date of the last calibration
Volt	**Mains voltage** Currently measured mains voltage
H_2O	**Last dehumidification** Date of the last dehumidification of the furnace
h	**Operating hours** Number of operating hours
h	**Firing hours** Number of firing hours
h	**Vacuum hours** Number of operating hours of the vacuum pump
IP	**IP address** Indication of the IP address
IP	**WLAN IP address** Indication of the WLAN IP address

IP	**Internet connection** Indicates whether or not the furnace is connected to the internet.
IP	**MAC address** Indication of the MAC address
IP	**WLAN MAC address** Indication of the WLAN MAC address

5.4.3 Temperature calibration

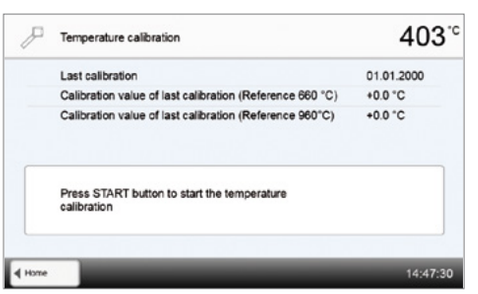
The thermocouple and heating muffle of the furnace may be subject to changes which affect the furnace temperature, depending on the mode of operation and the frequency of use. Conduct the automatic temperature calibration at least every six months.

Temperature calibration requires only few steps:



1. Open temperature calibration
Scroll to page 2 in the home screen and press the **[Temperature calibration]** button.

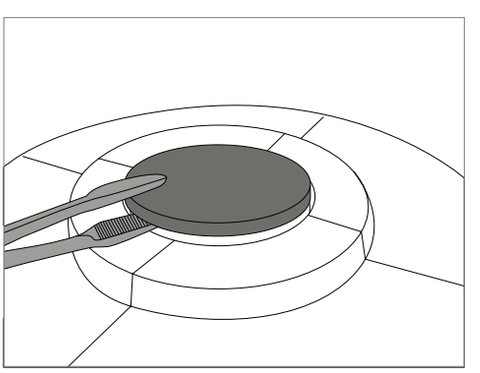
The furnace must have a stand-by temperature (403°C / 757°F) before the calibration is started.



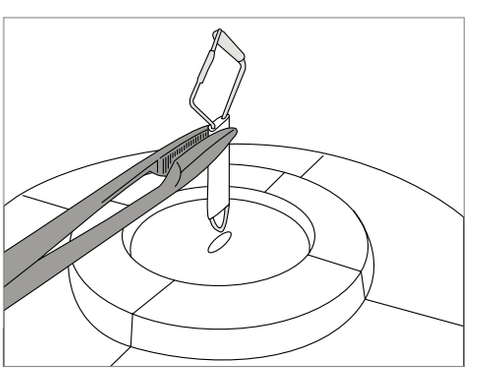
2. Start the calibration
The display shows the last calibration value and the date of the last calibration.

Press the [START] key on the membrane-sealed keypad to start the calibration. Follow the instructions on the display.

3. Remove the firing plate
Remove the firing plate from the furnace and place it on the cooling plate using the firing tongs.

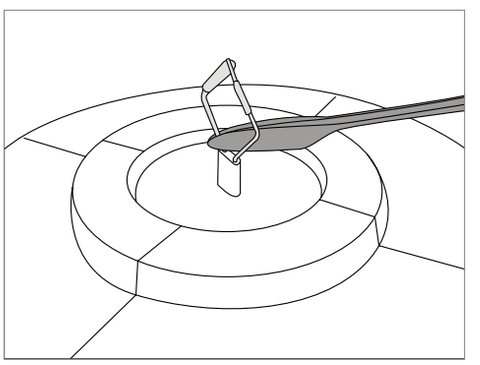


4. Insert the ATK2 sample
Carefully grip the upper part of the ATK 2 using the furnace tongs (Caution: fracture risk of the ceramic) and insert it into the holes designated for this purpose until it snaps into place.



5. Press on sample

If necessary, use the furnace tongs to apply slight pressure to the Centre of the calibration base until the calibration sample clicks into place. Observe the corresponding markings.



6. Start the calibration

Press STARTto start the calibration program. The progress of the calibration program is shown in the display.



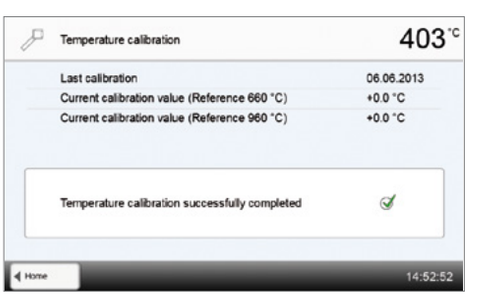
7. Complete the calibration

The result is displayed at the end of the calibration.

Temperature calibration successful

Temperature calibration failed

The calibration value is the difference between the measured current temperature and the desired set temperature.



At the end of the program, open the furnace head and carefully remove the ATK 2 using the furnace tongs and place it on the cooling tray to allow it to cool. Replace the firing plate using the furnace tongs.

To return to the home screen, press either the touch button **[Home]** in navigation bar or the HOME key on the membrane-sealed keypad.

5.4.4 Data backup

With the data backup function, individual programs and settings can be backed-up on a USB flash drive. We recommend using this feature, e.g. before a software update or before sending in the furnace for maintenance purposes.

Moreover, furnace data saved on a USB flash drive can be restored on the furnace. However, restoring only works on the same furnace with the identical serial number.

Data backup or data recovery requires only few steps:

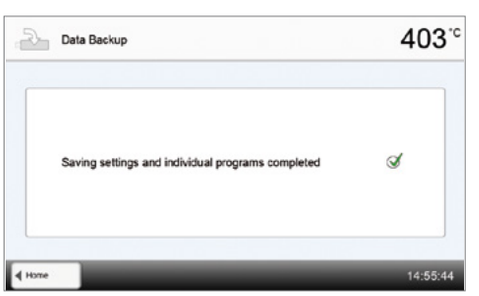
1. Open data backup
Scroll to page 2 in the home screen and press the **[Data backup]** button.



2. Conduct the data backup
Connect a USB flash drive to the furnace and press the **[execute]** button.



3. Complete the data backup
Data backup successful
Data backup failed



To return to the home screen, press either the touch button **[Home]** in navigation bar or the HOME key on the membrane-sealed keypad.

5.4.5 Software update

Software updates can be easily installed on the furnace by means of a USB flash drive. A USB flash drive, which contains a current software file (e.g. CS3_V1.10.iv) is required. The software version on the USB flash drive must be higher than the one installed on the furnace (see Selection - Information)

The free software updates for Programat furnaces are available from *www.ivoclarvivadent.com/downloadcenter*.

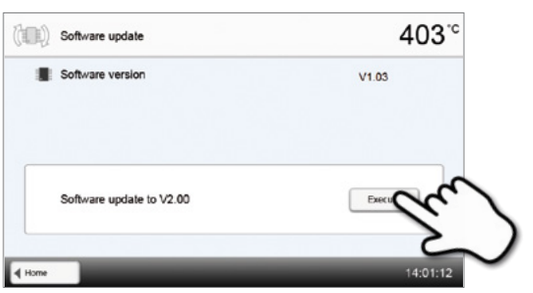
Back-up your data before performing a software update.

A software update requires only few steps:

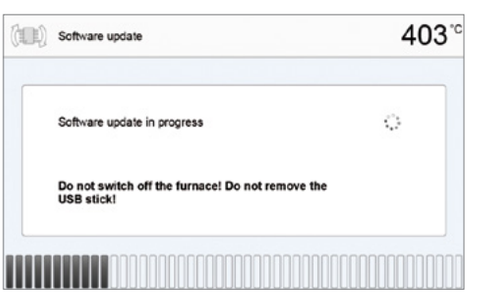
1. Open Software update
Scroll to page 2 in the home screen and press the **[Software update]** button.



2. Conduct Software update
If the USB flash drive with the software file is already connected, the furnace automatically searches for a valid software file. If the USB flash drive has not yet been connected with the furnace, do so now. Press the **[execute]** button.



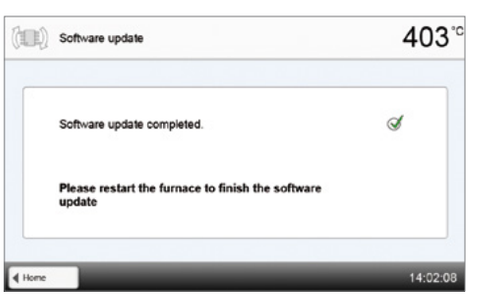
3. The status bar shows the progress of the update.



4. End Software update
The following messages are displayed:

Software update successful

Software update failed



The furnace has to be switched off and on again by means of the mains switch at the rear of the furnace to complete the software update.

Important information
Please note that modified Ivoclar Vivadent programs may be overwritten during a software update. Individual programs are not affected and will not be overwritten.

5.4.6 Diagnosis

Scroll to page 2 in the home screen and press the **[Diagnosis]** button.



The following functions are available in the Diagnosis menu:

- Tests (e.g. vacuum test, heater test, etc.)
- Error list (saved error messages)
- Remote Diagnosis
- Protocol table
- Service



5.4.6.1 Tests (test programs)

- **Vacuum pump test program**
  With the vacuum pump test program, the vacuum performance and tightness of the furnace vacuum system can be automatically tested. For that purpose, the achieved (minimum) pressure in mbar is measured and indicated. If the pressure value is below 80 mbar (hPa), the vacuum performance of the system is adequate.

- **Heating muffle test**
  The quality of the heating muffle may be automatically checked by means of the heater test (duration: approximately 7 minutes). The heater test should only be conducted with the empty firing chamber, since an object in the chamber (e.g. firing tray) may influence the test result. Conduct the heater test immediately after switching on the furnace and before any actual firing procedures are conducted. If the furnace is too hot, an incorrect heating muffle quality will be indicated. If the heating element quality falls below 50 %, replacing the heating element is recommended.

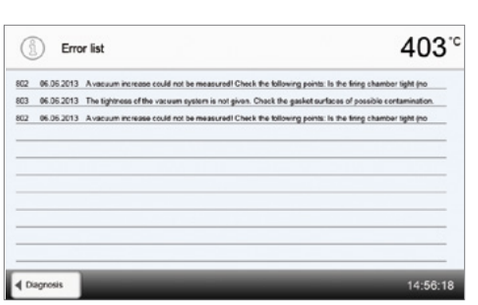
- **Keypad / touch test**
  Each time the keypad or the touch buttons are pressed, a short acoustic signal sounds to confirm its function.

- **Display test**
  Two different chequerboard patterns are alternately shown in the entire display. Every individual pixel can be visually checked.

- **OSD test**
  This test is used to check the LEDs of the Optical Status Display. For that purpose, the OSD alternately flashes in different colours.

5.3.6.2 Error table

Every error message is saved in an error table after it occurred. The **[Arrow]** buttons are used to scroll through the list. The last 20 error message are displayed.



5.4.6.3 Remote Diagnosis

The remote diagnosis function helps you in case of a possible problem with your Programat furnace and facilitates the communication between users and the Ivoclar Vivadent After Sales Service.

If the diagnosis function is executed, the furnace generates a diagnosis file, which is automatically saved on the USB flash drive. The file can be forwarded by e-mail or analyzed by means of PrograBase on a laptop/PC.

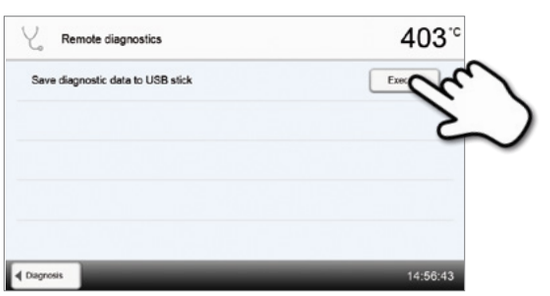
The diagnosis file provides furnace information (e.g. installed software version, set modes, etc.) operating data (e.g. operating hours, firing hours, etc.) calibration data (e.g. calibration values, date of the last calibration, etc.) test results and saved error messages.

Generating a diagnosis file:

1. Open the diagnosis function
Press the **[Remote Diagnosis]** button in the Diagnosis menu.



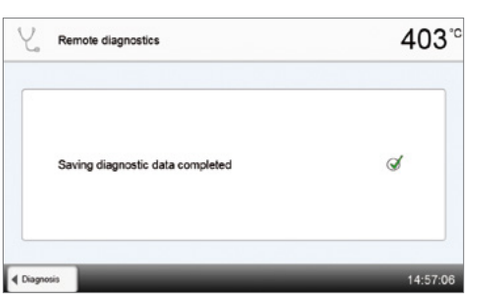
2. Generate a diagnosis file
Connect a USB stick with the furnace. Press the **[execute]** button.



3. Once the diagnosis file has been generated, one of the following messages is displayed

Diagnosis successful

Diagnosis failed



4. Forward or analyze the diagnosis file
Connect a USB stick with a laptop/PC. The file can only be analyzed by means of the PrograBase software or sent to any e-mail address.

If the furnace is connected with a laptop/PC via Ethernet, the file can also be directly opened, forwarded or analyzed by the PrograBase software.

5.4.6.4 Protocol table

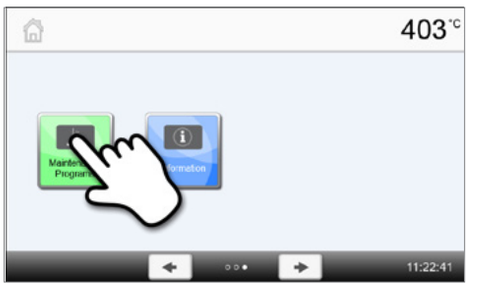
If the protocolling function has been activated in the Settings menu (see Chapter 5.4.1), the last 20 firing protocols are saved in the protocol table. The saved protocols can be printed from this table, sent to a PC, or deleted.

5.4.6.5 Service menu

This menu is code-protected and is only used by Ivoclar Vivadent After Sales Service.

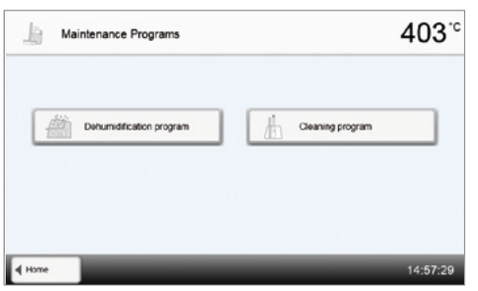
5.4.7 Maintenance programs

Scroll to page 3 in the home screen and press the **[Maintenance Programs]** button.



The following programs are available in the Maintenance Programs menu:

- Dehumidification program
- Cleaning program



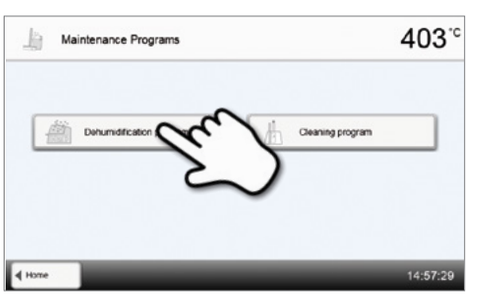
5.4.7.1 Dehumidification

The condensation of water in the insulation of the firing chamber and the vacuum pump will result in a lower vacuum and thus to impaired firing results. For that reason, the furnace head should be kept closed when the furnace is switched off or the temperature is below 100 C / 212°F, in order to prevent the absorption of humidity.

Conducting the dehumidification program:

1. Open the dehumidification program

Scroll to page 3 in the home screen and press the **[Maintenance Programs]** button. Press the **[Dehumidification Program]** button in the Maintenance Programs menu.

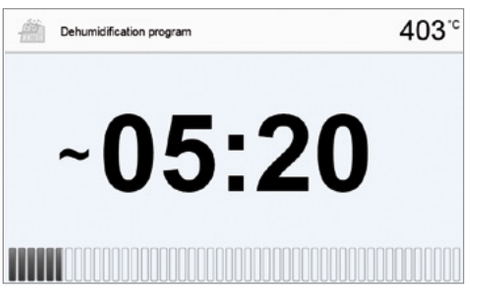


2. Start the dehumidification program

Press START to start the dehumidification program.



3. The status bar shows the progress of the dehumidification program

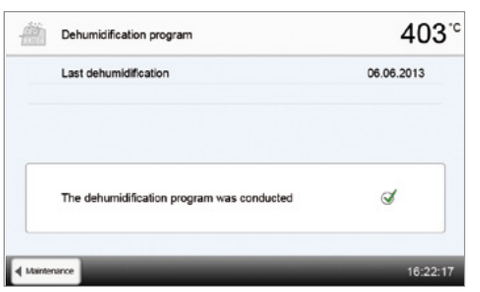


4. End the dehumidification program

The following messages are displayed:

Dehumidification program successful

Dehumidification program failed



When the dehumidification program is active, the furnace head is automatically opened and closed during the program. This supports the evaporation of condensed water. Do not interrupt this procedure.

5.4.7.2 Cleaning program

The cleaning program is used to "clean" the heating muffle (duration: approx. 17 min.). After a cleaning program, it is recommended to calibrate the furnace. In case of problems with discolouration of the ceramic, we recommend replacing the firing table or the firing tray material.

To start the cleaning program, proceed as described in the section on the dehumidification program.

5.4.8 Establishing a WLAN connection

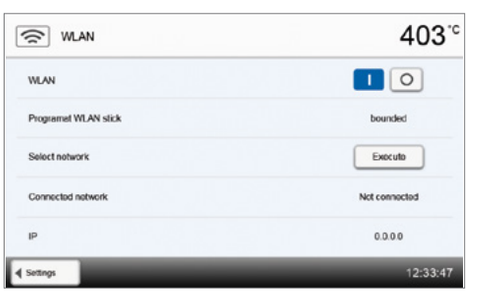
A WLAN connection can be set-up with in the Settings menu. This function is only available if the Programat WLAN flash drive has been connected with the furnace.

The set-up requires only a few steps:

1. Switch on WLAN.



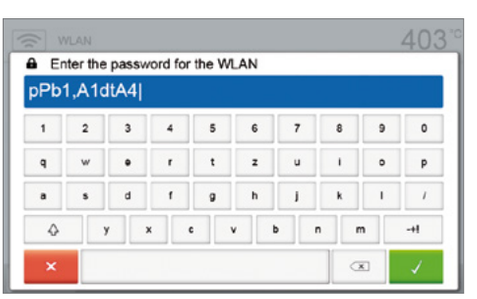
2. Press the button [execute] to show available WLAN networks.



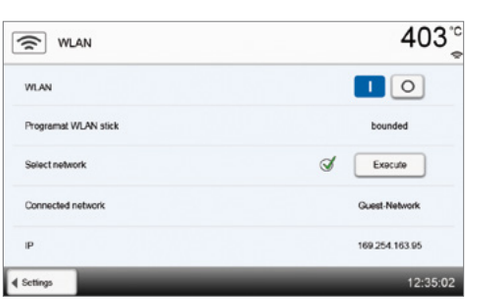
3. Select the desired network.



4. Enter the WLAN password and confirm with the green button or abort the entry with the red button.



5. The WLAN connection was successfully set-up.



Only 2.4 GHz networks with the following security standards are supported:
– WEP 64-bit
– WEP 128-bit
– WPA-PSK TKIP
– WPA-PSK AES
– WPA2-PSK TKIP+AES
– WPA2-PSK AES

After the initial set-up of the WLAN connection, the furnace automatically connects with the network last used at every new start, provided the network is available.

5.5 Multimedia functions

The Programat CS3 is equipped with multimedia functions such as photo display, MP3 and video player.
The furnace is also equipped with an internal memory. Images can be saved in this memory with the help of the "PrograBase X10" computer software. In order to use all multimedia functions without PrograBase X10, an external memory (USB flash drive or SD memory card) containing the corresponding data must be connected.

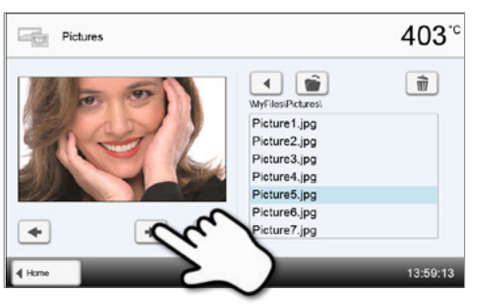
5.5.1 Image display

Scroll to page 2 in the home screen and press the **[Images]** button.

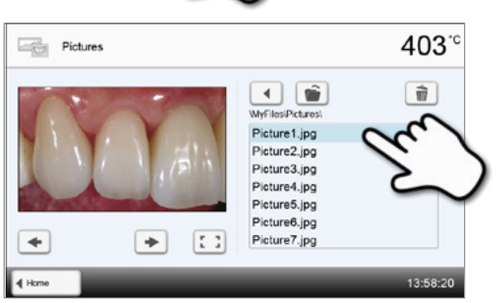
1. Select folder
The arrow keys are used to scroll through the folder. The folder can be opened by clicking the **[Open]** button.



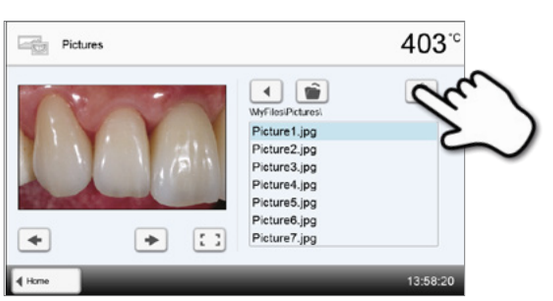
2. Scroll though available image files
The arrow keys are used to scroll through the available image files.



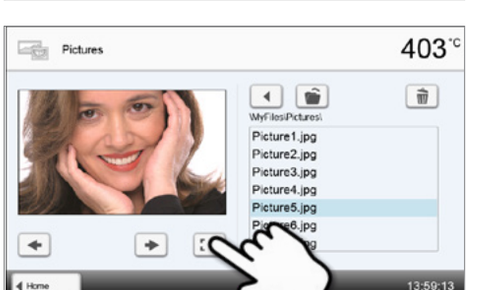
3. Select image
The desired image can be selected on the right side of the display. The left side of the display contains a preview.



4. Delete image
The image file can be deleted by tapping the **[Recycling bin]** button.



5. Switch to full screen view
The corresponding button is used to switch to the full screen view.



6. Full screen view
In the full screen view, you can scroll through the available image files. The image can be rotated by pressing the corresponding buttons and the full screen view can be ended.



7. Zooming image section
In the full screen view, the image can be enlarged or downsized. To activate the zoom function, press the touch screen for at least 1 second and move the finger towards the upper right (enlarge) or the lower left (downsize).



8. Moving the image
An enlarged image can be moved in all directions. For that purpose, press the touch screen with the finger and move the image in the desired direction.



To return to the home screen, press either the touch button **[Home]** in the navigation bar or the Home key on the membrane-sealed keypad.

5.5.2 MP3 player

Scroll to page 2 in the home screen and press the **[Music]** button.

1. Select folder
The arrow keys are used to scroll through the folder. The folder can be opened by clicking the **[Open]** button.



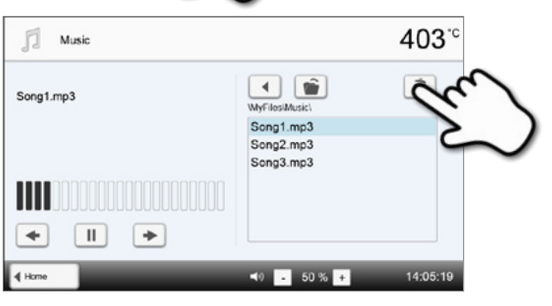
2. Selecting music file
The desired music file can be selected on the right side of the display.



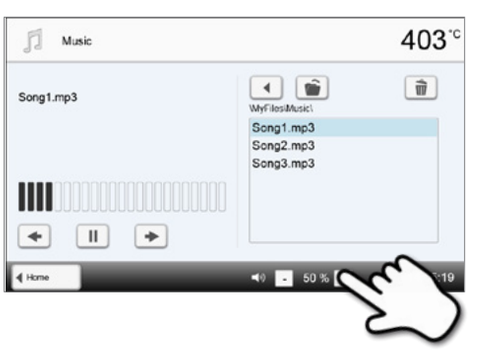
3. Playback elements
The corresponding buttons are used to change to the next or previous title, as well as to start or stop (or pause) the playback. At the end of a title, the next title is automatically played.



4. Deleting the music file
The music file can be deleted by tapping the **[Recycling bin]** button.



5. Adjusting the playback volume
The corresponding button is used to adjust the volume of the playback.



To return to the home screen, press either the touch button **[Home]** in the navigation bar or the Home key on the membrane-sealed keypad. **This does not end the music playback. The playback can only be stopped by pressing the corresponding button in the media player (see Step 2).**

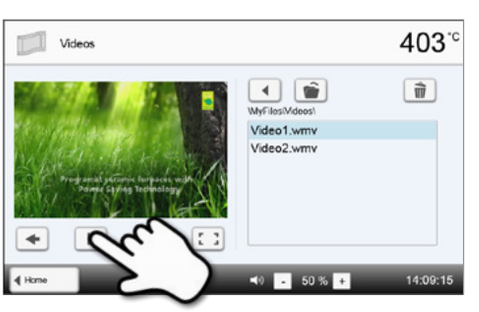
5.5.3 Video player

Scroll to page 2 in the home screen and press the **[Video]** button.

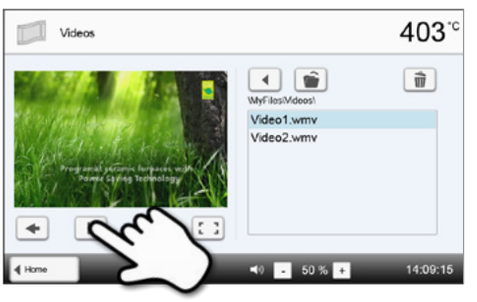
1. Selecting the folder
The arrow keys are used to scroll through the folder. The folder can be opened by clicking the **[Open]** button.



2. Selecting the video
The desired video file can be selected on the right side of the display. The left side of the display contains a preview.



3. Playback elements
The corresponding buttons are used to change to the next or previous title, as well as to start or stop (or pause) the playback. At the end of a video, the next one is automatically played.



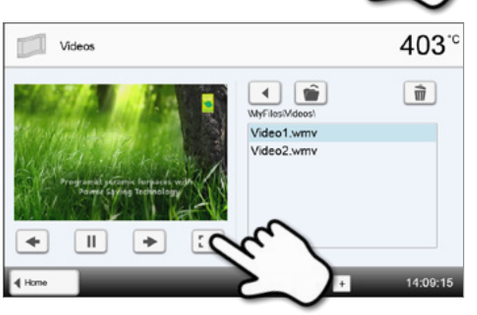
4. Deleting the video
The video can be deleted by tapping the **[Recycling bin]** button.



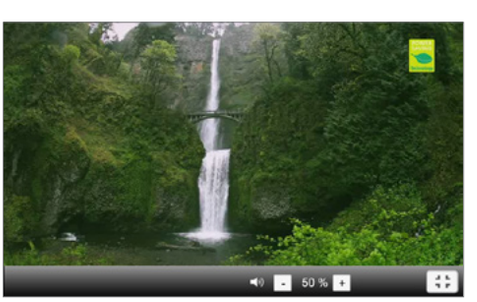
5. Adjusting the playback volume
The corresponding button is used to adjust the volume of the playback.



6. Switch to full screen view
The corresponding button is used to switch to the full screen view.



7. Full screen view
The corresponding buttons are used to end the full screen view and to adjust the volume.



To return to the home screen, press either the touch button **[Home]** in the navigation bar or the Home key on the membrane-sealed keypad.

5.6 Digital Shade Assistant (DSA) function

The Programat CS3 is equipped with a function to determine the tooth shade based on three selected reference teeth.

The process of shade determination is divided into two parts:
– Determining the reference teeth and imaging involving the patient (clinical part)
– Evaluating the image data by means of the DSA function directly with the Programat CS3

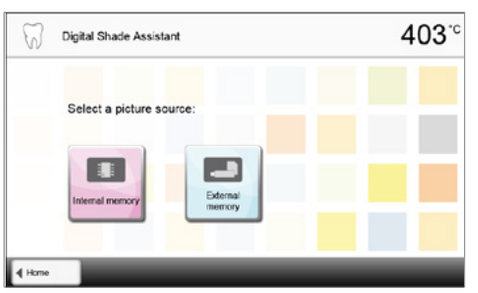
These Operating Instructions describe the procedure for the analysis of the image data. Instructions on determining the reference teeth and image taking are enclosed in the DSA Holder Kit and the DSA Starter Kit.

Using the Digital Shade Assistant Function of the Programat CS3

Press the DSA key on the membrane-sealed keypad to start the Digital Shade Assistant function.

1. Selecting the image source

Store the image data of the patient either on an USB flash drive or an SD memory card and connect it with the furnace. As an alternative, images can be transmitted to the furnace by means of the PrograBase X10 computer software.



After the start of the DSA function, the following image sources are available:

Internal memory:

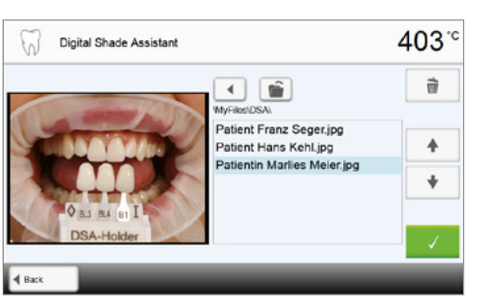
Images can be saved in the internal memory of the furnace with the help of the "PrograBase X10" computer software. For that purpose, connect the furnace with a laptop/PC, on which PrograBase X10 has been installed, via WLAN or LAN.

External memory:

USB data carriers (e.g. USB flash drive, external hard drive etc.) can be connected to the ceramic furnace. Additionally, the furnace is equipped with an integrated SD memory card reader.

2. Selecting the image and starting the analysis

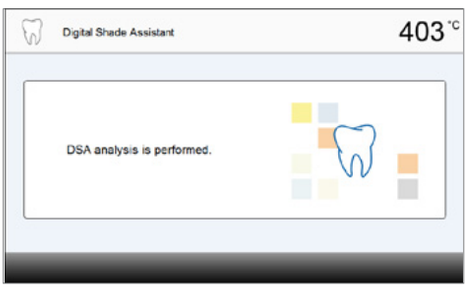
The desired jpg file can be selected on the right side of the display. The left side of the display contains a preview.



You can switch to the next or previous jpg file by pressing the **[Arrow Up/Down]** buttons.
The marked folder can be opened by clicking the **[Open]** button.
The folder can be left by clicking the **[Back]** button.
The image displayed can be deleted by clicking the **[Delete]** button.

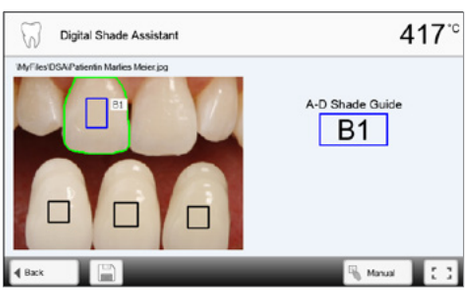
The analysis of the displayed image can be started by pressing the green button.

3. Automatic analysis is conducted
This screen is shown during the automatic analysis.



4. Result of the automatic analysis
The tooth to be analyzed (green frame) and the three shade guide teeth as well as their orientation (inicisal edge to cervical edge or incisal edge to incisal edge) are automatically recognized. The software compares the tooth to be analyzed with the reference teeth.

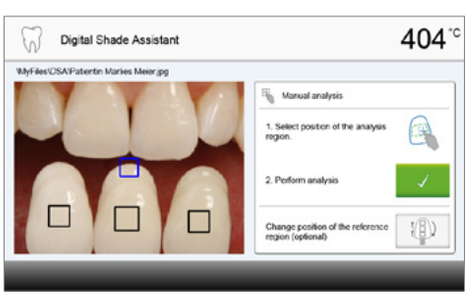
The result of the shade analysis is shown directly on the tooth to be analyzed as well as on the right side of the screen (shade B1 in this example).



5. Conducting a manual analysis
The position of the manual analysis section can be selected by pressing the **[Manual]** button. The blue rectangle can be moved on the touch screen with a finger.

The manual analysis can be started by pressing the green button.

As an option, the position of the reference areas can be changed by pressing the **[Position]** button.

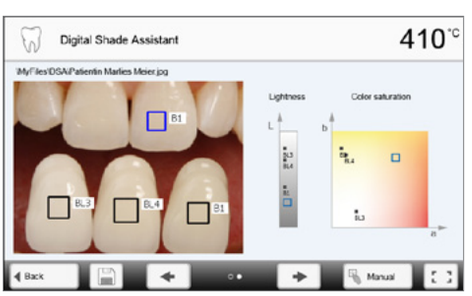


6. Result of the manual analysis
The manual analysis section is compared with the three shade guide teeth. The designation of the shade guide tooth that is most similar to the section to be manually analyzed, is shown as the result.

The right side of the screen shows the values of the analysis in a graphic diagram:
L **–>** Brightness
B, A **–>** Saturation
The blue square indicates the value for the tooth to be analyzed. Additionally, the values for the three reference teeth are indicated.

The manual analysis can be conducted any number of times.

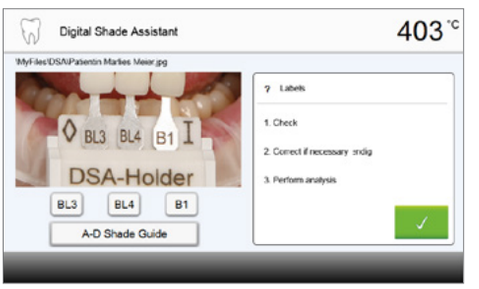
You can toggle between the automatic result and the manual result with the arrow keys.

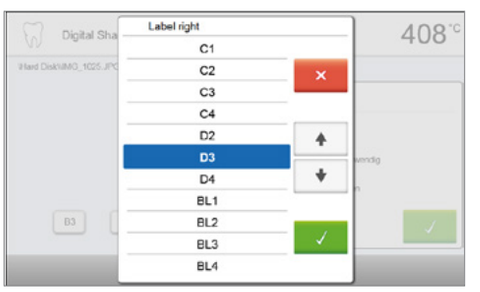


Please refer to the specialized literature for further information about the Lab colour room.

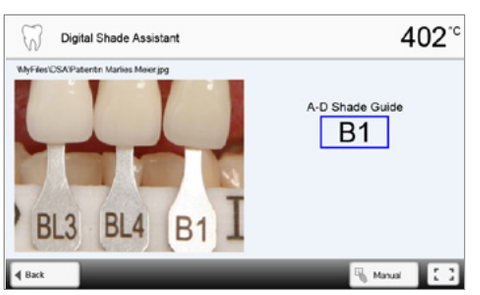
7. Verifying the designations (correcting)
If the designations of the shade guide teeth cannot be clearly recognized, this screen is shown. The recognized designations are shown in the three buttons below the image. If necessary, this designation can be corrected by pressing the corresponding button.

Finally, the analysis can be conducted by pressing the green button.

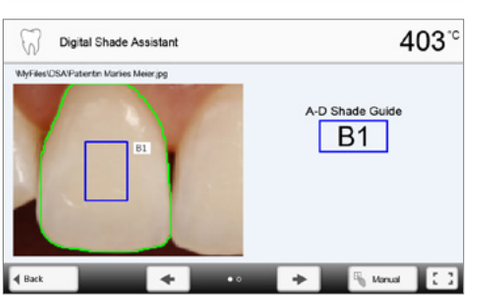




8. Moving an image section and zooming
The image section can be moved on the touch screen with a finger.

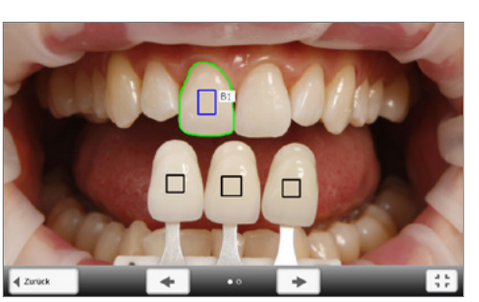


By double-clicking the touch screen, the image section can be enlarged and reduced again.



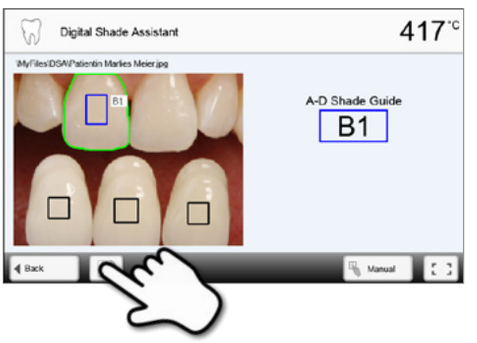
9. Full screen view
The **[full screen]** button is used to switch to the full screen view.

The corresponding button is used to end the full screen view.



10. Log function

The current shade analysis can be saved as a log file by tapping the **[Disk]** button. The log file can be printed via the PrograBase X10 software or stored as a PDF file.



The DSA results greatly depend on the determination of the three reference teeth and optimum picture taking. The designation of the reference tooth that is most similar to the tooth to be analyzed is shown as the result.
If the reference teeth are incorrectly determined or unfavourable pictures are taken, the DSA result will also be incorrect.
Further development of the software not excluded.

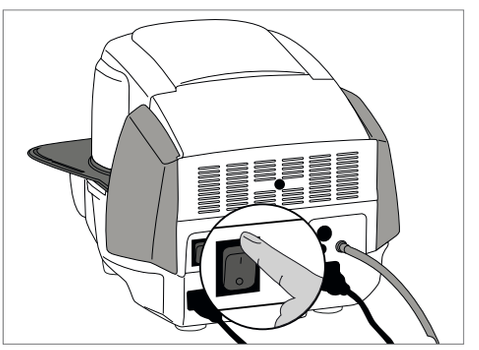
6. Practical Use

The operating procedure for the Programat CS3 will be explained with the help of two examples: one from Ivoclar Vivadent and one individual program.

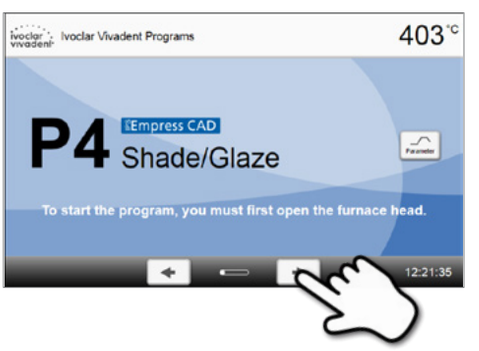
6.1 Firing with an Ivoclar Vivadent program

Step 1:
Switching on
Switch on the furnace with the mains switch at the rear of the furnace. The furnace conducts an automatic self-test.

Wait until the furnace has reached the set stand-by temperature.



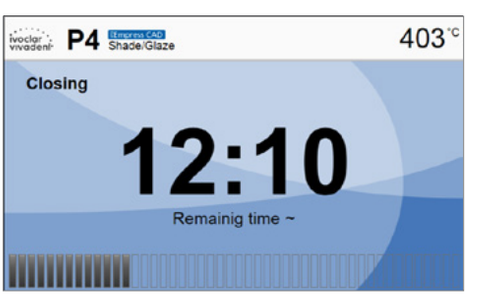
Step 2:
Select the program
The program screen appears after the self-test has been completed. Select the desired program using the **[Arrow]** buttons.



Step 3:
Load the furnace
Open the furnace head with the OPEN FURNACE HEAD key and place the object on the firing tray in the furnace.

Step 4:
Starting the program
Press the [START] key to start the program. The LED lights up in green. The remaining time of the program is shown in the display.

The furnace head opens automatically at the end of the program. If the Optical Status Display (OSD) lights up green, the furnace is ready for the next program start.

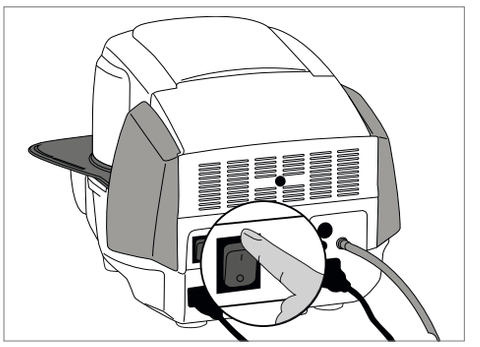


A program can only be started if the furnace head is open.

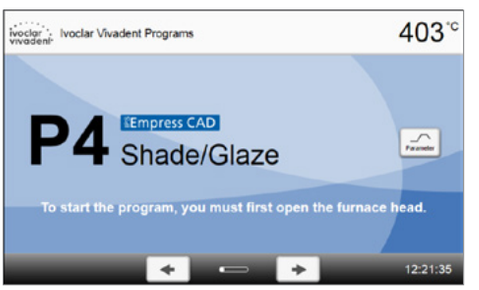
6.2 Firing with an individual program

Step 1:
Switching on
Switch on the furnace with the mains switch at the rear of the furnace. The furnace conducts an automatic self-test.

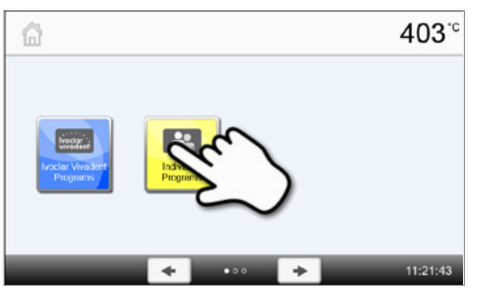
Wait until the furnace has reached the set stand-by temperature.



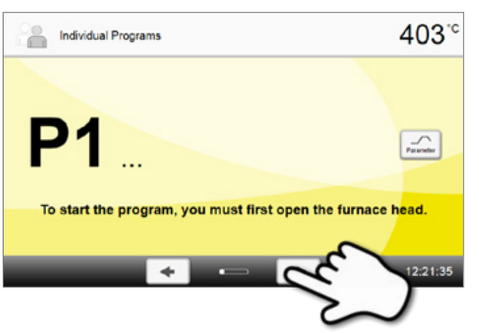
Step 2:
Select the program
The program screen appears after the self-test has been completed. The **[Home]** key is used to open the home screen.



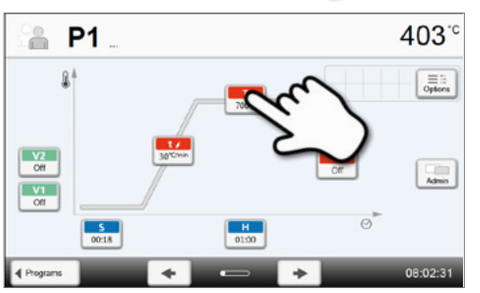
Step 3:
Select program type
Select the program type for individual programs.



Step 4:
Select the program
Select the desired individual program using the **[Arrowl]** button.



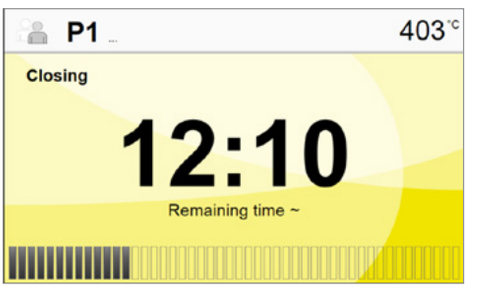
Step 5:
Enter the parameters
Enter the individual parameters and create the desired firing program (See Chapter 5.2.4 for details).



Step 6:
Load the furnace
Open the furnace head with the OPEN FURNACE HEAD key and place the object on the firing tray in the furnace.

Step 7:
Starting the program
Press the START key to start the program. The LED lights up in green. The remaining time of the program is shown in the display.

The furnace head opens automatically at the end of the program. If the Optical Status Display (OSD) lights up green, the furnace is ready for the next program start.



A program can only be started if the furnace head is open.

7. Maintenance, Cleaning, Diagnosis

This chapter describes the user maintenance and cleaning procedures for the Programat CS3. Only the tasks listed may be carried out by qualified dental technicians. All other tasks must be performed by qualified service personnel at a certified Ivoclar Vivadent Service Centre.

7.1 Monitoring and maintenance

The time for these maintenance procedures depends on the frequency of use and the working habits of the users. For that reason, the recommended times are only approximations.

Hazardous area	Part	When
Check all plug-in connections for correct fit.	Various external connections	weekly
Check if the furnace head opens smoothly and without excessive noise.	Furnace head opening mechanism	monthly
Check if the thermocouple is straight and in the right place	Thermocouple	weekly
Check the insulation for cracks and damages. If the insulation is worn down it has to be replaced by a certified Ivoclar Vivadent Service Centre. Fine hairline cracks on the surface of the insulation are harmless and do not influence the function of the furnace in a negative fashion.	Insulation	monthly
Check if the sealing rims of the furnace head and furnace base are clean and undamaged	Sealing rims of the furnace head and the furnace base	weekly
Check the membrane-sealed keypad for visible damage. If the keypad is damaged, it has to be replaced by a certified Ivoclar Service Centre.	Membrane-sealed keypad	weekly
Conduct temperature check: Use the temperature checking set to check and adjust the temperature in the furnace.	Firing chamber	every six months
Check the quartz glass cylinder to make sure the quartz glass is not defective.	Firing chamber	Daily
Check if there is condensate in the vacuum hose or firing chamber.	Vacuum hose, Firing chamber	monthly

This furnace has been developed for typical use in dental practices and dental laboratories. If the product is used in continuous operation, premature ageing of the expendable parts is to be expected. The expendable parts are, e.g. the heating muffle, furnace head seal or the insulation material.

Expandable parts are not covered by the warranty. Please also observe the shorter service and maintenance intervals.

In general, the furnace head should not be replaced since the components (furnace head and furnace base) have been coordinated with each other. However, if the furnace head must be replaced for maintenance reasons, subsequent temperature calibration is required.

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7.2 Cleaning

The furnace may only be cleaned when it is cool, since there is a burn hazard. Do not use any cleaning solutions. Disconnect power before cleaning.

The following parts have to be cleaned from time to time:

Item:	Frequency:	Cleaning material:
Furnace housing and furnace head	If required	soft, dry cloth
Membrane-sealed keypad and display	If required	Programat cleaning cloth
Cooling tray	Daily	cleaning brush*
Insulation	Daily	cleaning brush*
Sealing rim of the furnace head and the sealing surface	Daily	cleaning brush and a soft cloth
Firing table	If required	cleaning brush or sandblasting unit (with glass beads)

*Never clean with compressed air!

7.3 Service note

When the service note appears for the first time, the furnace has already carried out more than 1500 firing hours. If the service note is acknowledged, is will reappear every 1000 firing hours.

Ivoclar Vivadent recommends to conduct a heater test after a certain number of firing hours and have the heating muffle examined by Ivoclar Vivadent After Sales Service if necessary.

7.4 Stand-by

We recommend keeping the furnace head closed, especially if the temperature drops below 150°C / 302°F. If the furnace head is open, there is a risk that the insulation absorbs humidity and condensation water develops during firing. This negatively affects the vacuum performance and, consequently, the firing results.

7.5 Power-saving mode

If the furnace is not used for longer periods of time, Ivoclar Vivadent recommends to activate the power-saving mode. With the power-saving mode activated, individual components are switched off and the furnace temperature is reduced to 100°C / 212°F.

7.5.1 Automatic power-saving mode

The automatic power-saving mode can be activated in the Settings menu.

If the power-saving mode is activated and the furnace head closed, this function is automatically started after 30 minutes, if the furnace is on stand-by and no key is pressed during that time. The display shows the power-saving icon. Pressing any key ends the automatically activated power-saving function.

7.5.2 Power-saving key

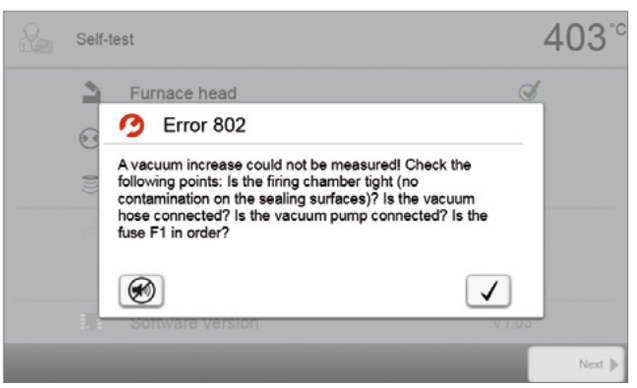
The power-saving mode can be manually activated by pressing the power-saving key. This is only possible with the furnace head closed and the furnace on stand-by. The display shows the power-saving icon. Pressing any key ends the power-saving function.

8. What If ...

This chapter will help you to recognize malfunctions and take appropriate measures or, if possible and acceptable, to perform some simple repairs.

8.1 Error messages

During operation, the furnace continuously monitors all the functions. If an error is detected, the respective error message is displayed.



The acoustic signal and the error message can be acknowledged with the corresponding buttons.

The following error messages my be displayed. If there are any questions, please contact the Ivoclar Vivadent After Sales Service.

Error / Hint No.	Work can continue after the error	Error	Text Error Message
2		T < B	Enter a logical value for T.
8		L > T	Enter a logical value for long-cooling L.
9		V2x < = V1x	Enter a logical value for the vacuum-on temperature V1x or the vacuum-off temperature V2x.
10		V2x > Tx + 1°C	Adjust either the vacuum values or the holding temperature T.
11		Incorrect values for V1x, V2x	Enter plausible values for V1x, V2x.
13 *,**		Actual temperature after Start > Tx + 80°C / 176°F	Caution excess temperature! Program aborted, furnace head opens to cool down.
14 *		Firing chamber temperature > 410°C / 770°F at the start of the calibration program; too high for the calibration program.	Temperature too high for calibration; furnace cools down. Start the program again later.
16		T2 < T1	Enter a lower value for T1 or a higher value for T2.
17		Power failure >10 s. during a program in progress.	A program in progress is interrupted for more than 10 s. The program cannot be continued.
18		T1 > V12	Set a lower value T1 or a higher value for V12.
20 **	No	Error in the heating system.	Check the heater fuse. If the first is OK, contact your local Ivoclar Vivadent Service Centre.
23		Heating muffle very old.	The heating muffle is worn down. It is recommended to replace it. However, programs can be started once the error message has been acknowledged.
24		Heating muffle defective.	The muffle is so worn down that it must be replaced immediately.
26		T is > B + 160°C at the start of the firing program	Firing chamber is too hot for the start of a firing program.
27 **,***	No	Furnace head cannot be initialized.	Furnace head cannot reach its end position. The furnace head might be blocked by external mechanical influences! If this is not the case, contact your local Ivoclar Vivadent Service Centre.
28 **		Furnace head does not reach its designated position.	Furnace head does not open/close properly. Furnace head was moved by hand or is obstructed. Move the furnace head only by means of the corresponding keys.

32 **	No	Vacuum is not released.	The vacuum cannot be released. The vacuum valve may be stuck or dirty. Please contact a service technician.
33		The required vacuum (xx mbar) is not reached within 1 min.	The vacuum cannot be established. Check the seal of the firing chamber, vacuum hose, vacuum pump, pump fuse.
106		Timer active - furnace in stand-by mode	The program cannot be started, as the furnace was set to stand-by by the timer (heater deactivated). Deactivate the timer or extend the time window to be able to execute programs.
110		HV > H (H2)	Enter a lower value for HV or a higher value for H (H2).
111		Maximum number of firing protocol entries reached.	The maximum number of firing protocol entries has been reached. Existing entries will be deleted/overwritten with the next entry.
150		Memory error	Error in the internal memory. Please restart the furnace.
531	Yes	Error while logging firing data	An error occurred while logging firing data. Possibly the memory medium is full.
702		Short power failure during a program in progress.	A program in progress is interrupted by a short power failure. The program is still being executed.
800		Final vacuum value not reached	The set final vacuum value cannot be reached. Check the vacuum pump.
801		Vacuum decrease	An unacceptable vacuum decrease has occurred.
802		No vacuum increase (self-test)	No vacuum increase was measured. Check the following points: Is the firing chamber tight (are the sealing surfaces clean)? Is the vacuum hose connected? Is the vacuum pump connected? Is fuse F1 in order?
803		Vacuum system not tight.	The tightness of the vacuum system is not ensured. Check the sealing surfaces for possible contamination.
1302 **		ATK2 calibration Preheating to 962°C / 1763°F	Error during calibration. Possibly the sample is not correctly inserted. Try again with a new sample and ensure the direct contact of the sample.
1501	Yes	Note -> working hours	The heating muffle has **** operating hours. Please conduct a heater test (diagnosis) and observe the notes in the Operating Instructions.
1510		T is > VT at the start of the firing program	The temperature in the firing chamber is higher than the predrying temperature. Press START to resume the program anyway.
1522		Software update Error during update	An error occurred during the software update. Do NOT switch off the furnace and try again. If the error reoccurs, try an update via the USB interface.
1800	Yes	USB flash drive	There is no USB flash drive.
1815	Yes	USB flash drive	Either no USB flash drive is connected to the furnace or the flash drive has not been prepared as external program memory. The USB flash drive can be prepared in the settings menu.
1820	Yes	USB flash drive	The USB flash drive has already been prepared for programs.
1825	Yes	USB flash drive	Remove all USB memory media and subsequently only connect the USB flash drive to be prepared.
1830	Yes	USB flash drive	Not enough memory area.
1835	Yes	Media playback	The selected file cannot be played. Possibly the data rate is too high.
1900	Yes	Data backup – recovery	The new software contains setting options that were not yet available at the time of the data backup. Only the settings of the data backup were recovered.
1901	Yes	Data backup – recovery	The new software contains program parameters that were not yet available at the time of the data backup. Only the existing program parameters of the data backup were recovered.
1902	Yes	Data backup – recovery	The new software contains program groups that were not yet available at the time of the data backup. Only the existing program groups of the data backup were recovered.
1911	Yes	Data backup – recovery	The new software contains program parameters that were not yet available at the time of the data backup. Please check the individual programs. Basically, the individual programs are no longer valid.
1912	Yes	Data backup – recovery	The new software contains program groups that were not yet available at the time of the data backup. Please check the individual program groups. Basically, the individual program groups are no longer valid.
1920	Yes	Data backup – recovery	Data backup could not be executed. Please install a more current software version.
2010	yes	DSA	The tooth region was not determined.
2020	yes	DSA	The 3 shade guide teeth were not found.

2030	yes	DSA	The contour of the tooth was not determined.
2041	yes	DSA	The analysis region and the references differ significantly.
2042	yes	DSA	The analysis region is invalid. Select an analysis region on a tooth surface.
2100	yes	DSA	Unexpected error (# ****)

* Furnace head opens if this error occurs!
** A program in progress is aborted
*** Error cannot be acknowledged; programs cannot be started.

8.2. Additional error messages

Please contact the Ivoclar Vivadent After Sales Service Centre, if one of the following error numbers is being displayed:

25, 29, 43, 44, 45, 46, 47, 48, 56
103, 107, 108, 109, 143, 144, 145, 146, 147
148, 700, 701, 703, 704, 707, 1010, 1011, 1012
1013, 1014, 1015, 1016, 1017, 1018, 1019, 1024, 1025
1026, 1028, 1143, 1144, 1145, 1146, 1147, 1148, 1207
1300, 1301, 1303, 1304, 1305, 1401, 1402, 1500, 1750
1751, 1752, 1753, 2750, 2751, 2752, 2753, 2770

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8.3 Technical malfunctions

These malfunctions may occur without an error message being displayed:

Error	Double-Check	Action
Vacuum is not or only slowly released	Is the vacuum released within approx. 30 seconds?	Wait until the vacuum has been released and remove object. Switch the furnace on and off again. *
Indication on display incomplete	Activate the display test program; *	*
Display not illuminated	Is the furnace properly connected according to the Operating Instructions and switched on?	Correctly connect the furnace and switch it on.
Signal transmitter does not sound	Is the signal transmitter switched off (Volume = 0)?	Adjust volume
Furnace head does not open	Was the furnace head opened manually?	Open the furnace head only by using the corresponding keys. Switch furnace off and on again.
	Has the vacuum already been released?	Is the program still running? Wait until the program is completed. Switch the furnace on and off again. *
Vacuum pump does not start working	Is the vacuum pump fuse defective?	Check fuse and replace if necessary.
	Was the maximum power consumption exceeded?	Use only the vacuum pump recommended by Ivoclar Vivadent.
	Is the vacuum pump correctly connected?	Correctly connect the vacuum pump to the furnace base.
Final vacuum is not reached.	Is the vacuum hose OK?	Check vacuum hose and hose connection (from the furnace to the pump and from the furnace head to the furnace base)
	Is the pump output OK?	Start the vacuum test program.
	Humidity/condensation in the vacuum hose?	Start dehumidification program.
Incorrect or illogical temperature indication	Is the thermocouple bent or fractured?	Contact your local Ivoclar Vivadent Service Centre.
	Is the thermocouple correctly connected?	Correctly connect thermocouple.
	Is the thermocouple plug defective?	*
Cracks in the insulation	Are the cracks small and insignificant (hairline cracks)?	Small cracks in the muffle do not negatively affect the performance of the furnace.
	Are the cracks large or have parts of the insulation broken off?	*
Cracks in the quartz glass / heating element	Are there cracks in the quartz glass or is the quartz glass sheathing of the heating wire broken?	Switch off the furnace. *
Firing result does not meet the expectations	Are the firing parameters correct?	Set the firing parameters in accordance with the instructions by the material manufacturer
	Has a suitable firing tray been used?	Use the original Programat firing tray or the special firing tray recommended for the respective material.
	Was the furnace calibrated?	Conduct a furnace calibration.
	Is the thermocouple bent or damaged?	*
The furnace does not send any messages to the Programat App (e.g. at the end of the program)	Is the furnace connected to the Internet?	Connect the furnace to an network with an Internet access via Ethernet or WLAN.

*If there are any questions, please contact the Ivoclar Vivadent After Sales Service.

8.4 Repairs

Repairs may only be carried out by a certified Ivoclar Vivadent Service Centre. Please refer to the addresses on the last page of these Operating Instructions.

If repairs during the warranty period are not carried out by a certified Ivoclar Service Centre, the warranty will expire immediately. Please also refer to the corresponding warranty regulations.

8.5 Reset to factory settings

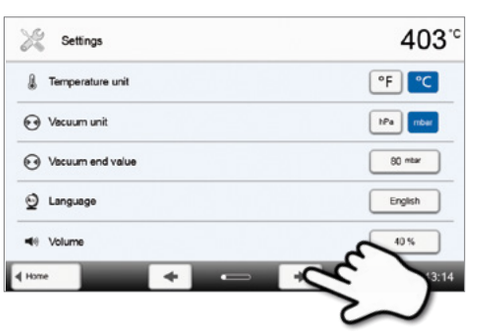
If the furnace has to be reset to its original condition, the factory settings can be loaded. In this process, all programs, melodies and volume adjustments are irrevocably reset to the factory settings.

For this purpose, proceed as follows:

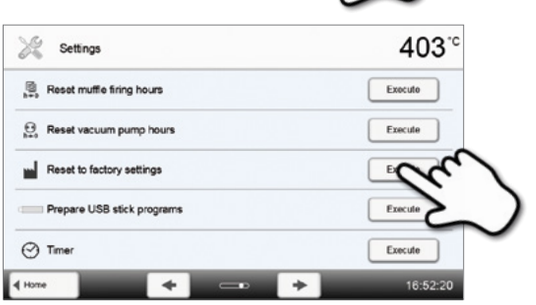
1. Open Settings
Scroll to page 2 in the home screen and press the **[Settings]** button.



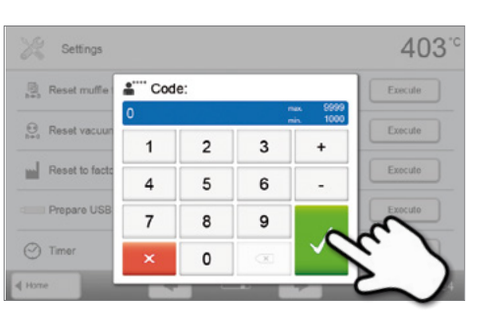
2. Open "Reset to factory settings"
The **[Arrow]** button is used to scroll through the Settings menus. Press the button until the setting "Reset to factory settings" appears in the display.



3. Reset to factory settings
Press the touch button **[execute]** in Reset to factory settings.



4. Entering the user code
Enter the user code (1234) and confirm the entry with the green button or cancel the entry with the red button.

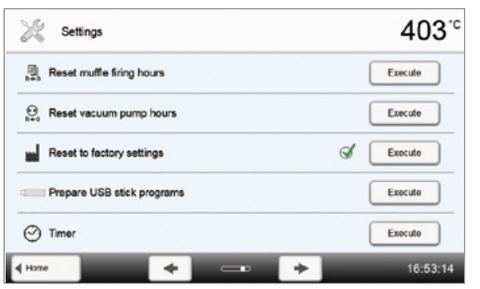


5 Complete resetting to factory settings

The following messages are displayed:

Reset to factory settings successful

Reset to factory settings failed



To return to the home screen, press either the touch button **[Home]** in the navigation bar or the HOME key on the membrane-sealed keypad.

9. Product Specifications

9.1 Delivery form

- Programat CS3
- Power cord
- Vacuum hose
- Programat Firing Tray Kit 2
- IPS e.max CAD Speed Crystallization Tray
- Automatic Temperature Checking Set ATK 2 (test set)
- USB download cable
- Operating Instructions
- Programat WLAN Kit
- DSA Holder Kit
- Various accessories

Recommended accessories:

- IPS e.max CAD Crystallization Tray
- Temperature Checking Set ATK 2
- Vacuum pump VP5, VP3 easy

9.2 Technical data

Power supply	100 V / 50–60 Hz 110–120 V / 50–60 Hz 200–240 V / 50–60 Hz
Overvoltage category	II
Contamination level	2
Acceptable voltage fluctuations	± 10%
Max. power consumption	14 A at 100 V 12 A at 110 – 120 V 8.5 A at 200 – 240 V
Acceptable data for pumps of other manufacturers: Max. output: Final vacuum:	 250 W /max. leakage current 0.75 mA < 50 mbar Only tested pumps should be used.
Electrical fuses:	100 V or 110 – 120 V: 125 V /T15 A (heating circuit) 125 V / T 5 A (vacuum pump)
	200 – 240 V: 250 V / T8 A (heating circuit) 250 V / T 3.15 A (vacuum pump)
Dimensions of electrical fuses	100 V or 110–120 V: Diameter 6.3 x 32 mm 200 – 240 V: Diameter 5 x 20 mm
Dimensions of the closed furnace	Depth: 495 mm Width: 320 mm / 395 mm (with cooling tray) Height: 320 mm
Usable size of the firing chamber:	Diameter: 90 mm Height: 80 mm
Max. firing temperature	1200°C (2192°F)
Weight	18.7 kg

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Safety notes
The furnace complies with the following standards:
EN 61010-1:2010
IEC 61010-1:2010
UL 61010-1:2012/R:2015
CAN/CSA-C22.2 No. 61010-1:2012 + UPD No. 1:2015

EN 61010-2-010:2014
IEC 61010-2-010:2014
UL 61010-2-010:2015
CAN/CSA-C22.2 No. 61010-2-010:2015

Radio protection / electromagnetic compatibility: EMC tested

9.3 Acceptable operating conditions

– Acceptable ambient temperature range:	+5°C to +40°C
– Acceptable humidity range:	80% maximum relative humidity for temperatures up to 31°C, gradually decreasing to 50 % relative humidity at 40°C; condensation excluded.
– Acceptable ambient pressure:	The furnace is tested for use at altitudes of up to 2000 m above sea level.

9.4 Acceptable transportation and storage conditions

– Acceptable temperature range:	–20 °C to +65 °C
– Acceptable humidity range:	Max. 80 % relative humidity
– Acceptable ambient pressure:	500 mbar to 1060 mbar

Use only the original packaging together with the corresponding foam material for shipping purposes.

10 Appendix

10.1 Program structure

Program	Description
1	Speed Crystallization program for IPS e.max CAD HT/MT/LT
2	Crystallization/Glaze program for IPS e.max CAD HT/MT/LT
3	Crystallization program for IPS e.max CAD Impulse/MO
4	Corrective/Stain/Glaze program for IPS e.max CAD with IPS e.max CAD Crystall
5	Stain/Glaze program for IPS e.max ZirCAD with IPS e.max CAD Crystall
6	Stain/Glaze program für IPS Empress CAD with IPS e.max CAD Crystall
7	Stain/Glaze program for IPS Empress CAD with IPS Empress Universal
8	Fusion/Crystallization program for the IPS e.max CAD-on technique
9	Characterizaton/Glaze program for the IPS e.max CAD-on technique

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