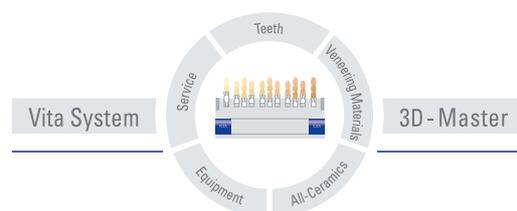


VITA ZYrcomat® T



Operating manual

Date of issue: 07-07



VITA

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1 Technical information

1.1 General description

- Casing consisting of painted sheet steel and stainless steel
- Firing chamber lined with high-quality insulating material
- Molybdenum disilicide heating elements
- Color graphic touchscreen display
- 50 freely programmable sintering programs

1.2 Safety features

- Temperature sensor monitoring
- Current monitoring
- Protection against power failure

1.3 Technical data

Dimensions: Firing unit: w x h x d 360 mm x 810 mm x 490 mm
Power unit: w x h x d 500 mm x 210 mm x 350 mm

Weight: Firing unit: 32.0 kg
Casing with power unit: 27.5 kg

Firing chamber - capacity: Diameter : 84.0 mm
Height: 90.0 mm

Firing chamber - temperature: max. 1600°C

1.4 Electrical data

Power supply: 200/230 Volt AC 50 Hz
110 Volt AC 50/60HZ

Power consumption: max. 1500 Watts

Classification: Safety class 1

1.5 Scope of delivery

Furnace in special shipping carton with:

- 1 firing unit (furnace)
- 1 casing with power unit
- 1 mains power lead for heating devices type HO5RR-FG1.0 mm²
- 1 high-current connecting cable power unit - firing unit 4 x10 mm²
- 1 control connecting cable power unit - firing unit -
- 1 firing tray (2 elements)
- 1 sintering crucible
- 1 pair of furnace tweezers
- 1 operating manual
- 1 Allen key 2.5 mm
- 1 Allen key 4.0 mm
- 1 Styles for control unit

2 Installation and starting-up

2.1 Important information

Read this operating manual before starting-up the unit. Keep the operating manual at a place which can be accessed by all users at any time. If problems should occur when starting-up the unit, we ask you not to perform any impermissible manipulations. Do not change any settings of the internal electronics of the unit; this may put your warranty in danger. When performing any interference inside the unit, the regulations according to DIN EN 61340-5-1 (protection of components exposed to electrostatic hazards)" must be adhered to. Please note that no liability will be assumed for any damage caused by ESD. ESD = electrostatic discharge.

2.2 Intended use

The unit may exclusively be used for sintering firing of dental oxide ceramics up to 1600°C.

When processing other materials, the insulation of the firing chamber and the molybdenum disilicide heating elements may be damaged so that any claim under guarantee will be void.

2.3 Transport safety cover

To ensure safe transport, the heating elements feature a cover. This cover must be removed before starting up the unit (see Starting-up the unit 2.6).

2.4 Installation of the firing unit (furnace)

- When positioning the furnace, the minimum distance of the furnace and any wall is at least 30 cm. The furnace must be placed into a dry, heated room.
- The air escaping in the rear upper area of the firing chamber must not be inhibited.
- At temperatures of less than 15°C (e.g. after transport) leave the unit for approx. 30 min. before starting-up. Make sure that the unit is placed on a heat-resistant surface. Heat radiation and heating up of the unit are within a harmless range if the unit is operated according to the instructions. However it can not be excluded that sensitive furniture surfaces and veneerings may exhibit slight discoloration due to continuous exposure to heat.
- The unit must not be exposed to direct sunlight.
- Do not place any combustible objects near the furnace.

2.5 Installation of the power unit

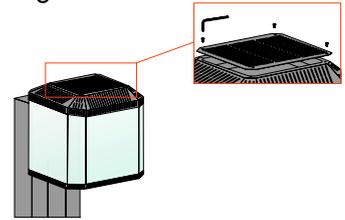
- Basically, the information provided under item 2 applies.
- Place the power unit in the direct vicinity of the furnace; a minimum distance of 50 cm must be kept.
- Place the power unit in a way to ensure that air that is sucked in at the air grille can escape freely. The air that is sucked in by the fan must not exceed a supply air temperature of 35°C. Clearance of the power unit to ground surfaces must be ensured.

2.6 Starting-up the unit

Note: Prior to starting up, please adhere to item 3 Safety advice!

- **Note:** Remove the transport safety cover at the top of the firing unit. Loosen screw of the device with the enclosed Allen key 2.5 mm and remove the cover (Fig. 1). Lift the transport safety cover and remove it, place the cover on again and fasten it with screws.

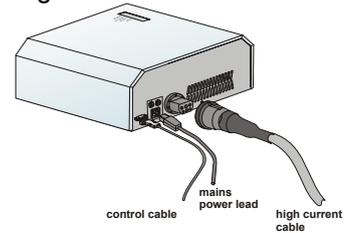
Fig. 1



- Plug the high-current connecting cable into the power unit and the furnace and fasten it with screws using the enclosed 4,0 mm Allen key (Fig. 2 + 3)

Caution! The cable is laid out in such a way as to avoid damage or wedging of the cable. While the furnace is operated, the cable will reach a temperature of approx. 40°C due to the high current consumption of the heating elements.

Fig. 2

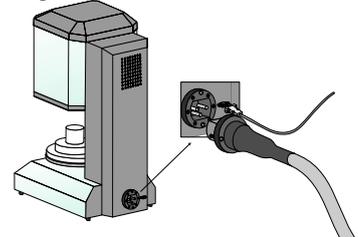


- Plug control cable into power unit and furnace and fasten it with securing screws (Fig. 2 + 3)

- Connect power unit to mains supply with the enclosed mains power lead. (Fig. 2)

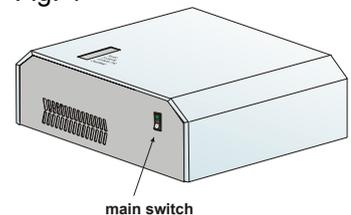
Caution: The unit must not be connected to multiway outlet sockets with extension cable; overload may result in a fire.

Fig. 3



- Switch on main switch at the power unit (Fig. 4)

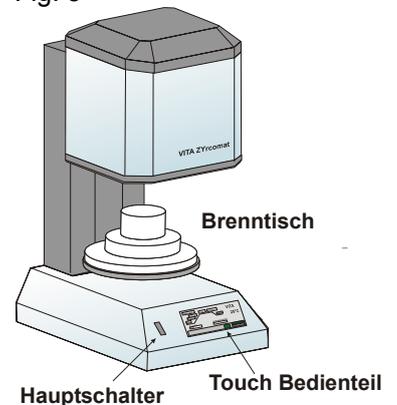
Fig. 4



- Switch on the On/Off switch at the furnace (Fig. 5)

- Press Lift down key (Fig. 5) and lift will descend to its lower position. (due to vibrations during transport particles of the firing chamber insulation will accumulate on the firing tray platform. They must be removed with a dry cloth)

Fig. 5



- Function of LED, see section LEDs of power unit.

- Place firing tray on the firing tray platform. (Fig. 5)
Caution: Furnace must not be operated without firing tray placed on, there is an increased risk of fire and injury due to considerable heating of the casing components.

2.7 Switching off the unit

If the furnace is not used, the lift should be moved into the firing chamber. Closing of the firing chamber will protect the insulation and avoid the absorption of moisture.

After the lift tray platform has been moved into the firing chamber, switch the furnace (switch to Off) and the power unit off (main switch).

3 Safety advice



For your personal safety we would like to ask you to read the following safety-relevant information completely before starting-up the unit.

3.1 Intended use

Basis for the design of the unit

The unit is of state of the art design and complies with the generally accepted rules concerning health and safety.

However, danger for the health and safety of the user or third parties as well as impairments of the unit and other material values may arise if the unit is improperly used.

Inadmissible modes of operation

Operation of the unit is not permitted

- with power sources, products etc. which are subject of a dangerous chemicals ordinance or which could affect the health of the operating personnel in any other way
- with equipment that has been changed by the user

Permitted modes of operation

Operation of this machine is only permitted if these operating instructions were read and understood and the procedures described are complied with.

Any other use and any use beyond these limits, such as processing of products other than the ones specified and handling of hazardous or health threatening substances, is considered as unintended use.

The manufacturer/supplier will not assume liability for damage resulting from this. The risk must solely be born by the user.

3.2 Pictograms



This pictogram warns of dangerous voltage. Before opening the unit it must be separated from the power supply by pulling out the mains plug.

Please note that electrical/electronic units must be disposed of separately. Do not dispose with household waste.

The black bar below the "garbage bin" symbol indicates that the unit was put into circulation after August 13, 2005.

Please note that the unit is subject to regulation 2002/96/EC (WEEE) and applicable national laws and must be disposed of accordingly.

Please contact your dealer if the unit needs to be disposed of.



This pictogram highlights useful hints, explanations and additional information concerning handling of the unit.

3.3 Copyright

These operating instructions must be treated confidentially. They should only be used by authorized persons. Disclosure to third parties is only permitted with the written approval of VITA VITA Zahnfabrik H. Rauter GmbH & Co. KG.

All documents are protected by copyright law.

Any disclosure as well as the reproduction of documents, even in form of excerpts, utilization and publication of the content are not permitted, if not explicitly approved. Violations are liable to prosecution and oblige to compensation.

All rights concerning the exercise of industrial property rights remain reserved.

3.4 Information of labels



This is a warning label about dangerous electrical current. Disconnect the unit (pull off plug at power unit) before opening it (Fig. 6).

The manufacturer disclaims any liability for accidents of the user if the furnace is not closed.

Caution: Do not place any objects near the lift tray.



Furnaces must not be operated without firing trays placed on. (Fig.7)

During continuous operation (max. end temperature, max. firing time) some parts of the firing chamber may reach high temperatures (above 70°C).

If the unit is connected to the mains supply, do not reach into the open firing chamber to avoid contact with live and hot components. When working at the open furnace, safety goggles must be worn.

Fig. 6

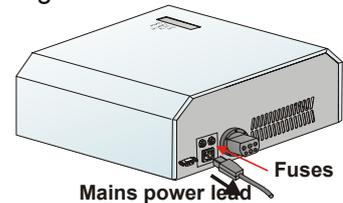
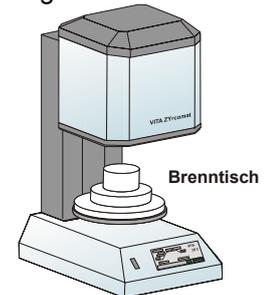


Fig. 7



3.5 Cleaning the furnace

Pull the plug from the power unit each time before the furnace is cleaned !! (Fig. 6)

It is not necessary to clean the interior of the firing chamber, cleaning of the casing with a wet cloth within regular intervals will ensure operational reliability. Standard cleaning agents can be used for the stainless steel casing.

Basically, no flammable liquids must be used for any type of cleaning work.

3.6 Operation and cleaning of the control unit.

The control unit may **exclusively** be operated with the enclosed pen (stylus).

The use of other operating elements will cause damage to the touchscreen.

Clean the display at regular intervals with a screen cleansing agent.

Such cleansers will not leave any scratches, have an anti-static effect and retard resoiling.

Damage to the display caused by inappropriate handling during operation or cleaning is excluded from warranty.

3.7 Fuses

At the rear of the power unit there are two fuses for the unit. The labels provide information on the fuses used in the unit. Fuses with different values must not be used. (Fig. 6)

version 200 / 230 Volt version 110 Volt

T 10 H 230 Volt T 16 H 250 Volt

3.8 CE - mark



The CE - mark entails a legally binding statement that the unit complies with the basic requirements, directive 73 / 23 / EEC, amended by directive 93/68/EEC, concerning electrical equipment.

We declare the conformity based on the following standards:

- Safety: IEC 610110-1:2001 2nd edition and IEC 610110-2-010:2003 2nd edition.

4 Transport of the unit

The unit may only be shipped in the **original packaging**.

Therefore we recommend to save the transport packaging and the transportation safety elements in the upper area of the firing chamber (see item 2.6).

If the original packaging is no longer available, please contact your service agent or the manufacturer.

Damage caused by inappropriate packaging shall be at the expense of the sender.

4.1 Warranty and liability

The warranty and liability are based on the conditions agreed upon by contract.



Changes to the software without the knowledge of and approval by VITA Zahnfabrik H. Rauter GmbH & Co KG cause the exemption from liability and warranty.

The warranty period starts when the unit is put into operation for the first time and is 2 years.

The heating elements are subject to increase wear; the warranty period for these components is 6 months.

4.2 Spare parts

Spare parts must comply with the technical requirements determined by the manufacturer. This is always assured when using original spare parts.

5 Technical equipment

5.1 Cooling fan in the firing unit (furnace)

The furnace has been equipped with a cooling fan which is switched on at a temperature of 100°C in the firing chamber.

The cooling fan remains switched on during the entire process time and will be switched off after the firing chamber has cooled down to a temperature of 95°C.

For safety reasons the unit must not be operated in case of failure of the cooling fan.

5.2 Cooling fan in the power unit

The power unit has also been equipped with a cooling fan which is switched on or off as soon as the main switch of the power unit is pressed.

The cooling fan avoids excessive heating of electrical and electronic components and contributes to ensure general operational reliability.

Failure of the cooling fan is displayed by the unit (see 7.3).

For safety reasons the unit must not be operated in case of failure of the cooling fan.

5.3 Mains power failure

The unit features a power failure safety device.

This element avoids program abortion and thus incorrect firing during short-time breakdown of the mains voltage supply (max. 15 minutes).

This backup device is activated in the event of a mains power failure during an active firing program.

If mains voltage is supplied again, the program is continued if the difference between the actual and the set temperature is less than 30 %.

If the difference is larger, the display shows power failure.
The program must be started again.

5.4 Temperature Controlling

Corresponding to the safety regulations for such high temperatures the ZYrcomat is equipped with two temperature sensors. These sensors will be controlled by a internal temperature controller.

During a intermittent failure within the temperature measurement the heating will be switched off.

It will release if the thermoelement get damaged (broken) or the difference between both temperature sensors is higher than 10°C.

5.5 Heating elements

The unit is equipped with high quality heating elements for a max. Temperature of 1.800°C.
The 200/230 V-Version has got 4 pcs. and the 110V-Version has got 5 pcs. of those heating elements.

A manual for the exchange of faulty heating elements can be downloaded from the VITA webside www.vita-zahnfabrik.com , Services / Equipment / Downloads / Equipment (within the system circle).

A faulty heating element will be indicated by the lit yellow LED at the ZYrcomat Power Unit (please see item 7.3).

5.6 Firing chamber insulation

The insulation of the firing chamber and the firing tray consist of high-quality insulating material.
Formation of cracks caused by high temperatures can not be excluded.

Such crack formation must be attributed to materials used and does not affect the function of the unit or the quality of the firing objects.

In this case warranty claims can not be submitted.

5.7 Program values (parameters)

The firing program has been preset and includes the following values:

Rising time: 1,5 h
 End temperature: 1530°C
 Hold-time for end temperature: 2 hrs

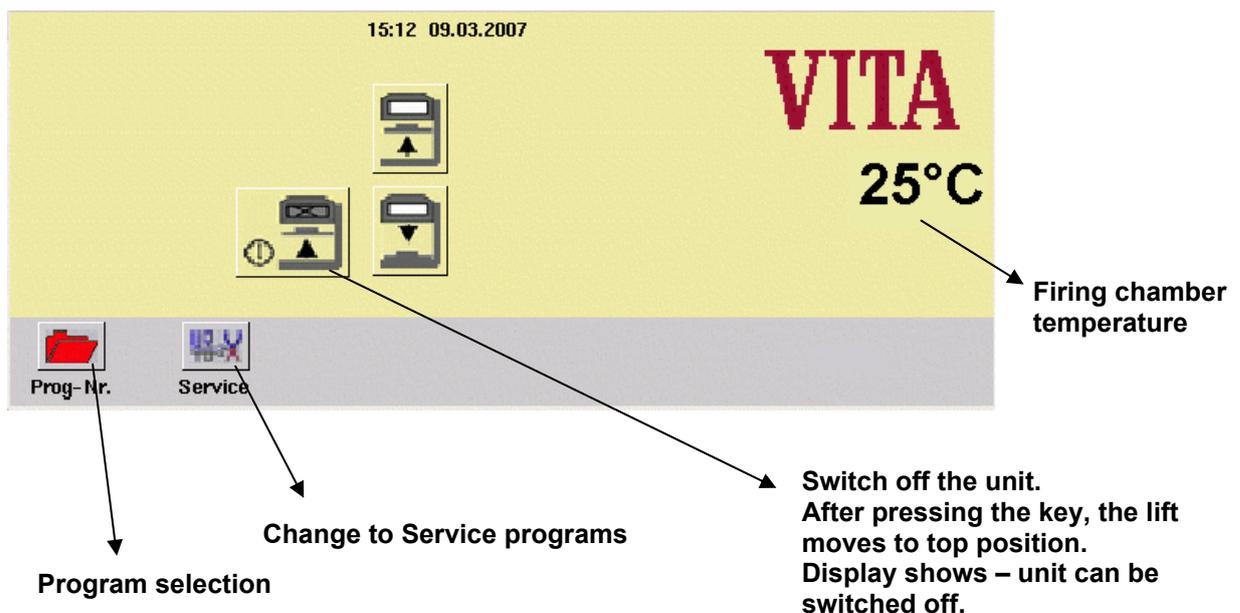
Cooling down to 400°C with furnace chamber being closed (lift key can only be used for opening at 400°C).

6 Saving of firing data for quality assurance

- Saving of nominal and actual firing data values (see section 8.5).
- Saving of user name, unit no., date of firing process, job no.,
- These data are saved to the memory of the control unit and exported to the management program (FDS – Firing – Data – System) on the PC using a memory stick (see section 8.6).

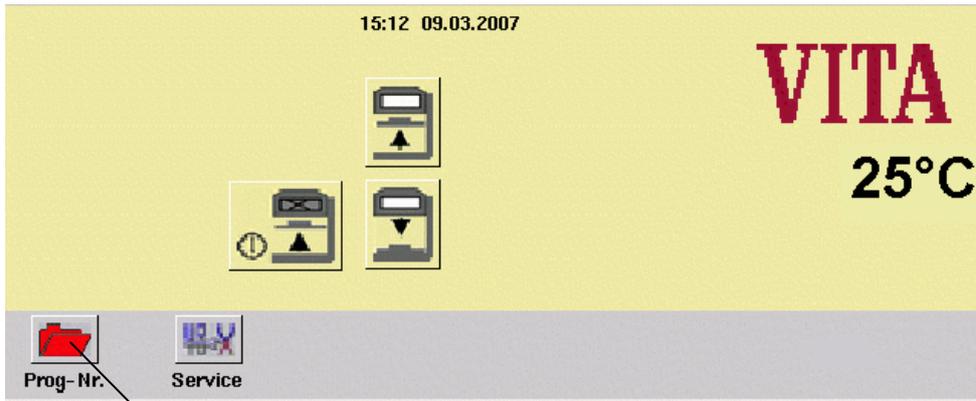
The necessary PC software (program) is available under Order No. DFDS.

7 Control elements of the firing unit (furnace)

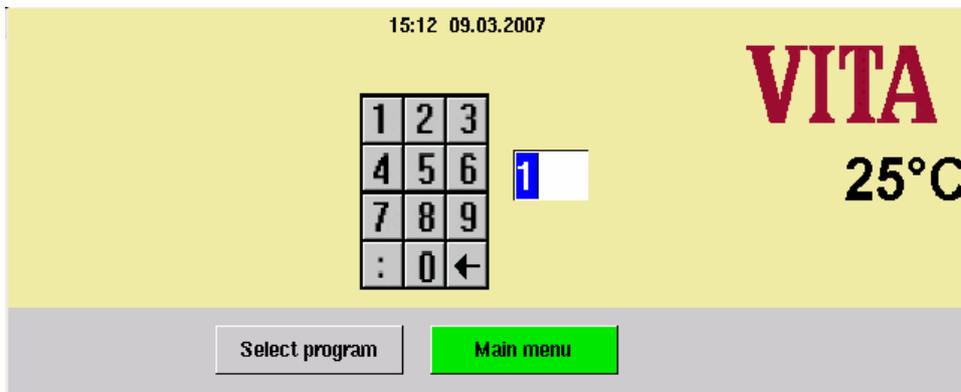


7.1 Selecting and starting a firing program.

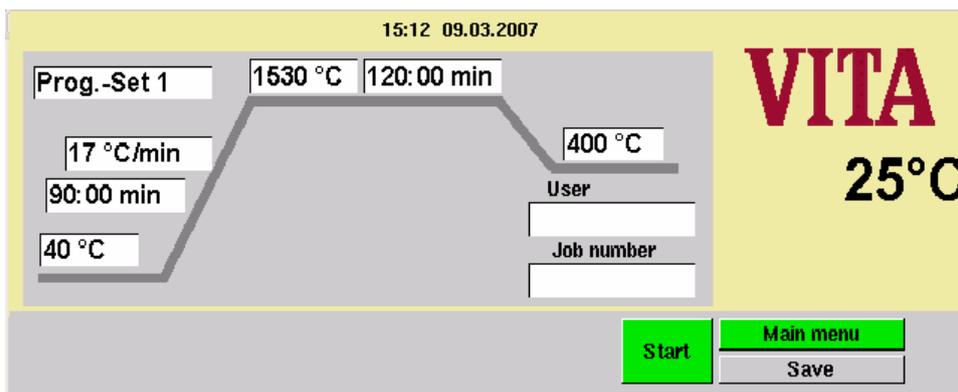
Switch on the main switch of the power unit - green control lamp in the main switch is lit.
Switch on the main switch of the firing unit (furnace) - touchscreen of the control element is activated.



Press button Prog. Nr.



- Enter Program number
- Press Select program button

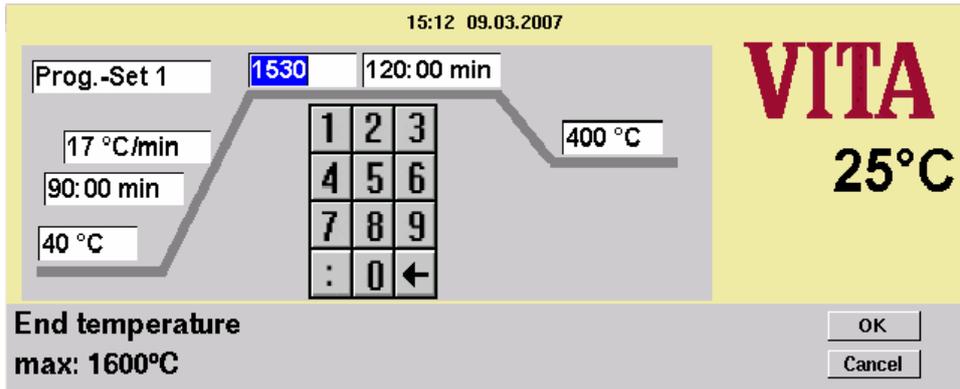


- Press Start button
Program runs with the specified values.
While the program is run, the total time of the program is displayed.
After the program has been completed and cooling down of the firing chamber to 400°C, the lift key can be pressed to move the lift to the bottom position.



Heating is only active, when the lift has been completely retracted!

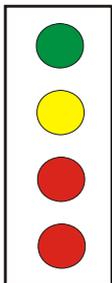
7.2 Changing program values



- Press desired program value, e.g. end temperature -- keyboard is displayed.
- Use keyboard to enter value - possible values are displayed in the lower info field.
- Press OK button.
- Press Save button.
- Press Yes or No buttons - if No is pressed, program is run with the changed value; the previously saved value is active after the end of the program.
This sequence applies to changes of all program values.

7.3 LEDs of power unit

The LEDs of the power unit indicate the following function:



green = unit switched on

yellow = load file overload/ failure of heating element

red = current limit current-limit control active

red = overheat operating temperature in the power unit exceeded

8 Service programs

Press "Service" button in the start menu.

8.1 Information about the unit/Software

The screenshot shows a service menu interface. At the top, the time is 15:12 and the date is 09.03.2007. On the left is a navigation menu with options: Info, Language, Screen, Process data, Date / Time, Display formats, Lift speed, Operating data, Calibrations, and Programs. The 'Info' menu is selected, displaying a table of technical data:

Version op.	e100	Update
Version CORE		
Device-ID op.	VITA	
Device-ID CORE		
VITA	+49 7761 562 222	
Dealer	VITA	
Factory Settings		

On the right side of the screen, the VITA logo is displayed in red, and the temperature is shown as 25°C. At the bottom, there is a green 'Main menu' button and the website address www.Vita-Zahnfabrik.com. The Accent logo is visible in the bottom left corner.

The information field shows technical information about the unit for:

Version opt.	= Software of control unit
Version core	= Software for core
Unit – ID opt.	= Serial-no. of control unit
Unit – ID core	= Serial-no. of core
VITA	= Hotline phone-no.
Dealer	= VITA

Factory Settings: With "Factory Settings" the following functions are reset to factory settings:

- Firing programs acc. to VITA firing table, see section 5.7
- Contrast see section 8.4
- Language: English, see section 8.3
- Time format to DD:MM:YY, see section 0
- Stop single push button contact, see section, see section 8.15
- Process data off, see section 8.5
- Temperature display °C, see section 8.9



All programs deviating from the VITA table will be deleted.

8.2 Software Update

A software update is loaded from the Memory Stick into the control unit.

The directory below must be created on the Memory Stick. The name of the storage medium may be different.



Observe the use of small initial letters

8.3 Language selection

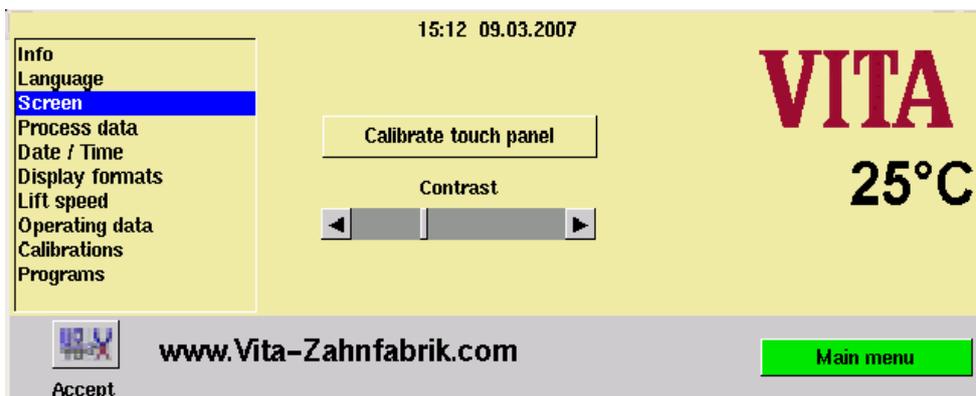


- Select the desired language.
- Press Accept button.
- Press Main menu button.



The actual screen display may vary from the illustration above.

8.4 Screen settings



Calibrating the touch panel

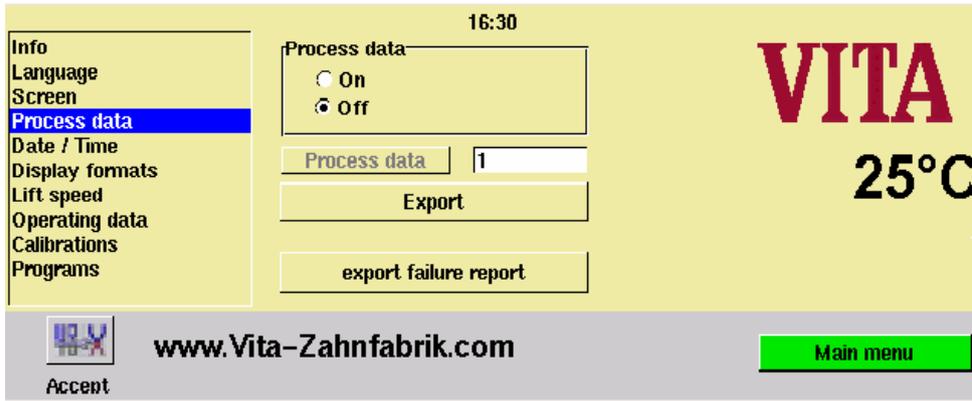
This calibration must be carried out when actuation of a field on the screen does not trigger any action of the desired function.

- Press the button "Calibrate touch panel".
- Keep on pressing the dots appearing on the dark display until the display lights up.

Contrast

- Adjust the desired contrast with the slide control.
- Press Accept button.

8.5 Process data



See also section **Fehler! Verweisquelle konnte nicht gefunden werden..**

"On" = Process data are saved in the control unit.

"Off" = Process data will not be saved.

"Process data" = Number of saved firing programs.

8.6 Loading firing programs from the Memory Stick

Saved firing programs are exported to the Memory Stick.

- Plug in the Memory Stick.
- Press button "Service".
- Press button "Process data".
- Press button "Export"
 - Firing data are transferred to the Memory Stick
 - After data are transferred, change to the main menu and pull out the stick.

8.7 Export failure report

Generally, the previous 10 firing programs that have been run are saved.

If an unsatisfactory firing result is obtained or failure has occurred in the program sequence, the failure report can be exported on a memory stick and emailed to instruments-service@vita-zahnfabrik.com for analysis.

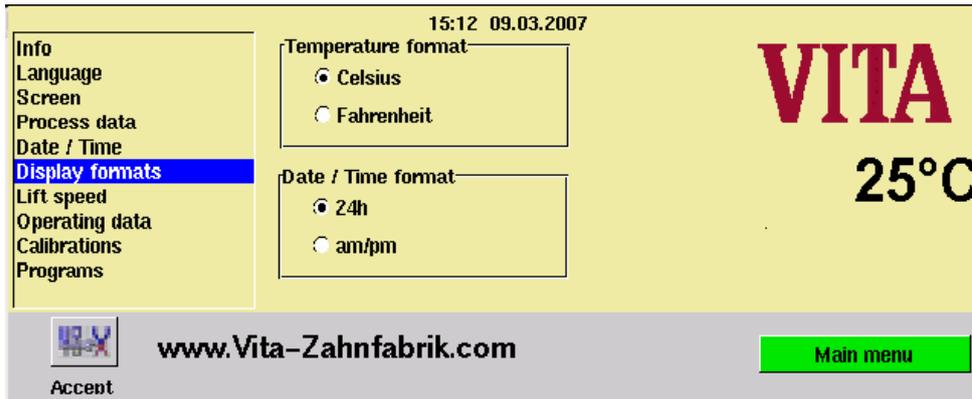
An immediate analysis of the failure report is carried out and sent back to the customer.

8.8 Date - Time



- Select "Date/Time".
- Press "Date" or "Time" button.
Date format = DD: MM: YY
Time format = HH: MM
See also section "Display formats".
- Press Accept button.

8.9 Display formats



Adjustment for temperature display:

Temperature display in °C or Temperature display in °F

Setting Date/Time:

24 h or am/pm

- Select the desired option.
- Press button "Accept".

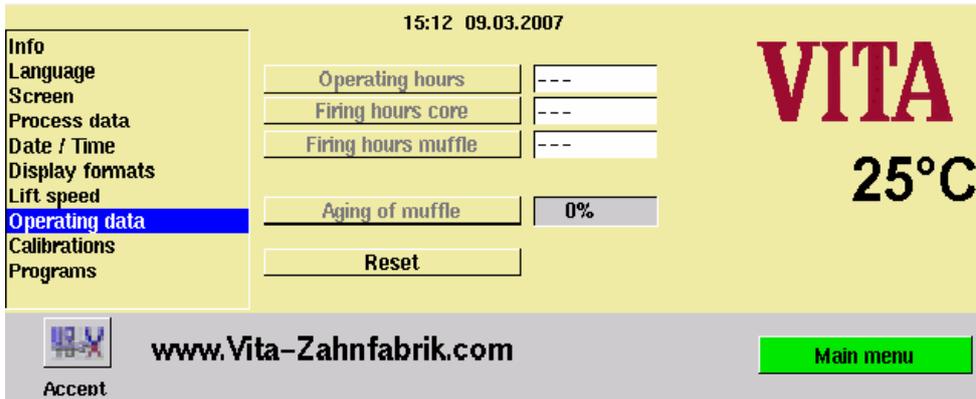
8.10 Lift speed adjustment



Adjust the lift speed with the slide control.

- Move the slide control.
- Press Accept button.

8.11 Operating data



Operating hours: Total time of unit
 Firing hours of heating: Total firing time
 Firing hours of heating: Firing hours of firing muffle
 Degree of aging of firing muffle: Display in %, related to 3000 firing hours.

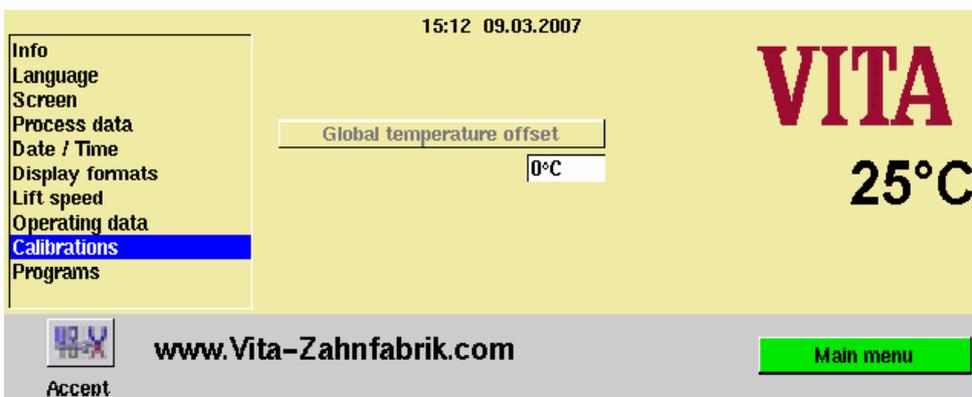
- Reset: If a new firing muffle is used, the counter for the firing hours of the muffle can be reset.

8.12 Temperature calibration

The unit features automatic temperature adjustment.

The temperature is automatically adjusted whenever a program is started.

The temperature, however, can still be changed within a range of plus to minus 20°C.



Entering "Global temperature offset":

- Select "°C" field, keyboard is shown
- Enter value.
- Press Accept.

Temperature too high, e.g. 15°C:

Enter: + 15°C

Temperature too low, e.g. 15°C:

Enter: - 15°C

8.13 Aborting programs



8.14 Press key to stop

"Once" = abortion of program without confirmation.

"Confirm" = abortion of program with confirmation.

- Select "Once" or "Confirm".
- Press Accept button.

8.15 Melody for end of program

- Select desired length.
- Press Accept button.

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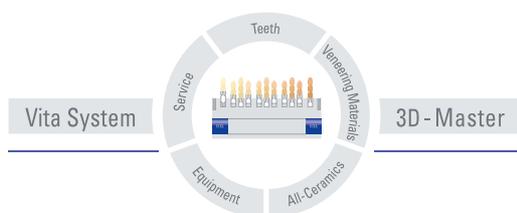
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all natural tooth shades are systematically
determined and completely reproduced.



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