VITA - Vacumat 500

Operating Manual
# Table of Contents

1 Technical Specifications ........................................................................................................ 2  
2 Safety advice .......................................................................................................................... 3  
3 Installation and Starting-Up .................................................................................................. 3  
4 Control panel.......................................................................................................................... 4  
   4.1 Description (Block A) ........................................................................................................ 4  
   4.2 Description Pre-drying (Block B)...................................................................................... 4  
   4.3 Description Heating-up (Block C) .................................................................................... 5  
   4.4 Description Firing temperature & End temperature (Block D) ........................................ 5  
   4.5 Description Vacuum (Block E) ........................................................................................ 5  
   4.6 Description Slow / Fast cooling (Block F) ........................................................................ 6  
   4.7 Description of Keyboard & Lift position keys (Block G).................................................... 6  
   4.8 Operating Block B – Pre-drying temperature & Pre-drying time ..................................... 7  
   4.9 Operating Block C - Heating up ...................................................................................... 8  
   4.10 Operating Block D - Firing temperature & End temperature ......................................... 9  
   4.11 Operating Block E - Vacuum parameters ...................................................................... 10  
   4.12 Operating Block F - Slow cooling .................................................................................. 11  
5 Adjusting the firing chamber temperature .......................................................................... 12  
6 Protection against Power failure .......................................................................................... 12  
7 Utilities ..................................................................................................................................... 13  
8 Changing the muffle ............................................................................................................. 14  
9 Error Messages / Service ..................................................................................................... 15  
10 Additional service advice ................................................................................................... 15  
11 Firing Cycle ......................................................................................................................... 16
1 Technical Specifications

Dimensions:  
- Height: 560 mm  
- Width: 360 mm  
- Depth: 335 mm

Firing Chamber (interior space):  
- Diameter: 96 mm  
- Height: 70 mm

Weight: 19 kg

Power Supply: 110/230 Volts A.C., 50/60 Hz

Max. power consumption: 1.5KW

Classification: Safety Class I

Fuse: 230V / 8 amp, 110V / 2 amp

Max. firing chamber temperature: 1200°C

Power supply for vacuum pump: 110/230 Volts A.C., 50/60 Hz, max. 0.2 KW

Vacuum pump (optional): Type PJ 9080-023.3, 110/230 Volts A.C., 50/60 Hz, IP 20  
- Weight: approx. 6.4 kg

Supply schedule:

Special shipping carton, containing:

- 1 VITA VACUMAT 500 furnace  
- 1 control panel  
- 1 firing tray  
- 1 mains power lead  
- 1 pair of furnace tweezers  
- 1 set of firing stands A+B, grey  
- 1 set of firing stands G, grey  
- 1 Operating Manual  
- 1 vacuum pump (only supplied on special order) supplied with painted casing: 1 aluminium-plate for depositing hot firing trays

If any items are missing, contact your supplier immediately. Save the carton and packaging materials in case you ever need to relocate the furnace.
2 Safety advice

This furnace may only be operated with the supplied mains power lead!

Prior to making the electrical connection, make sure that

- the furnace power switch is OFF.
- the furnace voltage matches your power supply. Confirm the line voltage for your furnace by checking the line voltage designation on the rating plate on the back of furnace.
- the protection fuse and the wiring system in your laboratory are suitable to carry the total electric load of the furnace (see rating plate and/or technical specifications).
- the wiring system in your laboratory has an efficient earth connection in compliance with rules and laws in force.
- the plug is inserted into a suitable wall socket which can easily be reached.
- the mains power lead is laid out in such way as to ensure that it does not come into contact with any hot surfaces or objects and that it does not obstruct any passage way.

● The manufacturer disclaims any liability in case these accident-preventing rules are not observed ●

This is a warning symbol about dangerous electrical current. Disconnect furnace from the mains power supply before opening it for maintenance or repair work. Contact your VITA dealer or a qualified service technician if your furnace needs to be repaired or serviced.

Typ PJ 9080-023.3
or
Typ PJ 9081-023.3

This label gives information on the power connection of the vacuum pump.

It is not necessary to clean the inside of the firing chamber, but only to wipe the surface of the insulation at the lower edge of the firing chamber regularly with a damp cloth. This applies also to the O-ring on the lift support plate. The casing can likewise be cleaned using a damp cloth. In order to ensure smooth gliding of the firing tray lift at all times, the lift guide rails should be wiped regularly with a dry cloth.

Never use cleaning agents or flammable liquids for cleaning the furnace

3 Installation and Starting-Up

(see also Safety Advice)

1. When positioning the furnace, the minimum distance between all sides of the furnace and any wall should be at least 25 cm.
2. Make sure the furnace power switch is OFF. Connect the furnace to the mains outlet, using the supplied mains power lead.
3. Connect the plug of the vacuum pump to the socket at the rear of the furnace and then slide the vacuum hose onto the nozzle.
4. Attach the operating panel to the front of the casing and connect the spiral cable to the right or left side.
5. Press the Power ON/OFF switch at the left to switch on the furnace. The firing tray lift will descend to its lower position. The LCD indicators in Block A display the current firing chamber temperature and the time of day.
6. Place the firing tray onto the lift support plate.
   Notice: Never operate the VITA VACUMAT 500 without the firing tray on the lift support plate. It may cause damage to the furnace.
7. Press the "Start" key. The firing tray ascends into the firing chamber, and the temperature starts rising until it has reached the factory-set starting temperature of 500°C.

Once the starting temperature has been reached, the furnace is ready for use with any firing program.

For further operating information, see the appropriate section of the Operating Manual.
4 Control panel

4.1 Description (Block A)

- Firing chamber temperature 20°C - 1200°C
- 1. Program No. 0 Close without heating
- 2. Program No. 1 - 200 Firing programs
- 3. Program No. 250 - 295 Utility programs

VACUUM in millibar during active vacuum program

4.2 Description Pre-drying (Block B)

- Pre-Drying LED
  1. flashes when Input-Mode PRE-DRYING is active
  2. „ON“ when PRE-Drying is a step of the selected program
  3. flashes when PRE-DRYING is active

- Display shows:
  1. Stand-by temperature 200°C-800°C
  2. PRE-DRYING temperature 200°C-800°C
  3. PRE-DRYING time 0:00 min - 40:00min

- Activates Input-Mode
  1. Changes PRE-DRYING temperature
  2. Changes PRE-DRYING time
  3. Calls set-points (temperature&time) during running program

- LED min:sec
  1. „ON“ when Input-Mode for PRE-Drying time is active
  2. „ON“ for approx. 3 sec. when selected PREY-DRYING time is called during running program

- LED °C
  1. „ON“ when Input-Mode for PREY-DRYING temperature is active
  2. „ON“ for approx. 3 sec. when selected PREY-DRYING temperature is called during running program
4.3 **Description Heating-up (Block C)**

Heating-UP LED
1. flashes when Input-Mode is active
2. „ON“ indicates a firing program has been selected
3. flashes when HEATING-UP is in program

Display shows:
- temperature rising rate in 20°C - 130°C
- Actives Input-Mode for temperature rising rate

4.4 **Description Firing temperature & End temperature (Block D)**

END temperature LED
1. flashes when Input-Mode END temperature is active
2. „ON“ when HOLD time for End temperature is a step of the selected program
3. flashes when HOLD time of END temperature is active

Display shows:
1. END temperature 200°C-1200°C
2. HOLD time of END temperature 0:00 min - 40:00 Min

Actives Input-Mode
1. Changes END temperature
2. Changes HOLD time for END temperature

LED min:sec
1. „ON“ when Input-Mode HOLD time of END temperature is active
2. „ON“ for approx. 3 sec. when selected HOLD time is called during running program

LED °C
1. „ON“ when Input-Mode END temperature is active
2. „ON“ for approx. 3 sec. when selected END temperature is called during running program

4.5 **Description Vacuum (Block E)**

VACUUM LED
1. flashes in Input-Mode
2. „ON“ when VACUUM is a step of the selected program
3. flashes when VACUUM is active

Display shows:
- VACUUM time 0:00 min - 40:00 min
- Activates Input mode
  1. Changes VACUUM time
  2. VACUUM start always when HEATING-UP starts
4.6 Description Slow / Fast cooling (Block F)

- **COOLING LED**
  1. flashes when Inpu-Mode COOLING is active
  2. "ON" when COOLING is a step of the selected program
  3. flashes when COOLING is active

- **Display shows:**
  COOLING temperature 300°C - 1000°C

- **Activates Input-Mode**
  1. COOLING temperature 300°C - 1000°C
  2. Select program FAST COOLING of firing chamber to 50°C below STAND-BY temperature

4.7 Description of Keyboard & Lift position keys (Block G)

- **INPUT Keyboard**
  1. Program "START"
  2. STAND-BY program "START" (firing chamber closed and HEATING-UP to STAND-BY)

- **Lift "ASCEND"**
- **Lift "DESCEND"**

- **ENTER - Key**
- **DELETE - Key**
- **Program "STOP"**
4.8 Operating Block B – Pre-drying temperature & Pre-drying time

Select program using keyboard and press Enter-Key '#'

Activate Input-Mode with PRE-DRYING Key

When Input-Mode is active, PRE-DRYING key will switch between input of PRE-DRYING time and PRE-DRYING temperature.

flashing PRE-DRYING LED
PRE-DRYING time LED min/sec."ON"
LCD shows preselected PRE-DRYING time

Change PRE-DRYING time?

YES

enter value using keyboard and press Enter-Key '#'

flashing PRE-DRYING LED min:sec
PRE-DRYING temp. LED °C 'ON'
LCD shows PRE-DRYING temperature °C

NO

Press Enter-Key '#'

Valid Input: 200°C - 800°C

Invalid entries will result in error message 'Err'.

Change PRE-DRYING temperature?

YES

enter value using keyboard and press Enter-Key '#'

Valid Input: 0 min - 40:00 min

NO

Press Enter-Key '#'

Input-Mode may be interrupted at any time by pressing the 'STOP'-Key.

PRE-DRYING LED 'ON'
LCD shows PRE-DRYING temperature

E N D

After program start PRE-DRYING values may be changed until PRE-DRYING LED is flashing. Thereafter program sequence is active and changes are no longer possible.
4.9 Operating Block C - Heating up

Select program using keyboard and press Enter-Key '#'

Activate Input-Mode with HEATING-UP key

flashing HEATING-UP LED
LCD shows ???

Change temperature rising rate?

YES

Enter value using keyboard and press Enter-Key '#'

HEATING-UP LED 'ON'
LCD shows value °C/min

END

NO

Press Enter-Key '#'

Input-Mode may be interrupted at any time by pressing the 'STOP' - Key

Valid Input: 20°C - 120°C/min
Invalid entries will result in error message 'Err'

After program start HEATING-UP values may be changed until HEATING-UP LED is flashing. Thereafter program sequence is active and changes are no longer possible.
4.10 Operating Block D - Firing temperature & End temperature

- Select program using keyboard and press Enter-Key ‘#’
- Activate Input-Mode with END temperature key
- Flashing END temperature LED
- LED min:sec HOLD time “ON”
- LCD shows End temp. HOLD time
- Change HOLD time? NO
  - Press Enter-Key ‘#’
  - YES
  - Enter value using keyboard and press Enter-Key ‘#’
- Flashing END temperature LED
- LED °C END temperature “ON”
- LCD zeigt Endtemperatur
- Change END temperature? NO
  - Press Enter-Key ‘#’
  - YES
  - Enter value using keyboard and press Enter-Key ‘#’
- END temperature LED ’ON’
- LCD shows END temperature °C
- END

After program start END temperature and END temperature HOLD time may be changed until LED °C or LED min:sec are flashing. Thereafter program sequence is active and changes are no longer possible.

Input-Mode may be interrupted at any time by pressing the ‘STOP’ key.

Invalid entries will result in error message ‘Err’.

Valid Input: 0 min - 40:00 min

Valid Input: 200°C - 1200°C
4.11 Operating Block E - Vacuum parameters

* VACUUM time:

Based on the selected temperature rising rate (°C/min), VACUUM time is calculated and preselected automatically.

The VACUUM pump starts as soon as the temperature starts rising. When END temperature has been reached, VACUUM stops.

The calculated VACUUM active time is equal to the temperature rising time, i.e. until END temperature has been reached.

If either a longer or shorter VACUUM time is required, change the preselected VACUUM time as described above.
4.12 Operating Block F - Slow cooling

Select program using keyboard and press Enter-Key '#'

Activate Input-Mode with COOLING key

Input-Mode may be interrupted at any time by pressing the 'STOP' key.

flashing COOLING LED
LCD shows COOLING temp. °C

Enter value using keyboard and press Enter-Key '#'

Change COOLING temp. ?

Valid Input: 300°C - 1000°C

Invalid entries will result in error message 'Err'.

COOLING LED 'ON'
LCD shows COOLING temp. °C

Press Enter-Key '#'

END

After program start COOLING values may be changed until COOLING LED'S are flashing. Thereafter program sequence is active and changes are no longer possible.
5 Adjusting the firing chamber temperature

The VITA - VACUMAT 500 furnace is supplied with a digitally controlled potentiometer for automatic adjustment of the firing chamber temperature. The factory-set temperature test circuit is adjusted as follows: At 1000°C a voltage of 9.25 millivolt may be measured at the built-in thermocouple (PtRhPt). Should the measurements differ during the life of the furnace, the adjustment may be checked and corrected using the supplied program.

The adjustment program is selected as follows:

1. Select program No: 294 and press the "#"-Key

The program displays the following settings:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-drying temperature</td>
<td>600°C</td>
</tr>
<tr>
<td>Pre-drying time</td>
<td>6:00 min</td>
</tr>
<tr>
<td>Heating-up time</td>
<td>66°C / min</td>
</tr>
<tr>
<td>Final temperature</td>
<td>1000°C</td>
</tr>
<tr>
<td>Hold-time for final temperature</td>
<td>5:00 min</td>
</tr>
</tbody>
</table>

2. press the "Start"-Key

The program starts, parameters may not be changed, the program must be stopped by pressing the "Stop" Key.

The LCD-Display in Block A indicates the temperature of the firing chamber in °C (degrees Celsius). The LCD-Display in Block B indicates the value in millivolt.

After two minutes in the hold-phase at a temperature of 1000°C, a short signal sounds which indicates the lift-keys "UP / DOWN" may now be used for adjustment. Using the "UP / DOWN" keys (UP = Increase, DOWN = Decrease), the voltage value may now be adjusted to 9.25 millivolt. At a temperature range of 1000°C a change of 0.01 millivolt causes a change in the firing chamber temperature of 1°C.

6 Protection against Power failure

The VITA VACUMAT 500 is protected against power failure. This backup device is activated immediately in the event of a mains power failure during a firing or stand-by program. If the power failure lasts for less than 20 seconds the program continues. In case of power failure for more than 20 seconds the program is aborted and the following is displayed:

The LCD-Display of Block B indicates the phase where the program aborted:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Pre-drying phase</td>
</tr>
<tr>
<td>Phase 2</td>
<td>Heating-up phase</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Hold-temperature phase</td>
</tr>
<tr>
<td>Phase 4</td>
<td>Cooling phase</td>
</tr>
</tbody>
</table>

Pressing of the "STOP"-key deletes all messages and the furnace is once more ready for use.

Notice: In case of the mains power supply in the laboratory being turned off accidentally with the furnace in operation or on stand-by, the same symptoms as those of a power failure will be indicated after the power resume.
7 Utilities

All programs listed may be selected by entering the respective program number using the keyboard (BlockH). The selection must be confirmed by pressing the "#"-Key. The programs may only be selected if no firing program is active. To stop or cancel a program, press the "Stop"-Key.

<table>
<thead>
<tr>
<th>Number</th>
<th>Program</th>
<th>Description</th>
<th>Display</th>
<th>Operating Keys</th>
</tr>
</thead>
<tbody>
<tr>
<td>276 + #</td>
<td>Show Operating Hours</td>
<td>Display in hours and minutes</td>
<td>LCD Block A</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td>277 + #</td>
<td>Show Software Version</td>
<td>displays software version</td>
<td>LCD Block A</td>
<td></td>
</tr>
<tr>
<td>281 + #</td>
<td>Stand-by temperature</td>
<td>Entry: 200°C - 800°C (500°C)</td>
<td>LCD Block B</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td>282 + #</td>
<td>Set signal on program end</td>
<td>Selection 1 = signals once</td>
<td>LCD Block B</td>
<td>Pre-Drying Key + #</td>
</tr>
<tr>
<td>283 + #</td>
<td>program termination with ‘Stop’ Key</td>
<td>Selection 1 = press ‘Stop’ 2x</td>
<td>LCD Block B</td>
<td>Pre-Drying Key + #</td>
</tr>
<tr>
<td>284 + #</td>
<td>start firing program when temperature of firing chamber is higher than stand-by temperature</td>
<td>Selection 1 = start when temp. is higher than stand-by temperature</td>
<td>LCD Block B</td>
<td>Pre-Drying Key + #</td>
</tr>
<tr>
<td>285 + #</td>
<td>Set volume</td>
<td>select '0' - '9'</td>
<td>LCD Block B</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td>289 + #</td>
<td>Initialization</td>
<td>all factory-set time/date values are read into memory (VITA settings)</td>
<td>LCD Block B</td>
<td></td>
</tr>
<tr>
<td>291 + #</td>
<td>Liftpositions: Pre-Drying and Cool-Down</td>
<td>Pos.1, 1st pre-drying step Value 0 - 40</td>
<td>LCD Block B</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pos.2, 2nd pre-drying step Value 30 - 60</td>
<td>select pos. with pre-drying key</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pos.3, 3rd pre-drying step Value 50 - 150</td>
<td>select using pre-drying key</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pos.4, cool-down step Value 30 - 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inv., intervall time Value 10 - 60 sec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>292 + #</td>
<td>Lift speed</td>
<td>select S up 0 - 99</td>
<td>lower LCD Block B</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td></td>
<td></td>
<td>select S down 0 - 99</td>
<td>select using pre-drying key</td>
<td></td>
</tr>
<tr>
<td>293 + #</td>
<td>Lift stop</td>
<td>select L up 0 - 99</td>
<td>lower LCD Block B</td>
<td>Keys Block G + #</td>
</tr>
<tr>
<td></td>
<td></td>
<td>select L down 0 - 99</td>
<td>select using pre-drying key</td>
<td></td>
</tr>
<tr>
<td>294 + #</td>
<td>Temperature-Adjustment</td>
<td>see description ‘Adjusting the firing chamber temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>close firing chamber without heating</td>
<td></td>
<td>Keys Block G + #</td>
<td></td>
</tr>
</tbody>
</table>

δ Factory settings
8 Changing the muffle

**CAUTION:** Only to be carried out by a qualified service technician!
**CAUTION:** Contact your VITA dealer or authorized service personnel!

Switch off furnace and disconnect from the mains power supply!

1. Unscrew the 2 screws on the rear panel and remove it.
2. Unscrew the six screws on the to casing of the furnace.
3. Lift off top casing of the furnace.
4. Unscrew and remove the screws (22254) on the top cover of ring chamber.
5. Disconnect all wires from the thermocouple.
6. Lift out insulation stone complete with thermocouple.
7. Disconnect the wires from the defective quartz glass spiral muffle and then lift it out.
8. Place new muffle into position, then reassemble the furnace in reverse order to that given above.

**CAUTION:** Do not forget to reconnect the earthed conductor wire to the furnace top casing!
9 Error Messages / Service

The VITA - VACUMAT 500 furnace is equipped with a self - checking system which detects and indicates possible errors. The following error messages may occur:

Err 1 the required i.e. the preselected temperature has been exceeded by 80 °C.
1. Hardware failure, change CPU-board

Err 2 Rupture of thermocouple
1. Defective temperature sensor, change thermocouple

Err 3 Error in vacuum system
1. Check and clean lift plate seal and lower edge of firing chamber
2. Check/change seals at firing chamber connections.
3. Check vacuum pump, change of membran and/or valve flap may be required.

Err 4 Furnace does not heat
1. Check/change fuse T8H 110 V at back of furnace
2. Check/change firing muffle

Err M Should the lift not have reached ist upper or lower within a certain time, the error message „errM“ will appear in flash mode in the temperature indicator °C. At the same time, this monitors the microswitches for the upper lift positions.

The error message „errM“ will also appear if the microswitch contact is defect. To delete the error message „errM“, press „STOP“ key. The time lapse until this error message appears can be set using program 901 and key #. The time value can be selected in the range 10 - 20 seconds; the factory stored value is 15 seconds. The time selected must be longer than the time the lift drie takes to move from the lower to the upper position. If the time is too short, the motor will switch off too early and the lift will be unable to reach ist nd position. In case of incorrect input of program parameters, a short signal indicates the error and the last valid input is assumed. In order to recognize the reliable closing contact of the micswitches, the debounce-time is set via program no. 902 and key #. The range for the setting is 2 - 10 (number x 15 msec. = debounce time). The factory-set value is 3. This setting should not be altered.

In case of incorrect input of program parameters, a short signal indicates the error and the last valid input is assumed.

In case of recurring "Err"-Messages after Power OFF/ON, please contact the VACUMAT service Department of your local VITA distributor.

10 Additional service advice

Daily usage of the VITA VACUMAT 500 is highly demanding. Due to external influence, such as very fine dust, the lift drive system needs to be cleaned regularly with a dry cloth.

The following problems/changes may be solved using the supplied utilities:

1. Lift drive too slow : Program 292 increases/decreases the lift speed.
2. Change lift position „Pre-Drying“ and „Cooling“: Program 291 will change the respective positions.

For servicing, the VITA VACUMAT 500 may only be shipped in special packing cases. If the original packing case is unavailable, special packing cases may be ordered.
### 11 Firing Cycle

<table>
<thead>
<tr>
<th>VITA OMEGA 900</th>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>°C/min.</th>
<th>Temp. approx °C</th>
<th>°C/min.</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidation firing</td>
<td>41</td>
<td>Follow manufacturer's instructions !</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st opaque firing (powder)</td>
<td>42</td>
<td>600</td>
<td>2.00</td>
<td>75</td>
<td>900</td>
<td>2.00</td>
</tr>
<tr>
<td>1st opaque firing (paste)</td>
<td>54</td>
<td>500</td>
<td>6.00</td>
<td>50</td>
<td>900</td>
<td>3.00</td>
</tr>
<tr>
<td>2st opaque firing (powder)</td>
<td>43</td>
<td>600</td>
<td>2.00</td>
<td>75</td>
<td>900</td>
<td>1.00</td>
</tr>
<tr>
<td>2nd dentine firing</td>
<td>45</td>
<td>600</td>
<td>6.00</td>
<td>50</td>
<td>890</td>
<td>1.00</td>
</tr>
<tr>
<td>3nd dentine firing</td>
<td>46</td>
<td>600</td>
<td>6.00</td>
<td>50</td>
<td>890</td>
<td>1.00</td>
</tr>
<tr>
<td>Glaze firing</td>
<td>47</td>
<td>600</td>
<td>0.00</td>
<td>75</td>
<td>900</td>
<td>2.00</td>
</tr>
<tr>
<td>Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid</td>
<td>48</td>
<td>600</td>
<td>4.00</td>
<td>75</td>
<td>900</td>
<td>2.00</td>
</tr>
<tr>
<td>Glaze firing with Glasurmasse 740 / Akz 25</td>
<td>49</td>
<td>600</td>
<td>4.00</td>
<td>75</td>
<td>900</td>
<td>1.00</td>
</tr>
<tr>
<td>Margin porcelain firing “LUMINARY”</td>
<td>50</td>
<td>600</td>
<td>6.00</td>
<td>50</td>
<td>900</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Alloys with a thermal expansion coefficient $\geq 14.5 \times 10^{-6} \times K^{-1}$ should be fired using slow cooling from the 1st dentine firing onwards. Slow cooling from firing temperature to starting temperature should take no less than 5 minutes. This increases the leucite content in the metal ceramic and raises the thermal expansion coefficient of the ceramic.

The vacuum time, indicated in the "VAC" column by an "X", results automatically from the given temperature rise °C/min. The vacuum switches on at the beginning of the temperature rise and switches off again when the end temperature is reached.

---

### VITA OMEGA

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>°C/min.</th>
<th>Temp. approx °C</th>
<th>°C/min.</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidation firing</td>
<td>1</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
<td>980</td>
</tr>
<tr>
<td>NEW (1) 1st opaque firing (powder)</td>
<td>2</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
<td>970</td>
</tr>
<tr>
<td>1st opaque firing (paste)</td>
<td>52</td>
<td>500</td>
<td>6.00</td>
<td>110</td>
<td>950</td>
</tr>
<tr>
<td>NEW (1) 2st opaque firing (powder)</td>
<td>3</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
<td>950</td>
</tr>
<tr>
<td>2st opaque firing (paste)</td>
<td>53</td>
<td>500</td>
<td>6.00</td>
<td>55</td>
<td>930</td>
</tr>
<tr>
<td>Dentine firing</td>
<td>4</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
<td>930</td>
</tr>
<tr>
<td>2nd dentine firing</td>
<td>5</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
<td>920</td>
</tr>
<tr>
<td>3rd dentine firing</td>
<td>6</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
<td>910</td>
</tr>
<tr>
<td>Glaze firing</td>
<td>7</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
<td>930</td>
</tr>
<tr>
<td>Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid</td>
<td>8</td>
<td>600</td>
<td>4.00</td>
<td>110</td>
<td>930</td>
</tr>
<tr>
<td>Glaze firing with Glasurmasse 740 / Akz 25</td>
<td>9</td>
<td>600</td>
<td>4.00</td>
<td>100</td>
<td>900</td>
</tr>
<tr>
<td>Margin porcelain firing “MARGIN”</td>
<td>10</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
<td>950</td>
</tr>
</tbody>
</table>

(1) = Firing of opaque porcelains marked with an asterisk at approx. 20°C higher.

The vacuum time, indicated in the "VAC" column by an "X", results automatically from the given temperature rise °C/min. The vacuum switches on at the beginning of the temperature rise and switches off again when the end temperature is reached. Follow manufacturer’s instructions !
### VITA VMK 95

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>Temp. approx °C</th>
<th>VAC min.</th>
<th>°C/min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidation firing</td>
<td>11</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
</tr>
<tr>
<td>1st opaque firing (powder)</td>
<td>12</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
</tr>
<tr>
<td>1st opaque firing (paste)</td>
<td>52</td>
<td>500</td>
<td>6.00</td>
<td>110</td>
</tr>
<tr>
<td>2st opaque firing (powder)</td>
<td>13</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
</tr>
<tr>
<td>2st opaque firing (paste)</td>
<td>53</td>
<td>500</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>Dentine firing</td>
<td>14</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>2nd dentine firing</td>
<td>15</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>3nd dentine firing</td>
<td>16</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>Correction porcelain firing CORRECTIVE</td>
<td>-)</td>
<td>600</td>
<td>4.00</td>
<td>55</td>
</tr>
<tr>
<td>Glaze firing</td>
<td>17</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
</tr>
<tr>
<td>Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid</td>
<td>18</td>
<td>600</td>
<td>4.00</td>
<td>110</td>
</tr>
<tr>
<td>Glaze firing with Glasurmasse 740 / Akz 25</td>
<td>19</td>
<td>600</td>
<td>4.00</td>
<td>100</td>
</tr>
<tr>
<td>Margin porcelain firing &quot;MARGIN&quot;</td>
<td>20</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
</tbody>
</table>

*) = Enter program number yourself

The vacuum time, indicated in the "VAC" column by an "X", results automatically from the given temperature rise °C/min. The vacuum switches on at the beginning of the temperature rise and switches off again when the end temperature is reached.

### VITA VMK 68

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>Temp. approx °C</th>
<th>VAC min.</th>
<th>°C/min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidation firing</td>
<td>21</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
</tr>
<tr>
<td>1st opaque firing</td>
<td>22</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
</tr>
<tr>
<td>2st opaque firing</td>
<td>23</td>
<td>600</td>
<td>2.00</td>
<td>55</td>
</tr>
<tr>
<td>Dentine firing</td>
<td>24</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>2nd dentine firing</td>
<td>25</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>3nd dentine firing</td>
<td>26</td>
<td>600</td>
<td>6.00</td>
<td>55</td>
</tr>
<tr>
<td>Glaze firing</td>
<td>27</td>
<td>600</td>
<td>0.00</td>
<td>110</td>
</tr>
<tr>
<td>Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid</td>
<td>28</td>
<td>600</td>
<td>4.00</td>
<td>110</td>
</tr>
<tr>
<td>Glaze firing with Glasurmasse 740 / Akz 25</td>
<td>29</td>
<td>600</td>
<td>4.00</td>
<td>100</td>
</tr>
</tbody>
</table>

VMK 68 N porcelains should all be fired at approx. 10°C higher.

The vacuum time, indicated in the "VAC" column by an "X", results automatically from the given temperature rise °C/min. The vacuum switches on at the beginning of the temperature rise and switches off again when the end temperature is reached.
VITA – Vacumat 500

### VITADUR ALPHA

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>Pre-drying min.</th>
<th>Temp. approx. °C</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>32</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>33</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>34</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>35</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>36</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
<tr>
<td>37</td>
<td>600</td>
<td>0.00</td>
<td>90</td>
<td>1.120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>Pre-drying min.</th>
<th>Temp. approx. °C</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>600</td>
<td>2.00</td>
<td>75</td>
<td>1.040</td>
</tr>
<tr>
<td>92</td>
<td>550</td>
<td>0.00</td>
<td>90</td>
<td>820</td>
</tr>
<tr>
<td>93</td>
<td>600</td>
<td>5.00</td>
<td>40</td>
<td>800</td>
</tr>
<tr>
<td>94</td>
<td>600</td>
<td>1.00</td>
<td>50</td>
<td>800</td>
</tr>
</tbody>
</table>

### Additional programs

<table>
<thead>
<tr>
<th>Progr. no.</th>
<th>Pre-Drying °C</th>
<th>Pre-drying min.</th>
<th>Temp. approx. °C</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>600</td>
<td>2.00</td>
<td>75</td>
<td>1.040</td>
</tr>
<tr>
<td>92</td>
<td>550</td>
<td>0.00</td>
<td>90</td>
<td>820</td>
</tr>
<tr>
<td>93</td>
<td>600</td>
<td>5.00</td>
<td>40</td>
<td>800</td>
</tr>
<tr>
<td>94</td>
<td>600</td>
<td>1.00</td>
<td>50</td>
<td>800</td>
</tr>
</tbody>
</table>

*) = Enter program number yourself

The vacuum time, indicated in the "VAC" column by an "X", results automatically from the given temperature rise °C/min. The vacuum switches on at the beginning of the temperature rise and switches off again when the end temperature is reached.

**Soldering in the VITA VACUMAT**

**Method 1:**

Preheat the restoration, complete with flux and beads solder, in a preheating furnace for 15 – 20 min. at 400°C.

**Program no. 93**

End temperature is the working temperature of the chosen soldering material + 50°C.

Pre-drying time: 5.00 min
Heating-up time: 40°C/min
Hold time: 3.00 min

**Method 2:**

Preheat the restoration, with flux but without solder, in a preheating furnace for 15 – 20 min. at 400°C.

**Program no. 94**

End temperature is the working temperature of the chosen soldering material + 50°C.

Pre-drying time: 1.00 min
Heating-up time: 50°C/min
Hold time: 4.00 min