VITA - Vacumat 250

Operating - Manual

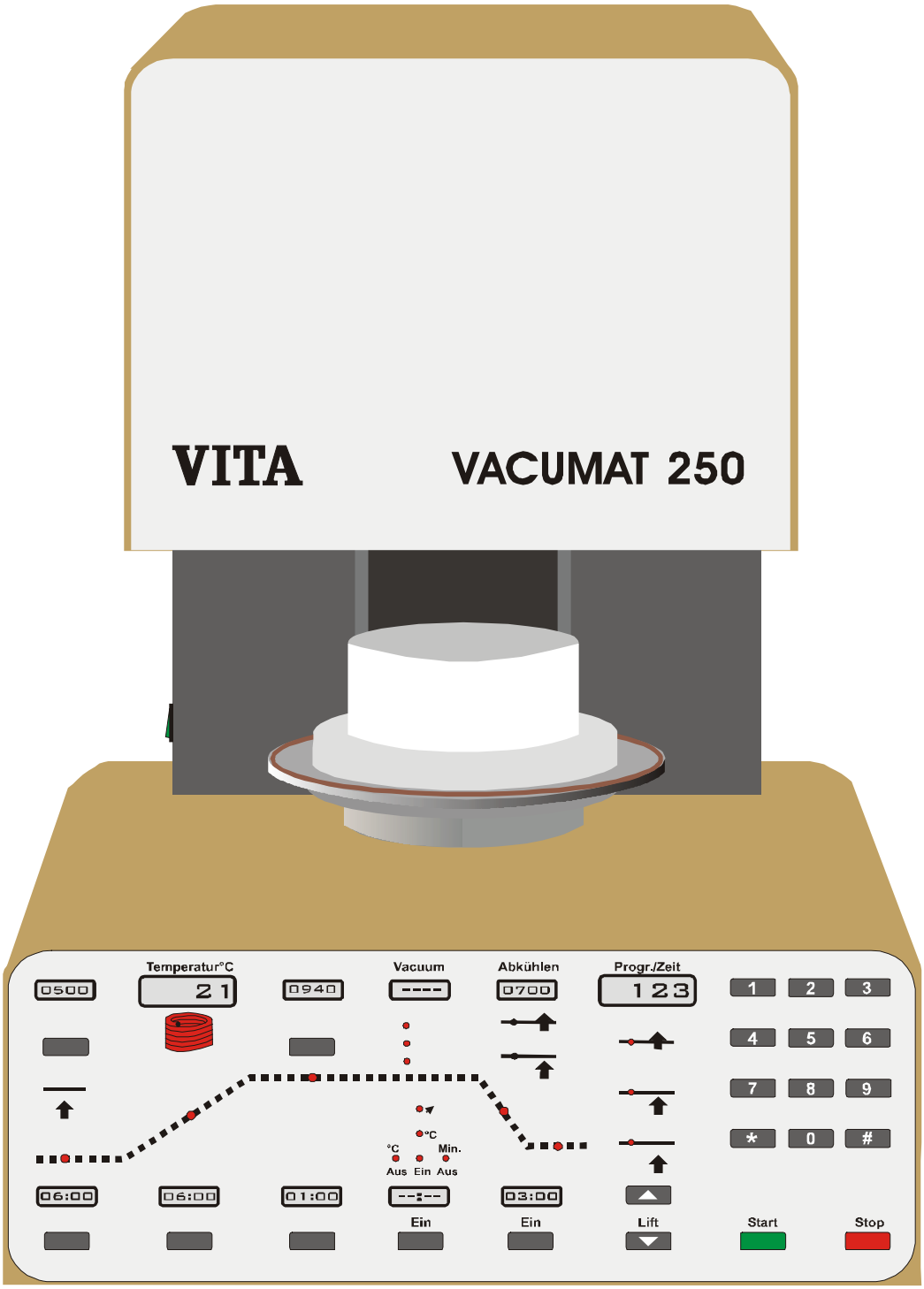


Table of Contents

1 Technical Specifications

Dimensions:	height: 540 mm width: 350 mm depth: 360 mm
Weight:	20,0 kg
firing chamber (utilizable space):	diameter: 96 mm heigth: 70 mm
power supply:	230 Volts A.C., 50/60 Hz
maximum power consumption:	1.5 KW
maximum temperature of firing chamber:	1200°C
Vacuum pump – available as an optional extra:	type PJ 9080 – 023.3, 230 Volts A.C., 50 Hz, IP20 weight 6.4 kg

Supply schedule:

1 special packing case containing:

1 VITA VACUMAT 250 furnace
1 firing tray
1 mains power lead complete with plugs
1 pair of furnace tweezers, 25 cm
1 set of firing trays AB, grey
1 set of firing trays G, grey
1 operating instructions manual
2 aluminium, black-anodized platforms for depositing hot firing trays
(only supplied with furnaces which have painted casings)

vacuum pump (supplied only upon specific request)

2 Installing & setting up for use

1. When positioning the furnace, a minimum of 25 cm space should be allowed for between it and any wall, either to the rear or sides.
2. Using the supplied mains power lead, connect the furnace up to the mains power supply
3. Connect the plug of the vacuum pump up to the socket at the rear of the furnace, and then press the vacuum hose onto the nozzle.
4. Press the power on/off switch to switch on the furnace, and the firing tray lift will descend to ist lower position. The temperature indicator (6) displays the temperature in the firing chamber, indicator no. 11 (prog. no. / time) displays the time of day.
5. Place the supplied firing tray onto the lift support plate.
6. Select the program „00“ with the programing input keys (K) and press the Start key (I), which will send the firing tray lift up into the firing chamber. The temperature will then rise until it reaches the factory-set starting temperature of 400°C. (The starting temperature can be altered program no. 381). The temperature indicator (1) showa the pre-programed temperature (end temperature), the temperature indicator (6) shows the temperature in the firing chamber (current temperature).

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

3 Temperature & time settings for the firing programs

The VITA VACUMAT 250 has a capacity of 250 freely selectable firing programs

The firing programs required for VITA materials are factory pre-programed, but can be altered at any time.

For all firing programs the following temperature and time settings can be selected:

1.	Pre-drying temperature	(indicator 1)	200°C – 700°C
2.	Firing temperature	(indicator 2)	450°C – 1200°C
3.	Pre-drying time	(indicator 3 and LD 1)	0:00 – 60:00 min.
4.	Heating-up time	(indicator 4 and LD 2)	3:00 – 20:00 min.
5.	Firing time to reach end temperature	(indicator 5 and LD 3)	0:00 – 60:00 min.
6.	Vacuum „ON“ at beginning of heating-up	(LD 4 and 6)	
7.	Vacuum „OFF“ - time-controlled	(LD 7)	0:00 – 40:00 min.
8.	Vacuum „ON“ – temperature-controlled	(LD 5 and 6)	400°C – 1000°C
9.	Vacuum „OFF“ – temperature-controlled	(LD 8)	600°C – 1200°C
10.	Cooling temperature	(indicator 9 and LD 12)	400°C – 1000°C
11.	Hold time for cooling temperature	(indicator 10 and LD 13)	0:00 – 20:00 min.
12.	Lift position during cooling phase, open or closed	(LD 14 and 15)	
13.	Choice of 3 lift positions	(LD 16, 17 and 18)	for pre-drying > 3 min.

14. When time and temprature settings other than mentiones above are entered, these are briefly displayed on the corresponding LCD indicator with the message „Err“. The previously stored setting is then resumed.

15. Program „0“ closing the firing cahmber without activating heating-up.

16. Program „00“ closing the firing chamber and heating-up to starting temperature.

17. Program „999“ fast closing down to starting temperature.

4 Selecting & starting firing cycle programs

1. Select the required firing program (nos. 1 - 250) via the programing input keys (K) and confirm with the # key
2. The LEDs light p to show all stages of the program stored. The firing temperatures and times are shown on the corresponding LCD indicators.
3. Press Start key (I) to activate the firing program.
4. The flashing LEDs indicate the stages of the program sequence in operation. The corresponding LCD indicators show the remaining running time (in minutes and seconds) for each stage in the program sequence.
5. The program in operation can be interrupted at any time with the Stop key (J).
6. The end of a firing program is indicated by a short, acoustic signal.

5 Entering and altering temperature & time settings

Once a firing program has been selected, all temperature and time settings can be altered as follows:

1. Pre-drying temperature (indicator 1)–enter values ranging from 200°C – 700°C.
2. Press key (A), and indicator (1) will display - - : - -. Enter temperature setting using the programing input keys (K) and confirm by pressing key #.
3. ★Firing temperature (indicator 2) – enter values ranging from 450°C – 1200°C.
4. Press key (B), and indicator (2) will display - - : - -. Enter temperature setting using the programing input keys (K) and confirm by pressing key #.
5. Pre-drying time (indicator 3) – enter values ranging from 0:00 – 60:00 min.
6. Press key (C), and indicator (3) will display - - : - -. Enter time setting using the programing input keys (K) and confirm by pressing key #.
7. ★Heating-up time (indicator 4) – enter values ranging from 3:00 – 20:00 min.
8. Press key (D), and indicator (4) will display - - : - -. Enter time setting using the programing input keys (K) and confirm by pressing key #.
9. ★End temperature firing time (indicator 5)–enter values ranging from 0:00 – 60:00 min
10. Press key (E), and indicator (5) will display - - : - -. Enter time setting using the programing input keys (K) and confirm by pressing key #.
11. Settings indicated ★ can be changed even after the program has started, provided they are not yet activated.

6 Entering & altering vacuum settings

The vacuum pump can be programed to switch on or off at a particular time or temperature setting as follows:

1. Select the firing program with the programing input keys (K).
2. If no vacuum settings are included in the selected program, vacuum „ON“ indicator (7) will display - - : - - and vacuum „OFF“ will display - - : - - LDs 4-11 in the vacuum block do not illuminate.
3. To enter vacuum parameters, activate entry mode as described.
4. If vacuum parameters have been defined in the selected program, the indicators will display the following: For vacuum „ON“ – either „LD 4 ↗ “ illuminates, vacuum „ON“ indicator (7) sisplays the pre-drying temperature setting. The vacuum pump is activated at the beginning of heating-up, or press key „F“ once more, and „LD5 °C“ illuminates, vacuum „ON“ indicator (7) displays the temperature setting at which the vacuum pump is activated. For vacuum „OFF“ „LD 7 OFF/min“ illuminates, vacuum „OFF“ indicator (8) shows the running time of the vacuum pump in min./sec. or „LD 8 OFF/°C“ illuminates, vacuum „OFF“ indicator (8) displays the switch-off temperature of the vacuum pump in °C. The vacuum setting in % is displayed by LD 9, LD 10 or LD 11.

To reach the entry mode for altering settings, proceed as follows:

Press vacuum „ON“ key (F) once to delete all LDs, if no vacuum is required, press key # and the program will run without vacuum. If vacuum is required, press vacuum „ON“ kay (F), then press key # to activate the entry mode. „LD 6 ON“ and „LD 4 ↗“ illuminate.

7 Activating the entry mode

1. Press vacuum „ON“ key (F), Vacuum „ON“ indicator (7) shows the pre-drying temperature setting, „LD 6 ON“ and „LD 4 ↗“ illuminate, Vacuum „OFF“ indicator (8) displays - - : - -.
2. By pressing the vacuum „ON“ key (F), it is now possible to set the vacuum to activate either at the beginning of heating-up (↗) or when a given temperature is reached (°C).
3. To activate the vacuum at the beginning of heating-up, select LD 4 with vacuum „ON“ key „F“ and confirm by pressing key #. Vacuum indicator (7) displays the pre-drying temperature setting.
4. To activate the vacuum at a given temperaure, press vacuum „ON“ key „F“ to select LD 5 °C, enter temperature setting with the programing input keys (K) and confirm by pressing key #. Vacuum indicator (7) now displays he temperature setting at which the vecuum pump is activated. Once the vacuum pump is programed to start, LD 7 OFF/Min. or LD 8 OFF/°C is illuminated.
5. By pressing the vacuum „ON“ key (F) it is now possible to deactivate the vacuum at a given time setting (e.g. 6 min.) or at a given temperature setting within the heating-up phase. Enter the require setting with the programing input kes (K) and confirm with key #. The switch-off value is displayed by vacuum indicator (8) in °C or min./sec.
6. If necessary, a reduced vacuum setting of 80 % or 50 % can be selected by pressing vacuum „ON“ (F). Confirm the selected setting by pressing key #. An entry at this point is necessary only if reduced vacuum is required, otherwise full vacuum (LD 9 – 100%) is automatically set.

8 Entering & altering cooling settings

1. Select firing program with programing input keys (K).
2. If the selected program includes no settings for slow cooling, indicators (9) and (10) display - - : - -, LD 12, 13, 14 and 15 do not illuminate. Activating entry mode, press „ON“ key (G) once, for further details see point 4.
3. If the selected program already includes settings for slow cooling, indicator (9) displays the target temperature setting in °C, indicator (10) displays the hold time for the cooling temperaturein min./sec., LD 14 or 15 indicates the lift position during cooling (with the firing chamber open or closed). Activating entry mode, press „ON“ key (G) once, for further details see point 4.
4. Press cooling „ON“ key (G) twice to illuminate LD 12, enter cooling temperature with the programing input keys (K) and confirm by pressing key #.
5. When LD 13 is illuminater, enter the hold time for cooling with programing input keys (K) in min./sec. and confirm by presing key #.
6. When LD 14 or LD 15 illuminates, select the required lift position with the „ON“ key (G) and confirm by pressing key #.

9 Lift positions for pre-drying

A choice of three lift positions is available for pre-drying with a pre-drying time of over 3 min. Once a firing program has been selected, any of the three lift positions can be selected by presing a lift key (H).

Indicator lights LD 16, 17 and 18 light up to show the lift positions selected. After the program has startd, the flashing indicator light shows the current lift position.

10 Uilities

All programs listen in the table can be selected by entering the corresponding progr. no. using the programing input keys. All entries must be confirmed by pressing the key #. To stop a program which has already been selected, press the program interrupt key „Stop“ (J).

Progr. no.	Program	Entry/Description	Indicator	
370	time	hrs./mins.	indicator 6/11 progr./time	
371	date	month/day	indicator 6	★
372	year	year	indicator 6	★
379	acoustic signal volume	0 – 7	indicator 6 displays entered value from 00 – 77	
381	starting temperature	200°C – 700°C	indicator 1	
383	adjusting temperature	plus/minus 20°C	indicator 6 for + value only enter setting for – value, enter setting and press key A value appears preceded by minus sign on indicator 6	★★
384	measuring vacuum parameters	only for maintenance purposes calibration programme for vacuum indicator	automatic test run, duration approx. 3 min.	**0**
387	measuring lift positions and intervals for pre-drying stages	pos.1 pre-drying lift pos.1 enter 0 - 40 pos.2 pre-drying lift pos.2 enter 30 - 60 pos.3 pre-drying lift pos.3 enter 50 -150 pos.4 lift pos. for cooling enter 30 -120 interval enter 20 - 60 sec.	indicator 1 shows pos. 1-4 and I n E for interval key „A“ to select pos. indicator 2 shows value entered confirm setting by pressing key #.	**1**
389	lift speed deactivate lift	speed „S up“ enter 80-220 speed „S dn“ enter 80-200 switch-off value „L up“ 80-220 switch-off value „L dn“ 80-200	Indicator 1 display pos. key „A“ to select pos. indicator 2 displays value entered	**2**
391	initializing	all time and temperature settings given in VITA firing chart are read into the memory	all displays active	**3**
396	operating time meter		indicator 1 displays hrs indicator 1 displays min./sec.	
999	fast cooling	temperature in firing chamber rapidly cooled to 50°C below starting temperature.	indicator 1 displays target temperature	
0		closing firing chamber without heating up		
00		closing firing chamber when heating up to starting temperature.	indicator 1 displays starting temperature (end temperature)	

Legend

This display can be activated by pressing kay „C“ when no firing program is running. The display is only active while in operation

★ ★ The temperature in the firing chamber can be alterd by +/- 20°C. The entire temperature range for all firing programs is altered by the entered value, i.e. an entry of + 20°C will result in a higher gegree of firing, an entry of – 20°C in a lower degree of firing.

0 The vacuum parameters are factory-calibrated. These settings only require to be changed when a pump other than that supplied with the furnace is used.

1 The lift position for pre-drying and cooling are also factory-calibrated. These settings can be altered by entering new settings using prog. no. 387. To check the altered lift positions, interrupt the program by pressing the Stop key (J), thwn start the program.

2 The speed at which the firing tray lift ascends and descends can be altered using prog. no. 389. Enter new settings to increase or decrease the lift speed. When altering the lift speed, also check the switch-off function and correct if necessary.

3 The setting for switching off the lift in the upper and lower positions must be selected to ensure the lift reaches the required position and does not switch off too early. The motor should switch off approx. 2 seconds after raeching the required (either upper or lower) positio (acoustic signal sounds). Find the correct switch-off value by checking with program „0“ (closing firing chamber without heating-up).

By activating this program, all settings required for VITA materials are reas into the memory. This means that after selecting a firing program according to VITA firing chart, all temperature and time settings are stored in the program.

11 Changing the muffel

Only to be carried out by, or under the supervision of VITA authorized personnel!

1. Isolate the furnace form ist electrical power source by removing ist plug from the socket
2. Unscrew the 4 screws in the sides of the anodized top cover of the furnace, remove them together with their cups, and then lift cover off (remove earthed conductor wire from anodized furnace top cover).
3. Unscrew the 6 screws in the top cover of the firing chamber, and then lift this off also.
4. Remove the insulation disc and insulating slab, disconnect the wires from the thermocouple,and then lift out the insulation stone complete with thermocouple
5. Disconnect the wires from the defective quatz glass spiral muffle and then lift it out
6. Place the 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 anodized furnace top cover!

12 Firing cycle chart

VITA OMEGA	Progr. no.	Pre-drying °C			Temp. approx. °C		VAC
Oxidation	1	600	0.00	4.00	980	5.00	0.00
(1) 1st opaque firing (powder)	2	600	2.00	3.00	950	1.00	3.00
1st opaque firing (paste)	52	600	6.00	6.00	950	1.00	6.00
(1) 2nd opaque firing (powder)	3	600	2.00	3.00	930	1.00	3.00
2nd opaque firing (paste)	53	600	6.00	6.00	930	1.00	6.00
Dentine firing	4	600	6.00	6.00	930	1.00	6.00
2nd dentine firing	5	600	6.00	6.00	920	1.00	6.00
3rd dentine firing	6	600	6.00	6.00	910	1.00	6.00
Glaze firing	7	600	0.00	3.00	930	1.00	0.00
Glaze firing with VITACHROM Fluid	8	600	4.00	3.00	930	1.00	0.00
Glanze firing with GLAZE no. 740	9	600	4.00	3.00	900	1.00	0.00
Margin porcelain firing „Margin ★“	10	600	6.00	6.00	950	1.00	6.00

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

VITA VMK 95	Progr. no.	Pre-drying °C			Temp. approx. °C		VAC
Oxidation firing	11	Follow manufacturer's instructions !					
1st opaque firing (powder)	12	600	2.00	3.00	950	1.00	3.00
1st opaque firing (paste)	52	500	6.00	6.00	950	1.00	6.00
2nd opaque firing (powder)	13	600	2.00	3.00	930	1.00	3.00
2nd opaque firing (paste)	53	500	6.00	6.00	930	1.00	6.00
Dentine firing	14	600	6.00	6.00	930	1.00	6.00
2nd dentine firing	15	600	6.00	6.00	930	1.00	6.00
3rd dentine firing	16	600	6.00	6.00	920	1.00	6.00
Correction porcelain firing CORRECTIVE	-*)	600	4.00	6.00	900	1.00	0.00
Glaze firing	17	600	0.00	3.00	930	1.00	0.00
Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid	18	600	4.00	3.00	930	1.00	0.00
Glaze firing with Glasurmasse 740 / Akz 25	19	600	4.00	3.00	900	1.00	0.00
Margin porcelain firing "MARGIN"	20	600	6.00	6.00	930	1.00	6.00

*) = Enter program number yourself

VITA VMK 68	Progr. no.	Pre-drying °C			Temp. approx. °C		VAC
Oxidation	21	600	0.00	4.00	980	5.00	0.00
1st opaque firing	22	600	2.00	3.00	950	1.00	3.00
2nd opaque firing	23	600	2.00	3.00	930	1.00	3.00
Dentine firing	24	600	6.00	6.00	930	1.00	6.00
2nd dentine firing	25	600	6.00	6.00	920	1.00	6.00
3rd dentine firing	26	600	6.00	6.00	910	1.00	6.00
Glaze firing	27	6000	0.00	3.00	930	1.00	0.00
Glaze firing with VITACHRIM Fluid	28	600	4.00	1.00	930	1.00	0.00
Glanze firing with GLAZE no. 740	29	600	4.00	1.00	900	1.00	0.00

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

VITA OMEGA 800	Progr. no. *)	Pre-drying °C			Temp. approx. °C		VAC
Oxidation	--	450	0.00	3.00	800	10.00	12.30
Bonder	--	450	2.00	3.00	800	2.00	3.00
Pre-Opaque	--	450	2.00	3.00	800	2.00	3.00
Opaque	--	450	2.00	3.00	790	2.00	3.00
Dentine firing	--	450	6.00	7.00	790	2.00	7.00
Galze firing	--	450	3.00	3.00	800	2.00	0.00

∗) = Enter program number yourself

VITA OMEGA 900	Progr. no.	Pre-drying °C			Temp. approx. °C		VAC
Oxidation firing	41	Follow manufacturer's instructions !					
1st opaque firing (powder)	42	600	2.00	4.00	900	2.00	4.00
1st opaque firing (paste)	54	500	6.00	6.00	900	3.00	6.00
2nd opaque firing (powder)	43	600	2.00	4.00	900	1.00	4.00
2nd opaque firing (paste)	55	500	6.00	6.00	900	2.00	6.00
Dentine firing	44	600	6.00	6.00	900	1.00	6.00
2nd dentine firing	45	600	6.00	6.00	890	1.00	6.00
3rd dentine firing	46	600	6.00	6.00	890	1.00	6.00
Glaze firing	47	600	0.00	4.00	900	2.00	0.00
Glaze firing with VITACHROM DELTA Fluid / Akzent Fluid	48	600	4.00	4.00	900	2.00	0.00
Glaze firing with Glasurmasse 740 / Akz 25	49	600	4.00	4.00	900	1.00	0.00
Margin porcelain firing "LUMINARY"	50	600	6.00	6.00	900	2.00	6.00

Alloys with a thermal expansion coefficient ≥ 14.5 x 10^{-6} x 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.

VITADUR ALPHA	Progr. no.	Pre-drying °C	→	↗	Temp. approx. °C	→	VAC
Hard core porcelain	31	600	0.00	6.00	1.120	2.00	6.00
Hard core porcelain with profile	-*)	600	6.00	6.00	1.120	2.00	6.00
Dentine firing	32	600	6.00	6.00	960	1.00	6.00
2^{nd}+3^{rd} dentine firing	33	600	6.00	6.00	950	1.00	6.00
Glaze firing	34	600	0.00	3.00	940	1.00	0.00
Glaze firing with VITACHROM Fluid	35	600	4.00	3.00	940	1.00	0.00
Gale firing with GLAZE no. 740	36	600	4.00	3.00	920	1.00	0.00

∗) = Enter program number yourself

Additional programs	Progr. no.	Pre-drying °C	→	↗	Temp. approx. °C	→	VAC
Metall - Corrector	91	600	2.00	6.00	1.040	1.00	0.00
Spectra-Gold	92	550	0.00	3.00	820	1.00	0.00
Furnace soldering 1	93	600	5.00	5.00	z.B.800	3.00	0.00
Furnace soldering 2	94	600	1.00	3.00	z.B.800	4.00	0.00

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

Set final temperature by adding 50°C to melting point of solder.

Pre-drying time: 5.00 min
Heating-up time: 5.00 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

Set final temperature by adding 50°C to melting point of solder.

Pre-drying time: 1.00 min
Heating-up time: 3.00 min
Hold time: 4.00 min

13 Operating the furnace

Display indicators:

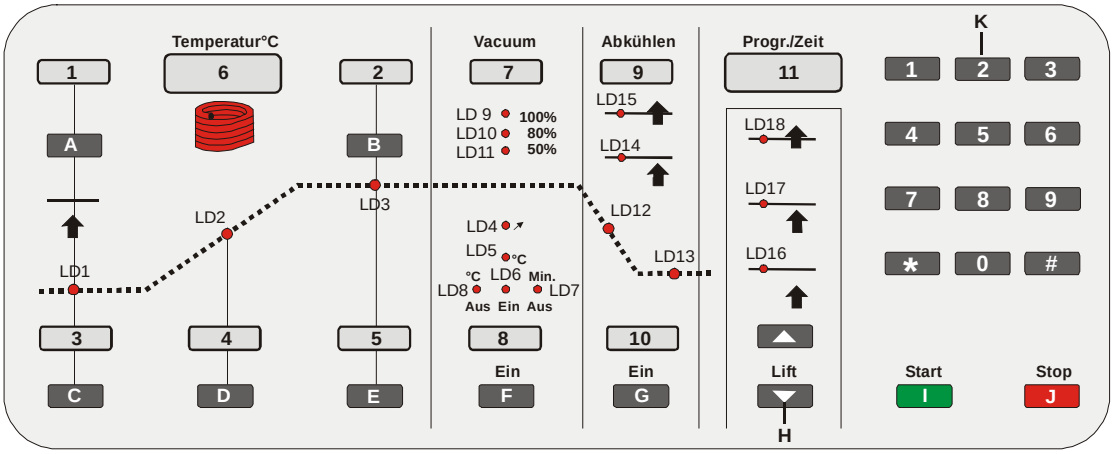
1 Starting and pre-drying temperature
2 End temperature
3 Pre-drying time setting
4 Heating-up time setting
5 End temperature firing time
6 Current temperature in firing chamber
7 Vacuum setting and Vacuum „ON“ at start of heating-up or at a given temperature setting
8 Vacuum „OFF“ – time or temperature controlled
9 Cooling temperature
10 Hold time for cooling temperature
11 Programme no. and time of day

Keys:

A Altering starting temperature
B Altering end temperature
C Altering pre-drying temperature setting
D Altering heating-up time setting
E Altering end temperature firing time
F Altering vacuum settings
G Altering cooling settings
H Firing tray lift keys
I Programme activate key „Start“
J Programme interrupt key „Stop“
K Programming input keys

LED control lights indicating current stage in programme sequence:

LD 1 Pre-drying
LD 2 Heating-up
LD 3 End temperature
LD 4 - LD11 Vacuum
LD12 - LD15 Cooling
LD16 - LD18 Lift positions



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Herausgabe dieser Gebrauchsinformation: 02/03
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