VITA VACUMAT® 40

Operating Manual

VITA
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Technical information

1.1 General functions

- 100 freely programmable firing programs
- Illuminated graphic display
- Clearly structured and controllable firing cycles
- 1 long-time cooling phase can be selected for each program
- Highest temperature accuracy
- Temperature adjustment program with silver sample
- Automatic temperature adjustment
- In case of power cut < 15 sec no abortion of program
- In case of power cut > 15 sec message in display
- Choice of three lift positions in pre-drying phase

1.2 Technical data

Width: 220 mm
Depth: 320 mm
Height: 420 mm
Casing: steel / stainless steel
Weight: 10.5 kg
Firing chamber-capacity: Diameter: 90 mm
Height: 55 mm
Firing chamber-temperature: max. 1190 °C

1.3 Electrical data

Power supply: 110/115 or 230 Volts AC, 50 Hz
Power consumption: max. 1500 Watts
Classification: Safety class 1
Power supply for vacuum pump: 110/115 or 230 Volts, 50/60 Hz max., 0.2 kW

1.4 Scope of delivery

Furnace in special shipping carton with:

- 1 keyboard
- 1 firing tray
- 1 mains power lead
- 1 pair of furnace tweezers
- 1 set of firing trays A + B
- 1 set of firing trays G
- 1 operating manual

Vacuum pump (option): 110/115 or 230 Volts, 50/60 Hz
Weight approx. 6.4 kg
2 Installation and starting-up

2.1 Installation

- When positioning the furnace, the minimum distance of the furnace from any wall should be at least 25 cm.
- 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. However, 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.
- Do not place the keyboard directly into the heat radiation area of the firing chamber.

2.2 Connecting the furnace to the main supply

Notice: Prior to starting-up, observe safety advice item 3!

- Connect furnace to the main supply (fig. 1). Do not use multiway socket outlet with extension, overload may result in a fire.
- Connect vacuum pump (fig. 1).
- Connect keyboard with the furnace (on the side) and open it (fig. 2). Do not place the keyboard in the area of direct heat radiation of the firing chamber.
- Switch on the furnace with the main switch (fig. 1), lift will descend into lower position.
- Place the firing tray onto the lift support plate (fig. 2).
- Activate with Standby Mode key (for further information see Standby Mode).

2.3 Furnace out of operation

If the furnace is not used, the lift should be moved with the loading tool into the firing chamber and the unit should be switched off with the main switch. Closing the firing chamber will protect the insulation and avoid the absorption of moisture.
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 furnace.

3.1 Information of labels

This is a warning symbol about dangerous electrical current. Disconnect the unit from the main supply before opening it (fig. 3).

Caution if rear panel is removed:
there may be a residual voltage of up to 400 volts on the board if the unit is switched off.

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.
When the unit is switched on, the lift will descend into the lower position (fig. 3).

Use lateral plate to place firing objects on (fig. 3).

Furnaces must not be operated without firing tray placed (fig. 2).

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 main supply, do not reach into the open firing chamber to avoid contact with live and hot components.

3.2 Clearing of the furnace

Unplug the unit each time before it is cleaned (fig. 3)!!

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 (especially of the lift drive).

Do not use hot objects for the keys of the keyboard,
e.g. pair of tweezers
The keyboard should only be cleaned with a dry cloth or brush.

Basically, no cleaning agents and no flammable liquids should be used for any type of cleaning work.
3.3 **Fuses**

In the rear panel 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.

[1 Ampere] [8 Ampere]

3.4 **CE-mark**

The use of the CE-mark entails the legally binding statement that the unit complies with the basic requirements of guideline 73/23 / EEC (Low Voltage Guideline) as well as guideline 89 336 / EWG (EMV - guideline).

3.5 **Cooling fan**

The furnace has been equipped with a cooling fan which will be switched on and provide half of its power after starting a firing program at a temperature of 605 °C to 800 °C in the firing chamber and then offer full power up to the end of the program and cooling down to 600 °C. The cooling fan avoids excessive heating of the furnace and contributes to ensure the general operational reliability of the furnace.

In case of failure of the cooling fan an error message is shown on the display (see error messages). For safety reasons the furnace should not be operated without the cooling fan.

Do not block the upper cover of the firing chamber or the openings of the rear panel.

4 **Protection against power failure**

4.1 **Main power failure**

The Vacumat 40 furnace is protected against power failure. This element avoids program abortion and thus incorrect firing in case of a short failure of the main voltage supply. This backup device is activated immediately in the event of a main power failure during an active firing program.

In case of a failure of less than approx. 10 sec, the program continues and is not aborted.
Display shows Error 09 (see error messages). Pressing the Stop key deletes the Error message and the data of the program sequence will be shown on the display again.

In the case of a failure of more than 15 sec the program is aborted and the display shows Error 08 (see error messages). Pressing the Stop key deletes the Error messages.

<table>
<thead>
<tr>
<th>Error 9</th>
<th>Recover</th>
<th>Continue: STOP</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Error 8</th>
<th>Power Fail</th>
<th>Continue: STOP</th>
</tr>
</thead>
</table>
5 **Rapid cooling down of the firing chamber**

To ensure that the furnace can be quickly reused for further firing processes, the pump can be activated by pressing.

**Precondition: no active program, lift tray in lower position and temperature in the firing chamber higher than standby temperature.**

After cooling down to 50 °C below the standby temperature, the pump is switched off, the lift is raised into the upper position and the temperature rises up to the standby temperature (Standby).

6 **Standby-Mode**

6.1 **Start**

Switch on furnace with the main switch – lift ⇧

<table>
<thead>
<tr>
<th>Time</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td>20 °C</td>
</tr>
<tr>
<td>10.01.1999</td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>500 °C</td>
</tr>
<tr>
<td>08.00</td>
<td>20 °C</td>
</tr>
<tr>
<td>10.01.1999</td>
<td></td>
</tr>
</tbody>
</table>

6.2 **Stop**

**STOP** Lift ⇩

Changing the Standby temperature see utilities No.1.

If the unit is switched on as well as in the standby mode, the time and the date are displayed (see utilities No. 15 and 16).
7 Firing programs

7.1 General information on firing programs and display

100 freely programmable firing programs are available. The programs include the following adjustable parameters:

1 Firing programs No. 1 – 100
   Set Mode (change/enter program values) or
   Run Mode (firing program active)

2 Pre-drying temperature 200°C - 700°C

3 Pre-drying time 0 - 40:00 min (entry in min/sec.)

4 Lift positions rising rate see item 8

5 Temperature rising rate 2:00 - 40:00 min, 20°C/min - 120°C/min
   (see also item 7.2 temperature rising rate)
   max. 1200 °C

6 End temperature

7 Hold-time for end temperature 0 - 40:00 min (entry in min/sec.)

8 Vacuum Start and vacuum value * Start simultaneously with temperature rising rate
   (pre-drying-temperature)
   or selection for start in the temperature range of
   200°C - 1100°C

   * After the start of the vacuum pump the
   vacuum value is displayed in %
   (see also item 7.3 vacuum display)

9 Vacuum Stop rising time is automatically taken over as vacuum time,
   or individual selection of Stop in the temperature
   range of 500°C - 1200°C or time range max. rising
   time plus temperature hold-time

10 Cooling temperature 200°C - max. end temperature in the program

11 Lift position slow cooling see also item 7.8

12 Display for temperature in the firing chamber up to 1200°C

The values for lift position, pre-drying (4) and slow cooling (11)
can be removed from the display with the utilities
program No. 17
7.2 Temperature rising rate

The temperature rising rate is displayed in the Set-Mode (program selected) in °C/min and in min/sec.
The value to be entered can be selected between °C/min (20°C – 1120°C) or min/sec.
(2:00 – 40:00).
The second value is calculated automatically and displayed.
Values outside the acceptable range activate a warning signal and the final, valid value is displayed again.
If – due to the entry of a temperature rising rate in min/sec – the calculated temperature rising rate of 20 °C/min is not reached or the upper value of 120 °C is exceeded, a valid rising time is automatically entered in min/sec.

If the pre-drying temperature or the firing temperature is changed after entering the temperature rising rate, the value °C/min is corrected, the time in min/sec remains unchanged as long as the value lies within the permissible range.

7.3 Vacuum display

The vacuum display shows the value in %.
Starting from the atmospheric pressure on sea level of 100 mbar:

100 % = 1000 mbar (can not be achieved)
95 % = 950 mbar or 50 mbar absolute
90 % = 900 mbar or 100 mbar absolute

The vacuum value that is achieved depends on the power of the vacuum pump used and ranges between 85 to 95 % (150 mbar – 50 mbar absolute).

If the vacuum value of 30 % is not reached within 15 sec during a firing program, the firing program is aborted and error message Vacuum, Error 00 is displayed.
7.5 Set-Mode, selecting a program, changing program values

Precondition: On-Mode, lift tray in lower position, no active program.

Program that was started last is displayed e.g. No. 4

Program starts (Run-Mode)

or

Changing program no.

1 2 3
4 5 6
7 8 9
0

When selecting programs with numerical block press # to confirm, not required when selecting with plus/minus keys.

Program starts

or changing program values

Selecting program value (selected value is displayed inversely)

Changing program value

1 2 3
4 5 6
7 8 9
0

temperature rising rate, see also 7.2

Changed values must be confirmed/stored by pressing # or ▲ / ▼

The key * is pressed to set back entered values,

program starts (changed values are stored)

or select/change next program value

or
7.4 Function of keys in the On-, Set- and Run-Mode

Mode: On: Furnace switched on, lift in lower position, no active program.
Prog Set: program selected
Prog Run: program started

1 On-Mode: activates standby
Set-Mode: starts program (previously changed values are stored)
Run-Mode: no function

2 STOP On-Mode: no function
Set-Mode: end set mode (previously changed and unconfirmed values are not stored)
Run-Mode: program abortion

3 Prog On-Mode: activates Set-Mode, program that was selected last is called
Set-Mode: no function
Run-Mode: no function

4 Add On-Mode: no function
Set-Mode: change of program No. and program values, plus/minus
Run-Mode: no function
5  
On-Mode:  
Set-Mode: manually moving lift up/down selection of program steps and simultaneous storing of the value changed last and call of next program step.

Run-Mode: manually moving lift up/down (not active with vacuum)

6  
On-Mode:  
Set-Mode: call utilities (see utilities)
call function input for vacuum parameters
call function input of cooling parameters
call function input of lift positions pre-drying

Run-Mode: no function

7  
On-Mode:  
Set-Mode: 0 to 9 enter program No. and program values

Run-Mode: no function

8  
On-Mode:  
Set-Mode: rapid cooling down of firing chamber (see item No. 6)
sets back/deletes values

Run-Mode: no function

9  
On-Mode:  
Set-Mode: no function

Run-Mode: Stores changed values and starts next program step.
no function
Run-Mode, program started

Precondition: On-Mode, lift tray in lower position, no active program.

Set-Mode selected (program selected),
(see item 7.5)

Run-Mode can be started with key.

The countdown of the respective time informs about the program progress.

After switching on the vacuum pump the vacuum value is displayed in the Start box.
7.7 Entering / changing / deleting vacuum parameters

Service

Precondition: program selected (Set-Mode),

press one time, programmed values are displayed.

Vacuum Off = no values displayed
Vacuum On = the pre-drying time is entered for Vacuum
Start (start of vacuum pump with start of temp. rising
time) for Vacuum Stop the temp. rising time/end temperature is taken over.

Prog Set 4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum</td>
<td>On</td>
</tr>
<tr>
<td>Vacuum Start</td>
<td>600 °C</td>
</tr>
<tr>
<td>Vacuum Stop (time)</td>
<td>6:00 min</td>
</tr>
<tr>
<td>Vacuum Stop (Temp)</td>
<td>960 °C</td>
</tr>
</tbody>
</table>

Selecting Vacuum On or Off:

+ or select On with key 1 in the numerical block and confirm with #

or

- select Off with key 0 in the numerical block and confirm with # (vacuum values not shown)

Changing vacuum parameters:

△ these keys are used to select between vacuum parameters
selected range can be changed.

Acceptable values for:
Vacuum Start = in the temperature range from pre-drying temperature to final temperature.

Changes of values with

+  or  →  1 2 3

1 2 3

4 5 6

7 8 9

0 .

Changed values must be confirmed/stored with

# or △ /

STOP

Set-Mode End of vacuum (any changed and unconfirmed values are not stored).
7.8 **Slow cooling**

**Precondition:** Program selected (Set-Mode), press two times, programmed values are displayed.

Cooling Off = all values are hidden
Cooling On = programmed values are displayed.

**Prog Set 4**

<table>
<thead>
<tr>
<th>Cool Down</th>
<th>Temp:</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>500 °C</td>
</tr>
<tr>
<td>40 %</td>
<td>700 °C</td>
</tr>
</tbody>
</table>

**Selecting slow cooling On or Off:**

- ▼ or select On with key 1 in the numerical block and confirm with key #
- ▲ or select Off with key 0 in the numerical block and confirm with # (cooling down parameter hidden)

These keys are used to select cooling down temperature and lift position, selected value can be changed.

**Acceptable values:**

- Cooling down temperature = 200°C – max. end temperature in the program
- Lift position = 0 – 99 % (0 % lift in lower position)

**Changes of values with**

- ▼ or ▲

**Changed values must be confirmed/stored with**

- # or ▲ / ▼

**STOP** Set-Mode End of cooling down (any changed and unconfirmed values are not stored).
Lift position for pre-drying

With the utilities No. 18, entry of unit parameters, the following basic values for the lift positions are entered:

Pos. 1 = 0 %  time 50 sec.
Pos. 2 = 25 %  time 50 sec.
Pos. 3 = 50 %  remaining pre-drying time

These values can be changed for each program.

Precondition: program selected, (Set-Mode)

Service  
- press three times, display shows programmed values,
- Pre-drying Lift position 1 underlined.

These keys are used to select lift positions and intervals, selected value is underlined and can be changed

Acceptable values:
- Lift position 1 = 0 – 30 % (0 % = lift in lower position)
- Lift position 2 = 0 – 60 % but not smaller than position 1
- Lift position 3 = 0 – 80 % but not smaller than position 2
- Interval 1 = 0 – 120 sec.
- Interval 2 = 0 – 120 sec.
- Interval 3 = automatic entry of remaining pre-drying time.

Changes of values with

Changed values must be confirmed/stored with

STOP  Set-Mode end (any changed and unconfirmed values are not stored).

Display for lift positions can be shown or hidden with Service No. 17.
Utilities

9.1 *Functions of keys in the Service-Mode:*

Precondition: On-Mode, lift tray in lower position, no active program.

Service call Utilities-Mode, start with No. 1
store changes and end service program.

Selecting On = key 1 or Plus key
Selecting Off = key 0 or Minus key

Changes of values

store changes and call next service program.

STOP press once, set back change of value.
press two times to end service program

9.2 *Service No. 1 Standby (Standby - Temperature)*

Service is pressed
display shows selected value (e.g. 500°C)

Changes of values (range 200°C - 600°C)

Service - store and end

or

store and start next service program.
9.3 Service No. 2: Lift speed

Service then ▲ is pressed until Service No. 2 is displayed
display shows previously selected values

These keys are used to select between raising and lowering speed,
selected value is underlined and can be changed.

Acceptable values:
Lowering: approx. 6 – 16 sec.
Raising: approx. 6 – 16 sec.

+ changes of values

Service store and end

or

▲ store and call next service program.

Note: When selecting/changing values, the lift moves into the upper or lower position after approx. 5 sec to determine the correct speed.
9.4 Service No. 3: Signal time

Service then is pressed until Service No. 3 is displayed.
Display shows previously selected values.

Acceptable values: 0 – 20 sec. or continuously

Service store and end

or

store and call next service program.

9.5 Service No. 4: Function STOP-key

Service then is pressed until Service No. 4 is displayed.
Display shows previously selected values.

changes of values

Acceptable values: 1 = Press Program Stop once
2 = Press Program Stop two times

Service store and end

or

store and call next service program.
9.6 Service No. 5: Show total operating hours

Service then ▲ is pressed until Service No. 5 is displayed.
Display shows total operating hours of the furnace.

Service end

or

▲

▼ call next service program.

9.7 Service No. 6: Show total operating hours of muffle

Service then ▲ is pressed until Service No. 6 is displayed.
Display shows operating hours of muffle.

Service end

or

▲

▼ call next service program.

9.8 Service No. 7: Call up furnace No.

Service then ▲ is pressed until Service No. 7 is displayed.
Display shows furnace No.

Service end

or

▲

▼ call next service program.
9.9 Service No. 9: Call up software No.

Service then \( \triangleleft \) is pressed until Service No. 8 is displayed.
Display shows software No.

Core = Software No. of operating element
CTRL = Software No. of main board

Service end

or

call next service program.

9.10 Service No. 9: Service-Hotline

Service then \( \triangleleft \) is pressed until Service No. 9 is displayed.
Display shows Tel. * 49 (0) 7761/562222

Service end

or

call next service program.
9.11 **Service No. 10: Temperature adjustment with silver sample**

With this program and the VITA silver sample set (VITA Order No. B 230) the temperature in the firing chamber can be checked and readjusted in the range of plus/minus 20 °C. Upon readjusting it must be ensured that the instructions to perform (instructions in the silver sample set) the test with the silver sample are strictly adhered to. Noncompliance leads to incorrect measurements and thus to incorrect adjustment.

**Service** then **△** is pressed until Service No. 10 is displayed

Use keys

**+**

**-** to set Temp. - Offset to "0"

Check program values:

**Prog** check program values.

**△** select/change program values with the keys

```
1  2  3
4  5  6
7  1  2
```

the following values should be included in the program:

- Pre-drying temperature 600 °C
- Pre-drying time 1:00 min
- Temperature rising time 6:00 min
- End temperature 955 °C
- Hold-time for end temperature 3:00 min

Changed values must be confirmed/stored with **#** or **△** / **△**

**STOP** end check/input of program values
Start program:

*Place silver sample on lift tray*

- is pressed, program starts
  - *acoustic signal at the end of the program*

**STOP** signal off

- melting point of silver sample is O.K.
  (silver should have melted slightly)
- **Service** program completed

or

- melting point of silver sample is not O.K.

**+** adjustment of temperature e.g. plus 10°C
  (range of plus/minus 20°C)

then **-**

program starts – see, *acoustic signal at the end of the program.*

When the melting point of the silver sample is reached, the temperature-offset value will be stored when the **Service** key is pressed.

Temperature control and thus the temperature in the firing chamber is adjusted with this value.

9.11.1 **Silver sample set VITA - Order No. B 230**

VITA silver sample set for temperature control contains

- Description
- VITA silver sample set for temperature control
- 6 ceramic trays
- 3 silver rods with a length of 70 mm and a diameter of 1.5 mm
9.12 Service No. 11: Automatic temperature adjustment

Automatic temperature adjustment is activated after switching on the furnace at intervals of 100 operating hours of the muffle. During this process the display shows for approx. 15 sec:
Auto Electronic.

Preconditions are:
Automatic temperature adjustment ON
• 100 operating hours of muffle have expired
• Temperature in the firing chamber lower than 50 °C

Automatic temperature adjustment considers and corrects any deviation of the electronic components within the temperature measuring circuit. Accordingly, a constant temperature control of +/- 1 °C is ensured even when the furnace is operated over longer periods.

Selecting Service program:
Service then is pressed until
Service No. 11 is displayed.

with key On is selected
or
with key Off is selected
Service end
or

store and call next service program.

9.13 Service No. 12: Code digit for PC connection

Service then is pressed until
Service No. 12 is displayed.

enter code digit

Acceptable range: 0 to 255
Service store and end
or

store and call the next service program.
9.14 **Service No. 13: Activate/reactivate data transfer**

Service then is pressed until Service No. 13 is displayed.

with key On is selected

or

with key Off is selected

Service end

or

store and call next service program.

9.15 **Service No. 14: Brightness/contrast of display**

Service then is pressed until Service No. 14 is displayed.

Display shows values selected so far

or

These keys are used to select between brightness and contrast, selected value is underlined and can be changed.

Acceptable values:
Brightness: 0 – 100 %
Contrast: 0 – 100 %

changes of values

Service store and end

or

store and call next service program.
9.16 **Service No. 15: Setting of time**

Service then ⬆️ is pressed until Service No. 15 is displayed.

These keys are used to select time of the day, (hrs - min), day, month and year; selected value can be changed. The sequence and the display of the parameters depends on the time and date format set in Service No. 16.

Acceptable values:
- Hours: 0 - 24 (0 - 12 am, 0 - 12 pm)
- Minutes: 0 - 60
- Month: 1 - 12
- Day: 1 - 31
- Year: up to 2099

Service ⬆️ store and end

or

Service ⬇️ store and call next service program.

9.17 **Service No. 16: Time - Date format**

Service then ⬆️ is pressed until Service No. 16 is displayed.

These keys are used to select a 12-hour or 24-hour display of time.

Service ⬆️ store and end

or

Service ⬇️ store and call next service program.
9.18 Service No. 17: Show – hide display messages

Service then ▲ is pressed until Service No. 17 is displayed.

▲ or ▼

These keys are used to select display messages for lift position pri-drying and lift position slow cooling down; selected message can be changed.

with key ▲ On is selected

or

with key ▼ Off is selected

▲

▼ changes

Service store and end

or

▲

▼ store and call next service program.
9.19 Service No. 18: Enter furnace parameters

Notice: When this program is run, individual values that have been entered will be overwritten with the values recommended by the manufacturer of the furnace.

Pre-stored basic setting for:

Service No. 1  Standby temperature  500°C
Service No. 2  Lift speed,  \( \uparrow = 10 \quad \downarrow = 14 \)
- Lift positions for pre-drying
  Pos. 1 = 0 %
  Pos. 2 = 25 %
  Pos. 3 = 50 %
  Pos. 4 = 50 %
- Lift position for cooling
  Pos. 1 = 50 sec.
  Pos. 2 = 50 sec.
Service No. 3  Time for buzzer  5 sec
Service No. 4  Abortion of firing program  1x Stop
Service No. 10  Temperature adjustment with silver sample
  Temp. - Offset = 0
Service No. 11  Automatic temperature adjustment  On
Service No. 12  Code digit for PC connection  1
Service No. 13  Store process data  Off
Service No. 14  Display brightness
  contrast  50 %

Reading basic furnace setting in the memory:

Service then \( \Rightarrow \) is pressed until Service No. 18 is displayed.
Display shows e.g.
00016 h = performed last during operating hour 00016.

man = performed manually (with Progr. No. 18)
or auto = automatically (only with new board)

Keep key pressed for approx. 5 sec
(countdown in the display), only then basic furnace setting are read in the memory.

Service end
or
9.20 Service No. 19: Read firing table in the memory:

Service then \( \text{ } \) is displayed until Service No. 19 is displayed.
Display shows e.g. 00016 h = was performed last during operating hour 00016.
man = performed manually (with Progr. No. 18)
or display auto = automatically (only with new board)

read in memory with key
keep key pressed for 5 sec
or
(countdown in the display), only then the firing table is read in the memory.

Service end

or

Service

call next service program.

9.20 Service No. 20: Delete process data

Service then \( \text{ } \) press until Service No. 20 is displayed.
Display shows e.g. 00016 h = was performed last at operating hours 00016.
50 = 50 data records are stored in the memory

keep key pressed for 5 seconds,
or
(countdown in the display), only then the records contained in the memory will be deleted.

Service end

or

Service

call next service program.

Caution: The data records in the memory will be automatically deleted during the transfer with the FDS program to a PC.
Service No. 21  Firing program – write / read parameters

The data of the firing programs have been stored in the memory of the keyboard.
In order not to lose firing programs that have been entered individually when exchanging the keyboard, it is possible to write the values to the memory of the board using the Service program "write".
This process should be carried out after any changes of firing programs to avoid loss of data.
If required, the firing programs can be read in the memory of the keyboard again using the service program "read".

Service press until Service No. 21
then is displayed.

Display shows e.g.

Select with keys:

write = write values to memory
or
read = read in memory of keyboard
keep key pressed for 5 sec,

or
(countdown in the display), only then the data
are transferred.

Service end

or

call next service program.

Service No. 22  Service parameters

READ WRITE

9.22  Service No. 21  Service – write / read parameters

The data Service Parameters (standard values see operating instructions Service Program No. 18) are stored in the memory of the keyboard.
In order not to lose firing programs that have been entered individually when exchanging the keyboard, it is possible to write the values to the memory of the board using the Service program "write".
This process should be carried out after any change of service parameters to avoid loss of data.
If required, the service parameters can be read in the memory of the keyboard again using the service program "read".

Press until Service No. 22 is displayed.

Display shows e.g.

Select with keys:

- \( ▲ \)
- \( ▼ \)
- \( ◀ \)
- \( ◁ \)

write = write parameters in the memory
or
read = read in memory of keyboard
keep key pressed for 5 sec,

or
(countdown in the display), only then the data will be transferred.

Service end

or

Service then \( ▲ \)

or

\( ▼ \)

call next service program.
9.23 Service Nr. 23 Language

Then press until Service No. 23 is displayed.

Display shows e.g.

Use keys

or

to select German, English, Spanish, Italian or French.

Service end

or

call next service program.

9.24 Error messages Error 01 – Error 29

In case of a malfunction Error xx is shown on the display.
The message can be reset by pressing the Stop key or by switching the unit
on and off.
If the malfunction is not eliminated, the message is repeated, the unit, however, can
only be operated after the elimination of the malfunction.
When one of the error messages listed below is displayed, it is required to contact
the manufacturer or an authorized service company,
see also Service No. 9, Service-Hotline.

In most cases it is necessary to open the furnace in order to detect or to verify an
error that has occurred.
For this purpose the aspects described under “Safety advice” must
be observed.

Error 00 vacuum error, 30% of vacuum not achieved
within 15 seconds.

Error 01 firing temperature exceeded by more than 20 °C
or transposition of thermocouple connections.

ERROR: 00
Vacuum
Continue: Stop

ERROR: 01
Temp - Burn >>
Continue: Stop
Error 02  Firing temperature exceeded by more than 30 °C during rising

Error 03  Break of temperature sensor, cooling fan runs immediately

Error 04  Malfunction of limit switch for lower lift position

Error 05  Error resp. failure of cooling fan

Error 06  Error resp. failure of lift motor

Error 07  Error resp. failure of speed measurement

Error 08  Error voltage supply resp. supply unit (see protection against power failure)
or

Error 09  Error, muffler defective.

ERROR 02  Temp - Burn >>
Continue: Stop

ERROR 03  Temp - Sensor
Continue: Stop

ERROR 04  Lift Home Pos
Continue: Stop

ERROR 05  Cooling Fan
Continue: Stop

ERROR 06  Lift Motor
Continue: Stop

ERROR 07  Lift Pos Sig
Continue: Stop

ERROR 08  Power Fail
Continue: Stop

ERROR 09  Core Recover
Continue: Stop

ERROR 10  Heating
Continue: Stop
Error 11  Memory, memory full, transfer data to PC or delete with Service No. 20.

Error 12  Vacuum Offset, error resp. malfunction of vacuum measurement

Further error messages:

Error messages Error 11 to 29 generally refer to malfunctions of the electronic system as well as communication errors between the operating element and the main board.

When these errors occur, the manufacturer of the furnace or an authorized service company should be contacted.

10  Data transfer

The FDS (Firing - Data - System) allows the transfer and administration of firing data to and on a PC to assure the quality of dental ceramic work.

The program (software on CD) including accessories is not included in the delivery of the unit and can be ordered under the Order No. D 34230.

10.1  Activate data storage

To store firing data, "Ein (on)" in the Service Program No. 13 must be selected.
This way it is ensured that firing data will be stored in the memory and the data can be transferred to a PC later on using the FDS (Firing - Data - System) program.
The memory in the furnace stores approx. 300 firing programs and will be automatically deleted after a transfer.
The message "memory full" (Error 11 - Memory) is displayed early enough to save a running program.
If no data are transferred to a PC, the memory can be deleted using the Service Program No. 20.

10.2  Connection to PC for data transfer

The connecting cable (figure 1) required for the transfer of data is included in the accessories of the PC program.

fig. 1
### VITA OMEGA

<table>
<thead>
<tr>
<th>Progr. No.</th>
<th>Pre-drying</th>
<th>→ min</th>
<th>→ min</th>
<th>→ °C/min</th>
<th>Temp. approx. °C</th>
<th>→ min</th>
<th>VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxidation</td>
<td>Follow manufacturer's instructions!</td>
<td></td>
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<td>3.00</td>
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<td>56</td>
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<td>110</td>
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### VITA OMEGA 900

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<th>Pre-drying</th>
<th>→ min</th>
<th>→ min</th>
<th>→ °C/min</th>
<th>Temp. approx. °C</th>
<th>→ min</th>
<th>VAC</th>
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<tr>
<td>Oxidation</td>
<td>Follow manufacturer's instructions!</td>
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<td></td>
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<tr>
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<td>75</td>
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<td>6.00</td>
<td>60</td>
<td>900</td>
<td>2.00</td>
</tr>
</tbody>
</table>

*) Enter program number yourself

Alloys with a thermal expansion coefficient \( \geq 14.5 \times 10^{-5} \times \text{K}^{-1} \) 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 hence raises the thermal expansion coefficient of the ceramic.

### VITADUR ALPHA

<table>
<thead>
<tr>
<th>Progr. No.</th>
<th>Pre-drying</th>
<th>→ min</th>
<th>→ min</th>
<th>→ °C/min</th>
<th>Temp. approx. °C</th>
<th>→ min</th>
<th>VAC</th>
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*Note: The table represents the firing schedule for various types of fireable materials.*
### VITA VMK 95

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<th>Operation</th>
<th>Prog. No.</th>
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<th>→ min</th>
<th>→ C/min</th>
<th>→ Temp. approx. °C</th>
<th>→ VAC min</th>
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*) Enter program number yourself

### Additional programs

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<th>Prog. No.</th>
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<th>→ min</th>
<th>→ min</th>
<th>→ C/min</th>
<th>→ Temp. approx. °C</th>
<th>→ VAC min</th>
<th>VAC min</th>
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</table>

**Soldering in the VITA VACUMAT**

**Method 1**
Preheat the restoration, complete with flux and beads of solder, in a preheating furnace for 15 – 20 min at 400°C.

**Program 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 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.

**Please note:** Our products should be used according to the working instructions. We cannot be held liable for damages resulting from incorrect handling or usage. The user is furthermore obliged to check the product before use with regard to its suitability for the intended area of applications. We cannot accept any liability if the product is used in conjunction with materials and equipment from other manufacturers which are not compatible or not authorized for use with our product. Furthermore, our liability for the correctness of this information is independent of the legal ground and, insofar as legally permissible, is limited to the invoiced value of the goods supplied excluding turnover tax. In particular, as far as legally permissible, we do not assume any liability for profit loss, for indirect damages, for consequential damages or for claims of third parties against purchaser. Claims for damages based on fault liability (culpable in contract, breach of contract, tort liability, etc.) can only be made in the case of intent or gross negligence. Date of issue of these instructions for use: 03/00.

---

**VITA**

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