CeramicMaster
E10



USER MANUAL

Dental Servis
Serdar Ayısıt
0555 274 05 51

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1. INTRODUCTION

Thank you for having purchased the CERAMICMASTER **E10** furnace which, we are sure will all meet all your needs and will satisfy your high demands.

This furnace has been designed according to the requirements of latest industrial standards and we guarantee that you will use it many years as your closest assistant.

However, inappropriate use may damage the equipment and be harmful to personnel. Please observe the relevant safety instructions and read the Operating Instructions carefully.

We wish you pleasant and fruitful work with the CERAMICMASTER **E10**.

SYMBOLS:



This symbol indicates that there is high dangerous tension under the bonnet which it is put on.



This symbol indicates that the machine complies with the requirements of the Directives for Low Tension and Electromagnetic Compatibility as well as for the Standards harmonized with them.

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2. SAFETY INSTRUCTIONS

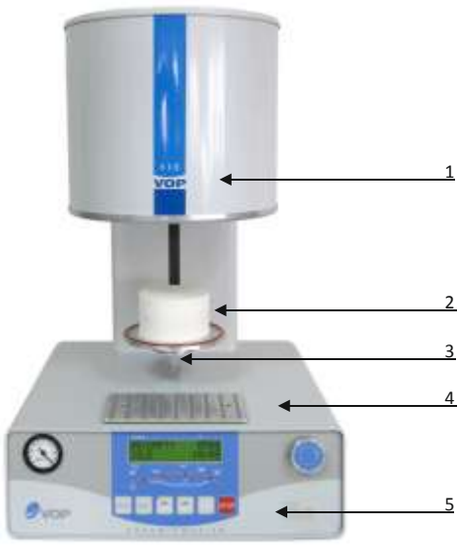
The following instructions must be observed in order to avoid personnel injury or equipment failure.

- the furnace must not be run by an operator who is not acquainted with these instructions;
- before turning on the plug in the net contact check if the voltage in the electrical network correspond to the working tension. In case of discrepancy, consult a specialist;
- on no account do not alter the device;
- the notices and stickers must be kept in good condition so that they are easily readable; they should not be removed!
- the machine must not function in case of being damaged and in position to injure the staff or a third person;
- keep the cables out of heat, oil and coarse objects; do not catch the device by the cable when you move it.
- switch off the furnace and pull out the plug of the feeder cable from the contact before each cleaning or upkeep.
- spare parts which are not specified by the manufacturer cannot be used!

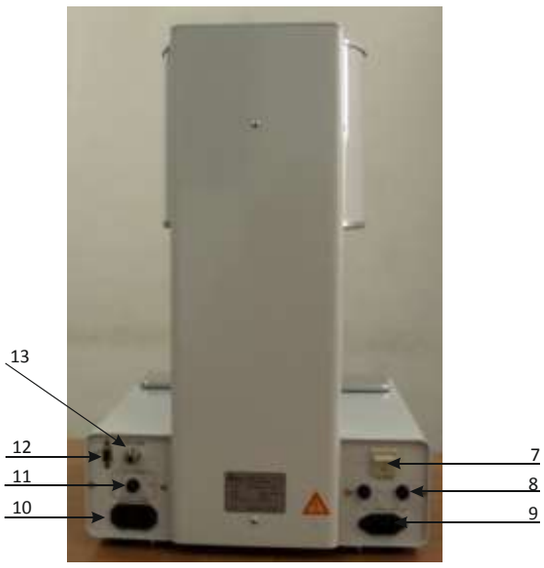
CAUTION! If the machine is used by such means not indicated by the manufacturer, the provided protection can get worse!

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3. DESCRIPTION OF THE UNIT



1 Cover of the chamber
2 Ceramic table
3 Lift table
4 Cooling pad
5 Front panel



6 Mains switch
7 Mains fuses
8 Plug of power cord
9 Plug of pump's power cord
10 Fuse for pump
11 Plug of RS232
12 Nozzle of pump's hose


14


15

13 Hose of the pump
14 Adapter


16

15 Vacuum pump

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4. INSTALLATION AND INITIAL START-UP

UNPACKING





- Carefully remove modules from packages;
- Make sure that the mains voltage is ~230V and the contact is reliably grounded.

CONNECTIONS



- Connect pump supply cable to the terminal with label "VACUUM PUMP" on the rear panel;
- Connect the power supply cable to the terminal with label "POWER" on the rear panel;
- Connect vacuum hose to the vacuum fitting with label "VACUUM" on the rear panel.
- The net switch is on the rear panel, on the right. Put the furnace in a position which enables its easy engaging turning off from the master switch as well as from the contact.

TEMPERATURE CORRECTIONS BY THE USER

It is possible to calibrate the temperature T within the limits of plus/minus 50°C. In order to do this you must proceed with the following steps: open the furnace; switch it off; switch it on again while pressing the buttons "RUN" and "STOP" at the same time. Now you are in service mode. You see the following indication on the display:

0:00:00 000 0XXX
TERMO CORRECT: + 0000

The current value of the correction can be changed with the turning of the multi-functional rotary knob. Push the button “PROG” to store the new value.

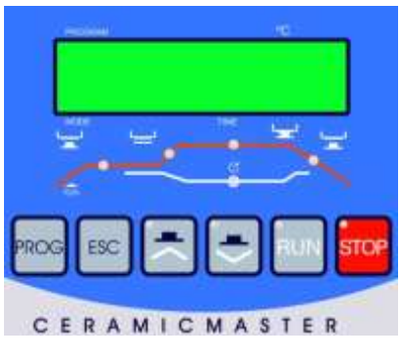
IMPORTANT!

After turning on the furnace it will show SELF TESTING for a few seconds. Do not release the buttons before you hear the sound of the buzzer - otherwise you will not enter into the mode for temperature adjusting but in normal operating mode.

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5. PRACTICAL USE

DESCRIPTION OF BUTTONS



PROG - puts the number of the program which is to be performed into programming mode.

ESC - cancels all changes.

RUN

- starts the chosen program when the indicator of the button flashes in green;
- permits the change of the chosen parameter value in a programming mode.

STOP

- stops the program at any moment;
- stops the movement of the table at any position;
- cancels all changes of the chosen parameter in a programming mode;
- recovers the normal working mode of the furnace after error.

- closes manually the furnace. The button can increase/decrease the chosen parameter value with 100 by pressing it while turning the multi functional rotary knob.

- opens manually the furnace . The button can increase/decrease the chosen parameter value with 10 by pressing it while turning the multi functional rotary knob.



MFRK - Multi Functional Rotary Knob. It is used for choosing of programs or parameters and set the values.

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This furnace has 2 LINE LCD display.

The LINE 1 shows following information:

PROGRAM sector shows the number of the chosen program for execution or the program for entering of parameters.

°C sector shows the current temperature value in the firing chamber.

The LINE 2 shows following information:

MODE sector shows information about current stage;

TIME sector shows the time left till the end of the executed program.



Indicator 1: the furnace is in the phase of **drying**.

Indicator 2: the furnace is in the phase when the temperature increases to the value for firing.

Indicator 3: the furnace is in the phase of **firing**.

Indicator 4: the furnace is in the phase of **cooling**.

Indicator 5: the vacuum pump is switched on.

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In order to change the value of a parameter it is necessary to do the following steps:

- With the multi functional rotary knob **MFRK** chose the program which parameters you want to change;
- Press button **PROG**. Indicator of the button **RUN** begins to blink green/red and you can see on the display:

XX : YYYYYYYYYY VIEW
PROGRAM NAME

The letter expressions means:

XX - number of program;
VIEW - view data;
YYYYYYYYYY – name of program;
PROGRAM NAME - parameter which to be changed;

- **PROGRAM NAME** is the first parameter which is shown when you enter in PROGRAM mode. Turn left/right the **MFRK** in order to chose the parameter you want to change;
- Press button **RUN** in order to chose the value of the parameter you want to change. If you have chosen the first parameter you would see on the display:

XX : YYYYYYYYYY EDIT
PROGRAM NAME

Indicator of the button RUN turns off and the red indicator on the button STOP begins to blink.

- Turn the **MFRK** to change the parameter value.

Press button STOP in order to leave the programming of the current parameter. Indicator of the button RUN begins to blink again in green/red which means that it is possible to program next parameter.

There are two possible ways of leaving the programming mode after you have finished with the changes in the parameters' value:

FIRST EXIT: press button **ESC**. This will CANCEL all the changes that are made in the parameters' value in the program.

SECOND EXIT: press button **PROG**. This will SAVE all the changes that are made in the parameters' value permanent.

The indicator of button **RUN** will flash in green in working mode if the temperature defined by the parameter **IDLE TEMP** is reached and if the temperature is not reached it will flash in red

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DESCRIPTION OF PARAMETERS IN ORDER OF THEIR APPEARANCE

PROGRAM NAME	parameter for set the name for the current program. Choose the position for desired letter by using buttons ▲ and ▼. Then choose the letter using **MFRK**.
IDLE TEMP	idle temperature. This is the temperature which the furnace keeps in STOP mode. Its value is from 150°C to 600°C but it can't exceed (DRY TEMP-20)°C.
PREDRY TIME	during this time the table stays in lower end position when the temperature in the chamber is equal to DRYTEMP. It can be changed from 0 s to 1 h.
DRY TEMP	drying temperature. Its value is from (IDLE TEMP+20)°C to (FIRE TEMP-20)°C.
DRY TIME	the time for moving the table from lower end position to the medium position which is about 1cm from the upper end position of the table. The temperature in the chamber is DRY TEMP. It can be changed from 0s to 1h.
FIRE RATE	increase rate of the temperature for the firing. Its value is from 30°C /min to 200°C /min.
FIRE TIME	time for maintaining the temperature FIRE TEMP. It can be changed from 0s to 30min.
FIRE TEMP	temperature for the firing. Its value is from (DRYTEMP+20)°C to 1100°C.
COOL1 TIME	During this time the table is about 1cm from the upper end position. It can be changed from 0s to 1h.
COOL2 TIME	time for opening the furnace to the lower end position. It can be changed from 0s to 1h.
VRUN TEMP	temperature which defines the start of the time VRUN TIME. Its value is from 0°C to 1250°C. If its value exceeds the value of the parameter FIRE TIME, vacuum will never start.
VRUN TIME	time which defines the start of the vacuum. It starts after the firing chamber temperature reaches the value of the parameter VRUN TEMP. It can be changed from 0s to 1h.
VSTOP TEMP	temperature which defines the start of the time VSTOP TIME. Its value is from 0°C to 1250°C. If its value exceeds the value of the parameter FIRE TIME, vacuum will never start.
VSTOP TIME	time which defines the stop of the vacuum. It starts after the firing chamber temperature reaches the value of the parameter VSTOP TEMP. It can be changed from 0s to 1h.

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Values of the parameters FIRE RATE, FIRE TEMP и FIRE TIME can be changed during the execution of the program. This can be done with the buttons **PROG**, **ESC** and ⏏ and with the turning of the multifunctional knob **MFRK**.

If you press the button **PROG** during the execution of a program the value of the parameter FIRE RATE will blink on the display and with **MFRK** will be able to change the programmed value.

Button **ESC** changes parameter FIRE TEMP, and button ⏏ changes parameter FIRE TIME.

ATTENTION!

When programming the temperature conditions for parameters IDLE TEMP, DRY TEMP and FIRE TEMP the program temperature cannot be lower than this of the previous parameter and at the same time higher than this of the next parameter.

There is a possibility for fast changing of parameters which have TEMPERATURE and TIME dimensions. When you push the ⏏ button and rotate the **MFRK** the value will change by 100 points, and by pushing ⏏ and rotate the **MFRK** the value will change by 10 points.

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6. ERRORS AND CORRECTIVE ACTIONS

General errors

1 - Missing signal "mains zero", entry 0

2 - Missing signal "mains zero", entry 1

3 - Mains frequency is not 50 Hz or 60 Hz.

Errors concerning the heating

15 - During running of a program: when the temperature is increasing the needed rate of increasing cannot be achieved.

19 - The required temperature is not reached for the selected time.

20 - The required temperature can not be reached during cooling.

21 - The selected temperature can not be reached during heating.

22 - Temperature is higher than 1200°C.

23 - Temperature is lower than 5°C.

99 - Interrupted thermo sensor or the temperature is higher than 1285°C.

Errors concerning the movement of the table

54 - The sensor for the table to position *drying* is not reached for a preset time.

76 - The time for opening is over during the program controlled mode.

84 - The upper position sensor of the table (closing) is not reached for the required time.

86 - The lower position sensor for the table is not reached for the required time during opening of the furnace.

Errors concerning the vacuum.

28 - The selected vacuum is not reached for the required time.

50 - There exists residual vacuum during the initial power on procedure.

51 - After releasing the vacuum, for the required time the vacuum is not released entirely.

75 - The vacuum can not be released in programming mode.

Errors concerning RS232 interface to the PC.

40 - A non-number-type symbol has appeared during receiving.

41, 42 - A symbol is received which is not = or ~ during receiving.

160 - Received number for the minutes greater than 59 during receiving.

161 - Received number for the seconds greater than 59 during receiving.

30, 31 - Timeout during receiving of programs.

121 - fault in the value of DRYTEMP
125 - fault in the value of FIRERATE
127 - fault in the value of IDLETEMP
128 - fault in the value of FIRETEMP
131 - fault in the value of VRTEMP
132 - fault in the value of VSTEMP
135 - fault in the value of FIRETIME

ATTENTION! When any error appears, it is written on the display and the furnace produces a sound signal. The button **STOP** has to be pressed in order to exit from this state.

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7. IMPORTANT PRACTICAL INFORMATION

1. Avoid positioning of furnace and pump in the immediate vicinity of heat sources (radiators).

2. Install the vacuum pump in a well-ventilated locations. Ensure that the apertures in the frame plate are free and that no foreign object can fall into the furnace base.

3. Avoid placing any objects on the frame plate, place only on the face cooling plate.

4. Ensure that the sealing ring in the furnace head and the sealing rim of the furnace base are kept clean and undamaged.

5. Always keep the firing chamber closed between firings.

6. It is strongly recommended to use porous ceramic tray (on request - № 81022).

WARNING! For the proper work of the furnace it is necessary to hold the furnace in stand-by mode for at least 0.5 hours. After switching on the furnace close the dome and wait 0.5 hours.

7. If the power supply is interrupted during the working process and:

a. If the temperature in the chamber has not decreased by more than 15 degrees, the current program will continue from the stage at which it has been stopped.
b. If the temperature in the chamber has decreased by more than 15 degrees, the following message will appear on the display:

LONG TIME POWER OFF

In this case the program cannot continue. You have to press the button STOP in order to exit this state.

The total number of the programs is 100 - with numbers from 0 to 99. Programs from №1 to №20 have parameters for ceramic NORITAKE**.**The manufacturer has entered equivalent parameters in all other programs.

It is responsibility of the customer to enter the data for the ceramic that he uses before he starts working.

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8. EXCHANGE OF DATA AND PROGRAMS BETWEEN THE Ceramic Master E10 FURNACE AND PC.

Transfer of programs from PC to the Ceramic Master E10 furnace.

Switch off the furnace; keep the buttons RUN and STOP depressed simultaneously and switch on the power supply.

Wait to appear message:

TERMO CORRECT: - - - -

Press the STOP button.

On the display following message will appear:

STOP SOUND: YES (N0)

Press ESC button.

Following question will appear:

Programs <- PC?

The furnace prompts to enter data from the PC to the furnace. If no entering of data is needed then press the ESC button. If entering of data is needed then start the program ***Teraterm Pro*** on the PC.

Go to menu *SETUP/Serial Port* in this program and perform following settings:

Com x	**- Serial port number**
Baud Rate	**- 9600**
Data	**- 8 bit**
Parity	**- none**
Stop	**- 1 bit**
Flow Control	**- none**
Transmit Delay	**- 0ns 1000ms**

Enter the menu *File/Send File* and perform following settings:

Options - select binary

Enter the file name where the programs are to be loaded from.

Press the PROG button of the furnace.

Select the function Open from the PC.

A message on the furnace display will appear:

RECEIVING
Programs – xx

This means that the programs are being loaded currently.

After finishing following question will appear on the display of the furnace:

Programs -> PC?

Push the ESC button .

Following question on the furnace display will appear:

Log File to PC?

Press the ESC button.

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Transfer of programs from the Ceramic Master E10 to PC.

Switch off the furnace; keep the buttons RUN and STOP depressed simultaneously and switch on the power supply.

Wait to appear message:

TERMO CORRECT: - - - -

Press the STOP button.

On the display following message will appear:

STOP SOUND: YES (N0)

Press ESC button.

Following question will appear:

Programs <- PC?

Press the ESC button and this question will appear on the furnace display:

Programs -> PC?

The furnace prompts to output the data from the furnace to the PC. If this is not needed, press the ESC button. When you wish to start transfer of data from the furnace to the PC start the program Teraterm Pro.

Open the menu *SETUP/Serial Port* and perform following settings:

Com x	**-**	**Serial port number**	
Baud Rate	**-**	**9600**	
Data	**-**	**8 bit**	
Parity	**-**	**none**	
Stop	**-**	**1 bit**	
Flow Control	**-**	**none**	
Transmit Delay	**-**	**0ns**	**1000ms**

Go to the menu *File/Log* and perform following settings:

Options	**-**	**select binary**

Enter the file name where the programs are to be saved and select function Open.

Press the PROG button of the furnace.

After the end of the operation following question will appear on thefurnace display.

Log File to PC?

Push the ESC button.

Close the file with the programs of the computer. This is done by going to the Teraterm Log window and pushing the STOP button.

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Transfer of a LOG file from the Ceramic Master E10 furnace to PC.

Switch off the furnace; keep the buttons RUN and STOP depressed simultaneously and switch on the power supply.

Wait to appear message:

TERMO CORRECT: - - - -

Press the STOP button.

On the display following message will appear:

STOP SOUND: YES (N0)

Press ESC button.

Following question will appear:

Programs <- PC?

Press the ESC button and this question will appear on the furnace display:

Programs -> PC?

Press the ESC button and following question will appear on the furnace display:

Log File to PC?

From the PC start the program Teraterm Pro.
Enter the SETUP/Serial Port menu and perform following settings:

Com x	**-**	**Serial port number**
Baud Rate	**-**	**9600**
Data	**-**	**8 bit**
Parity	**-**	**none**
Stop	**-**	**1 bit**
Flow Control	**-**	**none**
Transmit Delay	**-**	**0ns 1000ms**

Go to the menu *File/Log* and perform following settings:

Options	**-**	**binary**

Enter the file name where the coded data from the furnace to be saved and select Open.

Press the PROG button of the furnace.

After the end of the process you can continue to work with the furnace.

Close the log file in the PC by going to the *Teraterm Log* window and pressing the CLOSE button.

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Reloading of the control program (flash)

Form the PC start the program Teraterm Pro.

Go to the menu *Setup/Serial Port* and perform following settings:

Com x	**-**	**Serial port number**
Baud Rate	**-**	**9600**
Data	**-**	**8 bit**
Parity	**-**	**none**
Stop	**-**	**1 bit**
Flow Control	**-**	**none**
Transmit Delay	**-**	**0ns 1000ms**

When the furnace is switched off push and hold the ENTER button and switch on the furnace.
In the window of Teraterm Pro a message will appear:

VOP Co.
Press Space 1 – Here the program will count down 10 sec.

If within 10 seconds the SPACE bar (of the PC) is not pressed, the furnace will exit from the procedure. However, if the SPACE bar is pressed within 10 sec. then the internal program of the furnace will be deleted and the furnace will wait to load the new program, which is in HEX format file.

This is done in the following way:

In the program Teraterm Pro go to the menu *File/Send File* menu and perform following settings:

Options	**-**	**select binary**

Select the file containing the new program and press the Open button.

After finishing the data transfer the furnace will start automatically with the new control program.

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9. TECHNICAL DATA

1. Electrical supply	~230 V, ±10%, 50Hz
2. Power consumption	
2.1. Furnace with vacuum pump	1700 W
2.2. Furnace without vacuum pump	1550 W
3. Category of overtension	II
4. Vacuum pump data	
4.1. Suction capacity	22 l/min
4.2. Regulated vacuum level	от 0.1 до 0.9 bar
5. Maximal firing temperature	1100°C
6. Effective firing chamber dimensions	Ф 95 мм; h 46 мм
7. Overall dimensions of closed furnace:	
7.1. Width	370 мм
7.2. Length	380 мм
7.3. Height	570 мм
8. Model Weight	20 кg
9. Number of programs	100
10. Working temperature	5°C - 40°C
11. Level of environment pollution	2

12. The device is designed for usage in normal dental premises up to 2000 m altitude above sea level.

13. The maximum relative humidity of the air must be 80% for temperatures up to 31°C, decreasing lineally to 50% relative humidity for temperature 40°C.

14. Working modes

14.1. Programming mode

Programming of the parameters is fully described in chapter 7. PROGRAMMING.

14.2. Working mode

It shows the number of the executed program and the parameters' value of the ongoing program phase.

The values of all parameters could be seen if you use the Multi Functional Rotary Knob **MFRK**.

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10. MAINTENANCE

Clean only with a dry or slightly moist cloth (no solvents!).

Change the safety locks with the announced valus only, namely:

1.25A, slow (class T).
8A, slow (class T).

No repair activity by a service technician who is not authorized by the manufacturer is allowed!

The lifting and carrying should be made only with the both hands from below as the furnace stands on end.

No carrying and transportation in another state except for vertical position is allowed!

11. DELIVERY SCOPE

Furnace CERAMICMASTER E10	1 pc.
Vacuum pump PVD-M22	1 pc.
Power cable	1 pc.
Flexible tube for the vacuum	1 pc.
Spare fuses	
1.25A/250V	1 pc.
8A/250V	2 pc.
User Manual	

PRODUCER: "VOP" Ltd.
2140 IZ "Microelectronika"
Botevgrad, Bulgaria
Tel. 0723 66303
Tel./Fax 0723 66304

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"VOP" Ltd.
Mikroelectronika
2140 Botevgrad
Tel. 0723 66303
Tel./Fax 0723 6304

Ceramic Master E10

WARRANTY SHEET

"VOP" Ltd. warrants the consumer for proper operation of all parts and materials in this product during a period of **12 months** since the day of its purchase.

During this period VOP Ltd. or its authorized persons will repair on its own account all defects which have occur during the normal operation of the machine.

Defects caused by improper transportation, storage and manipulation of the product or due to malfunction of the electrical mains supply are repaired on the account of the customer.

This warranty shall become void if attempts are made to repair the product by persons not authorized by the producer.

Serial Number _____

Invoice number _____

Date _____



MANAGER of "VOP" Ltd.

_____ _____

CLIENT:

Serial Number _____

Invoice number _____

Date _____

Voucher Manufacturer

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