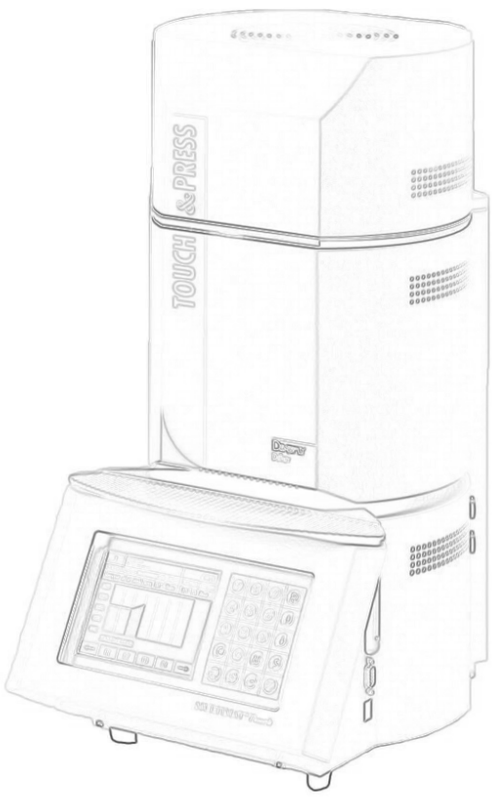
MULTIMAT®*Touch*

Directions for Use

Software Version 1.93 and higher

Status of Information December 20th, 2001





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Serdar Ayısıt
0555 274 05 51

Introduction

Dear customer,

Thank you for having bought Dentsply's **Multimat®** ***Touch***. This furnace represents an advanced, state of the art product of the **Multimat®** generation. By selecting from various different firing modes, this furnace allows you to fire (&press) the materials from a broad range of different manufacturers. Easy, menu-driven operation keeps training times to a minimum.

The **Multimat®*Touch*** is equiped with 100 or 300 freely programmable programs. 62 preset programs of Dentsply's ceramics come on top, meaning that they do not lower the amount of individual programs. The Touch Screen allows direct interaction and a quick selection of functions. All firing data are visualized over a color graphic display. Control of the measurement and control processes is effected by means of a 32 bit microprocessor. Furthermore the **Multimat®** ***Touch*****&Press** version allows pressable dental ceramics to be processed in addition to the usual firing options. This device complies with all applicable current EU directives and VDE/UL safety regulations.

<u>Before</u> startup, please read the entire operating instructions!

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Meaning of Warning and Caution Notes:



Warning!
This symbol indicates particularly important notes and instructions in respect of which any non-compliance may cause injury or accident hazards.



Caution!
Hot surface

This symbol is placed everywhere you could get in contact with a hot surface.

Text in Italics means that this part only refers to the furnace version Multimat® Touch&Press

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1. Description of parts

1.1 Description of parts

1. Press hood
2. Cover
3. Cooling jacket
4. Support
5. Firing platform
6. Firing platform carrier
7. Work storage platform
8. Control casing
9. Smart card slot
10. Interface RS 232 (Printer/PC port)
11. Interface RJ 485 (for PC network)
12. Touch Screen
13. Control
14. Equipment fuses
15. Mains socket
16. Vacuum connection
17. Vacuum pump socket
18. Compressed air connection
19. Filter control
20. Muffle
21. Press platform (without picture)

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1.2 Technical data

Multimat®*Touch*

Height:	closed	approx. 441 mm
	Open	approx. 585 mm
Width:		approx. 320 mm
Depth:		approx. 425 mm
Voltage :		approx. 220/230 V for countries with 220/230 V approx. 110 / 115 V for countries with 110/115 V approx. 125 V for countries with 125 V
Frequency:		50/ 60 Hz
Overvoltage category:		II
Degree of contamination:		2
Protection class:		I
Performance:		1350 VA without pump
Fuses:		2 x 16 A slow fuses, 6.3 x 32 mm, 250 V
Pump plug:		2.5 A
Weight:		approx. 22 kg

Multimat®Touch&Press

Height:	*closed*	*approx. 593 mm*
	open	*approx. 748 mm*
Width:		*approx. 320 mm*
Depth:		*approx. 425 mm*
Press pressure:		*2.7 bar*
Voltage :		*approx. 220/230 V for Countries with 220/230 V* *approx. 110 / 115 V for Countries with 110/115 V* *approx. 125 V for Countries with 125 V*
Frequency:		*50/ 60 Hz*
Overvoltage category:		*II*
Degree of contamination:		*2*
Protection class:		*I*
Performance:		*1350 VA without pump*
Fuses:		*2 x 15 A slow fuses, 6.3 x 32 mm, 250 V*
Pump plug:		*2.5 A*
Weight:		*approx. 25 kg*

1.3 Environmental conditions

Temperature:	2 °C to 40 °C
Relative air humidity:	80% at 31 °C
Height:	3500 m above sea level

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2. Safe use

2.1 Use within specifications



Warning!
The **Multimat®*Touch*** has been designed and is exclusively intended for firing/ pressing dental ceramics. Dentsply will not be liable for any damage resulting from any other use that is not within our specifications. Programs with temperatures above 1000 °C reduce the life span of the muffle, the press cylinder and the press valve. In this case those items are excluded from warranty.
Such use within specifications also includes all notes, instructions, and information contained in these operating instructions as well as all notes, instructions, and information contained in the separate operating instructions provided by the vacuum pump manufacturer.
Repairs have to be carried out by the Dentsply-Service or by Dentsply authorized Service specialists.
Please touch the touch screen within the specified sensitive areas. Touching out of these specified areas might lead to breakage of the touch screen. Never touch the touch screen with hard and/or sharp pieces.

Please use the press platform only for pressing. For porcelain firings use the firing platform.

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2.2 Hazards and safety notes



Caution!
In order to ensure risk-free operation the following notes must be observed and fully complied with:

- Do not set up furnace and vacuum pump in the immediate vicinity of heat sources.
- The current consumption of the vacuum pump should not be more than 2.5 A. The muffle and pump power are added and can lead to overload of the equipment fuse.
- The distance to the nearest wall should be at least 25 to 30 cm.
- The area where you set up the Multimat®*Touch* should be non flammable. There should be no combustible items in the vicinity.
- Set up the vacuum pump in a well ventilated place. In case of an oil-lubricated vacuum pump, it should be always located at a lower level than the furnace. The check valve on the vacuum hose must be placed higher than the pump.
- Do not touch any parts which may become hot during operation; in particular do not touch the cover.
- Before switching on this unit, ensure that the operating voltage specified on the equipment corresponds to your mains voltage.
- For 220/230 V please use the power cord H05VV-F 361,0 with grounded mains plug ST 300 and grounded outlet.
- For 100-127 V please use the power cord STJ 3x18AWG 105 °C with grounded mains plug USA NEMA 5-15 P and grounded outlet.
- *In case of a furnace with press function, the pressure shown on the pressure regulator of 2.7 bar must be maintained (even during regular vacuum firing).The air pressure should always refer to air pressure mentioned on the sign beside the compressed air connection.*
- On first-time operation, after any extended standstill as well as at a high level of humidity or low temperatures, it may no longer be possible to generate a sufficient vacuum. In such cases start program # 354.
- If the furnace is under vacuum for an extended period, the O-ring of the firing platform may adhere or stick slightly.
- At the start of the firing muffle heating process, there may be an occurrence of vibration noise from the heater winding.
- In case of low voltage the temperature heat rate will be slower.
- Only use original replacement parts.



Warning!
- This unit may be connected only to a 16 A slow fused plug with a protective contact and a differential-current circuit breaker 30 mA.
- Disconnect the unit from mains whenever service and repair work is carried out.
- Repairs performed while the unit is open and under voltage may be carried out by a competent specialist only.
- At least once a year a protective ground wire test has to be performed by a specialist.
- Following any and all repair work, a high voltage and protective ground wire test is to be carried out.
- If any defects or damage occur such that safe operation is no longer ensured, the unit must be secured against any unintentional use.

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3. Setup and first use

3.1 Unpacking

- First, please check the "Shockwatch" label on the carton. If it red colored, the impact energy during transport was higher than allowed and your unit could be damaged. Please contact us if the furnace is not operational.
- Open the packaging and unpack the Multimat®*Touch* carefully.

3.2 Check accessories

- Check that the delivery is complete. The following accessories will be supplied with each **Multimat®*Touch***:
  - 1 mains connection cable
  - 1 sagger tray
  - 1 firing platform
  - 1 tweezers
  - Directions for Use

- *For the **Multimat®Touch&Press,** the following accessories will come on top:*
  - *1 pressing platform*
  - *1 filter regulator with pressure gauge and compressed air hose*

For pressing of the FAC pressing porcelain, you also need an aluminium oxide plunger, investment paper and a spruing set. These items are part of the FAC complete kit. If you need single items, please order with the following numbers:

430112 FAC spruing set large
430114 FAC aluminium oxide plungers
430115 FAC investment paper

- Note any transport damage.
- If the delivery is incomplete or has been damaged in transit, contact your supplier.

3.3 Setup

- Place the furnace onto a suitable setup location, and ensure that a sufficient distance between the unit and the wall is maintained (25 cm minimum).
- Remove the shipping safety devices.
- Place the firing platform onto the firing platform carrier.
- Connect the mains plug of the Dentsply vacuum pump to the vacuum pump socket on the furnace, and push the vacuum hose onto the hose adapter on the furnace. The arrow on the filter must be in the direction of the vacuum pump.
- *If you have a **Multimat® Touch&Press** furnace, connect the air hose of the filter pressure control to the bulkhead connector of the furnace.*
- *Connect the filter pressure control to the compressed air system and set the press furnace to its operating pressure of 2.7 bar (the pressure has been preset to 2.7 bar by the manufacturer).*

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3.4 First use

- Before establishing the connection, check whether the mains voltage of your power supply corresponds to the mains voltage specified on the rear plate.

  If the mains voltage of your power supply is out of the voltage range mentioned on the rear plate of your furnace you have to use a voltage constanter.

- Connect the mains cable of the furnace to the furnace and to a mains socket protected by a 16 A fuse (inert) and a differential-current circuit breaker (30 mA). The mains diode above the numeric key pad illuminates.

3.4.1 Start screen display

The start screen display showing the Dentsply logo, the version number of the software as well as the serial number of the control unit will appear for 6 seconds on screen. The firing chamber with a possibly vacuum will be filled with air. The following screen will appear:

3.4.2 Language selection



Select your language by touching the appropriate sensor button. The sensor button changes its color.

Users have unlimited time to select the language. The language can be also modified at a later stage (see section 4.5.2.3 Reset language).The language selection screen will appear only after choosing it in the main menu (see section 4.5 Main Menu – Furnace Parameters).

3.4.3 Introduction



Touch the Right Arrow key to change over to the next screen.

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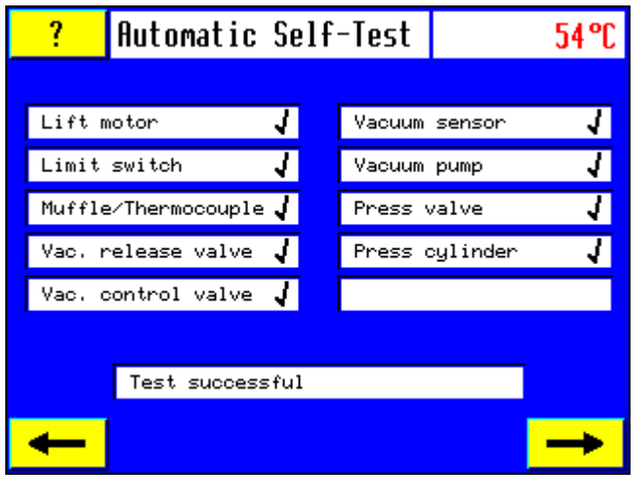
3.4.4 Installation and safety notes



On the screen the most important installation notes appear as well as the compliance note to follow the installation and safety information in the Directions for Use.

Confirm with the OK button and touch the Right Arrow key.

3.4.5 Automatic Self-Test



The automatic self-test will be carried out automatically.

The result of the test will be indicated in the text line.

If the test is without any error, the test positions are ticked off. After completion, the screen display "Basic Settings" will appear.
If the test is not successfully, a red cross will appear next to the relevant test position and a corresponding note is displayed in the text line. In such cases, confirm by touching the sensor button "OK".

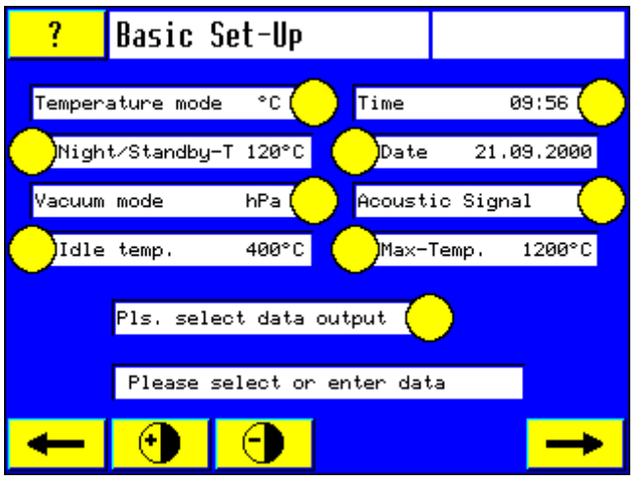
The auomatic self-test test will be carried out at each new start of the furnace when taken from mains and plugged in again.

Note: When the left arrow key is operated, a safety interval of 5 seconds between the "Basic Set-Up" and "Automatic Self-Test" is set to prevent the automatic self test being selected by accident. The Automatic Self-Test can be stopped by touching “C”.

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3.4.6 Basic settings

Note: Several basic settings are preset at the factory. You may touch the sensor button "⇨" to accept these basic settings or change them as described below.



3.4.6.1. Temperature mode

Touch the yellow sensor button to change between °C and °F.

3.4.6.2 Night/Standby Temperature

Press yellow sensor button to select the Night/standby temperature (furnace is turned off but still plugged in mains).

The Night/Standby Temperature is used to prevent humidity to enter the firing chamber. If the furnace is turned off by using the on/off button the Standby Mode will be activated automatically as long as the standby temperature is above >100 °C. Night temperature (see section 4.4. Night mode sensor button).

1. Touch the yellow sensor button (button changes color)
2. Use the numeric keypad to input the new temperature (Range between 100 °C and 300 °C) .
   Temperature > 100 °C = Night/Standby is ready
   Temperature < 100 °C = Night/Standby is not ready
3. Touch the sensor button again or choose another parameter; the standby temperature will be accepted.
4. Wrong numbers can be deleted by touching the “C” sensor button.

3.4.6.3 Vacuum unit

Touch the yellow sensor button to change between hPa and inHg and Hg”.
For “inHg” and “Hg”” the pressure accuracy will be one digit after the decimal point.

Note:

HPa → 1013 hPa = Normal pressure at sea level
InHg → 29.9 inHg = Normal pressure at sea level
Hg”→ 0 Hg” = Normal pressure at sea level (US-version)

3.4.6.4 System Time

1. Touch the yellow sensor button "Time" (color change of the button)
2. Enter a 4-digit number for hours and minutes using the numeric keypad. Format: hh:mm

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3.4.6.5 Date
1. Touch the yellow sensor button "Date"
2. Enter a 8-digit number for day/month/year using the numeric keypad

3.4.6.6 Acoustic Signal
Touch the yellow sensor button to activate or deactivate the signal.

3.4.6.7 Idle temperature
This function is used to save energy and to reduce the surface temperature of the furnace.

Note: The idle temperature is preset to 400 °C and cannot be set higher than 600 °C. The idle temperature has to be at least 25 °C lower than the low temperature.

Touch the sensor button to change the idle temperature as follows:
1. Touch the sensor button
2. Input the new temperature using the numeric keypad.

3.4.6.8 Max-Temp
This function is used to set the upper temperature limit.

Note: It is recommended to limit the temperature to avoid muffle exposure to thermal stresses.

Touch the yellow sensor button to change the maximum temperature as follows:
1. Touch the sensor button.
2. Input the new temperature using the numeric keypad.
3. Touch the "Max-Temp" sensor button again (or select another sensor button). The temperature will be accepted. (Sensor changes into yellow again.)

3.4.6.9 Data output
(optional, only available if the Multimat® Touch or the Multimat® Touch&Press was bought with PC/printer port or if the furnace was upgraded by the PC/printer port.)

Press sensor button to switch data output between "Printer", "PC" and "No output“. With "Printer" or "PC" data output activated, the nominal and actual firing data are output automatically after a firing provided a printer or PC is connected. If no printer or PC symbol is displayed, then only the nominal firing data are output on pressing the PR/PC sensor button in the lower display line (firing data display).

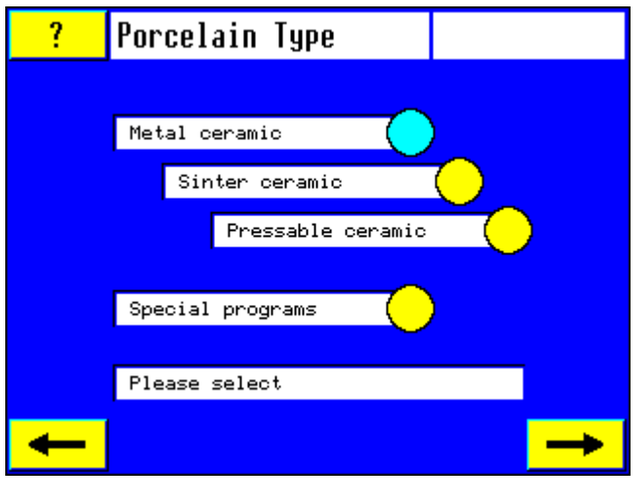
3.4.6.10 Screen brightness
Press the sensor button "◐+" for increasing brightness and "◐-" for decreasing brightness.

Press the sensor button "⇨" when you have completed entering the basic settings. The furnace will change over into the next screen.

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3.4.7 Porcelain type

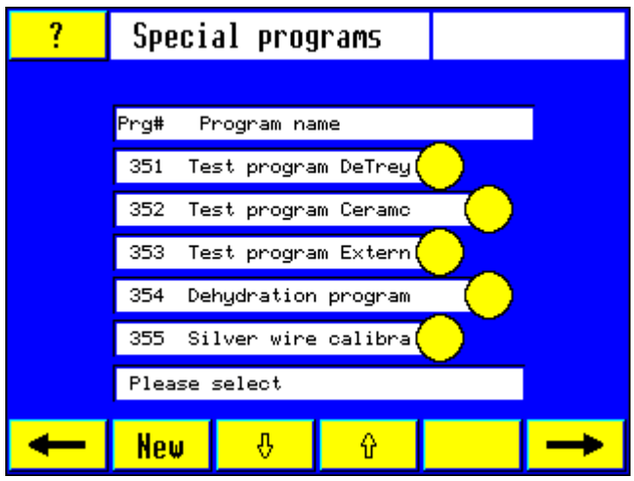
Select from among the options shown by pressing the relevant sensor button, e.g. Special Programs.



Note: When metal ceramics has been selected, the furnace will first switch over to the screen display "Firing Modes" and, once a firing mode has been selected, you will be asked if you want to work with preset or individual programs. Next, the furnace will switch over to the relevant program list. (See section 5: Create own program).

When selecting sinter ceramic, pressable ceramic or special programs, the furnace will switch over directly to the relevant program list.

3.4.8 Program list: special programs



select the required program from the program list, e.g. Test program DeTrey or Test program Ceramco by pressing the relevant sensor button.

Note: The difference between the test programs (DeTrey/ Ceramco/ External) lies in the method of how the parameters are being set. If you already own a Dentsply DeTrey (Dentsply Ceramco) furnace you will recognize the way the programs are being handled.

When the required test program has been selected, the furnace will switch over automatically to the next screen.

3.5 Test programs

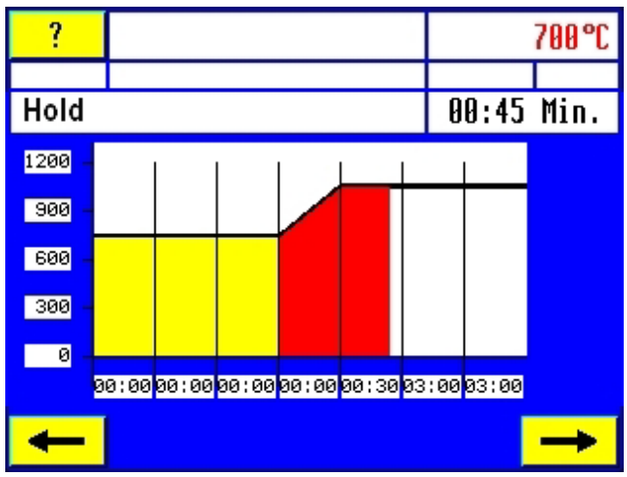
3.5.1 Test program DeTrey / Ceramco / External

This test program will give you a first impression of all program functions the **Multimat®*Touch*** can offer. Please also see section 6. Choose one of the programs that you think you might most likely work with (DeTrey for Europe, Ceramco for USA, External for competitor's porcelain).

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3.5.2 Start a test program

1. Open the muffle (lift) with the arrow up “⇧” button on the numeric key pad.
2. Touch sensor button "start/stop".



After starting, the furnace will switch over automatically to the program sequence screen.

The status line above the temperature/time graphic is showing the actual program status and the complete remaining time.

The program starts by initiating a heating sequence from the preset basic/idle temperature to the required low temperature.

The firing chamber will be open while this sequence is in progress.
When the low temperature is reached, the program sequence starts with the first program stage.

Drying
During this stage the muffle (firing chamber) will move downward in a step by step fashion, and the program curve will be generated on screen in relation to time. Underneath this program section, the respective time period will be visibly counted down to zero.

The vertical lift of the firing chamber is 150 mm in the normal case and during pressing 158 mm. The firing chamber is closed at 0 mm. The firing chamber is in its upper end position at 150 mm (pressing: 158 mm). The standard drying position is at 80 mm. The firing chamber moves during drying in 9 uniform steps from its upper end position into the standard drying position. The standard drying position 80 mm and the 9 steps are values preset in the factory. The end position and the steps can be changed within these values (cf. 6.13 Change standard drying position and steps). We recommend retaining these settings if there are no urgent reasons to do otherwise.

Preheating
The firing chamber will move from its last drying position into the preheating position, and the preheating time period will be visibly counted down to zero.

Vacuum time controlled (Dentsply DeTrey firing method)
When the preheating time period has expired, the firing chamber will close, the vacuum pump will be activated and evacuate the firing chamber until the preset vacuum pressure is reached.

Vacuum temperature controlled (Ceramco firing method)
Vacuum on and off is controlled by temperature.

Rate of temperature rise
When the preset vacuum pressure has been reached, the temperature will rise to the firing temperature level at the preset rate of temperature rise. Underneath this program section, the preheating time period will be visibly counted down to zero.

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Vacuum time period
When the firing temperature level has been reached, the vacuum time period will start (firing under vacuum). Underneath this program section, the vacuum time period will be visibly counted down to zero. On completion of the vacuum time period, the firing chamber will be ventilated.

Firing time period
The vacuum time period will be followed by the firing time under normal pressure conditions, that is, without any vacuum pressure being applied. Underneath this program section, the firing time will be visibly counted down to zero.
Following the end of the firing time, the firing chamber will move into its upper end position. Firing circle is completed and the start screen will be displayed again. The end of firing will be indicated by a triple signal tone.

Note: While the firing chamber is heated up vibration noise produced by the heating coil can be heard for a few seconds.

Tempering (not valid for the test programs)
The tempering position of 50 mm is a value preset in the factory only for "Carat metal porcelain". For the values for the tempering position and tempering temperature refer to the porcelain manufacturer of the porcelain you use (cf. also Section 6.14).

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4. Practical application: an introduction

4.1 Firing parameter limit values

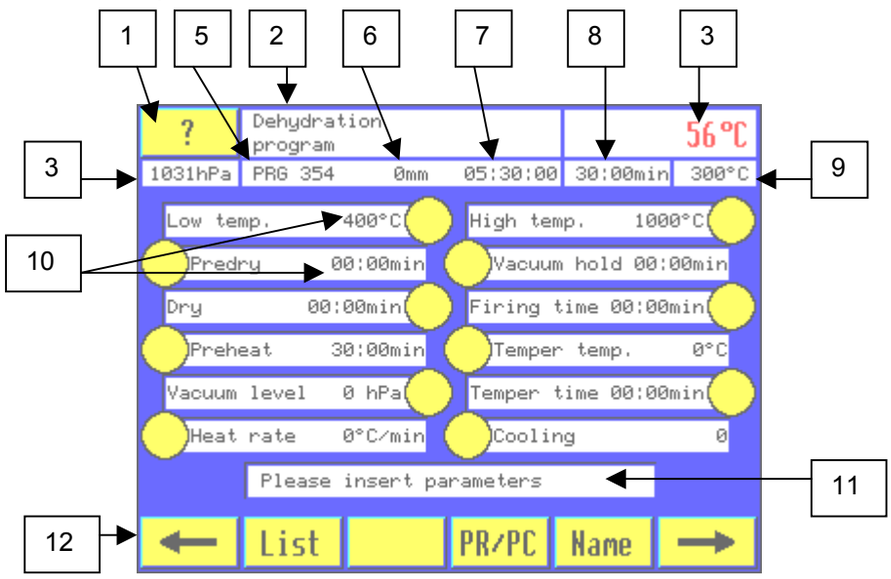
Parameter	Lower Limit	Upper Limit
Night/Standby temperature	101 °C (214 °F)	300 °C (572 °F)
Basic/Idle temperature	30 °C (86 °F)	600 °C (1112 °F)
Nom. value firing temp.	30 °C (86 °F)	1200 °C (2192 °F)
Act. val. firing temperature	30 °C (86 °F)	1250 °C (2282 °F)
Time periods	00:00 min or hrs.	99:59 min or 17:59 hrs.
Heating rate, controlled	0.1 °C/min (0.18 °F)	120 °C/min (248 °F)
Cooling stages	0	3
Vacuum level	1 hPa (0.1 inHg) (29.9 Hg")	1013 hPa (29.9 inHg) (0.1 Hg")
View	00:01 min	03:00 min
Vacuum ON *	30 °C (86 °F)	1200 °C (2192 °F)
Vacuum OFF *	30 °C (86 °F)	1200 °C (2192 °F)
Firing chamber position		150 mm (pressing 158 mm)
Steps	1	9

* Temperature controlled vacuum is possible only in the Ceramco firing mode.

Note: Values which lie outside these limits can be neither stored nor started. The value to be inputed jumps back automatically to the minimum or maximum allowed value.

4.2 Display

Color or monochrome graphic display for indicating firing parameters and text.
Basic screen display structure:



1. Help touch button
2. Program name
3. Temperature, actual value
4. Vacuum indication, actual value
5. Program number
6. Lift position
7. Date or Time
8. Total firing time, nominal value
9. Firing temperature, nominal value
10. Data input
11. Information field
12. Soft touch sensor buttons

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4.3 Screen display functions

1. Help (?)
The help function is filled with text which assists the operator to retrieve specific information when malfunction information appears. The text is limited to the most important information only.

2. Program name
Screen display for the program name. The program name is taken from the text input field.

3. Temperature, actual value
This parameter indicates the actual temperature within the firing chamber. The temperature unit will be pre - selected in the basic settings section.

4. Vacuum display, actual value
This parameter indicates the actual vacuum pressure in the vacuum system, from ambient pressure to the preset vacuum level. The units of the vacuum can be selected in the basic settings.

5. Program number
This displays the current program number.

6. Lift position
This figure visualizes how far the lift is from the firing platform.
- If closed this value equals 0 mm,
- if open 150 mm,
- if open for pressing 158 mm.

7. Date/time
Alternative representation of date or time. Which of the two is to be shown will be set in the "Configuration" submenu. For printing firing data documentation, it is recommended to use the date setting here.

8. Total firing time, nominal period
This parameter indicates the approximate addition of all firing sections as a nominal value.

9. Firing temperature, nominal value
This parameter indicates the current nominal temperature value. The temperature unit will be pre-selected by means of the basic settings.

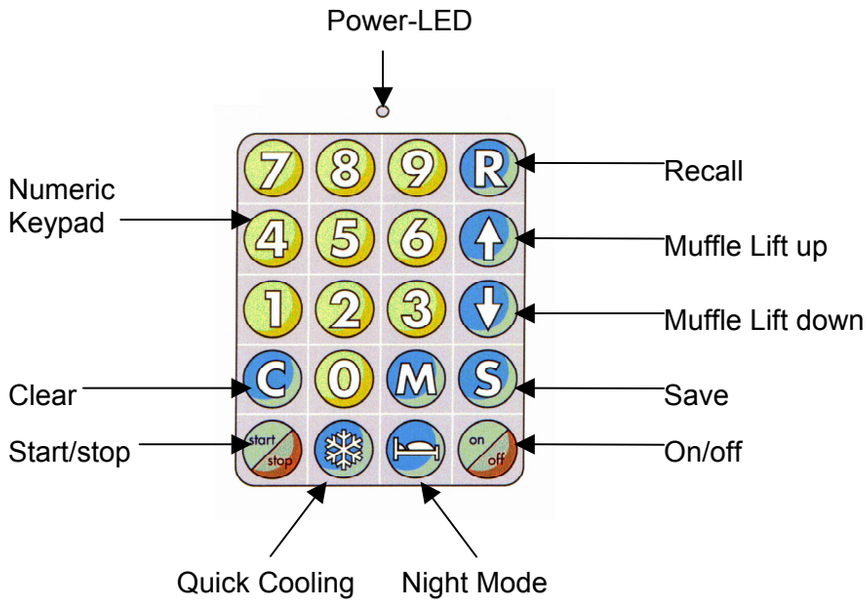
10. Data input
In these fields you can set your firing parameters. Touch round yellow sensor for modifications.

11. Information field
Within this section of the screen display, the information during the whole process of handling and programming the furnace is being shown.

12. Soft touch sensor buttons
Touch buttons for calling context-related functions.

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4.4 Keyboard functions



Mains LED
This LED is illuminated, when the furnace is connected to mains.

Numeric input
This is used to enter numeric values.

Recall "R"
Press touch button and enter the relevant program number. Press “R” button again to select and display the required program.

Lift "⇧"
Press the touch button "⇧" to move the firing chamber upwards or to stop a downward movement.

Lift "⇩"
Press the touch button "⇩" to move the firing chamber downwards or to stop an upward movement.

Memory "M"
When this button is touched, the “Main Menu” will be displayed.

Save "S"
The touch button “S” is used to store programs. When this button is pressed, the values will be stored under a program number. More details about storing programs see section 6.6

On/off sensor button
Press this sensor button to activate/ deactivate the furnace. For the "off" mode the firing chamber has to be closed. If the furnace is turned off by using the on/off button the Standby Mode is automatically activated as long as the standby temperature is > 100° C.

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Night mode sensor button
This function activates the automatic final shutdown of the furnace following a firing sequence. This function will be connected as desired with the current program by touching the sensor button "bed". The symbol for night mode "Bed" will be displayed in the firing data view and in program sequence view.

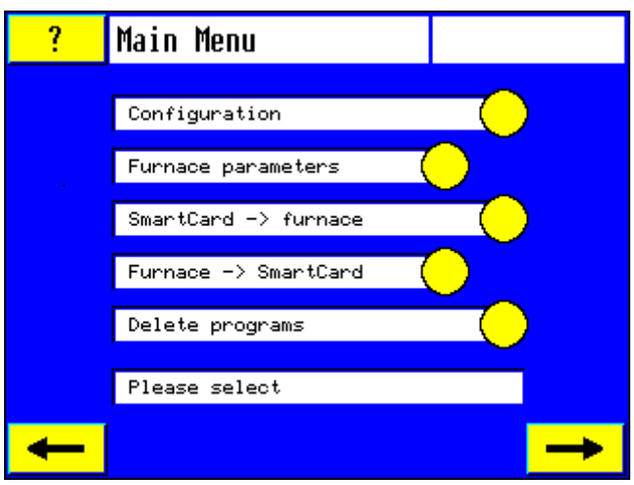
Following the firing sequence, the unit will switch into its “off” state (screen display off, muffle off) and the firing chamber remains open until the Night/Standby temperature is reached. After reaching the night/standby temperature the firing chamber closes. Press the "on/off" sensor button to switch the furnace back on.

Quick cooling – “❄“ sensor button
Manual activation of the fast cooling system when the program has ended, with open firing chamber, press sensor button “❄”. Quick cooling remains activated until the low temperature has been reached.
In this case the actual temperature of the firing chamber must be greater than the low temperature. Touch button ”❄” again to deactivate quick cooling.
Automatic (programmed) quick cooling see section 6.2

Start/stop
To start a program the firing chamber has to be open. Press the touch button to start, stop or abort a program. For abortion of a program touch the “start/stop” button and wait a few seconds until the muffle (lift) is in upper position and the screen changes into the parameter view.

Clear “C”
Press this touch button to:
1. Delete an incorrect input.
2. Acknowledge an information or error display message.
3 Cancel the vacuum.
4 Cancel after firing in the "View" function.
5 Interrupt automatic self test.

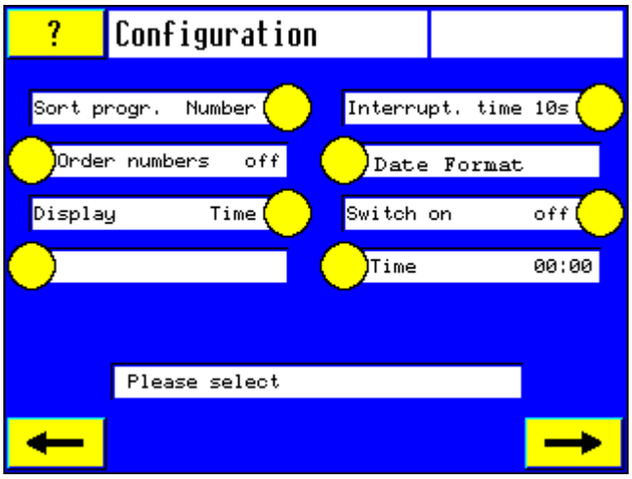
4.5 Main menu



Touch the “M” sensor button to get into the Main menu.
The main menu includes all functions that cannot be executed directly. This is done from the display screen shown below containing the menu. The various individual submenus will be activated by pressing the submenu touch buttons. Use the numeric keypad to change values in the submenus if possible. Changed values will be accepted by selecting a new submenu or pressing the same touch button again. Leave the menu selection by touching “M” again or by touching “⇦” until your previous screen reappears.Touch sensor “M” on the right side on the numeric keypad to activate the menu.

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4.5.1 Configuration



Sort progr. : Number/name sorting
Programs can be sorted either by their program number, therefore numerically, or according to the program name, therefore alphabetically. (Cf. Section 6.12)

Note: This function can be used only for Latin letters.

Order number on/off (Optional)
Is used to input order numbers for multiple firing.

Time/date display
Selection possibility whether time or date should be displayed in the program. (Cf. Section 6.15)

Failure duration 1-20 seconds (Interrupt time)
Is used for setting the power failure recovery in seconds. 10 seconds are preset (Cf. Section 6.4).

Date Format
The Date Format can be selected as follows
DD.MM.YYYY
YYYY.MM.DD
MM.DD.YYYY
Touch the button until your prefered date format appears.

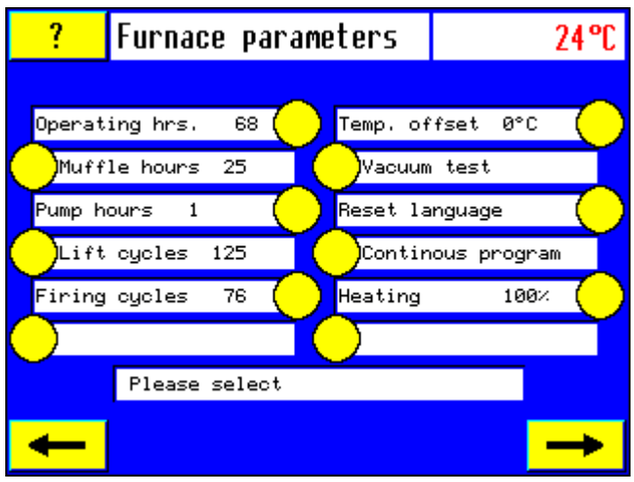
Switch Power on/off
Is used to activate the power on time. (Cf. Section 6.7)

Time 00:00 – 24:00
Is used for setting the time at which the furnace is switched on automatically provided it is connected to the power supply. This time can be maximum 24 hours in the future for safety reasons. (Cf. Section 6.7).

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4.5.2 Furnace Parameters

The temperature offset, muffle hours and the language can be reset. All other displays in this menu have only an informative character and can not be changed.



4.5.2.1 Reset calibration offset

1. Select temperature offset.
2. Touch button "C"; numeric values will be reset to zero.
3. Touch button "M" until the program reappears.

Now run the silver test (#355) and calibrate the furnace (cf. Section 6.5)

Note: **<u>You cannot input any manual offset.</u>** Always run the silver wire calibration.

4.5.2.2 Vacuum test

1. Choose vacuum test
2. Touch “start/stop” to start vacuum test

The vacuum test starts.

To abort the vacuum test touch “start/stop again.
The preset vacuum of 50 hPa must not fall more than 20 hPa in 5 minutes. After termination of the program a message is giving feedback concerning the results of the test. Please confirm message.

4.5.2.3 Reset Language:

1. Touch sensor “Reset language”
2. Confirm with “C”
3. Unplug and replug the furnace to mains.
4. Choose new language

4.5.2.4 Heating % (Power factor)

This function states the percentage of the line voltage at which the heating muffle is operated. The furnace can be set to 30%, 75%, 85% and 100% according to line voltage and heating muffle.

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When ordering a replacement heating muffle, always state the voltage on the nameplate of the furnace.

100 – 240 V	=	100 V Muffle
100; 110; 115; 125 V	=	100 V Muffle
230 V	=	230 V Muffle

4.5.2.5 Reset Muffle Operating Hours

After changing the muffle the muffle operating hours can be reset to Zero.

1. Select “Muffle operating hours”
2. Input code 6070 using the numeric keypad
3. Select “Muffle operating hours” again
4. Confirm reset by touch sensor button “C”

4.5.2.6 Statistical data

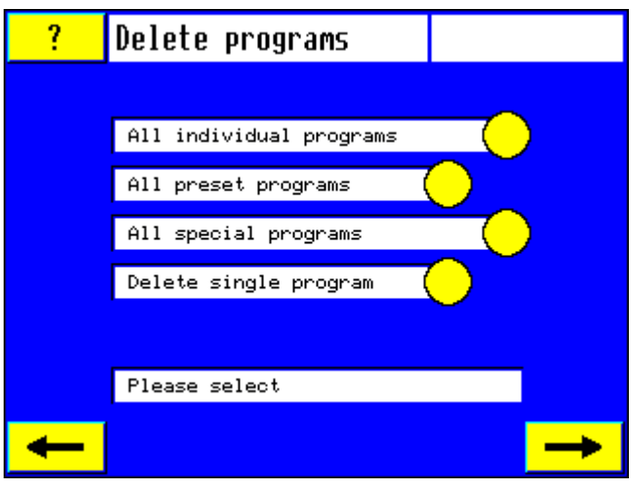
Furnace operating hours
Pump operating hours
Lift cycles
Firing cycles

These values can only be read, and are used by the control system as reference source for maintenance instructions.

4.5.3 Smart Card

The Smart Card is used to save individual programs and to transfer to other Multimat® Touch and Multimat® Touch&Press furnaces. A detailed dscrition is included in the Smart Card Kit (see also Special functions 6.16 and 6.17).
In addition, memory upgrading to 300 individual programs or to activate the PC/Printer port is also possible with a special Smart Card configuration. After upgrading, the Smart Card can be used to save programs.

4.5.4 Delete programs



4.5.4.1 Single program

1. Press sensor button “M”
2. Press sensor button “Delete programs”
3. Press sensor button “Delete single program”
4. Enter program number of the program which should be deleted.
5. Delete program by touching sensor button “Delete single program” again.

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4.5.4.2 Delete all individual programs

1. Press sensor button "M"
2. Press Sensor button "Delete programs"
3. Press sensor button "All individual programs"
4. Confirm safety request by pressing sensor button "C". All individual programs are deleted.

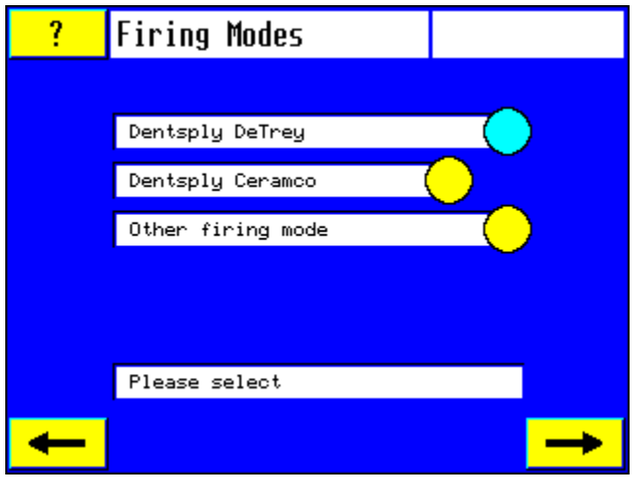
4.5.4.3 Delete all preset / all special programs

The sensor buttons of „all preset programs“ and „all special programs“ are deactivated. These program groups can only be deleted by entering a special code (available by your Dentsply service technician)

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5. Create an own program

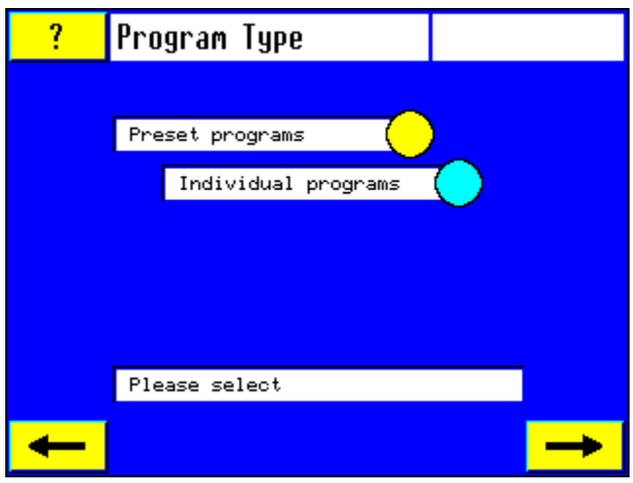
The various individual steps for selecting the ceramic type have already been described in chapter 3.4.



5.1. Firing Modes

After selection of a specific ceramic type, the screen display "Firing Mode" will appear. Use this screen display to select the firing procedure by touching the relevant sensor button. After the required firing procedure has been selected, e.g. DENTSPLY DeTrey or DENTSPLY Ceramco, the furnace will switch over to the next screen.

5.2 Program type

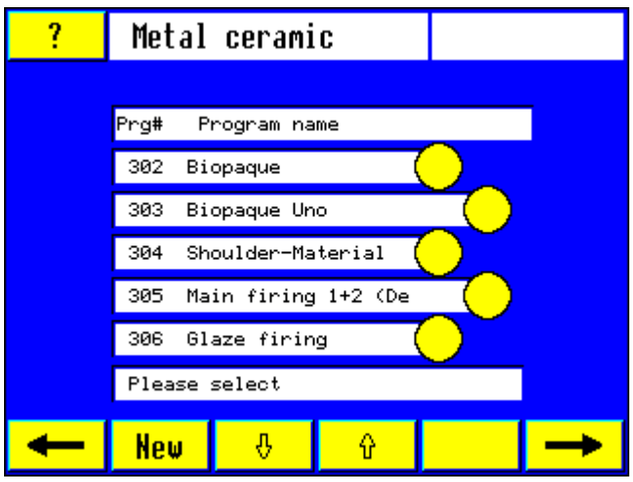


Select from the options shown.

Touch the relevant sensor button to select the program type required, e.g. individual programs. When the desired program type has been selected, the furnace will switch over to the next screen.

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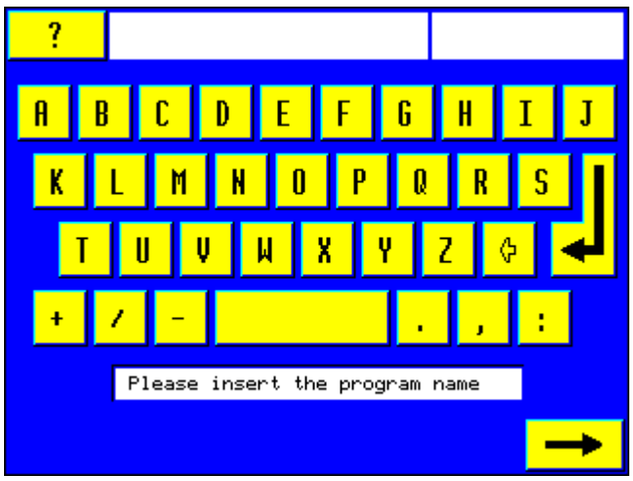
5.3 Program list



The soft key sensor bar along the bottom edge of the screen provides the option to scroll in the program list

Select the soft key "NEW" to create a new program. The furnace will switch over to the relevant screen.

5.4 Text input

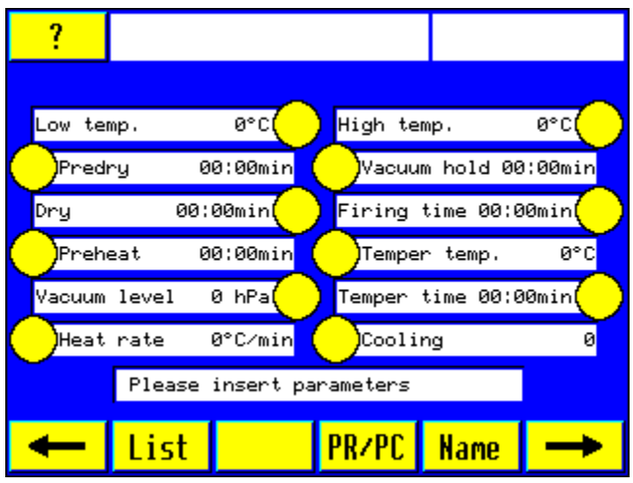


Note: Only program names in Latin letters will be accepted.

Use these letters and characters to enter the desired program name, e.g. "Carat main firing". The text entered will appear in the text window.
Touch the enter button "↵" to be able to write in a second row.

Touch "⇨" to complete text entry. The furnace will switch over to the relevant screen.

5.5 Setting the firing parameters



Input of the numbers using the numeric key pad.

Note: When entering a time, the colon between minutes**:**seconds or hours**:**minutes represents a preset separation. The time value 3 minutes 20 seconds, for instance, will be entered as 0320.

Note: Possibility of changing the program name subsequently by pressing the "Name" soft key.

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5.5.1 Setting Low temperature
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter for example the value 500 for 500°C.

5.5.2 Setting Predry time
(firing chamber in its upper position)
This is only to be used if drying at low temperature across an extended period of time is required. Whilse this drying stage is in progress, the firing chamber will remain in its topmost stop position.

5.5.3 Setting Drying time
Press the yellow touch button. Use the numeric keypad 0-9 and enter, for example the value 0600 for 6 minutes (cf. Section 7.13)

5.5.4 Setting Preheating time
Press the yellow touch button. The current value flashes. Use the numeric keypad 0-9 to enter, for example the value 0300 to have 3 minutes.

5.5.5 Setting Vacuum level
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter the value 50. Select the vacuum unit in the "Basic Set-Up" section.
In Ceramco firing mode, the vacuum level can be activated or deactivated in a temperature-controlled fashion.

5.5.6 Setting Heat rate
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter for example the value 80 for setting the increase rate on 80° C / Minute. With other firing procedures, the rate of temperature rise can be time-controlled.

5.5.7 Setting High temperature
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter for example the value 940.

5.5.8 Setting Vacuum time
a) time controlled (e.g. Dentsply DeTrey Mode)
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter for example the value 0100 for 1 minute.

b) temperature controlled (e.g. Dentsply Ceramco Mode)
Press the according yellow sensor button. Use the numeric keypad to enter activation and deactivation temperature for your vacuum.

Note: The ceramic types, metal ceramics and pressable ceramics are entered and shown in minutes:seconds, sinter ceramics in hours:minutes.

5.5.9 Setting Firing time
Press the respective yellow touch button. Use the numeric keypad 0-9 to enter for example the value 0200 for 2 minutes.
Note: The ceramic types metal ceramics and press ceramics are entered and shown in minutes : seconds, sinter ceramics in hours : minutes.

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5.5.10 Setting Tempering temperature

Tempering will increase the thermal expansion coefficient of the ceramics by a controlled growth of Leucite crystals. In this way, the thermal expansion coefficient for metal ceramics can be adjusted to alloys which deviate significantly in terms of their thermal expansion coefficient. Touch the yellow sensor next to the text and enter for example the figure 1000 for 1000°C.

Consult ceramic's manufacturer before use!

5.5.11 Setting the tempering time

Touch the yellow sensor and enter for example the figure 1000 in the numeric keypad for 10 minutes for example.

Setting the cooling stage

The 3 cooling stages of the **Multimat®*Touch*** allow to decrease stress within the ceramics. If programmed, cooling will start on completion of the firing time period. Cooling will continue until low temperature is reached again.

Touch the respective yellow touch button. Each time you touch the yellow sensor button the cooling stage changes. Press as often as neccessary to select the appropriate cooling stage.

Cooling stages

0 = firing chamber moves immediately into its topmost stop position – no cooling
1 = firing chamber opens up to approx. 70 mm
2 = firing chamber opens up to approx. 50 mm
3 = firing chamber remains closed
Quick cooling

(Time controlled cooling available in sinter mode only)

5.6 Save program

Save your new program by touching the button "S". The firing parameters entered will be checked for feasibility. Firing parameters that are not feasible will be shown in the info field. Confirm error message with "C". Correct error by entering new data. If all firing parameters are accepted, the control system will propose to use the next available program number as a storage location. If you agree and accept this proposition, then press the button "S" again.

Alternatively, if you wish to save a program individually, then use the numeric keypad to enter a different program number and confirm with "S". The firing parameters will be saved. By entering a new number, the old program with this number will be overwritten. You will be asked if you want to overwrite.

5.7 Start a program

Open the firing chamber with the Up key "⇧" on the right-hand control panel (if it is not already opened). Touch the button "start/stop". The furnace will switch over to the firing curve screen.

The firing curve visualizes all firing sections. Initially, the firing curve will be shown empty underneath which, starting on the left, is being filled up during the firing sequence with color or in grey. Below the firing curve, the time periods for the firing sections are shown. They are visibly counted down to zero.
On the right-hand margin, the screen display shows symbols for printer or PC (if pre - selected in the basic settings).

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While firing is in progress, the following functions can be chosen:

Function	Action
a. View	touch button "⇧", then"⇩" to close again
b. cancel view	touch button “start/stop”
c. Cancel program	touch button "start/stop"
d. Cancel vacuum or view function	touch button "C"
e. Change firing parameters	soft key "⇦"
f. Confirm messages	touch button "C"
g. Activate Night mode	Touch sensor button “Night mode”

Programming of the firing parameters in the various individual firing procedures is always the same.

5.8 Standard functions

5.8.1 Recall a program

1. Touch the button "R" and enter a program number. If the program number is below 100 touch “R” again
2. Touch soft key "List" and scroll through the programs listed. The required program will be displayed directly by touching the respective associated touch button.

5.8.2 Save program

Save your program by pressing the button "S". The firing parameters entered will be checked for feasibility. Not feasible firing parameters will be shown in the info field. Confirm error message with “C”. Correct firing parameters by entering new data. If all firing parameters are accepted, the control system will propose to use the next available program number as a storage location. If you agree and accept this proposition, touch the button "S" again.

Alternatively, if you wish to save a program with an individual program number, use the numeric keypad to enter the desired program number. The firing parameters will be saved. By entering a new number that already exists, the furnace asks you if the old program with this number should be overwritten.

5.8.3 Changing a program

Change your program by direct selection of the firing parameter and subsequent input of the new value by means of the numeric input block. The new value will be accepted by:

a. touching again the sensor button of the firing parameter
b. selecting another firing parameter
c. save the program.

5.8.4 Changing a program during a firing sequence

All firing sections not yet processed may be changed while firing is in progress. This is effected by means of soft key "⇦" in the firing curve screen. The firing parameter Screen appears. This screen also allows the firing progress to be traced. After the firing parameters shown on the information bar are executed, the yellow sensor button next to the bar will disappear. Activated parameters cannot be changed. Parameters which have not yet been activated can be changed. Select parameter which has to be changed. The respective parameter value will be displayed on a blue background. User can change this value by means of the numeric keypad. Any change made will be accepted by renewed selection of the touch button for the respective parameter (more details see 6.8.3). The change made is a one-time change only, will not be saved, and only applies to the current firing sequence. After the last change has been made you can return to the firing curve screen. When firing has been completed, the original parameters will be displayed again.

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5.8.5 Copy program

Recall “R” the program which should be copied. Copy the program by pressing the touch button "S" and entering a new program number by means of the numeric keypad. If the program number is used, a relevant message will appear. You will be asked to overwrite or not. If you press touch button "S" twice, the program will be automatically stored under the next available program number.

5.8.6 Deleting programs

(cf. Section 4.5.4)

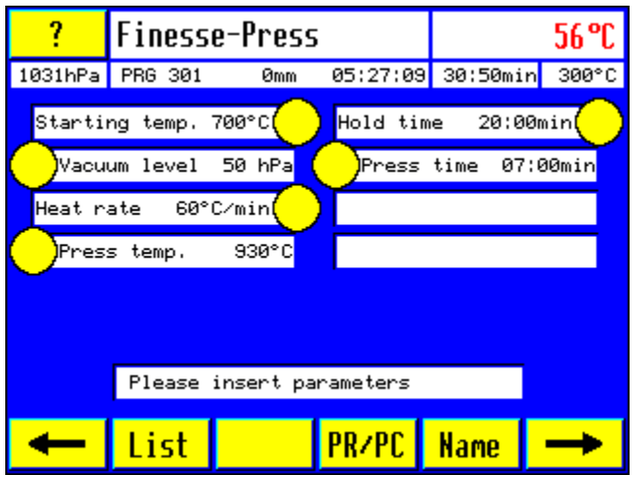
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5.9 Pressing

Place the pressing platform on the platform carrier for pressing pressable ceramics..

After having chosen „Pressable ceramics“ in the screen „Porcelain type“ the furnace directly switches over to the program list for pressable ceramics. The press program for FINESSE ALL-CERAMIC (FAC) is preset under 301.

Choose the Finesse All-Ceramic program from the list by touching the yellow sensor next to the text. The furnace automatically switches to the screen FINESSE ALL CERAMICS.



Open the firing chamber with „⇧“ and start the program by touching „start/stop“. The furnace changes into the screen firing chart.

***Note**: Do not place the investment ring in the muffle at this time. This step comes later.*

Description of the pressing procedure:

- *After having started the program the firing chamber closes and the temperature rises from the idle temperature (to be changed in the basic settings) to the starting temperature of 700°C.*
- *The firing chamber opens automatically as soon as the starting temperature has been reached. The starting temperature of 700 C will be maintained. The upper end position is 158 mm high to facilitate placing the investment ring on the pressing platform. An acoustic signal informs that the externally preheated investment ring onto the pressing platform in the furnace can be placed.*
- *After the placement of the investment ring touch the sensor „⇩“. The press program will continue.*
- *The firing chamber closes, the vacuum pump turns on and creates a vacuum of 50 hPa.*
- *After reaching the final vacuum the temperature starts rising with a heat rate of 60°C/min up to a pressing temperature of 930°C.*
- *The hold time on 930°C is 20 minutes.*
- *After elapsing of the hold time, the press cylinder comes down with 2.7 bar air pressure and the pressing begins. The pressing force equals to 21.7 dN. Hold time is 10 minutes.*
- *After the pressing procedure, the press cylinder returns to its starting point.*
- *The firing chamber is ventilated and moves to its upper starting position. The pressing is completed.*

Be sure to place the investment ring centrally on the pressing platform at all times.

***Note:** Use the pressing platform only for pressing. Crowns and bridges fired on the pressing platform will be underfired.*

***Note**: While working with pressable ceramics always consider the manufacturer’s directions for use.*

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6. Special functions

6.1 Night/standby-temperature

This function is used to prevent humidity from entering the firing chamber.
Night/standby temperature can be preset in the basic settings.
This function allows to pre-select a temperature between 101 °C and 300°C to be maintained within the firing chamber in the "Off" state. The Night/Stanby temperature can be changes in the “Basic settings”.

Recommended night/standby temperature is 120° C.

Night/standby temperature > 100° C = activated
Night/standby temperature < 100° C = deactivated

Activating of the Night/Standby function

- Night/Standy temperature has been set above 100° and furnace swithc off by touching “on/off”
- Night/Standy temperature has been set above 100°C and Night mode button is touched during a firing

Note: When this function is activated the furnace must not be disconnected from mains (i.e. general mains switch).

6.2 Quick cooling

For quick cooling, the vacuum pump is activated and sucks fresh air into the firing chamber with the firing chamber in its open state. If programmed, the function starts after finishing of a firing program. Quick cooling ends when the low temperature level has been reached again. The pump will stop 20° C below the low temperature.

Manual operation:
Quick cooling on completion of the program, with open firing chamber, can be activated manually by pressing the sensor button “❄”. The actual temperature of the firing chamber must in this case be greater than the low temperature. Quick cooling can be deactivated by touching “❄” again.

Automatic operation:
If you want that the quick cooling starts automatically after a firing, touch the cooling sensor button in the furnace parameter screen as long as “Quick cooling” appears.
The symbol for quick cooling “❄” will be shown in the firing data display and in the program sequence screen.

6.3 View function

(for soldering)

During soldering without vacuum it is possible to move the firing chamber up by touching the lift key ”⇧”. Stop the movement of the firing chamber by pressing the lift key "⇩" to inspect the soldering work.
The Soldering (Firing) time will be interrupted, the screen display switches over automatically into the firing data screen. The solder temperature (firing temperature) can be changed by using the numeric keypad.

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How to use the View function:

1. Touch the sensor button “Firing temperature”
2. Change the Firing temperature on the numeric keypad
3. Touch the sensor button “Firing temperature” again
4. Touch the sensor button “⇨”. The screen changes into the firing mode.
5. Touch the lift key ”⇩" to close the firing chamber again and continue the program. After the temperature has been set, post-firing is possible for up to three minutes. This post-firing time is counted up from zero. Post-firing can be cancelled at any time by touching the ”start/stop” key.

Note: The View function can only be activated, if no tempering or cooling is programmed. Temperature change is only visible at the current value.

6.4 Voltage loss bridging (Power failure recovery)

(Configuration submenu Section 4.5.1.4)

The Multimat®*Touch* is equipped with a power failure bridging device. This bridging will become effective as soon as there is a mains power failure during the running firing program. The bridging duration can be set from 1 to 20 seconds. If the downtime is shorter than the bridging time, the program will continue to run, with the following message appearing at the end of the program: "E 07 – There was a power failure”. If the downtime exceeds the bridging time, the program will be canceled and again the following message appears: "E 07 – There was a power failure”.

Note: Check the firing results!

Setting the voltage loss bridging

1. Press sensor button "M"
2. Press sensor button "Configuration"
3. Press sensor button "Failure duration"
4. Input bridging time between 1 and 20 seconds on the numeric keypad.
5. Press sensor button "M" enough times until the preceding program appears again.

6.5 Check firing chamber temperature

(Silver Calibration Set “Silver Sample manual”, Order No. 03 532 803 (optional))

The firing chamber temperature has been accurately preset at our site. If, for any reason, there should be a need to check the temperature within the firing chamber, proceed as follows:

The following items are required:

- 1 Dentsply silver sample carrier
- 1 piece of silver wire – diameter: 0.3 mm, length: 37 mm.

Procedure:

- Heat furnace at 600 °C for approximately 1 hour.
- Insert silver wire into the Dentsply silver sample carrier.

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The following data are stored in the special programs section as "silver wire calibration" program number 355:

Preheating temperature	650°
Pre-drying time	0 minutes
Drying time	0 minutes
Preheating temperature	3 minutes
Vacuum level	50 hPa
Heat rate	120°C / Min
Firing temperature	961° C (melting point of the silver wire)
Vacuum time	0 minutes
Firing time	1 minutes
Tempering temperature	0° C
Tempering time	0 minutes
Cooling stage	0

- Open firing chamber and place sample carrier with silver wire centrally onto the firing platform.
- Start test program "Silver wire calibration" (#355).
- If - after completion of the program - the silver wire has started to melt along its upper third, that is, a bead has formed on the wire surface, then the temperature is correct (with an accuracy of +/-2°C).
- If the silver wire surface has not started to melt, then the firing chamber temperature is too low. In this case, repeat the test program - each time with a temperature rise rate of 3°C - until the required melting effect on the surface of the silver wire is achieved.
- If the silver wire has melted altogether, then the firing chamber temperature is too high. In this case, repeat test program - each time with a new length of silver wire and a temperature reduction rate of 3°C each time - until the required melt effect on the surface of the silver wire is achieved.

If you have found the correct temperature touch the "Silver" sensor button. The temperature offset will be set automatically.

The correction of the firing chamber temperature is completed.

6.6 Night mode

This function switches the heating off automatically after firing is finished and the chamber temperature cools down to the night/standby temperature. This function can be switched on or off for the program as desired by pressing the "Bed" sensor button. The "Bed" symbol for night mode is displayed in the firing curve.
After finishing a firing, the furnace system switches off the display and the firing chamber temperature cools down. After reaching the night/standby, the firing chamber closes automatically. The night/standby temperature is held as long as the furnaces is switched on by touching the "on/off" sensor button.

6.7 Pre-select activation timer

(Configuration submenu Section 5.5.1.5)

This function can be preset to activate the furnace automatically at a specific time. The function will be called up in the submenu "Configuration". The "Activate" and "Time" input fields appear.

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Activating the switch-on time

1. Press the sensor button "M".
2. Press the sensor button "Configuration".
3. Press the sensor button "Time"
4. Enter the time in 24 hour format 00:00 on the numeric keypad.
5. Sensor button "Activate" to "on"
6. Press the sensor button "M" frequently enough until the preceding program appears again.

After the furnace is switched off touching the "on/off" sensor button, it is switched on again automatically at the pre-selected time.

Note: Due to safety reasons the pre-select time frame is limited to 24 hours. The pre-select activation button is automatically reset to the status “off” after the function has been executed.

6.8 Vacuum test

(Furnace Parameters submenu Section 4.5.2.2)

Only for Service use.

6.9 Printer/PC

Note: This function can only be used if a this function is activated. The nominal and actual values will be transferred automatically after finishing a firing when the printer or PC symbol is shown. If no printer or PC symbol is selected, the data transfer can be done by touching the soft key “PC/PC”.

The printer should be configured as follows:
9600 Baud/ 8 bit/ 1 Stop bit/ No parity

Note: For connecting a printer you need:
➢ For serial:
1x modem V24 cable, serial,
➢ For parallel
1x two-way converter serial to parallel with connection cable.

6.10 Acoustic signals

Short signal tone:	at each key press
Long signal tone:	When an impermissible entry is made
Triple signal tone:	When program terminates. In press program: furnace has reached start temperature; insert investment ring.

6.11 Software Update

To connect the furnace with your PC you have to use the serial Interface of the furnace and the serial interface of the PC. if you do not have any more free interfaces left on your computer/ laptop you might be able to use the mouse port (very often a serial Interface), To connect the interfaces use a serial cable (D-SUB, 9 St/D-SUB, 9 jacks, 9 pins) (available in any computer shop):

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1. Turn on PC/ Laptop
2. Start Windows Explorer (Start/ Programs/ Windows Explorer)
3. Insert the disk or CD-ROM with the Software update
4. Click on 3,5“ Disk drive or CD-ROM drive
5. On the right hand screen you will see a file named „MumaUpdt.exe“, having a satellite dish in front of its name.
6. Click once on this file.
7. Now connect the furnace with the PC (Furnace: middle interface on the right side of the furnace RS 232; PC/Laptop: serial or mouse interface, you don’t need the mouse any more for this procedure).
8. Disconnect the furnace from mains power supply (unplug the cable).
9. Push the „enter“ button on your PC/ laptop (also called „return“ button). A pop up window appears on your monitor. Now plug the power supply cable back into the furnace.
10. The display of the furnace is supposed to remain black, while the display on your PC/ laptop shows the status of the data transfer (duration approx. 2-3 minutes). The end of the transfer is confirmed by the line „ready“ in the monitor window.
11. Unplug the furnace from all cables (The mains cable too) and plug the mains cable in again after 5 seconds.
12. The furnace is now upgraded and you can see the new version number in the initial screen.

6.12 Program sorting according to name or program number

(Main menu Section 4.5.1.1)

This function enables the programs to be sorted according to name or program number. This function is very helpful if the programs are prefixed by a letter for identification.

Program sorting

1. Press the sensor button "M"
2. Press the sensor button "Configuration"
3. Press the sensor button "Sorting" and select the name or number.
4. Press the sensor button "M" frequently enough until the preceding program appears.

6.13 Change standard drying position and steps

This function enables the standard drying position and the number of steps with which the standard drying position should be reached proceeding from the upper end position to be changed.

Set new drying position

1. Double press in the program on the white Drying Bar. A selection screen appears.
2. Press the yellow sensor button "Drying position"
3. Enter the new drying position in "mm" using the numeric keypad.
4. With a drying position smaller than 100mm, press the "Drying position" sensor button again.
5. Press the "Left arrow". The program is displayed again.

Note: The drying position can be selected between 0 and 150 mm. The starting position in the screen is 0.

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Setting steps
1. Touch the yellow sensor button "Steps"
2. Enter the number of steps on the numeric keypad
3. Press the soft key "⇦" . The program is displayed again.

Note: To permanently retain the changed drying parameters, the program must be saved before the start. The new drying parameters apply only for the changed program. All other programs remain unaffected by this.

Note: We recommend not to change the standard settings without any objective needs.

6.14 Change the standard tempering position

This function enables the standard tempering position to be changed (Carat).

Set the new tempering position
1. Double press in the program on the white "Tempering" Bar. A selection screen appears.
2. Press the yellow sensor button "Tempering position"
3. Enter the new tempering position in "mm" on the numeric keypad
4. If the positino is smaller than 100 mm touch the "Tempering position" sensor button again
5. Press the soft key "⇦". The program is displayed again.

Note: To permanently retain the changed tempering position, the program must be stored before the start. All other programs remain unaffected by this.

6.15 Display time and date

This function enables the optional display of the time or of the date in the program. The date is preset in the factory.

Changing the time or date display
1. Press the sensor button "M"
2. Press the sensor button "Configuration"
3. Press the sensor button "Display date" or "Display time". The display changes to time or date.
4. Press the sensor button "M" frequently enough until the preceding program appears.

6.16 Smart Card

(Smart Card Set # 03 050 050)
(Main menu Section 4.5)

All or selected individual programs can be transferred from the furnace to the Smart Card and vice versa. Up to 300 individual programs can be saved on the Smart Card. We recommend this feature as an additional program back-up.

The Smart Card Set contains in addition a CD-ROM which contains
- Latest furnace software
- Interactive User Guide
- Directions for use

We recommend, first to upload the latest softeware on your Multimat® Touch (cf. chapter 6.15) before using the Smart Card.

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6.16.1 Format Smart Card
The Smart card must be formatted prior to first use! All data will be deleted.

1. Insert the Smart Card into the furnace (chip backwords)
2. Touch the sensor button “M” on the numeric keypad
3. Select “Furnace parameter”
4. Select “Format Smart card”
5. Confirm with “S” = yes
6. Formatting takes about 5 to 10 seconds
7. Confirm formatting with “C”
8. All individual programs can now be saved.

6.16.2 Program transfer Furnace → Smart Card
Note: The Smart card has to be formatted prior to first use!

1. Insert the Smart Card into the furnace (chip backwords)
2. Touch the sensor button “M” on the numeric keypad.
3. Press the sensor button "Furnace → Smart Card". A program list appears.
4. Select programs by pressing on the associated sensor buttons or, if all programs on the program list should be transferred, press the sensor button "All" of the softkey bar.
5. Press the sensor button " → Card" of the softkey bar.
6. Confirm with "C"

Note: The life time of the Smart Card memory is limited to 5 years. Please save your programs regularly.

6.16.3 Program transfer Smart Card → Furnace
This function enables programs to be transferred from the Smart Card to the furnace.

1. Insert the Smart Card into the furnace (chip backwords)
2. Touch the sensor button “M” on the numeric keypad.
3. Press the sensor button "Smart Card → Furnace "
4. Confirm “Load programs” with “S” = yes
5. Programs will be loaded
6. Confirm with "C"

6.16.4 Multimat® Touch Upgrades
For upgrading your furnace

Activating of the PC/pritner port (# 03 050 030) or

Memory extension up to 300 programs (# 03 050 040)

please follow the instructions in 6.16.3 program transfer Smart Card → Furnace.

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7. Service and maintenance

7.1 Lift

The lift is used for the vertical transportation of the firing chamber. The lift is driven by means of a geared motor. If there is a power failure in the unit, the firing chamber can be lifted up by hand in order to remove the work pieces. By exerting forceful pressure from the top, the firing chamber can be moved down manually.

7.2 Firing platform complete with firing platform carrier

The firing platform is located above the firing platform carrier. The firing platform carrier is mounted in a vertically sprung fashion to the top of the furnace subsection. This subsection provides heat insulation of the firing chamber, and is also used as an object carrier.
The firing platform carrier complete with O-ring will seal off the firing chamber in the event of a vacuum firing. To avoid damage of the firing platform carrier or the O-ring the firing platform has to be placed on the platform carrier at all times.

Maintenance note: The O-ring of the firing platform carrier is to be kept clean and to be checked occasionally for possible damage. To prevent damaging of the firing platform carrier and on the O-Ring seal place always the firing or pressing platform onto the firing platform carrier.

7.3 Vacuum pump

We recommend to use the Multimat® Touch with the high-performance Biodent vacuum pump (# 03 002 115VD, # 03 002 125VD or # 03 002 220VD depending on the voltage supplied in your country).
The Multimat® *Touch* can be also operated with all efficient vacuum pumps that have a grounded plug connector (current consumption 2.5A max.). The vacuum pump should have a suction capacity of at least **30** l/min and should reach a minimum end pressure of 30 hPa. How to connect such pumps is described in Section 3 "Setup and initial use".

The power cord between furnace and pump must not exceed a length of 2 m.

Maintenance note: Please read the instructions for use for the pump for maintenance.

Important note: If the vacuum pump is oil-lubricated, change the oil every 3 months.

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7.4 Replacement of firing muffle



Caution!
This product contains ceramic fibers; it may release fiber dusts; these have proven carcinogenic in animal experiments.
Follow EC safety data sheet.

The heat insulation of the firing chamber in this unit consists of ceramic fibers. Following extended use of ceramic fibers at temperatures above 900°C, silicon type substances (cristobalite) may occur. In certain cases, e.g. when replacing the firing muffle, dust exposure may occur which will possibly cause irritations to skin, eyes, and respiratory organs.

When replacing the firing muffle, please proceed as follows:

- All personnel must be told to wear long-sleeved clothing; cover your head, wear eye protection and gloves.
- Fit dust extraction device to the source of dust, and, if this is not possible, equip your personnel with the dust mask FFP3 or similar.
- On completion of this task, any clinging dust particles must first be rinsed off the unprotected skin with cold water. Only then use hot water and soap to wash off.
- Wash your working cloth separate from normal garments.



Warning!
Before opening this unit, disconnect mains cable from mains socket.

Removal:

Multimat®Touch&Press:
1. *Comply with dust protection measures!*
2. *Disconnect mains plug!*
3. *Shut down compressed air supply!*
4. *Unscrew press hood, pull slightly towards the rear and remove carefully in an upward direction.*
5. *Undo connector from the solenoid valve.*
6. *Disconnect the compressed air hose from the solenoid valve by withdrawing the clamp ring in an upward direction and the compressed air hose in a downward direction at the same time.*
7. *Disconnect approximate sensor*
8. *Continue with the instructions for Multimat® Touch*

Multimat®*Touch*:
1. Unscrew cover and lift off in an upward direction (until the press stamp is freely accessible).
2. Disconnect protective conductor from cover.
3. Remove insulating disk.
4. Disconnect thermoelement from the two rear terminal studs.
5. Remove thermoelement complete with hole bar, then remove terminal insulation.

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6. Disconnect the heating wire ends of the muffle from the two front terminal studs (you need a 12 mm and a 8 mm wrench).
7. Remove muffle from insulation insert - if the furnace is hot, handle with care at the heating wire ends.

Fitting:



Caution!
Wear textile gloves when fitting the new muffle, in order to prevent the quartz tubing from coming into contact with hand sweat.

A new muffle is fitted by following the above instructions in reverse order.

Note: After changing of the muffle we recommend to re-calibrate furnace temperature by running the calibration test (Silver wire test; section 6.5)



Warning!
Make sure that the wire ends do not have any contact with the metal shell of the furnace upper section. If necessary, shorten wire ends as appropriate.
Reconnect protective conductor to cover and to press hood!

7.5 Replacement of control unit



Warning!
Before opening this unit, disconnect mains cable from mains socket.



Caution!
The firing chamber must be located in its top stop position.

1. Disconnect mains plug
2. Unscrew the two philips screws below the control element.
3. Remove control element in an upward direction.
4. Withdraw vacuum hose and all connectors.
5. Disconnect thermocouple.
6. Disconnect protective wire from the control unit.

A new control unit is fitted in by following the above instructions in reverse order.

Note: The control unit should be send only in their service packaging. Please ask Dentsply Service department.

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7.6 Inspections

We recommend an inspection after 15,000 lift cycles in which the essential functions are checked or components are replaced if necessary. For service please contact your Dentsply dealer.

7.7 Cleaning notes

The Multimat®*Touch* is painted with epoxy paint. Use a mild household detergent to clean the paint surface. The touch screen is to be cleaned in the off mode only (dark screen). Please use white spirit or a mild window cleaning agent.

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8. Errors and remedies

The information provided below is intended to assist you in identifying and evaluating simple errors and to fix them by appropriate remedial action.
An Error message, its likely cause and the appropriate remedial action will be shown in a text format on the display. Acknowledged the displayed message by pressing the "C" key.
Additional information to the reason of the malfunction will be available by pressing the “?”.

An Error messages which cannot be displayed on screen for technical reasons will only be described in this section. For faster identification, the messages are characterized by a prefixed alphanumeric code.



Warning!
Before opening this unit, disconnect mains cable from mains socket.



Caution!
When shipping, support the top of the furnace by a suitable transportation support device. Use the Dentsply Service Packaging. Please ask the Dentsply Service Department.

All information messages must first be deleted by "C”. Touch “?” to get further information on your errors.

Error:	Cause:	Remedy:
Display and illuminated mains diode are extinguished.	Mains fuse is defective. Display is defective.	Disconnect mains plug! Replace defective fuses. If the display still remains dark, call service engineer.
E 01 Waiting period to place object exceeded.	You only have 15 minutes to place the press muffle. This period is exceeded.	Insert faster.
E 02 – Vacuum has not been removed. Firing chamber does not open.	Selenoid valve is defective.	Replace selenoid valve
E 03 – Limit switch is not closed.	Transport retainer or foreign body between furnace top and bottom sections.	Disconnect mains plug. Remove transport retainer or foreign bodies. Delete information messages by pressing "C". Reconnect unit to mains. Press "on/off". Operate lift "⇧" . Following approx. 10 seconds, the firing chamber will open. Press lift "⇩". Limit switch closes and the furnace will again be ready for operation.

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E 04 – Control unit is too hot. Program cancellation, continuous sound.	Extremely high standby temperature with open firing chamber.	Disconnect mains plug and allow furnace to cool down for a period of 5 minutes approximately. If not in use, always keep furnace closed. After this down-cooling period, restart furnace as usual.
E 05 – Nominal vacuum has not been reached, program cancellation.	There is a leak in the vacuum system or Pump intake capacity is too low or moisture has entered into the firing chamber insulation.	Start Vacuum test program (in Menu furnace parameters) Check if pump complies with specifications. Use stronger pump with more intake Run program no. 354 “Dehydration Program” If none of the activities solves the vacuum issue, please contact your service technician
E 06 – Fast cooling is still activated.	Low temperature has not yet been reached.	Wait until low temperature has been reached, or deactivate manually by pressing key “❄”.
E 07 – Mains failure.	Temporary mains supply failure while firing is in progress.	Not possible. Please check firing results.
E 08 – Heating circuit is defective. Program abortion.	Triac might be defective.	a) Disconnect furnace from mains plug b) Wait one hour to cool the furnace c) Reconnect power plug to furnace If E08 still appears, please contact your service engineer.
E 09 – Thermocouple broken, Wiring broken. Program abortion.	Thermocouple is broken or there is an interruption in the wiring. Thermocouple wrong polarity	Check thermocouple and wiring. Reverse polarity of Thermocouple or wiring.
E 10 – Battery is weak	Battery on the control board is flat.	Call service engineer to replace battery.
E 11 – Excess temperature	The actual temperature is 25°C above the nominal value.	Call service engineer and ask him/her to check the temperature control system.
E 12 – Max press distance reached. Program abortion.	Not enough investment material in the investment Ring	Use enough investment material to prepare pressable tovestment rings
E 13 - Limit sensor not recognized	Sensor not adjusted or broken	Adjust the limit switch or contact your service technician.
E 17 - Temperature reference device defictive		Change control unit

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E 20 – Smart Card cannot be read.		Smart card not inserted properly. Smart card type not accepted. Smart card reader defective.
E 21 - No data on Smart Card		Smart card without data inserted.
E 22 – Smart card contains invalid data.		Smart card type not accepted. Program upload to Smart Card was not correct.
E 23 – Not enough memory in the furnace.		Not enough memory to save more individual programs. Delete not used programs.

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9. Preset programs

9.1 Firing Table for Carat Metal Ceramics (DeTrey Mode)

(Use sagger tray)

Prog #.	Firing	Preheat /Low Temp. °C	Drying min.	Preheat min.	Vacuum Level hPa	Rate of temp. Rise °C/min.	Firing/ High Temp. °C	Vacuum time min.	Firing time min.	Cool-ing stage
302	D-CAR-Biopaque	500	03:00	03:00	50	Max.	975	01:00	02:00	0
303	D-CAR-Biopaque Uno	500	05:00	03:00	50	80	950	01:00	02:00	0
304	D-CAR-Joint opaque	500	05:00	05:00	50	max.	975	01:00	02:00	0
305	D-CAR-Main firing 1+2 ◆ Dentine + enamel	500	06:00	03:00	50	80	940	01:00	03:00	✹
306	D-CAR-Glaze firing	500	03:00	03:00		80	920	00:00	03:00	✹
307	D-CAR-Glaze firing With overglaze	500	03:00	03:00		80	910-920 *	00:00	03:00	✹
308	D-CAR-Stains firing Multicolor F stains	500	03:00	03:00	50	80	940	02:00	03:00	✹
309	D-CAR-Correction firing Vacuum firing	500	03:00	03:00	50	max.	840	01:00	02:00	✹
310	D-CAR-Correction firing Glaze firing	500	03:00	03:00		max.	840	00:00	02:00	✹

D = DeTrey Mode
CAR = Carat Metal-Ceramic

✹ If necessary, cool-down.
◆ For larger workpieces, we recommend a pre-drying time of 10 minutes on the firing platform with an open firing chamber.
* depending on desired grade of glaze

These firing temperatures are recommended figures. If necessary, carry out a firing test, and adjust firing temperatures or times.

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9.2 Firing table for Finesse metal ceramics (DeTrey Mode)

(Use sagger tray)

Prog #.	Program Description	Preheat/ Low Temp. °C	Drying time min.	Preheat. min.	Vacuum Level hPa	Rate of Temp. Rise °C/Min.	Firing / High Temp.: ° C	Vacuum Time Min.	Firing time min.
311	D-FIN-Powder Opaque	450	03:00	03:00	50	90	800	00:30	01:00
312	D-FIN-Paste Opaque	450	05:00	03:00	50	90	790	00:06	00:30
313	D-FIN-Joint Opaque / Margin/margin mod.	675	03:00	07:00	50	35	770	00:06	00:30
314	D-FIN-Correction Opaque	450	05:00	03:00	50	90	760	00:06	00:30
315	D-FIN-1.Main Firing Opaque dentine, Dentine, Dentine effect, enamel, gums	450	05:00	05:00	50	35	760	00:06	00:30
316	D-FIN-2. Main Firing Opaque dentine, Dentine, Dentine effect, enamel, gums	450	05:00	05:00	50	35	750	00:06	00:30
317	D-FIN-Correction Firing	450	05:00	05:00	50	55	730	00:06	00:30
318	D-FIN-Glaze firing/ Stains ✷	450	03:00	03:00	-	70	750	-	00:06
319	D-FAC-repair porcelain	450	05:00	05:00	50	35	810	00:06	00:30
320	D-FAC-Shade stain porcelain	450	03:00	01:00	-.	100	730	--	00:12

D = DeTrey Mode
FIN = Finesse metal ceramic
FAC = Finesse All Ceramic
✷ depending on desired grade of glaze



Caution!
Firing parameters that are not listed in the firing table should be set to "0" during value input.
Note: Do not use the press platform for firings!

Note: If necessary, carry out a firing test and adjust firing temperatures or times.

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9.3 Firing table for Finesse All Ceramic (DeTrey Mode)

Caution! Use the pressing platform!

Prog #.	Press	Start temp. °C	Vacuum level hPa	Rate of temp. Rise °C/Min.	Press temp.: °C	Vacuum time min.	holding time min.	Press time min.
301	D-FAC Press	700	50	60	930	27:00	20:00	07:00
319	D-FAC-Repair Porcelain	See firing table for Finesse Metal Ceramic / Progr. No. 319						
320	D-FAC-Shade stain porcelain	See firing table for Finesse Metal Ceramic / Progr. No. 320						

D = DeTrey Mode
FIN = Finesse metal ceramic
FAC = Finesse All Ceramic

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9.4 Firing table for Finesse; FAC and Ceramco II (Ceramco Mode)

(Use sagger tray)

Prog #	Program Description	Time (min.)					Temperature					Vacuum	Stages
		Pre Dry	Dry	Pre-Heat.	Vac. Hold	Firing time	Preheat/ Low Temp. °C	Firing/ High Temp.: °C	Heat rate / Rate of temp. Rise °C/Min	Vac on	Vac. off	Vac Level hPa	Cool-ing Stages
324	C-FIN-Powder Opaque	0	03:00	03:00	0	01:00	450	800	90	450	800	50	0
325	C-FIN-Paste Opaque	0	05:00	03:00	0	0	450	790	90	450	790	50	0
326	C-FIN-Opaque/Correction/Opac	0	05:00	05:00	0	03:00	450	760	35	450	760	50	0
327	C-FIN-1st Dentin/Enamel/Mod.	0	05:00	05:00	0	03:00	450	760	35	450	760	50	0
328	C-FIN-2nd Dentin/Enamel/Mod.	0	05:00	05:00	0	0	450	750	35	450	750	50	0
329	C-FIN-Dentin Correction	0	05:00	05:00	0	0	450	730	55	450	710	50	0
330	C-FIN-Margin/Margin/Mod.	0	03:00	07:00	0	0	675	770	35	675	770	50	0
331	C-FIN-Natural Glaze	0	03:00	03:00	0	0	450	750	70				0
332	C-FIN-Glaze/Stain	0	03:00	03:00	0	0	450	750	70				0
333	C-CII-Ultra-Pake	0	03:00	03:00	0	01:00	500	975	120	500	975	50	0
334	C-CII-Paint-O-Pake	0	03:00	03:00	0	0	650	970	70	650	950	50	0
335	C-CII-Edge Shoulder	0	05:00	05:00	0	0	650	965	70	650	945	50	0
336	C-CII-Body	0	05:00	05:00	0	0	650	940	70	650	920	50	0
337	C-CII-Natural Glaze	0	03:00	03:00	0	01:00	650	940	70				0
338	C-CII-Low Temp. Glaze	0	03:00	03:00	0	01:00	650	915	70				0
339	C-CII- Add-On	0	05:00	05:00	0	0	650	915	70	650	865	50	0
340	C-CII-Silver Body	0	05:00	05:00	0	0	650	960	55	650	940	50	0
341	C-CII-Silver Natural Glaze	0	03:00	03:00	0	01:00	650	960	55				0
342	C-CII-Silver Overglaze	0	03:00	03:00	0	01:00	650	935	70				0
343	C-CII-Silver Add-On	0	05:00	05:00	0	0	650	940	70	650	890	50	0
344	C-CII-Colorlogic Veneer	0	08:00	08:00	0	0	500	940	50	500	920	50	1
345	C-CII-Colorlogic RDM – single	0	06:00	06:00	0	10:00	650	1010	50				1
346	C-CII-Colorlogic RDM – model	0	06:00	06:00	0	15:00	650	1010	50				2
347	C-CII-Final Touch Body & Incisal	0	05:00	05:00	0	0	450	705	55	450	685	50	0
348	C-CII-Final Touch Stains & Glaze	0	03:00	03:00	0	01:30	450	690	55				0
349	C-FAC-Repair Porcelain	0	05:00	05:00	0	00:30	450	770	35	450	770	50	
350	C-FAC-stains (shade stain porcelain)	0	03:00	01:00	0	01:00	450	730	100	0	0	0	0

C = Ceramco Mode
FIN = Finesse Metal ceramic
FAC = Finesse All ceramic

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10. Software

We recommend to install always the latest software version on your Multimat® Touch or Multimat® Touch&Press. Please ask your Sales Rep or download it from the website www.digitux.de/dentsply, password “tech”.

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11. Dentsply Subsidiaries



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