Directions For Use

Preliminary Version: 02 May 2000

MULTIMAT®*Touch*

CONTENT

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!

This symbol indicates important information on instructions which you should comply with.

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

1. Description of parts

1.1 Description of parts

1. Press hood
   8.1 Cover
3. Cooling jacket
3. Support
3. Firing platform
4. Firing platform carrier
6. Work storage platform
6. Control casing
9. Board slot
9. RS 232 (Printer/PC
9. RJ 485 (PC network)
12. Touch Screen
12. Control
13. Equipment fuses
14. Mains socket
15. Vacuum connection
16. Vacuum pump socket
17. Compressed air connection
18. Filter control
19. Muffle
20. Press base

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. 230 V in Countries with 230 V
		approx. 100 - 125 V in all other countries
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 Vac
Pump plug:		2.5 A
Weight:		approx. 27 kg

Multimat®Touch&Press

Height:	*closed*	*approx. 593 mm*
	open	*approx. 740 mm*
Width:		*approx. 320 mm*
Depth:		*approx. 425 mm*
Press pressure:		*2.7 bar*
Voltage :		approx. 230 V in Countries with 230 V
		approx. 100 - 125 V in all other countries
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 Vac*
Pump plug:		*2.5 A*
Weight:		*approx. 28 kg*

1.3 Environmental conditions

Temperature:	2°C – 40°C
Relative air humidity:	80% at 31°C
Height:	2000 m above sea level

2. 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 and menu-driven operation keep training times at a minimum.
The **Multimat®*Touch*** is equipped with 100/ 300 freely programmable programs. Preset programs of Dentsply's ceramics come on top, meaning that they do not lower the amount of individual programs. The Touch user interface allows direct interaction and favors a quick selection of functions.

All firing data are visualized over a monochrome/ 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.

Please read the whole operating instructions before startup!

3. Safe use

3.1 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 lifespan 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 authorized Service specialists.

3.2 Hazards and safety notes

Caution!

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

12. Do not set up furnace and vacuum pump in the immediate vicinity of heat sources.
13. The distance to the nearest wall should be at least 25-30 cm.
14. The area where you set up the **Multimat®*Touch*** should be non flammable; even in the vicinity, there should be no combustible items.
15. Set up the vacuum pump in a well ventilated place. In case of an oil-lubricated vacuum pump, this should always be located at a lower level than the furnace. The check valve on the vacuum hose must be placed higher than the pump.
16. Do not touch any parts which may become hot during operation; in particular do not touch the cover.
17. Before switching on this unit, ensure that the operating voltage specified on the equipment corresponds to your mains voltage.
18. *In case of a furnace with press function, the pressure shown on the pressure regulator of 2.7 bar must be maintained.*
19. In the event of any extended stand still 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.
20. If the furnace is under vacuum for an extended period, the O ring of the firing platform may adhere or stick slightly.
21. At the start of the firing muffle heating process, there may be an occurrence of vibration noise from the heater winding.
22. Only use original replacement parts.

Warning!

23. This unit may be connected only to a 16 A slow fused plug with a protective contact and a differential-current circuit breaker 30mA.
24. Disconnect the unit from mains whenever service and repair work is carried out.
25. Repairs performed whilst the unit is open and under voltage may be carried out by a competent specialist only.
26. Following any and all repair work, a high voltage and protective conductor test is to be carried out.
27. If any defects or damage occur such that safe operation is no longer ensured, the unit must be secured against any unintentional use.

4. Setup and first use

4.1 Unpacking

- Open the packaging; then read first the unpacking instructions which are packed on top.
- Unpack furnace and accessories in accordance with the unpacking instructions.

4.2 Check accessories

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

*- The following accessories will come on top for the **Multimat®Touch&Press**:*

  - *1 pressing platform*
  - *1 pressure regulator with gauge*

- Investment ring plungers, investment papers and muffle set will be available with every FAC-complete Kit

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

4.3 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.
- Connect the mains plug of the Dentsply vacuum pump to the vacuum pump socket and push the vacuum hose onto the hose adapter. The arrows on the filters must point in the direction of the vacuum pump.
- *If you have a 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 set to 2.7 ex works).*

4.4 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 this is not the case, do not connect the furnace.

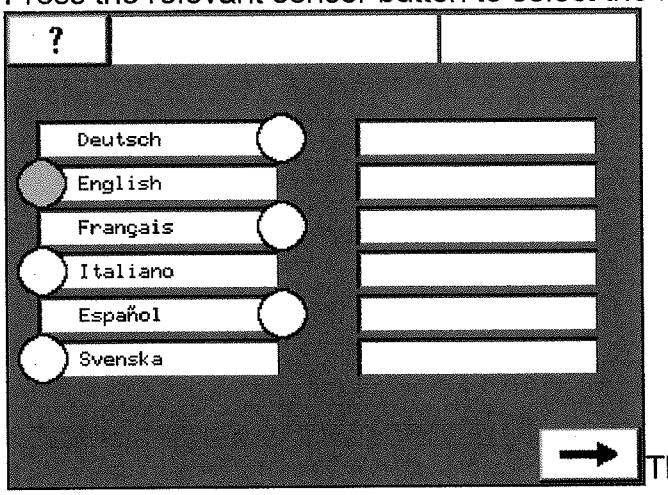
- Connect the mains cable of the furnace to a mains socket protected by a 16A fuse (inert) and a differential-current circuit breaker (30mA). The mains diode illuminates.

4.4.1 Start screen display

The start screen display showing the Dentsply logo and the version number of the software will appear on screen for 6 seconds. Then the following screen will appear:

4.4.2 Language selection

Press the relevant sensor button to select the language required.



The sensor button changes its color.

The language selection screen will appear only after choosing it in the main menu (see chapter 5.5 Main Menu – Furnace Parameters). Users have unlimited time to select the language. You can also modify the language by pressing the left arrow three times after a completed automatic self-test.

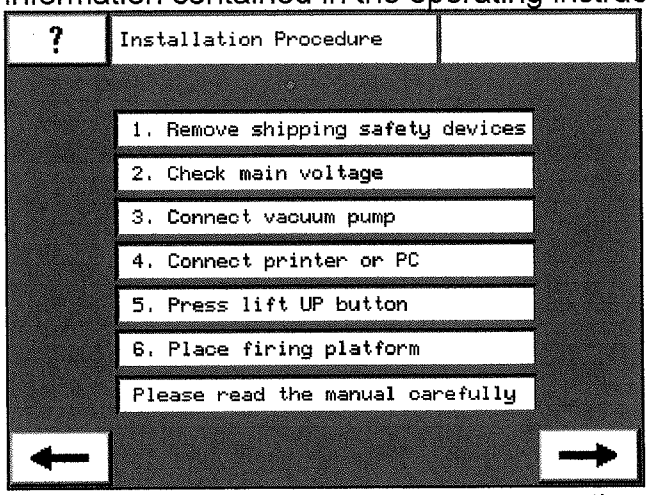
Note: If the device is disconnected from mains, an automatic self-test will be carried out after the furnace has been plugged in again. This will not happen if the furnace has been shut down by touching the on/off sensor. Then the last program used will be reactivated.

4.4.3 Introduction

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

4.4.4 Installation and safety notes

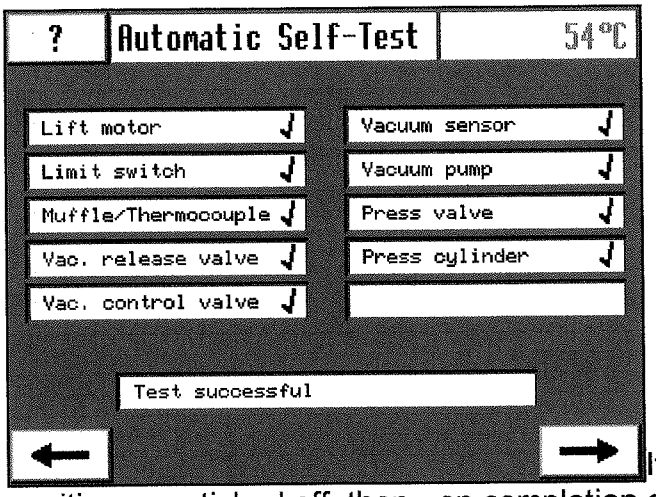
The introduction screen is followed by a screen display with the most important installation notes and the compliance note with regard to the installation and safety information contained in the operating instructions.



Having read the installation notes, press the right-hand arrow key.

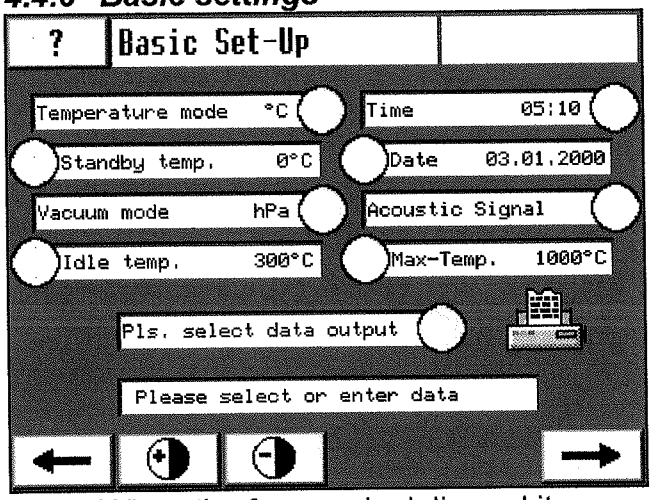
4.4.5 Automatic Self-Test

The following screen display with the function test will appear on screen. The test will be executed automatically. The result of the test will be indicated in the text line.



If the test is without any fault, the test positions are ticked off, then - on completion of the first test - the screen display "Basic Settings" will appear. If the test is not completed successfully, a red cross will appear next to the relevant test position. In such cases, press sensor button "OK" to confirm the test result. The function test will be carried out at each new startup of the furnace when taken from mains and plugged in again. If just turned off by the "on/off" button the last program or screen that has been used before shutting the furnace down will appear automatically.

4.4.6 Basic settings



Note: When the furnace is delivered it comes with its basic settings preset at the factory. You may press the sensor button "⇨" to accept these basic settings or change them as described below.

Temperature mode

Press sensor button to change over between °C and °F.

Standby

Press sensor button to preselect the standby temperature (furnace is turned off but still plugged in mains).

1. Press sensor button (button changes color)
2. Use the numeric input of the right-hand sensor field to enter the new temperature value.

Temperature value > 100° C = standby is ready

Temperature value < 100° C = standby is not ready

3. Press same sensor button again or choose the next parameter to be changed; the new temperature value will be accepted.

This function is used to prevent humidity from ingressing into the firing chamber.

If the furnace is turned off, this function will be automatically activated.

Vacuum unit

Press sensor button to change over between hPa and inHg.

Time

1. Press sensor button "Time".
2. Enter the 4-digit number for hours and minutes using the numeric input of the right-hand sensor buttons.

Date

1. Press sensor button "Date".
2. Enter the 8-digit number for day/month/year using the numeric input of the right-hand sensor buttons.

Acoustic Signal

Press the sensor button to activate or deactivate the signal.

Idle temperature

Press the sensor button to change the basic temperature as follows:

1. Press the sensor button.
2. Input the new temperature value using the numeric input of the right-hand sensor field.

Note: Preset to 400°C. Cannot be set higher than 600°C. Idle temperature has to be at least 25°C lower as preheating temperature

Data output

Press sensor button to switch data output between "Printer ", "PC" and "No output" Printer and PC are shown as symbols.

Screen brightness

Press the sensor button "Screen brightness"; a "✍+" for increasing brightness and a "✍-" for decreasing brightness will appear in the soft key bar.

Maximum Temperature

Press sensor button to determine and limit the maximum temperature the furnace will accept.

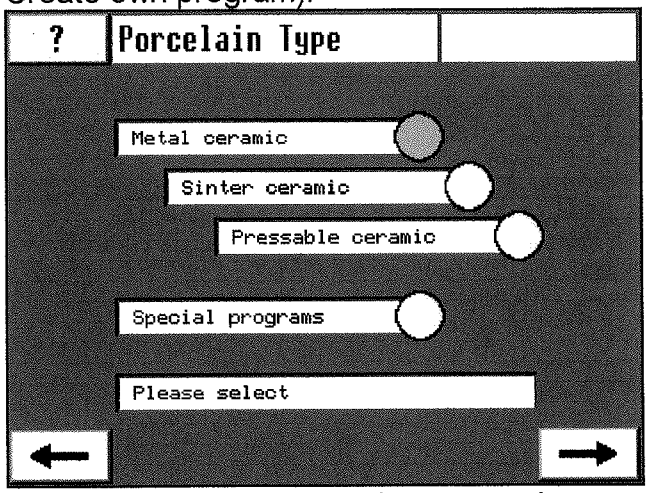
1. Press the sensor button.
2. Set the new limit value using the numeric input of the right-hand sensor field.
3. Press sensor button again; the new temperature value will be accepted.

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

4.4.7 Porcelain type

Select from among the 4 options shown by pressing the relevant, sensor button, e.g. Special Programs

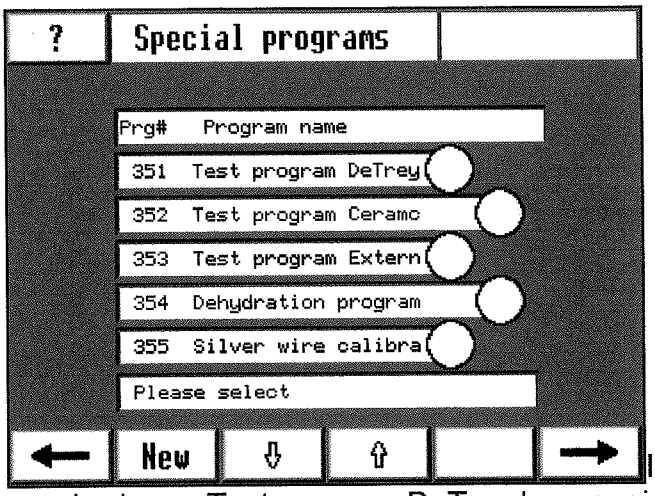
Note: When the ceramic type metal ceramics has been selected, the furnace will first switch over into the screen display "Firing Modes" and, once a firing mode has been selected, you will be asked if you want to work with preset or individual programs. Next, the furnace will switch over into the relevant program list. (See chapter 6: Create own program).



When the ceramic types sinter ceramic, pressable ceramic, and special programs are selected, the furnace will switch over directly into the relevant program list.

After selection, the furnace will automatically switch over into the next screen.

4.4.8 Program list: special programs



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

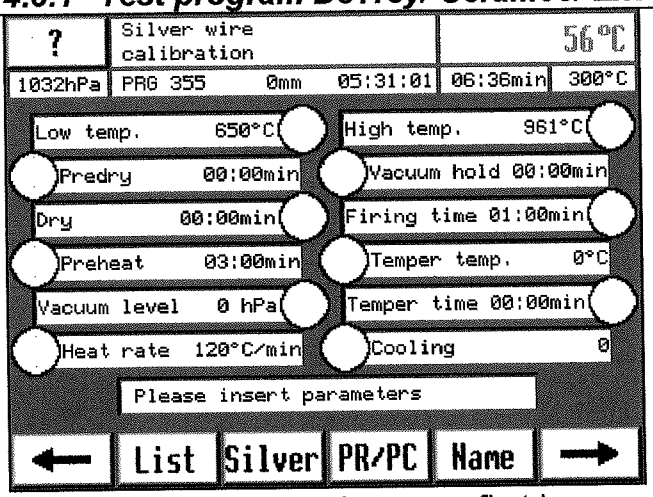
When the required test program has been selected, the furnace will switch over automatically into the next screen.

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.

4.5 Test programs

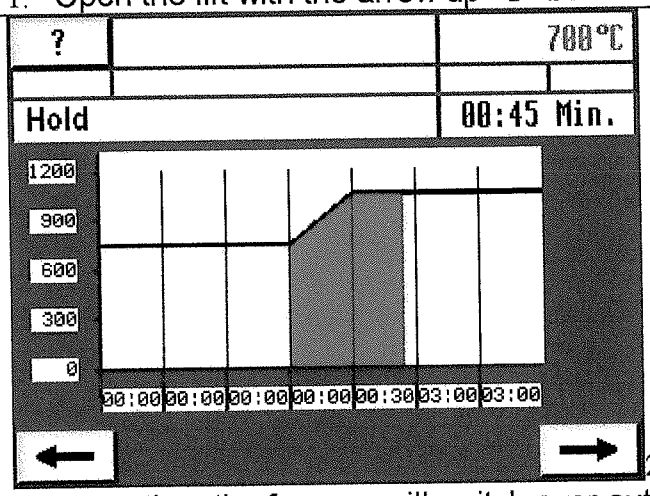
4.5.1 Test program DeTrey/ Ceramco/ External



This test program will give you a first impression of all program functions the **Multimat®*Touch*** can offer. Please also see chapter 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). On the left you see a silver calibration program for demo purposes. The status bar underneath the red actual temperature will always show the current program parameters and the total time the program will need.

4.5.2 Start test program

1. Open the lift with the arrow up "⇧" button on the right hand numeric key pad.



2. Press sensor button "start/stop".

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

The program starts by initiating a heating sequence from the preset basic temperature to the required preheating temperature. The firing chamber will be open whilst this sequence is in progress.
When the preheating temperature is reached, the program sequence starts with the

first program stage.

Drying
During this stage the 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.

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
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.

Rate of temp. 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.

Vacuum time period
When the firing temperature level has been reached, the vacuum time period will start. 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 stop position. Firing will be completed, and the start screen will be displayed again. The end of firing will be indicated by a triple signal tone.

Note: Whilst the firing chamber is heated up from room temperature, vibration noise produced by the heating coil can be heard for a few seconds.

5. Practical application: an introduction

5.1 Firing parameter limit values

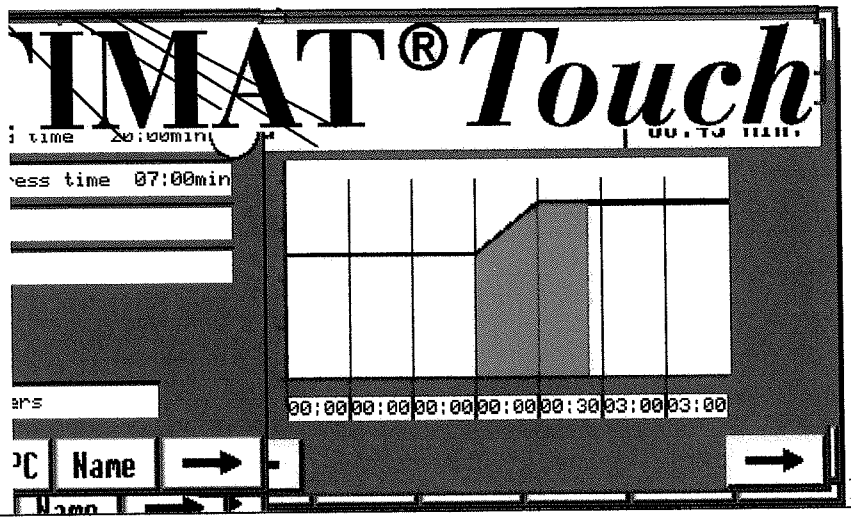
Parameter	Lower Limit	Upper Limit
Standby temperature	100° C (212 °F)	300° C (572°F)
Basic temperature	30° C (86°F)	600° C (1112°F)
Nom. value firing temp.	20 °C (68°F)	1200 °C (2192°F)
Act. val. firing temperature	0° C (32°F)	1250° C (2282°F)

Time periods	00:00 min/ hrs.	99:59 min/ 17:59 hrs.
Heating rate, controlled	0.1 °C/min (0.18°F)	120 °C/min (248°F)
Heating rate, max.		ca. 130°C/min (284°F)
Cooling stages	0	3
Vacuum level	0 hPa (0 inHg)	1013 hPa (30 inHg)
View	00:01 min	03:00 min
Vacuum ON	20 °C (68°F)	1200 °C (2192°F)
Vacuum OFF	ditto	ditto
Firing chamber pos.		150
Steps	1	9

5.2 Display

Colour 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/ time
8. Total firing time, nominal value
9. Firing temperature, nominal value
10. Data input
11. Information field
12. Soft touch sensor buttons

5.3 Screen display functions

1. Help (?)

The help function is filled with texts that assist the operator to retrieve specific information directly. The texts are limited to the most important information only. Not

available in the initial version. Will be updated asap.

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 prsselected 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.

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.

7. Date/time
Alternative representation of date or time. Which of the two is to be shown will be set in the "Configuration" submenu (not available yet). 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.

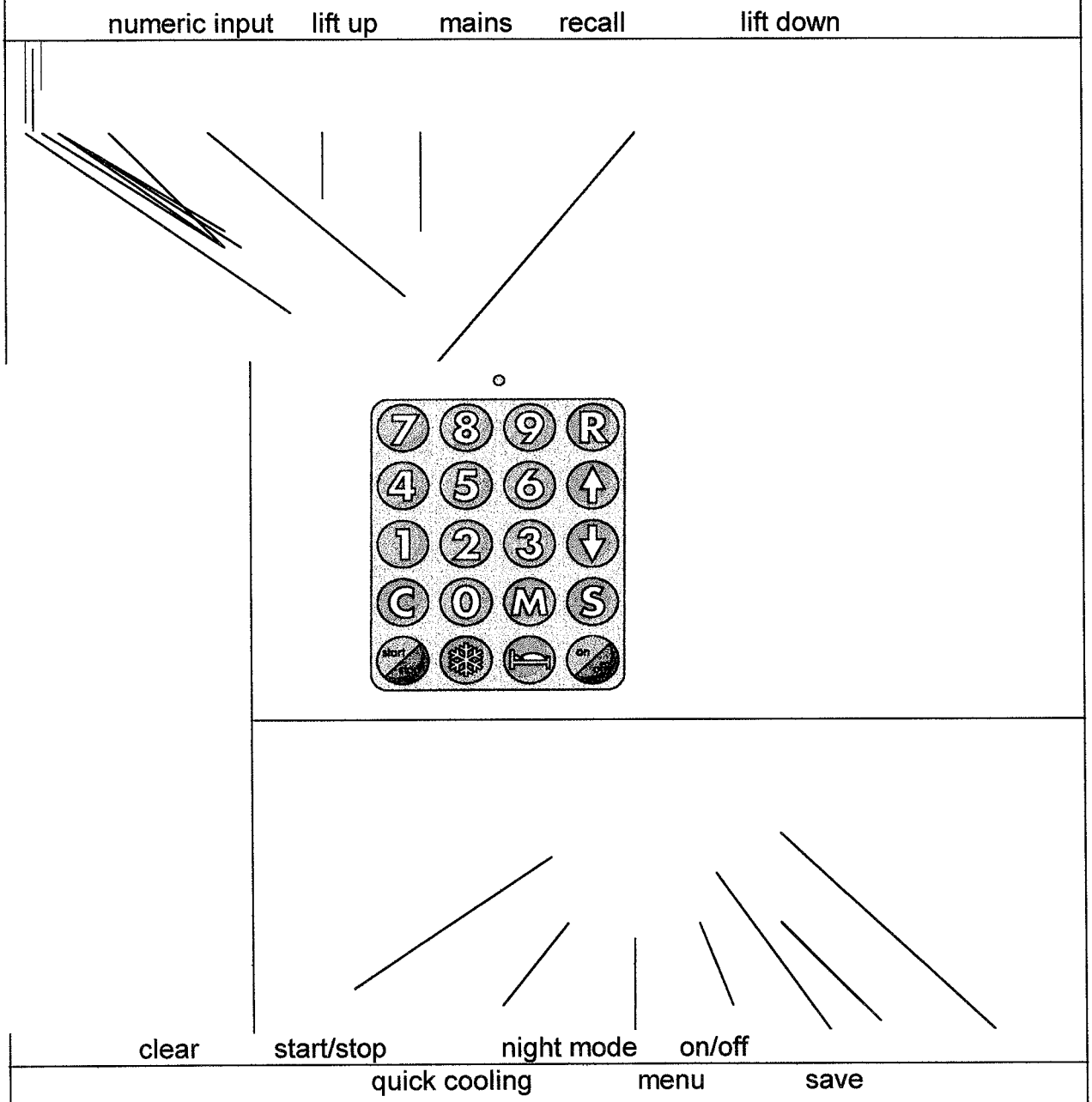
9. Firing temperature, nominal value
This parameter indicates the current nominal temperature value. The temperature unit will be preselected by means of the basic settings.

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. In case of errors this is the place where they are described as long as they are not too serious.

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

5.4 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 to display the required program. When the button has been pressed, the program number must be entered via the numeric input field within 1 minute.

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 menu selection screen will be displayed.

Save "S"
When touch button "S" is pressed, the values will be stored under a program number. The program number display will appear for one minute. Within this time period the program number should be entered using the numeric input field or you can accept the suggested number by touching "S" again. By doing so you can also copy programs and save them on different program numbers (open program to be copied and touch "S" button).

On/off
Press this sensor button to activate/ deactivate the furnace. For the "off" mode the firing chamber has to be closed. "Standby" can be set and the muffle holds the temperature that has been preset to 120° C in the basic settings. When the furnace is on, the idle temperature comes into effect.

Night mode "bed"
This function activates the automatic final shutdown of the furnace following a firing sequence. This function will be connected with the current program by pressing the sensor button "bed". The symbol for night mode "bed" will be displayed in 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 will open. Press the "on/off" sensor button to switch the furnace back on.

Note: Night mode turns off standby mode (to be changed in future).

Quick cooling – "❄"
Manual operation:
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 preheating temperature has been reached.
In this case the actual temperature of the firing chamber must be greater than the preheating temperature. Touch button "❄" again to deactivate quick cooling.

Start/stop
Press the touch button to start or stop a program. For abortion of a program hit the "start/stop" button and wait a few seconds until the lift is in upper position and the screen changes into the parameter view.

Note: A program will only start with lift in open position.

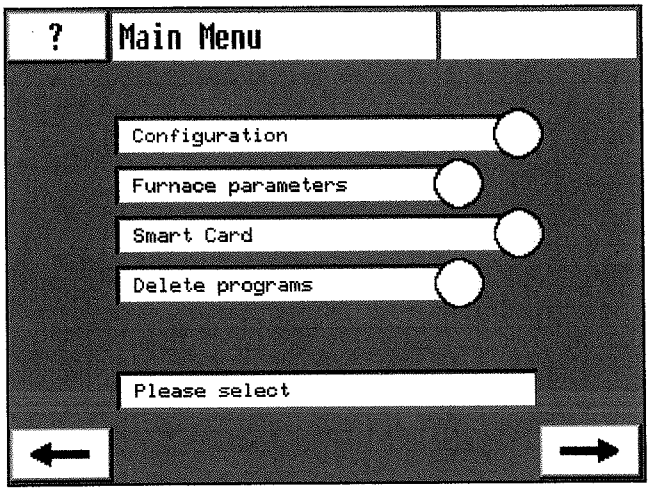
Clear "C"

Press this touch button to:
delete an incorrect input.
acknowledge an information or fault display message.
cancel the vacuum.

5.5 Menu

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

Main menu



Configuration

Drying

Normally, the vertical lift of the firing chamber will be 150 mm. At 0 mm, the firing chamber will be closed. At 150 mm, the firing chamber will be in its topmost stop position. The stop position for drying is at 80 mm. During the drying process, the

firing chamber will move in 10 even steps from its top stop position into the stop position for drying. The stop position for drying at 80 mm, and the 10 steps are values preset at the factory. Within these values, stop position and steps can be changed. But in the absence of any other really compelling reasons, we recommend to leave these factory settings unchanged.

Tempering

The tempering position at 50 mm is a value preset at the factory for "Carat Metal Ceramics" only. For other metal ceramics, the values for the tempering position and tempering temperature are to be obtained from the ceramics manufacturer.

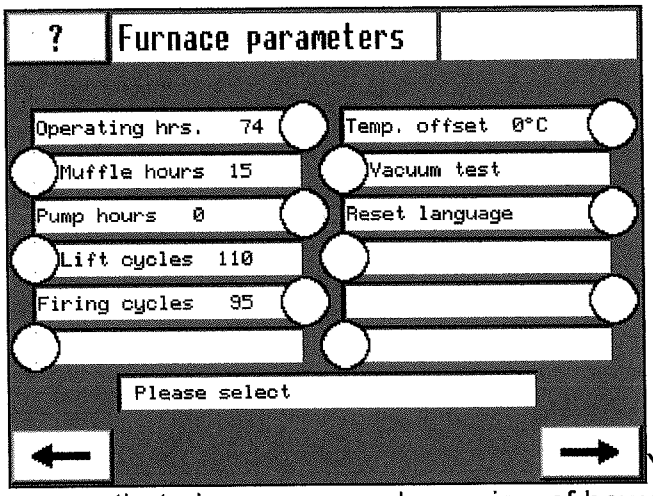
Set turn on time

Here you can set a timer which will turn the furnace on at a certain future time as long as the furnace is plugged into mains. For security reasons the timeframe cannot be longer than max. 24 hours and is being set like the "Time" in the "Basic Settings" in chapter 4.4.6. (Not ready yet, will be ready soon).

Sort programs

Programs can be listed alphabetically according to their program name or numeric according to the program number. (Not ready yet, will be ready soon).

Furnace Parameters



You find statistical information in this screen that give you a good overview of how you have operated the furnace. The right side of the screen allows you to change the temperature offset, test the vacuum and reset the language.

Temperature offset:

This offset is already preset. If you need to reset the figure:

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

By running the silver wire calibration you can find out the new offset (see chapter 7.5)

Note: You cannot type in manually a new offset. Always run the silver wire

calibration.

Vacuum test:
The preset vacuum of 50 hPa must not fall more than 20 hPa in 5 minutes. After termination of the program confirm the message.

1. Choose vacuum test
2. Touch "start/stop" (touch "C" to abort vacuum test)

Reset Language:

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

Smart Card

The smart card is not in the normal accessories package and is not needed besides the underneath mentioned functions. The smart card is meant to expand your memory from 100 to 300 programs and/or to give you access to the PC/ printer interface. Furthermore this function also implies the saving and recalling of programs that can be transferred between two **Multimat®*Touch*** furnaces. This can also be done via PC and floppy disk. (Not available yet)

Delete programs

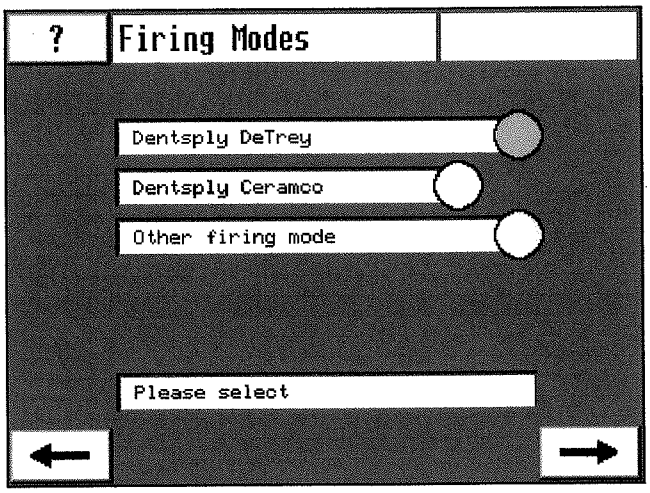
1. Choose the type of program(s) that is (are) intended to be deleted.
2. Delete with „C".

Delete single program(s)

1. Touch "Delete single program"

2. Enter program number of program that has to be deleted. 3. Delete program by touching sensor “Delete single program” again.

6. Create own program

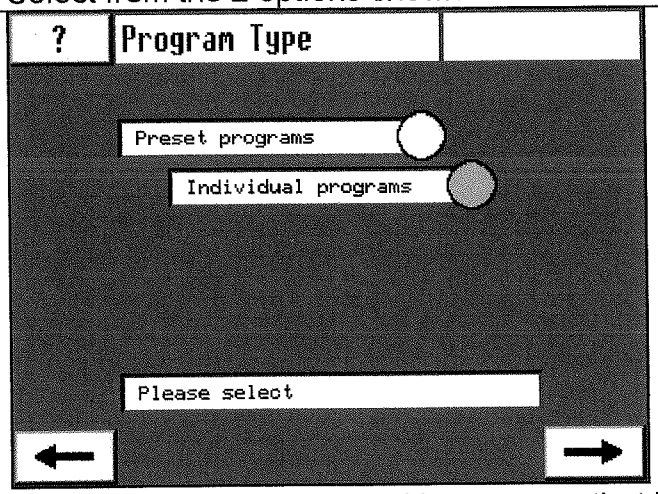


6.1. Firing Mode

The various individual steps for selecting the ceramic type have already been described in 4.4. Having decided upon 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, the furnace will switch over to the next screen.

6.2 Fixed programs/ individual programs

Select from the 2 options shown

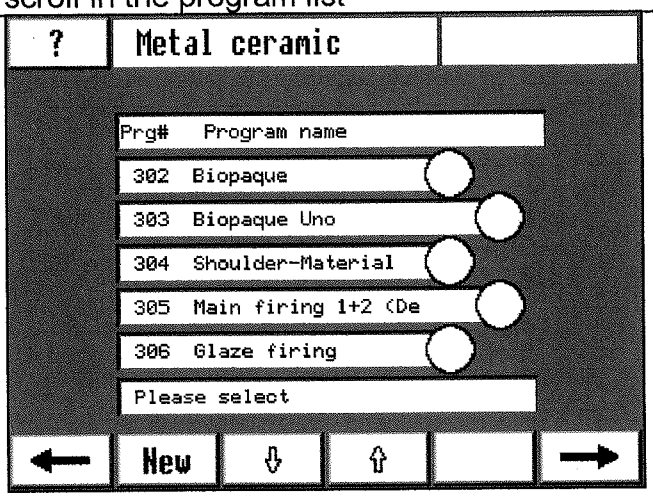


Either you decide to work with programs that have already been set in the first place (preset programs) or you can access programs that you have programmed by yourself (individual programs). Press the relevant sensor button to select the program type required, e.g. individual programs. When the desired program type has been selected, the furnace will switch over to the next screen.

6.3 Program list

The soft key sensor bar along the bottom edge of the screen provides the option to

scroll in the program list



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

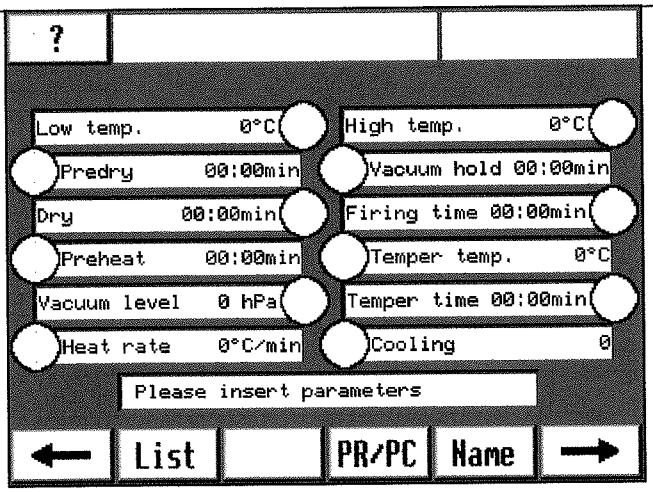
6.4 Text input

Use these letters and characters to enter the text required, e.g. "Carat main firing". The text entered will appear in the text window. Press "⇨" to complete text entry. The furnace will switch over to the relevant screen.

Touch the enter button "↵" to have the following text written in the second row.

6.5 Setting the firing parameters

Note: For entering the various firing parameters you have a maximum of 60 seconds. 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.



6.5.1 Setting the low temperature

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

6.5.2 Setting the predry time

(firing chamber in its topmost position)

This is only to be used if drying at low temperatures across an extended period of time is required. Whilst this drying stage is in progress, the firing chamber will remain in its topmost stop position.

6.5.3 Setting the drying time

Press the yellow touch button. Use the numeric keypad 0-9 and enter the value 0600 for 6 minutes.

6.5.4 Setting the preheating time

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

6.5.5 Setting the 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.
With other firing procedures, the vacuum level can be activated or deactivated in a temperature-controlled fashion.

6.5.6 Setting the heat rate

Press the respective yellow touch button. Use the numeric keypad 0-9 to enter the value 80. With other firing procedures, the rate of temperature rise can be time-controlled or time and temperature-controlled.

6.5.7 Setting the high temperature

Press the respective yellow touch button. Use the numeric keypad 0-9 to enter the value 940.

6.5.8 Setting the vacuum time

Press the respective yellow touch button. Use the numeric keypad 0-9 to enter the value 0100 for 1 minute.

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

6.5.9 Setting the firing time

Press the respective yellow touch button. Use the numeric keypad 0-9 to enter 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.

6.5.10 Setting the tempering temperature

Optional

Tempering will increase the thermal expansion coefficient for the ceramics by a controlled crystal growth of Leucit crystals. In this way, the thermal expansion coefficient for metal ceramics can be adapted to alloys which deviate significantly in terms of their thermal expansion coefficient.

Consult ceramic's manufacturer before use!

Touch the yellow sensor next to the text and enter the figure 1000 for 1000°C for example.

6.5.11 Setting the tempering time

Optional

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

6.5.12 Setting the cooling stage

Press the respective yellow touch button. Use the numeric keypad 0-9 to enter the value 0.

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

If programmed, cooling will start on completion of the firing time period. Cooling will continue until the preheating temperature is reached again.

The 3 cooling stages of the **Multimat®*Touch*** have the effect of a decrease of stress within the ceramics.

6.6 Save program

Save your program by pressing the button "S". The firing parameters entered will be

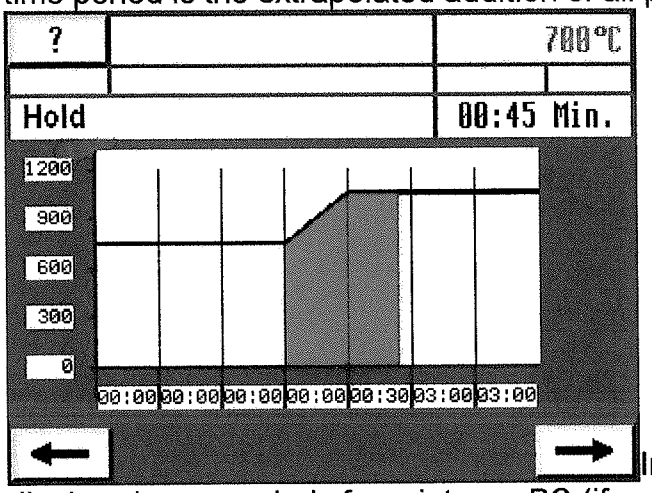
checked for plausibility. Firing parameters that are not plausible will be shown in the info field and need to be cleared with “C” and then corrected. If all firing parameters are accepted, the control system will propose to use the next available program number as a storage location. If you agree and accept this proposition, then repress the button "S".

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

6.7 Start a program

Touch the button "start/stop". The furnace will switch over to the firing curve.

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 colour or in grey. At the bottom of the firing curve, the time periods for the firing sections are shown. They are visibly counted down to zero. The residual time period is the extrapolated addition of all partial time periods.



In its right-hand margin the screen display shows symbols for printer or PC (if preselected in the basic settings).

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

a. View	touch button Lift "⇧", then"⇩" to close again
b. Cancel program	touch button "start/stop"
c. Cancel vacuum or view function	touch button "C"
d. Change firing parameters	soft key "⇦"
e. Acknowledge messages	touch button "C"

Programming of the firing parameters in the various individual firing procedures is always the same. The firing procedure "Dentsply DeTrey" allows users - by its separate input of time and temperature greater individual liberty with regard to programming.

6.8 Standard functions

6.8.1 Recall a program

1. Press the touch button "R" and enter the program number.
2. Touch "R" again
3. Press soft key "List" and scroll through the programs listed. The required program will be displayed directly by pressing the respective associated touch button. (Not available yet)

6.8.2 Save program

Save your program by pressing the button "S". The firing parameters entered will be checked for plausibility. Firing parameters that are not plausible will be shown in the info field and need to be cleared with "C" and then corrected. 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 repress the button "S".

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

6.8.3 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. renewed selection of the firing parameter
b. selecting a different firing parameter
c. save
d. start (for one time-use)

6.8.4 Changing a program during a firing sequence

All firing sections not yet processed may be changed whilst firing is in progress. This is effected by means of soft key "⇦" in the firing curve screen. This screen also allows the firing progress to be traced. The sensor buttons of the firing parameters processed lack the yellow sensor next to them. 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 get a blue background. Users 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. 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 redisplayed.

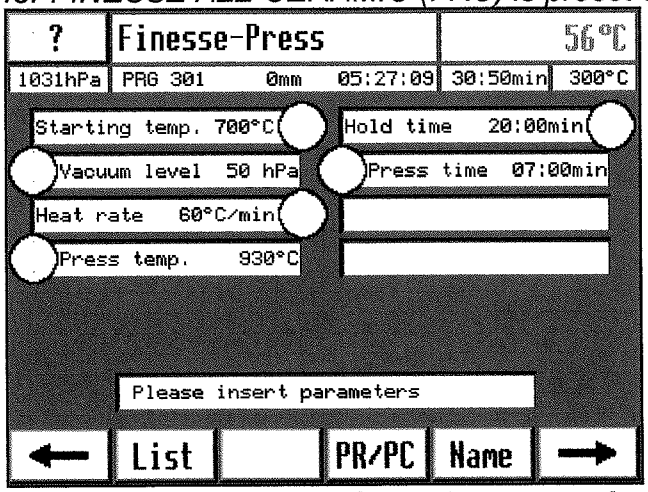
6.8.5 Copy program

Copy a program by pressing the touch button "S" and entering a program number by means of the numeric keypad. If the program number is already in use, a relevant message will appear. If you press touch button "S" twice, the program will be automatically stored under the next available program number.

6.9 Pressing

In order to press an all-ceramic you need to place the pressing platform on the platform carrier.

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 on the left.

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 muffle with the investment material yet on the pressing platform. 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. An acoustic signal informs you that you can place the externally preheated pressing muffle onto the pressing platform in the furnace.*
- *After the placement of the pressing muffle touch the sensor „⇩". The press program will be continued.*
- *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 termination of the hold time the press cylinder comes down with 2.7 bar air pressure and the pressing begins. The press power amounts to 21.7 dN. Hold time 7 minutes.*
- *After the pressing procedure the press cylinder returns to its starting point.*
- *The firing chamber is flooded and moves to its upper starting position. The*

pressing is terminated.

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

7. Special functions

7.1 Standby

This function is used to prevent humidity from ingressing into the firing chamber.

Standby can be preset in the basic settings.
This function allows a temperature of 120 °C to be maintained within the firing chamber in the "Off" state. Recommended standby temperature: 120° C.
Standby temperature > 100° C = activated
Standby temperature < 100° C = deactivated

Note: When this function is activated, the furnace must not be disconnected from mains.

7.2 Quick cooling

For quick cooling, the vacuum pump is activated and pumps fresh air into the firing chamber with the firing chamber in its open state. If programmed, the function starts on completion of the firing program. Quick cooling ends when the preheating temperature level has been reached again. If the preheating temperature level is again exceeded in an upward direction by stored heat, the vacuum pump will cut in again. The pump will stop 20° C below the preheating temperature and cuts in again at 10° C above that preheating temperature level.

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 preheating temperature. Quick cooling can be deactivated by touching "C".

Automatic:
If "quick cooling" is to be saved together with the relevant program, then press soft key "❄" in the screen before pressing the "S" button.
The symbol for quick cooling "❄" will be shown in the firing data display and in the program sequence screen.

7.3 View function

(soldering, not available yet)

During firing without vacuum it is permissible to move the firing chamber up by means of the lift key "⇧" and then to stop the firing chamber by pressing the lift key "⇩" in order to inspect the workpiece.
Firing time expiry will be stopped, the screen display switches over automatically into

the firing data screen and activates the firing temperature. By using the numeric keypad, it is now possible to decrease or increase for example the firing temperature. Press 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 max.
This post-firing time is counted up from zero. Post-firing can be cancelled at any time by means of the "start/stop" key.

Note: The View function can only be activated, if no tempering or cooling is programmed.

7.4 Voltage loss protection

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 in relation to the equipment in its idle status, or if such a mains power failure occurs during the running firing program. The bridging duration can be up to 10 seconds. If the downtime is shorter than 10 seconds, the program will continue to run, with the following message appearing at the end of the program: "E 08 - Caused by mains failure". If the downtime exceeds 10 seconds, the program will be canceled and again the following message appears at the end of the program: "E 08 - Caused by mains failure".

Note: Check the firing results!

7.5 Check firing chamber temperature by means of a silver sample.

(Calibration set "Silver Sample manual", order no. 03 532 803 (optional))

The precision of the temperature control system 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 sample carrier
- 1 piece of silver wire – diameter: 0.3 mm, length: 37 mm.

- Procedure:
- Heat furnace to 650 °C for approximately 1 hour.
- Insert silver wire into the Dentsply sample carrier.
- The following data are stored in the special programs section as "silver wire calibration":

Start program number "355" (touch "R" then type in "355" then confirm by "R") being the silver wire calibration program.

Preheating temperature	650°
Pre-drying time	0 minutes
Drying time	0 minutes
Preheating temperature	3 minutes

Vacuum level	50 hPa
Heat rate	120°C
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 slug 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, the test program must be repeated - each time with a temperature rise rate of 3°C - until the required melt 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, the test program must be repeated - 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 on the bottom of the softkey bar and the calibration will be set.

Any deviation of the firing chamber temperature from its nominal value, which may possibly have been found, can be checked as follows:

1. Press sensor button "Menu"
2. Select submenu "Furnace Parameters"
3. Have a look at the calibration offset in the right row

The calibration of the temperature is completed.

Increase chamber temperature ⇨ increase calibration offset
Reduce chamber temperature ⇨ decrease calibration offset

Example:
An increase in the calibration offset by the value 3 means an increase in chamber temperature by 3°C.

Note: Before the next silver wire calibration the offset has to be set to “0”. Submenu "Furnace Parameters" in the “Menu” screen

7.6 Night mode

This function activates the automatic final shutdown of the furnace after firing. The function will be connected with the current program by pressing the sensor button

"Bed". The symbol for night mode "Bed" will be shown in firing data view and in the program sequence screen.

On completion of firing, the unit will switch into the OFF state (screen display off, muffle off) and the firing chamber will open. Press the "on/off" sensor button to reactivate the furnace.

7.7 Preselect activation timer

(Submenu "Configuration". Not available yet.)

This function can be preset to activate the furnace automatically at a specific time. The function will be called up in the submenu "Configuration". An input field for the activation time will appear. Press the sensor button to activate the input field. Enter the time in a 24 hour mode by means of the numeric touch field. Then, press the sensor button OK and the time will be accepted.

Note:
For safety reasons the activation of this function will remain valid for 24 hours only.

7.8 Vacuum test

(Submenu "Device Parameter")

This parameter automatically checks for vacuum pressure loss. After the vacuum tests have started, the firing chamber will close, and a vacuum pressure of 50 hPa will build up. A test period of 10 minutes will follow. During this time there may be a fall in vacuum pressure down to 20 hPa max. If there is a greater loss of vacuum pressure, the test has not been passed. The test will be started from the submenu "Device parameter".

7.9 Printer/PC

(9600 Baud/ 8 bit/ 1 Stop bit/ No parity. PC software not available yet)

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

The Print/PC touch button within the soft keys will start a printout of the nominal values only. You will get firing protocols, if data output has been set to "Printer" in the basic settings, or a data transmission to the PC, if data output is set to PC. The nominal and actual values will be printed out automatically after firing if the printer has been chosen in the basic settings..

7.10 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 start temperature; insert investment material.

7.11 Software Update

Variation 1, in case you do **not** have any more free interfaces left on your computer/ laptop (Use cable D-SUB, 9 St/D-SUB, 9 jacks, 9 pins):

- Turn on PC/ Laptop
- Start Windows Explorer (Start/ Programs/ Windows Explorer)
- Click on 3,5" Disk (A:)
- On the right hand screen you will see a file named „MumaUpdt.exe", having a satellite dish in front of ist name.
- Click once (!!) on this file.
- Now connect the furnace with the PC (second interface on the right side of the furnace, on your PC/ laptop mostly the mouse interface, that you don't need any more for this procedure).
- Unplug the furnace from mains power supply (unplug the cable).
- Push the „enter" button on your PC/ laptop (also called „return"button). A pop up window appears on your monitor. Now plug the furnace to mains power supply again.
- 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.
- Unplug the furnace from all cables (The mains cable too) and plug the mains cable in again after 5 seconds.
- The furnace is now upgraded and you can see the new version number in the initial screen.

Variation 2, in case you have a free interface port where to plug in the cable in your PC/ laptop:

- Connect the cable with PC and furnace (second interface on the right side of the furnace, on your PC/ laptop mostly the mouse interface, that you don't need any more for this procedure).
- Unplug the furnace from power supply/ electric current.
- Run the MumaUpd.exe file with a satellite icon in front of it. (open the Windows Explorer (Start/ Programms/ Windows Explorer) and double click the file MumaUpdt.exe.
- You will see a window popping up on your PC monitor.
- Now turn the furnace on (plug in to main power supply).
- The display of the furnace is supposed to remain black, while the display on your PC 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.
- Unplug the furnace from all cables (The mains cable too) and plug the mains cable in again after 5 seconds.
- The furnace is now upgraded and you can see the new version number in the initial screen.

8. Service and maintenance

8.1 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 workpieces. By exerting forceful pressure from the top, the firing chamber can be moved down manually.

8.2 Firing platform complete with firing platform carrier

The firing platform is located above the firing platform carrier and mounted in a vertically sprung fashion to the top of the furnace subsection. This subsection has the task to provide downward 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.

Maintenance note: The O ring of the firing platform carrier is to be kept clean and to be checked occasionally for possible damage.

8.3 Vacuum pump

The **Multimat®*Touch*** can be operated with all efficient vacuum pumps that have a grounded plug connector (power consumption 2.5A max.), preferably with Dentsply vacuum pumps. The vacuum pump should have a liter capacity of at least 25 l/min and feature a limit pressure of 30 hPa. How to connect such pumps is described in Section 4 "Setup and initial use".

The pump connection line must not exceed a length of 2 m.

Maintenance note: For maintenance, the instructions contained in the pump operating manual must be complied with.

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

8.4 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 dust mask FFP3.
- On completion of this task, any clinging dust particles must first be rinsed off the unprotected skin by means of cold water. Only then use hot water and soap to wash off.
- Wash your working close 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. *Disconnect protective conductors from the press hood.*
6. *Undo connector from the solenoid valve.*
7. *Disconnect the compressed air hose from the solenoid valve by withdrawing the clamp ring in an upward direction and the compressed air hose at the same time*

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 connection pins.
5. Remove thermoelement complete with hole bar, then remove terminal insulation.
6. Disconnect the heating wire ends of the muffle from the two front connection pins (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 pipe from coming into contact with hand sweat.

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

Warning!

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

8.5 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 cheesehead 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 conductor from the control unit.

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

8.6 Cleaning notes

The **Multimat®*Touch*** is painted with epoxyd paint. Use a mild household detergent to clean the paint surface. The touch screen is to be cleaned using white spirit or a mild window cleaning agent.

9. Faults and remedies

The information provided below is intended to assist you in identifying and evaluating simple faults and to remove these by appropriate remedial action.
A fault message, its likely cause and the appropriate remedial action will be shown in a text format in the display. After the message displayed has been acknowledged by means of the "C" key, the current screen content will reappear or the next information message will be displayed. Fault messages which cannot be displayed on screen for technical reasons will only be described in this chapter.
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 furnace top section by means of a transportation support device.

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

Fault:	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 1 minute to place the press muffle. This period is exceeded.	Insert faster.
E 02 – Vacuum has not been removed. Firing chamber does not open.	Ventilation valve is defective.	Check magnetic coil of ventilation valve, replace magnetic coil, if necessary.
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.
E 04 – Control element is too hot. Muffle does not heat, 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 ingressed into the firing chamber insulation by disconnecting from mains for longer than 20 hours.	Start program with vacuum. Observe vacuum display whilst the vacuum pump is running and kink the vacuum hose after 1 minute (keep sealed). If the vacuum in the furnace (display) drops considerably (the numeric value continues to increase), then the firing chamber / vacuum system is leaking, or humidity has ingressed into the firing chamber. If the vacuum does not drop, then pump capacity is insufficient. a. Check vacuum system. b. In the event of humidity ingress into the firing chamber insulation, start drying program 0. c. Check vacuum pump acc. to manufacturers' instruction.
E 06 – Fast cooling is still activated.	Standby temperature has not yet been reached.	Wait until standby temperature has been reached, or deactivate manually by pressing key "C".
E 07 - Mains failure.	Temporary mains supply failure whilst firing is in progress.	Not possible. Please check firing results.
E 08 – Heating circuit is defective. Program abortion.	Triac is defective.	Call service engineer. Replace control system.
E 09 – Thermocouple broken, Program cancellation.	Thermocouple is broken or there is an interruption in the thermoconductor.	Check thermocouple and thermoconductor.
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.	Sensor dejusted or broken	Adjust or exchange sensor.

10. Preset programs

10.1 Firing Table for Carat Metal Ceramics

(Use sagger tray)

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

✹ If necessary, cool-down.

◆ For larger workpieces, we recommend a pre-drying time of 10 minutes on the firing platform with open firing chamber.

* depending on desired grade of glaze

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

10.2 Firing table for Finesse metal ceramics

(Use sagger tray)

Prog #.	Firing	Preheat . Temp. °C	Drying time min.	Preheat. min.	Vacuum level hPa	Rate of temp. rise °C/Min.	Firing temp.: ° C	Vacuum time min.	Firing time min.
311	Powder opaque	450	03:00	03:00	50	90	800	00:30	01:00
312	Paste opaque	450	05:00	03:00	50	90	790	00:06	00:30
313	Joint opaque	675	03:00	07:00	50	35	770	00:06	00:30
314	Correction opaque	450	05:00	03:00	50	90	760	00:06	00:30
315	1.Main firing Opaque dentine, Dentine, Dentine effect, enamel, gums	450	05:00	05:00	50	35	760	00:06	00:30
316	2. Main firing Opaque dentine, Dentine, Dentine effect, enamel, gums	450	05:00	05:00	50	35	750	00:06	00:30
317	Correction firing	450	05:00	05:00	50	55	730	00:06	00:30

318	Glaze firing/ stains ✷	450	03:00	03:00	⊢	70	750	⊢	00:06

Caution!

Firing parameters that are not listed in the firing table, will be set to "0" during value input.

✷ depending on desired grade of glaze

Note: If necessary, carry out a test firing and adapt firing temperatures or times.
For larger work the temperatures are to be increased (5° C).

10.3 Firing table for Finesse All Ceramic

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	Finesse-Press	700	50	60	930	27:00	20:00	07:00

changes 17.05.2000 in red: P.5, P. 8, P. 11-12, P. 33-36, not printed yet (except page 8