TEGRA MP100
PORCELAIN FURNACE

OPERATORS MANUAL

Teknik Dental

Table Of Contents

Introduction ---------- 1

Security ---------- 2

General Specifications ---------- 3

Installation ---------- 4

Operation ---------- 5

Programming ---------- 5

Parameters ---------- 6

Settings ---------- 8

Running a Program ---------- 9

Error Messages ---------- 10

Maintenance and Cleaning ---------- 11

Warranty ---------- 12

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INTRODUCTION

Dear Customer,

Thank you very much for purchasing the MP 100 Porcelain Furnace. We designed the MP 100 with reliability, safety and functionality in mind. This manual was prepared with great care to ensure a safe and enjoyable operation of your furnace. Make sure you understand the safety indications before installing, operating or maintaining your furnace. It is your responsibility to install the MP 100 in conformance with your local electrical directives.

The MP 100 is a high temperature porcelain furnace for dental laboratory use. There are 100 programming slots for customized heat treatments. The programming is done through the touchscreen in front of the furnace. The muffle is a moving part and it will close down to cover the heating tray to apply heat and vacuum. All heating and vacuum functions are controlled by a microprocessor.

ATTENTION

The signs and symbols in this manual have the following meanings:



Hot Surface
This symbol warns the user to be cautious of hot surface.



Caution
This symbol alerts the user that important operating and maintenance instructions are explained.



High Voltage
This symbol warns the user of the risk of high voltage

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SAFETY

- Use indoors only.
- Never operate the unit in close proximity to combustible materials.
- The unit must be electrically grounded to a three wire electrical outlet. Do not use a power strip. The electrical service provided must be of the proper size according to local electrical directives.
- Unit must be placed in a position that allows the power cord to be easily disconnected from the wall or inlet socket.
- Disconnect the line cord before attempting to service the unit.
- Do not attempt to operate or maintain the unit until you have read and understand this operation manual. If the unit is not operated in the manner as specified in this manual, the protection provided by the unit may be impaired.
- Do not operate the touchscreen with tools; this will damage the touchscreen
- Do not use solvents or liquid cleaners on the touchscreen; they will enter the panel and damage it.
- Do not place firing trays or other hot objects directly in front of the furnace; they will melt the touchscreen display cover.



Failure to use the furnace according to this manual may impair protection provided by the furnace The MP 100 Model furnaces are dental laboratory heat treatiment furnaces for firing porcelain. The furnace was built according to safety regulations of the European Community. Do not use the furnace for anything other than the intended usage.



The firing chamber contains insulating material comprised of ceramic fibers classified as carcinogens. When working on the muffle fiber dust may get released. Exposure can potentially be carcinogenic if inhaled, as well as irritate skin, eyes and respiratory organs. Wear appropriate protective clothing when working with the insulation material.



The interior of the Main Assembly is only accessible by removing hardware with tools and should only be opened and serviced by qualified technicians. Since the interior of the unit may contain high voltage and dangerous components, failure to heed this warning may result in equipment and personal damage.

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GENERAL SPECIFICATIONS

Environmental conditions

- Indoor use
- Max altitude 2000 meters. For use in higher altitudes, contact the manufacturer for instructions.
- Ambient operating temperature 5 - 40°C (41°F - 104°F)
- Maximum relative humidity 80%, non-condensing for temperatures up to 31°C
- Mains supply voltage fluctuations not to exceed +/- 10% of the nominal voltage
- Operates at Pollution Degree 2, Installation Category II environments. (IEC 664)

Technical Specifications

Electrical

Voltage Ranges: 220-230 V ~ 50 Hz

Currents: 6 AMP ~ 1400 Watts



At least a 20 AMP fuse is recommended for the outlet in use with this device. If there are other equipment attached to the same outlet, use a higher rated fuse.

Fuses

The fuses are located on the back, next to the power cord. Replacement fuses must be used as defined below.

1. Power 10 AMP
2. Heater 10 AMP
3. Vacuum 10 AMP
4. Lift 3 AMP

Exterior Dimensions:

Height: 56 cm (43 cm when muffle is closed)

Width: 29 cm

Depth: 34 cm

Interior Muffle Dimensions:

Height: 6.3 cm

Diameter: 10 cm

Furnace Weight: 23Kg

Shipping Weight: 25Kg

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INSTALLATION

Unpack and remove the furnace from its shipping carton. Save the carton and other packing material for future transportation needs.

Check the package content.

- Operators Manual (This document)
- Furnace
- Electric cord and vacuum tubes
- Porcelain firing tray

Shipping damage should be reported to the dealer and carrier as soon as detected.



Install furnace on a sturdy surface and allow space for ventilation. The furnace should be at least 30 cm off from any wall.



Carry the furnace by holding it from the bottom. Never lift the furnace by the top muffle. When carrying the furnace, bend by your knees, do not bend at the waist. Always keep your back straight.



Ensure the unit is properly grounded. To avoid electrical shock, this furnace must be installed by a qualified electrician who can understand fuse specifications, electrical source and grounding code requirements.

Attach the vacuum pump

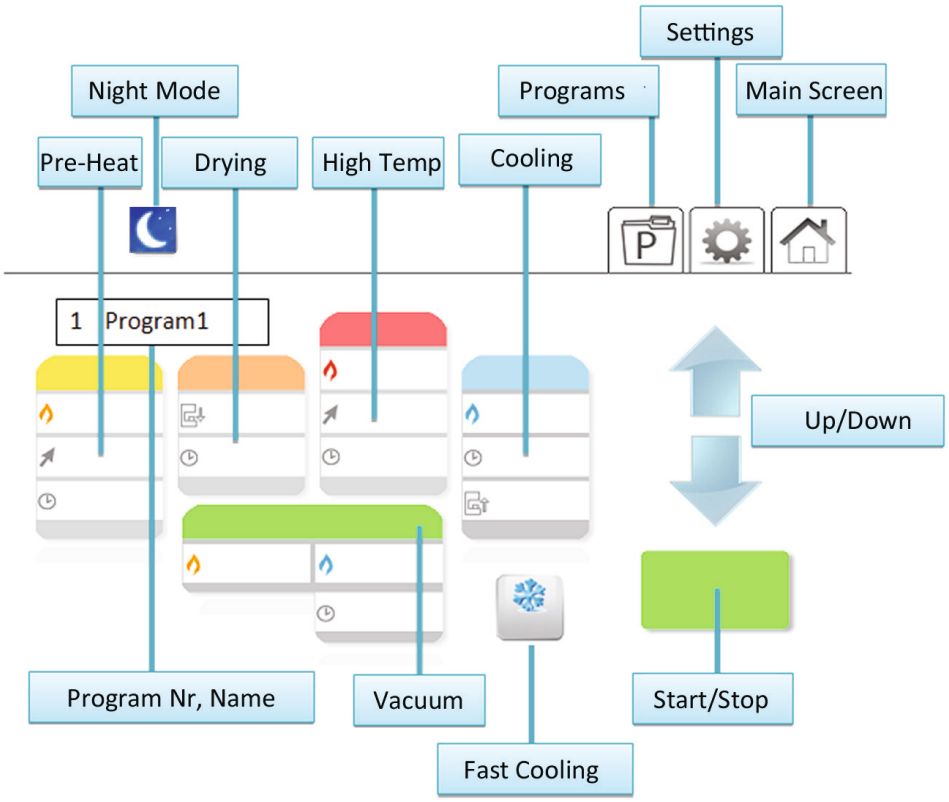
The vacuum electricity is provided by the furnace. Connect the vacuum electrical cord to the vacuum electric outlet of the furnace. Connect the vacuum pump air hose to the vacuum outlet of the furnace.

Before First Use

Clean the gasket with a soft brush. The gasket helps hold the vacuum pressure, avoid damaging the shape with harder objects, Use a vacuum cleaner to gently clean the heating chamber prior to use to remove the insulation dust due to shipment. Be careful not to touch the insulation material and the thermocouple inside the chamber with hard objects.

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OPERATION



Programming

When you power the furnace the last program that was run will load automatically.

All programming is done via the touchscreen. You can change the parameters by tapping on the parameter. Each parameter has a pop up screen where you can tap the plus and minus signs to change the parameter. You can also tap the parameter again to use the on screen keyboard to enter the parameter.

Any changes to the program is automatically saved. However when the program is running, the changed parameters will be active for the running program and revert to their original values when the program stops.

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Parameters

PRE HEAT



Low Temperature
This is the drying temperature of your porcelain powder.
Min: "Idle Temperature (Settings)" / Max: 700ºC



Heat Rate to Low Temperature
This is the heat rate when heating from ***"Idle Temperature (Settings)"*** to ***"Low Temperature"***
Min: 20 ºC/dk / Max: 130 ºC/min



Low Temperature Hold Time
Hold time when the "Low Temperature" is reached. The parameter is entered as minutes and seconds.
Min: 0 min / Max: 99 min

DRYING



Muffle Close Time
This parameter defines the time it will take for the muffle to move from the open position to the closed position. Zero (0) will close the muffle directly.
Min: 0 min / Max: 99 min



Dry Time
This parameter defines how long the furnace should wait to further dry the porcelain powder. For Dentin firings use at least 30 seconds drying.
Min: 0 min / Max: 99 min

FIRING



High Temperature
This is the target temperature for firing the porcelain powder
Min: "Low Temperature" / Max: 1100ºC



Heat Rate
This parameter defines the heating speed when heating up towards the High Temperature (10) parameter
Min: 20 ºC/min / Max: 130 ºC/min



Hold Time
The furnace will hold and maintain the ***"High Temperature"*** value as defined in this parameter.
Min: 0 min / Max: 99 min

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VACUUM



Vacuum Start Temperature
The vacuum will start when the muffle temperature reaches this parameter value. If the muffle is still open when this parameter value is reached, the vacuum will wait and start as soon as the muffle is closed.
Min: 0°C / Max: 1100°C (Zero "0" for no vacuum)



Vacuum Release Temperature
The vacuum will release when the muffle temperature reaches this parameter value
Min: 0°C / Max: 1100°C (Zero "0" for no vacuum)



Vacuum Hold Time
This parameter defines the vacuum holding period after reaching the ***High Temperature***. **Attention:** If this parameter is assigned a value, the furnace will ignore the ***Vacuum Release Temperature***.
Min: 0 min / Max: 99 min

COOLING



Cooling Temperature
This parameter defines the temperature where the muffle temperature should drop to before opening the heating chamber.
Min: 0 °C / Max: "Hedef Isı"



Wait at Cooling Temperature
This parameter defines how long the furnace should wait at the ***Cooling Temperature*** before opening the heating chamber
Min: 0 min / Max: 99 min



Muffle Opening Period
This parameter defines the time it takes for the muffle to travel from the closed position to the open position.
Min: 0 min / Max: 99 min

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Settings

Tap the settings button on the main screen



Idle Temperature
When the furnace is turned on, the muffle will heat up and keep the heat steady at the temperature defined in this parameter.
Min: 200°C / Max: 550°C



Offset
This parameter is for calibrating the temperature. If the porcelain powder shows signs of too much heat, enter positive values corresponding to the assumed temperature difference. If the porcelain powder shows signs for lack of heat, use negative values.
Min: -100 / Max: +100



Fan Start Temperature
This parameter sets the trigger temperature for the fans behind the muffle (˚C). When the chamber reaches the set temperature, the fan will turn on and start cooling the muffle exterior.



Vacuum Set
Max vacuum level the furnace will reach
Min: 100 (-mbar) / Max: 1000 (-mbar)



Vacuum Mode
This parameter can be set as Continious or Itterative. The Continious mode will run the pump non stop. The Itterative mode will stop and hold the vacuum when the Vacuum Set level is reached. The pump will restart if the vacuum level drops.



Fast Cooling
This parameter can be set as Active or Passive. When Active, the pump will start after the program cycle has completed to quickly circulate the air trough the muffle so it can cool down quickly and allow you to start the next program faster.

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Test
This option will run a self diagnostics of the furnace which will check for basic functionality. At the end of the test, the user will receive an on screen report.



Date/Time
Set the date and time



Language
Select your language. Contact your dealer for adding a new language.



Sleep Mode
This function is useful for when you want to leave your desk and need your furnace to stand by. Sleep mode turns off the screen and the elevator once the program has finished. The furnace will drop to 100°C and wait. The idle temperature to wait can be changed by the manufacturer upon user request.
Tap the screen to wake up the furnace.

• Loading a Program

There are 100 customizable programs.

Tap the Program icon on the top of the home screen.

The MP100 comes with several built in generic programs. Select a program from the program list. If you wish to create a new program, tap an empty program.

When a program is selected you will return to the home screen. Here you can tap the empty space next to the program folder icon to give your program a name. You can also change the parameters. Any change is instantly saved to memory.

You can change the parameters when the program is running. The parameters will take effect immediatly when the program is running and only if the modified parameter is not in the currently executed segment. For example, when the program is running at the Pre-Heat segment, you can change the High Temperature parameter.

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ERROR MESSAGES AND PROBLEMS



These notes are for authorized technicians only

Error Message	Cause/Solution
SSR Error Overheating	The furnace is overheating. If you receive this message there may be a problem with the solid state relay. Contact your dealer.
Lower Limit Switch The chamber can not reach the lower limit switch. The lift or the switch may be broken.	Check the lift engine. If the lift engine is not working check the fuse of the lift engine. If there are no problems with the lift engine the lower limit switch might need to be replaced.
Upper Limt Switch The chamber can not reach the upper limit switch. The lift engine or the switch may be broken.	Check the lift engine. If the lift engine is not working check the fuse of the lift engine. If there are no problems with the lift engine the upper limit switch might need to be replaced.
Thermocouple Error The thermocouple or the connections are not attached.	The furnace is not receiving any signal from the thermocouple. Check the thermocouple and the connections.
Can not Heat Check the fuse and heating element. Küçük Vakum Kaçağı	Check the heater fuse at the back of the furnace. If the fuse is OK, the heating element needs a replacement.
Minor Vacuum Leak	Clean the gasket around the firing tray. Check the pump performace and vacuum tubes.
Major Vacuum Leak Inspect the vacuum pump, the air tubes and electric connection	A major vacuum leak means there is large air escape in the muffle or vacuum connections or the vacuum engine is not running at all.

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MAINTENANCE AND CLEANING



Interior maintenance can be carried out only by Teknik Dental LTD or its authorized service centers. Unauthorized maintenance will void your warranty.



To avoid electrical shock, this furnace must always be disconnected from the power supply prior to maintenance servicing and cleaning. Refer to qualified personnel for maintenance and servicing.



Cleaning
Clean exterior of furnace only by wiping unit with a damp cloth coated with a mild non abrasive cleaner. The gasket under the muffle should be cleaned dusted off daily. Turn of the furnace and use a soft brush to remove any dust that may cause vacuum leak. Attention: The muffle may be still be hot even after the furnace is turned off and detached from the power supply



Purging the Muffle
The muffle will naturally get contaminated with foreign material and excess humidity. This will affect the quality of the work. Depending on your rate of usage, periodically run high temperature programs with an empty tray to burn of contamination and excess humidity.



Never use any detergents or flammable liquids.

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WARRANTY

WARRANTY: Except with respect to those components parts and uses which are hereinafter described, Teknik Dental LTD. warrants this furnace to be free from defects in material and workmanship for a period of three years from the date of sale. Teknik Dental LTD's liability under this warranty is limited solely to repairing or, at Teknik Dental LTD's discretion, replacing those products included within the warranty which are returned to Teknik Dental LTD within the applicable warranty period (with shipping charges prepaid), and which are determined by Teknik Dental LTD to be defective. Dealer, labor, shipping and handling charges are not covered by this warranty. This warranty shall not apply to any product which has been subject to misuse; negligence; or accident; or misapplied; or modified; or repaired by unauthorized persons or improperly installed. This warranty does not cover heating elements.

INSPECTION: Buyer shall inspect the product upon receipt. The buyer shall notify Teknik Dental LTD in writing of any claims of defects in material and workmanship within thirty days after the buyer discovers or should have discovered the facts upon which such a claim is based. Failure of the buyer to give written notice of such a claim within this time period shall be deemed to be a waiver of such claim.

DISCLAIMER: The provisions here-in stated are Teknik Dental LTD sole obligation and excludes all other remedies or warranties, expressed or implied, including those related to MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE. No representative or person is authorized to assume for us any liability in connection with the sale of our equipment.

LIMITATION OF LIABILITY: Under no circumstances shall Teknik Dental LTD be liable to the buyer for any incidental, consequential or special damages, losses or expenses.

LIMITATION OF ACTIONS: The buyer must initiate any action with respect to claims under the warranty described in the first paragraph within one year after the cause of action has accrued.

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