

# MUFFLE POLYMERIZING UNIT THERMOPOL

 MAINTENANCE AND INSTRUCTION MANUAL



## 1. GENERAL CHARACTERISTICS

The THERMOPOL polymerizer allow to program a cycle composed by two working phases (phase 1 = preheating and phase 2 = boiling) according to the operator's needs thanks to free data input within the programming ranges. Moreover the operator has the opportunity to choose between an immediate turn-on and a postponed one (timer phase).

### Data Chart

Phase 1 (Preheating)	
Temperature	from 0°C to 100°C
Gradient	from 0 to FULL (max speed)
Holding time	from 00.00 (h - min) to 20.59 (h - min)
Phase 2 (Boiling)	
Temperature	From Phase 1 temperature to FULL (boiling temperature)
Gradient	from 0 to FULL (max speed)
Holding time	from 00.00 (h - min) to 20.59 (h - min)
Avvio ritardato – Delayed start	
Tempo - Time	from 00.00 (h - min) to 99.59 (h - min)
It is possible to program only the boiling phase setting 0°C as preheating temperature (phase 1) and setting FULL as boiling temperature (phase 2).	
Setting boiling temperature at FULL, gradient is automatically set at FULL	
I The gradient is not equivalent to °C/min but to a scale of values where the max value is FULL (resistance always working).	

## 2. CONTEMPLATED USE

Equipment for the polymerization of the acrylic components of fixed and movable dental prostheses and skeletal prostheses.

## 3. INSTALLATION

- Verify the unit has not suffered any evident damage during transportation.
- Place the unit on a stable horizontal non flammable surface away from any water sprayings and from flammable materials. The polymerizer has to be placed on a sufficiently spacious surface to allow a correct ventilation.
- Fit the muffles in the tank and by a container put water in the tank till the muffles are covered. The machine has not to be used without water. The resistance has to be always covered by the water (min. water level – to the grit). Do not place for any reason the polymerizer under a spout of water.
- Before installation make sure the supply mains are in conformity with tag (230 Vac – 50/60 Hz) and that the power line is protected with a differential thermo magnet switch. Also check electrical inputs and power installed. If you are not sure what kind of power is available to you please contact the Electric Power Company. In particular, verify if the grounding system is efficient.
- Make sure the general switch is in the off position (0), then connect the electric cable's plug to an electrical outlet.

If the unit emits a constant beep immediately upon power-up and none of the control buttons respond, the power source (power outlet) is inadequate.

## 4. PROGRAMMING OF CYCLE

To program a cycle follow correctly and in the indicated order the instructions below:

1) Turn-on machine, 2) Program data Phase 1 – Preheating, 3) Program data Phase 2 - Boiling

### 4.1 Turn-on machine

The polymerizer is turned-on by turning the general switch to the ON position (I). The interior green light will be lit. The word OFF will appear on display. All LEDs will be off.

In case numbers would appear on display, press **START/STOP** button to put the polymerizer on state of IDLE-OFF.

### 4.2. Program data for phase 1 (preheating)

Press key **PROG** to enter.

On display the words “Ph.1”, “°C” and the last temperature value of phase 1 programmed will appear in sequence.

During programming of phase 1 preheating the **PROG** key's red led will start flashing intermittently.

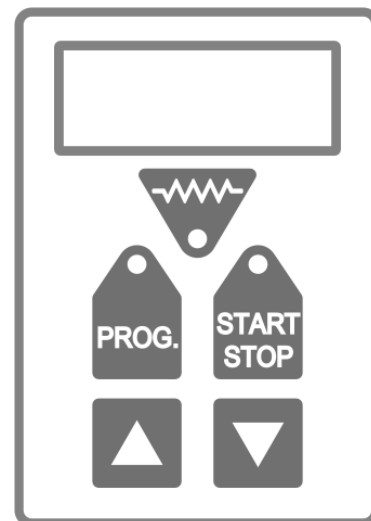
The change of this parameter (programming range 0/100°C) is carried out using key **↑** (to increase value) and **↓** (to decrease value).

In case a value equal to 0 is set this phase is by-passed (no parameters are considered for this phase) and cycle starts directly from phase 2.

Press key **PROG** to confirm entry.

On display the word “rAtE” and the last speed increase value programmed will appear in sequence.

The modification of this parameter (programming range 0/FULL=max speed) is carried out using keys **↑** (to increase value) and **↓** (to decrease value).



Setting this value at FULL, temperature will be increased to maximum speed (resistance always active). It is advisable never to set the speed increase at a value inferior to 13 otherwise the heating will be too slow.

Press **PROG** key to confirm entry.

On display the word “Hr.Mn” followed by the last holding time programmed will appear.

Four numbers divided by a dot will appear on display.

The two still numbers on the left side of the dot indicate the hours, while the flashing numbers on the right side of the dot indicate the minutes.

The first parameter to change are the hours.

The modification of this parameter (programming range 00/20 hours) is carried out by using key **↑** (to increase value) and **↓** (to decrease value).

Press **PROG** key to confirm entry and pass to programming of minutes.

On display you will see now the two numbers on the right side of the dot (indicating minutes) still while the two numbers on the left side of the dot (indicating the hours) flashing.

The modification of this parameter (range of programming 00/59 minutes) is carried out using keys **↑** (to increase value) and **↓** (to decrease value).

In the case a value equal to 00.00 is set, the time of preheating is not included and the polymerizer after reaching the temperature will pass directly to phase 2.

Press key **PROG** to confirm data entry and pass to programming of phase 2.

### 4.3. Program data for phase 2 BOILING

On display the words "Ph.2", "°C" and the last temperature value of phase 2 programmed will appear in sequence.

During programming of phase 2 boiling the **PROG** key's red led will start flashing intermittently.

The change of this parameter (programming range Phase 1 temperature/FULL=boiling temperature) is carried out using key **↑** (to increase value) and **↓** (to decrease value).

To make boiling, set the temperature at FULL.

Press key **PROG** to confirm entry.

If the operator has set a temperature lower or equal 99°C, on display the word "rAtE" and the last speed increase value programmed will appear in sequence and the operator has the possibility to choose the value to set.

If the operator has set FULL as temperature, on display the words "rAtE" and FULL will appear in sequence. In this case the speed increase is automatically set at FULL (max value).

The modification of this parameter (programming range 0/FULL=max speed) is carried out using keys **↑** (to increase value) and **↓** (to decrease value).

It is advisable never to set the speed increase at a value inferior to 17 otherwise the heating will be too slow.

Press **PROG** key to confirm entry.

On display the word "Hr.Mn" followed by the last holding time programmed will appear.

Four numbers divided by a dot will appear on display.

The two still numbers on the left side of the dot indicate the hours, while the flashing numbers on the right side of the dot indicate the minutes.

The first parameter to change are the hours.

The modification of this parameter (programming range 00/20 hours) is carried out by using key **↑** (to increase value) and **↓** (to decrease value).

Press **PROG** key to confirm entry and pass to programming of minutes.

On display you will see now the two numbers on the right side of the dot (indicating minutes) still while the two numbers on the left side of the dot (indicating the hours) flashing.

The modification of this parameter (range of programming 00/59 minutes) is carried out using keys **↑** (to increase value) and **↓** (to decrease value).

In the case in which a value equal to 00.00 is set, the time of boiling is not included.

Press key **PROG** to confirm data entry .

On the display the word OFF appears.

## 5. START UP PROGRAMMING

After programming the cycle the operator is given two options:

- immediate turn-on
- postponed turn-on

During programming of start-up the **PROG** key's red led will start flashing intermittently.

### Immediate turn-on

With polymerizer in OFF press the **START/STOP** key.

Four zeroes divided by a dot will appear on display.

Press twice (2 times) the **START/STOP** key and the cycle is activated with an immediate effect.

### Posponed turn-on

With polymerizer in OFF press the **START/STOP** key.

Four zeroes divided by a dot will appear on display.

The two still zeroes on the left side of the dot indicate the hours; while the two flashing zeroes on the right side of the dot indicate the minutes.

The first parameter to change are the hours.

The modification of this parameter (programming range 00/99 hours) is carried out using keys **↑** (to increase value) and **↓** (to decrease value).

Press the **START/STOP** key to confirm entry and to go to programming of minutes.

On display you will now see two still numbers to the right side of the dot (indicating the minutes) while the two numbers on the left side of the dot (indicating the hours) are flashing.

The modification of this parameter (programming range 00/59 minutes) is carried out by pressing the keys **↑** (to increase value) and **↓** (to decrease value).

Press key **START/STOP** to confirm entry.

In this specific case, after setting the hours and the minutes, on the display will appear the time in hours and minutes corresponding to the residue time to the start of the cycle. Such value is shown as countdown to start-up time.


For all duration of timer, the small dot between the four numbers will flash and the red led of **START/STOP** key will stay on.

## 6. WORKING CYCLE


The cycle begins after programming the start-up (see chapter 6), thus, after pressing three consecutive times the **START/STOP** key (immediate turn-on) or after the programmed time is over (postponed turn-on).

At moment of cycle's start-up, a beep will let the operator know the passage from timer phase to working phase.

On the display it will be shown for a few seconds the programmed temperature followed by the real temperature of water in the polymerization tank..


The **START/STOP** key's orange led will stay on until the set temperature is reached, the orange led  of activated resistance will lit indicating the power delivery to resistance.

At the moment the set temperature is reached, a beep will notify the operator and on the display just for a few seconds the time holding value set for the phase in course followed by the real temperature of water in the tank will be shown.


The green led of the **START/STOP** key will remain on for the duration of the time set; the orange led  of activated resistance stays on indicating the power delivery to resistance for keeping up temperature.

At each passage from one phase to another, a beep will notify the operator.

On the display it will be shown for a few seconds the programmed temperature followed by the real temperature of water in the polymerization tank..

The **START/STOP** key's orange led will stay on until the set temperature is reached, the orange led  of activated resistance will lit indicating the power delivery to resistance.

At the moment the set temperature is reached, a beep will notify the operator and on the display just for a few seconds the time holding value set for the phase in course followed by the real temperature of water in the tank will be shown.

The green led of the **START/STOP** key will remain on for the duration of the time set; the orange led  of activated resistance stays on indicating the power delivery to resistance for keeping up temperature.

When the time is expired, the resistance stops working and on the display the word OFF appears.

## 7. INSPECTIONS

### IDLE OFF state

In the IDLE-OFF state the following inspections maybe done, using the indicated key:

- **↑**: by keeping this key pressed you may see on the display the temperature inside the polymerization tank.

### Phases 1 and 2

During phases 1 and 2 the following inspections are possible by pressing the indicated key:

- **↑**: by keeping this key pressed you may see on the display the temperature set for the phase in course.

- **PROG**: by keeping this key pressed you may see on the display the speed of increase set for the phase in course.

- ↓ : during the increase of temperature programmed, by keeping this key pressed, the holding time programmed is shown. During the holding time by pressing this key the residue holding time for the phase in course is shown.  
In all these cases at the release of the key, after a few seconds the value present before pressing the key will appear.

## 8. POWER FAILURES

### During TIMER phase

when power returns, you will see on the display for a few seconds the residue time to the start-up of oven memorized at the time of the failure, afterwards, the countdown starts again (but the time the power missed due to the failure is not considered).

The operator may decide to:

- let the timer finish its course
- put timer on zero by pressing the **START/STOP** key, turning the oven OFF and activating the cycle with immediate effect by pressing three consecutive times the **START/STOP** key.

### During increase on phases

when power returns, the cycle continues from the phase in which it was at the moment the power failed and it will recuperate the lost temperature.

### During stationary time on phases

when power returns two cases may present:

- if the time when power was missing was minimal the temperature inside the chamber did not decrease, and the polymerizer will do all over again the holding time programmed.
- if the temperature in the chamber decreased, the polymerizer will reach the temperature programmed and all over again the holding time programmed.

In each of these cases when the power returns a beep will notify the operator of the problem caused.

### During programming

when power returns the polymerizer will be at IDLE OFF showing on display the word OFF.

## 9. TECHNICAL DATA

Overall dimensions: W x D x H	<b>S</b> = 180 x 440 x 440	<b>L</b> = 350 x 440 x 440
Weight:	9 Kg	12 Kg
Voltage:	230 Vac 50/60 Hz	
Power:	1200 Watts	
Fuses:	6 x 32 mm F 8 A/250 V (on power supply)	
	5 x 20 mm T32mA/250 V (on circuit board)	
Use:	Internal	
Temperature:	from +5°C to +40°C	
Relative Humidity:	80% max	
Altitude:	up to 2000 m	
Installation category:	II	
Pollution rate:	2	

### 9B. TIPS (THERMOPOL LARGE)

- For cooking at 75°C, we recommend setting the temperature at 81°C.
- For cooking at 100°C, we recommend adding 30 minutes to the cooking time.
- For cooking at two temperature levels (75°C followed by 100°C), we recommend setting the temperature of the 1st level at 81°C, then adding 30 minutes to the holding time for level #2.

## 10. ORDINARY MAINTENANCE

The THERMOPOL polymerizer do not need any particular maintenance.

## 11. WARNINGS

- It is recommended, before turning off the polymerizer with the general switch in the off position (0), to press the **START/STOP** key to put oven in IDLE-Off state which is shown with the word "OFF" on display.
- The muffles have to be fitted in and taken off only by appropriate instruments
- During the use of polymerizer the operator must wear gloves and safety accessories, as the polymerizer reaches very high temperatures both inside and outside.
- Use only water to fill the polymerizer. Never use inflammable fluids or substances as they can generate dangers of explosion, implosion or emission of toxic gas.
- The discharge of the liquid has to be made in accordance to the regulations in force. This operations must be done with the general switch off (0) position, with the electrical cable disconnected and the operator must wear gloves and safety accessories.
- For cleaning operations use a dry cloth and a liquid detergent (do not use flammable liquids). Dry with a soft cloth. Do not place for any reason the polymerizer under a spout of water. Cleaning operations must be done with the general switch off (0) position, with the electrical cable disconnected. Before using cleaning techniques different from the ones indicated by EUROCEM, the operator must contact the manufacturing company.
- Do not place any objects over the electrical cable and do not put cable in places where it can be stepped over.
- In case of prolonged inactivity disconnect the electrical cable.
- For any need of transportation, always empty the tank and use the original packaging

## 12. INSTRUCTIONS FOR DISPOSAL

This product shall not be disposed of as a mixed municipal rubbish. For the disposal comply with the provisions of the rules in force.



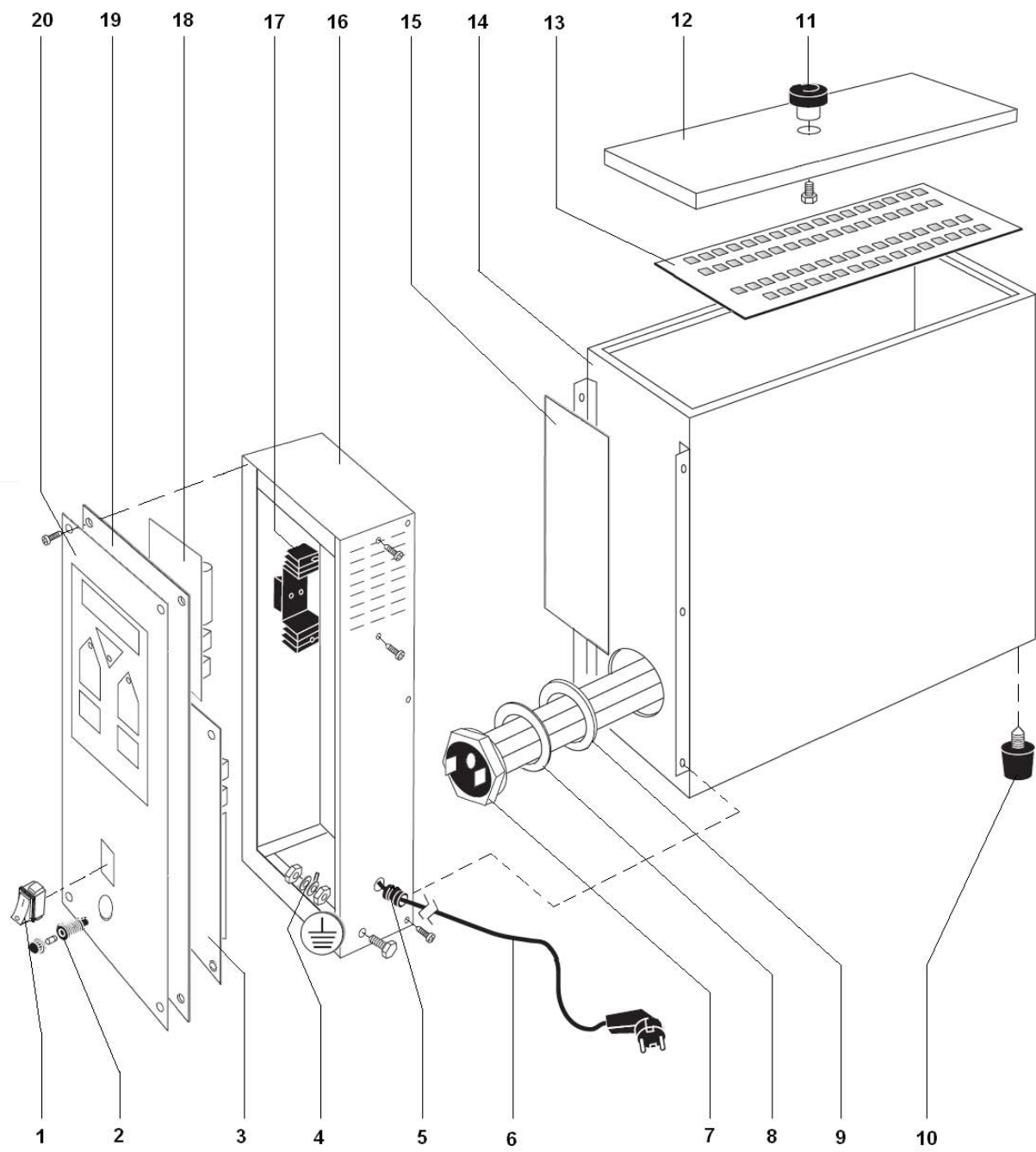
## 13. IMPORTANT INFORMATION

- The Manufacturing Company declines any responsibility for any unit installed, utilized, modified, repaired and/or altered by non competent and unauthorized personnel.
- The unit has been designed and built only for the uses contemplated, consequently the Manufacturing Company refuses any responsibility for damages to persons, animals, things, and the machine itself caused by improper use of this unit. The improper use of this machine is dangerous!!
- Subject the unit to a complete annual revision by the Manufacturer.
- To clarify any doubt and/or technical explanation please contact our Technical Department.

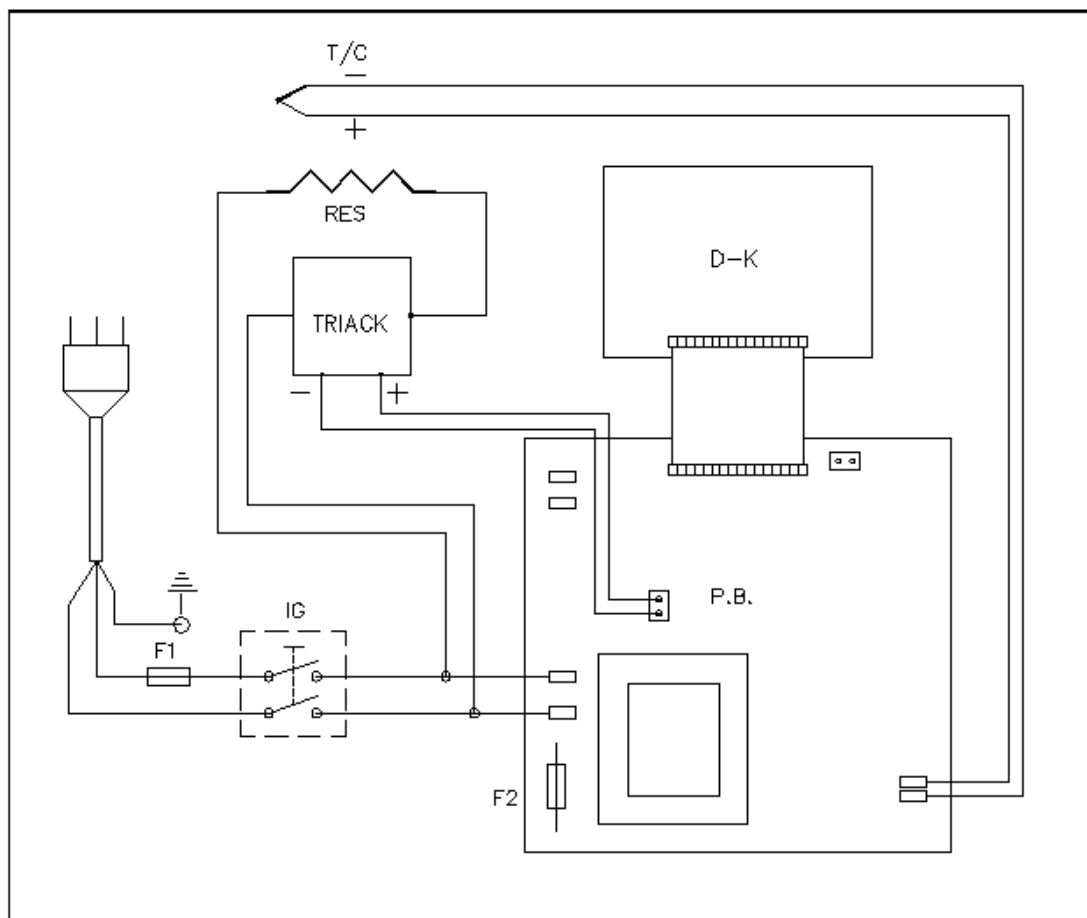
#### 14. EXPLODED DRAWING AND SPARE PART LIST

No.	ITEM S	ITEM L	DESCRIPTION
1	NEC016		Switch
2	NEA060		Fuse-holder
3	2502008		Power board
4	---		Ground connection
5	NEA106		Cable clamp
6	NEV009		Power cord
7	2502010		Armored resistance
8	2502011		Resistance gasket
9	2502012		Resistance gasket
10	2502014		Rubber feet
11	2502013		Cover knob
12	2502003S	2502003L	Cover
13	2502004S	2502004L	Grid
14	2502002S	2502002L	Bath body
15	2502006S	2502006L	Thermal insulation
16	2502005S	2502005L	Protection casing
17	2502009		Triack with heatsink
18	2502009		Control board with keyboard and display
19	2502007		Control panel
20	2502001		Brand label





## 15. WIRING DIAGRAM



POS.	DESCRIPTION
IG	Main switch
P.B.	Power board
F1	Fuse
F2	Fuse on board
D-K	Control board with keyboard and display
TRIACK	Triack
RES	Armored resistance
T/C	Thermocouple

### DENTalfarm s.r.l.

Via Susa, 9/a - 10138 TORINO - ITALY

☎ TECHNICAL-COMMERCIAL SERVICE (+39) 011/4346588

☎ AFTER-SALE SERVICE 011/4346632

☎ FAX 011/ 4346366

E-mail: [info@dentalfarm.it](mailto:info@dentalfarm.it)

Sito – web site: [www.dentalfarm.it](http://www.dentalfarm.it)