Forno a vácuo para metalo cerâmica
Vacuum furnace for metalo-ceramic
Horno con vacío para metalo cerámica

50P

alumini 50

alumini 50

EDG

TEMPERATURA / FUNÇÃO

alumini 50

PROGRAMAS

LER · SALVAR · PROG
· PATAMAR
T1 · TEMPO QUEIMA · ELEVADOR
· SOBE · DESCE · VÁCUO
T2 · RAMPA
· VELOC · MANUAL
↑ ↓ · S / S

EDG
EQUIPAMENTOS

MANUAL DE INSTRUÇÕES
INSTRUCTION MANUAL
MANUAL DE INSTRUCCIONES

alumini 50

Vaccum furnace for metalo-ceramic

Date of manufacture

		200

Serial number

1 Receipt

The equipment is packed separately from the vacuum pump, therefore check the receipt of 2 boxes in case you have acquired the furnace and the pump.
Before opening your equipment package check the items below:
Package general state. In case of evident damage, complain immediately to the transportation service. We remind you that the product travels by the transportation service own risk and responsibility

## 2 Accessories

Alumini 50 package must contain:
a) the furnace.

b) one tray for metalloceramics.

c) one support for rigid blanket

d) one package with 6 isothermal pins.

e) Instruction manual.

The vacuum pump package contains the pump and its accessories.

3 Main features

- Quartz muffle and ceramics blanket in shape of vacuum molded cope of low thermal mass warranty the perfect homogeneity of temperature.
- 50 free programs.
- Management by microprocessor.
- Easy operation and visualization of the burning parameters.
- Non- volatile memory preserves in use the last program.
- Operation room temperatures at 1.100ºC.
- Maximum temperature limiter at 1.200ºC.
- Linear heating speed from 20 to 200ºC/min.
- thyristor power control by burst does not cause noise on the electrical network - supply and does not interfere in other equipment.
- Burning time from O to 10,5 minutes with decreasing time visualization.
- Programmable and independent up and downwards elevator time.
- Security systems protect the equipment against operation errors and defects.
- Lighting and sounding indication of all the process phases.
- To avoid room heating and save energy, after 4,5 minutes without any operation the muffle is semi closed automatically.
- Night mode; After 2 hours without operation the muffle is closed and the temperature is kept at 100ºC.
- Automatic or manual vacuum operation can be activated at any phase of the process.
- Fast cooling.
- Operation time totalizer.
- Low cost muffle replacement system.
- Elevator with entrance by the lower face perfectly balanced.
- Forced ventilation of the electronic system keeps the integrity of the components.
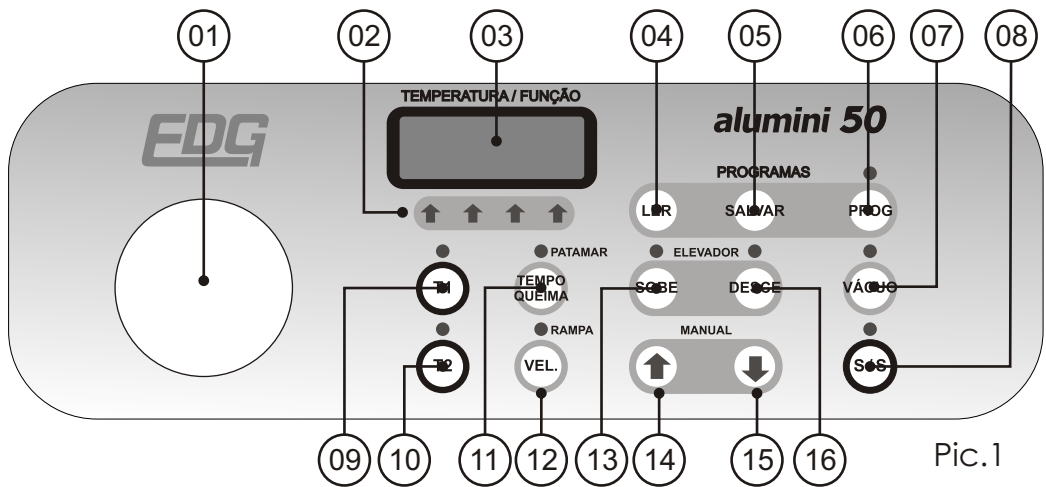
Pic.1

1- Vacuum indicator.
2- Parameter setting key.
3- Multi-functional display
4- Recipe call key.
5- Recipe store key.
6- Input/output recipe bank key.
7- Vacuum programming key.
8- Start/stop key (start/stop).
9- T1 Programming and visualization key.
10- T2 programming/visualization key.
11- Programming; burning time key.
12- Programming/ heating speed visualization key.
13- Programming/ upwards mode visualization key.
14- Manual activation for upwards elevator.
15- Manual activation for downwards elevator.
16- Programming/ downwards mode visualization key.

4 Lighting indications

T2 and T2 leds: indicate which temperature is being executed.
Level Led: indicates which equipment is in stand by position keeping the temperature or executing the burning time.
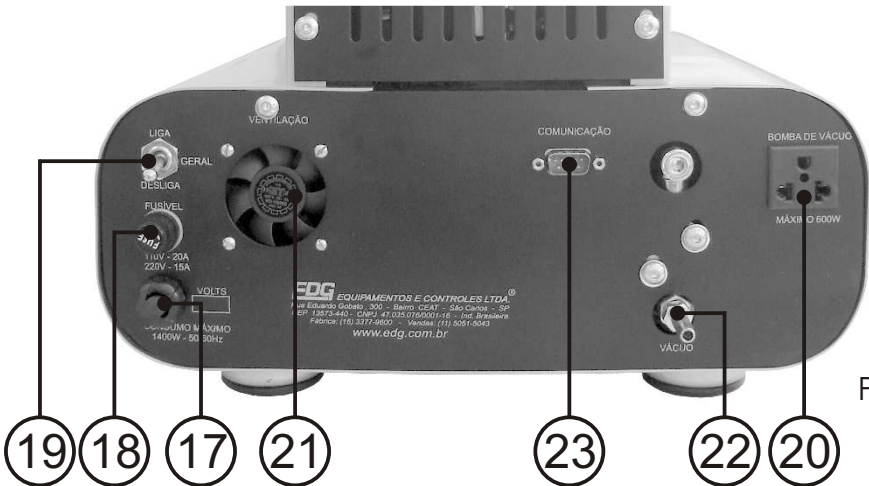Slope Led: indicates which equipment is heating (Ti to T2) or cooling (T2 to Ti).
Elevator Leds: indicate whether the elevator is going upwards or downwards.

Prog Led: indicates that the system is in store mode/ recipe reading.
Vacuum Led: indicates that the vacuum pump will be or is on.
Led 5/5: indicates when the process was initialized.

Pic.2

19 18 17 21 23 22 20

17- Power supply tension identifier/ power supply cable.
18- Fuse case.
19- On/off switch.
20- Female plug for vacuum pump connection.
21- Forced ventilation.
22- Vacuum hose connection.
23- Communication

Next, the numbers in parentheses refer to the figures 1 and 2.

5 Installation

Your Alumini 50 must be placed distant from curtains and inflammable materials. A furnace is a heat generator that needs to be dissipated, otherwise there will be a overheating in their components. Therefore, put your equipment in a ventilated place that allows free air circulation. It is advisable a 15 cm minimum distance between the furnace and any other object that can damage the ventilation.
Put your furnace distant from taps or sinks that can cause water splash on the equipment.
1-1 Check if the tension of your electric power supply is the same as the one indicated on your furnace's label (17).

1-2 Install the furnace in an exclusive electric power supply using 6 mm2 wire if it is 100 volts or 4 mm2 if it is 220 volts.

1-3 Never connect the furnace to the same electric power supply in which other furnace, compressors, electric taps, or any other high consume device is connected.

1-4 Check if the exclusive outlet in which the furnace is plugged is under good conditions, has good quality and capacity to support 20 amperes.

1-5 Connect the ground terminal to a grounding bar and never to the electrical neutral.

The non-observance of the items above will interfere in the equipment good operation and its warranty.

1-6 It is advisable the use of a auto-transformer type tension regulator with 2 kw minimum capacity. Do not use, under any hypothesis, regulators used in computers.

1-7 Connect the vacuum hose to the furnace (22) and to the pump.

Connect the vacuum pump supply cable in the plug that is in the backside of the furnace (20).

6 Operation

To better illustrate it, we will give an example of programming for the following burning process:

- Starting from the room temperature, go to Ti at 600ºC, which is the operation input temperature.

- Keep at this temperature until the operator's order to start the burning.

- The input process of the piece in the muffle (preheating/ drying) must take about 6,5 minutes.

-The burning temperature is 960ºC. (T2).

-The heating speed between Ti and T2 must be 55ºC/minute.

-The burning time will be1 minute.

- The vacuum must turn on at the muffle closing and off when finishing the burning time.

- Finished the process the elevator must go downwards directly.

T1 ºC	T1 ºC	Speed ºC/min.	Burning time min.	UP pos.	Down pos.	Vaccum yes / no
600	900	55	1.00	5	D	yes

7 Program

Turn on the on/off switch situated in the backside of the furnace (19); the display (2) will indicate the software version that is used "Pr 1.0" and then the message "Ed6" will be shown for 30 seconds while the equipment carries out its self-checking.

Afterwards the room temperature will be indicated; if the muffle is closed the elevator will go to the lower position and the temperature will go to factory programmed T1.

> ⚠ **Note:** Four seconds after the function keys are pressed and the parameter values are adjusted, the system will return automatically, awaiting for the insertion of a new parameter or burning start.

7.1 T1 and T2 temperature setting

- Press the key T1 (09) and then press the keys (02) one for each digit entering the required value of 600ºC. The furnace will heat up to this temperature.
- Press the key T2 (10) and then press the keys (02) inserting the required value of 960ºC on the display (03).

7.2 Heating speed setting

- Press the key Vel repeatedly (12) until the display indicates the required speed of 55ºC/min. The additions are from 5 in 5 ºC/min.

7.3 Burning time setting

- Press the Burning time key (Tempo de queima) (11) repeatedly until the required value of 1 minute. The additions are from 30 in 30 seconds.

7.4 Elevator time setting.

- Press the key Sobe (up)(13) repeatedly until the value shows up on the display 5.
- Press the key desce (down) (16) until the letter "d" appears on the display.

The times of the elevator are divided in this way:

"d" The elevator goes up or downwards directly (non-stop).

"O" For manual activation by means of the keys (14) and (15). This position is used when a preheating is required, placing the piece at the entrance of the muffle during a time controlled manually. In the following positions, the times of the courses are approximately these ones:

"D" = Direct   "6" = 3,30 minutes
"1" = +- 1 minute   "7" = 4,00 minutes
"2" = 1,30 minutes   "8" = 4,30 minutes
"3" = 2,00 minutes   "9" = 5,00 minutes
"4" = 2,30 minutes
"5" = 3,00 minutes

7.5 Vacuum setting

- Next we press the vacuum key (07) in a way that the led on it is lit up indicating that the vacuum pump is programmed to be activated as soon as the muffle closes. If it is not necessary vacuum (oxidation) press the key Vacuum (07) in order the led be off.

8 Storing a recipe

To store a recipe above:
- Press the key prog (06).
- Then, choose a number for the recipe from 01 to 50 using the parameter setting keys(Tecla de ajuste de parâmetros) (02).
- Press the key Save (Salvar) (05) and the recipe will be stored in the chosen number. To delete a recipe already saved in the memory.
- Press the key prog (06).
- Type the number of the chosen recipe in the parameter setting keys (teclas de ajuste de parâmetros) (06).
- Press the key (Read) Ler (04).
- The stored recipe under the chosen number is available to be used.

⚠️ Note: All the parameters can be modified at any phase of the process, except the burning time when this is under execution.
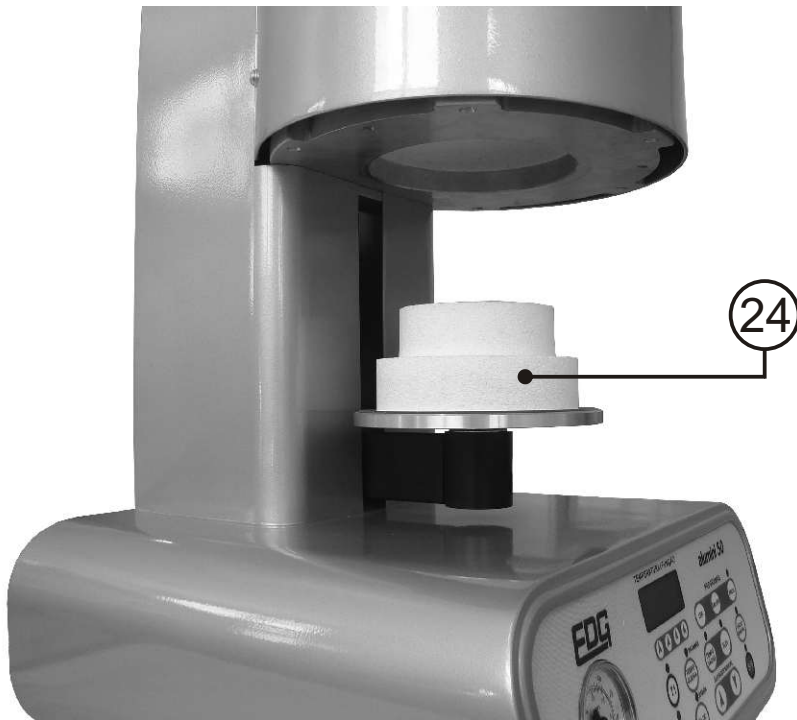
Pic. 3

When the professional puts the work on the burning tray the muffle is normally above 500ºC.

- Put the piece to be burned on the tray.

9 Burning

Now all the parameters are programmed and stored:

Await until the temperature reaches the programmed temperature for Ti.

Press the key Start/Stop (08) and the burning will start.

⚠ Note: if the muffle is under or above the programmed temperature for T1 the burning will not start.

- The muffle will be closed , the vacuum pump is activated, the temperature starts to increase after the vacuum reaches about 75% of the maximum value.
- After T2 is reached the burning time counting starts and when finished the vacuum is released and the message "Ar" (Air) is showed, the elevator goes down to its lower point and the burning is over.
- The message "Resfria" (cool) is showed on the display until the temperature reaches T1 again, being ready for a new burning.
- As the burning is being executed, leds will show the process operation.
- All the process parameters will be recorded in the memory. Equal and successive burnings will be executed without the necessity of new programs.

10 Fast cooling

Under certain cases, it is necessary to decrease quickly the T2 temperature for T1; to do so put the elevator about 2 centimeters upwards from the initial position using the key Manual sobe (manual up) (14) and then turn on the vacuum pump, Vácuo key (07).
Reached the temperature T1 return the elevator to the initial position, key (15).

11 Burning time visualization.

The time course can be visualized by pressing the burning key (11). The time will be showed on the display in decreasing mode. This option is useful for ceramics that needs burning time with and without vacuum and it is only necessary to turn off the vacuum in the chosen time.

12 Stand by position

After 4,5 minutes without operation your equipment enters the stand by position. The elevator goes up next to the closing keeping this way up to the next operation. This proceeding saves energy and avoids room heating.
To return to the initial position use the key Manual para baixo (manual down) (15).

13 Night routine

After 2 hours without operation the equipment enters the night routine automatically, closing the muffle and decreasing the temperature to 100°C and it can remain this way indefinitely avoiding the entrance of humidity in the muffle.
To leave this routine press the Start/Stop key (08).

14 Use timer

The Alumini 50 is equipped with a device that adds the hours of use.
From the moment that it is turned on the time of using is stored in an internal timer.
This device is very useful for the control of the muffle lifetime, energy waste, etc.
To access the timer:
With the equipment off keep pressed the key Ler (read) (04) pressed.
Then, turn on the equipment and wait for the initialization process.
The number indicated on the display is the number of operation hours.
Before leaving the factory, your equipment is tested exhaustively. Therefore, operation values from 1 to 10 are normal in new products.

15 Error messages

To avoid equipment damage two numbered messages are showed in the display.
Error 1 – adjusted temperature above the maximum allowed of 1.100ºC. To correct it wait the sign stops and correct the temperature.
Error 2 – Muffle temperature above the allowed 1.200ºC.
Turn off and turn on the equipment. If the error remains, turn off the equipment and contact the technical assistance.

⚠ **Warning:** The Alumini 50 is calibrated for instant temperature measurements. In the cooking with burning time, high heating speed and pieces of large dimensions, some settings in the temperature can be needed for determined types of ceramics.
For a better result it is suitable the use of bases with low thermal mass and inert alumine supporting pins of low thermal conductivity (isothermal pins).

Specification:
- Feeding 110 ou 220 volts. 50/60 Hz. Under order
- Maximum consumption 1.400 Watts.
- Fuse 20 amperes for 110 volts, 10 amperes 220 volts.
- Maximum temperature of operation 1.100ºC.

Notations

Notations

EDG

EQUIPAMENTOS

EDG Equipamentos e Controles
Ltda.
R. Eduardo Gobato,300
Centro Empresarial de Alta
Tecnologia C.E.A.T.
São Carlos, S.P. 13573-440
Brasil
55 16 33779600
edg@edg.com.br

www.edg.com.br