

Casting Machine  
**LC-CAST 600T**



USER MANUAL

# USER MANUAL

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## 1. INTRODUCTION

Thank you for having purchased the Casting Machine **LC-CAST 600T** which, we are sure will all meet all your needs and will satisfy your high demands.

This machine has been designed according to the requirements of latest industrial standards and we guarantee that you will use it many years as your closest assistant.

However, inappropriate use may damage the equipment and be harmful to personnel. Please observe the relevant safety instructions and read the Operating Instructions carefully.

We wish you pleasant and fruitful work with the **LC-CAST 600T**.

### SYMBOLS:



This symbol indicates that there is high dangerous tension under the bonnet which it is put on. Switch off the furnace before removing the marked cover.



This symbol indicates that the machine complies with the requirements of the Directives for Low Tension and Electromagnetic Compatibility as well as for the Standards harmonized with them.



This symbol means that people with pacemakers need to be careful when working with the unit.

## 2. SAFETY INSTRUCTIONS

### WARNING!

This device is Class A. When used in domestic environment it may cause radio interference. In this case, it may need the user to take appropriate measures.

The following instructions must be observed in order to avoid personnel injury or equipment failure.

### ATTENTION!

*BEFORE INSTALLING AND STARTING READ THIS INSTRUCTION!*

*ONLY PERSONNEL WHO ARE FULLY CONVERSANT WITH THIS MANUAL SHOULD WORK WITH THE MACHINE.*

- The centrifuge and the HF generator can be switched on only when the upper lid is closed.
- When during melting the upper lid is open, the high-frequency heating is interrupted.
- The upper lid is locked and it cannot be open in **ROTATION** mode.
- The apparatus cannot be set to melting unless there is water in the cooling system.
- The inductor must be lifted to upper position for melting only when the crucible is centred on it.
- The centrifuging process can start only when the inductor is in lower position.
- The rod for lifting of the inductor can be raised only if the power switch of the front panel is pressed.  
When the engine is started, the rod is locked in lower position.
- the device is not permitted to be run by an operator, who is not entirely introduced to these safety instructions;
- before switching on the plug into the network socket, you should check whether the electricity grid voltage meets the prescribed working voltage. In case of incompliance, seek the assistance of a specialist;
- it is not permitted in any case to modify the device;
- the notices and stickers must be kept in good condition so that they are easily readable; they should not be removed!
- the machine must not function in case of being damaged and in position to injure the staff or a third person;
- keep the power cable out of heat, oil and coarse objects; do not catch the device by the cable when you move it.
- switch off the furnace and pull out the plug of the feeder cable from the contact before each cleaning or upkeep.
- spare parts which are not specified by the manufacturer cannot be used!

### CAUTION!

*If the machine is used by such means not indicated by the manufacturer, the provided protection can get worse!*

### 3. DESCRIPTION OF THE UNIT

The machine for centrifugal casting **LC-CAST 600T** is designed for induction high-frequency casting of Co-Cr, Ni-Cr-Mo and precious alloys used in dentistry.

The melting is inductive and normally 30 g of metal are melted within 1 min.

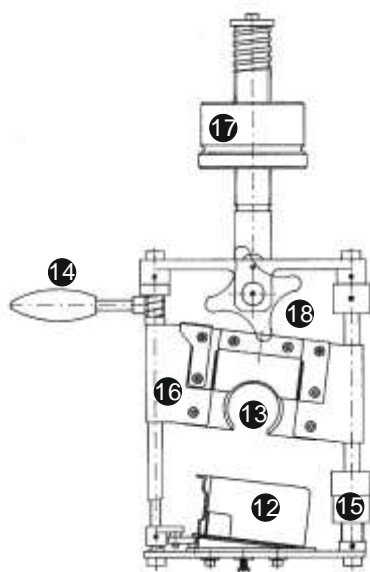
The induction coil is lifted and dropped by an electric motor. Cooling is autonomous.



#### ATTENTION!

**WHEN YOU MELT PRECIOUS METALS – GOLD OR SILVER – ALWAYS USE GRAPHITE INSERT!  
IF YOU DO NOT USE GRAPHITE INSERT, THE MACHINE CAN BE SERIOUSLY DAMAGED.**

- 1 Potentiometer for setting the initial strength of the casting;
- 2 **LIFT** button. It is used for moving the inductor up and down as well as for starting the casting process. It is used as STOP button also.
- 3 Front panel;
- 4 Handle of upper lid;
- 5 Watching window;



- 12 Bed of the muffle;
- 13 Stand of the crucible;
- 14 Regulating handle;
- 15 Stop limiter;
- 16 Carriage;
- 17 Counterweight;
- 18 Cross-shaped handle.

The temperature of the generator is monitoring by built-in sensor. In case of malfunction of the cooling system the process is interrupted automatically.

The status of the machine is indicated on the display.

#### 4. INSTALLATION AND INITIAL START-UP



- Carefully unpack the machine and located on the existing space.
- Set the casting machine on a stable basis. The height of the table that will be placed must be consistent with the height of the operator. It is recommended to be 45 - 55 cm.
- Make sure that the mains voltage is ~230VAC.
- Fit it on installation with a conductor 2,5mm<sup>2</sup> in thickness as it is recommended to be on a separate circle with fuse 20A.
- The main means of disconnecting the device from the mains plug are the power switch and circuit breaker. The device should not be placed in such a way that the means of disconnection (plug and circuit breaker) are difficult to access.
- The contact must be earthed reliably.
- Make sure that there is water in the container (3 liters).
- Connect the plug into the socket.

## 5. PRACTICAL USE

### 5.1. PRESETTING

To ensure the normal operation of the unit before each casting procedure balance of the arm must be made depending on the certain weight of the used muffle and the quantity of the metal needed for the casting. For this purpose you must keep the following steps:

- Move inductor in the down position by pressing the green button LIFT;
- Loosen the cross-shaped handle (18) until you feel that the arm can move freely;
- Put the muffle into the bed (12);
- Put the crucible into the stand (13).

**NOTE:** *When melting precious metals the usage of graphite insert is obligatory.*

- Put the necessary quantity of metal into the crucible;
- By means of the regulating handle (14) and the stop limiter (15) adjust the orifice of the crucible to match the pouring cone of the muffle but without touching it;
- Slide the carriage (16) to the position most close to the muffle;
- Move the counterweight (17) by rotating it until balance of the mechanism is achieved;
- The non-balance resulting from the shift of the molten metal away of the crucible to the muffle during the process of casting is compensated by rotation of the counterweight in direction opposite to the muffle.

**CAUTION!** *This adjustment described is essential for avoiding of the vibrations of the apparatus when casting.*

- Set the starting force spin (the starting point in the rotation) using potentiometer 1;
- Come into position of the crucible over the inductor. When the position is correct you will hear an interrupted sound. Lift up the inductor by pressing the button **LIFT**;
- Close the lid in order to start the melting.
- Watch the melting process through the window of the upper lid, and if the metal is ready for casting, press **LIFT**. At this point the inductor goes down and rotating mechanism starts turning;
- Casting ends after expiring the preset time or after pressing **LIFT**. During the casting the lid is locked.

## 5.2. MELTING



After completing the presets work continues in the following sequence:

- Turn on the unit. LED 8 (ready to work) will light up. Cooling pump will turn on for about 30 seconds and then stop.
- Open the top cover if it is closed. If the inductor is in the down position will light indicator (7).
- When the inductor is in the lower position rotate the centrifugal mechanism so that the crucible be over the inductor. Lift the inductor by pressing LIFT button, making sure the crucible falls in lifting inductor. This is achieved by rotation of the centrifugal arm and sliding the carriage (16).

As a result of this action will light indicator (6) and indicator (7) will go out.

- Open the top cover. The device will go on MELT mode. The red light HF (11) will light up, showing that the high-frequency generator works. Also the green indicator (10) will light up, indicating that the cooling system works.

If during the melting process the operator opens the top cover, the high-frequency generator will immediately turn off and the unit will switch into STANDBY mode.

If you leave the top cover closed, the machine will be in MELTING mode no more than 150 seconds, then stops as alarm interrupted with a beep and flashing LED (8) in red. This is done to protect the machine in case it was forgotten for a long time in MELTING mode. After opening the top cover the unit will go again on STANDBY mode.

Watch metal melting through the inspection window on the top cover.

## 5.3. CASTING

For the process of casting machine uses the principle of centrifugal casting. The casting is started at the time of melting by pressing the button **LIFT**.


The initial force of the acceleration can be changed by rotating knob 1 (selectable between positions 1 to 10, in position 1 the force is weakest, and position 10 is the most severe).

The time of casting is predetermined - 30 seconds, but the process, if necessary, may be terminated by pressing the LIFT button.

To ensure the safety of the machine during the molding, the top cover is locked and is unlocked after the centrifugal mechanism stops rotating.



## 6. DESCRIPTION OF ERRORS

When for any reason the normal operation of the apparatus is interrupted, this is indicated on the front panel by blinking of red LED  and the relevant sound warning.

Moreover, the blinking of this LED provides information for the problem occurred.

Please find below the description of the numbers of blinking and the relevant reasons for the interruption of the normal work.

<u>NUMBER OF BLINKINGS</u>	<u>REASON</u>
1	No pressure in the cooling system;
2	Communication error;
3	Error in the lift mechanism;
4	No feedback in the generator;
5	The generator doesn't find the appropriate frequency;
6	Time for melting more than 150 seconds;
7	Current overloading of the generator;
8	No voltage of the generator;
9	Other error in the generator;
10	Problem with the temperature sensor DS1822;
11	Temperature overloading;
12	Other undescribed error;
13	The cooling fan of Generator doesn't work;
14	Casting doesn't start ( no rotation );
15	Ambient temperature is below 10°C.

In order to pass on to mode *READY FOR WORK* press button **LIFT** or turn off the power supply and turn it on again.

## 7. IMPORTANT PRACTICAL INFORMATION

Use only VOP crucibles or similar. The type is FORNAX F.

Before perform a casting you could warm up the metal in the apparatus until it become red. This will reduce the melting time. Do not heat the metal in muffle furnace.

Avoid placing of the machine in the immediate vicinity of heat sources (radiators).

Avoid placing any objects on the apparatus body.

Clean the rest of metal carefully as you look out for metal particles not to fall into the brass pipes of the inductor.

The windings of the inductor should not come into contact.

Clean the isolating plates of the inductor only with a dry towel without using of water or any solvents.

Lifting and carrying the device is done by using special handles that are mounted on the side of the chassis. It can be carried by two people.

No carrying and transportation in another state except for vertical position is allowed!

Regularly (once a year) check the water in the tank as for this purpose you have to open the rear and the left lid.

## 8. TECHNICAL DATA

1. Electrical supply	~230 V, ±10%, 50/60Hz
2. Maximum power consumption	2600 W
3. Category of overvoltage	II
4. Minimum quantity of metal for melting	10 gr
5. Maximum quantity of metal for melting	70 gr
6. Material of the pot	Ceramic
7. Material of the pot for precious metals	Ceramic with graphite ingot
8. Time for melting of 30gr metal	max 60 s
9. Cooling	Autonomous, 3 l distilled water
10. Modes for melting	Auto / Manual
11. Torque adjustment	Manual
12. Inductor's movement	Automatic
13. Overall dimensions	570/630/570mm
14. Model Weight	73 kg
15. Working temperature	18°C - 30°C
16. Level of environment pollution	2
17. The device is designed for usage in normal dental premises up to 2000 m altitude above sea level.	
18. The maximum relative humidity of the air must be 80% for temperatures up to 31°C, decreasing lineally to 50% relative humidity for temperature 40°C.	

## 9. MAINTENANCE

Clean only with a dry or slightly moist cloth (no solvents!).

Change the safety locks with the announced values only, namely:

1A; slow (class T)

3,15A; slow (class T)

6,3A; slow (class T)

No repair activity by a service technician who is not authorized by the manufacturer is allowed!

If for some reason you have to remove the centrifugal mechanism, when you put it in place watch the sign on the axis to be visible.

If these signs are not seen and the crucible can't be centered, remove the centrifugal mechanism from the axle and install it in the other direction.

## 10. SCOPE OF DELIVERY

Casting machine <b>LC-CAST 600T</b>	1 pc
Handles	4 pcs
Spare fuses	
1A; slow (class T)	1 pc
3,15A; slow (class T)	1 pc
6,3A; slow (class T)	1 pc
User Manual	1 pc

**PRODUCER:** "VOP" Ltd.  
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 Botevgrad, Bulgaria  
 Tel. 0723 66303  
 Tel. 0723 66304

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2140 Botevgrad  
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## LC-CAST 600T

### WARRANTY SHEET

“VOP” Ltd. warrants the consumer for proper operation of all parts and materials in this product during a period of **12 months** since the day of its purchase.

During this period VOP Ltd. or its authorized persons will repair on its own account all defects which have occur during the normal operation of the machine.

Defects caused by improper transportation, storage and manipulation of the product or due to malfunction of the electrical mains supply are repaired on the account of the customer.

This warranty shall become void if attempts are made to repair the product by persons not authorized by the producer.

Serial Number \_\_\_\_\_

Invoice number \_\_\_\_\_

Date \_\_\_\_\_



MANAGER of “VOP” Ltd

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CLIENT:

Serial Number \_\_\_\_\_

Invoice number \_\_\_\_\_

Date \_\_\_\_\_

Voucher Manufacturer