

# Electric Furnace Calibration Procedure

Memorial University Technical Services  
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## 1.0 Oven Specification

- Electric Furnace
- Total range of the oven (0 - 800°C)
- Used Range of the oven (520 – 800°C)

## 2.0 Standards and Equipment

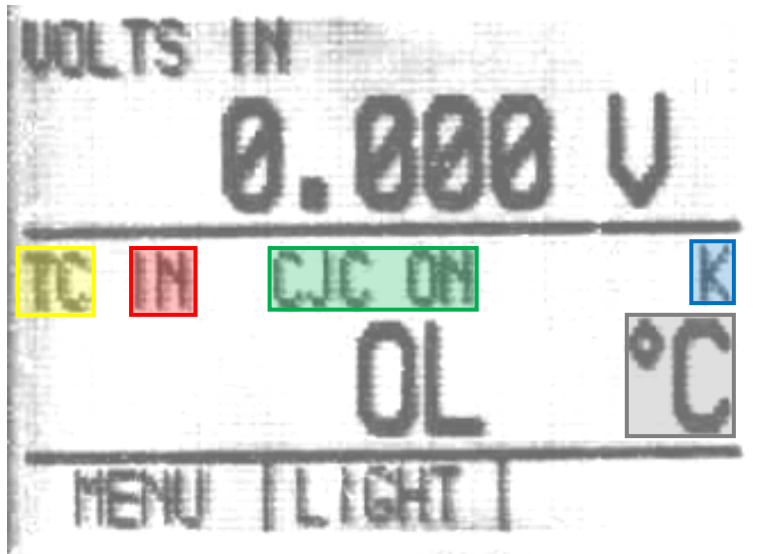
The following equipment is required:

- A NIST certified temperature calibration device
- (Omega CL310 used in this case)
- K Type Thermocouple

*All equipment used must have a valid calibration certificate*

## 3.0 Setting up the thermocouple on the CL310

- Record the ambient temperature. If the temperature is  $<18^{\circ}\text{C}$  or  $>24^{\circ}\text{C}$ , see the Division Manager for further instructions.
- Plug in the K type thermocouple wire in the slot labeled TC on the device
- Configure the thermocouple and the CL310 to measure temperature by setting up the lower display as shown in the picture below. Press the buttons in the following sequence
  - Power Button, Press F1,
  - Press F2 to edit **first option**, keep pressing F1 till it becomes 'TC',
  - Press F2 to edit **second option**, keep pressing F1 till it becomes 'IN',
  - Press F2 to edit **third option**, keep pressing F1 till it becomes 'CJC ON',
  - Press F2 to edit **fourth option**, keep pressing F1 till it becomes 'K',
  - Press F2 to edit **fifth option**, keep pressing F1 till it becomes '°C', press F3.



## 4.0 Calibration Procedure

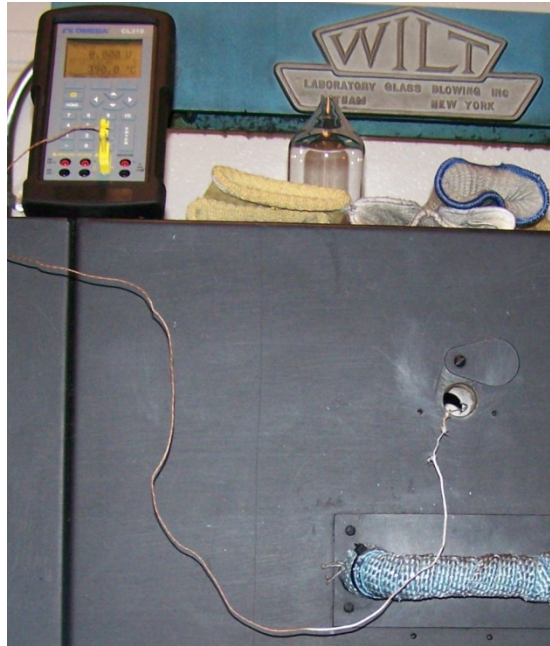
- Preheat oven to 710°C (will take approximately 3hours)
- Place the thermocouple inside the oven as shown below in the similar Wilt Model 125, place the thermocouple inside the oven while it is being preheated.



Wilt: Model 125

- Place the thermo couple in the same place inside the oven every time; also make sure the sensor at the tip of the thermocouple doesn't touch the walls of the oven, or the base.

- For an accurate reading ensure that the sensor on the tip of the thermocouple does not touch the walls of the oven. This can be achieved by gently bending the thermocouple wire appropriately. One could also use a stand or a support so that the thermocouple wire stays fixed as shown in the picture below.
- Also make sure that the tip of the thermocouple and the thermocouple inside the oven are relatively close to each other. (Also shown in the picture below).



Thermocouple connected to CL-310

- Once everything is setup as described above, then is the time to take the readings. The reading for the oven should be taken in at least 3 temperature ranges within the operable range of the oven, and in each range at least 5 readings need to be taken. (See the sample record sheet for more information.)
- Record your readings on a calibration record sheet “TS-0084 Electric Furnace Calibration Record Sheet”.