

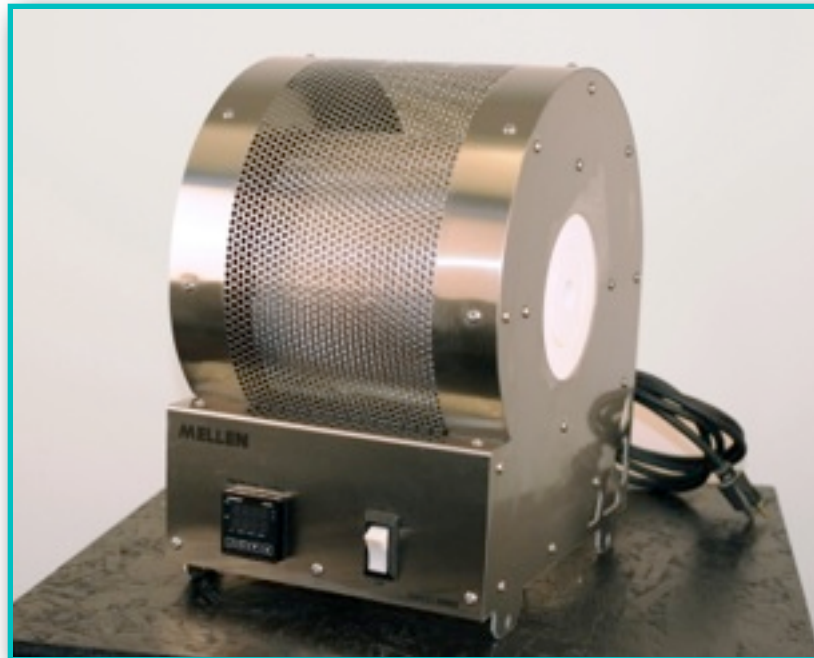
The MELLEN Company, Inc. www.MELLENCompany.com



MELLEN NACCI Furnace System MA # 100109

Congratulations on your purchase of a MELLEN NACCI Furnace Furnace System. In order to assist in your scientific procedures, please consult this manual prior to unpacking and installation.

If needed, contact technical support at the MELLEN Company:
40 Chenell Drive, Concord, NH 03301
phone 603-228-2929 fax 603-228-5727
e-mail info@mellencompany.com) with additional questions.



The NACCI Series Tube Furnace has a maximum ID of 3 inches with tube adaptors for 1" and 2" tubes. The furnace comes in heated lengths of 6", 12", 18", 24", 30" and 36".

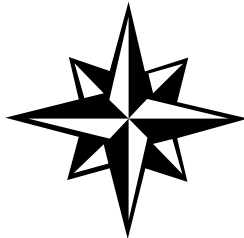
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OMEGA Control Manual -

<http://www.omega.com/manuals/manualpdf/M4437A.pdf>.

Safety Data Sheets.....appendix (of printed manual)



Furnace Information

All MELLEN furnaces are labeled with an information sticker allowing the user to access necessary information concerning the furnace.

The serial number for the MELLEN furnace is located on a MELLEN furnace plate primarily located in the lower left hand corner in the rear of the furnace. Attached to this plate, you will conveniently find the Furnace Model Number, Serial Number as well as contact data for the MELLEN Company.

The furnace plate also contains wattage and voltage information, zone configuration and any special adaptations on this furnace.

Important Safety Information

- Never place any part of the body in the furnace or touch the furnace while activated or while cooling.
- Use proper ventilation at all times, so not inhale fumes from a bake-out procedure or a run. Do not approach the furnace without a mask.
- Never have food or drink near the furnace.
- Apply proper voltage to the heaters.
- Provide at least ½" clearance between furnace surface and any conductive parts.
- Take necessary precautions when handling high temperature materials.
- Do NOT exceed the recommended temperature ratings.
- Do not modify or drill holes to the heaters without consulting MELLEN (603-228-2929).
- Do NOT apply voltages greater than 250 volts to the furnace.
- Do NOT support the furnace by any electrical parts.
- Do NOT bury any electrical interconnections between the furnace and any equipment.
- Furnace should be level and free from vibrations.
- Furnace should be installed and grounded in accordance with national and local codes.
- Avoid contact between furnace and any metallic object.
- Always wash hands after coming in contact with furnace and components.
- Do not place any combustible components inside the furnace.
- Do not hold furnace by the knobs used to open and close the furnace.

Unpacking Instructions

Remove furnace from box or crate.

Inspect furnace for any damage. Report any damage to the delivering carrier immediately to insure a proper claim.

Remove any packaging material from the bore, paying attention not to damage the insulation.

Do not drop box or furnace.



TUBE ADAPTORS



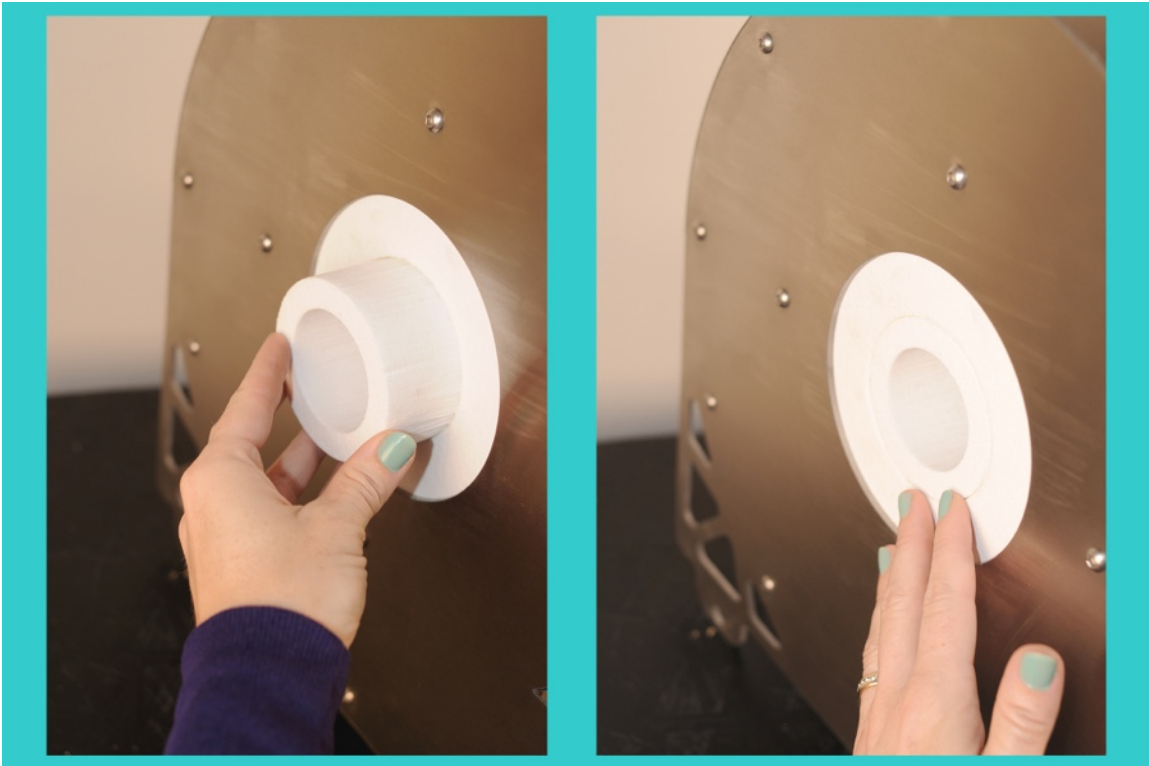
The NACCI Furnace is supplied with two sets of Tube Adaptors that when inserted into the furnace, allow the standard 3 inch bore to use 2 inch or 1 inch tubes.

Custom adaptors are available upon request.

Simply insert matching set into cool furnace until adaptor is flush with furnace bore.

Remove adaptors when furnace is cool.

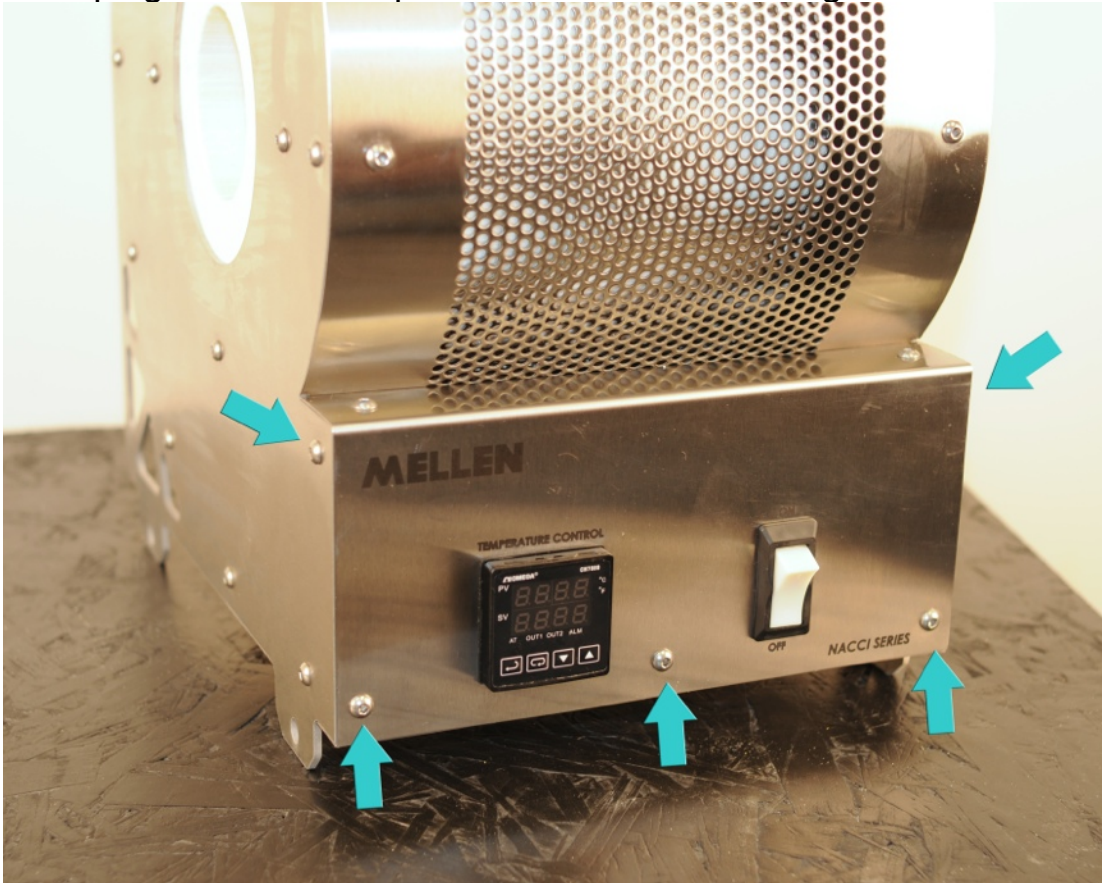
Do not attempt to remove adaptors from hot or warm furnace



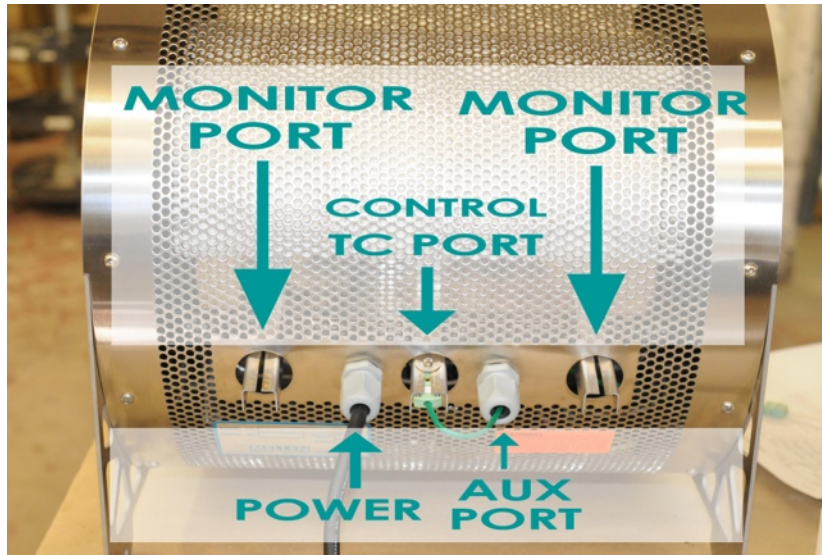
OPTIONS

The NACCI has communication capability and alarm relay that can be routed to customer requirements.

1. Unplug furnace from power source before wiring.

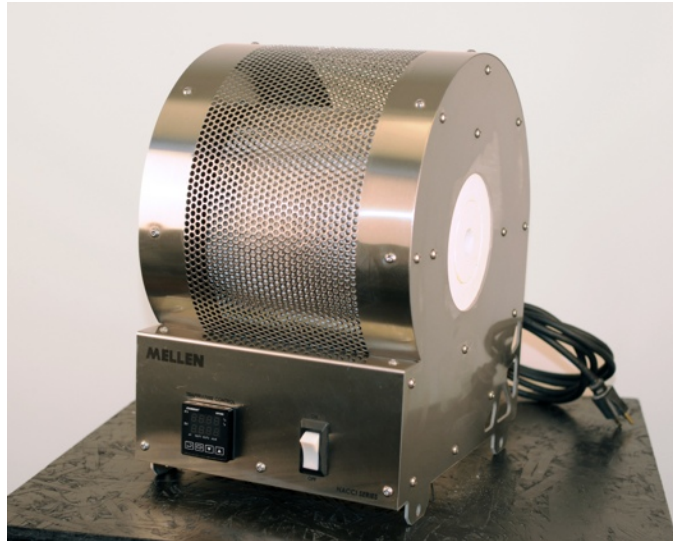


2. Remove 5 screws and faceplate on front of furnace using and Allen Head Wrench.
3. Run wire through furnace in the AUX port located in the back of the furnace, the same port where TC wire is located. Simply unscrew the cap on the port and insert communications wire.

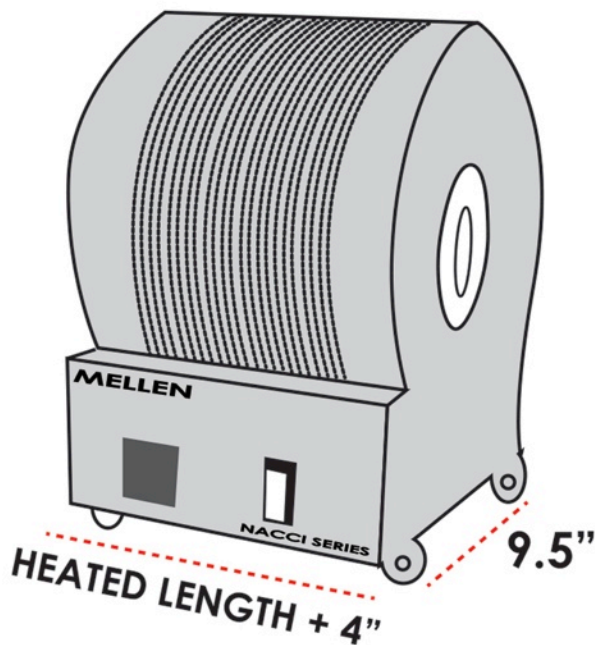


4. Run wire from the AUX port to the instrument in the front of the furnace per OMEGA Controller Instructions.
5. Replace front plate on furnace.

Mounting Unit



The NACCI can be operated by setting it on a desk or table. It also has places in the feet for a mounting assembly.

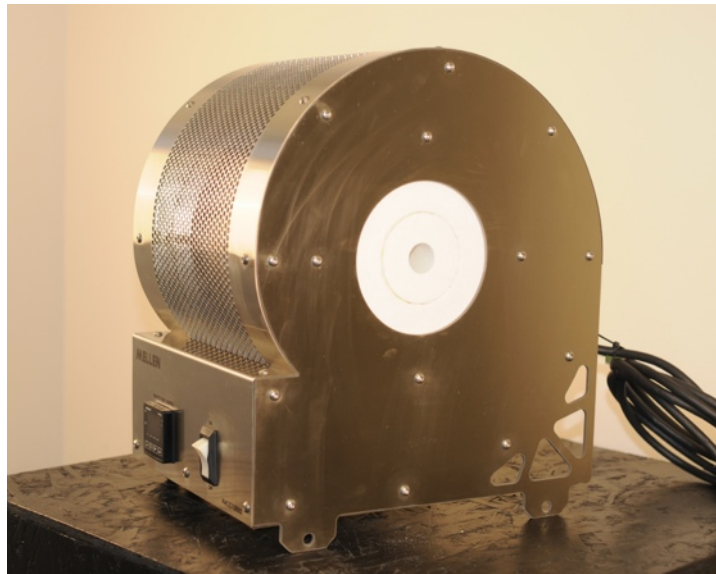


There are 3/8" holes located on all four feet of the furnace. The holes are 9.5" apart from front to back.

Initial Run and Bake-Out Instructions

The furnace contains carefully selected insulation to permit the best possible operation. These materials, inherently contain moisture that must be slowly and completely removed before furnace utilization. During this process, a small quantity of smoke and vapors from the binders will be emitted. The smoke will have a bad odor, so provide adequate and proper ventilation.

Be certain furnace bore is free of any debris or packing materials. Do not tilt the bore during the Initial Bake Out Procedure.



Plug both furnace ends with 1" Tube Adaptors (as shown on page 6). Slide the TUBE ADAPTORS into the ends of the furnace until they are flush with the bore.

Follow this heating schedule for Initial Bake Out Procedure.

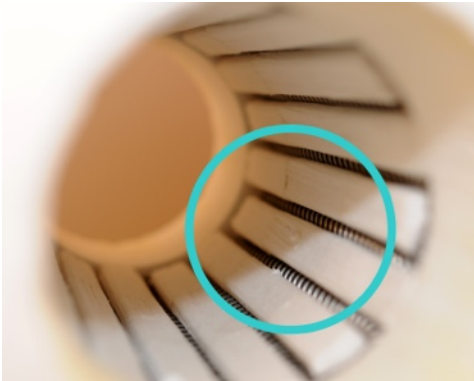
1. Ramp furnace to 200°C and hold at temperature for 30 minutes.
2. Ramp furnace to 600°C and hold for 45 minutes
3. Ramp furnace to 1000°C and hold for 30 minutes.
4. Ramp furnace to 50°C above expected operating temperature **without exceeding 1250°C, (the furnace's maximum operating temperature)** and hold for 30 minutes.
5. Allow furnace to cool.
6. Remove tube adaptors if desired.

Thermocouple

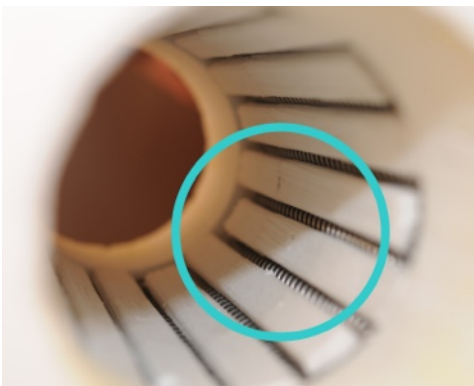
Each NACCI Furnace is shipped with a Type S Thermocouple. The thermocouple (TC) is used to measure temperature for your system in the furnace. Most TC's last approximately one year with normal use. After that time, TC's commonly need replacement. In this situation contact MELLENN (603-228-2929) with your part number for TC replacement.

TC's should be handled with care. The ceramics are fragile and thus can be broken easily. A broken ceramic can lead to broken or twisted wires which may cause a second junction to be formed resulting in incorrect temperature readings.

Exposing TCs to arsenic or any other corrosive material may contaminate the TC. The TC should be cleaned or replaced if the TC appears to be corroded or attacked in any way.



To install a TC, insert TC into the furnace from the back of the furnace. To properly place the TC, slide it into the bore so that you can see the metal bead as shown in the photo.



After you see the TC in the bore, slide it back just until the TC is no longer visible. Tighten the screw, using a Phillips Head Screwdriver, to hold the TC in place.

Basic Operation

The furnace should be brought to temperature as slowly as is practical for your applications. During prolonged periods of inactivity, the furnace should be shut off or idled at approximately 500°C.

WARNING: MELLEN elements are electrically live. Avoid contact with any metallic object. When using metallic retorts, provide a minimum clearance of ½ inch to allow for expansion and to prevent electrical arcing.

WARNING: The furnace should be installed and grounded in accordance with national and local codes

QUICK START GUIDE:

For a detailed control guide, read the OMEGA controller manual.

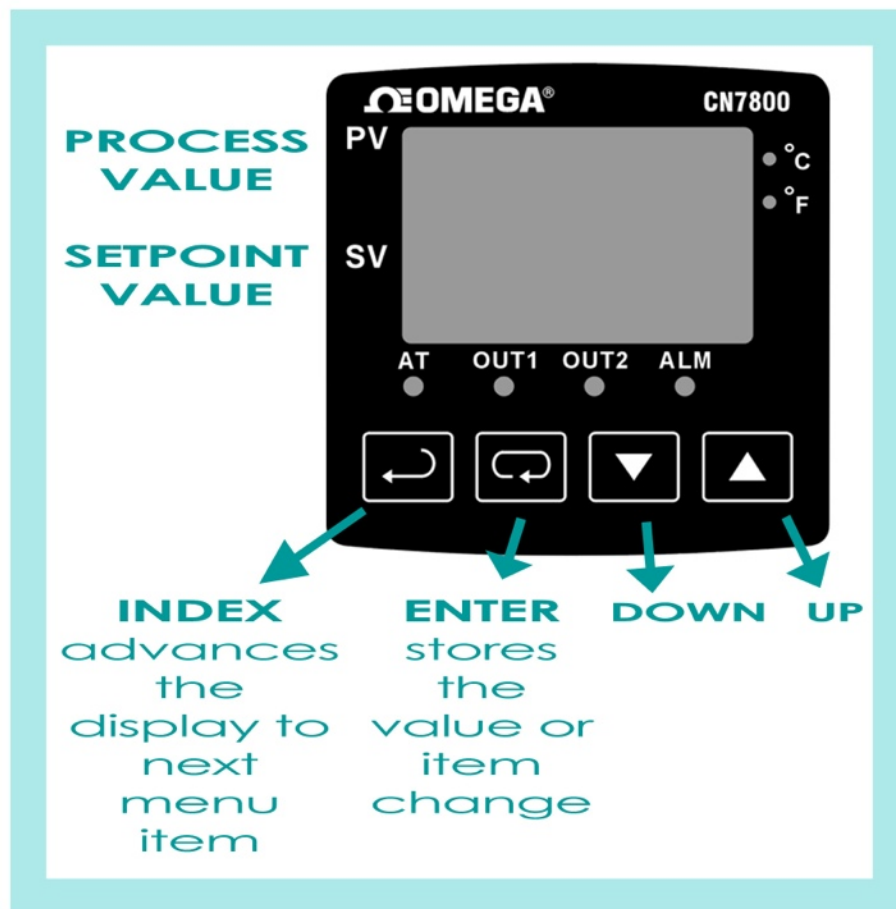


Turn furnace on by pushing POWER switch. Follow OMEGA manual for control information or follow QUICK START Tips on the next page.

QUICK START

The following instructions are intended for a quick start of the furnace. Refer to the OMEGA Control manual for more instructions

<http://www.omega.com/manuals/manualpdf/M4437A.pdf>.



1. Plug furnace power cord into power source. Turn on POWER SWITCH located on front of furnace.
2. Set SETPOINT VALUE - push the UP ARROW located on the controller until the desired SETPOINT VALUE. The numbers will be in degrees Celsius. Use the up and down arrows to achieve the desired temperature setting. (Holding the buttons down will scroll through the numbers at a fast rate.)
3. When desired SETPOINT VALUE is found push the INDEX button. This will cause the furnace to start to ramp to temperature.

BEYOND QUICK START

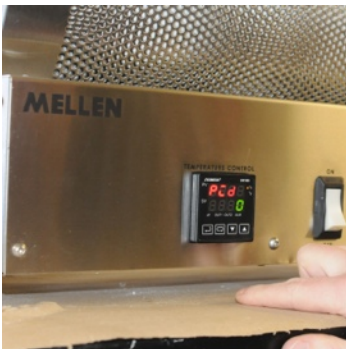
The controllers are capable of multiple segment recipes. Consult the OMEGA manual for information on creating recipes.

AUTO-TUNE

If the temperature is cycling, the control is equipped with an AUTO-TUNE to stabilize the temperature. Consult the OMEGA manual for additional information beyond what is given below.



1. Push the INDEX button once. The screen will show At in red and oFF in green.



2. Push the ENTER button. The screen will show Pid0 in red and 0 in green.



3. Push the UP arrow until the screen reads Pid 4 in red and Auto in green, flashing.

4. Push the INDEX button once to solidify the AUTO-TUNE setting. The AUTO in green will stop flashing.

The AUTO-TUNE will now be set with this temperature until it is changed by the user.

Furnace Maintenance

Element Replacement is done at MELLEN. Contact Mellen for pricing and availability.

TC Replacement - contact MELLEN with part number.