How to Calibrate MTI Tube Furnace

Temperature reading on the controller's PV screen (T1) may different from the actual temperature at furnace tube center (T2) due to different thermal couple's location and various specifications (e.g. TC type, diameter and response time). In order to achieve accurate temperature measurement inside the tube during heating, you shall calibrate the furnace during the **steady state** (Normally, the steady state can be reached around 30 minutes) and then properly set the temperature offset value (A function relates to "SC"/"Cor" parameter in the control unit). Please follow the steps below:

1. Please firstly insert porous ceramic blocks (included in the standard package) from two ends of tube before heating.
2. Please drill a hole on the ceramic block.
3. Please use the thermocouple & thermometer with **NIST certificate** and **similar response time** to do the calibration. Insert the external thermocouple from one side through the ceramic block and make sure the thermocouple reach the center of furnace tube.
4. Connect the thermo-couple to a precise thermometer (see www.mtixtl.com -> Furnace Accessories -> Thermal Couples (K, S, B type)   ).
5. Follow the general heating procedure described in particular Operation Manual to heat furnace to desired working temperature and then hold for 1 hour until the **steady state** can be reached.
6. Record temperature difference (T) between PV value (T1) and external thermometer's reading (T2) as T=T2-T1.
    (Note: Always, T2 is minuend and T1 is subtrahend and T may be positive or negative.)
7. Adjust the temperature offset parameter "SC"/"Cor" according to the temperature difference (T).
    (Note: Please refer to a particular operation manual for temperature offset parameter setting)

External thermocouple for calibration

Built in thermocouple in furnace

Refractory ceramic blocks at two ends (included).

MTI GSL-1100X Multi-position Tube Furnace (**GSL-1100X-110V**)
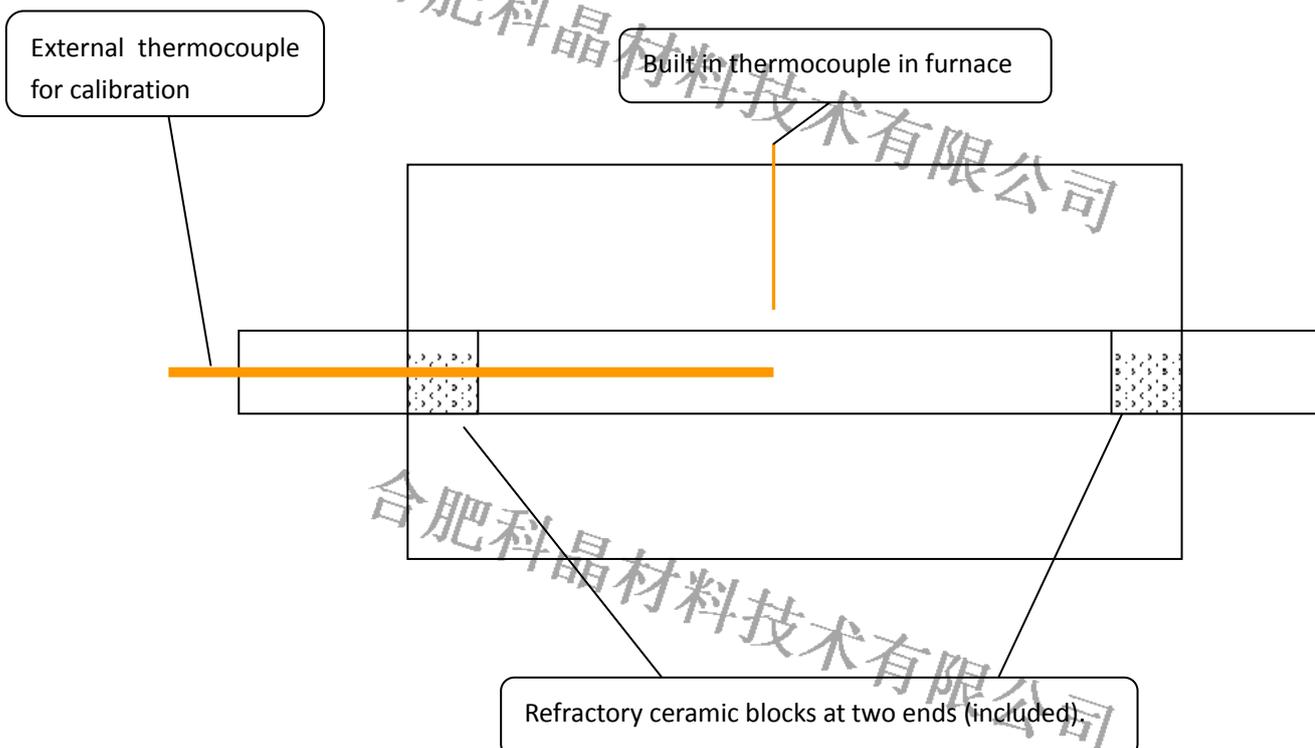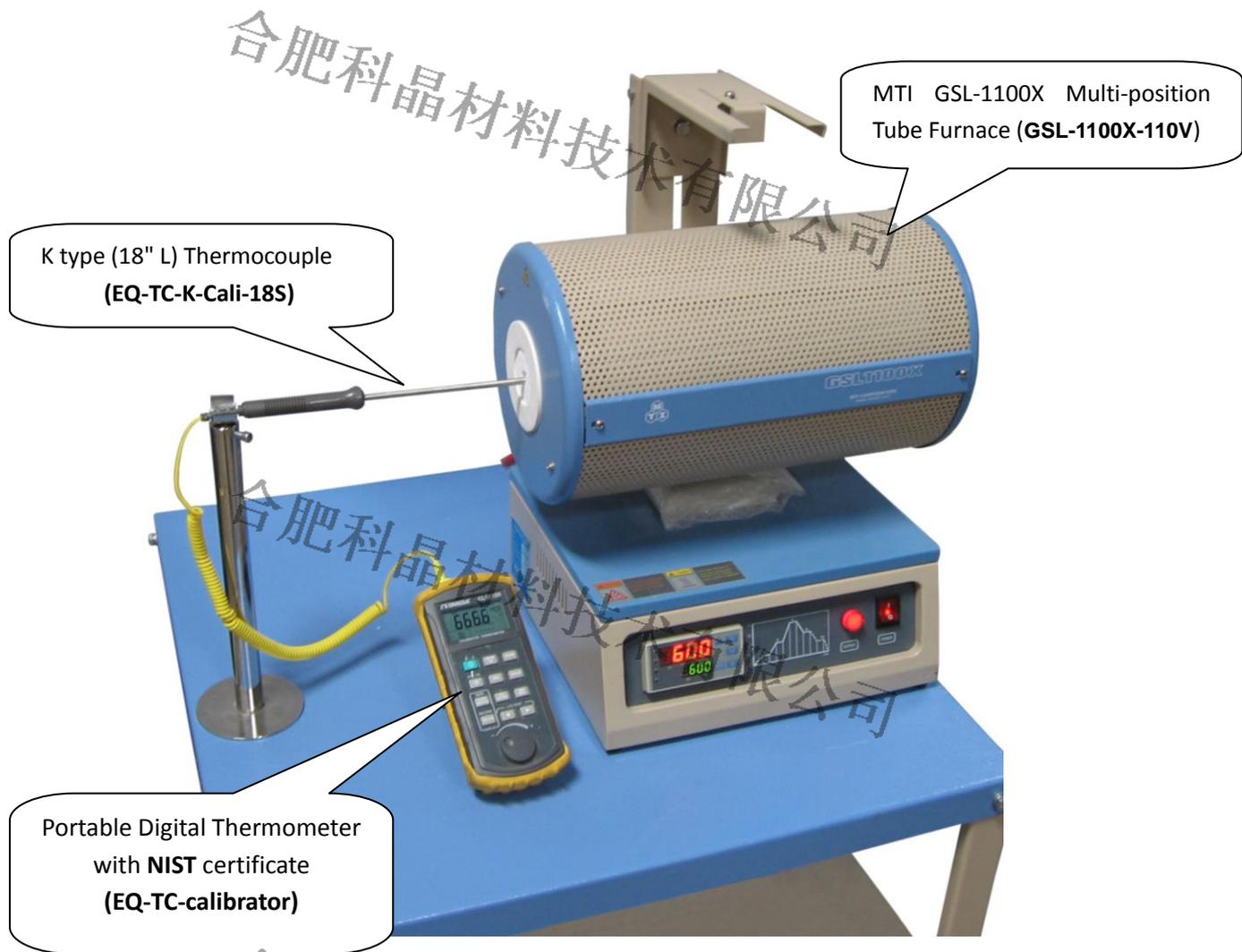
K type (18" L) Thermocouple **(EQ-TC-K-Cali-18S)**

Portable Digital Thermometer with **NIST** certificate **(EQ-TC-calibrator)**

Typical calibration kits for MTI Tube Furnaces