

SUBJECT FIRING PARTS IN VACUUM - In
Nichrome Tube Heated In Gas Furnace

SUPERSEDED DATE

Supersedes former 34-10-30

Parts which require vacuum firing at temperatures up to 850°C (max.) may be fired in a gas heated nichrome tube vacuum furnace.

1. EQUIPMENT

→ Model No. 780-WW Gas Heated *Nichrome Tube Vacuum Furnace.

2. PROCEDURE

A. Starting Furnace

As referred to in the following paragraphs, valves numbered 3 and 5 are air valves, and valves numbered 2, 4 and 6 are gas valves. Since the furnace has four burners, four sets of valves are numbered 5 and 6.

1. Be sure that valves numbered 4 and 6 are closed.
2. Open valve 3 and valve 5 if not already open. Turn main and control switches on control panel to "on" position and see that electrically operated air valve is in "open" position. The valve is open when one mercury column is 1 3/8" higher than the other. Allow air to flow for about 10 minutes to disburse any gas which may have accumulated in oven before turning on gas.
3. Open valves 2 and 4 on main gas line.
4. Open pilot valve and light pilot. Adjust valve so that flame is about 6" long. Insert pilot in lighting hole opposite first burner to be lighted and place so the flame is directly below opening of burner. Be sure that air blowing out of burner opening does not extinguish the pilot flame.
5. Open wide valve 6 of burner being lit and be certain it is burning properly before proceeding to the next. Then light each of others in turn and in same manner. If for any reason the burner does not light promptly, close valve 6 to prevent flooding the furnace with gas.
6. Set control to desired temperature.

B. Operating Pump

1. Load parts into round bottom boats about 10" long x 3 7/8" wide x 1 3/4" deep (overall dimen.) Boats may be completely filled with parts so long as parts are not damaged as a result of such loading. Place 2 loaded boats end-to-end and centrally into nichrome tube.
2. Close breech of tube and apply vacuum by means of Kinney pump.
3. Operate vacuum pump until pressure becomes 1 micron or less. (The portable McLeod gauge, on base equipped with casters, is used to check vacuum as often as feasible.)

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2. PROCEDURE (Cont'd)

B. Operating Pump (Cont'd)

4. Open water valve wide to permit water to circulate around external portion of tube.

** 5. Operate pumps 10-15 minutes before inserting tube into furnace which is set at desired temperature. Continue pumping and heating as schedule requires. Tube pressure must reach 0.5 microns or less before tube is removed but parts may be fired as long as schedule requires.

** 6. Special Instructions for Handling Cathode-Ray Tube Micas after Firing.

- Use micas within 8 hours or store in vacuum desiccator.
- Refire unused micas after standing more than 8 hr. in the air (unless heated carrier), or more than 2 days in vacuum desiccator storage.
- If micas are handled use clean, dry gloves.

C. Closing Down Furnace

- Remove loaded nichrome tube from furnace and allow pumps to operate for 1 hour while parts and tube are cooled by air blast from blower or fan.
- Close water valve after tube has cooled for 30 minutes.
- When cool, shut off vacuum pumps and loosen pinch clamp on rubber hose attached to end plate of nichrome tube.
- Loosen retaining screw holding end-plate to nichrome tube and remove boats.
- Close down valves 6 in turn.
- Close valves 4 and 2 in order.
- Place switches on control panel in "off" position.

STANDARDIZING SECTION
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