LA-306 Quick Startup Guide

Figure 1-1 LA-306 Control Console

Prepare furnace

a. Verify white Main Power light is ON. Verify EMO switches are closed (including safety switch inside control console enclosure).

b. Make sure all Energize Lamps switches are properly ON or OFF per process requirements (Fig 1-2).

c. Press green CONTROLS ON button (Fig 1-3) to enable the control system. Belt & fans will start. Source process gas solenoid valve will open.

Set flowmeters

a. Verify process gas source pressure is 65-75 psi.

b. Verify gas flow at each flowmeter meets profile requirements. Adjust individual flowmeters to suit.

Set temperature

Verify or adjust zone temperature settings for the profile you are running. To adjust each controller:

a. Press Up or Down button until green SV displays correct setpoint temperature (Fig 1-4).

b. Press Set button.

Verify or adjust belt speed setpoint

a. To adjust, press Enter (E) button next to Belt Speed display (Fig 1-5) to adjust the leftmost digit.

b. Press UP or DOWN arrow until desired value shows.

c. Press E to lock in first digit and move to the next digit. Pressing E after rightmost digit is set returns speed controller to operating mode.

d. Let the belt speed settle 2-3 minutes before pressing Lamps ON button.

Start furnace lamps

a. Press green Lamps ON button.

b. Wait 30 minutes after green Status Ready lamp is lit.

c. Place product on belt.

Note: For best results, after Ready light turns ON allow furnace to run for 30-45 minutes at process temperatures before inserting product. Start each production run with two dummy product carriers. Closely follow with product carriers 1/2” to 3/4“apart on belt.

Figure 1-2 Energize Lamps

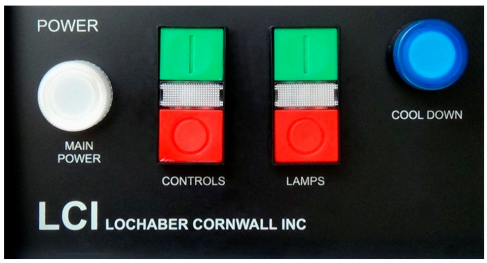

Figure 1-3 Controls and Lamps buttons

Figure 1-4 Temperature controller

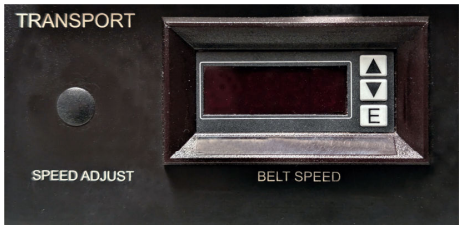

Figure 1-5 Speed Adjust

LA-306 Shutdown

a. Press COOL DOWN button (fig 1-3). Lamps shut off immediately. Controls stay on, belt and fans keep running. Process gas valve stays open.

b. Furnace belt and fans will operate until control enclosure reaches below 80°C. Then Process Gas valve closes and fans, belt and controls shut off.

Figure 1-6 Status Ready

LA-306 Flowmeter Notes

SEALS. For furnaces equipped with a SEALS flowmeter, to prevent damage to the element seals and avoid premature lamp failure:

a. When operating at 400°C or below, set the SEALS flowmeter to at least 12 L/min.

b. As a guide, when operating above 400°C, increase flow a minimum of 2.5 L/min for each 100°C the furnace is operated above 400°C. For example, for 800°C operation adjust SEALS to 22 L/m.

COOLING. To prevent damage to the CACT aluminum heat exchanger:

a. When operating at 200°C or below, set the COOLING to suit process parts cooling requirements.

b. When operating above 200°C, set COOLING to a minimum of 8 L/m (for 200°C in Zone 3) plus 2.5 L/min per 100°C above 200°C to protect CACT, or higher to suit process parts cooling requirements. For example, at 800°C in Zone 3 set COOLING to 23 L/min.

NITROGEN FIRING. When firing in nitrogen, make sure to allow adequate time for furnace to purge oxygen from internals.

a. If furnace is just being started, allow at least 30 minutes after green Ready lamp is lit.

b. If furnace has been operating on nitrogen, you can start processing almost immediately after temperatures have settled and green Ready lamp is lit.

c. If furnace has been operating on CDA, allow at least 30 minutes after switching to nitrogen and green Ready lamp is lit.

Note: To further reduce oxygen concentrations in furnace, increase gas flow to Zone 1 and Zone 2-3 rather than increasing flow to baffles. Also decreasing flow slightly to Stack flowmeter can often lower O_2 concentrations in the chamber zones.

LA-306 Lamp Check

During startup from a cold start, all enabled red TEST LED's should light. To check lamps:

a. From a cool start, press green CONTROLS button.

b. Turn ON the top and bottom ENERGIZE LAMPS switches (figure 1-2) for the Zone you are testing. Press green LAMPS ON button.

c. All LED's for selected lamps should light during initial startup.

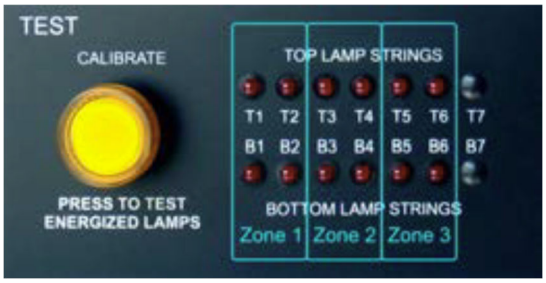

Figure 1-7 Standard Zone Lamp Strings

d. Repeat steps b & c. above for each set of lamps to be tested. Any LED's that do not light at all indicate a failure of a lamp string. Consult manual or TEC-251 to further troubleshoot.