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INTRODUCTION: Completion of all the steps contained in this guide will verify that the Tjernlund Specified System is properly interlocked and that the venting system is properly balanced. Follow the directions carefully; step by step completion ensures thoroughness and allows Tjernlund to provide better support if difficulties occur. This guide is normally completed in 15 minutes.

TJERNLUND SPECIFIED SYSTEMS

Interlock and Baffle Balancing Guide

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THIS GUIDE THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, CARBON MONOXIDE POISONING, EXPLOSION, OR PERSONAL INJURY OR PROPERTY DAMAGE.

**DO NOT DESTROY. PLEASE READ CAREFULLY AND
KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.**

GENERAL INTERLOCK CONFIRMATION

Determine if each heater has an individual connection to a dedicated appliance interlock terminal block either directly on the CPC-3 or to an EXP-4E.

If **each heater IS individually connected**, continue to Section A1 (below).

If **each heater IS NOT individually connected**:

Continue to Section A2 (below) if **ALL heaters are interlocked to the CPC-3 through a Staging Control**.

Continue to the Section A1 (below) if **SOME heaters are interlocked to the CPC-3 through a Staging Control and SOME are directly interlocked to the CPC-3** and complete these instructions before then **also completing the instructions** for Section A2 (below) **for those heaters interlocked to the CPC-3 through a Staging Control**.

A1. Confirmation for: Individually Interlocked Heaters

Identify any appliance interlock terminal blocks with 1 or 2 leads connected. This is incorrect; refer to wiring diagram to properly wire your system.

Identify any terminal blocks with 4 leads connected to them. ****Pull the wire jumper if 4 leads are connected.** Repeat for each terminal block with 4 leads connected.

Confirmation of Correct Voltage

Identify all terminal blocks with wires connected to the combination of either the "A" and "B" terminal positions or the combination of the "1" and "2" terminal positions.

If **leads are connected to the "A" and "B"** terminal positions, verify that the **red jumper tab is placed over the "Dry"** position pins.

If **leads are connected to the "1" and "2"** terminal positions, verify that the **red jumper tab is placed on the position matching the burner circuit voltage with which the "1" and "2" terminal positions are interfaced**.

NOTE

If this voltage is unknown, post a call for heat and use a multimeter to check the voltage associated with burner circuit and move the red jumper tab to the position corresponding to that voltage.

Position 1 should be positive, Position 2 should be negative.

If no voltage, refer to the wiring diagram to verify proper wiring or determine if interfaced heater is not posting a call for heat.

A2. Confirmation for: Staging Control

The CPC-3 stages the firing of burners when multiple heaters call for heat at the same time. This staging prevents nuisance under-draft faults by allowing the system set-point to be reached prior to another burner firing. Without this feature the CPC-3 may fault if successive activation of heaters never allows the pressure set point to be maintained within a 90 second time frame. If your application has a single interface and interlock signal controlling multiple heaters you must program a minimum 1 minute delay between when heaters are activated into the sequencer or Staging Control.

Verify that the terminal block connecting the Staging Control to the CPC-3 has 4 wires connected.

If less than 4 wires; refer to the wiring diagram to verify proper wiring.

B. Heater Staging Process: Heaters ON Test

- (1) Hold the “Save Setting” button for 5 seconds. “Key Pad Open” will appear on the bottom of the CPC-3 Display.
- (2) Press the “Options” button once.
- (3) Press the the “Increase” button 3 times. “Set Stages” will appear on the bottom of the CPC-3 Display.
- (4) Press the “Enter” button once. “Set Stages All On” will appear on the bottom of the CPC-3 Display.
- (5) Press “Save Setting” button once. “Set States All Off” will appear on the bottom of the CPC-3 Display.
- (6) Post a call for heat for each heater connected to the system.
- (7) Verify that 1 call light for each heater connected to the CPC-3 appears, unless you are interlocking a building mangagement system which MAY light only 1 light in total for all the heaters it controls.

NOTE

Refer to the wiring diagram to verify proper wiring if the number of LEDS lit:

- Does not match the number of heaters connected to the CPC-3
or
- Is something other than 1 if interlocked with all heaters
or
- Does not match the number of individually interlocked appliances for a Staging Control

- (8) Remove call for heat.
- (9) Press “Save Setting” button once. “Set Stages On” will appear on the bottom of the CPC-3 Display.
- (10) Press “Options” button once. “Keypad Open” will appear on the bottom of the CPC-3 Display.
- (11) Press “Enter” button once. “Lock Out Keypad” will appear on the bottom of the CPC-3 Display.
- (12) Press “Save Setting” button once. “Keypad Locked” will appear on the bottom of the CPC-3 Display.

NOTE

If this system is for a Draft or Sealed Combustion Air application, continue to Section C (below).

If this system is for an Open Air Combustion Air application, continue to Section D on page 4.

C. Pre-Balancing (For Draft and Sealed Combustion Air Applications Only)

NOTE

This section assumes that you are using the Auto-Draft for either Draft or Sealed Combustion Air applications. It also assumes that balancing baffles are installed for each heater. **Go to the section entitled “Heater Staging Process: Heater Off Test” for Open Air Combustion Air applications or if balancing baffles are not installed.**

NOTE

If barometric dampers are installed verify that they are canted “open” based on the heater manufacturer’s specifications or at least 1/4 inch.

If a draft hood is present in the system confirm that a slight negative pressure exists across the entire draft hood intake.

Verify that the CPC-3 is set for the correct "Operation Mode" and "Set Point".

For **Draft** applications, use the **top line** of the CPC-3 display to verify that the **"Operation Mode" indicates "A"** on the CPC-3 Display and the **"Set Point" is at "-0.15."**

For **Sealed Combustion Air** applications, use the **second from the top line** of the CPC-3 display to verify that the **"Operations Mode" indicates "A"** on the CPC-3 Display and the **"Set Point" is at "0.00."**

For **Draft and Combustion Air** applications, **verify the corresponding "Operation Mode" and "Set Point" for each application.**

NOTE

If the "Operation Mode" or "Set Point" does not match the above settings, refer to the instructions in order to set the proper "Operation Mode" and "Set Point."

Draft and Sealed Combustion Air Balancing

(1) Completely **close all balancing baffles** (except those you have previously balanced if you are repeating this process according to Step 4) within the Auto-Draft controlled system **except the baffle corresponding to the heater "furthest" from the fan** (meaning the heater with the longest vent run between it and the Auto-Draft unit). **Close the baffle corresponding to that heater only 25% of the way** (i.e. 75% open).

IMPORTANT

Prepare to sample, based on the heater manufacturer's specifications, **the draft** (for draft applications) **or the combustion air** (for sealed combustion air applications) **of the heater "furthest" from the fan.**

(2) Fire the heater "furthest" from the fan.

NOTE

The Auto-Draft fan(s) should begin to run and the "Actual Draft", as indicated on the CPC-3 display, should approach and then remain reasonably close to the fan's "Set Point."

IMPORTANT

If "Actual Draft" reaches the "Set Point" level, but no "Run" LED (under the "Burner Status" heading) is lit, verify a "Pre-Purge" has not been programmed into the CPC-3. Refer to the instructions in order to set the "Pre-Purge" to 0.

(3a) For **Draft** Applications

Once the "Set Point" range is reached, adjust the balancing baffle for the heater "furthest" from the Auto-Draft fan so that the draft you are measuring for that heater, using the method described by the heater manufacturer, lies within the middle of the heater manufacturer's recommended draft range for that heater.

(3b) For **Sealed Combustion Air** Applications

Once the "Set Point" range is reached, adjust the balancing baffle for the heater "furthest" from the Auto-Draft fan so that the combustion air you are measuring for that heater is at neutral.

NOTE

Fluctuations of less than + or - .010 may be common as the fan stabilizes. Adjust the draft or combustion air to fit within the heater manufacturer's specifications.

IMPORTANT

If you are unable to balance the heaters within the heater manufacturer's "acceptable" range of draft (for draft applications) or combustion air (for combustion air applications) consult a Tjernlund Products technician at 800-255-4208 or FanMail@TJFans.com.

(4) **If possible, keep heater firing** and repeat steps 1-4 of the "Draft Balancing" section, but replacing the instructions referring to the heater you previously balanced with that of the next "furthest" heater from the Auto-Draft fan. Continue to repeat until all heaters have been balanced. **If NOT possible, repeat the balancing for each heater individually.**

(5) Once all heaters have gone through the balancing process, reverify that each heater is correctly balanced. Adjust baffles and/or the CPC-3's "Set Point" accordingly (refer to instructions in order to adjust the CPC-3's "Set Point").

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