



General Heating Element Guidelines

Cold Furnace Start-ups

When firing up a cold furnace, the following recommendations will help ensure a safe transition from cold to optimum operating temperature.

MANUALLY SET CONTROL

Whether firing up a cold furnace during initial start-up or after extended shut downs (maintenance periods, breakdown or holiday), you must manually set the control instrument through the High Limit Thermocouple located within the element chamber. Maximum allowable increase per hour as sensed by the heating element control thermocouple should not exceed 500°F per hour, up to 1000°F, and only 100°F per hour thereafter until furnace operating temperature is obtained. Without careful control of element temperature, over-temperature conditions will occur, causing sagging, distortion, and rapid fatigue leading to melting.

FOLLOW SAFE OPERATING CONDITIONS

Use a high quality pyrometer, and be sure safe operating conditions are not exceeded. Make sure that the Thermocouples (T/C's) are functioning and in proper position at all times the equipment is in operation.

FACTOR IN LAG TIME

Remember the greater the distance the T/C is from the element, the greater the lag time in temperature readings.

NEVER HEAT TOO RAPIDLY

Sometimes excessive temperature is caused by furnace control thermocouple calling for heat too rapidly. Batch loaded furnaces with doors are the most likely type to have this condition. Controller must be set to specific rate to prevent overheating of elements.

LOCKOUT PROCEDURE

Turn off and secure disconnects for all power to the electrical devices being worked on. Wear safety glasses and insulating gloves.

CHECK CONNECTIONS

Heat generated by electric heating elements will cause bolted terminal connections to expand and loosen. Retighten connections after initial furnace start-ups or installation of new elements. Periodic tightening of buss bars, transformer lugs, and element connections will prevent downtime for equipment repair. DO NOT continue to operate the furnace if the terminal connectors are red hot. Tighten clamp and/or clean contact.

SECURE PROPER ELECTRICAL GROUND

Electrical ground connection is a must. Proper grounding guards against shock when working on part of the system. It also prevents damage to sensitive electrical and computer equipment. We recommend ground connections be re-torqued once a year.

KEEP SAFE!

Always cut power to elements before removing any safety cover. Terminal covers should be tagged Danger High Voltage.

SCHEDULE REGULAR MAINTENANCE

Regularly scheduled maintenance for thermocouples is required for proper control of elements. We recommend they be replaced during furnace shut down for general maintenance.

Disclaimer:

Procedures mentioned above are merely recommendations to follow during installation and are not intended or implied as operating instructions regarding furnace equipment. Refer to furnace manufacturer's operation manual. The furnace manufacturer and/or operator are solely responsible for handling, installation and control of heating elements, cycling and furnace heat up time.

