1.0 General

1.1 This Specification is for a versatile electrically heated Keith 2250°F rated Bench Top furnace that may be purchased with various options to make it even better suited for your process heating application. It’s most common application, however, is for metal heat-treating.

The furnace is designed to set directly on a work bench, however, we also offer an optional steel stand, so the furnace may be installed as floor standing furnace without a bench. When used for heat-treating metal parts, this furnace is often purchased with an optional quench tank for hardening.

1.2 Hearth space in the heating chamber is 18-inch wide by 24-inch deep, and the useable height within the chamber is 18-inch tall. The standard hearth or floor material is a 5/8-inch thick ceramic plate.

1.3 The furnace comprises a single enclosure surrounding both the heating chamber and electrical controls below that have all been integrally wired into a single space saving unit. Exterior construction will be heavy gauge sheet metal that is reinforced with structural steel that is finished in an attractive color of gray paint.

1.4 An Operating & Service Manual with electrical diagram together with an instruction booklet(s) will be provided together with booklets for the model(s) of Watlow temperature controllers you choose to order.
2.0 Heating Chamber

2.1 Walls, roof, door and floor will be insulated with 4-1/2 inches of thermally efficient insulating firebrick rated for use up to a 2250°F maximum operating temperature (2100°F continuous operating temperature).

2.2 The door opens by rising vertically while keeping the heated surface hot face safely away from the furnace operator. A Kaowool® rope seal surrounds and is attached to the door where it seals to the face of the heating chamber.

2.3 Coiled wire heating elements are installed in porcelain element plates that are mounted along each sidewall of the furnace heating chamber. Total heating capacity of the heating chamber is 14.4 kilowatts.

3.0 Temperature & Power Controls

3.1 All the furnace controls will be mounted in the base of the furnace and integrally wired to the rest of the furnace. Operating controls include the temperature controllers, as well all operating switches and indicator lights.

3.2 Furnace temperature will be automatically controlled by a Watlow series PM3T digital set point instrument and type “K” thermocouple. Upgrades for a programmable controller are available under the prices and options section on the first page of this proposal.

3.3 Power to the heating elements is controlled steplessly and silently by a solid-state relay.

3.4 An optional high limit temperature protection is also available consisting of a Watlow series LV instrument together with separate type “K” thermocouple.

4.0 Optional Quench Tank

4.1 The 17 by 34-inch by 17-inch deep quench tank is fabricated with 3/16-inch thick steel sheet that is continuously welded and then painted with a good quality industrial paint.

4.2 Tank rolls on 2-inch diameter wheels so it can be easily moved in or away from the furnace as needed.
5.0 Utilities Required

5.1 Operating voltage for this furnace as quoted is 240 Volt, single phase, 60 Hz with a 54.4 Amperes draw. The furnace should be connected to at least an 70-Amperes rated electrical service according to your local building code requirements.

5.2 Alternatively, the furnace can be wired for use with 208 or 480 Volts, single phase, 60 Hz electrical power at a nominal increase in price. For 208 Volt Power, there will be a 60.1 Amperes draw that should be connected to supply that is at least wired for a 75 Amperes electrical service per local code requirements. For the 480 Volt power, there will be a 26.0 Amperes draw that should be connected to a power supply rated for a minimum 35 Amperes electrical service per local code requirements.

6.0 Heat Treat Tool Wrap

6.1 Keith stainless steel heat treat wrap is the common and most cost-effective solution for preventing your parts from oxidizing during heat-treating. A small amount of paper or charcoal wrapped inside the heat treat foil often helps to consume fugitive oxygen within the package.

6.2 Two grades of heat-treat wrap foil are available. Our premium high temperature grade stainless steel foil is #309 grade that is suitable for use to 2240°F, or our most popular #321 grade that is suitable for use to 2000°F.