



SPECIAL FURNACE CO INC

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FB SERIES



**CERAMIC FIBER LINED
LARGE BOX FURNACES
TEMPERATURES TO 2200°F (1200°C)**

APPLICATIONS

The FB Series Electric Box Furnaces are a general purpose ceramic fiber lined electric box furnace. They achieve high precision by featuring highly accurate controls, mercury contactors for fast cycle times, two zone control (top and bottom), and even spacing of elements. They reach temperatures up to 2200°F with iron-aluminum chrome elements, and up to 2000°F with the standard nickel-chrome elements. Insulation is all ceramic fiber except for hearth and hearth support.

FEATURES

HIGH TEMPERATURE UNIFORMITY

The furnace is uniform to within +/- 25°F above 1500°F (800°C). Optional top mounted recirculating fans and multi-zone power controls are available for uniformity of up to +/-10°F.

TWO ZONE CONTROL FOR CLOSE GRADIENTS

The elements are divided into top and bottom zones. The control output is routed through two input switches, which allow adjustment of the total time on to each zone.

EVEN ELEMENT PLACEMENT

Coiled alloy elements are evenly spaced along the sides, back, and door creating an even wall of radiation.

PROPRIETARY CERAMIC ELEMENT HOLDERS

The elements are supported in proprietary high temperature ceramic element holders. These provide perfect support for the coiled elements as well as excellent radiating characteristics. The smooth surface prevents premature failure of the element as it expands and contracts. The holders are kept in place on the insulation walls with specially designed ceramic clamps and screws which fasten to a stainless steel mesh screen which is an integral component of the insulation system.

CERAMIC FIBER INSULATION FEATURES FAST HEAT UP AND COOL DOWN

The sides of the furnace are insulated with 8" of low density ceramic fiber and mineral wool board. The hearth is typically insulated with ceramic fiber, firebrick sections or light weight but tough insulating castable refractory. The top is insulated with 10 pound density 8" ceramic fiber modules.

DOOR AND SEAL

The door seal is a folded pad of ceramic fiber blanket, which seals against a rigid ceramic fiber board attached to the case front. The standard furnace door is horizontally opening with a double-pivoted hinge which allows parallelogram opening of the door. This keeps the hot face of the door away from the operator and allows tight sealing of the door. Four hand wheels clamp the door tightly against the front seal. Pneumatic or Electrically operated vertical doors are optional (these are particularly useful when loading and unloading the furnace hot).

VARIOUS HEARTHS AND LOADING SYSTEMS

The standard hearth is a flat castable pad. Castable piers on centers for forklift loading are optional. An option for a convenient loading system is a serpentine alloy hearth tray which is loaded into the furnace with a hydraulically operated lifting cart. Other types such as alloy rollers are available.

DIGITAL PID CONTROL SYSTEM

The standard control is a Honeywell UDC 2300 digital PID 3 mode tuning control. All fuses, transformers, contactors, and controls are housed in a NEMA 1 panel. (NEMA 12 panels with fused disconnects are optional). Quiet, long life mercury contactors are standard. Thermocouples are inconel sheathed Type K. Thermocouple break protection is included. Included is a Honeywell UDC 2300 digital high limit back up control with manual reset, back up contactors and separate thermocouple. A limit switches shuts off furnace power when the door is opened. Control voltage is transformed to 120 volts. The control circuit and each power branch circuit are fully fused. Single point power connection.

TESTING AND INSTRUCTIONS

The furnace is power tested to insure proper watt ratings. A complete instruction manual includes easy start up instructions, theory of operation, maintenance instructions, parts list, and a detailed trouble shooting guide. A ladder logic diagram and panel layout are prepared on CAD for easy readability.

WARRANTY

The furnace is warranted for one year except for elements and thermocouples which are warranted for six months. See warranty sheet Q12C.

OPTIONS

- **JIC CONTROL OPTION:** This includes a NEMA 12 control cabinet, all oil tight switches and a panel mounted fused disconnect switch. Zone switches are percentage timers.
- **RAMP/SOAK PROGRAM CONTROLS**
- **TEMPERATURE RECORDERS:** Round or strip chart
- **SCR POWER CONTROL:** For greater precision. Multi-zoning (up to 8 zones) is available for high uniformity.
- **HIGH TEMPERATURE FANS:** Temperatures to 1800°F, 2000°F or 2200°F.
- **ATMOSPHERE BLANKETING:** Case can be sealed for controlled atmosphere operation.
- **MANUAL OR POWERED VENTURI VENT:** A manual or powered venturi can be provided for fast cooling or venting. This can be programmable.
- **PNEUMATIC OR ELECTRIC VERTICAL DOORS:** The door is counterbalanced with either a pneumatic actuator or an electric gear motor drive with torque limit safety in case of jams. Floor switch is optional.
- **HEAT SHIELD:** For very low case temperatures.

SPECIFICATIONS

| MODEL NUMBER | WORKING DIMENSIONS | | | INSIDE DIMENSIONS | | | OUTSIDE DIMENSIONS | | | WORK CU FEET | LOAD K.W. | SHIP WGHT | SHIP WGHT |
|--------------|--------------------|----|----|-------------------|-----|-----|--------------------|-----|-----|--------------|-----------|-----------|-----------|
| | W | H | D | W | H | D | W | H | D | | | | |
| FB 333 | 36 | 36 | 36 | 42 | 42 | 42 | 84 | 88 | 69 | 27 | 64 | 675 | 4200 |
| FB 334 | 36 | 36 | 48 | 42 | 42 | 54 | 84 | 88 | 81 | 36 | 76 | 900 | 4900 |
| FB 336 | 36 | 36 | 72 | 42 | 42 | 78 | 84 | 88 | 105 | 54 | 100 | 1350 | 6300 |
| FB 444 | 48 | 48 | 48 | 54 | 54 | 54 | 96 | 100 | 81 | 64 | 105 | 1200 | 5900 |
| FB 446 | 48 | 48 | 72 | 54 | 54 | 78 | 104 | 92 | 102 | 96 | 136 | 1800 | 7300 |
| FB 555 | 60 | 60 | 60 | 66 | 66 | 66 | 116 | 104 | 90 | 125 | 157 | 1875 | 7700 |
| FB 666 | 72 | 72 | 72 | 78 | 78 | 78 | 128 | 116 | 102 | 216 | 219 | 2700 | 10000 |
| FB 888 | 96 | 96 | 96 | 102 | 102 | 102 | 152 | 140 | 126 | 512 | 375 | 4800 | 15800 |

Dimension are in inches (except for Working Cubic Feet). Weight is in pounds. Standard voltage is 460/3/60; most other voltages are optional. Special sizes are available. Heavier load weights are possible. Outside dimensions are for a horizontal door and include the side mounted control panel. Fans reduce inside working height by 12". Specifications subject to change without notice.