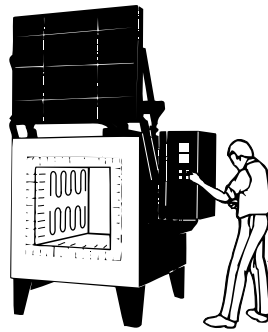




**BULLETIN  
FH-760**

# High Temperature Box Furnaces



**2200°F  
HEAVY DUTY  
ELECTRIC AND GAS  
HEAT TREATING  
FURNACES**

Grieve standard 2200°F heat treating furnaces are used for a variety of heat treating applications such as hardening, sintering or firing including those requiring inert atmospheres. Precision microprocessor based temperature controls and energy-saving insulation maximize the performance of these rugged units. Twelve standard models from 6.7 to 96 cubic feet, built for long, hard, continuous use.

## STANDARD FEATURES

- **UL LISTED CONTROL PANEL**
- **Standard Box Furnaces from Grieve meet the requirements of National Fire Protection Association Standard 86, Industrial Risk Insurers, Factory Mutual and OSHA standards. For some applications, such as those involving special atmospheres or hazardous locations, the above organizations require additional safety devices.**
- **Controls**
  - Digital, microprocessor based, thermocouple actuated, indicating temperature controller
  - Modulating burner on gas furnaces
  - Motor control push buttons and on-off heat switch
  - LED pilot light
- **Safety Equipment—Electric Furnace**
  - Adjustable, thermocouple actuated, manual reset excess temperature controller
  - Separate heating element control contactors
  - Door interlock switch turns off power to heating elements when door is opened; restores power when door is closed
- **Safety Equipment—Gas Furnace**
  - Adjustable, thermocouple actuated, manual reset excess temperature controller
  - Electronic flame safeguard protection
  - Combustion air blower with air flow safety switch
  - Purge timer
  - High gas pressure switch
  - Low gas pressure switch
  - Two pilot safety shutoff valves with leak test stations
  - Two main safety shutoff valves with leak test stations\*
  - Valve position indicator on main safety shutoff valves
  - Over 400,000 BTU/HR safety shutoff valve interlocked with purge timer
- **Construction**
  - <sup>3</sup>/<sub>16</sub>" steel plate reinforced furnace shell
  - <sup>1</sup>/<sub>2</sub>" thick steel front plate
  - Brushed stainless steel control panel face
  - Powered vertical lift door
  - Door hot side faces away from operator at all times
  - Heavy duty ceramic hearth plates supported by firebrick piers
  - 1 year limited warranty
- **Every furnace fully assembled and individually factory tested**



\*Industrial Risks Insurers vent valve only provided at specific request  
Specifications Subject to Change Without Notice  
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**MODEL HD-183618-HT ELECTRIC**

# SPECIFICATIONS

NOT FOR USE WITH FLAMMABLE SOLVENTS, VAPORS OR GASES.

Model	Work Space		Outside Dimensions* (WxDxH)	Height Door Open	Door Type	Hearth Rating Lbs‡	Heat Input		Operating Characteristics†				Approx Shipping Weight
	Dimensions (WxDxH)	Volume Cu Ft					KW	BTU/HR	Control Accuracy	Furnace Uniformity	Rise Time		
											Electric	Gas	
HD-183618-HT	18" x 36" x 18"	6.7	54" x 71" x 75"	98"	Electric	300	40	425,000	±0.3%	±25°F	180 min	140 min	4500 lbs
HD-243618-HT	24" x 36" x 18"	9	60" x 71" x 75"	98"	Electric	360	48	450,000	±0.3%	±25°F	165 min	125 min	4800 lbs
HD-243624-HT	24" x 36" x 24"	12	60" x 71" x 81"	108"	Electric	360	56	520,000	±0.3%	±25°F	155 min	120 min	5700 lbs
HD-244824-HT	24" x 48" x 24"	16	60" x 86" x 81"	108"	Electric	480	65	600,000	±0.3%	±25°F	150 min	130 min	6500 lbs
HD-304830-HT	30" x 48" x 30"	25	66" x 86" x 87"	116"	Electric	600	72	700,000	±0.3%	±27°F	165 min	130 min	7300 lbs
HD-306030-HT	30" x 60" x 30"	31	66" x 98" x 87"	116"	Electric	700	78	725,000	±0.3%	±27°F	180 min	140 min	8400 lbs
HD-364836-HT	36" x 48" x 36"	36	78" x 86" x 126"	126"	Air	750	78	800,000	±0.3%	±30°F	180 min	140 min	8600 lbs
HD-366036-HT	36" x 60" x 36"	45	78" x 98" x 126"	126"	Air	850	88	850,000	±0.3%	±30°F	180 min	150 min	9800 lbs
HD-367236-HT	36" x 72" x 36"	54	78" x 110" x 126"	126"	Air	1000	100	1,000,000	±0.3%	±30°F	180 min	150 min	10500 lbs
HD-484836-HT	48" x 48" x 36"	48	90" x 86" x 126"	126"	Air	925	90	915,000	±0.3%	±30°F	180 min	150 min	9500 lbs
HD-484848-HT	48" x 48" x 48"	64	90" x 86" x 150"	150"	Air	1100	110	1,100,000	±0.3%	±33°F	165 min	130 min	10500 lbs
HD-487248-HT	48" x 72" x 48"	96	90" x 110" x 150"	150"	Air	1600	158	1,500,000	±0.3%	±35°F	140 min	120 min	13500 lbs

\*All Models—Control panel overhang 9" right side.  
 Gas Models—Combustion blower overhang 36" rear.  
 Electric Models—Transformer overhang 24" rear.

†Accuracy as percent of controller span. Uniformity at 100°F below maximum temperature. Rise Time in minutes to 100°F below maximum temperature. Tests run with empty furnace. Performance will vary with load and application. See Bulletin TC-920 for additional details.  
 ‡Uniformly distributed.

## STANDARD EQUIPMENT

### ● All Models

- 208 volts, 3-phase, 60 Hz
- 230 volts, 3-phase, 60 Hz
- 460 volts, 3-phase, 60 Hz
- Other electrical characteristics available

Wall and floor insulation, 9" thick, consisting of:

- 4½" of 2500°F insulating firebrick
- 2½" of 2300°F insulating firebrick
- 2" of 1900°F, 18½ lbs/cf block insulation

Roof insulation, 8" thick, consisting of:

- 1" of 2600°F, 8 lbs/cf ceramic fiber blanket
- 5" of 2300°F, 8 lbs/cf ceramic fiber blanket
- 2" of 1700°F, 4 lbs/cf ceramic fiber blanket

Furnace shell is made of 3/16" thick steel plate reinforced with structural steel. Doorsill constructed from firebrick to protect furnace during loading. Ceramic hearth plates are 2" thick and supported by firebrick piers. Soft insulation on door provides an excellent heat seal by pressing against the vestibule refractory and the ½" thick steel front plate. Exterior painted with Trilite Green enamel.

Each features completely wired, side access (U). UL listed control panel assembled on the furnace enclosing terminals for incoming power, temperature controllers, push buttons and pilot lights.

### ● Electric Models

Safety devices as listed on the front of this bulletin. Heating element contactors electrically interlocked with door to shut off power to heaters as door opens and restore power when closed. Heating elements located at sides, rear and under hearth. High temperature alloy rod overbend heating elements hanging from the vertical walls by "J" hooks. Rear mounted power transformer feeding low voltage heating elements.

### ● Gas Models

- 1,000 BTU natural gas at 2 psig pressure; 1" NPT inlet up to 800,000 BTU/HR
- 1¼" NPT 850,000 to 1,100,000 BTU/HR
- 1½" NPT at 1,500,000 BTU/HR
- Other gas characteristics available

Safety devices as listed on the front of this bulletin. Automatic pre-ignition purge period and push button electric ignition contributes to ease of operation. Modulating gas burners fire beneath hearth from opposing sides to circulate heated air through the work space. Gas burners protected with electronic flame safety relay. Door interlock switch drives main burners to low fire when door is opened and restores control when door is closed.

### ELECTRIC DOOR

Door pivots upward above furnace, clearing front for easy loading. In the closed position, full door weight seats door firmly against furnace face. Structural steel pivot arms are supported at furnace sidewalls by bearings and connected to a heavy duty electromechanical actuator. The door is controlled by a switch at the furnace control panel.

### AIR DOOR

Door rises vertically in front of the furnace hanging from heavy duty roller chain, sprockets, shaft and pillow block bearings. In the closed position, rollers at the sides of the door engage support brackets to force the full door weight against the furnace face. Large diameter air cylinder rotates support shaft to lift the door. The door is controlled by a manual air valve with supply filter, lubricator and regulator. Requires 60 psig compressed air.

## ADDITIONAL EQUIPMENT AVAILABLE\*

- **Programmable Temperature Controller**, microprocessor based, digital indicating, thermocouple actuated, in lieu of standard controller ..... **PTC3**
- **Recording Thermometer**, thermocouple actuated, 24-hour, 10" diameter circular chart used in conjunction with standard controller ..... **RT**
- **Programmable Recording Temperature Controller**, microprocessor based, thermocouple actuated, digital display, 24-hour, 10" diameter circular chart, in lieu of standard controller ..... **PRTC3**

- **Digital Timing Temperature Controller**, microprocessor based, digital indicating, incorporates 99 hour 59 minute timer, starts timing when temperature reaches set point and shuts down oven at end of set time .. **DTS3**
- **Digital Shut Down Timer**, with continuous "hold" feature ..... **SDT**
- **Digital Batch Timer**, for uniformly timing batch operations. Continuous alarm with door interlock; alarms at end of preset time period until door is opened or timer reset .. **BT**

- **Alloy Hearth Tray**, made of heat resisting high temperature alloy, for protecting ceramic hearth plates from impact and heavy loading ..... **AH**
- **Inert Atmosphere Construction**, electric only, includes continuously welded shell, inert atmosphere gas inlet and outlet, high temperature door gasket, sealed terminal boxes, optional forced cooling systems are available at additional cost ..... **IAC**
- **Inert Atmosphere Inlet Piping**, with indicating flow control and manual gas valve. Specify atmosphere ..... **IAIP**



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\*See Bulletin TC-960 for modifications and other optional equipment.