




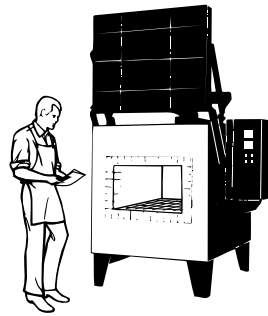
Tempering Furnaces

Grieve standard 1400°F Tempering Furnaces are used for a variety of heat treating applications including those requiring inert atmospheres. Recirculating blower provides high velocity vertical down air flow for excellent heat transfer from 800°F to 1400°F. Precision microprocessor based temperature controls and energy-saving insulation maximize the performance of these rugged units.

STANDARD FEATURES

-  UL LISTED CONTROL PANEL
- Standard tempering 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 lights
- **Safety Equipment Electric Furnace**
 - Adjustable, thermocouple actuated, manual reset excess temperature controller
 - Separate heating element control contactors
 - Recirculating blower air flow safety switch
- **Safety Equipment Gas Furnace**
 - Adjustable, thermocouple actuated, manual reset excess temperature controller
 - Electronic flame safeguard protection
 - Stainless steel powered forced exhauster
 - Exhauster air flow safety switch
 - Recirculating blower air flow safety switch
 - Purge timer
 - High and low gas pressure switches
 - 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**
 - Vertical down air flow specifically designed for tempering
 - High pressure, air cooled, stainless steel recirculating blower
 - Adjustable patented opposed louvers on full coverage supply and return ductwork
 - $\frac{3}{16}$ " steel plate reinforced furnace shell
 - $\frac{1}{2}$ " thick steel front plate
 - 16 gauge stainless steel interior
 - Work space bottom reinforced with stainless steel grid
 - Brushed stainless steel control panel face
 - Powered vertical lift door; hot side faces away from operator
 - Energy-saving lightweight ceramic fiber insulation
 - Fast heat-up and cool-down
 - Built-in baffles prevent radiant heat
 - Adjustable fresh air intake and exhaust dampers
 - 1 year limited warranty
- **Every furnace fully assembled and individually factory tested**

*Industrial Risks Insurers vent valve only provided at specific request
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**BULLETIN
TF-740**

**1400°F
FORCED CONVECTION
HEAVY DUTY
ELECTRIC AND GAS
TEMPERING FURNACES**



**MODEL TF-243624 ELECTRIC
WITH OPTIONAL FUSED DISCONNECT SWITCH**



SPECIFICATIONS

NOT FOR USE WITH FLAMMABLE SOLVENTS, VAPORS OR GASES.

Model	Work Space		Outside Dimensions* (WxDxH)	Height Door Open	Blower		Door Type	Hearth Rating Lbs‡	Heat Input		Operating Characteristics†				Approx Shipping Weight
	Dimensions (WxDxH)	Volume Cu Ft			CFM	HP			KW	BTU/HR	Control Accuracy	Furnace Uniformity	Rise Time		
													Electric	Gas	
TF-183618	18" x 36" x 18"	6.7	35" x 87" x 74"	78"	2400	3	Electric	400	30	190,000	±0.3%	±12°F	95 min	85 min	3100 lbs
TF-243624	24" x 36" x 24"	12	47" x 92" x 80"	90"	3500	5	Electric	600	42	285,000	±0.3%	±14°F	95 min	85 min	4000 lbs
TF-304830	30" x 48" x 30"	25	53" x 106" x 86"	102"	4250	5	Electric	900	52	355,000	±0.3%	±14°F	90 min	80 min	5200 lbs
TF-364836	36" x 48" x 36"	36	59" x 111" x 126"	126"	5300	5	Air	1100	65	450,000	±0.3%	±20°F	90 min	80 min	6400 lbs
TF-366036	36" x 60" x 36"	45	59" x 121" x 126"	126"	6000	7½	Air	1300	74	510,000	±0.3%	±20°F	90 min	80 min	6800 lbs
TF-484848	48" x 48" x 48"	64	71" x 114" x 150"	150"	8000	10	Air	1500	100	660,000	±0.3%	±22°F	80 min	70 min	8700 lbs
TF-487248	48" x 72" x 48"	96	71" x 152" x 150"	150"	9600	15	Air	2200	120	800,000	±0.3%	±22°F	80 min	70 min	9950 lbs

*All Models—Control panel overhang 9" right side.
Blower motor overhang 18" rear except 20" on 15 HP.
Gas Models—Burner overhang 18" right side.
325 CFM exhauster to 510,000 BTU/HR, 650 CFM above.

†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 insulation, 7" thick, consisting of:

- 1" of 2300°F, 8 lbs/cf ceramic fiber blanket
- 2" of 1700°F, 4 lbs/cf ceramic fiber blanket
- 2" of 1900°F, 15 lbs/cf block insulation
- 2" of 1200°F rockwool insulation

Floor insulation, 6½" thick, consisting of:

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

● 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. High temperature alloy coiled wire heating elements supported in alloy rack. Heating elements located in heat chamber upstream of the recirculating blower. Exhaust outlet 4" diameter.

● Gas Models

- 1,000 BTU natural gas at 2 psig pressure; 1" NPT inlet up to 800,000 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 burner fires into chamber upstream of the recirculating blower. Gas burner protected with electronic flame safety relay. Door interlock switch drives main burner to low fire when door is opened and restores control when door is closed. Exhaust outlet 6" diameter.

Furnace shell is made of 3/16" thick steel plate reinforced with structural steel. Doorsill constructed from firebrick to protect furnace during loading. Stainless steel grid at bottom of work space to distribute loading. 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 (UL), UL listed control panel assembled on the furnace enclosing terminals for incoming power, temperature controllers, push buttons and pilot lights.

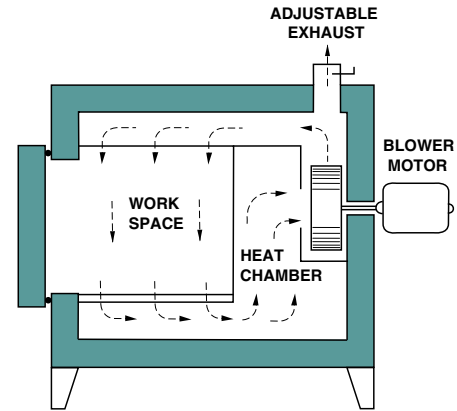
ELECTRIC DOOR

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.

Circulation Diagram (Side View)



Full vertical downward air flow provides excellent heat transfer and uniform temperature distribution.

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**

● **Automatic Door Switch**, turns off blower and heat when door is opened. Restores blower and heat on electric models, blower only on gas models, when door is closed **ADS**

● **Inert Atmosphere Construction**, electric only, includes continuously welded shell, inert atmosphere gas inlet and outlet, sealed terminal boxes, recirculating blower shaft seal, high temperature door gasket, 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**

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



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