

FRICION-AIRE®

Here's how it works...

The Friction-Aire oven provides a controlled environment with 100% straight-line proportional temperature performance without heating elements or electrical controls. It uses a unique high velocity airflow system to move air through a prescribed pattern to generate heat. This concept offers a number of advantages.

Class I, Group D, Div I and II

Friction-Aire chambers can be used for a number of hazardous work applications due to the unique operating concept of providing controlled heat without heating elements. This characteristic helps solve the problem of operational safety when operating in a Class I, Group D processing environment by removing an ignition source.

Three models of the Friction-Aire family are listed by Underwriter's Laboratories. These chambers are the first—and only—electric ovens to have ever been so listed.

Friction-Aire ovens are a sound solution to the Class I, Group D processing applications. If you would like more information or need help in choosing the right chamber for your specific application requirement, please let us know. We would like to be of service.

Greater Cost-Effective Performance

There are potential energy savings over conventional ovens. The operational concept and simplistic design features also reduce maintenance cost as well.

Temperature Uniformity

There is no central heat source in the system. Heat is generated within the air as it moves using a blower to develop turbulence and friction. As a result, there are no hot spots or points within the chamber that exceed the indicated air temperature. Temperature stratification problems are eliminated by Friction-Aire.

Built-in over-temperature protection

Friction-Aire ovens incorporate a unique and intrinsically safe, non-electrical overtemperature protection system. It is powered by its own secondary bellows.

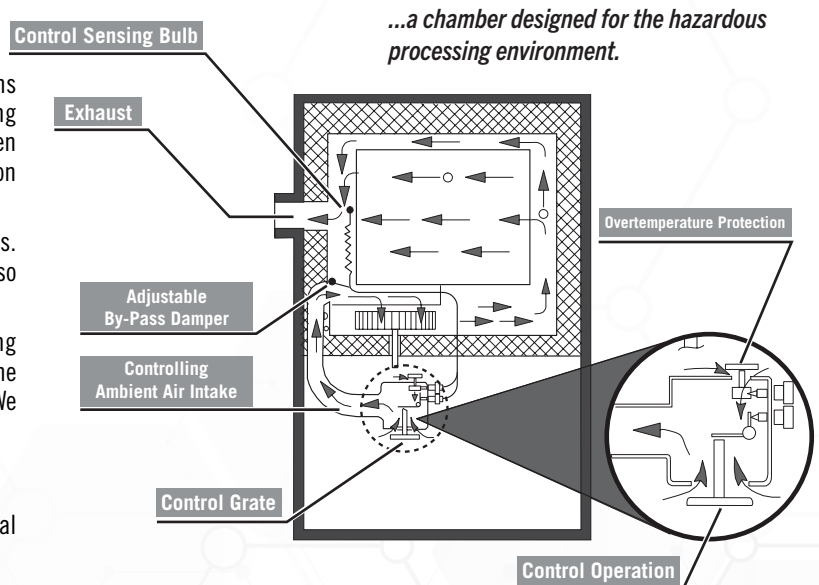
The bellows responds to its own sensing bulb. A spring-loaded vent with an inlet area greater than the control vent area is latch-closed by a reset lever on the control panel.

If the main control fails, the OTP safety-sensing bellows trips the vent latching mechanism to lock the vent in the fully open position. The resulting increase in exhaust capacity immediately drops the chamber temperature. The vent must be re-closed manually by pressing the reset lever. The oven is then ready to continue operation.

Fast Cool-Down Rates

High-velocity air generated by the blower system is fully controllable within the work chamber and reduced to a practical rate during the work cycle.

Fast cool-down is an inherent capability of the system. Typically, an empty oven temperature will drop from +150°C to +50°C in thirty minutes.



Natural Interlock of Blower & Heat

This characteristic means that if the motor/blower system—the only source of heat—fails, the chamber temperature will automatically drop. No dangerous temperature runaway conditions exist in this system.

If air circulation stops, there are no uncontrolled heating elements to increase oven temperature above the set point of the control.

The need for a timed purge cycle is eliminated to avoid igniting the air/solvent mixture at start-up. When product is initially placed in the oven, a high concentration of volatiles is present due to rapid evaporation from the product. If a conventional heating element design is used, this concentration must be diluted by a timed purge cycle prior to energizing the heaters. Since Friction-Aire ovens do not have resistive heating elements, this need is eliminated.

Over-Temperature Protection (OTP)

This non-electrical system is powered by its own secondary bellows and responds to its own sensing element. A spring-loaded vent with an inlet area greater than the control vent area is latch-closed by a reset lever on control panel.

If the main control fails, a properly set OTP safety trips the vent latching mechanism to lock the vent in the fully open position. The resulting increase in exhaust capacity immediately drops chamber temperature. The vent must be re-closed by manually pressing the reset lever. Oven operation continues at safe temperature.

OVENS



HS Series Models

Precision electric batch ovens without heating elements or electrical controls.



Scan for additional specifications and options



Control Operation

A temperature-sensitive bellows regulates fresh ambient air to the blower system. Temperature is set by the control dial. As the temperature rises with blower operation, the bellows expand to open and position the control gate. More air enters the system causing sharp temperature curve-off and stabilization.

An adjustable by-pass damper vane establishes control inlet pressure. When horizontal, the damper restricts path of blower only through control. Since this reduces CFM and velocity, heating is minimized for control at lower temperatures. When the damper is vertical, the system recirculates for maximum heat.

While a large air volume must be moved to generate heat, much of it passes through the by-pass chamber surrounding the work chamber. The small percentage passing through the inner chamber is practical for most applications.

Solid or Gravity side walls are available for applications involving the drying of lightweight powders and other sensitive airborne product loads.

UL Listed Ovens

The three standard HS models (1002, 1202 and 3802) have been listed by Underwriter's Laboratories for operation in Class I, Group D hazardous locations. They are ideally suited for the testing and processing of hazardous materials, paints, solvents and lacquers. There are no heating elements in the chamber and no inherent hot spots to create potential danger. Tests show that load temperature follows closely behind chamber temperature. If the application calls for the processing of hazardous materials over extended periods, the load temperature and chamber temperature will be practically equal at all times. When chamber and load reach complete equilibrium, they will remain so indefinitely until the temperature is deliberately changed. Even if spillage of flammables inside the chamber occurs, danger is minimized since any surface the liquid encounters is only as hot as the process air.

Non-UL Listed Ovens

The HS-362 model offers all of the operational advantages of the standard models in a size that meets higher volume processing requirements. Its design resembles the typical batch oven configuration and provides a work chamber volume of 36 cubic feet. It delivers controlled batching temperatures in a range from 25°C above ambient to +150°C (302°F). The HS-362 ovens have been specially engineered to meet the stringent design requirements of Class I, Group D service. They incorporate a relief panel and safety cage centered in the back wall, plus Class I, Group D motors and starters with approved M.I. cable and fittings. An electric, non-indicating backup OTP in a Class I, Group D enclosure is furnished as standard on this unit. A Class I, Group D door switch that shuts off the blower when the door is opened is also included as standard.



FRICTION-AIRE® HS SERIES GENERAL SPECIFICATIONS

UL Listing	UL Listed Models			Non-UL Listed Models			
Model	HS-1002†	HS-1202	HS-3802	HS-362	HS-1004†	HS-1204	HS-3804
Cubic Feet (Liters)	1.3 (36.3)	5.2 (147.3)	13.7 (388)	36.0 (1019.5)	1.3 (36.8)	5.2 (147.3)	13.7 (388)
Work Space Inches (mm) (W x D x H)	14 x 17 x 12 (36 x 43 x 30)	25 x 20 x 20 (63 x 51 x 51)	38 x 25 x 25 (96 x 63 x 63)	37 x 37 x 48 (94 x 94 x 122)	14 x 17 x 12 (36 x 43 x 30)	25 x 20 x 20 (63 x 51 x 51)	38 x 25 x 258 (96 x 63 x 63)
Temperature Range:	+20°C above ambient to +150°C (302°F)			+20°C above ambient to +260°C (500°F)			

†Bench Model