

## 2,400°F (1,315°C) COMBINATION SLOT AND BOX FORGE FURNACE

### APPLICATIONS

The FW Series gas fired furnaces are designed for forging (although they can be used for general-purpose applications such as heat treating). They reach 2,400°F (1,315°C), and have the unique ability to be deployed as either slot-type forge furnaces or box-type furnaces because of the door design. Designed for heavy-duty use, they feature state-of-the-art high velocity highturn down ratio burners with proportional control.



# FEATURES

## HEAVY-DUTY FLOOR MOUNTED CASE CONSTRUCTION FEATURES 3/16" CASE STEEL

The FW furnaces have a reinforced heavy-duty 3/16" steel case with a floor mounted base. The base plate is 1/4" steel. The entire case is primed with 800°F silicone paint and finished in machine enamel.

## FIREBRICK AND CERAMIC FIBER INSULATION

The bottom part of the furnace, where the high velocity burners fire, is lined with 4-1/2" of 2,800°F (1,535°C) insulating firebrick backed up with 4" of mineral wool and calcium silicate. This will resist the high velocity of the burners. The upper part of the chamber is lined with low thermal mass 2,600°F (1,425°C) ceramic fiber modules for fast heat-up and cooldown. No asbestos is used.

## UNIQUE DUAL PURPOSE VERTICAL DOOR

The vertical door is designed so that the first 6" of travel moves against the door seal. This provides an adjustable slot up to 6". After that, the door pulls away from the seal and travels to the full up position. The door is counterbalanced and manually operated with a hand crank located on the right side.

## VESTIBULE SHELF

A heavy-duty vestibule shelf allows work to be rested in front of the slot. This has a 1/4" stainless steel liner to resist wear.

## 3"-THICK SILICON CARBIDE HEARTH

A 3"-thick heavy-duty silicon carbide hearth plate is selected to withstand the typical abuse these furnaces receive. Base to hearth dimension is 32".

## ECLIPSE COMBUSTION AIR BLOWER SYSTEM

Combustion air is provided by a centrifugal combustion blower. A pressure gauge and air pressure switch monitor performance. Each burner has separate orifice plates and butterfly valves for precise balancing of air flow. The control of the firing rate is done with a motorized butterfly valve that controls the amount of combustion air relative to a 4-20mA signal from the temperature control.

## ELECTRONIC FLAME SAFETY SYSTEM, SPARK IGNITOR AND PURGE TIMER

Each burner is ignited with a spark plug automatically actuated from the Eclipse Multi-Flame Series 6000 flame safety system. Ultra-violet (UV) sensors monitor each burner. Before ignition, the system goes through a timed purge with the combustion air. Safety interlocks include a combustion air pressure switch and gas high/low pressure switch. The Eclipse Multi-Flame 6000 flame monitoring system keeps the operator apprised of the status of the burners. It includes running time along with voltage signal to each UV sensor. It will alert the operator of any problem with the burners, air flow or gas pressure and will provide "first out" information to actually pinpoint a problem.

# SPECIFICATIONS

Model Number	Working Dimensions			Inside Dimensions			Outside Dimensions			Stand BTU	No Burn	Max Load LBS	Ship Weight
	W	H	D	W	H	D	W	H	D				
FW 222	24	24	24	30	35	28	74	118	86	200,000	1	600	2,900
FW 224	24	24	48	30	35	52	74	118	110	400,000	1	1,200	3,500
FW 333	36	36	36	42	47	40	98	144	98	600,000	2	1,350	4,500
FW 334	36	36	48	42	47	52	98	144	110	700,000	2	1,800	5,500
FW 336	36	36	72	42	47	76	98	144	134	800,000	3	2,700	6,500
FW 444	48	48	48	54	59	52	110	178	110	900,000	2	2,400	8,000
FW 446	48	48	72	54	59	76	110	178	134	1,250,000	3	3,600	10,000

All dimensions are in inches. Weight is in pounds. Outside dimensions include control panel, gas piping and combustion blower. 240 or 480 volts is normal. 208, 380 and 575 volts are optional. Larger sizes are available by special quote. Specifications are subject to change without notice.

The operator only needs to press the RESET key to start the burner firing sequence.

## FM APPROVED GAS TRAIN

Included in the combustion system is a combustion air flow switch, pressure regulator, dual safety shutoff valves, Hi-Low pressure safety switch, purge timer and all other items necessary to meet FM and IRI approval. All piping is hard black iron piping, except for some control tubing.

## THERMJET VELOCITY BURNERS

The gas burners are one or more Eclipse ThermJet medium or high velocity burners. These fire under the hearth. The high velocity promotes temperature uniformity. Single burner furnaces have the burner located in the back; multiple burner furnaces have them located on the sides, patterned to promote temperature uniformity. The ThermJet burners feature excellent flame stability for stable temperature control.

## NATURAL GAS OR PROPANE

The system can be set up for natural gas or propane. This can be easily changed in the field. 1 psi gas pressure is required for proper operation.

## DIGITAL CONTROL SYSTEM WITH NEMA 12 PANEL

The standard control is a Honeywell UDC 2500 digital PID 3 mode tuning control. The thermocouple is Type R enclosed in an alumina protection tube. The control cabinet is a side mounted NEMA 12 panel with a fused disconnect switch. All pilot lights and switches are oil tight. All fuses, transformers, contactors and controls are located in the panel. The control voltage is transformed to 120 volts. Meets National Electrical Code, IRI, FM and NFPA requirements. It features a single point power connection.

## OVERTEMPERATURE CONTROL SYSTEM

This includes a Honeywell UDC 1200 digital high limit control with manual reset, backup contactors and a separate Type R thermocouple.

## TESTING AND INSTRUCTIONS

The furnace and combustion system are fully tested at the factory. A complete instruction manual includes easy startup instructions, theory of operation, general dimension drawing, assembly drawings, maintenance instructions, parts list and a detailed troubleshooting guide. A ladder logic diagram, panel layout and combustion flow schematic is prepared on CAD.

## WARRANTY

The furnace is warranted for one year except for elements and thermocouples, which are warranted for six months.

# OPTIONS

- **ELECTRIC DOOR OPERATION:** An electric gear motor lifts the door up and down.
- **RAMP/SOAK PROGRAM CONTROLS**
- **TEMPERATURE RECORDERS:** Round or strip chart.