



Vacuum Furnace Model VF-10

- Small 4' x 6' Footprint Fits Your Mfg. Cell
- Heats To 1800°F Within 20 Minutes
With Rapid Cool Down
- Utilizes Quick, Clean Induction Heat
- For Brazing & General Purpose Heating
- Facilitates Continuous Flow
Manufacturing
- Operates At High Vacuum or Partial
Pressure Of Inert Gas

Our VF-10 Vacuum Furnace is designed to heat parts of virtually any shape in a high temperature, high vacuum environment. Although the compact 4' x 6' footprint fits easily into your manufacturing cell, our furnace can reach temperatures as high as 1800°F. The chamber has base vacuum of 1×10^{-6} Torr with a leak-up rate of less than 3 microns per hour.

With the Model VF-10's quick, clean induction heating system, 1800°F can be reached within 20 minutes. Cool down to 400°F from maximum temperature can be achieved within 90 minutes. Temperature uniformity is rated at $\pm 25^\circ\text{F}$ at 1800°F.

The most common applications for vacuum furnaces include heating small lot sizes, brazing parts of unusual shapes, repairing "orphans" from other heating

processes, and other applications which benefit from whole part heating. It's easy to set up a continuous manufacturing flow, run various processes throughout the day and realize up to 90% improvement in overall cycle time.

To permit easy loading, the furnace's part handling mechanism opens at the base of the system, then automatically raises up to 20 lbs. of parts up into the vacuum chamber and heating coil, and finally lowers the parts back down to base level for unloading.

The standard hot zone of the VF-10 has an 8" ID, 8" height, and volume of 0.24 cu. ft. The chamber is mounted on a heavy duty stainless steel frame that houses all the required equipment for vacuum, atmospheric and system control, as well as the induction heating station.

With the VF-10's efficient induction heating system, the furnace reduces overall cost of ownership over a 14-year life by 75% when compared to traditional vacuum furnace technology. The typical operating cost is just \$1.31 per hour, based on \$0.15/kwh and \$0.40/ft³ Ar.

Real time monitoring and SPC are a snap with the optional optical pyrometer and digital chart recorder; process data for each individual part can be recorded, stored and sent directly to your desktop.

To maximize operator safety, the heating system has been fully isolated. Safety interlocks protect access to the vacuum chamber and manual controls.



Operator Safety Features

- Light curtain
- E-stop
- Fully-isolated heating system
- Chamber access interlocks
- Over-temperature safety latch

Options & Accessories

- Viewport
- Residual Gas Analyzer
- Tilt and Pour
- Quench System
- Optical Pyrometer (for individual part temperature measurement with closed loop control)
- Digital Data Recorder (sends real time process data to your network)
- Paper Chart Recorder

Protected under US Patent 6,649,887.
Other patents pending.



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VF-10 Vacuum Furnace

HOT ZONE

Work Zone Size: 8" ID x 8" Height (customizable)
Temperature Range: 100° F to 1800° F +/- 25° F
Time-to-Temperature: Less than 20 minutes to 1900° F
Heating Elements: Graphite
Power Supply: 10-40 kW induction heating system

CONTROLS

PLC: Xycom PLC System with touch screen interface
Temperature: Honeywell 300 Temperature Controller
Thermocouple: Type K
Recorder: Honeywell DPR 250
Vacuum Gauge: Televac MC-300 Digital Controller with convection & cold cathode sensors

VACUUM PUMPING SYSTEM

Mechanical Pump: Edwards RV12
Turbo Pump: Leybold 350 L

CHAMBER

Design: Heavy duty, double-walled stainless steel, water cooled vessel
Door: Pneumatically operated, bottom load (horizontal load available)
Ports: All required ports; includes spare 4.5" port



UTILITY REQUIREMENTS

Electrical: 480 VAC, 3-Phase, 40 Amp service
Water: 4 GPM @ 40 PSI, heat load of 25 kW
Air: 80 psi
Inert Gas: 30 psi, 30 CFH (backfilling only)

PHYSICAL

Dimensions: 4' W x 3'D x 6' H
Shipping Weight: 1600 lbs.

OPTIONAL COOLING SYSTEM

Gas Blowers: 100 cfm, rated to recirculate a partial pressure nitrogen gas plate
Heat Exchanger: