

# PRODUCT INFORMATION

## Series 19 High Temperature Vacuum Or Controlled Atmosphere Refractory Metal Heat Zone Furnace



### Applications

Brazing	Melting	Ceramic Firing
Sintering	Heat Treating	Degassing

### Main Features

- Convenient to load/unload.
- Clean, compact, vacuum tight construction.
- Use in vacuum, inert, nitrogen and hydrogen atmospheres.
- Low thermal mass – rapid heating and cooling.
- Accurate temperature control.

### Heat Zone Size

6.5" Dia. X 12" High to  
15" Dia. X 24" High

### Interlocks:

Chamber is immobilized if

- Heat zone is energized, or
- Chamber is pressurized.

### Temperature

Up to 3000°C (5432°F)

### Pressure-Vacuum:

2 PSIG to 10<sup>-6</sup> Torr

**The furnace is completely assembled and thoroughly tested prior to shipping. A copy of test results will accompany shipment.**

### General

The Centorr Vacuum Industries Series 19 High Temperature, High Vacuum or Controlled Atmosphere, Cold Wall, Refractory Metal Heat Zone Furnaces are convenient to operate. The heat zone housing is raised hydraulically as a unit on a dovetail slide, thus exposing the stationary work support hearth for loading or unloading. This furnace is particularly well suited to applications which require maintenance of precise positioning or assembly of the work during firing.

A furnace system typically consists of the basic furnace chamber assembly, the high vacuum system or evacuation system, the process gas system, the power supply, the temperature control instrumentation, and the furnace mounting system.

The unit is ready to operate as soon as power is connected to the main circuit breaker, process gas is supplied, and water inlet/drain connections are made.

### Basic Furnace Chamber Assembly

The basic furnace consists of a double wall all stainless steel, water jacketed chamber containing the heat zone. The heat zone is resistance heated. The heating element is made of refractory metal. The heat shields are also refractory metal. Heat zone components are easily accessible for inspection or maintenance. A hearth is provided for work support. The entire inside of the furnace chamber is designed to conform to the best high vacuum practice. Particular attention is given to the choice of heat zone materials and to surface finishes. Ports are provided for sighting, thermocouples,

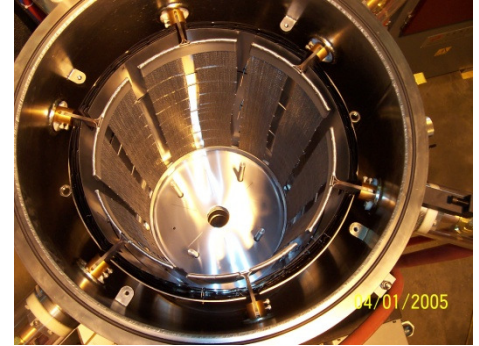
evacuation, inert gas inlet and exit, gauges, etc. Centorr Vacuum Industries' proprietary rotatable sight window is included as standard equipment.

### **High Vacuum System**

Standard high vacuum systems consist of high vacuum elbow, diffusion pump with cold trap, mechanical pump, full automatic valve system, Viton "O" rings, and combination ion gauge and two station thermocouple gauge vacuum instrument.

### **Evacuation System**

For operation in the 10-50 microns range of vacuum or for evacuation prior to back-filling with desired process gas, we include an evacuation system. This includes a mechanical vacuum pump, vacuum valve, and manifold. A line filter ahead of the vacuum pump and thermocouple type vacuum instrument are available.



### **Process Gas System**

The standard process gas system consists of vacuum-tight gas inlet valve and relief valve. Bourdon type pressure-vacuum gauge and manifold. Process gas systems capable of handling multiple gases, including gas mixing, mass flow control, and gas analysis are available as options.

### **Temperature Control Instrumentation**

Centorr Vacuum Industries can supply control circuitry ranging from the simplest manual power control to programmer controller instrumentation. These controls can include automatic closed loop- control utilizing thermocouples, power transducers, or optical pyrometers for sensing, and can incorporate controllers, recorders, and programmers. Various types of micro-processor programmers and computers are available.

### **Power Supply System**

Power supply systems consist of silicon controlled rectifier power controller with current limit, step-down transformer, ammeter, voltmeter, pushbuttons, indicator lights, and water interlocks, all completely wired and packaged in a floor standing cabinet. Power supply systems employing saturable core reactors are also available on request.

Utility requirements are given in KVA at customer's primary voltage, single or three phase, and 50 or 60 Hertz.

### **Furnace Mounting**

The Furnace is mounted on a steel table.