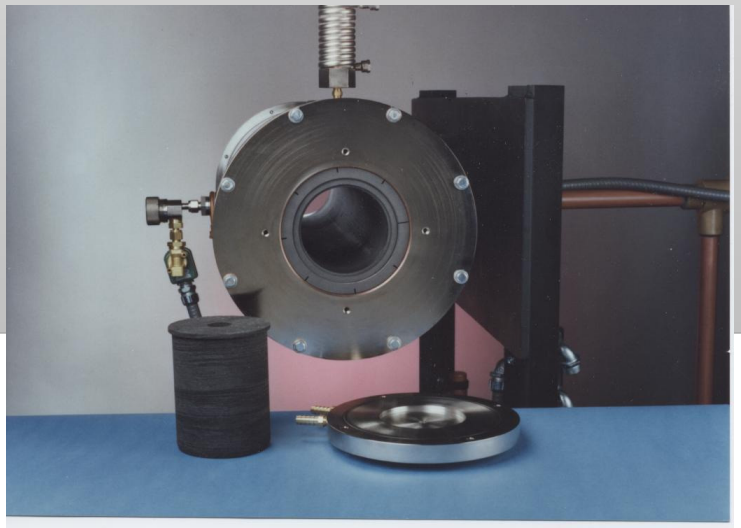
CENTORR Vacuum Industries

800.962.8631 603.595.7233 sales@centorr.com

PRODUCT INFORMATION SERIES 10 GRAPHITE TUBE FURNACE



Applications

Annealing	Heat Treating
Carbon Fiber Processing	Melting
Homogenization	Sintering
Ceramic Firing	Wetting Studies

Main Features

Low Initial Cost.
Efficient, inexpensive to use.
Uncomplicated design, easy to operate.
Clean, compact, vacuum tight construction.
Use in vacuum, inert, reducing or oxidizing atmospheres.
Accurate temperature control.

Heat Zone Sizes

2.4" ID x 4" to 14" long
4" ID x 6 to 16" Long

Operating Pressure

10-50 Microns to 2 PSIG
10^{-6} Torr to 2 PSIG

Operating Temperature

Up to 1000℃ (2012℉)
1650℃ (3000℉)
2000℃ (3632℉)

2500℃ (4532℉)
3000℃ (5432℉)

General

The Centorr Vacuum Industries Model 10 High Temperature, High Vacuum or Controlled Atmosphere, Cold Wall, Graphite Tube Furnaces are simple and easy to Operate.

A typical Furnace System consists of the Basic Furnace Chamber Assembly, The Evacuation System, the Process Gas System, the Power Supply, Temperature Control Instrumentation, and the Furnace Mounting Assembly.

These furnaces can be built having effective heat zone sizes of 2.4" ID x 4" to 14" Long or 4" ID x 6" to 16" Long; and capable of operating up to 3000℃ (5432℉) in Vacuum, Inert Gas, Nitrogen (or in Oxidizing Atmospheres with Muffle Tube Kit).

The Evacuation Kit is capable of attaining 10-50 Microns; the furnace chamber may be backfilled to 2 PSIG. The Furnace chamber is usually mounted on a stand with the Evacuation system located directly behind for maximum efficiency. The Power Supply/Control Console is also located as close as possible to the furnace chamber.

The Furnace is ready to operate as soon as power is connected to the circuit breaker, water inlet/drain and air supply connections are made. Prior to shipment, the Furnace is completely assembled and thoroughly tested. A copy of test results will accompany shipment.

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Evacuation System

For Operation in the 10-50 Microns range of vacuum or for evacuation prior to backfilling with inert gas, we include an Evacuation System. This includes a Mechanical Vacuum Pump, Vacuum Valve, and Manifold. Line filter ahead of the vacuum pump, and Thermocouple type Vacuum Instrument are available.

High Vacuum System

For operation in the 10^{-4} to 10^{-6} Torr range of vacuum, we supply a High Vacuum System. This system includes a High Speed Diffusion Pump, Cold Trap, Mechanical Pump, High Vacuum, Fore-line, and Roughing Valves, Vent Valves, High Vacuum Elbow, and Vacuum Instrument. Systems are fully Automatic.

Process Gas System

Process Gas Systems consist of vacuum tight Gas Inlet Valve and Relief Valve, Bourdon type Pressure-Vacuum Gauge, and Manifold.

Temperature Control Instrumentation

Centorr Vacuum Industries can supply from the simplest manual Temperature Control to the most elaborate Implementation. This can include Automatic closed loop control utilizing Thermocouples with Auto Retract System, Power Transducers, or Optical Pyrometers for temperature control; and incorporating Indicator-Controllers, Recorders, and Programmers. Various types of Micro-Processor Programmers are available.

Power Supply System

Power Supply Systems consist of Silicon controlled Rectifier power controller (saturable core reactors also available) with current limit, step-down transformer, circuit breaker, contactor, control transformer, ammeter, voltmeter, pushbuttons, indicator lights, water interlocks, all completely wired and packaged in a floor standing cabinet. 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 stand completely in the open. It may be oriented Vertically, Horizontally, or at any desired angle. The Purge Port serves as its mounting point from which it may be swiveled without detaching from the evacuation system.

Options – Muffle Tube Kit

For Operating in Oxidizing Atmospheres, these furnaces can be supplied with a Refractory Muffle Tube which is sealed to the furnace at both ends. Muffle tube kits can also be provided with closure lids with ports for gas inlet and exit, and/or sight windows or thermocouples.

Temperature Control Instrumentation

This same furnace can be built to withstand up to 300 or 1500 PSIG of internal pressure of Inert Gas or Nitrogen.
Please see Series EP Data Sheet.