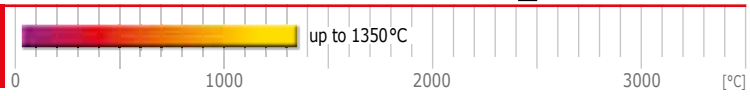
FHA, FHC – Horizontal and Vertical Tube Furnaces



Carbolite Gero standard tube furnaces FHA and the three zone tube furnace FHC can be operated in both vertical and horizontal positions up to 1350 °C.

The heating element consists of an exposed CrFeAl heating coil which is mounted on a ceramic fibre module. The low thermal mass of the ceramic fibre insulation guarantees low energy consumption and allows fast heating rates. With its wide range of accessories, the comprehensive F range provides complete solutions for ambitious thermal treatment. Inside the furnace, the heating element is constructed of vacuum formed fibres containing free radiating heating elements that are attached to the insulation by a ceramic holding ridge. When compared to conventional heating methods, the 5 mm thick heating wires are combined with a low voltage, heavy-weight transformer power supply that provides an exceptional lifetime of the heating elements and temperature stability. The control thermocouple is a high grade type S thermocouple. Additionally, the tube furnace is available with up to 8 heating zones for the most precise temperature control and uniformity.

NEW

FHA 13/80/500

Control module

Standard features

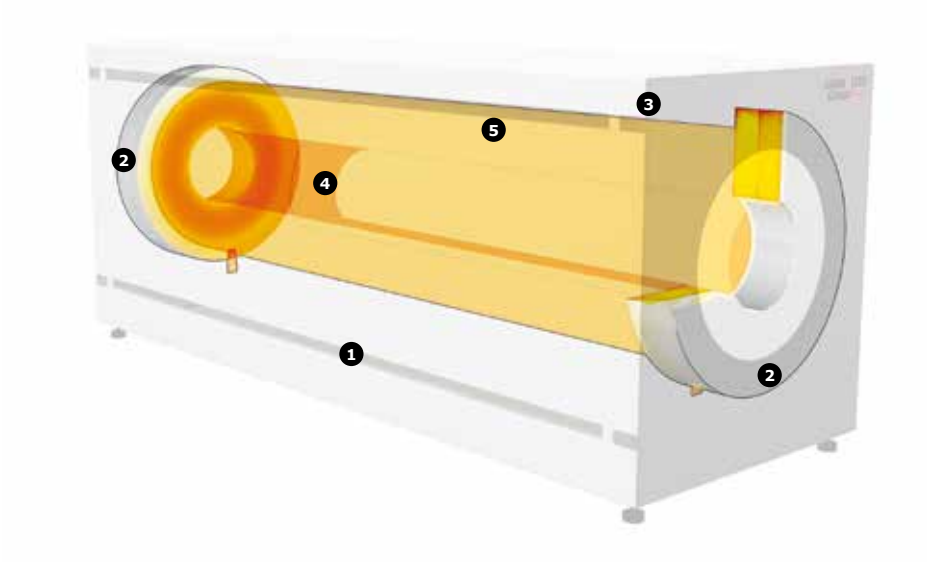
- 1350 °C maximum operating temperature
- Carbolite Gero 3216CC controller, with single ramp to setpoint & process timer
- Accepts work tubes with outer diameters up to 110 mm
- Heated lengths of 200, 500, 750, 1000 or 1250 mm
- Use in horizontal or vertical orientation
- Exceptional lifetime and temperature stability
- High grade thermocouple type S
- Low thermal mass ceramic fibre insulation
- High quality 5 mm APM wire heating element
- Available with 1 – 3 heating zones
- Furnace comes with separate control box with 2 m cable, plug and socket
- Retransmission of setpoint for three zone models

Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 94 – 97). Please note that special controllers may be needed for this model
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)
- Wide choice of tube diameters and materials is available. See pages 98 – 99 for tube materials and dimensions
- 'L' stand for vertical usage
- Insulation plugs & radiation shields to prevent heat loss & improve uniformity (see page 103)
- Modified atmosphere and vacuum assemblies are available (see page 103)
- Larger tube diameters on request

View inside

1) Outer case
2) End insulation
3) Case insulation
4) Heating elements
5) Inner insulation (hot face)



Technical data

Tube furnace FHA (single zone) and FHC (three zones) both available in horizontal and vertical arrangement (with optional 'L' stand)

CGN Model	Max. temp. [°C]	Max. outer diameter accessory tube [mm]	Heated length [mm]	Dimensions: External furnace *H x W x D* [mm]	Furnace weight [kg]	Recommended tube length for use in air [mm]	Recommended tube length for use with modified atmosphere [mm]	Dimensions: Control module *H x W x D** [mm]	Control module weight [kg]	Uniform length ±5 °C [mm]	Max. power [W]
Horizontal and Vertical Tube Furnaces (may need further equipment) FHA											
FHA 13/32/200	1350	32	200	420 x 400 x 350	25	390	925	480 x 560 x 500	50	100	1200
FHA 13/32/500	1350	32	500	420 x 700 x 350	30	690	1225	480 x 560 x 500	50	250	2400
FHA 13/50/200	1350	50	200	420 x 400 x 350	30	390	925	480 x 560 x 500	50	100	1500
FHA 13/50/500	1350	50	500	420 x 700 x 350	35	690	1225	480 x 560 x 500	50	250	3000
FHA 13/50/750	1350	50	750	420 x 950 x 350	40	940	1475	850 x 560 x 500	60	375	5400
FHA 13/80/200	1350	80	200	420 x 400 x 350	35	390	925	480 x 560 x 500	50	100	2100
FHA 13/80/500	1350	80	500	420 x 700 x 350	40	690	1225	480 x 560 x 500	60	200	5200
FHA 13/80/750	1350	80	750	420 x 950 x 350	50	940	1475	850 x 560 x 500	70	375	7800
FHA 13/80/1000	1350	80	1000	420 x 1200 x 350	80	1190	1725	850 x 560 x 500	90	500	10400
FHA 13/110/500	1350	110	500	590 x 700 x 520	55	690	1225	850 x 560 x 500	70	250	7800
FHA 13/110/750	1350	110	750	590 x 950 x 520	70	940	1475	850 x 560 x 500	90	375	11400
FHA 13/110/1000	1350	110	1000	590 x 1200 x 520	100	1190	1725	850 x 560 x 500	90	500	12000
FHA 13/110/1250	1350	110	1250	590 x 1450 x 520	130	1440	1975	850 x 560 x 500	90	610	20000
3-Zone Horizontal and Vertical Tube Furnaces (may need further equipment) FHC											
FHC 13/32/500	1350	32	500	420 x 700 x 350	30	690	1225	480 x 560 x 500	50	350	2400
FHC 13/50/500	1350	50	500	420 x 700 x 350	35	690	1225	480 x 560 x 500	50	350	3000
FHC 13/50/750	1350	50	750	420 x 950 x 350	40	940	1475	850 x 560 x 500	60	550	5400
FHC 13/80/500	1350	80	500	420 x 700 x 350	40	690	1225	480 x 560 x 500	60	350	5200
FHC 13/80/750	1350	80	750	420 x 950 x 350	50	940	1475	850 x 560 x 500	70	550	7800
FHC 13/80/1000	1350	80	1000	420 x 1200 x 350	80	1190	1725	850 x 560 x 500	90	800	10400
FHC 13/110/500	1350	110	500	590 x 700 x 520	55	690	1225	850 x 560 x 500	70	300	7800
FHC 13/110/750	1350	110	750	590 x 950 x 520	70	940	1475	850 x 560 x 500	90	500	11400
FHC 13/110/1000	1350	110	1000	590 x 1200 x 520	100	1190	1725	850 x 560 x 500	90	750	12000
FHC 13/110/1250	1350	110	1250	590 x 1450 x 520	130	1440	1975	1100 x 560 x 500	90	950	20000

Please note:
- Heat up rate when using an optional ceramic work tube must be limited to 5°C/min
- *Further to the depth of the control module 150 mm for the power plugs and other plugs needs to be added
- The power supply is based on 200–240 V for 1 phase and 380–415 V for 3 phase power
- Minimum uniform length in horizontal furnace with insulation plugs fitted at 100°C below max. temperature