OB-12

GENERAL PURPOSE *ovens* & *incubators*

complete temperature CONTROL

- PEAK SERIES OVENS TO 300°C
- HIGH TEMPERATURE OVENS TO 400°C, 500°C & 600°C
- INCUBATORS TO 80°C
- GRAVITY AND FORCED AIR CIRCULATION MODELS
- DIGITAL DISPLAY OF TEMPERATURE
- FAST HEAT UP AND RECOVERY TIMES
- POLISHED STAINLESS INTERIORS
- CHOICE OF CONTROL SYSTEMS
- NUMEROUS OPTIONS

CARBOLITE®

PEAK SERIES

outstanding features

The PEAK series of ovens and incubators has been designed and engineered using the latest computer aided design to facilitate production of all metal components on the latest CNC controlled production equipment.

Both gravity convection and forced air circulation models are included in the Peak series. The bench mounted models are available in four sizes with a maximum operating temperature of 300°C, whilst the larger floor standing models are available with fan assisted air circulation only, with a maximum operating temperature of 250°C. Incubators have a maximum temperature of 80°C.

The ovens are constructed for long term reliability and depending on the choice of control system can perform simple drying processes or more complex and demanding heat treatment processes and long term stability testing of materials or components.

complete temperature CONTROL

HIGH TEMPERATURE OVENS

LHT model

The laboratory high temperature range of ovens operating at temperatures up to 600°C is offered in three sizes. All models are capable of continuous operation at maximum temperature.

The outer cases are fabricated from corrosion resistant zinc coated mild steel and finished in two tone hard wearing stoved epoxy/polyester coating. The inner chamber is constructed from polished stainless steel which provides resistance to chemical attack and allows easy cleaning after use. All units are provided with stainless steel shelves with multi-position settings for convenient loading and unloading. Maintenance free heating elements and fan motor are fitted.

Low thermal mass insulation materials are used throughout in order to achieve rapid heating and to allow efficient energy utilisation. The heavy duty fan ensures optimum temperature uniformity throughout the work chamber. Double skin construction provides a cool safe outer case.

A variety of control options, ranging from on/off digital display to sophisticated controllers/programmers is available. Please refer to Temperature Control Systems information for further details.

A stand and trolley are available to convert bench mounted ovens into floor standing models.

complete temperature CONTROL

Model	400°C 500°C 600°C	LHT 4/30 LHT 5/30 LHT 6/30	LHT 4/60 LHT 5/60 LHT 6/60	LHT 4/120 LHT 5/120 LHT 6/120
Chamber Dimensions (mm) (H) (W) (D)		300 300 305	400 400 405	650 480 405
External Dimensions (mm) (H) (W) (D)		570 830 570	670 930 670	920 1030 670
Usable volume (litres)		30	60	120
Heat up time (mins) 240 V	400°C 500°C 600°C	50 75 120	50 75 120	50 75 120
Recovery time (mins) 240 V	400°C 500°C 600°C	10 16 20	10 16 20	10 16 20
Temperature stability **On/off control** **PID control**		±1.5°C ±0.5°C	±1.5°C ±0.5°C	±1.5°C ±0.5°C
Temperature uniformity (at 600°C)		±5°C	±5°C	±5°C
Power (watts)	400°C 500°C 600°C	1000 2000 2000	1500 2250 2250	2250 3000 3000
No of shelves supplied		2	2	2
Weight (kg)		73	99	179

PEAK SERIES

Floor standing ovens

These ovens - with fan assisted air circulation only - extend the range of laboratory ovens to provide more capacity than is normally found in a laboratory and are available in 400 or 800 litre capacities. The ovens are ideally suited for the drying of considerable quantities of glassware or large individual pieces.

Whilst using the same components as the smaller models, the ovens will accept a greater number of trays, or without trays can be used for processing large components. With a large number of trays fitted, they will process quantities of thin sheet materials.

The folded sheet metal case provides a strong and relatively lightweight unit. With a two-tone light grey stoved epoxy powder paint finish, the ovens fit comfortably into laboratory surroundings.

FLOOR STANDING			
Model		PF400	PF800
Max Temp (°C)		250	250
Chamber Dimensions (mm)	(H) (W) (D)	1500 605 510	1500 1200 510
External Dimensions (mm)	(H) (W) (D)	1970 980 720	1720 1585 1000
Chamber Capacity (litres)		400	800
Weight	(Kg)	200	280
Shelves (number supplied) (max. possible) (max dist load/shelf kg) (max load kg)		 3 30 10 75	 3 30 10 100
PERFORMANCE			
Power Rating at 240 V (watts)		6000	9000
Holding Power * at max. temp (watts)		2200	3500
Temperature Uniformity * (at max temp as a %)		± 1.7	± 1.7
Temperature Stability on/off control	**(°C)**	± 1.0	± 1.0
Temperature Stability PID control	**(°C)**	± 0.2	± 0.2
Heat Up Times * (mins) 240 V	100°C 200°C 250°C	15 40 85	17 45 100
Recovery Times * (mins) Door Open 60secs 240 V	100°C 200°C 250°C	10 12 25	12 15 30
Air Exchanges vol (l/h)		12000	12000
Air Exchanges Exchanges / Hour		30	15

Note: A uniformity of ± 1% = ± 1 °C at 100° C.
* With vents closed

Typical oven applications include:

- drying of glassware
- warming
- sterilising
- ageing
- curing
- burning-in
- long term stability testing;
- softening
- annealing
- enamelling
- baking
- bending
- tempering
- pre-heating
- soldering

Typical incubator applications include:

- incubation of culture tests
- drying slides
- microbiological incubators
- germination tests
- egg incubation
- weight loss substitutes
- bacteriological tests

PEAK SERIES

outstanding features

*S*tylish and robust

The outer cases are fabricated from corrosion resistant zinc coated mild steel and finished in two tone hard wearing stoved epoxy/polyester coating. The inner case is constructed from polished stainless steel. All units are provided with non-tilt bright nickel wire plated shelves with multi-position settings for convenient loading and unloading.

*A*djustable air ventilation

The chamber ventilation and exhaust vent are easily adjustable from the front control panel, on all bench top models.

*D*igital temperature control

The control module is able to house many variations of digital instrumentation with simultaneous display of measured and set temperature. Microprocessor based on/off controllers are fitted as standard. Where precise temperature control is more critical, a PID microprocessor based controller is available, also with digital temperature indication.

*E*conomy and efficiency

Insulation around the oven chamber utilises totally encased fibre material. This material has a very low thermal mass and thermal conductivity, ensuring very efficient insulation.

This also ensures reduced holding power, making the units economical to operate once set temperature has been reached.

*D*oor action

A flush fitting door latch with a concealed mechanism is both simple to use and provides a handle when unlatched. The lever action ensures gentle closure. The door seal design includes a newly formulated silicone compound, providing longer life and durability at maximum temperature. The design also allows convenient replacement if necessary.

*C*ontrol panel

The side mounted control panel avoids damage from accidental spillage.

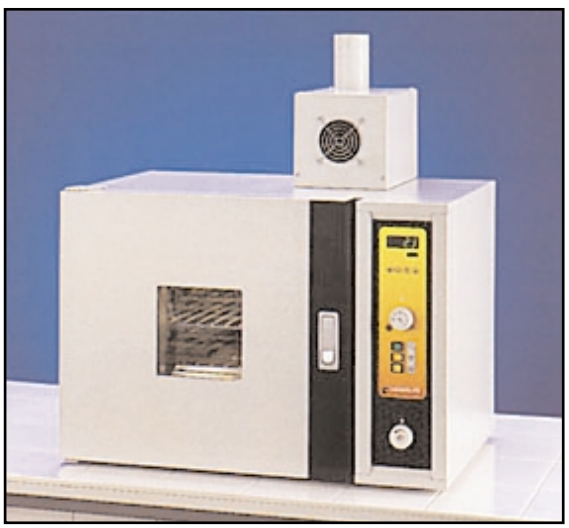
*S*afety standards

All units meet the relevant UK and European health and safety at work legislation and the performance criteria of BS 2648 and DIN 50-011. They are manufactured to comply with BS EN 61010: safety standard and also the low voltage and EMC European Directives.

*O*ptions

- Range of overtemperature protection systems in accordance with DIN12-880 Part 2.
- Stoving and curing option available for processes involving liberation of flammable vapours.
- Timers: Process timers - manual or automatic. Mechanical or electronic time switches
- Top access port for independent probe
- Stacking frame
- Lockable door latch
- Exhaust fan *
- Variable speed fan *
- Inert gas connection *
- Flow meter & needle valve
- Viewing window in door *
- Interior light
- Air inlet filter
- Cable entry port *
- Door switch
- Stands & trolleys
- Chart recorders
- Sealed inner chamber for use with inert gases

* These options may affect Chamber Uniformity



Moisture extraction option for processes involving large amounts of water.

PEAK SERIES

Bench top ovens

This modern range of ovens provides a combination of excellent performance and reliability.

Increased power and low thermal mass encased fibre insulation ensure both fast heat up times and reduced recovery times. Reduced holding power once at set temperature, together with the insulation, makes the range economical and outer case temperatures have been significantly reduced.

Both gravity and forced air circulation models are available with a wide choice of control options allowing the most critical performance criteria to be met. Where processes involve the liberation of flammable vapours, a stoving and curing option is available. Also, where processes involve large amounts of water, a moisture extraction option is available.

		OVENS WITHOUT FANS				OVENS WITH FANS			
Model		PN30	PN60	PN120	PN200	PF30	PF60	PF120	PF200
Max Temp (°C)		300	300	300	300	300	300	300	300
Chamber Dimensions (mm)	(H)	250	350	450	700	300	400	500	750
	(W)	330	392	492	592	292	392	492	592
	(D)	320	420	520	520	320	420	520	520
External Dimensions (mm)	(H)	470	570	670	920	470	570	670	920
	(W)	665	765	865	965	665	765	865	965
	(D)	470	570	670	670	470	570	670	670
Chamber Capacity (litres)		27	58	115	215	28	66	128	230
Weight	(Kg)	30	45	60	75	30	45	60	75
Shelves									
(number supplied)		2	2	2	2	2	2	2	2
(max. possible)		3	5	9	15	3	5	9	15
(max dist load/shelf kg)		10	10	10	10	10	10	10	10
(max load kg)		20	30	40	50	20	30	40	50
PERFORMANCE									
Power Rating at 240 V (watts)		750	1000	1500	2250	1000	1500	2000	2700
Holding Power * at max. temp (watts)		300	480	720	1160	350	600	800	1250
Temperature Uniformity * (at max temp as a %)		± 2.3	± 2.3	± 2.7	± 3.5	± 1.0	± 1.0	± 1.0	± 1.0
Temperature Stability on/off control	**(°C)**	± 1.5	± 1.5	± 1.5	± 1.5	± 1.0	± 1.0	± 1.0	± 1.0
Temperature Stability PID control	**(°C)**	± 0.5	± 0.5	± 0.5	± 0.5	± 0.2	± 0.2	± 0.2	± 0.2
Heat Up Times *	100°C	12	12	12	14	4.5	4.5	4.5	5.5
(mins)	200°C	26	26	26	29	12	12	12	14
240 V	300°C	52	52	52	58	25	25	25	30
Recovery Times * (mins)	100°C	2.5	2.5	2.5	3	1	1	1	1.5
	200°C	5	5	5	6	2.5	2.5	2.5	3
Door Open 60secs 240 V	300°C	8.5	8.5	8.5	10	4	4	4	5
Air Exchanges vol (l/h) @ 100°C	(a)	N/A	N/A	N/A	N/A	1400	1400	1400	1400
	(b)	N/A	N/A	N/A	N/A	10,000	10,000	10,000	10,000
Air Exchanges Exchanges / Hour	(a)	N/A	N/A	N/A	N/A	50	21	11	6
	(b)	N/A	N/A	N/A	N/A	360	153	79	44

Note: A uniformity of ±1% = ±1°C at 100°C.
* With vents closed
a) With standard fan
b) With optional exhaust fan

PEAK SERIES

Incubators

The incubators are of the same basic construction as the ovens and have a maximum operating temperature of 80°C. Minimum operating temperature 10°C above ambient. Both gravity convection and fan assisted versions are available.

All units have an integral sealed glass door to facilitate product inspection and are designed for long term accuracy and reliability. As with all products in the Peak range, a wide choice of control and programming options and other optional features is available. The 400 & 800 litre capacities are floor standing models.

Heat up times are excellent and temperature stability with microprocessor three term control varies from ±0.2°C to ±0.5°C, depending on the model type.

	INCUBATORS WITHOUT FANS				INCUBATORS WITH FANS					
Model	PIN30	PIN60	PIN120	PIN200	PIF30	PIF60	PIF120	PIF200	PIF400	PIF800
Max Temp (°C)	80	80	80	80	80	80	80	80	80	80
Chamber Dimensions (mm) (H)	255	350	450	700	300	400	500	750	1500	1500
(W)	330	392	492	592	292	392	492	592	605	1200
(D)	320	420	520	520	320	420	520	520	510	510
External Dimensions (mm) (H)	470	570	670	920	470	570	670	920	1970	1720
(W)	655	765	865	965	665	765	865	965	980	1585
(D)	470	570	670	670	470	570	670	670	720	1000
Chamber Capacity (litres)	27	58	115	215	28	66	128	230	400	800
Weight (Kg)	30	45	60	75	30	45	60	75	200	280
Shelves										
(number supplied)	2	2	2	2	2	2	2	2	3	3
(max. possible)	3	5	9	15	3	5	9	15	30	30
(max dist load/shelf kg)	10	10	10	10	10	10	10	10	10	10
(max load kg)	20	30	40	50	20	30	40	50	75	100
PERFORMANCE										
Power Rating at 240 V (watts)	250	550	675	1000	250	675	675	1000	2000	4000
Holding Power * at max. temp (watts)	70	95	140	250	115	150	200	300	530	840
Temperature Uniformity * (at max temp as a %)	± 3.5	± 3.5	± 3.5	± 3.5	± 1.5	± 1.5	± 1.5	± 1.5	± 2.0	± 2.0
Temperature Stability on/off control (°C)	± 2.0	± 2.0	± 2.0	± 2.0	± 1.0	± 1.0	± 1.0	± 1.0	± 1.0	± 1.0
Temperature Stability PID control (°C)	± 0.5	± 0.5	± 0.5	± 0.5	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2	± 0.2
Heat Up Times * (mins) 37°C	6.5	6.5	6.5	8	2.5	3	3	4	15	17
60°C	12.5	12.5	12.5	16	8.5	7	8.5	12	40	45
240 V 80°C	18	18	18	25	16.5	12	15.5	23	85	100
Recovery Times * (mins) 37°C	0.5	1	2	2.5	1	0.5	1	1.5	10	12
60°C	1	2.5	3.5	4	2	1	1.5	3	12	15
Door Open 60secs 80°C	1.5	3	4.5	6	3.5	1.5	2.5	5	25	30
240 V										
Air Exchanges vol (l/h)	N/A	N/A	N/A	N/A	1400	1400	1400	1400	12000	12000
Air Exchanges Exchanges / Hour	N/A	N/A	N/A	N/A	50	21	11	6	30	15

Note: A uniformity of ±1% = ±1°C at 100°C.
* With vents closed

temperature control systems

A choice of control systems is available including controllers which simply heat up the furnace and hold at one temperature indefinitely and more complex programming systems. Access to parameters is simple and easy to understand and is customised to present only those parameters which need to be viewed or adjusted.

Carbolite 200 & 201 Controllers

The 200 is a simple on/off controller with large clear digital display. The 201 is a three term microprocessor controller with the facility of an adjustable single ramp to set point, either up or down. This high precision instrument has a large digital display.
Both the controllers are exclusive to Carbolite and are jointly designed by Eurotherm and ourselves. The measured temperature is provided by large LED's located behind a wipe clean membrane panel. The setpoint is displayed and adjusted by pressing either the raise or lower button.

Eurotherm 2416 CC

The Eurotherm 2416 CC is an advanced setpoint programming temperature controller with eight segments, any of which can be a ramp, step or dwell. It is housed in a compact 1/16 din size measuring 48 x 48mm.
It provides precise control with the advanced PID control algorithm giving stable 'straight-line' control of the process. Power feedback is used to stabilise the output power and hence the controlled temperature against supply voltage fluctuations. The controller continually corrects for drift and this gives high stability and rapid response to process changes.

Eurotherm 2408 CP

The Eurotherm 2408 CP contains the same features as the 2416 CC, but is housed in a ⅛ din size measuring 48 x 96mm high. The larger case allows for more options including storage of up to 20 separate programmes.

Overtemperature Protection

An independent overtemperature protection system may be justifiable to protect expensive heating elements or valuable furnace contents. Where the Carbolite 201 controller is the main controller, an overtemperature protection facility is integrated into the same display panel and incorporates an independent power supply and control circuit. When required with other main controllers, a separate Eurotherm 2132 digital controller is fitted. This unit is housed in a compact 1/32 din size measuring 24 x 48mm wide. The additional control unit uses a separate thermocouple and operates a contactor to shut down the furnace in the event of the set temperature being exceeded.

Communications Software

IPSC communicates with one programmer at a time and allows data logging. It also shows a graph of furnace temperature and set point on the computer screen and allows storage of programs on disc, and easy editing and error free downloading to the furnace programmer.

Other Options Additional control systems can be supplied and they include cascade control, multi-segment programmers and process timers. The Carbolite 201 controller is also available with an integral process timer. When the working setpoint is reached, a timed period starts and can either end with an audible alarm or to switch off the power at the end of the time period.

Standard Electrical Supply

When ordering, always quote the model, controller and the preferred type of electrical supply from the list. Please indicate the frequency (50 or 60 Hertz) and number of phases. For 3-phase supplies (where applicable), please state whether a neutral is available (if so, please quote both the phase-to-phase and the phase-to-neutral voltages, eg 380.220V). Typical single phase voltages are 100, 110, 200, 208, 220, 240 and 254V. 3-phase voltages **without** neutral are typically 220, 380, 415 and 440V. 3-phase voltages **with** neutral are typically 220/127, 380/220, 415/240 and 440/254.

Note

As a result of continuous product development, we reserve the right to change specifications and illustrations. In the unlikely event of one of our standard products not meeting your requirements, we have the capability to design and manufacture a unit specifically tailored to meet your needs.
Carbolite manufactures in compliance with the relevant safety standards to BS EN 61010-1: 1993 & 61010-2-010: 1995. All products carry the CE mark which indicates compliance with all relevant European safety directives; ie Low Voltage Directive and ElectroMagnetic Compatibility directive.

CE

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