DNO-D Series, Drying Oven With Natural Convection

Routline drying and sterilization applications up to 200°C and storage at precisely controlled elevated temperature are the strengths of DNO drying ovens.

- **Hot air ovens** are suitable for various applications in the fields of agricultural, and industrial researches for heating, drying, sterilizing and baking in laboratories, hospitals, and industries.
- **PID temperature control** provides automatic compansation after load changes, setting changes or door opening for excellent accuracy.

- **Natural convection** heat distribution combines with adjustable air vents to provide excellent uniformity.
- **Double wall** construction, **fiberglass** insulation and **silicon rubber** door sealing reduce heat loss and power drain.
- **Stainless steel interior** chamber and shelves are corrosion resistant,durable & easy to clean.
- **Power coating exterior** is beautiful, durable, and corrosion resistant.

DNO-30

Features:

- Simple keypad input allows easy temperature setting.
- LED digital display enable users to monitor the chamber temperature at any given time.
- Visual alarm indicator alerts users of abnormal conditions if the chamber temperature exceeds the setting point by 10°C.
- The temperature can be controlled and maintained to 200°C.
- Ovens feature a see-through window to view contents without opening.
- Adjustable shelves are included.
- The temperature stability is ±0.5°C at 100°C; ±1.0°C at 200°C.
- Optional cable port.
- Optional gas inlet.

Specifications:

Model	DNO-30	DNO-50	DNO-80	DNO-150	DNO-300
Convection	Natural convection				
Working temperature	Ambient +5°C ~ 200°C				
Capacity (liters)	30	50	80	150	300
Chamber dimen.(mm)	W325xD310xH315	W380xD365xH390	W420xD450xH463	W625xD510xH500	W625xD510xH1000
Power watts	700	1000	1200	1400	2000
Dimensions (mm)	W425xD420xH610	W480xD475xH695	W522xD560xH770	W725xD620xH795	W725xD620xH1465
Accessory	2 Shelves				4 Shelves
Optional accessory	Test tube basket				
Power supply	AC110V 60Hz or 220V 50/60Hz				

DFO-Serie, 36 Liter, 80 Liter, 150 Liter, 240 Liter Ovens

DFO series units are primarily used in applications needing rapid drying and sterilization. Totally homogenous temperature distribution, rapid dynamic response. This modern range of ovens is available in 4 sizes.
DFO series offers excellent uniformity and stability & are used for many applications as Glassware drying, warming, sterilizing, ageing , curing, softening, annealing, preheating and testing , drying slieds.
The inner case is constructed from polished stainless steel.
All units are provided with wire plated shelves with multi-position settings.
All models are with fan assisted air circulation, the chamber ventilation and exhaust vent are easily adjustable.
Wide choice of control options is available, PID controller & timer is fitted as standard with dual display of measured value and setpoint.


DFO-36

Options:

- 38 mm cable port
- Gas inlet
- 5 programs of 8 segments model: 3216CP
- 4 programs of 16 segments model: 2416P4
- RS-232 / 485 communication model: 3216E

Specifications:

Model	DFO-36	DFO-80	DFO-150	DFO-240
Temp. range	Room temperature - 250°C			
Temp. constancy	±0.1°C			
Temp. uniformity	±1°C at 100°C			
Temp. control	PID			
Temp. sensor	Thermo couple K			
Heater: Oven	1100W	1500W	1800W	2200W
Inside Material	sus-304			
Timer	99hr 59min			
Window (mm)	W200xH300			W200xH500
Safety devices	Short circuit breaker, over heat protector, sensor abnormality			
Inside dimensions (mm)	W400xD300xH300	W500xD400xH400	W600xD500xH500	W600xD500xH800
Outside dimensions (mm)	W525xD420xH595	W620xD520xH620	W720xD620xH720	W720xD620xH1020
Capacity (liters)	36	80	150	240
Shelfs	2			3
Weight	34kg	47kg	60kg	76kg

Model: HF4-2, Horizontal Air Flow Ovens 300°C

MRC High Performance Ovens are engineered to meet the most critical temperature requirements.
They are designed for continuous drying operations at temperatures up to 300°C.
Factory-set over temperature protection prevents control failure from damaging contents and guards against burnout.
The Watlow controller provides a 24-step ramp and soak, 0.1°C control, multiple levels of operator access and automatic resumption of program following a power failure.
Time and temperature are displayed in a three-digit LED readout for fast and accurate setting. In addition, the sealed membrane touch-pad control panel is water and acid resistant.
Horizontal air flow provides fast heat-up and recovery and ensures rapid drying.
Heated air is continuously circulated by twin turbo blowers.
Blowers also circulate air to motor bearings to prolong motor life.
Punched stainless steel shelves are adjustable on 1/2 inch centers.
Adjustable three air intake and exhaust ports can be opened for fast drying of high-moisture content samples.
The 3.5 inch thick wrap-around fiberglass insulation on all sides minimizes heat loss.
A high temperature gasket door seal eliminates air leakage and ensures longer gasket life while being subjected to extreme operational temperatures.


HF4-2

This unit includes long-lasting, low-watt density heating elements. It also has adjustable heavy-duty hinges & a door latch that are designed for lifetime service.
The HF4 has rugged, welded construction with a double-walled, corrosion-resistant type 304 stainless steel interior and a powder-coated exterior.

Model	HF4-2
Capacity (liters)	133
Interior dimension (cm)	W52xD50.8xH51
Enterior dimension (cm)	W89xD73.7xH96.5
Temperature range	15°C above ambient to 300°C
Temperature uniformity	+/-1.0°C at 110°C
Electrical specifications	Volts: 220V Hz:50/60 Watts: 2200 Amps: 12
Temperature recovery time	4 min to reach 110°C
Heat-up (min)	10 min to 110°C (20 min to 180°C)
Shelves	2 Supplied (8 maximum)

Models: CE3F-2 & CE5F-2, Horizontal Air Flow Ovens 300°C

The CE Oven Series incorporates the Sure Load shelf system, triple wall construction, and easy-to-read microprocessor controls. Users can adjust the air exhaust from the chamber without being near the the heat source. Even at operating temperatures of 225°C, the outer skin of this unit meets all CE requirements, so workspaces remain cool.

The 99 hr 59 min digital timer has an independent control, so its use is optional. Once the timer expires, the heating elements turn off while the blower continues running to cool the samples inside the oven.

Whatever the application, these forced air ovens deliver precise uniformity, air distribution and the peace of mind expected from the MRC brand. All of the MRC CE series ovens are CE approved. The CE family is our lastest installment of a product of Constant.

Sure Load Shelf Design • Non-Tip Shelves • Microprocessor Controls • Horizontal Air Flow • Cool Touch Damper • Digital Timer to 99hr & 59 min • CE Approval.


CE3F-2

Model	CE3F-2	CE5F-2
Capacity (liters)	85	141
Inside Dimen.(mm)	W420xD495xH420	W533xD495xH533
Outside Dimen.(mm)	W648xD680xH850	W760xD680xH965
Temperature Range	15°C above ambient to 225°C	15°C above ambient to 240°C
Temp. Uniformity	+/-1.75°C at 150°C	+/-2.0°C at 150°C
Electrical Spec.	Volts: 220V Hertz: 50/60 Hz Watts: 1100 Amps: 5	Volts: 220V Hertz: 50/60 Hz Watts: 1500 Amps: 6.5
Temp. Recovery Time	6 minutes at 150°C	
Heat-up (min)	24 minutes at 150°C	
Shelving	2 Supplied (8 Maximum)	

PF-Serie, 300°C Ovens


PF-30

This modern range of ovens provides a combination of excellent performance & reliability. Increased power and low thermal mass encased fibre insulation ensure both fast heat up times & reduced recovery times. Reduced holding power once at set temp., together with the insulation, makes the range economical & outer case temperatures have been significantly reduced. Both gravity & 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 & curing option is available. Also, where processes involve large amounts of water, a moisture extraction option is available.

Features: The outer cases are fabricated from corrosion resistant zinc coated mild steel & 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.

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

Digital temperature control
The control module is able to house many variations of digital instrumentation with simultaneous display of measured and set temperature. Microprocessor based PID controllers are fitted as standard.

Economy 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.

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

Control panel
The side mounted control panel avoids damage from accidental spillage.

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

Options:
- Range of over temp. protection systems in accordance with DIN12-880 Part 2.
- Stoving & 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.
- 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.

Specifications:

Model	PF30	PF60	PF120	PF200
Max. Temp (°C)	300	300	300	300
Chamber Dimensions (mm) (H)	300	400	500	750
Chamber Dimensions (mm) (W)	292	392	492	592
Chamber Dimensions (mm) (D)	320	420	520	520
Outside Dimensions (mm) (H)	470	570	670	920
Outside Dimensions (mm) (W)	665	765	865	965
Outside Dimensions (mm) (D)	470	570	670	670
Chamber Capacity (liters)	28	66	128	230
Weight (kg)	30	45	60	75
Shelves				
Number Supplied	2	2	2	2
Max. Possible	3	5	9	15
Max. Dist load/shelf kg	10	10	10	10
Max load kg	20	30	40	50
Performance				
Power Rating at 240V (watts)	1000	1500	2000	2700
Holding Power* at Max. temp. (watts)	350	600	800	1250
Temp. Uniformity* (at Max. temp. as a%)	±1.0	±1.0	±1.0	±1.0
Temp. Stability on/off control (°C)	±1.0	±1.0	±1.0	±1.0
Temp. Stability PID control (°C)	±2.0	±2.0	±2.0	±2.0
Heat up Times* (Mins) 240V 100°C	4.5	4.5	4.5	5.5
Heat up Times* (Mins) 240V 200°C	12	12	12	14
Heat up Times* (Mins) 240V 300°C	25	25	25	30
Recovery Times* (Mins) Door Open 60sec 240V 100°C	1	1	1	1.5
Recovery Times* (Mins) Door Open 60sec 240V 200°C	2.5	2.5	2.5	3
Recovery Times* (Mins) Door Open 60sec 240V 300°C	4	4	4	5
Air Exchanges vol (l/h) @ 100°C	1400	1400	1400	1400
Air Exchanges	50	21	11	6

* These options may affect Chamber Uniformity Note: A uniformity of ±1%=±1°C at 100°C *With vents closed.

FD-600

FD-400/600, 200°C Large Capacity Ovens

These ovens - with fan assisted air circulation are widely used in the field of biochemistry, chemical pharmacy, medical sanitation, agriculture & environment protection, etc. & are available in 430 or 600litre capacities. The ovens are ideally suited for the drying of considerable quantities of glassware or large individual pieces.

The ovens will accept a greater number of trays, or without trays can be used for processing large components.

Three-dimensional heating technology ensures the solid temperature uniformity in the working chamber. Sound airway structure & gentle airflow circulation design.

Mirror stainless steel chamber, electro polished stainless steel shelves & toughened glass internal door.

Applications:

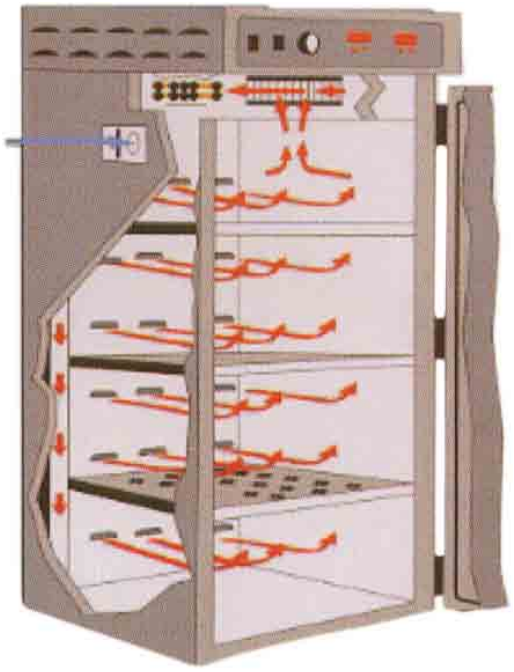
- drying of glassware
- warming
- sterilising
- ageing
- curing
- burning-in
- long term stability testing
- softening
- annealing
- enamelling
- baking
- bending
- tempering
- pre-heating
- soldering

Specifications:

Model	FD-400	FD-600
Control mode	Fuzzy logic control technology	
Display mode	LED	
Blow mode	Bottom vertical airflow	
Temperature range (°C)	Ambient +5~200	
Temperature adjusting precision (°C)	≤±0.5 (200°C)	
Temperature fluctuations (°C)	≤±0.1	
Temperature uniformity (°C)	≤±2.5 (200°C)	
Security function	Upper and lower temperature limit exceeding alarm, independent exceeding guard	
Additional function	Timing operation, monitoring timer, power-off recovery, parameter recalling, correction of temperature indicator	
Capacity (liters)	430	600
Number of clapboard (piece)	2 (Maximum 4)	
Net weight (kg)	170	210
Inside dimension (mm)	W700xD650xH950	W800xD780xH1000
Outside dimension (mm)	W890xD780xH1420	W990xD910xH1470
Packing dimension (mm)	W1010xD900xH1590	W1110xD1030xH1640
Power (W)	3100	3700
Voltage	AC 220V 50/60Hz	

FX14-2/FX28-2, Forced Air Horizontal Flow 200°C Ovens

Large Capacity Ovens. Models FX14-2 features 385 liter and FX28-2 793 liter are perfect for high volume sample processing and drying applications including production processes. Precise Temperature Control: Technology. The independent overtemperature protection (DTP) control is user adjustable and provides added security against temperature overshoot. Include a precision microprocessor controller, 99 hr./59 min. electronic timer and true forced air horizontal airflow. 90mm of insulation, wrapped in two layers. A chamber door gasket eliminates heated air leakage. The door hinges are user adjustable to maintain a positive seal over the life of the oven. True Horizontal Airflow. The blower-assisted airflow design facilitates temperature uniformity and fast recovery. A turbo blower and heavy-duty motor combine to direct heated air over the shelves and samples for even, constant drying, curing and baking.



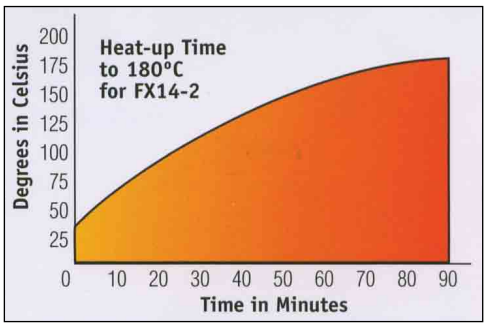
FX28-2 AirFlow Diagram

Features:

True horizontal airflow provides excellent uniformity and faster heat-up • Microprocessor control for precise temperature control • Independent Safety Controller • 99 hr/59 min Electronic Timer automatically turns off at selected time • Adjustable exhaust port controls the rate of drying.

Specifications:

Model	FX14-2*	FX28-2*
System type	Mechanical convection	Mechanical convection
Controls/Display	Single setpoint mProc.	Single setpoint mProc.
Chamber capacity (liters)	385 lit.	793 lit.
Temperature range	Amb.+5 to 200°C	Amb.+5 to 200°C
Temperature uniformity	±3°C at 110°C	±3°C at 110°C
High limit control	Yes	Yes
External dimensions (cm)	W94xD86.4xH119.4	W94xD86.4xH200
Internal dimensions (cm)	W78.74xD63.5xH78.74	W78.74xD63.5xH157
Shelves supplied	3 Shelves	6 Shelves
Maximum shelves	8 Shelves	16 Shelves
Shipping weight (kg)	154	204
Element wattage	2000	4000
Electrical requirements Max. amp draw at 220Vac Power frequency/phase	10 50-60Hz/single phase	19 50-60Hz/single phase



Applications:

- Batch Testing
- Sterilizing
- Electronic Burn-in
- Aging Tests
- Glassware Drying
- Stability Testing

* - 2 Denotes 220V

KF-Series, Vacuum Drying Ovens

The Vacuum Drying Oven well combines vacuum condition with drying heating technique, significantly reduces boiling point and vapor tension, in order to provide the experiments a dustless, nonvortex, gentle working room.
Therefore, it will be convenient to collect, discharge and reuse the vapor. Moreover, because the whole procedure of experiment, like storage, heating, drying, all processes in the vacuum or inert gas chamber, the specimen won't be oxygenated readily.
There are Three optional modes of 22L, 47L, and 77L.

Application:

It is broadly applied to biochemistry, chemical pharmacy, medical sanitation, agriculture and environment protection, such as the powder drying, baking and sterilizing and disinfection of glass container.
It is particularly fit for quick drying disposal of thermal sensitive, fissile, oxidizing substance and complex compounds.


KF300


KF500

Features:

- Vacuum electromagnetic valve makes it easy to switch the vacuum pump.
- Built-in large-scale plate heating design ensures the fine uniformity of temperature in the chamber.
- Mirror stainless steel chamber. electro polished stainless steel shelves and toughened glass observe window indoor. the luxurious and elegant profile with aesthetic designing.

Options:

- Temperature Programer 4 programs of 16 segments, Model: Eurotherm 2416P4
- RS-232/485 comunication. Model: Eurotherm 3216E.
- Oil vacuum pump.
- Diaphragh vacuum pump.

Specifications:

Model	KF300	KF400	KF500
Temperature range (°C)	40 ~ 180	40 ~ 200	40 ~ 250
Temperature uniformity	±5°C of set point		
Duration to max temperature	70 minutes		80 minutes
Range of vacuum degree	133mbar (1Torr)		
Capacity (liters)	22	47	77
Number of shelves (piece)	1	2 (maximum 4)	
Net weight (kg)	50	75	120
Inside dimension (mm)	W300xD300xH250	W350xD350xH385	W400xD450xH430
Outside dimension (mm)	W510xD435xH720	W560xD485xH845	W610xD585xH1310
Power (w)	300	800	1200
Voltage	AC 220V 50/60Hz		


1407-2

1407-2/1408-2, Small Vacuum Ovens

Vacuum ovens are used for a wide variety of vacuum drying, curing and moisture content testing. Common applications include drying heat sensitive samples, moisture determination, & drying heat sensitive samples under a controlled atmosphere.
MRC vacuum ovens are specifically designed for unparalleled performance when utilized for these, and other, applications.
Since there is no air in the vacuum chamber, heat is transferred from the heating elements to the interior chamber wall, then to the shelves, and finally to the samples.
MRC Vacuum ovens maximize conductive heat techniques. To minimize conductivity resistance, ALUMINIUM shelves are provided with all MRC vacuum ovens. The oven chambers are wrapped in high temperature insulation which aids overall performance and promotes energy efficiency.
MRC offers both standard ANALOG vacuum ovens with mechanical thermostat & Digital PID controlled models. Both ranges include unique design features which enhance the overall performance of the ovens.
These features include durable construction with corrosion resistance stainless steel chambers, true vacuum valves, cross-flow ventilation through the oven chamber, and interchangeable door gasket for application specific use.
Independent, resettable circuit breakers prevent any electrical overload.

Analog Model For Accuracy and Economy

The Models 1407-2/1408-2 feature hydraulic thermostats & corrosion resistant stainless steel interior. A 13mm thick tempered glass observation window resists breakage under vacuum & permits easy viewing of the chamber interior. Glass viewing windows are "spring mounted" which allows the door to close squarely, thus ensuring a tight seal around the oven door. Furthermore, the door gasket has a beaded edge which also ensures vacuum integrity. Door gaskets are designed to be easily removable & interchangeable. The standard gasket supplied with all models is made of highly resistant SILICONE rubber. Also available as optional accessories are application specific gaskets. The BUNA-N gasket is available for solvent applications & is limited to a maximum temperature of 125˚C. The FLOUROSILICON gasket is available for applications involving acids & is limited to a maximum temperature of 200˚C.


1408-2

Digital Model for Top Performance and Accuracy

The Model 1407DIG feature PID (Proportional Integral Differential) controllers. This controller delivers precise temp. stability & repeatability. Dual digital display of setpoint & actual chamber temperature.

Specifications:

Model Analog	1407-2	1408-2
Model Digital	1407DIG	1408DIG
Chamber Capacity (liters)	16	47
Temperature Range	40-210^{O}C	
Temperature Uniformity	±3.5^{O}C @ 100^{O}C ±5^{O}C @ 200^{O}C	
Heat up time, Minutes	30 minutes to 100^{O}C	
Shelves Supplied	2	
Outside dimensions(mm)	H565xD420xW362	H640xD622xW440
Inside dimensions(mm)	H229xD305xW229	H305xD508xW305
Weight	27Kg	50Kg
Watts/Amps-230Volt	550/2.4	1200/5.2
Cycle	50/60 Hz	
Phase	Single	

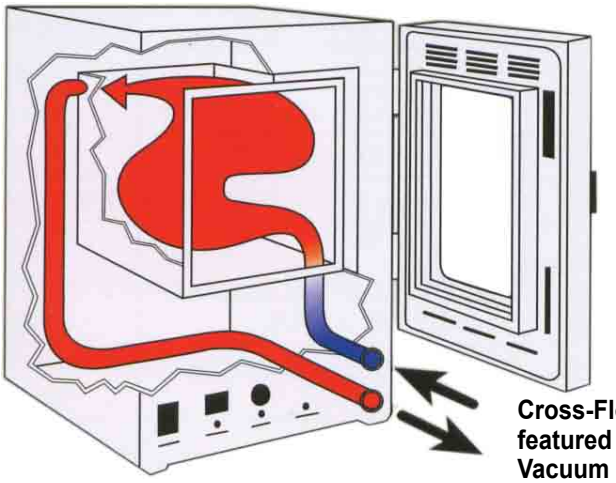

1408-2

Options:

- Temperature Programer 4 programs of 16 segments, Model: Eurotherm 2416P4.
- RS-232/485 comunication. Model: Eurotherm 3216E.
- Oil vacuum pump.
- Oil Free vacuum pump.

1425-2/1445-2/1465-2, Small/Medium Vacuum Ovens

This unit is durably constructed with seamless welds and strong bracing. All vacuum ovens are built with a stainless steel chamber for exceptional durability. We use solid brass vacuum valves with Teflon seats to prevent leaks. Our double plenum design resulting in a cool outer surface. The doors on these units have positive latch handles with spring-loaded glass to facilitate a good vacuum seal without hinge binds that shorten the gasket life. A selection of gaskets (for specific applications) and a small bench top footprint increase the versatility of these ovens.
Our unique cross-flow ventilation forces inert gas to fill the entire chamber.



Cross-Flow Ventilation featured in all Vacuum Ovens

Users can choose from 3/8 inch orifices or a KF25 fitting to withstand heavy use, minimize draw-down time and achieve low vacuum levels. We offer a full line of gaskets to suit applications involving high temperatures, acids, or solvents.

Features:

- Cross Ventilation Air Flow Design.
- Teflon Seated Vacuum Valves.
- Achieve Impressive Vacuum Levels.
- Sizes Range from 16-125 liter.
- Built-in Over temperature Protection.

Specifications:

Model	1425-2	1445-2	1465-2
Capacity (liters)	16	45	125
Inside dimensions (cm)	W22.9xD30.5xH22.9	W30.5xD50.8xH30.5	W45.7xD61xH45.7
Outside dimensions (cm)	W43xD48xH58	W52xD71.75xH67.75	W66xD79xH81
Temperature range	10°C above ambient to 240°C		
Temperature uniformity	±3.5% of set point		
Electrical specification	Volts: 220V Hertz: 50/60 Hz Watts: 750W Amps: 3.5A	Volts: 220V Hertz: 50/60 Hz Watts: 1100W Amps: 5.0A	Volts: 220V Hertz: 50/60 Hz Watts: 1500W Amps: 7.0A
Temperature control	1°C		
Heat-up (min)	35 minutes at 100°C	45 minutes at 100°C	65 minutes at 100°C
Shelves	3 Supplied		
Agency Approval	UL and CE Approved		

1495D, Large Vacuum Oven

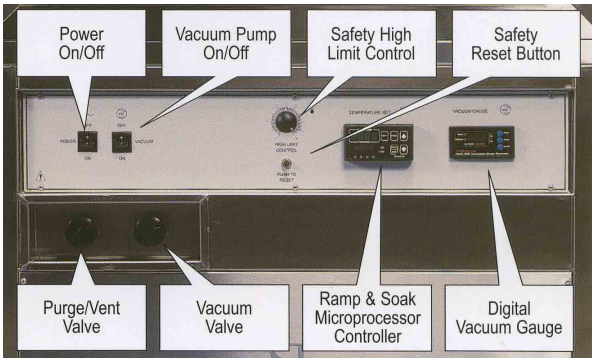
Unique Design. The Model 1495D is a general purpose vacuum oven specially designed for professional and industrial use. The combination of the oven and a ruggedly constructed mobile stand creates an ideal vacuum application station. The stand is designed for mounting a vacuum pump at the base. All vacuum plumbing and KF25 connections are provided (vacuum pump not included).
Precision Controllers. The Waltow 981 temp. controller, programmable and microprocessor-based, offers multiple ramp and soak capabilities, including storing and running up to 24 temperature profiles. The controls are easily adjustable and the control panel is user friendly. A digital vacuum gauge shows chamber vacuum level in measurements of Torr and m/Torr. The display range is 760 Torr down to 0 mil Torr. A secondary independent high limit controller provides over temperature safety protection. **Rugged Construction.** High grade stainless steel construction is used for the exterior and chamber interior. Vacuum valves incorporate 3/8" brass orifices to withstand heavy use.

Introduced Gas Saturates Chamber Uniformly.
Our unique cross-flow ventilation design forces nitrogen or other inert gases to fill the entire chamber. Gas is forced across the greatest distance of the chamber, purging the chamber as it passes over the samples. Corrosion-resistant stainless steel tubing is used for the gas purge piping system. Use this feature to reduce effects of oxidation.
The oven chamber is wrapped in high temperature insulation which aids overall performance and promotes energy efficiency. Powder coat construction, true vacuum valves and cross-flow ventilation through the oven chamber enhance total performance. The vacuum oven is secured to a ruggedly constructed mobile stand to create a vacuum pump at the base. Although the oven is not supplied with a vacuum pump, all vacuum plumbing and KF25 connections are provided.

Features/Benefits:

- Large capacity is efficient and accommodating
- Ramp and Soak Controller
- Stainless Steel Interior
- KF40 Fitting Included
- All stainless steel construction
- Programmable Controller
- Digital Vacuum Gauge for accuracy
- Cross-flow ventilation allows for a dry oxygen free environment.
- System ready to receive vacuum pump

Pannel:



Specifications:

Model	1495D
System Type	Vacuum Oven Station
Controls/Display	Digital mProc.
Chamber Capacity (liters)	255
Temperature range	Amb. +15°C to 220°C
Temp. uniformity	±7.0°C at 150°C
Heat up (min)	90 minutes at 150°C
High Limit Control	Yes-Independent
Outside Dimen. (cm)	W92xD114.3xH157.5
Inside Dimen. (cm)	W71xD61xH61
Vacuum Gauge	Digital-m/Torr Scale
Standard Gasket Material	Viton
Shelves Supplied	3 Aluminium
Maximum Shelves	7 Shelves
Shipping Weight in kilograms	445kg
Element Wattage	3500
Electrical Requirements: Max. Amp draw at 220Vac Power Frequency/Phase	16 50-60 Hz/ Single Phase

* - 2 Denotes 220V

Aplications:

- Vacuum drying & curing
- Moisture determination
- Out-gassing solids & liquids
- Aging tests
- Electronic process control
- Vacuum embedding
- Vacuum storage
- Plating

Model: HF2-2, Inert Gas Class 10,000 Cleanroom Oven 300°C

Model	HF2-2
Capacity (liters)	133
Interior dimension (cm)	W52xD50.8xH51
Enterior dimension (cm)	W89xD73.7xH96.5
Temperature range	15°C above ambient to 300°C
Temperature uniformity	+/-1.0°C at 110°C
Electrical specifications	Volts: 220V Hz:50/60 Watts: 2200 Amps: 12
Temperature recovery time	4 min to reach 110°C
Heat-up (min)	10 min to 110°C (20 min to 180°C)
Shelves	2 Supplied (8 maximum)

MRC clean air ovens incorporate all the special features needed for high temperature clean room work: an all heliarc-welded type 304 stainless steel interior, two adjustable perforated stainless steel shelves, rapid heat recovery, and two separate LED digital displays for time and temperature that show set point or up-to-the-second process information. The PID (Proportional Integral Differential) controller provides a 24-step ramp and soak, 0.1°C control, and multiple levels of operator access. A sealed membrane touch-pad control panel protects the controllers.

These units also have three adjustable air intake & exhaust ducts that are easily removed for cleaning & allow the use of either room or recirculated air. A nitrogen inlet port for purging is standard to prevent contamination. MRC clean room ovens are made with 3.5 inches of high-temperature, wrap-around insulation and a high-temperature silicone rubber door seal.

Options:

- Horizontal Air Flow.
- Encapsulated Insulation.
- Nitrogen Purging.
- 24-Step Ramp and Soak PID Controller.
- Stainless Steel Interior & Durable powder coated exterior paint.
- Built-in Overtemperature Protection.
- Hepa filteration (Model CR1).

Model: CR-1, Inert Gas Class 100 Cleanroom Oven, 200°C, HEPA Filter

Model	CR-1
Capacity (liters)	110
Interior dimension (cm)	W43.2xD50.8xH51
Enterior dimension (cm)	W89xD73.7xH96.5
Temp. range	15°C above ambient to 200°C
Temp. uniformity	+/-1.0°C at 110°C
Electrical specifications	Volts: 220V Hertz: Watts: 2200 Amps: 12
Temp. recovery time	4 minutes to reach 110°C
Heat-up (min)	10 min to 110°C (35 min to 180°C)
Shelves	2 Supplied (8 maximum)

CR-Serie, Class 100 Clean Room Ovens

All sources of particulate contamination are fully sealed. The sealed stainless steel interior and gloss white epoxy finish make the ovens easily cleaned.

Standard features:

- Designed for operation within Class 100 environments (US FED STD 209E) .
- 250°C maximum operating temperature .
- 30 to 1790 litre chamber volumes.
- Fully sealed low thermal mass insulation to avoid shedding fibres .
- Fully enclosed brush less fan motor .
- PID controller, with single ramp to set-point facility .
- Smooth easily cleaned gloss epoxy exterior
- Polished stainless steel sealed interior enables use of inert gas atmosphere.
- Perforated stainless steel shelves .
- Particle free silicone rubber door seal.
- Membrane control panel with clear bright LED display.
- Double skin construction for cool safe outer case temperature .
- Fully adjustable chamber ventilation.

Options:

• Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation) • HEPA filtered airflow available • Digital process control timers & multi segment programmers available • Paperless DAQ (Data Acquisition) graphical recorders available • Top access port for independent thermocouple • Cable access port • Viewing window door • Through door illumination system • Stacking frame to enable units to be stacked one upon another • Key-lock door • Door switch to cut off power when the door is open • Fully customised through wall (flange fitted) designs are available • Up to 300,400,500,600°C.

Model	Max. Temp. (°C)	Temp. Stability (°C)	Temp. Uniformity (°C) @250°C	Heat-up time to Max. (mins)	Recovery time to Max. (mins)	Dimensions		Shelves Fitted/ Accepted	Shelf Loading Each/ Total (kg)	Volume (liters)	Max. Power (W)	Power Supply
						Internal HxWxD(mm)	External HxWxD(mm)					
CR/30	250	±0.2	±3.0	35	4	310x310x310	655x460x670	2/3	10 20	30	1000	230V single phase
CR/70	250	±0.2	±3.0	35	4	310x470x470	655x620x820	2/5	10 30	68	1500	230V single phase
CR/130	250	±0.2	±4.0	35	4	550x470x470	895x620x820	3/9	10 40	121	2000	230V single phase
CR/180	250	±0.2	±5.0	58	5	770x470x470	1115x620x820	3/15	10 50	170	2500	230V single phase
CR/220	250	±0.2	±5.0	75	4	610x610x610	1130x780x850	3/15	15 45	227	3000	single phase
CR/330	250	±0.2	±5.0	80	6	915x610x610	1440x780x850	4/8	15 60	340	4500	single phase or 3 phase
CR/450	250	±0.3	±5.0	75	9	1220x610x610	1750x780x850	5/11	15 75	450	6000	3 phase
CR/840	250	±0.3	±5.0	-	-	1525x915x610	2050x1065x850	6	15 -	850	12000	3 phase
CR/1790	250	±0.3	±5.0	-	-	1220x1220x1220	1750x1420x1450	5	15 -	1810	18000	3 phase

Minimum operating temperature approximately ambient plus 200°C
Uniformity values are measured in an empty chamber, with vents closed after a stabilisation period
Shelf loadings are based on evenly distributed weight

PF-SC Serie, 300°C Ovens For Solvents

Most vapour explosions in ovens occur when materials that can absorb large quantities of solvent are being processed; typical examples being colls & similar electrical equipment, fibreboard & textiles. Every flammable solvent has a lower & upper flammable limit, & unless the concentration of the solvent vapour is within this range it will not explode. The range widens, for most solvents, with increasing temp. Precautions must be taken to ensurs that no substantial volume of vapour/air mixture within the rarge of fiaamability can occur in the oven. It is not sufficient to permit an explosive mixture to form and attempt to obtain safety by preventing foreseeable means of ignition. The precautions must be directed towards keeping the concentration of solvent vapour down and this is achieved by permitting only the minimum Quantity of solvent to enter the oven and by ventilating the oven continuously in use, to diluts the solvent vapours emitted to one quarter of the lower flammable limit. The "flash-point" of a substance is the temperature at which it evolves sufficient vapour to form an ignitable mixture with air when tested under standard conditions. Thus, if the flash point of a liquid is below the temperature of the work room it will give off vapour until (and beyond) the point where the whole room is full of a flammable mixture, or until all the liquid has evaporated. If the flash point is higher than room temperature, then the liquid will never give off enough vapour to form a flammable mixture in the room. Low flash point solvents are thus intrinsically dangerous. However, the choice of a solvent with a high flash point will usually make no difference to the safety of the oven used to evaporate it, since the oven almost Inevitably has a working temperature higher than the flash point. It is still most desirable to choose solvents with the highest possible flash points to reduce danger at the dipping, spraying and other processes prior to the oven.

Pre-Treatment: The first step should be to limit as far as possible the amount of solvent entering the oven at each loading. Particular care is neaded with articles which have been dipped in paint or varnish to give a thicker coating than is usually obtained by spraying. As much drying as possible should be carried out before the articles are added Into the oven. Where the process permits, it is a good practice, both for safety and economy of heat, to allow the load to remain for a short time in a semi-enclosure provided with mechanical exhaust ventilation, so that air at room temperature can remove some of the solvent. This arrangement also has the advantage that dripping in ths oven is reduced, whereby the accumulation of paint and varnish residues in the oven became less of a problem.

Ventilation: Reliance on natural convection currents up the chimney is not normally an acceptable method of introducing sufficient fresh air into the oven to prevent a solvent/air explosion mixture forming. The oven should be fitted with mechanical exhaust ventilation. It is important that the exhaust draught should be applied at points in the oven where the rate of evaporation is a maximum, and that there are no dead spots in the oven space where there is Tittle air movement, witn little dilution of the flammable vapours as a result. In order to improve the temperature distribution and to obtain an even flow of air throughout the oven it is normal to have some form of air recirculatlon. A proportion of the vapour and fume laden air should be extracted through a flue fitted with its own separate exhaust fan. Reliance on spillage of sufficient vapour and fume laden air through a rotund draught flue from the redrculation system tends to be unsatisfactory. An interlock between the heat source and the exhaust ventilation is the normal method of ensuring that sufficient air is Introduced into the oven for safety.

Explosion Relief & Door Fastening: Although an oven may be provided with comprehensive precautions, explosions can still occur due to failure of components, inadequate servicing, or deliberate scotching of safety devices. The probability of fatal or serious injury to workpeople, or serious damage to the oven, can be reduced substantially if suitable explosion relief is provided, coupled with adequate securing of the doors of the oven to pre-vent their becoming missiles in the event of an explosion. It is recommended that ex-plosion relief panels are fitted to all solvent evaporating ovens Irrespective of chamber volume. These notes cover the bare essentials of the requirements for solvent evaporating ovens used in stpvlng and curing processes.

Model	PF30-SC	PF60-SC	PF120-SC	PF200-SC
Max. Temp (°C)	300	300	300	300
Chamber Dimensions (mm) (H) (W) (D)	300 292 320	400 392 420	500 492 520	750 592 520
Outside Dimensions (mm) (H) (W) (D)	470 665 470	570 765 570	670 865 670	920 965 670
Chamber Capacity (liters)	28	66	128	230
Weight (kg)	30	45	60	75
Shelves Number Supplied Max. Possible Max. Dist load/shelf kg Max load kg	 2 3 10 20	 2 5 10 30	 2 9 10 40	 2 15 10 50
Performance				
Power Rating at 240V (watts)	1000	1500	2000	2700
Holding Power* at Max. temp. (watts)	350	600	800	1250
Temp. Stability on/off control (°C)	±1.0	±1.0	±1.0	±1.0
Temp. Stability PID control (°C)	±2.0	±2.0	±2.0	±2.0
Heat up Times* (Mins) 240V 100°C 200°C 300°C	4.5 12 25	4.5 12 25	4.5 12 25	5.5 14 30
Recovery Times* (Mins) Door Open 60sec 240V 100°C 200°C 300°C	1 2.5 4	1 2.5 4	1 2.5 4	1.5 3 5
Air Exchanges vol (l/h) @ 100°C	10,000	10,000	10,000	10,000
Air Exchanges (Exchanges/Hour)	360	153	79	44

LHT-Series, Laboratory High Temperature Ovens


LHT 6/60

Standard features:

- 400°C, 500°C or 600°C Operating temperatures.
- 30, 60 & 120 litre capacities.
- 301 PID controller with ramp to set point function.
- Heavy duty convection fan for good uniformity.
- Low thermal mass insulation for energy efficiency & rapid heating.
- Corrosion resistant, polished stainless steel interior .
- 2 Multi-position shelves.
- Suitable for continuous operation (see options*) .
- Double skin construction for cool safe outer case .
- Hard wearing, zinc coated & stoved epoxy polyester coated exterior.

Options:

- Cable entry ports .
- Over temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation)*.
- A range of sophisticated digital control & multi segment programmers is available.
- Optional overtemperature protection recommended for continuous operation & to protect valuable contents.
- Process timer.
- RS232! RS485 communications.
- Viewing window.
- Chamber illumination (requires viewing window)**.
- Variable speed fan.
- Floor stands & stacking frames.
- Routine spares kit.
- Extraction fan (may alter achievable uniformity).
- Stoving & curing upgrade for use with small volumes of volatile solvent or paint fumes (comprises over temperature protection, extraction fan and an explosion relief panel. **The stoving & curing option is not compatible with the viewing door or through door illumination options.

Model	Max. Temp. (°C)	Temp. Stability (°C)	Temp. Uniformity (°C) @250°C	Heat-up time to Max. (mins)	Recovery time to Max. (mins)	Dimensions		Shelves Fitted/ Accepted	Volume (liters)	Max. Power (W)	Weight (kg)	Power Supply
						Internal HxWxD(mm)	External HxWxD(mm)					
LHT4/30	400	±0.5	±5.0	50	10	300x300x305	570x830x570	2	30	1000	73	230V single phase
LHT4/60	400	±0.5	±5.0	-	16	400x400x405	670x930x670	2/3	60	1500	99	230V single phase
LHT4/120	400	±0.5	±5.0	-	20	650x480x405	920x1030x670	2/4	120	2250	179	230V single phase
LHT5/30	500	±0.5	±5.0	-	10	300x300x305	570x830x570	2	30	2000	73	230V single phase
LHT5/60	500	±0.5	±5.0	50	16	400x400x405	670x930x670	2/3	60	2250	99	230V single phase
LHT5/120	500	±0.5	±5.0	-	20	650x480x405	920x1030x670	2/4	120	3000	179	230V single phase or 3 phase
LHT6/30	600	±0.5	±5.0	70	10	300x300x305	570x830x570	2	30	2000	73	230V single phase
LHT6/60	600	±0.5	±5.0	-	10(+)	400x400x405	670x930x670	2/3	60	2250	99	230V single phase
LHT6/120	600	±0.5	±5.0	-	-	650x480x405	920x1030x670	2/4	120	3000	179	230V single phase or 3 phase

3 phase (uses 2 phases & neutral of 380/220V - 415/240V supply)
(+) Recovery to 500°C set -pomt

HTMA-Series, High Temperature Modified Atmosphere Ovens


HTMA 4/28 & HTMA 4/95

Standard features:

- 400°C, 500°C or 600°C Operating temperatures.
- 28, 95 & 220 litre capacities.
- Digital PID temperature control using 301 controller including over- temperature protection.
- Rear mounted fan & side air guides give horizontal 'airflow'.
- Manual gas control via needle valves & flowmeters (nickel brass).
- Corrosion resistant, ferritic grade 430, stainless steel interior with perforated non-tip shelves & runners.
- Copper pipe-work with brass flow-meter & solenoid valves .
- Single side hinged door, with metal heat seal & rubber gas tight seal, closed using none slam lever switch.
- Suitable for continuous operation (see options*).
- Double skin construction for cool, safe, outer case.
- Hard wearing, zinc coated & staved epoxy polyester coated exterior.

Options:

- Automatic gas control (requires a 3508 series programmable controller).
- Manual electronic gas control using 2x flow-meters & solenoid valves .
- Stainless steel pipe-work with brass flow-meter & solenoid valves .
- Stainless steel pipe-work, flow-meter & solenoid valves.
- A range of sophisticated digital control & multisegment programmers are available.
- RS232 / RS485 communications.
- Fixed or castor mounted floor stands.

A range of gas tight high temperature ovens for use with inert atmospheres in a batch production environment.

Model	Max. Temp. (°C)	Heat -up time to Max. (mins)	Recovery time to Max. (mins)	Dimensions		Shelves Fitted/ Accepted	Volume (liters)	Max. Power (W)	Weight (kg)	Power Supply
				Internal HxWxD(mm)	External HxWxD(mm)					
HTMA4/28	400	50	10	305x305x305	880x675x885	2	30	1000	73	230V single phase
HTMA4/95	400	75	16	455x455x455	1010x880x1120	2/3	60	1500	99	230V single phase
HTMA4/220	400	120	20	610x610x610	1160x1030x1280	2/4	120	2250	179	230V single phase
HTMA5/28	500	50	10	305x305x305	880x675x885	2	30	2000	73	230V single phase
HTMA5/95	500	75	16	455x455x455	1010x880x1120	2/3	60	2250	99	230V single phase
HTMA5/220	500	120	20	610x610x610	1160x1030x1280	2/4	120	3000	179	230V single phase or 3 phase
HTMA6/28	600	50	10	305x305x305	880x675x885	2	30	2000	73	230V single phase
HTMA6/95	600	75	16	455x455x455	1010x880x1120	2/3	60	2250	99	230V single phase
HTMA6/220	600	120	20	610x610x610	1160x1030x1280	2/4	120	3000	179	230V single phase or 3 phase

Uniformity is measured in an empty chamber with vents closed, after a stabilisation period
* Nominal values based upon a representative sample of products