



# Laboratory Products 2021



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## Natural Convection

### DNI SERIES, 10/20/30/50/80/150/300 LITER INCUBATORS



Lab incubators are specially designed for long-term and stable continuous operation. Ideal for gentle incubation of organisms, such as on agar plates, and also for conditioning of heat sensitive media. Lab Incubators are ideal for cultures, eggs, microbiology, and other biology samples in hospitals, industries, and laboratories. PID Temp. Control provides automatic compensation after load changes, setting changes or door opening for excellent accuracy. Natural convection heat distribution combines with the adjustable air vents to provide excellent uniformity.

Double wall construction, fiberglass insulation provided on 5 sides as well as between inner and outer walls, and silicon rubber door sealing reduce heat loss and power drain.

Stainless steel interior chamber and shelves are corrosion resistant, durable and easy to clean. Powder coating exterior is beautiful, durable, and corrosion resistant. Internal transparent door to facilitate product inspection.

#### Features:

- ▶ Simple keypad input allows easy temperature setting.
- ▶ LED digital display enables 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 70°C.
- ▶ Double doors allow samples viewing from the inner door.
- ▶ Shelves can be adjustable.
- ▶ The temperature stability is  $\pm 0.3^{\circ}\text{C}$  at 37°C;  $\pm 0.4^{\circ}\text{C}$  at 70°C.
- ▶ DNI-10 incubator: a reliable efficient and compact chamber in a sturdy design at a very favorable price. Units are stackable.

DNI-300D



#### Specifications:

MODEL	DNI-10	DNI-20	DNI-30	DNI-50
Convection	Natural convection			
Temperature Range	Ambient +5°C ~ 70°C			
Volume (Liters)	10	20	30	50
Inside Dimensions (mm)	W282xD200xH190	W300xD310xH230	W325xD310xH315	W380xD365xH390
Heater: Incubator	150W	200W	300W	500W
Outside Dimensions (mm)	W500xD270xH300	W412xD420xH500	W425xD420xH610	W480xD475xH695
Shelves	1 Shelf	2 Shelves		
Power supply	AC220V 50/60Hz (110V 60Hz available)			

MODEL	DNI-80	DNI-150	DNI-300
Convection	Natural convection		
Temperature Range	Ambient +5°C ~ 70°C		
Volume (Liters)	80	150	300
Inside Dimensions (mm)	W420xD450xH463	W625xD510xH500	W625xD510xH1000
Heater: Incubator	700W	800W	1000W
Outside Dimensions (mm)	W522xD560xH770	W725xD620xH795	W725xD620xH1465
Shelves	2 Shelves		
Power supply	AC220V 50/60Hz (110V 60Hz available)		

# Incubators

## Forced Air

### DFI SERIES, 36 LITER, 80 LITER, 150 LITER, 240 LITER INCUBATORS



DFI-36

#### Microbiological Incubator With Forced Convection

Premium equipment for all gentle incubation applications, including processing large numbers of samples at high throughput.

Outstanding dynamics keep the required temperature virtually stable with homogenous distribution, irrespective of how many times the door is opened. The modern range of incubators is available in 4 sizes.

DFI Series offers excellent uniformity and stability and are used for many applications as incubation of culture test, drying slides, microbiological incubation, bacteriological test and more. The inner case is constructed from polished stainless steel. Internal glass door for incubator. All units are provided with wire plated shelves with multi position settings.

All models are with fans assisted air circulation.

The chamber ventilation and exhaust vent are easily adjustable.

Wide choice of control options is available.

PID controller is fitted as standard with dual display of measured value and setpoint, timer included.

#### Options:

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

MODEL	DFI-36	DFI-80	DFI-150	DFI-240
Temp. range	Room temperature - 80°C			
Temp. constancy	±0.1°C			
Temp. control	PID			
Heater: Incubator	400W	400W	600W	800W
Inside Material	SUS 430			
Timer	1 minute to 99 hours & 59 minutes or continuous			
Safety devices	Short circuit breaker, over heat protector, sensor abnormality			
Inside dimensions (mm)	W400xD300xH300	W500xD400xH400	W600xD500xH500	W600xD500xH800
Outside dimensions (mm)	W525xD420xH595	W620xD520xH620	W720xD620xH720	W720xD620xH1020
Volume (Liters)	36	80	150	240
Shelves fitted	2	2	2	3
Max. Shelves	7	10	13	23
Weight	34kg	52kg	75kg	85kg



## Cooled Incubators, BOD



### BOD-80/150/175DUAL/400/550/590/850

- ▶ Automatic high and low temperature alarm to prevent the temperature from going too high and dropping too low
  - ▶ Built-in circulating fan for temperature uniformity
  - ▶ Illumination and Timer can be install if required
  - ▶ The compressor will be delayed to start working if power cut and with timer for defrost.
- Using environmental protection cold-media R134a
- ▶ Internal Power socket.

#### Options:

- ▶ 38mm cable port
- ▶ Gas inlet
- ▶ Day/Night Light+Timer

#### The MRC model BOD-80/150/175x2

Cooled incubator designed to obtain freezing, incubating, drying and test temperatures between 0°C and +70°C (or -10°C and +60°C).

It has stainless steel chamber and two doors, when the outer metallic door is opened there is inner glass door. Very good uniformity is achieved by forced air circulation. A PID temperature controller provides constant and accurate temperature. Inside power socket enable the use of the shaker rotator or other instrument inside. Cable port with cup is available upon request.

#### The MRC model BOD-400/550/590/850

Is ideal for BIOCHEMICAL OXYGEN DEMAND of sewage and waste water.

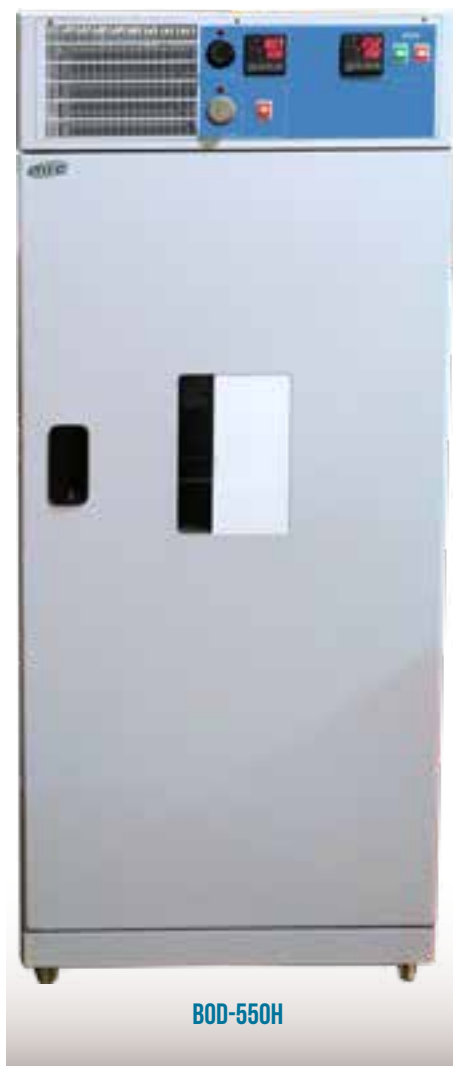
Other applications includes fermentation studies, drug stability tests. Excellent temperature uniformity is obtained by forced air circulation.

A PID microprocessor temperature controller provide accurate and constant temperature.

Dual display of setpoint and chamber temperature.

Hermetically sealed compressor and automatic defrost.

MODEL	BOD-590	BOD-850	BOD-550	BOD-400	BOD-320	BOD-150	BOD-175 DUAL	BOD-80
Temp. range	0°C~70°C (or -10°C to 60°C)							
Temp. Accuracy /Uniformity	±0.1°C/ ±1.5°C at 37°C					±0.1°C / ±1°C at 37°C		
Temp. control	PID							
Temp. Display	LED digital display actual and setting temperature							
Temp. Sensor	PT-100Ω							
Heater	900W	1200W	1200W	1200W	1200W	900W	900W x 2	900W
Volume	590L	1010L	550L	400L	320L	150L	175L x 2	80L
Shelf (Adjustable)	4	4	4	4	3	2	2	2
Inside Material	Strengthen white porcelain	SUS 304						
Refrigerator	1/3HP					1/4HP		
Inside WxDxH(mm)	680x600x1450	850x850x1400	680x580x1400	600x500x1350	600x500x1070	600x500x500	700x500x500	500x400x400
Outside WxDxH(mm)	815x800x1940	930x1060x1860	760x820x1860	670x740x1820	680x740x1472	680x700x825	780x690x1720	560x550x670
Weight	90Kg		200Kg	180Kg		78Kg	150Kg	50Kg



### BOD-550H/850H, TEMPERATURE & HUMIDITY CHAMBERS

MRC stability chambers are perfectly designed for the high requirements of stability studies and climatic tests

Stability Testing for shelf life, accelerated aging, expiration date testing. Whether your testing is for R&D, clinical trials, pharmaceuticals store life, packaging life, ongoing stability, our stability chambers provide a stable, temperature/humidity conditioned environment for worry-free operation with a control system that is easy to use and saves you time. Stability Chambers specifically developed to meet FDA/ICH stability requirements MRC chambers generating exceptional control and uniformity of both temperature and humidity. MRC Chambers feature various safety feature

- ▶ Inside Stainless Steel and Outside Mild Steel Powder Coated
- ▶ Inside observation glass door
- ▶ Heavy-duty door hinges and latches
- ▶ Optional port Hole with rubber seal to insert sensors for validation purpose
- ▶ Compressor with CFC Free
- ▶ Safety thermostats to cut off the supply in case of overshoot and undershoot of Temperature
- ▶ Optional IQ, OQ, Documents,
- ▶ Works on 230V AC single phase 50Hz
- ▶ Built-in circulating fan for temperature uniformity
- ▶ Illumination and Timer can be install if required
- ▶ The compressor will be delayed to start working if power cut and with timer for defrost. Using environmental protection cold-media R134a
- ▶ Internal Power socket.

#### Options:

- ▶ 38mm cable port
- ▶ Gas inlet
- ▶ Day/Night Light+Timer



Cable port



Gas inlet



Ultrasonic humidity system

MODEL	BOD-550H	BOD-850H
Temperature Range	0°C ~ 60°C	
Temperature Control	PID temperature controller, PV actual value and SV setting value displayed at the same time	
Temperature Precision	±0.1°C	
Touch Setting	Power, cooling temperature, humidity	
Safety Device	overheat and over low cut off device. 2-stage protection with safety protection alarm and indicator, compressor delay-start, high and low pressure of cold media protection device	
Heater	1200 Wat	2000 Wat
Refrigerator	1/3 HP R134a	3/4 HP R134a
Humidity Display	PID Humidity controller, PV actual value & SV setting value displayed at the same time	
Humidity Control	50% RH ~ 95% RH	
Control Precision	± 3%	
Humidity Display	Digital	
Humidity Device	Ultrasonic wave stainless steel (Back-mounted)	
Shelf / Inner Chamber	4 psc / W650xD550mm	4 psc / W820xD820mm
Inside Dimension (WxDxH), Volume	680 x 580 x 1400 mm (Approx 550 Liter)	850 x 850 x 1400 mm (Approx 1010 Liter)

## Stability Chambers



CCG-150

### Temperature and humidity



### CCG-150/250, CONSTANT TEMPERATURE & HUMIDITY CHAMBER

#### Features:

- ▶ Rational air duct structure; balance type control method; imported special electric motor and blade are applied to make temperature & humidity distribution even and greatly improve test precision and evenness of temperature & humidity.
- ▶ International famous brand refrigerant compressor and Germany EBM condenser applying 134a refrigerant & featuring fluorine free. environmental protection are applied and conform to the world trends.
- ▶ Programmed temperature and humidity control; micro-computer fuzzy control PID control; temperature priority and time priority; optional for the user. Intelligent programmed mode is applied. The control part applies high brightness super large LCD and fuzzy PID control method to be more humanized.
- ▶ Temperature sensor PT1 00 applies Honeywell product. The humidity sensor applies Swiss Rotronic capacitive sensor.
- ▶ Over-temperature protection, creepage protection, door open alarm, current failure, e alarm and sensor alarm functions are provided to improve the safety. Meanwhile, automatic start, stop, timed operation, clock display & self recover after power fails are provided.
- ▶ Automatic defrosting and manual defrosting functions are provided for long term test to solve the problem of temp. & humidity drifting.



MODEL	CCG-150	CCG-250
Convection method	Compulsory convection method	
Control method	Balance type	
Temperature range	-10°C ~ +80°C	
Humidity control scope	20 ~ 98%	
Temperature resolution	0.1°C	
Temperature fluctuation	±0.1°C	
Temperature evenness	±0.5°C (65°C)	
Humidity fluctuation	Within ± 1.5% (65°C)	
Working room temperature	5 ~ 35°C	
Insulating material	Overall foaming of polyurethane	
Programmed control	Fuzzy logistic PID control method common operating mode/programmed operating mode	
Overall dimension(mm)	W665 x D733 x H1300	W765 x D773 x H1490
Inner dimension (mm)	W540 x D400 x H700	W640 x D440 x H890
Weight	About 114.5KG	About 137KG
Effective volume	151L	250L
Total power of heating and humidifying	1450W	2000W
Refrigerating power- refrigerant	245W,R134a	270W,R134a
Water supply volume	Inside: 10 L Outside: 25 L	
Power voltage	AC-220V 50/60Hz	
Tray (standard configuration)	Three layers	Three layers

- ▶ Performance parameter test under empty load: Ambient temperature of 20°C, ambient humidity of 50%RH.
- ▶ Temperature and humidity fluctuation exceeding the scope noted in the table is normal under defrosting condition.
- ▶ The change of product appearance and parameter will not be notified additionally. Product appearance may deviate due to shooting and printing reasons.



### PGI-550H/550RH/550V/550VH, PLANT GROWTH INCUBATOR 550 LITER

- ▶ Customized design
- ▶ Apply to microorganism Lab / Cell culture / Biotechnology experiments / Analytical Lab / Food Science and Technology / Agricultural Lab / The Fisheries Laboratory / Gardening / Plant Research / Seeds.

Illuminated growth chamber controllers, allow setting of two temp. conditions day & night & an On/Off illumination cycle relative to the program selected. Timers can be set to adjust cycles from 10 minutes up to 24 hours. Each system operates independently allowing for simulation of a diurnal cycle, such as an eight hour day cycle of 30°C with light followed by a sixteen hour night cycle of 18°C without light.

Forced air circulation ensures the most reproducible test conditions. The chamber air is gently & continuously circulated at a rate that ensures temp. uniformity of all test samples. The unit is equipped with a hermetically-sealed compressor & an independent

safety controller. It also includes a circuit breaker to protect from electrical overload, 5 shelves, adjustable leveling feet, steel exterior with welded seams & corners, & double-coated, baked enamel finish.

MRC Diurnal growth chambers are designed for studies requiring day and night time simulation. Standard models come with flourescent illumination. Optional led illumination.



Internal

PGI-550H/850H: Horizontal illumination

PGI-550RH/850RH: Horizontal illumination with humidity control

#### Option:

PGI-550V/850V: Vertical illumination

PGI-550VH/850VH: Vertical illuminationn with humidity control.

MODEL	PGI-550H	PGI-550RH WITH HUMIDITY	PGI-850H	PGI-850RH WITH HUMIDITY
Temperature Range	0°C ~ 60°C			
Temperature Control	PID temperature controller, PV actual value and SV setting value displayed at the same time			
Temperature Precision	±0.1°C			
Touch Setting	Power, cooling temperature, humidity, illumination timer device			
Safety Device	overheat and over low cut off device. 2-stage protection with safety protection alarm and indicator, compressor delay-start, high and low pressure of cold media protection device			
Heater	1200 Wat		2000 Wat	
Refrigerator	1/3 HP R134a		3/4 HP R134a	
Humidity Display	-	PID Humidity controller, PV actual value & SV setting value displayed at the same time	-	PID Humidity controller, PV actual value & SV setting value displayed at the same time
Humidity Control	-	30% RH ~ 95% RH	-	30% RH ~ 95% RH
Control Precision	-	± 3%	-	± 3%
Humidity Display	-	Digital	-	Digital
Humidity Device	-	Ultrasonic wave stainless steel (Back-mounted)	-	Ultrasonic wave stainless steel (Back-mounted)
Illumination	4000-8000 LUX			
Timer	24H Temperature and light control			
Shelf / Inner Chamber	4 psc / W650xD550mm		4 psc / W820xD820mm	
Inside Dimension (WxDxH)	680 x 580 x 1400 mm (Approx 550 L)		850 x 850 x 1400 mm (Approx 1010 L)	
Outside Dimension (WxDxH)	760 x 820 x 1870 mm		930 x 1060 x 1860 mm	
Volume	550 Liter		1010 Liter	
Power Voltage	110V/220V14A/7A	110V/220V16A/8A	110V/220V14A/7A	110V/220V16A/8A
Weight	200 kg	210 kg		



## Large, Growth Incubators

PGI-2460/PGI-2460H/PGI-2660/PGI-2660H, GROWTH CHAMBER WITH HIGH ILLUMINATION



PGI-2660



- ▶ Animals, plant cell culture ▶ Insect ▶ Plant culture ▶ Tissue culture
- ▶ Domestication treatment ▶ Algae culture ▶ Pathology observation
- ▶ Biochemical experiment.

MODEL	WITHOUT HUMIDITY	PGI-1015H	PGI-2460	PGI-2660
	WITH HUMIDITY	PGI-1015RH	PGI-2460H	PGI-2660H
Temperature range		0°C ~ 60°C	0°C ~ 45°C	
Temperature control	Micro-computer PID temperature controller, PV actual value and SV setting value displayed at the same time, with independent day/night temperature			
Control Precision	±0.02°C dpi 0.1°C			
Touch Setting	Power, cooling, temperature, humidity, light, timer, all using touch setting			
Safety Device	Electronic LCD display, precision setting 0.1°C, overheat and over low cut off device. 2-stage protection with safety protection alarm and indicator, compressor delay-start, high and low pressure of cold media protection device			
Heater / Cooler	-		1KW SUS 304# / 7000 BTU	1.5KW SUS 304# / 12000 BTU
Humidity Control	Micro-computer PID temperature controller, PV actual value and SV setting value displayed at the same time			
Humidity Range	30% RH ~ 90% RH			
Control Precision	±0.02% dpi: 0.1%RH / ±3% RH			
Display / Safety Device	Digital display/Electronic setting precision 0.1%RH, with high or low humidity alarm			
Humidifier	Ultrasonic wave stainless steel humidifier			
Illumination Device	4-sides glasses heat insulation illumination: 0-30000LUX for choose, independent light control			
Timer Device	24h temperature and light control			
Shelf / Material	4pcs		5pcs	10pcs
Inside Dimension (WxDxH)	1250 x 580 x 1400 mm		620 x 620 x 1300 mm	1200 x 690 x 1300 mm
Outside Dimension (WxDxH)	1280 x 780 x 1870 mm		910 x 930 x 2070 mm	1490 x 1000 x 2070 mm
Volume	1015 Liter		500 Liter	1076 Liter
Power Voltage	220V 50/60Hz			

# Incubators

## Benchtop Shaker Incubators, Top Door

TOU-50



### TOU-50/TOU-120, ORBITAL SHAKING INCUBATOR, BENCHTOP

#### Applications:

- ▶ Areas of application: cultivation of cell & tissue cultures or micro organisms. molecular biology, cell and insect culture, and entomology studies.
- ▶ Production of secondary natural substances & biogenetic pharmaceuticals etc.

#### Features:

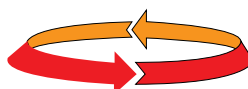
- ▶ Space saving with transparent window in the front which provide good visibility that minimize the need to open the chamber, automatic cutout of shaker when lid is open to protect operator.
- ▶ Platform 300 x 400 mm or 450 x 450mm accept flasks up to 2 Liter, test tubes racks and gel trays.
- ▶ Shakers feature a triple eccentric drive that handles heavy workloads, provides uniform agitation, smooth quiet enables continuous 24-hour operation even at high speeds.
- ▶ Precisely monitor and control chamber temperature over complete range with  $\pm 0.1^\circ\text{C}$  accuracy at  $37^\circ\text{C}$  with PID temperature controller
- ▶ AC brushless motor & precise speed control from 25 to 250rpm or 40 to 400rpm, controlled by a digital controller
- ▶ Speed programmability: Continuous or multi-step RPM programmability in which a timed run consisting of a sequence of up to 9 timed steps, each at a set speed & direction of rotation. Each timed run can be repeated up to 999 times.



Flask Holders

Tube holders

Optional: Universal spring tray for various sizes of flasks



- ▶ Min. noise & no vibration, max. load 20kg
- ▶ Automatic stop of shaking, when the door is opened
- ▶ Accommodate flasks up to 2000ml
- ▶ Auto restart after power failure.

MODEL	TOU-50	TOU-120
Type	Flip-up door	
Temp. range	Ambient + $4^\circ\text{C}$ ~ $70^\circ\text{C}$	
Temp. Accuracy/Uniformity	$\pm 0.1^\circ\text{C}$ / $\pm 0.5^\circ\text{C}$ at $37^\circ\text{C}$	
Speed/Temp. control	PID	
Temp. Display	LED	
Speed programmer	20 ~ 250 rpm (optional 40 ~ 400 rpm), 9 steps of speed & direction of rotation	
Shaking Orbit	25 mm	
Timer	1 minute to 99 hours & 99 minutes or continuous operation	
Volume	66L	102L
Shelve	N/A	N/A
Shaking Plate Size (mm)	400x300	450x450
Inside dimensions (mm)	W455xD390xH380	W500xD540xH380
Outside dimensions (mm)	W460xD510xH540	W510xD650xH540
Weight (Approx.)	30Kg	40Kg

#### Capacity of flask holders:

MODEL	111-1-110050	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000
FLASK CLAMPS	50ML	125ML	250ML	500ML	1000ML	2000ML
TOU-50	35	20	12	6	4	2
TOU-120	64	36	25	16	9	5

## Cooled Shaker Incubators



LOM-150


### LOM-65/80/150-SERIES, SHAKING INCUBATOR, ORBITAL MOTION, FRONT DOOR

This multipurpose model can shake, incubate & refrigerate.

The 480x380mm platform accepts flasks up to 6 Liter.

Large viewing window & internal light provide clear chamber visibility, with moveable window blind.

One stationary shelf for incubating added samples with a front opening door, the LOM-150 can be used on the bench or on the floor, wide temp. range 0-60°C. Model LOM-150D: two stage shaker enable to shake 2 platform simultaneously. Useful for biological culture under various temperature.

- ▶ Inside material is SUS304 & outside body is powder painting 
- ▶ Screen-touch panel
- ▶ The compressor will be delayed to start working if power cut and with timer for defrost.
- ▶ With safety switch to stop shaking when opening door
- ▶ Three-point bearing transmission is adopted suitable for heavy loads and continuous duty.
- ▶ Minimum noise, no vibration.
- ▶ Refrigeration using non cfc gas R134A
- ▶ Transparent glass observation window & internal light.
- ▶ Provide clear visibility without opening the door.
- ▶ Uses brushless AC motor for long durability & stable performance of the shaking system.
- ▶ Overheat and over low protector, built-in circulating fan for temp. uniformity.



LOM-80



LOM-65

Front opening with one standing shelf

Optional: Day/night light+timer.

MODEL	LOM-65	LOM-80	LOM-150	LOM-150D
System	Forced air circulation			
Shaking system	Orbital			
Shaking platform	Single		Double	
Temp. range	Ambient + 4°C~70°C	0°C~70°C		
Temp. constancy	±0.1°C			
Temp. uniformity	±1°C (at 37)			
Temp. control/display	PID/LED			
Temp. sensor	PT-100Ω			
Inside material	SUS-304			
Speed Programmer	20~250 rpm (optional 40~400 rpm), 9 steps of speed & direction of rotation	20~300 rpm (option 400 rpm)		20~150 rpm
Shaking width	25 mm			
Shaking plate	W400xD300	W440xD340	W480xD380	W480xD380 Double platform
Refrigerator	1/4 HP			
Heater: Incubator	900W			
Safety devices	Short circuit breaker, over heat protector, refrigerator over load protector, sensor abnormality, over low protector			
Inside dimensions (mm)	W450xD390xH370	W500xD400xH400	W600xD500xH500	
Outside dimensions (mm)	W520xD550xH610	W580xD590xH790	W680xD690xH860	
Volume (Liter)	65	80	150	
Shelves	1 (Adjustable)			N/A
Power supply	110/220V, (8.5A)			
Weight	50	78Kg	98Kg	100Kg

### Capacity of flask holders:

MODEL	111-1-110050	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000
FLASK CLAMPS	50ML	125ML	250ML	500ML	1000ML	2000ML	3LITER	4LITER	5LITER
LOM-65	35	20	12	6	4	2	-	-	-
LOM-80	-	20	12	6	4	2	1	1	-
LOM-150	-	30	20	12	6	5	4	2	1
LOM-150D	-	30x2 set	20x2 set	12x2 set	-	-	-	-	-

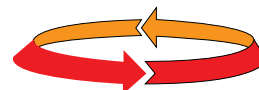


LOM-175-DUAL

### LOM-175-DUAL/LOM-175D-DUAL, ORBITAL DUAL SHAKING INCUBATOR

#### Features:

- ▶ Useful for biological culture under various temperatures
- ▶ Inside material is SUS304 & outside body is powder painting
- ▶ Screen-touch panel
- ▶ The compressor will be delayed to start working if power cut and with timer for defrost.
- ▶ With safety switch to stop shaking when opening door
- ▶ Three-point bearing transmission is adopted suitable for heavy loads and continuous duty.
- ▶ Minimum noise, no vibration.
- ▶ Refrigeration using non cfc gas R134A
- ▶ Optional day/night light with timer.
- ▶ Transparent glass observation window & internal light.
- ▶ Provide clear visibility without opening the door.
- ▶ Uses brushless AC motor for long durability and stable performance of the shaking system.
- ▶ Overheat and over low protector, built-in circulating fan for temperature stability.



#### Optional: Tube Holders



Flask Holders



#### Double Platform



MODEL	LOM-175-DUAL	LOM-175D-DUAL
Platform	Single	Double
Temp. range	0°C~70°C	
Temp. Accuracy	±0.1°C	
Temp. control	PID	
Temp. Display	LED 2-screen digital display actual and setting temperature	
Speed Programmer (9 steps)	20~250 rpm (option 400 rpm)	20~150 rpm
Shaking width	25 mm	
Timer	999h / 999min / 999sec	
Heater	900 W each chamber	
Refrigerator	1/4HP	
Volume	Each chamber 175L	
Shaking Plate Size (mm)	640x440	
Inside dimensions (mm)	W700xD500xH500	
Outside dimensions (mm)	W780xD690xH1720	
Shelves	1 Adjustable	N/A
Weight (Approx.)	170Kg	180Kg

#### Capacity of flask holders:

MODEL	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000
FLASK CLAMPS	125ML	250ML	500ML	1000ML	2000ML	3LITER	4LITER	5LITER
LOM-175-Dual	40x2 set	28x2 set	20x2 set	12x2 set	6x2 set	6x2 set	2x2 set	2x2 set
LOM-175D-Dual	40x4 set	28x4 set	20x4 set	-	-	-	-	-



## Large Shaker Incubators



LOM-400



Flask Holders



Optional: Tube Holders

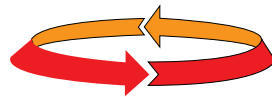
### LOM-200/400 SERIES, PRECISE SHAKING INCUBATOR, TOP DOOR, ORBITAL MOTION WITH DIGITAL PID CONTROL UP TO 70°C

#### Features:

- ▶ Useful for biological culture under various temp.
- ▶ Inside material is SUS304 & outside body is powder painting
- ▶ Screen-touch panel
- ▶ The compressor will be delayed to start working if power cut and with timer for defrost.
- ▶ With safety switch to stop shaking when opening door
- ▶ Three-point bearing transmission is adopted suitable for heavy loads and continuous duty.
- ▶ Minimum noise, no vibration.
- ▶ Refrigeration using non cfc gas R134A
- ▶ Optional day/night light with timer.
- ▶ Transparent glass observation window & internal light.
- ▶ Provide clear visibility without opening the door
- ▶ Uses brushless AC motor for long durability and stable performance of the shaking system.
- ▶ Overheat and over low protector, built-in circulating fan for temperature stability.
- ▶ Speed programmer: 9 steps of speed & direction of rotation.



LOM-200-5  
With optional  
day/night  
illumination+timer



MODEL	LOM-200-5	LOM-200-2	LOM-400-5	LOM-400-2
System	Forced air circulation			
Shaking system	Orbital			
Temp. range	0°C~70°C			
Temp. constancy	±0.1°C			
Temp. uniformity	±1°C (at 37)			
Temp. control / display	PID / LED			
Temp. sensor	PT-100			
Inside material	SUS-304			
Speed Programmer	20~250rpm	20~400rpm	20~250rpm	20~400rpm
Shaking width	50 mm (25 mm)			
Shaking plate (mm)	W600xD480mm		W960xD600mm	
Refrigerator	1/4 HP		1/3 HP	
Heater: Incubator	1200W			
Safety devices	Short circuit breaker, over heat protector, refrigerator over load protector, sensor abnormality, over low protector			
Inside dimensions	W680xD560xH540mm		W1040xD680xH540mm	
Outside dimensions	W1010xD640xH870mm		W1370xD760xH870mm	
Volume (Liters)	205		381	
Power supply	110/220V, 50/60Hz, (8.5A)			
Weight	200Kg		300Kg	

#### Capacity of flask holders:

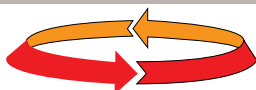
MODEL	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000
FLASK CLAMPS	125ML	250ML	500ML	1000ML	2000ML	3LITER	4LITER	5LITER
LOM-200-2/5	48	30	20	12	9	6	6	4
LOM-400-2/5	96	60	40	24	15	15	12	8

# Incubators

## Large Shaker Incubators



LOM-834D



### LOM-560/LOM-834 SERIES, ORBITAL SHAKING INCUBATOR, LARGE VERTICAL TYPE

#### Features:

- ▶ Useful for biological culture under various temperature.
- ▶ Inside material is SUS304 & outside body is powder painting
- ▶ Screen-touch panel
- ▶ The compressor will be delayed to start working if power cut and with timer for defrost.
- ▶ With safety switch to stop shaking when opening door
- ▶ 3-point bearing transmission is adopted suitable for heavy loads & continuous duty.
- ▶ Minimum noise, no vibration.
- ▶ Refrigeration using non cfc gas R134A
- ▶ Optional day/night light with timer.
- ▶ Transparent glass observation window & internal light.
- ▶ Provide clear visibility without opening the door.
- ▶ Uses brushless AC motor for long durability and stable performance of the shaking system.
- ▶ Overheat and over low protector, built-in circulating fan for temperature stability.
- ▶ Speed programmer - 9 steps of speed & direction of rotation.



LOM-560D  
Double platform

MODEL	LOM-560	LOM-560D	LOM-834	LOM-834D
Shaking platform	Single	Double	Single	Double
Temp. range	0°C~70°C			
Temp. Accuracy	±0.1°C			
Temp. control	Micro-computer PID temperature controller			
Temp. Display	LED 2-screen digital display actual and setting temperature			
Speed Programmer	20~250 rpm	20~150 rpm	20~250 rpm	20~150 rpm
Shaking width	50 mm			
Timer	999h / 999min / 999sec			
Heater	1600 W			
Illumination	Fluorescent lamp 20 W			
Shelves (Adjustable)	2	1	2	1
Refrigerator	1/3HP		1/2HP	
Volume	560L		834L	
Shaking Plate Size (mm)	740x480		960x600	
Inside dimensions (mm)	W860xD600xH1100		W1100xD690xH1100	
Outside dimensions (mm)	W940xD800xH1840		W1190xD920xH1840	
Weight (Approx.)	280Kg		300Kg	

#### Capacity of flask holders:

MODEL	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000
FLASK CLAMPS	125ML	250ML	500ML	1000ML	2000ML	3LITER	4LITER	5LITER
LOM-560	48	40	24	12	9	6	6	4
LOM-560D	96	60	40	24	-	-	-	-
LOM-834	78	50	36	18	10	10	8	8
LOM-834D	156	100	72	36	-	-	-	-

## Hybridization



### DHI-22/37, HYBRIDIZATION INCUBATOR

The MRC hybridization incubators offers high performance with precise temperature control, safety and convenience. It is small and space saving incubator.

The bottle carousel is easily removable for easy cleaning of the chamber. The bottle carousel accept up to eight bottles (300mm). Very homogeneous temperature distribution in the chamber is obtained by air forced ventilation. This airflow system also ensures fast recovery of chamber temperature after door opening.

A PID temperature controller provide constant & no temperature overshoot. Dual display of actual chamber temperature & set point temp.

Tempered glass viewing window provides clear chamber visibility without opening the door. Simple operation of speed by means of rotary switch & the speed display is by analog tachometer.



#### Features:

- ▶ Inside material is SUS304 & outside body is powder painting
- ▶ Touch-screen panel
- ▶ Speed and temperature with digital display
- ▶ Built-in circulating fan for temperature stability
- ▶ Full accessories are available
- ▶ Orbital(bi-directional)/Rotation/Rocking motion.

#### Applications:

- ▶ Northern (RNA) blot hybridizations
- ▶ Southern (DNA) blot hybridizations
- ▶ Western (Protein) blot hybridizations.



MODEL	DHI-37	DHI-22
Shaking	Rotation+orbital	Rocking
Temp. range	Ambient +5°C~70°C	
Temp. Accuracy	±0.1°C	
Temp. control	PID	
Temp. Display	LED	
Rotor Speed	6 ~ 50rpm	-
Rotor Capacity	8 pcs (Max)	-
Shaker Speed	10 ~ 100rpm	6 ~ 60rpm
Shaking Width	25mm	-
Shaker Capacity	Carry 6 kg	-
Timer	999 h / 999 min / 999 sec	
Shaking Plate (mm)	310 x 210	
Inside dimensions WxDxH(mm)	350x250x425	350x255x250
Outside dimensions WxDxH(mm)	440x375x660	440x375x410
Weight	33kg	23kg

# Ovens

## Drying & Forced Convection Ovens



DFO-36

### DFO-SERIES, 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 and/or 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 slides. 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.

#### 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.

#### Options:

- ▶ RS-232/485 communication model: 3216E
- ▶ 4 programs of 16 segments model: 2416P4
- ▶ 5 programs of 8 segments model: 3216CP
- ▶ 38, 50, 75, 100mm cable entry port
- ▶ Gas inlet
- ▶ Interior light.



DFO-36

DFO-80

DFO-150

DFO-240

#### Specifications:

MODEL	DFO-36	DFO-80	DFO-150	DFO-240
Temp. range	5°C above ambient to - 250°C			
Temp. constancy	±0.1°C			
Temp. uniformity	±1°C at 100°C	±1°C at 100°C	±2°C at 100°C	±2.5°C at 100°C
Temp. control	PID			
Circulation	Forced air - two speed selectable with a switch			
Heater: Oven	1100W	1500W	1800W	2200W
Inside Material	SUS-430			
Timer	1 minute to 99 hours an 59 minutes or continuous			
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
Shelves	2	2	2	3
Max. No. of Shelves	7	10	13	23
Weight	34kg	52kg	75kg	85kg



## 250°C Large Capacity Forced Air



DFO-480

### DFO-270/480, LARGE FORCE CONVECTION, SINGLE DOOR

- ▶ Ideal for Large Volume Baking Electronic Parts, Drying, Conditioning and Sterilizing
- ▶ Inner case is SUS 430 and outside body is powder painting.
- ▶ Tempered Safety Glass Window to see inside without door opening
- ▶ Install double over temperature protection.
- ▶ All models are with fan assisted air circulation, air vent on both sides
- ▶ Brake wheels easy to move.



MODEL	DFO-270	DFO-480
Temp. range	Ambient + 5°C-250°C	
Temp. Accuracy	±1°C	
Temp. control / Display	PID	
Temp. Sensor	K type	
Volume	270L	480L
Timer	1 minute to 99 hours an 59 minutes or continuous	
Shelf (Adjustable)	4	
Power Voltage	220VAC 1PH 50/60Hz	
Heater Watage	3.6Kw	4.4Kw
Inside dimensions (mm)	W600xD500xH900	W800xD600xH1000
Outside dimensions (mm)	W780xD620xH1520	W980xD720xH1620
Weight	130kg	200kg



DFO-2160

### DFO-600/720/1008/2160, LARGE FORCE CONVECTION, DOUBLE DOOR

- ▶ Ovens are used for many applications as baking, drying, conditioning, sterilizing, electroplate, plastic, chemical industry, printing, hard ware, pharmacy, tea fired, bake industry .... etc
- ▶ Inner case is SUS 430 and outside body is powder painting.
- ▶ Tempered Safety Glass Window to see inside without door opening
- ▶ Install double over temperature protection.
- ▶ All models are with fan assisted air circulation, air vent on both sides
- ▶ Brake wheels, easy to move
- ▶ Silent fan motor.



Vent



Wheel

MODEL	DFO-600	DFO-720	DFO-1008	DFO-2160
Temp. range	Ambient + 5°C-250°C			
Temp. Accuracy	±1°C			
Temp. control / Display	PID			
Temp. Sensor	Thermocouple K type			
Volume	600L	720L	1008L	2160L
Timer	1 minute to 99 hours an 59 minutes or continuous			
Shelf (Adjustable)	4			
Power Voltage	400/230VAC 3PH+N 50/60Hz			
Heater Watage	6Kw		9Kw	15Kw
Inside dimensions (mm)	W1000xD600xH1000	W1200xD600xH1000	W1400xD600xH1200	W1800xD1000xH1200
Outside dimensions (mm)	W1250xD750xH1580	W1450xD750xH1580	W1650xD750xH1820	W2000xD1200xH1980

# Ovens

## Vacuum, Small Capacity, 210°C



1407DIG

### 1407-2/1408-2, SMALL VACUUM OVENS

MRC vacuum ovens provide exceptional capabilities for fast and gentle drying of heat sensitive materials. They prevent residue accumulation on products and also allow safe drying of flammable solvents.

These units feature a radiant heating system that optimizes chamber space and provides excellent heat transfer and temperature uniformity. All MRC vacuum ovens are built with stainless steel chambers that are easy to clean and have exceptional durability.

The doors have positive latch handles with spring-loaded glass to facilitate a good vacuum seal without hinge binds that shorten the gasket life.

The tempered glass viewing window allows for safe, continuous monitoring of samples. A selection of gaskets (for specific applications) and a small bench top footprint increase the versatility of these ovens.

The MRC Vacuum Ovens are equipped with silicone gaskets. While these gaskets resist a wide variety of temperatures and pressures, they can breakdown in the presence of solvents and acids. For solvent applications, we recommend using Buna gaskets. For acidic applications, we recommend using Fluorosilicone or Viton® gaskets.

MRC stocks vacuum pumps and related accessories that are compatible with most applications. Our technical support team is available to advise on the perfect solution for your complete vacuum oven system purchase.

#### Vacuum Oven Applications:

- ▶ Moisture Determination
- ▶ Out Gassing Solids
- ▶ Aging Tests
- ▶ Plating
- ▶ Chemical Resistance Studies
- ▶ Drying of Paper
- ▶ Rubber and Textiles
- ▶ Desiccating
- ▶ Dry Sterilization
- ▶ Out Gassing Liquids
- ▶ Vacuum Storage
- ▶ Electronic Process Control

#### Analog Temperature Control:

- ▶ Temperature Uniformity
  - ±3.0°C at 60°C
  - ±9.0°C at 120°C
  - ±13.0°C at 200°C
- ▶ Temperature Range Ambient
  - +15°C to 210°C
- ▶ Heat-Up Time 90 minutes to 150°C.

#### Vacuum Control:

- ▶ Vacuum Range
  - inch Hg (-3.0 to -29.9)
  - kPa (-10 to -101)
  - mbar (-101 to -1010)
- ▶ Display Range (Analog Dial Gauge)
  - inch Hg (0 to 30), cm Hg (0 to 76).

#### Optional: Temperature Programmer



1408-2

#### Optional Vacuum Pumps:



VP-68: Oil free  
68 liter/min  
120mbar



ST-140: Oil  
127liter/min  
0.13millibar

MODEL ANALOG	1407-2	1408-2
MODEL DIGITAL	1407DIG	1408DIG
Chamber Capacity (Liters)	17	48
Temperature Range	Ambient 15-210°C	
Temperature Uniformity	±3°C @ 60°C, ±9°C @ 120°C, ±13°C @ 200°C	
Heat up time, Minutes	90 minutes to 150°C	
Shelves Supplied	2	2
Outside dimensions(mm)	H572xD483xW394	H642xD705xW470
Inside dimensions(mm)	H228xD304xW228	H304xD508xW304
Weight	27Kg	50Kg
Watts/Amps-230Volt	550/2.4	1200/5.2
Cycle	50/60 Hz	
Phase	Single	

## Programmable Box Chamber, 1050°C, 1200°C



### MSF-SERIES, 1050°C, 1200°C, CHAMBER FURNACES

The MSF multi purpose furnace is bench mounted with a maximum temperature of 1200°C. It is available with chamber size of 3.6 Liter or 6.2 Liter.

MRC's multipurpose furnaces with stainless-steel cabinet, are suitable for every laboratory application, including burnout preheating, tempering casting and metallurgical process. For dental laboratory.

The drop down door can be used as a shelf when loading and unloading samples. A chimney is fitted for ventilation of the chamber.

Double security: hardware and software over-temperature protection to prevent exceeding maximum allowed temp.

Advanced PID temperature programmer suite variety of applications.

The advanced set point programming temperature controller contains 15 separate programmes each with 8 stages. Optional gas inlet available.

### Advanced PID Programmer



MSF 12-6

MSF 11-4

### Optional: Gas Inlet



Gas inlet

### Unique Chamber Dimensions for dental laboratory

MRC burnout furnaces are designed for maximum efficiency & provide a generous internal capacity despite modest overall size. Although the volume of the muffle is relatively small. This furnace enables to cast in one burnout.

MSF 11/4: Accept 4 rings x 9 - 4 rings x 2

MSF 12/6: Accept 12 rings x 9 double layer.

This advantage is very important, as it enables to gain maximum use of muffles volume.

### MSF 11/4

- ▶ Max temperature: 1050°C
- ▶ Inner dimensions: W180xD205xH95mm
- ▶ Outside dimensions: W350xD380xH440mm
- ▶ Power: 220V/50Hz, 110V/60Hz, 1500Watt
- ▶ Net weigh: 23Kg

### MSF 12/6

- ▶ Max temperature: 1200°C
- ▶ Inner dimensions: W180xD250xH135mm
- ▶ Outside dimensions: W400xD490xH530mm
- ▶ Power: 220V/50Hz, 2700 Watt
- ▶ Net weight: 41Kg

- ▶ 15 programs-up to 8 stages.
- ▶ Bright VFD alpha-numeric display
- ▶ End cycle date real time programming
- ▶ Advanced keyboard, 9 key-pads only
- ▶ Heat up or cool down rates
- ▶ Calendar and time display
- ▶ Temperature and time override
- ▶ Fault and error automatic diagnostic messages:
  - Thermocouple brake - No current
  - Temperature fault - Date error
  - Over temperature - EE error
- ▶ Selectable language for messages: English, German, French, Italian.
- ▶ Celsius or Fahrenheit
- ▶ Automatically restart, the program will restart after a power failure during a burning cycle. The controller will recall the last temperature and resume program operation.



# Shakers

## Funnel/Platelet/Sieves

### VS-6/VD-12/VD-12S/V-U, FUNNEL SHAKERS



VD-12  
with 8x500ml funnel

This shaker is efficient in shaking evenly reagents of various kinds of materials under same control parameters.

it is suitable for organic, inorganic chemical, medical, and pharmaceutical research, extraction & development of media, and waste water analysis.

different capacity(0.1~1L) of funnel bottles can be put at one time, funnel holders are movable.

2 Liter of funnel bottle or special size bottle is fixed by larger funnel holder.

single, double sides or horizontal type is optional.

low noise device, electronic buffer acceleration. with timer, tachometer, and fuse safety device.

VD-12S  
with 4x2 liter  
funnel



MODEL	100ML	200ML	300ML	500ML	1L	2L	SHAKING FREQUENCY	STROK (MM)	SIZE (MM)	KG
VD-12	12 pcs	12 pcs	8 pcs	8 pcs	6 pcs	-	0-350	40	W430xD710xH710	65
VD-12S	12 pcs	12 pcs	8 pcs	8 pcs	6 pcs	4 pcs	0-350	40	W430xD710xH730	81

### TSS-200, SIEVE SHAKER FOR 200MM SIEVES



POS-42



POS-84

### POS-42/84, PLATELET SHAKER

The TSS-200 test sieve shaker from MRC, produces accurate, consistent results and features constant-controlled amplitude, precise controls, quick-release hold-downs.

Maintenance-free, quiet operation; it can be used directly on a laboratory countertop.

Belt closing system provides more secure method for placing and removing test sieve stacks in the unit. This belt closing system also enables easier, quieter operation. Sieves, cover and bottom collecting pan are not included.

#### Features:

- ▶ One piece construction to prevent cross contamination.
- ▶ A high degree of corrosion resistance and ease of cleaning thanks to high-alloy stainless steel.
- ▶ Maximum stability and optimum sealing when used in sieve stacks.

#### Applications:

separation, fraction, particle size determination.



TSS-200

Platelet shaker POS-42 and POS-84 are widely used in blood banks ▶ A stationary base drives the storage frame side-to-side 38mm ▶ Removable open mesh shelves provide air circulation ▶ A ball bearing drive motor and internal fan produce durable & reliable operation ▶ Stainless steel shelves can be easily cleaned ▶ POS-42 & POS-84 are easy to use ▶ Quality certification: ISO 9001, ISO 13485.

MODEL	POS-42	POS-84
Capacity	42 bags	84 bags
Speed	72 rpm (fixed)	
Number of shelf	7 shelves	
Overall dimen. WxDxH (mm)	460x350x360	840x350x360

MODEL	TSS-200
Rotation speed	0~6,000 rpm
Size of sieve container	Ø200x60mm Max. 8 pcs
Electronic control	Step-less system
Timer	Continuous or 0~60 min
Safety device	Glass fuse 6A
Power	110/220V, 50/60Hz
Weight	25Kgs
Dimension (mm)	300x300x330



## Benchtop Platform Orbital Shakers



### BENCHTOP PLATFORM SHAKERS:

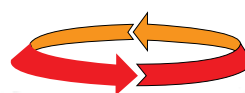
Orbital shakers are for shaking in ambient conditions on the bench or in incubator or warm room or cool room. These shakers are available in three models. Platform accommodate a mix of flask clamps. A powerful, quiet, space saving, reliable, either for gentle shaking of liquids or vigorous mixing of materials. Maintenance free, the tray is proof against aggressive liquids. Flexible platform system. All kinds of dishes can be placed on the platforms: beakers, erlenmeyer flask, test tube racks etc. All models feature a large easy to read LED display. A specific run time can be entered or continuous running can be selected. These medium size orbital shakers are well engineered & provide smooth operation when under maximum load and speed. The top tray of each model has threaded holes to accommodate flask holders from 50ml to 6000ml.

### Features:

- ▶ Triple eccentric drive enables continuous 24-hours operation, handles heavier loads and provides smooth uniform agitation of full or unbalanced loads even at high speeds.
- ▶ Units operate in temperature range of 4 to 40°C and humidity conditions from 20 to 80% non condensing enabling them to be used in incubators, warm rooms, environmental chambers and refrigerators.
- ▶ Easy to adjust speed up to 300rpm.
- ▶ Easy to adjust timer up to 9999 minutes.
- ▶ Memory of speed when power cut.

### Applications:

- ▶ Cell cultures
- ▶ Bacterial suspensions
- ▶ Solubility studies
- ▶ Staining
- ▶ Extraction procedures
- ▶ Destaining
- ▶ Diagnostic tests
- ▶ Washing Procedures
- ▶ General Mixing
- ▶ Hybridization



MODEL	TOS-4030FD	TOS-4838FD	TOS-6048FD
System shaking	Orbital		
Speed programmer	20-300 rpm		
Shaking orbit	25mm		
Shaking plate (mm)	W400xD300	W480xD380	W600xD480
Outside DIM. (mm)	W400xD330xH165	W480xD380xH165	W600xD480xH210
Shaking plate	Flask rack	Flask rack	
Maximum load	12kg	20kg	26kg
Weight	17.5kg	26.5kg	36kg

### Accessories:

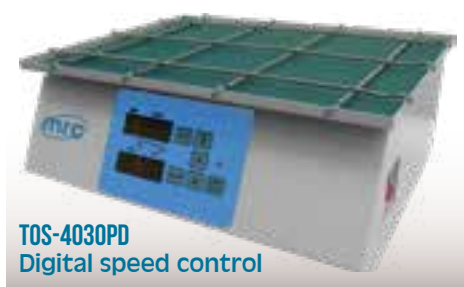
MODEL	111-1-110050	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000	111-1-116000
MODEL/FLASK CLAMPS	50ML	125ML	250ML	500ML	1000ML	2LITER	3LITER	4LITER	5LITER	6LITER
TOS-4030F Capacity	35	20	12	6	4	2	1	1	-	-
TOS-4838F Capacity	48	30	20	12	6	4	2	2	1	1
TOS-6048F Capacity	80	48	30	20	12	6	6	4	2	2

# Shakers

## Benchtop Platform Orbital Shakers



**TOS-4030P**  
Analog speed control



**TOS-4030PD**  
Digital speed control



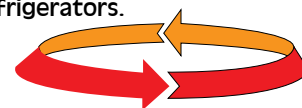
**TOS-4030M**  
Magnetic platform

### BENCHTOP PLATFORM SHAKERS:

Orbital shakers are for shaking in ambient conditions on the bench or in incubator or warm room or cool room. These shakers are available in three models. Platform accommodate a mix of flask clamps. A powerful, quiet, space saving, reliable, either for gentle shaking of liquids or vigorous mixing of materials. Maintenance free, the tray is proof against aggressive liquids. Flexible platform system. All kinds of dishes can be placed on the platforms: beakers, erlenmeyer flask, test tube racks etc. All models feature a large easy to read LED display. A specific run time can be entered or continuous running can be selected. These medium size orbital shakers are well engineered & provide smooth operation when under maximum load and speed. The top tray of each model has threaded holes to accommodate flask holders from 50ml to 6000ml.

### Features:

- ▶ Triple eccentric drive enables continuous 24-hours operation, handles heavier loads and provides smooth uniform agitation of full or unbalanced loads even at high speeds.
- ▶ Units operate in temperature range of 4 to 40°C and humidity conditions from 20 to 80% non condensing enabling them to be used in incubators, warm rooms, environmental chambers and refrigerators.
- ▶ Easy to adjust speed up to 300rpm.
- ▶ Easy to adjust timer up to 9999 minutes.
- ▶ Memory of speed when power cut.



### Applications:

- ▶ Cell cultures
- ▶ Bacterial suspensions
- ▶ Solubility studies
- ▶ Staining
- ▶ Extraction procedures
- ▶ Destaining
- ▶ Diagnostic tests
- ▶ Washing Procedures
- ▶ General Mixing
- ▶ Hybridization

### Tube holders for Magnetic Platform:



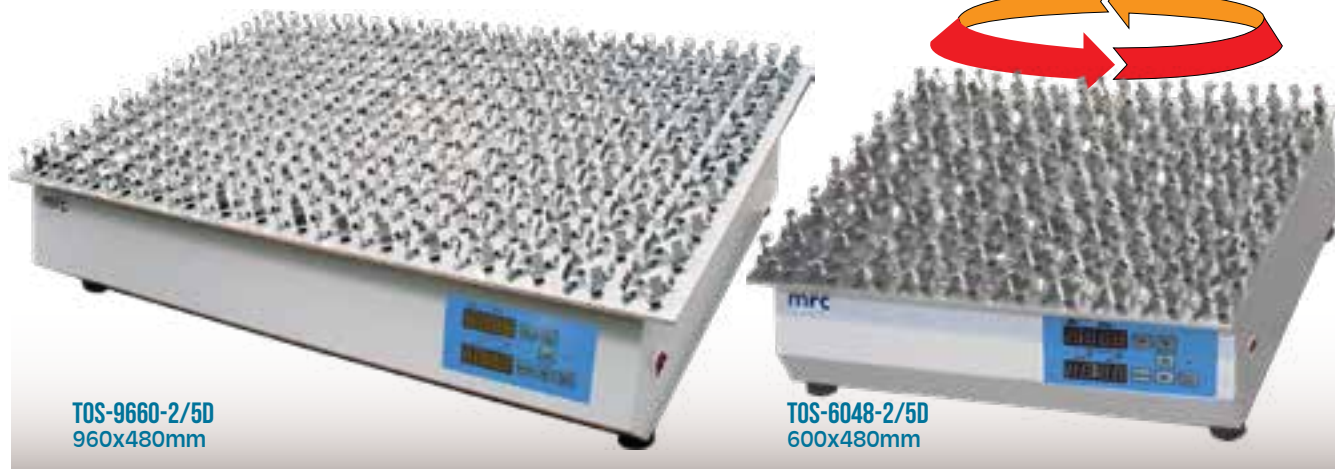
MODEL	TOS-4030PD	TOS-4030P	TOS-4030M
System shaking		Orbital	
Speed programmer	20-300 rpm	20-250 rpm	20-300 rpm
Shaking orbit		25mm	
Shaking plate (mm)		W400xD300	
Outside DIM. (mm)		W400xD330xH165	
Shaking plate	Digital Plate	Analog Plate	Magnetic Plate
Maximum load		12kg	
Weight	17kg	17kg	25.5kg

### Accessories for TOS-4030M:

MODEL	DESCRIPTION
1123	1 Clip Plate for 12 each 10-13mm tubes
1124	1 Clip Plate for 6 each 15-17mm tubes
1125	1 Clip Plate for 3 each 28-30mm tubes
1120	6 Clip Plates for 12 each 10-13mm tubes
1121	6 Clip Plates for 6 each 15-17mm tubes
1122	6 Clip Plates for 3 each 28-30mm tubes
1126	Bag Mounting Strips (pack of 16)
1130	2 Clip Plates for Hybridization Tubes
1135	1 Magnetic Covered 100 Microtube Box (8 boxes)

## Large Digital Orbital Shakers

### LARGE DIGITAL SHAKERS:



### Optional: Tube Holders



MRC large open air shakers designed to uniformly shake hundreds of samples, day-in & day-out, under the extreme conditions of an environmental room. New engineering concepts in load balancing minimize stress & vibrations, even when fully loaded & running at the maximum speed. Accepts hundreds of samples on up to 2 accessory platforms. As pictured, platforms have easy access to all glassware, & lock in place without tools. Maintenance free, the tray is proof against aggressive liquids. A powerful, quiet, reliable, either for gentle shaking of liquids or vigorous mixing of materials.

### Unique Advantage:

Shakers feature a triple eccentric drive that handles heavy workloads, provides uniform agitation, smooths and quiet enables continuous 24-hour operation even at high speeds. Precisely balanced, extremely stable shaker mechanism with massive cast-iron base need not be bolted to the floor. Four large capacity Orbital Shakers available. They are well engineered and have heavy duty orbital mechanisms that provide smooth operation when under maximum loading and speed. The top plate is 6mm aluminium and has tapped holes to accommodate flask holders from 50ml up to the heavy flasks sizes: 1 Liter to 6 Liter. Both models feature an easy to use digital control with speed and timer display and are attractively finished in a durable grey powder coating.

### Optional: Flask Holders



A specific run time can be entered or continuous running can be selected. Speed programmability: Continuous or multi-step RPM programmability in which a timed run consisting of a sequence of up to 9 timed steps, each at a set speed & direction of rotation. Each timed run can be repeated up to 999 times.

MODEL	TOS-6048-2	TOS-6048-5	TOS-9660-2	TOS-9660-5
Shaking system	Orbital			
Speed programmer	30-400 rpm	20-250 rpm	30-400 rpm	20-250 rpm
Shaking orbit	25 mm	50 mm	25 mm	50 mm
Shaking plate	W600xD480		W960xD600	
Outside dimensions (mm)	W600xD480xH210		W960xD600xH210	
Maximum load	28kg		60kg	
Weight	63 kg		75 kg	

### Accessories:

MODEL	111-1-110050	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000	111-1-113000	111-1-114000	111-1-115000	111-1-116000
FLASK CLAMPS	50ML	125ML	250ML	500ML	1000ML	2LITER	3LITER	4LITER	5LITER	6LITER
TOS-6048-2/5 Capacity	80	48	30	20	12	6	6	4	2	2
TOS-9660-2/5 Capacity	160	96	60	40	24	15	8	8	6	6



# Shakers

## Double Platform Large Orbital Shakers

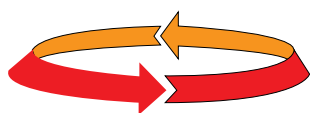
### DOUBLE PLATFORM LARGE ORBITAL SHAKERS



TOS-6048D-2/5D  
600x480mm



TOS-9660D-2/5D  
960x480mm



Optional: Tube Holders



Flask Holders

MRC large open air shakers designed to uniformly shake hundreds of samples, day-in & day-out, under the extreme conditions of an environmental room. New engineering concepts in load balancing minimize stress & vibrations, even when fully loaded & running at the maximum speed. Accepts hundreds of samples on up to 2 accessory platforms. As pictured, platforms have easy access to all glassware, & lock in place without tools. Maintenance free, the coated tray is proof against aggressive liquids. A powerful, quiet, reliable, either for gentle shaking of liquids or vigorous mixing of materials.

**Unique Advantage** - Precisely balanced, extremely stable shaker mechanism with massive cast-iron base need not be bolted to the floor.

Four large capacity Orbital Shakers available. Both are well engineered and have heavy duty orbital mechanisms that provide smooth operation when under maximum loading and speed. The top plate is 6mm aluminium and has tapped holes to accommodate flask holders from 50ml up to the heavy flask sizes: 1 Liter to 6 Liter. Both models feature an easy to use digital control with speed and timer display and are attractively finished in a durable grey powder coating. A specific run time can be entered or continuous running can be selected. Speed programmability: Continuous or multi-step RPM programmability in which a timed run consisting of a sequence of up to 9 timed steps, each at a set speed & direction of rotation. Each timed run can be repeated up to 999 times.

MODEL	TOS-6048D-5D	TOS-9660D-5D
Shaking system	Orbital	
Speed programmer	20-250 rpm	20-250 rpm
Shaking orbit	50 mm	50 mm
Shaking plate	W600xD480 Double	W960xD600 Double
Outside dimensions (mm)	W600xD480xH560	W960xD600xH560
Weight	75 kg	95 kg

### Accessories:

MODEL	111-1-110050	111-1-110125	111-1-110250	111-1-110500	111-1-111000	111-1-112000
FLASK CLAMPS	50ML	125ML	250ML	500ML	1000ML	2LITER
TOS-6048D-5 Capacity	160	96	60	40	25	15
TOS-9660D-5 Capacity	320	192	120	80	48	30



## Digital Precise Water Baths



WBO-200



WBO-100

### WBO-SERIES, UNSTIRRED UP TO 80°C WATER BATH

The MRC stainless steel water bath are available in 2 sizes: 10 & 20 Liters. Model WBO-100 and WBO-200 unstirred bath are used for general applications in laboratories. They provides excellent temperature uniformity of the liquid. A PID temperature controller provides instant and accurate temperature. The tank of the bath is made of corrosion resistant stainless steel with round corners for easy cleaning. Include hood cover.

#### Features:

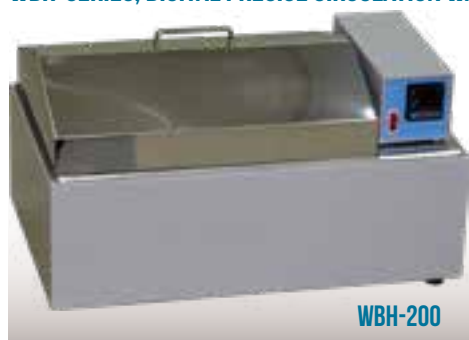
- ▶ Ideal for biotechnology, clinical, environmental, medical, petroleum, food industry
- ▶ Stainless steel lid prevents evaporation & keeps constant temperature
- ▶ Excellent uniformity & stability
- ▶ Seamless, corrosion-resistant, stainless steel chamber
- ▶ Available in 10, 20 Liters
- ▶ Gable cover included.

#### Applications:

- ▶ Incubate cultures
- ▶ Worn bacteriological media
- ▶ Perform chemical reactions
- ▶ Thaw samples.

MODEL	WBO-100	WBO-200
Temp. range	Room temperature ~ +5°C to 80°C	
Temp. constancy / control	±0.1 / PID	
Temperature Uniformity	±0.2 at 37°C	
Heater	300W	600W
Safety devices	Short circuit, over head protector, sensor abnormality	
Bath opening (mm)	W295xD235xH150	W495xD295xH150
Inside dimensions (mm)	W295xD235xH150 / 10Liter	W495xD295xH150 / 20Liter
Outside dimensions (mm)	W420xD280xH185	W620xD340xH185
Volume / Weight	10L / 6.5kg	20L / 9kg

### WBH-SERIES, DIGITAL PRECISE CIRCULATION WATER BATH



WBH-200

There are 2 sizes with internal circulation pump, 10 & 20 Liters. The immersion circulator bridge can easily remove for easy cleaning of the tank.

#### Features:

- Ideal for Biotechnology, Clinical, Environmental, Medical, Petroleum, Food Industry, Pharmaceutical or Industrial Applications
- ▶ Powerful Circulation Pump Assures Temp. Uniformity.: Internal
  - ▶ Stainless Steel Bath(#304) for Superior Durability and High Thermal Efficiency
  - ▶ Stainless Steel lid Prevents Evaporation and keeps Constant Temperature.



WBH-100

MODEL	WBH-100	WBH-200
Temp. range	Ambient +5°C to 100°C	
Temp. constancy / control	±0.1 / PID	
Temperature Uniformity	±0.1 at 37°C	
Internal circulating pump	9Liter/Minute	
Heater	800W	1000W
Safety devices	Short circuit, over head protector, sensor abnormality	
Bath opening (mm)	W200xD235xH150	W400xD295xH150
Inside dimensions (mm)	W295xD235xH150 / 10Liter	W495xD295xH150 / 20Liter
Outside dimensions (mm)	W340xD280xH320	W540xD340xH320
Volume / Weight	10L / 7kg	20L / 10kg

## External Precise Circulation Water Baths



### WBH-SERIES, DIGITAL EXTERNAL PRECISE CIRCULATION WATER BATH

There are 2 sizes with internal circulation pump, 10 & 20 Liters. The immersion circulator bridge can easily remove for easy cleaning of the tank.

#### Features:

Ideal for Biotechnology, Clinical, Environmental, Medical, Petroleum, Food Industry, Pharmaceutical or Industrial Applications

- ▶ Powerful Circulation Pump Assures Temp. Uniformity: Internal and external Circulation
- ▶ Stainless Steel Bath(#304) for Superior Durability and High Thermal Efficiency
- ▶ Stainless Steel lid Prevents Evaporation and keeps Constant Temperature.



WBH-100  
With External Circulation

External Circulation Nozzles  
IN  
OUT

MODEL	WBH-100I	WBH-200I
Temp. range	Ambient +5°C to 100°C	
Temp. constancy / control	±0.1 / PID	
Temperature Uniformity	±0.1 at 37°C	
Internal circulating pump	9Liter/Minute	
External circulating pump	Yes	
Heater	800W	1000W
Safety devices	Short circuit, over head protector, sensor abnormality	
Bath opening (mm)	W200xD235xH150	W400xD295xH150
Inside dimensions (mm)	W295xD235xH150	W495xD295xH150
Outside dimensions (mm)	W340xD280xH320	W540xD340xH320
Volume / Weight	10L / 7kg	20L / 10kg

### WBH-060N, EXTERNAL HEATING CIRCULATION BATH

The MRC WBH-060N, 6 Liter heating bath, is the most user-friendly baths available.

This heating circulator is mainly used for temperature controlling larger external systems such as heating plates, autoclaves or reaction vessels.

Combined powerful pressure/suction pumps provide a good heat exchange and optimum temperature accuracy; robust design using high grade stainless steel inside and outside the bath.

MRC heating circulator with stainless steel bath tank is mainly used for internal and external temperature tasks. simultaneous temperature applications of smaller objects can also be carried out directly in the internal bath of the circulator.



MODEL	WBH-060N
Working range	Ambient +5°C~100°C
Volume	6 Liter
Stability	±0.05°C
Setting&Readout	Digital
Heater	500W
Pumping flow	7L/min, 0.12kg/cm <sup>2</sup>
Reservoir(mm)	W150xD255xH150
Overall(mm)	W210xD315xH330
Power source	110/220V 60/50Hz 5/2.5A

## External Precise Refrigerated Circulators



WBL-100

### WBL-SERIES, DIGITAL PRECISE REFRIGERATED BATH, INTERNAL & EXTERNAL CIRCULATOR

#### Refrigerated Circulating Baths

- ▶ Compact design.
- ▶ For external & internal temperature applications.
- ▶ Low noise level.
- ▶ Rapid cool down and heating time.
- ▶ Water drain for easy cleaning of the inner tank.
- ▶ Models WBL-200 has casters.
- ▶ Water level protector.
- ▶ Ideal for direct immersion of samples or external circulating system in the field of biotechnology & laboratories.
- ▶ Powerful circulation pump ensures temp. uniformity: internal and external circulation.
- ▶ Connection with evaporator or viscometer is applicable.



WBL-200

#### Options:

- ▶ Display resolution to 0.01 °C
- ▶ Build in RS-232/485
- ▶ PT-100Ω temperature probe for direct measurements and control of external systems
- ▶ Analog inputs and outputs for external programmer and temperature recorder.

MODEL	WBL-100	WBL-101	WBL-200
Temperature range	-30°C~100°C		
Temp. constancy	±0.1°C		
Temp. control	PID		
Temp. sensor	PT-100Ω		
Circulation pump	9L/min. max. head 2m	18L/min. max. head 7m	27L/min. max. head 7m
Heater	1600W		2500W
Refrigerator	1/3HP		1 HP
Cooling capacity at 20°C	660Watt/2252 BTU/hour		1000Watt/3412 BTU/hour
Safety devices	Short circuit breaker, over heat protector, sensor abnormality, overload protector		
Bath opening (mm)	W200xD150xH150		W300xD210xH180
Bath dimension	W200xD300xH150		W300xD360xH180
Outside dimensions	W315xD450xH630		W420xD530xH800
Volume	9.0L		19.4L
In/Output	9.5mm		12.5mm
Weight	35kg		63kg

### WBLD-SERIES, REFRIGERATION CAPACITY RECYCLABLE COOLERS



#### Features:

- ▶ Closed circulating system can avoid refrigerating medium evaporation and pollution, save energy.
- ▶ Circulating system is equipped with filter apparatus, clean refrigerating medium avoids instrument line clogging
- ▶ With built-in liquid-level monitor, liquid-level inside the bath can be checked visually.
- ▶ Circulating system is equipped with pressure gauge, displays circulating system pressure.

MODEL	WBLD-1000	WBLD-1000G	WBLD-2000	WBLD-2000G	WBLD-3000	WBLD-3000G	WBLD-6000	WBLD-6000G
Temp. range (°C)	-10 ~ 25							
Temp. stability (°C)	±2							
power supply (V/Hz)	220V/50Hz						380V/50Hz	
Cooling capacity(W)	1000@15°C		2000@15°C		3000@15°C		6000@15°C	
Refrigerating Medium	R134a							
Pump Flow (L/min)	30	≥7	30	≥7	30	≥16	40	≥16
Pump Pressure (Bar)	1	1-10	1	1-10	1	1-10	1.4	1-10
Dimensions L×W×H (mm)	675×426×695		675×456×775		740×490×830		1020×635×1030	

MODEL	WBLD-3-300	WBLD-3-700	WBLD-3-1000	WBLD-3-2500
Temp. range (°C)	-30 ~ 25			
Temp. stability (°C)	±2			
power supply (V/Hz)	220V/50Hz			380V/50Hz
Cooling capacity(W)	0°C -10°C -20°C -30°C	1240 780 300 -30	1750 1070 700 300	2820 1810 1000 520
Refrigerating Medium	R410a			R404a
Pump Flow (L/Min)	30	30	30	30
Pump Pressure (Bar)	1	1	1	1.4
Dimensions (L×W×H) (mm)	675×426×695	675×456×775	740×490×830	1020×635×1030



## Reciprocal Shaking Baths



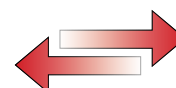
WBT-200  
300X240mm

### WBT-200/400D/401, DIGITAL PRECISE SHAKING WATER BATH, 22 & 38 LITER, & DIGITAL PID CONTROL, RECIPROCATING MOTION, 20~200RPM, TO 100°C, ±0.1°C, UP TO 1 LITER FLASK

These reciprocating water bath shakers are available in three models. Model WBT-200 small platform 250x300mm, Model WBT-400D large platform 300x400mm & Model WBT-401 refrigerated to 0°C. Temperature control is precise, temp. range of 5°C above ambient to 100°C, speed range 20 - 200 rpm, heat loss and evaporation minimized with use of stainless steel hood cover. Easy emptying through a drain at the lowest point. Micro processor temperature PID controller with dual display of measured temperature and set temperature.

#### Options:

- ▶ Water level protector.
- ▶ Universal platform.

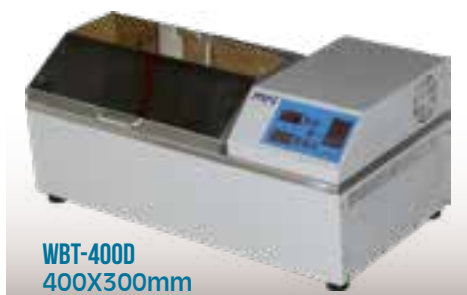


#### Features:

- ▶ Stainless Steel Bath for Superior Durability & High Thermal Efficiency
- ▶ Innovative Easy-to-Use Digital PID Controller
- ▶ Electronically Controlled Shaking Mechanism Provides Quiet Reciprocating Motion and Precise Speed Control
- ▶ Universal Stainless Steel Spring Rack (Optional): for various kind of Flasks dishes and Tubes (optional)
- ▶ Patent shaking mechanism: minimum noise and vibration.



WBT-401  
refrigerated



WBT-400D  
400X300mm



Universal Spring Racks

Optional: Tube Holders

Flask Holders

MODEL	WBT-200	WBT-400D	WBT-401
System	Reciprocation shaking circulation		
Temp. range	Room temperature - 100°C		0°C-100°C
Temp. constancy	±0.1°C		
Temp. control	PID		
Temp sensor	PT-100Ω		
Inside material	SUS304		
Rate of shaking	20~200 rpm		
Shaking width	20 and 40 mm variable		
Shaking plate (mm)	300x240mm	400x300mm	
Refrigerator			1/4HP
Heater	1200watt	1600watt	
Safety devices	Short circuit breaker, over heat protector, sensor abnormality, refrigerator over protector		
Inside dimensions (mm)	W500xD300xH150	W600xD350xH180	
Outside dimensions (mm)	W700xD350xH300	W830xD415xH350	W980xD415xH430
Volume (Liters)	22.5	37.8	
Weight	25kg	30kg	53kg

CAPACITY OF FLASKS	50 ML	125 ML	250 ML	500 ML	1000 ML	2000 ML
WBT-200 number of flasks	20	12	6	4	2	1
WBT-400D/401 number of flasks	35	20	12	6	4	2

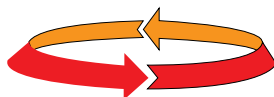
**WBT-450, DIGITAL PRECISE SHAKING WATER BATH, 45 LITER, DIGITAL PID CONTROL, ORBITAL MOTION, 20~200RPM, 75°C TO 100°C, ±0.1°C, UP TO 3 LITER FLASK**



These orbital water bath shakers are available in two models.  
WBT-450: orbital motion with large platform.

**Options:**

- ▶ Water level protector.
- ▶ Universal platform.



Optional: Tube Holders



Flask Holders

**Features:**

- ▶ Stainless Steel Bath for Superior Durability & High Thermal Efficiency
- ▶ Innovative Easy-to-Use Digital PID Controller
- ▶ Electronically Controlled Shaking Mechanism Provides Quiet Reciprocating Motion and Precise Speed Control
- ▶ Universal Stainless Steel Spring Rack (Optional): for various kind of Flasks dishes and Tubes (optional)
- ▶ Patent shaking mechanism: minimum noise and vibration.



Universal Spring Racks

**CP-13/17, CIRCULATION PUMPS**



CP-13

Pumping Capacity up to 13 liter/min.  
Model CP-13: Max. Immersion Depth 13cm  
Model CP-17: Max. Immersion depth 17cm

MODEL	WBT-450
System	Orbital circulation
Orbit diameter	25 mm
Speed readout	Tachometer
Temp. control	PID
Temperature readout	Digital
Working temperature range	Ambient +5°C~75°C
Stability	±0.2°C
Power watts	1200W
Optional accessory	Gable cover
Timer	No
Platform	450x290
Inside dimensions (mm)	W560xD405xH200
Outside dimensions (mm)	W740xD530xH450

CAPACITY OF FLASKS	50 ML	125 ML	250 ML	500 ML	1000 ML	2000 ML
WBT-450 number of flasks	35	24	15	12	6	2

## Polycarbonate Water Bath for full Visibility of Samples

WB-5  
5.5 Liter



### WB-SERIES, FOR FULL VISIBILITY OF SAMPLES

#### Features:

- ▶ Low-cost fully compatible substitute for expensive Water Bath.
- ▶ Seamless transparent polycarbonate tank-with stands temperature 120°C.
- ▶ Fast-Acting thermostat also serves as low-water-level protector, preventing heating-element burn-out & fire hazard.
- ▶ Temperature setting in °C from ambient to +100°C
- ▶ Temperature control accuracy of approximately ±1°C ensures precise test conditions
- ▶ Robust & reliable - designed for years of trouble-free service.

WBS-14  
14 Liter



Options: WB-Special:  
According to customer dimensions

Removable Modular Heating  
Assembly enables convenient cleaning of all parts & makes it usable in other vessels.



WBS-5  
5.5 Liter

### WBS-Series, With Safety Thermostat

These Water Baths are identical to the WB models but are equipped with an additional Safety Thermostat.

TEMP. RANGE: FROM SLIGHTLY ABOVE AMBIENT TO +100°C (WITH COVER) ACCURACY: APPROX.: 0.3°C AT 37°C (DEPENDING ON OPERATING CONDITIONS). VOLTAGE: 230 V, 50 HZ (OR 120 V, 50/60 HZ).					ACCESSORIES		
STANDARD MODEL	BATH CAPACITY (LITERS)	INSIDE DIM'S (CM) W1XD1XH1	OUTSIDE DIM'S (CM) W2XD2XH2	WATTS	BATH COVER MODEL	FLOATING BALLS MODEL	EVAPORATION LID MODEL
WB-3	2.7	10 x 17 x 10	15 x 31 x 24	500	C-3	FB-3	-
WB-4	4.5	13 x 31 x 13	16 x 41 x 24	600	C-4	FB-4	-
WB-5	5.5	16 x 20 x 11	22 x 34 x 24	750	C-5	FB-5	EL-5
WB-7	7.0	16 x 30 x 11	22 x 44 x 24	1000	C-7	FB-7	-
WB-8	8.5	12 x 21.5 x 36.5	16 x 27.2 x 42.5	1000	C-8	FB-8	-
WB-11	11.0	17 x 30 x 18	19.1 x 23.3 x 35.5	1200	C-11	FB-11	-
WB-14	14.0	21 x 37 x 20	28 x 50 x 30	1500	C-14	FB-14	EL-14
WB-30	30	32 x 51 x 18	38 x 66 x 24	*2000	C-30	FB-30	EL-30/8/11

WITH SAFETY THERMOSTAT MODEL	BATH CAPACITY (LITERS)	INSIDE DIM'S (CM) W1XD1XH1	OUTSIDE DIM'S (CM) W2XD2XH2	WATTS	BATH COVER MODEL	FLOATING BALLS MODEL	EVAPORATION LID MODEL
WBS-3	2.7	10 x 17 x 10	15 x 31 x 24	500	C-3	FB-3	-
WBS-4	4.5	13 x 31 x 13	16 x 41 x 24	600	C-4	FB-4	-
WBS-5	5.5	16 x 20 x 11	22 x 34 x 24	750	C-5	FB-5	EL-5
WBS-7	7.0	16 x 30 x 11	22 x 44 x 24	1000	C-7	FB-7	-
WBS-8	8.5	12 x 21.5 x 36.5	16 x 27.2 x 42.5	1000	C-8	FB-8	-
WBS-11	11.0	17 x 30 x 18	19.1 x 23.3 x 35.5	1200	C-11	FB-11	-
WBS-14	14.0	21 x 37 x 20	28 x 50 x 30	1500	C-14	FB-14	EL-14
WBS-30	30	32 x 51 x 18	38 x 66 x 24	*2000	C-30	FB-30	EL-30/8/11

\*1500W at 120V

# Baths

## Digital Water Bath for full Visibility of Samples



WBS-XD-R

### Transparent Polycarbonate Thermostatic Bath

Digital: Temperature control accuracy of approximately  $\pm 0.2^{\circ}\text{C}$  ensures precise test conditions.

### WBS-D SERIES: With Digital Control

WBS-7D  
7 Liter



C-7

TEMP. RANGE: FROM SLIGHTLY ABOVE AMBIENT TO +100°C (WITH COVER) ACCURACY: APPROX.: 0.3°C AT 37°C (DEPENDING ON OPERATING CONDITIONS). VOLTAGE: 230 V, 50 HZ (OR 120 V, 50/60 HZ).					ACCESSORIES		
DIGITAL MODEL	BATH CAPACITY (LITERS)	INSIDE DIM'S (CM) W1XD1XH1	OUTSIDE DIM'S (CM) W2XD2XH2	WATTS	BATH COVER MODEL	FLOATING BALLS MODEL	EVAPORATION LID MODEL
WBS-3D	2.7	10 x 17 x 10	15 x 31 x 24	500	C-3	FB-3	-
WBS-4D	4.5	13 x 31 x 13	16 x 41 x 24	600	C-4	FB-4	-
WBS-5D	5.5	16 x 20 x 11	22 x 34 x 24	750	C-5	FB-5	EL-5
WBS-7D	7.0	16 x 30 x 11	22 x 44 x 24	1000	C-7	FB-7	-
WBS-8D	8.5	12 x 21.5 x 36.5	16 x 27.2 x 42.5	1000	C-8	FB-8	-
WBS-11D	11.0	17 x 30 x 18	19.1 x 23.3 x 35.5	1200	C-11	FB-11	-
WBS-14D	14.0	21 x 37 x 20	28 x 50 x 30	1500	C-14	FB-14	EL-14
WBS-30D	30	32 x 51 x 18	38 x 66 x 24	*2000	C-30	FB-30	EL-30/8/11

DIGITAL MODEL RIGHT SIDE	BATH CAPACITY (LITERS)	INSIDE DIM'S (CM) W1XD1XH1	OUTSIDE DIM'S (CM) W2XD2XH2	WATTS	BATH COVER MODEL	FLOATING BALLS MODEL	EVAPORATION LID MODEL
WBS-3D-R	2.7	10 x 17 x 10	15 x 31 x 24	500	C-3	FB-3	-
WBS-4D-R	4.5	13 x 31 x 13	16 x 41 x 24	600	C-4	FB-4	-
WBS-5D-R	5.5	16 x 20 x 11	22 x 34 x 24	750	C-5	FB-5	EL-5
WBS-7D-R	7.0	16 x 30 x 11	22 x 44 x 24	1000	C-7	FB-7	-
WBS-8D-R	8.5	12 x 21.5 x 36.5	16 x 27.2 x 42.5	1000	C-8	FB-8	-
WBS-11D-R	11.0	17 x 30 x 18	19.1 x 23.3 x 35.5	1200	C-11	FB-11	-
WBS-14D-R	14.0	21 x 37 x 20	28 x 50 x 30	1500	C-14	FB-14	EL-14
WBS-30D-R	30	32 x 51 x 18	38 x 66 x 24	*2000	C-30	FB-30	EL-30/8/11

\*1500W at 120V

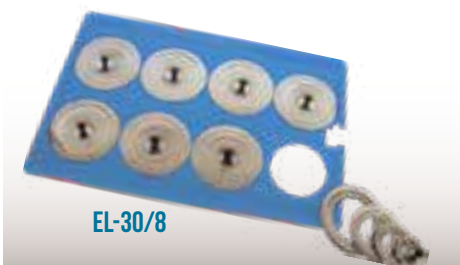
### Accessories:



WB  
Balls Blanket

### Floating balls:

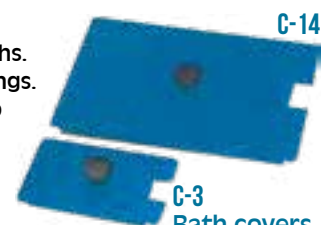
A balls blanket of Floating Polypropylene Balls is most effective for reducing evaporation and loss of heat from the Water Bath. The Balls act as effectively as a lid (flat or gabled), while enabling immersion and removal of flasks & other vessels without having to lift a lid. Usable UP to 110°C.



EL-30/8

### Evaporation lids:

Evaporation Lids (EL) for use with WB and WBS Baths. Each Lid has openings equipped with concentric rings. The rings reduce the diameters of the openings to accommodate containers of all sizes. The EI-5 Lids, for use with WB(S)-5 Baths, have four 80mm diameter openings.

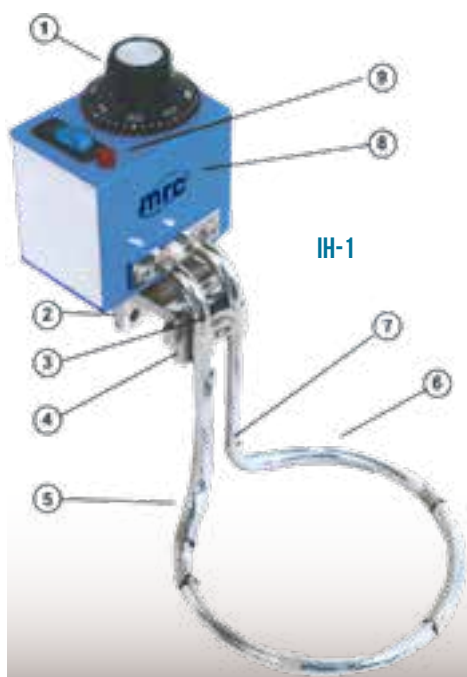


C-14

C-3  
Bath covers



## Thermostatic Controlled Immersion Heaters



### IH-SERIES, THERMOSTATIC CONTROLLED IMMERSION HEATERS

#### Immersion heat:

Thermostatically Controlled Immersion Heaters. Reliable element for accurately heating liquids to temperatures of up to 300°C with a tolerance of approx.  $\pm 1^\circ\text{C}$ . Designed for trouble-free application. Suitable for use in science and industry for: Distillation, evaporation, sterilization, rotary evaporation, ultrasonic cleaning, photographic bath etc.

#### Immersion Heater IH-1

- 1- Temperature setting in  $^\circ\text{C}$
- 2- Threaded hole for attachment to stand
- 3- Height adjustment permits wide range of application
- 4- Mounting bracket (patented design) with teflon-tipped disc permitting secure clamping to all surfaces, including glass
- 5- Heating element chromium-plated copper sheath: also available in stainless steel on special order
- 6- Fast-acting thermostat also serves as low-level cut-out, preventing element burn-out and fire hazard
- 7- Shallow immersion depth (3 cm)
- 8- The control housing is located outside the vessel and thus protected against vapors and temperature effects
- 9- Indicator light

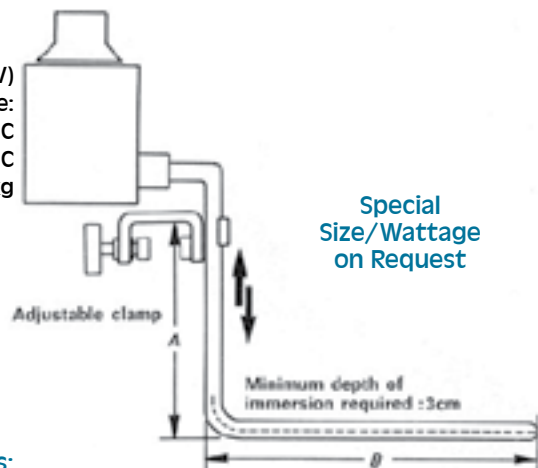
Voltage: 220V (or 115V)

Temp. Range:

50 - 300°C or 50 - 110°C

Temp. Tolerance: approx.  $\pm 1^\circ\text{C}$

Weight: 0.8-1 kg



IHSD-1  
Digital control

#### Immersion heater Features:

- ▶ Easily converts any container into a thermostatically controlled bath from RT-5°C to 300°C.
- ▶ Rugged, reliable, convenient, maintenance-free, energy-saving & reasonable priced.
- ▶ Fully valid substitute for expensive water and oil baths.
- ▶ Permits utilization of the entire contents of the container, without effecting the functioning of stirrers.
- ▶ Heat is applied directly to the liquid, ensuring rapid rise of temperature.
- ▶ Safe - fast acting thermostat server as low-water level cut out.
- ▶ You get the temperature you set.
- ▶ Control box is located on the outside and is unaffected by vaporous and temperature effects.

MODEL 50-300°C	DIGITAL RT+5°C - 300°C	MODEL 50-110°C	DIGITAL RT+5°C - 110°C	WATTS	"A" MM	"B" MMΦ
IH3/13	IHSD-3/13	IH1/13	IHSD-1/13	500	100	130
IH3/15	IHSD-3/15	IH1/15	IHSD-1/15	750	110	150
IH3/17	IHSD-3/17	IH1/17	IHSD-1/17	750	120	170
IH3/19	IHSD-3/19	IH1/19	IHSD-1/19	1000	130	190
IH3/21	IHSD-3/21	IH1/21	IHSD-1/21	1000	150	210
IH3/23	IHSD-3/23	IH1/23	IHSD-1/23	1250	180	230
IH3/25	IHSD-3/25	IH1/25	IHSD-1/25	1500	200	250
IH3/27	IHSD-3/27	IH1/27	IHSD-1/27	1500	200	270



### TEPS-1, IMMERSION CIRCULATOR - BASIC MODEL - ANALOG

#### Features:

- ▶ Temperature range: ambient to 100°C (with cooling +10 to 100°C).
- ▶ Accuracy: approx.  $\pm 0.3$  to  $\pm 1$ °C.
- ▶ Pumping capacity: up to 12 l/min.
- ▶ Safety Cut Off.
- ▶ 12L/min max. head 2m.
- ▶ Immersion depth: min. 6cm, max. 15.5cm.
- ▶ Optional: Glass Thermometer

Optional: External circulation apparatus.



### TEPS-4, DIGITAL IMMERSION CIRCULATOR

#### Features:

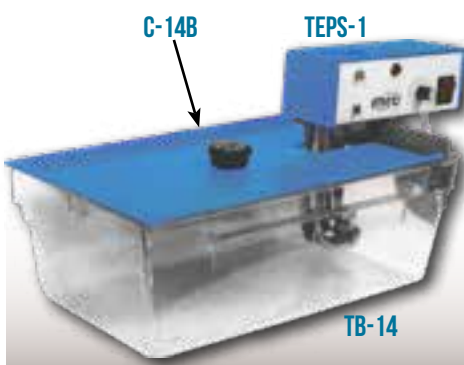
- ▶ Digital set and display of actual operating temperatures.
- ▶ PID controller provides very precise temperature control.
- ▶ Adapts to many different containers.
- ▶ Temperature range: ambient +5°C to 100°C (with cooling -10°C to 100°C),
- ▶ Accuracy: approx.  $\pm 0.1$ °C.
- ▶ Pumping capacity: up to 12 l/min.
- ▶ Immersion depth: minimum 6 cm, maximum 15.5 cm.
- ▶ Safety Cut Off.

Optional up to 200°C (for oil).

*Stainless Steel Case*



MODEL	TEPS-1	TEPS-4	TEPS-4S
Temperature range	up to 100°C		
Temperature stability	$\pm 0.3$ °C to 1°C	$\pm 0.1$ °C	
Controller	Basic analog	PID Digital	
Readout	Thermometer	Digital °C/°F	
Pumping flow	12 Liter/min		
Immersion	Minimum 60mm, Maximum 155mm		
Heater	1000Watt (optional, 1500, 2000watt)		
Over temp. safety	Adjustable		
Dimensions (mm)	W200xD240xH90 W120xD140xH135	W200xD240xH90 W120xD140xH135	
Weight	2kg	2.3kg	-



### TB-SERIES, POLYCARBONATE TANK TB TYPE FOR IMMERSION THERMOSTAT / CIRCULATOR

PC Tank with bridge for fixing immersion circulator TEPS-1/TEPS-4, Seamless Transparent Polycarbonate Tank - withstands 120°C.

Heating circulators are commonly used for cell cultures, enzyme assays, coliform testing, DNA incubation & procedures.

TB-7	16x30x13cm-Height, 7 Liter
TB-8	21x35x14cm-Height, 8.5 Liter
TB-11	18x27x18cm-Height, 11 Liter
TB-14	21x35x18cm-Height, 14 Liter
TB-30	32x51x20cm-Height, 30 Liter

## Immersion Circulator/Large Bath



### TEPS-V6, LARGE PORTABLE CLIP-ON DIGITAL IMMERSION CIRCULATOR

MRC immersion heaters and water baths with a precise temperature controlled environment, to produce consistently perfect results Ideal for sous vide and other demanding applications.

MRC immersion circulator is a space saving clip on heater/stirrer unit. It can be easily fitted to a standard stainless or polycarbonate gastronorm square tank or round (minimum depth 18cms) and maximum volume of approximately 60 Liters. For large tanks and pots there are several immersion heaters with higher wattage and immersion lengths. Precise temperature achieved by PID high precision controller, accuracy and repeatability are guaranteed. Actual temperature is clearly displayed to 0.1°C.

Temperature settings are retained in memory even after 'power off'. Temperatures can be easily and rapidly set with the push button, wipe clean control panel. Easy clamping method, safety protection for low water level and optional sturdy handle for easy carrying. The case is constructed from high quality stainless steel. If the water drops below the recommended minimum level or the unit is inadvertently switched.

#### Applications:

► Laboratory water baths ► Calibration baths ► Sous vide.

MODEL	TEPS-V6
Display/resolution	Digital LED/0.1°C
Temp. range	Ambient + 5°C - 95°C
Temp. setting	Push button
Stability	±0.1°C
Display/resolution	Digital LED/1 min. increments
Dimensions (mm)	Stirrer case: W122 x D153 x H200 (includes handle) Guard: W122 x D132 x H148 Allow 90mm at rear of unit for mains cable/ventilation
Electrical supply	230V
Power consumption	1kW (Optional: 2000, 2600, 3000 watt)

### WBSI-150, LARGE BATH

The heaters, temperature sensor, water level protection are positioned under removable protection tray positioned over the base of the tank provides effective liquid mixing by pump and prevents sous vide packs from coming into contact with the heated tank bottom. No snagging of packs on heating coils or stirrers, no difficult places to clean/keep clean, just lots of unobstructed, temperature controlled space for you to work with.

A removable lid supplied with the bath minimises evaporation of water & helps maintain bath temperature. Should the bath accidentally be run with little or no water, a safety cut-out ensures that you and your workplace remain safe. Baths is made of a stainless steel inner tank housed within a stainless steel enclosure and drainage for fast emptying. Robust, durable, easy to clean.

Simple and safe to operate- just select the desired temperature using the dial, and the large, easy to read, illuminated digital display gives you instant confirmation of the set temp.



MODEL	WBSI-150
Tank Capacity	150 liter
Temperature Range	Ambient +5°C ~ 95°C
Stability & Unloaded at 70°C	±0.2°C
Temperature Setting	Via control knob
Display	3 digit LED
Display Resolution	0.1°C
Working Volume	H350 x W950 x D550mm
Overall Dimensions	H900 x W1050 x D640mm
Electrical Supply	3 phase 380V
Heater Power & Overall Consumption 3 x 380V	9KW
Safety	Water Level Protector
Flow	33 liter/Minute

# Ultrasonic-Cleaners

## Analog, Power Control

For intensive cleaning, degassing emulsifying, homogenization, and the acceleration of chemical processes in the research, production, and maintenance sectors.

### Features:

- ▶ Useful for Cleaning and Removing Dirt, Grease, Waxes and Oil from all Lab Instruments by Ultrasonic Frequency
- ▶ Made of Stainless Steel, Finished Surface
- ▶ Convenient Preset Function: Heating and Timer
- ▶ Bottom-Mounted Drain (except AC-120H)
- ▶ Include basket & lid.

Laboratories	Cleaning, degassing, homogenizing, emulsifying,
Hospital, Clinics	Cleaning surgical instrument, manufacture of implants and stents
Dental, Tatoo	Cleaning instruments for dental treatment, cleaning dental prostheses
Optics	Cleaning spectacles, optical lenses before coating etc.
Jewelry & watches	Cleaning chains, rings, straps, watches parts etc.
Chemical sector	Cleaning reactors, acceleration of chemical reactions etc.
Plastics industry	Cleaning injection moulds etc.
Car & Aircraft industry	Cleaning engine parts carburators etc.
Mobile phones & Electronics	Cleaning PCB boards
Printing shops	Cleaning ink cassetes

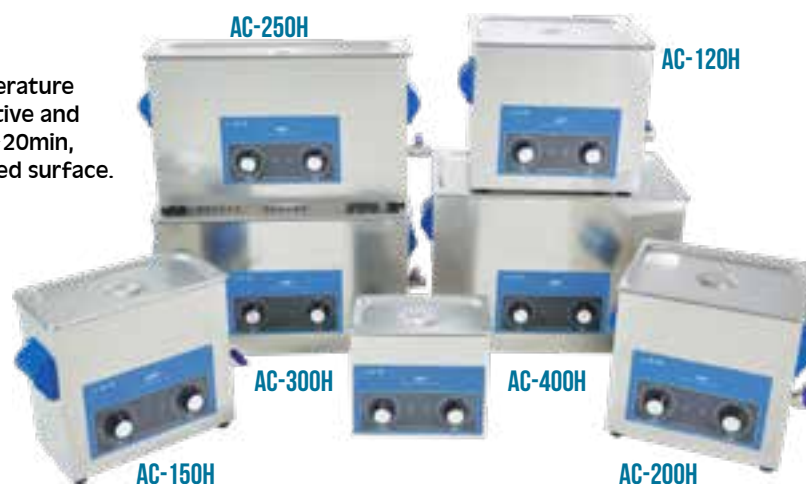
### AC-ANALOG SERIES

Ultrasonic cleaner-set with analog timer & temperature controller, with wire basket and lid, highly effective and efficient cleaning, stainless steel, up to 80°C, 0~20min, 40kHz frequency. Made of stainless steel, finished surface.

### ACP-SERIES, POWER ADJUSTABLE ULTRASONIC CLEANER



ACP-200H



- ▶ Power adjustable from 30% to 100% suitable for different cleaning (from 3L and above)
- ▶ With mechanical control timer & heater
- ▶ Memory function
- ▶ Stamping tank without welding gap for better waterproof

- ▶ Timer: 0-30 minutes
- ▶ Ceramic heaters for better heating effect.

ANALOG	AC-120H	AC-150H	AC-200H	AC-250H	AC-300H	AC-400H
ANALOG+POWER CONTROLL	ACP-120H	ACP-150H	ACP-200H	ACP-250H	ACP-300H	ACP-400H
Operating Frequency	40Khz	40Khz	40Khz	40Khz	40Khz	40Khz
Tank capacity (Liters)	3	6	9	13	20	27
Internal tank size(mm)	L240xW140xH100	L300xW155xH150	L300xW240xH150	L330xW300xH150	L500xW300xH150	L500xW300xH200
External DIM.(mm)	L270xW170xH240	L330xW180xH310	L330xW270xH310	L360xW330xH310	L550xW330xH310	L550xW330xH360
Internal tank stuff	SUS 304 #1.0t					
External stuff	Steel plate toast paint					
LID cover stuff	Stainless steel SUS 304					
Timer	1-20 min (ACP-Series: 1-30 min)					
Ultrasonic power (AC Series)	100W	150W	200W	300W	400W	500W
Power adjustable (ACP Series)	30 - 100W	45 - 150W	60 - 200W	90 - 300W	120 - 400W	150 - 500W
Heating Power	100W	300W	300W	400W	500W	500W
Net Weight	3.2Kg	6.2Kg	8.2Kg	10.2Kg	13.2Kg	14.9Kg
Drainage	None	Have				
Power source	AC100~120V/AC220~230V 50/60Hz					



# Ultrasonic-Cleaners

## Digital, Degas Function

### DC-POWER FULL SERIES

Digital Ultrasonic Cleaner-set, with Wire Basket & Lid, Highly Effective & Efficient Cleaning, Stainless Steel, up to 70°C, 0-99min., Frequency 40KHz

- ▶ Useful for Cleaning to Remove Dirt, Grease, Waxes and Oil from all Lab instruments by Ultrasonic Frequency.
- ▶ Microprocessor Control: Timer, Temperature and Output Control.
- ▶ Frequency: up to 40kHz.
- ▶ Temperature Range from Ambient to 70°C.
- ▶ Temperature accuracy: ±3°C.
- ▶ Convenient Pre-set Function: Heating and Timer.
- ▶ Bottom - Mounted Drain (Except DC-80H & DC-120H).
- ▶ Maximum 99 minutes Set Cleaning Time.
- ▶ Include Basket & Lid.



### DCG-H SERIES, DIGITAL ULTRASONIC CLEANERS WITH DEGAS FUNCTION

#### Features:

- ▶ Turbo power: Normal and soft function to resolve the cleaning blind spot
- ▶ Auto-degas function for laboratory purposes
- ▶ Memory function
- ▶ Automatically ultrasonic frequency tracking
- ▶ LED display for temperature and timer
- ▶ Timer: 1-99 minutes
- ▶ Temperature: 0-80°C, Temperature Accuracy: ±3°C
- ▶ SUS304 tank. Stamping tank without welding gap for better waterproof
- ▶ User-friendly and clear panel.
- ▶ High-performance transducer systems
- ▶ Drainage and cool fan are available for 6L and above volume models, convenient to use.
- ▶ Ultrasonic Frequency: 40KHz.

#### Applications:

- ▶ Hospital and Dental Clinics ▶ Optical Stores and Makers ▶ Biology and Chemical Labs ▶ Jewelry Store & Maker ▶ Watch Service Shops ▶ Mobilephone and Electronics Service Shops ▶ Shooting Clubs & Printing Shops ▶ Automotive shop ▶ Hardware ▶ Tattoo ▶ Aerospace & marine parts.

MODEL - DIGITAL	DC-80H	DC-120H	DC-150H	DC-200H	DC-250H	DC-300H	DC-400H
MODEL - DEGASING	DCG-80H	DCG-120H	DCG-150H	DCG-200H	DCG-250H	DCG-300H	DCG-400H
Operating frequency	40 KHz						
Tank Capacity (Liters)	2	3	6	9	13	20	27
Internal tank size (LxWxH) (mm)	150x140x100	240x140x100	300x155x150	300x240x150	330x300x150	500x300x150	500x300x200
External dimension (LxWxH) (mm)	190x170x220	270x170x240	330x180x310	330x270x310	360x330x310	550x330x310	550x330x360
Internal tank stuff	SUS 304 #1.0t						
External stuff	Steel plate toast paint						
LID cover stuff	Stainless steel SUS 304						
Timer	1-99min						
Ultrasonic power	50W	100W	150W	200W	300W	400W	500W
Heating Power	100W	100W	300W	300W	400W	500W	500W
Net weight	1.9kg	2.9kg	5.8kg	8.8kg	10.2kg	13.2kg	14.9kg
Drainage	None	None	Have				
Power source	AC100~120V/AC220~240V 50/60Hz						

# Ultrasonic-Cleaners

## Power, Pulse, Degas, Sweep Functions



DCS-400H



### DCS-SERIES, MULTI FUNCTION ULTRASONIC CLEANERS

#### Functions:

- ▶ **Degassing** is the removal of dissolved oxygen trapped in a liquid. In ultrasonic cleaning systems, trapped, dissolved oxygen in the ultrasonic cleaning solution will hinder the ability of the system to clean. This dissolved oxygen must be removed from the bath by quick degassing before cleaning.
- ▶ The **Sweep** function guarantees an optimum sound field distribution in the cleaning bath due to a modulation of the frequencies.
- ▶ **Pulse** – activatable power increase of approx. 20% by inforcement of the peak performance
- ▶ Ultrasonic **power set** 40%- 70%- 100%.
- ▶ All the buttons are touch-sensitive
- ▶ LCD window shows
- ▶ Electronic time & temperature control
- ▶ Autostart temperature-controlled / temperature pre-selection
- ▶ Separate excitation type
- ▶ High-performance transducer systems
- ▶ Dry run proof ceramic heating
- ▶ 0-60 Min timer, 0-80°C heating
- ▶ Quick degassing before cleaning
- ▶ Improved cleaning uniformity with sweep
- ▶ Boost high-strength cleaning power 120% with Pulse
- ▶ Ultrasonic power set 40%- 70%- 100%
- ▶ Safety switch-off.

#### Features Illustration:

11) Window shows the minute & sec just set or minute remained in ultrasonic cleaning process

10) Frequency window shows

9) Power window shows

8) LED indicator for Ultrasonic

7) Timer setting

6) Pulse button

5) Degas button

4) Sweep button



12) Actual °C/°F window shows the current temperature of cleaning fluid inside the tank

13) LED indicator for Heating in process

14) Heating setting

3) Ultrasonic power setting

2) START/PAUSE & Memory Setting

1) Power ON/ OFF

MODEL	DCS-120H	DCS-150H	DCS-180H	DCS-200H	DCS-250H	DCS-300H	DCS-400H
Operating Frequency	37Khz						
Tank capacity (Liters)	3	6	12	10	15	20	27
Internal tank size(mm)	L238xW138xH100	L302xW152xH150	L490xW138xH150	L302xW239xH150	L325xW295xH150	L498xW296xH150	L498xW296xH200
External DIM.(mm)	L270xW170xH240	L330xW180xH310	L550xW330xH360	L330xW270xH310	L360xW330xH310	L550xW330xH310	L550xW330xH360
Internal tank stuff	SUS 201 #1.0t						
External stuff	SUS 201						
LID cover stuff	Stainless steel SUS 201						
Timer	0÷60 min						
Ultrasonic power	160W	240W	400W	320W	360W	480W	640W
Heating Power	100W	300W	400W	500W	500W	600W	800W
Net Weight	3.2Kg	6.2Kg	15.5Kg	8.2Kg	10.2Kg	13.2Kg	14.9Kg
Drainage	None					Have	
Power source	AC100~120V/AC220~230V 50/60Hz						

# Ultrasonic-Cleaners

## Digital, Two Frequencies



DCF-H SERIES, NOISELESS ULTRASONIC CLEANERS



### Applications:

Special use for industry of laboratory, medical, biochemistry, microbiology, physics, agronomy, foodstuff, pharmacy, etc. For cleaning, cell separation, cell lysing, mixing, extraction, emulsifying, sonochemistry, sample preparation, nano-fabrication and degassing of liquids.



### Functions:

- ▶ Super low noise machine. Noise level less than 60dB
- ▶ Power adjustable: 40%, 70% and 100%, ensure that more fragile, delicate glassware is not damaged
- ▶ 3 kinds of different frequencies (45kHz, 65kHz, 45&65kHz) to meet different cleaning requirements
- ▶ Extended degassing capabilities (up to 60mins) allow for "beyond cleaning" applications for sample preparation
- ▶ Intelligent LCD operation panel
- ▶ Temperature (°C/°F) for option
- ▶ Side-mounted drainage valve (except for 3L)
- ▶ Easy one-button operation
- ▶ Memory function
- ▶ Completely programmable, you can freely set parameters as required
- ▶ Patent products.

MODEL	DCF-120H	DCF-150H	DCF-200H	DCF-400H
Frequency (kHz)	Three frequency for option: 45kHz, 65kHz, 45&65kHz			
Volume (Liters)	3	6	10	30
Tank size (LxWxH) (mm)	L240xW114xH100	L300xW155xH150	L300xW240xH150	L498xW296xH200
Unit size (LxWxH) (mm)	L320xW165xH285	L400xW180xH315	L400xW270xH315	L605xW330xH385
Ultrasonic power (W)	100	150	200	500
	40%, 70%, 100% adjustable			
Heating power (W)	100	300	300	500
Temperature (°C/°F)	0-65°C/32-149°F			
Timer	1-60mins/ untimed			

# Ultrasonic-Cleaners

## Industrial Large

### SONICA 36L/40L/65L/96L/117L/157L/206L, INDUSTRIAL ULTRASONIC WATER BATH CLEANERS

#### Applications:

Industry Ultrasonic Cleaner can be used in industry & mining enterprise, universities, colleges and scientific research unit laboratory; Hospital; Electronic workshop assembly line; Clock and watch eyeglasses shop, jewelry; Jeweler's shop, Electronic products, mechanical hardware fitting, eyeglasses, jewelry, clock and watch, money, fruit and so on.

The Industry Ultrasonic can also be used in household, to clean personal articles such as gold and silver jewelry, necklaces, earrings, glasses & nozzles.



#### Features:

- ▶ Whole machine made of SUS304 stainless steel for acid-proof, anti-corrosive, 2mm thickness.
- ▶ Industrial grade ultrasonic transducer, moisture-proofed PCB
- ▶ Temperature can be set from 30-110°C
- ▶ Industrial grade for 24 hours continuous working
- ▶ Advanced generator, sweep frequency, high quality, better effect
- ▶ Ultrasonic frequency: 28Khz (optional: 40, 68, 80 or 120Khz)
- ▶ Material: Stainless steel with diamond-shaped figures. (Tank, Housing, Basket, Lid)
- ▶ High-performance transducer, steady & durable performance
- ▶ Secure and stable PCBA
- ▶ Ultrasonic power can be adjusted from 0-100%.

MODEL	DIMENSIONS (LXWXH)MM	VOLUME (L)	ULTRASONIC POWER (W)	ULTRASONIC FREQUENCY (KHZ)	HEATING POWER (W)	HEATING TEMP. (°C)
SONICA 36L	510x300x250	36	720	28/40	500	30-110
SONICA 40L	400x300x330	40	720	28/40	2000	30-110
SONICA 65L	500x350x360	65	1080	28/40	3000	30-110
SONICA 96L	600x400x400	96	1440	28/40	4000	30-110
SONICA 117L	650x450x400	117	1800	28/40	4000	30-110
SONICA 157L	700x500x450	157	2160	28/40	5000	30-110
SONICA 206L	750x550x500	206	2520	28/40	6000	30-110

*Non Standard Dimensions Request are Wellcome*

### CAV-METER-2, CAVITATION METER

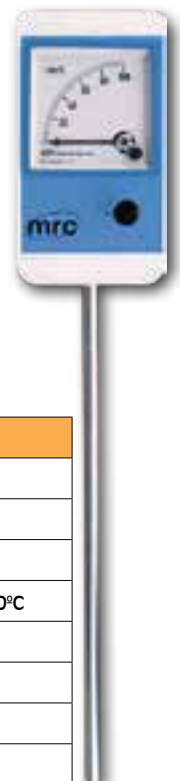
Our Ultrasonic Cleaning Cavitation Intensity Meter instantly measures ultrasonic energy (cavitation) directly in ultrasonic cleaning tanks. It is used to measure ultrasonic energy simply by dipping the cavitation meter probe into an ultrasonic tank. It is very rugged and built to last a lifetime. The solid stainless steel probe can be used in any harsh chemical & extreme environments.



#### With our cavitation meter, one can:

- ▶ Detect loss of ultrasonic energy with periodic readings
- ▶ Calculate best work loads
- ▶ Determine most efficient baskets & work fixtures
- ▶ Compare energy from tank to tank
- ▶ Compare energy level over life of tank
- ▶ Compare energy in tank loaded & unloaded
- ▶ Day to day comparative readings.

MODEL	CAV-METER-2
Range	0-100, 0-1000, 0-5000 Cavins
Self powered	No batteries
Weight	1Kg
Temperature range	Probe -100°C to +400°C, Meter 0 to +50°C
Standard probe	16" stainless steel indestructible
Optional probes	22", 28", or remote
Case	ABS
Meter	3.75" analog with glass window





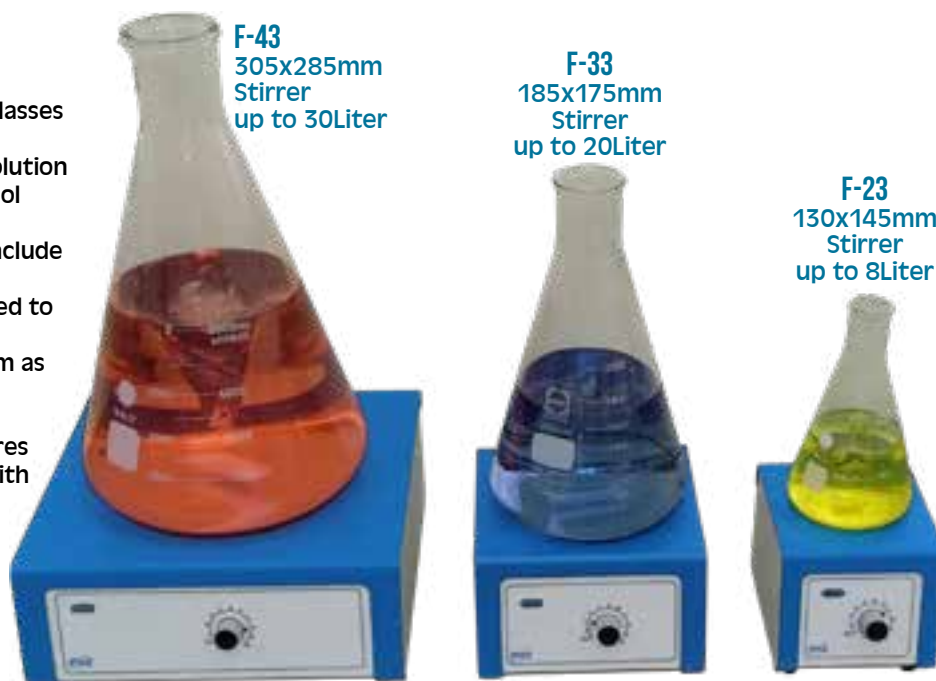
## Analog Magnetic Stirrers

### Stirring Assembly:

Electronic speed control provides constant torque over a speed range from 100 to 1200 RPM, regardless viscosity changes of the medium.

### Application:

- ▶ Stirring viscous gels
- ▶ Stirring latex mixtures
- ▶ Mixing polymers, starches & Molasses
- ▶ Standard reagent mixing
- ▶ Stir up to 4 Liters of aqueous solution
- ▶ Aluminium top plate remains cool while stirring
- ▶ For safe operation, all models include a power indicator light that illuminates when power is applied to the control
- ▶ Quiet stirring at a gentle 100rpm as well as at a vigorous 1000 rpm operation
- ▶ Strong magnetic coupling ensures that stir bar remains coupled with drive magnet, even in viscous solutions.



**F-43**  
305x285mm  
Stirrer  
up to 30Liter

**F-33**  
185x175mm  
Stirrer  
up to 20Liter

**F-23**  
130x145mm  
Stirrer  
up to 8Liter



**F-43S**  
305x285mm  
Stirrer  
up to 30Liter  
(Stainless  
steel case)

### F-23, MAGNETIC STIRRER, UP TO 8 LITER (H2O)

Powerful drive magnet ▶ Strong motor-stirs up to 8 Liter water ▶ Compact design maximizes use of available bench space ▶ Variable speed control up to 1200rpm ▶ Electronic speed control with "OFF" position ▶ Available as 4-position stirrer, & 6-position stirrer ▶ Powerful motor & strong magnet provide exceptional stirring even with a solution that has a viscosity similar to cooking oil ▶ Durable, easy-to-clean, corrosion-resistant top plate available.

### F-33, MAGNETIC STIRRER, UP TO 8 LITER

Similar to F-23 but with bigger plate 18.5 X 17.5 cm.

### F-33S, MEDIUM-HIGH VOLUMES STIRRER, UP TO 20LITER

Magnetic stirrer 185 x 175 mm with a heavy duty brushless (non sparking) induction motor with condenser. Exclusive powerful magnet is especially designed for most efficient magnetic coupling. Stir up to 20 Liter water ▶ Gentle or vigorous stirring ▶ Integral ring-stand holder ▶ Include rear bracket for support rod.

### F-43, LARGE VOLUME STIRRER, UP TO 30LITER

The giant stirrer is similar to the above described Model F-33 but with a 30.5 x 28.5 cm. top plate. The giant size top plate easily accommodates stirring loads as large as 30 Liter water. Optional Rod.

### F-43S, LARGE VOLUME STIRRER, UP TO 30LITER

Similar to F-43 but with stainless steel case.

### Analog Models:

MODEL	TOP PLATE	CAPACITY	SPEED RANGE	DIMENSIONS (WXHXD)	CASE	WEIGHT
F-23	W130xD145 mm	8 Liter	100 to 1200 rpm	130x125x186 mm	-	1.2 kg
F-33	W185xD175 mm	8 Liter	100 to 1200 rpm	186x125x197 mm	-	3.2 kg
F-33S	W185xD175 mm	20 Liter	100 to 1400 rpm	186x125x197 mm	Stainless Steel	3.2 kg
F-43	W305xD285 mm	30 Liter	100 to 1400 rpm	305x125x305 mm	-	4.2 kg
F-43S	W305xD285 mm	30 Liter	100 to 1400 rpm	305x125x305 mm	Stainless Steel	4.2 kg

# Stirrers

## Digital Magnetic Stirrers



**F-33D**  
185x175mm  
Stirrer  
up to 8Liter

### Stirring Assembly:

Electronic speed control provides constant torque over a speed range from 100 to 1200 RPM, regardless viscosity changes of the medium.

### Application:

Stirring viscous gels ▶ Stirring latex mixtures ▶ Mixing polymers, starches & Molasses ▶ Standard reagent mixing ▶ Stir up to 4 Liters of aqueous solution ▶ Aluminium top plate remains cool while stirring ▶ For safe operation, all models include a power indicator light that illuminates when power is applied to the control ▶ Quiet stirring at a gentle 100rpm as well as at a vigorous 1000 rpm operation ▶ Strong magnetic coupling ensures that stir bar remains coupled with drive magnet, even in viscous solutions.

### F-33D, MAGNETIC STIRRER, UP TO 8 LITER

Powerful drive magnet ▶ Strong motor-stirs up to 8 Liter water ▶ Compact design maximizes use of available bench space ▶ Variable speed control up to 1200rpm ▶ Electronic speed control with "OFF" position ▶ Available as 4-position stirrer, & 6-position stirrer ▶ Powerful motor & strong magnet provide exceptional stirring even with a solution that has a viscosity similar to cooking oil ▶ Durable, easy-to-clean, corrosion-resistant top plate available. 18.5 X 17.5 cm.

### F-33SD, MEDIUM-HIGH VOLUMES STIRRER, UP TO 20LITER

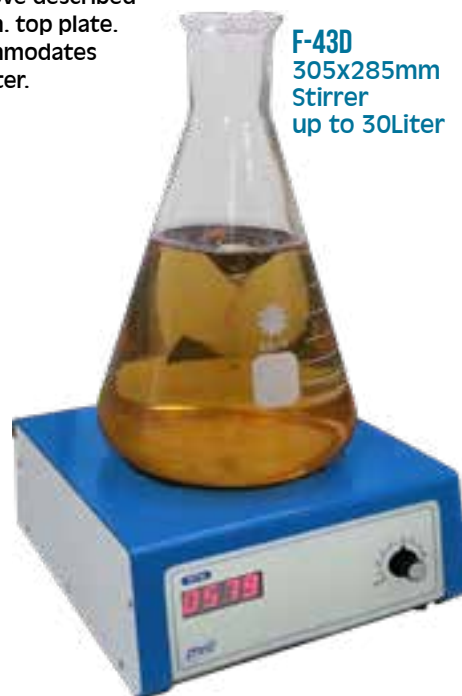
Magnetic stirrer 185 x 175 mm with a heavy duty brushless (non sparking) induction motor with condenser. Exclusive powerful magnet is especially designed for most efficient magnetic coupling. Stir up to 20 Liter water ▶ Gentle or vigorous stirring ▶ Integral ring-stand holder ▶ Include rear bracket for support rod.



**F-43SD**  
305x285mm  
Stirrer  
up to 30Liter  
Stainless Steel  
Case

### F-43D, LARGE VOLUME STIRRER, UP TO 30LITER

The giant stirrer is similar to the above described Model F-33 but with a 30.5 x 28.5 cm. top plate. The giant size top plate easily accommodates stirring loads as large as 30 Liter water. Optional Rod.



**F-43D**  
305x285mm  
Stirrer  
up to 30Liter

★ ★ ★  
**GERMAN AC MOTOR**  
**ROBUST & MAINTENANCE**  
**FREE DESIGN**  
★ ★ ★

**FOR CONTINUES**  
**WORK**

24  
7  
365

### Digital Models:

MODEL	TOP PLATE	CAPACITY	SPEED RANGE	DIMENSIONS (WXHXD)	CASE	WEIGHT
F-33D	W185xD175 mm	8 Liter	100 to 1200 rpm	130x125x186 mm	-	1.2 kg
F-33SD	W185xD175 mm	20 Liter	100 to 1400 rpm	186x125x197 mm	Stainless Steel	3.2 kg
F-43D	W305xD285 mm	30 Liter	100 to 1400 rpm	305x125x305 mm	-	4.2 kg
F-43SD	W305xD285 mm	30 Liter	100 to 1400 rpm	305x125x305 mm	Stainless Steel	4.2 kg

## Multi Magnetic Stirrers



F 13-2X2

### MULTI-MAGNETIC STIRRER, SEPARATE SPEED CONTROLLER FOR EACH CHANNEL

The Multi-magnetic Stirrer provides 4 or 6 stirring places. Separate stirrer control knobs & pilot lamps are provided, so that each stirrer can be independently controlled. 220V/50Hz. (On request 115 V/60Hz).

- ▶ Multichannel series remains cold even after several days of continuous operation
- ▶ Chemical resistant top plate
- ▶ Support devices at the rear of the base
- ▶ Independent controlled stirring positions
- ▶ Powerful magnets for strong magnetic coupling.



F 13-6



F 13-3X2



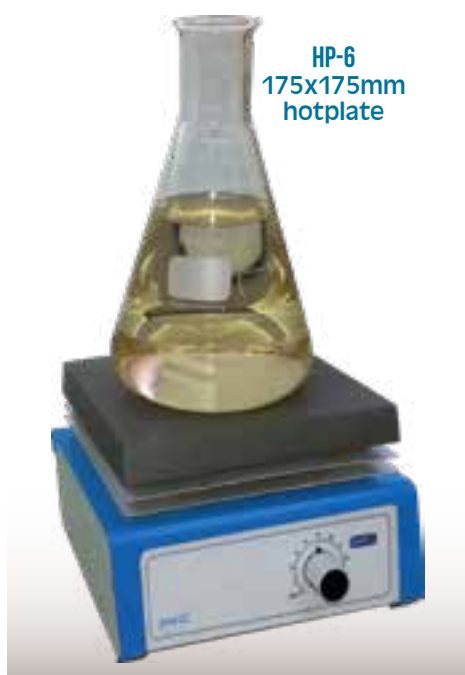
F 13-4

MODEL	F 13-4	F 13-6	F 13-3X2	F 13-2X2
Speed range	0~1300 rpm			
Distance between stirring point Maximum diameter of beaker	133 mm		150 mm	
Capacity	One point maximum - 8L			
	2-6 Liter each			
Material	Plate: Aluminium			
Weight	5kg	7.5kg		5kg
Dimensions (mm)	W600xD146xH80	W800xD146XH120	W450xD300XH120	W300xD300XH80
VA	80VA	120VA		80VA
Power	AC110/220/230V, 50/60Hz			
Unit	F-13/4 / F-13/2x2		4 Point magnetic stirrer	
	F-13/6 / F-13/3x2		6 point magnetic stirrer	



# HotPlates

## Analog Aluminium Top Hotplates



**HP-6**  
175x175mm  
hotplate

### HP SERIES ALUMINIUM TOP HOTPLATES

Uniform Heating at a Reasonable Price!  
This modern range of aluminium hotplates provides superior temperature uniformity and stability is available in 7 sizes.

**GHP-4**  
250x250mm  
hotplate



**HP-1**  
115x115mm  
hotplate

Compact & lightweight hotplate, great to use in limited space. Making possible for processing of delicate materials at low critical temperatures.



**E-1**  
Iron hotplate,  
up to 450°C  
dia. 80mm



**HP 1-5**  
115x588mm  
hotplate

#### Application:

- ▶ Distillations, extractions & digestions
- ▶ Heat aqueous reagents
- ▶ Semiconductor baking
- ▶ Acid/Base digestions - trace metal analysis. etc.
- ▶ Sample drying
- ▶ General reagent heating
- ▶ Heating TLC plates
- ▶ Evaporations
- ▶ Warning/curing applications - pastes, adhesives, & solder
- ▶ Ideal for general lab heating
- ▶ Liquid evaporations.

#### Features:

- ▶ Chemical resistant top plate, easy to clean.
- ▶ Excellent heat conduction distributes the heat evenly & uniformly over the entire heating surface.
- ▶ Sensitive "stepless" temperature control is maintained by means of a hydraulic thermostat with minimum overshoot and undershoot Making possible the processing of delicate materials at low critical temperatures.
- ▶ Pilot lamp indicates when heat is on.
- ▶ Special radiation shields keep apparatus relatively cool during continuous operation.
- ▶ Supplied with a 3-wire line cord and sturdy screw type support device at the rear of the base to hold standard rod.

MODEL	TEMPERATURE RANGE	TOP PLATE	DIMENSIONS	WATT	WEIGHT
HP-1	40-300°C (optional 350°C)	115x115mm	W140xH110xD220mm	450W	1.2kg
HP-6	40-300°C (optional 350°C)	175x175mm	W200xH150xD260mm	750W	2.3kg
GHP-4	40-300°C (optional 350°C)	250x250mm	W250xH150xD260mm	1500W	3.3kg
E-1	up to 450°C	Diameter 80mm	W120xH120xD180mm	450W	1.1kg
HP 1-5	40-300°C (optional 350°C)	115x588mm	W600xH140xD120mm	2000W	5kg



## Analog/Digital Ceramic Hotplates

### HPK-1 & HPK-4, ANALOG MODELS

#### Features:

- ▶ High impact strength, Acid and alkali resistance
- ▶ Heats rapidly up to 500°C in 8 minutes
- ▶ Stepless heat control
- ▶ Ceramic top remains perfectly flat to ensure maximum heat transfer.
- ▶ Reflective white top makes sample viewing easy.
- ▶ Not recommended for use with metal vessels.

#### Applications:

- ▶ Models are excellent for microscale chemistry
- ▶ General lab heating & stirring
- ▶ Sample drying
- ▶ Media preparation
- ▶ General microbiological applications.

**500°C**



### HPK-1D & HPK-4D, DIGITAL MODELS

Measures Temp. in Sample

#### Features:

- ▶ Microprocessor closed-loop control
- ▶ Digital display of all parameters for easy operation. Temperature can be displayed in °C or °F
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient.
- ▶ Temperature may be controlled either at the plate surface by internal sensor, or at the sample by a Thermocouple Immersion probe.

#### Description:

- ▶ Solid state feedback control monitors & adapts to sudden changes in ambient or sample temperature, preventing boil-overs, ruined samples, and lost time.
- ▶ Digital display for quick and easy observation.
- ▶ Previous set point is stored in memory & will appear on the display when the unit is switched on.

#### Options:

- ▶ RS232 or RS485 Communication
- ▶ Programmer
- ▶ Separate Control box.

#### Back Panel

support device at the rear of the base to hold standard rod.

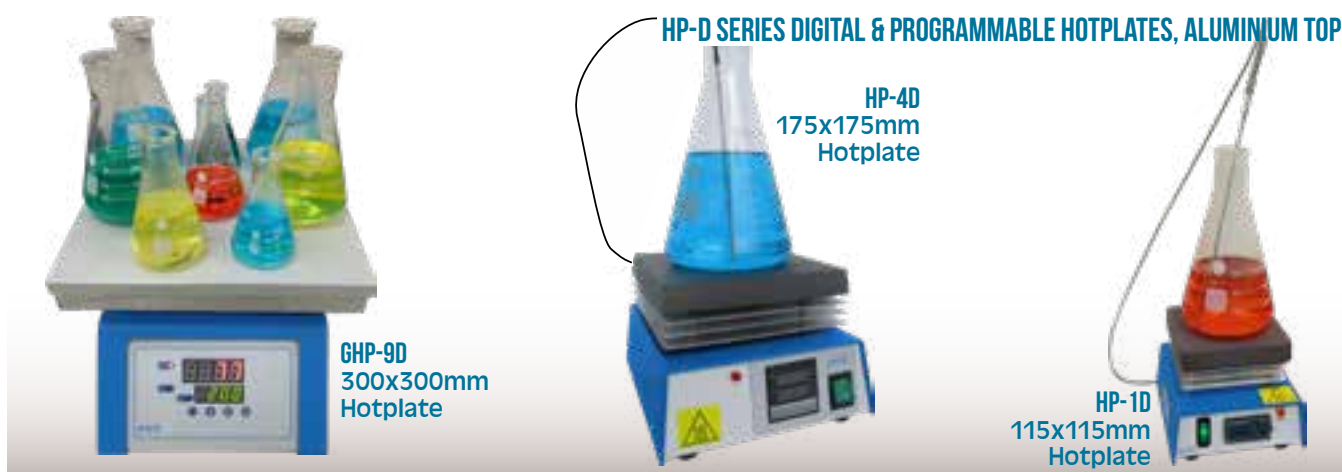
★ ★ ★  
**GERMAN AC MOTOR**  
**ROBUST & MAINTENANCE**  
**FREE DESIGN**  
★ ★ ★



MODEL	TEMP. RANGE	TOP-PLATE	TEMP. CONTROL
HPK-1	up to 500°C	115x115mm	Analog
HPK-1D	up to 500°C	115x115mm	Digital
HPK-4	up to 500°C	175x175mm	Analog
HPK-4D	up to 500°C	175x175mm	Digital

# HotPlates

## Digital Aluminium Top Hotplates



### Application:

- ▶ Distillations, extractions and digestions
- ▶ Heat aqueous reagents
- ▶ Semiconductor baking
- ▶ Acid/Base digestions - trace metal analysis. etc.
- ▶ Sample drying
- ▶ General reagent heating
- ▶ Heating TLC plates
- ▶ Evaporations
- ▶ Warning/curing applications-pastes, adhesives, and solder
- ▶ Viscosity studies
- ▶ Reaction optimization
- ▶ Solubility studies
- ▶ Safety thermostat.

### Features:

- ▶ Temperature can be displayed in °C or °F.
- ▶ Digital timer & ramp to temperature function (HP-1D only)
- ▶ Digital set-point and read-out of actual temperature.
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient.
- ▶ Temperature may be controlled either at the plate surface by internal sensor, or at the sample by a Thermocouple Immersion probe.
- ▶ Safety: in the event of broken sensor, power to the heater is shut-down.
- ▶ Temperature range: above ambient to 300°C (optional 400°C).
- ▶ Chemical resistant top plate, easy to clean.
- ▶ Excellent heat conduction distributes the heat evenly & uniformity over the entire heating surface.
- ▶ Pilot lamp indicates when heat is on.
- ▶ Special radiation shields keep apparatus relatively cool during continuous operation.
- ▶ Support device at the rear of the base.
- ▶ Option: External temp. sensor 200mm length, 3.2mm diameter.



### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 400°C



MODEL	TEMP. RANGE	TOP PLATE	TEMP. STABILITY	DIMENSIONS	WATT	WEIGHT
HP-1D	40-300°C (optional 350°C)	115x115mm	±1°	W140xH110xD220mm	450W	1.3kg
HP-4D	40-300°C (optional 350°C)	175x175mm	±1°	W200xH150xD260mm	750W	2.4kg
GHP-4D	40-300°C (optional 350°C)	250x250mm	±1°	W250xH150xD260mm	1500W	3.4kg
GHP-9D	40-300°C (optional 350°C)	300x300mm	±1°	W290xH150xD305mm	1700W	4.5kg
HP-400	Up to 370°C (optional 350°C)	400x400mm	±1°	W400xH150xD400mm	3000W	12kg
HP-600	Up to 370°C (optional 350°C)	400x600mm	±1°	W400xH150xD600mm	4500W	18kg
GHP-4X2D	40-300°C (optional 350°C)	500x250mm	±1°	W500xH150xD250mm	3000W	6.6kg
HP-1X5D	40-300°C (optional 350°C)	588x115mm	±1°	W600xH150xD145mm	2000W	5kg

## Digital Aluminium Large Hotplates

### HP-D SERIES DIGITAL & PROGRAMMABLE HOTPLATES, ALUMINIUM TOP

**GHP-4X2D-SPL**  
500x250mm Hotplate  
Large surface for large loads



**HP-60D-SPL**  
600x400mm Hotplate  
Large surface for large loads



## Special Request Wellcome

**HP-66D-SPL**  
600x600mm Hotplate  
Large surface for large loads



#### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 400°C

#### Features:

- ▶ Temperature can be displayed in °C or °F.
- ▶ Digital timer & ramp to temperature function (HP-1D only)
- ▶ Digital set-point and read-out of actual temperature.
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient.
- ▶ Temperature may be controlled either at the plate surface by internal sensor, or at the sample by a Thermocouple Immersion probe.
- ▶ Safety: in the event of broken sensor, power to the heater is shut-down.
- ▶ Temperature range: above ambient to 300°C (optional 400°C).
- ▶ Chemical resistant top plate, easy to clean.
- ▶ Excellent heat conduction distributes the heat evenly & uniformity over the entire heating surface.
- ▶ Pilot lamp indicates when heat is on.
- ▶ Special radiation shields keep apparatus relatively cool during continuous operation.
- ▶ Support device at the rear of the base.
- ▶ Option: External temp. sensor 200mm length, 3.2mm diameter.

#### Application:

- ▶ Distillations, extractions and digestions
- ▶ Heat aqueous reagents
- ▶ Semiconductor baking
- ▶ Acid/Base digestions - trace metal analysis. etc.
- ▶ Sample drying
- ▶ General reagent heating
- ▶ Heating TLC plates
- ▶ Evaporations
- ▶ Warning/curing applications-pastes, adhesives, and solder
- ▶ Viscosity studies
- ▶ Reaction optimization
- ▶ Solubility studies
- ▶ Safety thermostat.

MODEL	TEMP. RANGE	TOP PLATE	TEMP. STABILITY	DIMENSIONS	WATT	WEIGHT
GHP-4DX2-SPL	Up to 300°C (optional 400°C)	500x250mm	±1°	W500xH150xD250mm	3000W	kg
HP-600-SPL	Up to 370°C (optional 400°C)	600x400mm	±1°	W400xH105xD600mm	4500W	kg
HP-660-SPL	Up to 370°C (optional 400°C)	600x600mm	±1°	W600xH105xD600mm	6500W	kg



# HotPlate Stirrers

## Analog Stirrers Aluminium Top Hotplates

### MH-SERIES, HOTPLATE MAGNETIC STIRRERS

#### Features:

- ▶ Temperature range: above ambient to 300°C (optional 400°C).
- ▶ Chemical resistant top plate, easy to clean.
- ▶ Excellent heat conduction distributes the heat evenly and uniformly over the entire heating surface.
- ▶ Pilot lamp indicates when heat is on.
- ▶ Special radiation shields keep apparatus relatively cool during continuous operation.
- ▶ Designed for continuous use, to handle fluids of varying viscosities in up to 30Liter capacity.
- ▶ Available in 3 sizes to accommodate most laboratory applications requiring mixing and temperature control.
- ▶ Gentle or vigorous stirring.
- ▶ Sensitive "stepless" temperature control is maintained by means of a hydraulic thermostat with minimum overshoot undershoot Making possible the processing of delicate materials at low critical temperatures.



**MH-1**  
115x115mm  
Hotplate Stirrer  
Up to 8 liters

**MH-4**  
175x175mm  
Hotplate Stirrer  
Up to 10 liters

**GMH-5**  
250x250mm  
Hotplate Stirrer  
Up to 30 liters

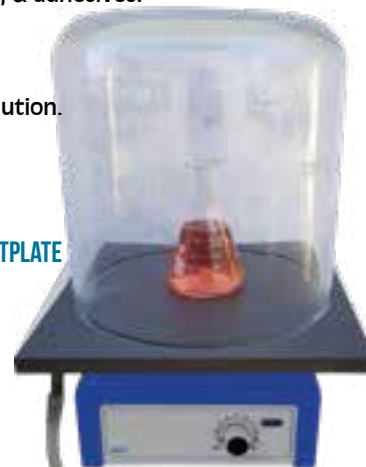
#### Application:

- ▶ Warming/mixing applications - gels, pastes, & adhesives.
- ▶ Standard reagent mixing and heating.
- ▶ Preparing culture media.
- ▶ Evaporation and distillation procedures.
- ▶ Titration requiring heating & stirring of solution.
- ▶ General microbiological applications.
- ▶ Gentle heating.
- ▶ Micro scale chemistry.
- ▶ General lab heating & stirring.
- ▶ Sample drying.
- ▶ Media preparation.

#### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 400°C
- ▶ External temp. sensor 200mm length, 3.2mm diameter
- ▶ Separate control box.

#### VACUUM HOTPLATE



**MH-6**  
175x175mm  
Hotplate Stirrer  
Up to 10 liters



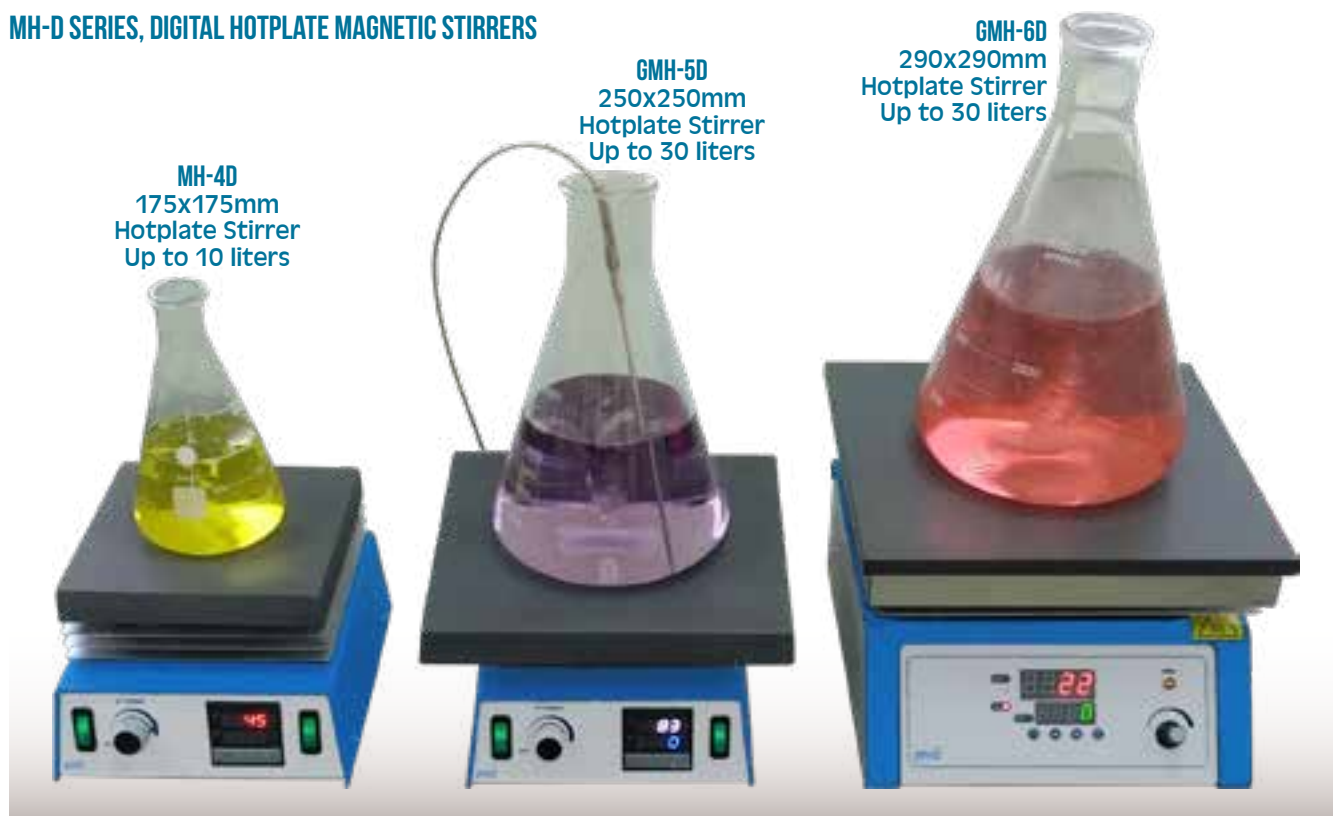
MODEL	TEMP. RANGE	SPEED RANGE	CAPACITY MAX.	TOP PLATE	DIMENSIONS	WATT	WEIGHT
MH-1	40-300°C (optional 350°C)	100-1200rpm	8 Liter	115x115mm	W140xH110xD220mm	450W	1.9kg
MH-4	40-300°C (optional 350°C)	100-1200rpm	10 Liter	175x175mm	W200xH150xD260mm	750W	3kg
MH-6	40-300°C (optional 350°C)	100-1200rpm	10 Liter	175x175mm	W200xH150xD260mm	750W	3kg
MH-5	40-300°C (optional 350°C)	100-1400rpm	20 Liter	175x175mm	W200xH150xD260mm	750W	3.4kg
GMH-5	40-300°C (optional 350°C)	100-1400rpm	30 Liter	250x250mm	W250xH150xD260mm	1500W	4.4kg



# HotPlate Stirrers

## Digital Stirrers Aluminium Top Hotplates

### MH-D SERIES, DIGITAL HOTPLATE MAGNETIC STIRRERS



#### Application:

- ▶ Warming/mixing applications - gels, pastes, & adhesives.
- ▶ Standard reagent mixing and heating.
- ▶ Preparing culture media.
- ▶ Evaporation and distillation procedures.
- ▶ Titration requiring heating & stirring of solution.
- ▶ General microbiological applications.
- ▶ Gentle heating.
- ▶ Micro scale chemistry.
- ▶ General lab heating & stirring.
- ▶ Sample drying.
- ▶ Media preparation.

#### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 400°C
- ▶ External temp. sensor 200mm length, 3.2mm diameter
- ▶ Separate control box.

#### Features:

- ▶ Temperature range :above ambient to 300°C (optional 350°C).
- ▶ Chemical resistant top plate, easy to clean.
- ▶ Excellent heat conduction distributes the heat evenly and uniformity over the entire heating surface.
- ▶ Pilot lamp indicates when heat is on.
- ▶ Special radiation shields keep apparatus relatively cool during continuous operation.
- ▶ Designed for continuous use, to handle fluids of varying viscosities in up to 30Liter capacity.
- ▶ Available in 3 sizes to accommodate most laboratory applications requiring mixing and temperature control.
- ▶ Gentle or vigorous stirring.
- ▶ Temperature can be displayed in °C or °F.
- ▶ Digital set-point and read-out of actual temperature.
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient.
- ▶ Temperature may be controlled either at the plate surface by internal sensor, or at the sample by a Thermocouple Immersion probe.
- ▶ Safety: in the event of broken sensor,power to the heater is shut-down.



MODEL	TEMP. RANGE	SPEED RANGE	CAPACITY MAX.	TOP PLATE	DIMENSIONS	WATT	WEIGHT
MH-4D	40-300°C (optional 350°C)	100-1200rpm	10 Liter	175x175mm	W200xH150xD260mm	750W	3kg
MH-5D	40-300°C (optional 350°C)	100-1400rpm	20 Liter	175x175mm	W250xH150xD260mm	750W	3.1kg
GMH-5D	40-300°C (optional 350°C)	100-1400rpm	30 Liter	250x250mm	W250xH150xD260mm	1500W	3.5kg
GMH-6D	40-300°C (optional 350°C)	100-1400rpm	30 Liter	290x290mm	W290xH175xD305mm	1700W	4.0kg

# HotPlate Stirrers

## Analog/Digital Ceramic Hotplate Stirrers

### MHK-1 & MHK-4, ANALOG MODELS

#### Features:

- ▶ High impact strength, Acid and alkali resistance
- ▶ Heats rapidly up to 500°C in 8 minutes
- ▶ Stepless heat control
- ▶ Ceramic top remains perfectly flat to ensure maximum heat transfer.
- ▶ Reflective white top makes sample viewing easy.
- ▶ Not recommended for use with metal vessels.

#### Applications:

- ▶ Models are excellent for microscale chemistry
- ▶ General lab heating & stirring
- ▶ Sample drying
- ▶ Media preparation
- ▶ General microbiological applications.

**500°C**

★ ★ ★  
GERMAN AC MOTOR  
ROBUST & MAINTENANCE  
FREE DESIGN  
★ ★ ★



MHK-4  
175x175mm  
Ceramic Hotplate stirrer



MHK-1  
115x115mm  
Ceramic Hotplate stirrer



### MHK-4D, DIGITAL MODEL Measures Temp. in Sample

#### Features:

- ▶ Microprocessor closed-loop control
- ▶ Digital display of all parameters for easy operation.
- ▶ Temperature can be displayed in °C or °F.
- ▶ Digital set-point and read-out of actual temperature.
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient.
- ▶ Temperature may be controlled either at the plate surface by internal sensor, or at the sample by a Thermocouple Immersion probe.
- ▶ Safety: in the event of broken sensor, power to the heater is shut-down.

#### Description:

- ▶ Solid state feedback control monitors & adapts to sudden changes in ambient or sample temperature, preventing boil-overs, ruined samples, and lost time.
- ▶ Digital display for quick and easy observation.
- ▶ Previous set point is stored in memory & will appear on the display when the unit is switched on.

#### Options:

- ▶ RS232 or RS485 Communication
- ▶ Programmer
- ▶ Separate Control box.

#### Back Panel

support device at the rear of the base to hold standard rod.



MHK-4D  
175x175mm

MODEL	TEMP. RANGE	TOP-PLATE	TEMP. CONTROL	MAGNETIC STIRRER
MHK-1	up to 500°C	115x115mm	Analog	100~1200rpm
MHK-4	up to 500°C	175x175mm	Analog	100~1200rpm
MHK-4D	up to 500°C	175x175mm	Digital	100~1200rpm

# HotPlate Stirrers

## Analog Multi-Position Hotplate Stirrers

### Model: MH 1-3x2

Dimensions: Top plate 11.5x11.5cm,  
Overall W45xH14.5xD31cm

Power: 2400 watt-6x400 watt.  
Weight: 12Kg.

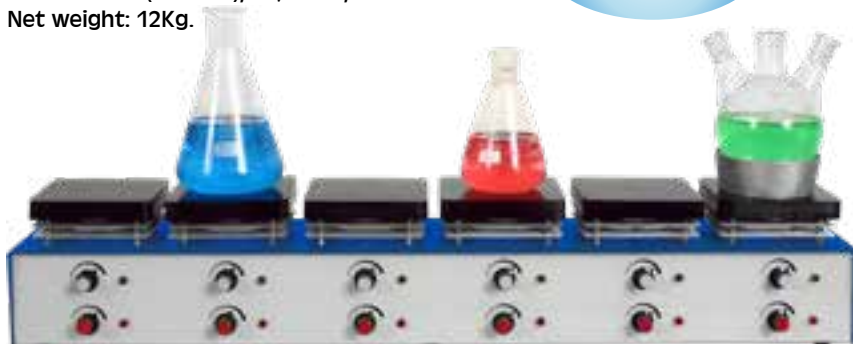


MH 1-3x2  
6 position hotplate stirrer

### Model: MH 1-6, 6 Positions

Dimensions: Overall W81xH14.5xD22cm  
(Includes support rod clamp)

Power: 230V (or 115V), 50/60Hz, 2400W-6x400W  
Net weight: 12Kg.



MH 1-6  
6 position hotplate stirrer

300°C

### Model: MH 1-2x2, 4 Positions

Dimensions: Top plate 11.5x11.5cm  
Overall W30xH14.5xD31cm  
(D includes support rod clamp)  
Placed in two rows 2+2

Power: 230V (or 115V), 50/60Hz,  
1600W-4x400W

Net weight: 8Kg.



MH 1-2x2  
4 position hotplate stirrer

### Model: MH 1-4, 4 Positions

Dimensions: Overall W60.5xH14.5xD22cm

Power: 1600 watt-4x400 watt.  
Weight: 8Kg.



MH 1-4  
4 position hotplate stirrer

★ ★ ★  
GERMAN AC MOTOR  
ROBUST & MAINTENANCE  
FREE DESIGN  
★ ★ ★

### Model: MH4-3, 3 Positions

Dimensions: 17.5x17.5cm Hotplates

Power: 2250 watt-3x750 watt.  
Weight: 8Kg.



### Application:

- ▶ Warming/mixing applications - gels, pastes, & adhesives.
- ▶ Standard reagent mixing and heating.
- ▶ Preparing culture media.
- ▶ Evaporation and distillation procedures.
- ▶ Titration requiring heating & stirring of solution.
- ▶ General microbiological applications.
- ▶ Gentle heating.
- ▶ Micro scale chemistry.
- ▶ General lab heating & stirring.
- ▶ Sample drying.
- ▶ Media preparation.

### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 400°C
- ▶ External temp. sensor 200mm length, 3.2mm diameter
- ▶ Separate control box.

### ANALOG MULTI-POSITION HOTPLATE STIRRERS, 2,3,4 OR 6 PLACES

- ▶ Aluminium Top Plate 115x115mm or 175x175mm
- ▶ Independent Heating & Stirring Control
- ▶ up to 300°C (optional 350°C)/1600 rpm
- ▶ Excellent for multi-use and a wide various sample testing.
- ▶ Aluminium tops are chemical resistant & heat up quickly and uniformly. Great for low temperature applications.
- ▶ Units are built from durable cast aluminium cases & painted with chemically resistant paint.
- ▶ Individually controlled stirring and heating positions.
- ▶ Each position can be used to stir only, heat only or heat and stir at the same time.
- ▶ Ideal for a narrow bench-top or for applications needing support rack system.
- ▶ Stirrers are equipped with strong magnets and high torque motors. Up to 8 Liter of water for each position.

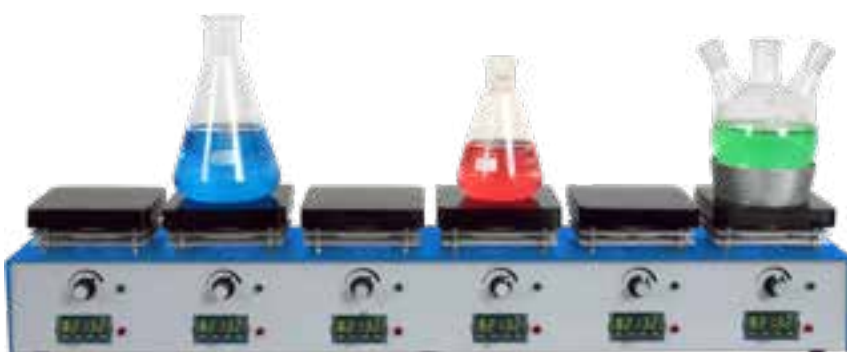


# HotPlate Stirrers

## Digital Multi-Position Hotplate Stirrers



**MH 1-3X2D**  
6 position digital hotplate stirrer



**MH 1-6D**  
6 position digital hotplate stirrer



**MH 1-2X2D**  
4 position digital hotplate stirrer



**MH 1-4D**  
4 position digital hotplate stirrer

**300°C**

### Model: MH 1-6D, 6 Positions

Dimensions: Overall W81xH14.5xD22cm  
(Includes support rod clamp)

Power: 230V (or 115V), 50/60Hz,  
2400W-6x400W

Net weight: 12Kg.

### Model: MH 1-4D, 4 Positions

Dimensions: Overall W60.5xH14.5xD22cm

Power: 1600 watt-4x400 watt.

Weight: 8Kg.

### Model: MH 1-2x2D, 4 Positions

Dimensions: Top plate 11.5x11.5cm  
Overall W30xH14.5xD31cm  
(D includes support rod clamp)  
Placed in two rows 2+2

Power: 230V (or 115V), 50/60Hz,  
1600W-4x400W

Net weight: 8Kg.

### Model: MH 1-3x2D

Dimensions: Top plate 11.5x11.5cm,  
Overall W45xH14.5xD31cm

Power: 2400 watt-6x400 watt.

Weight: 12Kg.

### DIGITAL MULTI-POSITION HOTPLATE STIRRERS, 2,3,4 OR 6 PLACES

- ▶ Aluminium Top Plate 115x115mm
- ▶ Independent Heating & Stirring Control
- ▶ up to 300°C (optional 350°C)/1600 rpm
- ▶ Excellent for multi-use and a wide various sample testing.
- ▶ Aluminium tops are chemical resistant & heat up quickly and uniformity. Great for low temperature applications.
- ▶ Units are built from durable cast aluminium cases & painted with chemically resistant paint.
- ▶ Individually controlled stirring and heating positions.
- ▶ Each position can be used to stir only, heat only or heat and stir at the same time.
- ▶ Ideal for a narrow bench-top or for applications needing support rack system.
- ▶ Stirrers are equipped with strong magnets and high torque motors. Up to 8 Liter of water for each position.

### Application:

- ▶ Warming/mixing applications - gels, pastes, & adhesives.
- ▶ Standard reagent mixing and heating.
- ▶ Preparing culture media.
- ▶ Evaporation and distillation procedures.
- ▶ Titration requiring heating & stirring of solution.
- ▶ General microbiological applications.
- ▶ Gentle heating.
- ▶ Micro scale chemistry.
- ▶ General lab heating & stirring.
- ▶ Sample drying.
- ▶ Media preparation.

### Options:

- ▶ RS232 Communication
- ▶ RS485 Communication
- ▶ Separate Control box.
- ▶ Programmer
- ▶ Up to 350°C
- ▶ External temp. sensor 200mm length, 3.2mm diameter
- ▶ Separate control box.



★ ★ ★  
**GERMAN AC MOTOR**  
**ROBUST & MAINTENANCE**  
**FREE DESIGN**  
★ ★ ★



# HotPlate Stirrers

## Analog Multi Position Ceramic Hotplates/Stirrers

### Model: MHK 1-2x2

Dimensions: 30x14.5x31cm  
Power: 1600 watt-4x400 watt  
Weight: 8 kg



**MHK 1-2X2**  
4 Positions, 115x115mm hotplate

### Model: MHK 1-6, 6 Positions

Dimensions: Overall W81xH14.5xD22cm  
(Includes support rod clamp)  
Power: 230V (or 115V), 50/60Hz,  
2400Watt-6x400W  
Net weight: 12Kg



**MHK 1-6**  
6 Positions, 115x115mm hotplate

### Model: MHK 1-2x3

Dimensions: Overall W45xH14.5xD31cm  
(Includes support rod clamp)  
Placed in two rows 3+3  
Power: 230V (or 115V), 50/60Hz,  
2400W-6x400W  
Net weight: 12Kg.



**MHK 1-2X3**  
6 Positions, 115x115mm hotplate

### Model: MHK 1-4, 4 Positions

Dimensions: 60.5x14.5x22cm  
Power: 1600 watt-4x400 watt  
Net weight: 8 kg



**MHK 1-4**  
4 Positions, 115x115mm hotplate

### Model: MHK 4-3

3 positions, 175x175mm plate, 3x1100watt=3300watt



**MHK 4-3**  
3 Positions,  
175x175mm hotplate

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**FREE DESIGN**  
★ ★ ★

### Features:

- ▶ High impact strength, Acid and alkali resistance
- ▶ Heats rapidly up to 500°C in 8 minutes
- ▶ Stepless heat control
- ▶ Ceramic top remains perfectly flat to ensure maximum heat transfer.
- ▶ Reflective white top makes sample viewing easy.
- ▶ Not recommended for use with metal vessels.

### Applications:

- ▶ Models are excellent for microscale chemistry
- ▶ General lab heating & stirring
- ▶ Sample drying
- ▶ Media preparation
- ▶ General microbiological applications.

**500°C**

**FOR CONTINUES**  
**WORK**  
**24/7**  
365

### ANALOG CERAMIC HOTPLATE STIRRERS MULTI-POSITION, 2,3,4 OR 6 PLACES, 115X115MM OR 175X175MM

- ▶ Heat to 500°C on plate surface in minutes
- ▶ Stir from up to 1600 rpm on each stirring position with individual controls.
- ▶ Plate size for all units is 115x115 or 175x175mm.
- ▶ Solid ceramic heater surface for excellent chemical resistance.
- ▶ Multi position hotplate stirrer with 2,3,4,6 positions.
- ▶ Individually controlled stirring and heating positions.
- ▶ Each position can be used to stir only, heat only or heat and stir at the same time.
- ▶ Ideal for a narrow bench-top or for applications needing support rack system.
- ▶ Stirrers are equipped with strong magnets & high torque motors, up to 8 Liter of water.

# HotPlate Stirrers

## Digital Multi Position Ceramic Hotplates/Stirrers

### DIGITAL CERAMIC HOTPLATE STIRRERS MULTI-POSITION, 2,3,4 OR 6 PLACES, 115X115MM OR 175X175MM

#### Model: MHK 1-6D, 6 Positions

Dimensions: Overall W81xH14.5xD22cm  
(Includes support rod clamp)

Power: 230V (or 115V), 50/60Hz,  
2400Watt-6x400W

Net weight: 12Kg

#### Model: MHK 1-4D, 4 Positions

Dimensions: 60.5x14.5x22cm

Power: 1600 watt-4x400 watt

Net weight: 8 kg

#### Model: MHK 1-2x3D

Dimensions: Overall W45xH14.5xD31cm  
(Includes support rod clamp)

Placed in two rows 3+3

Power: 230V (or 115V), 50/60Hz,  
2400W-6x400W

Net weight: 12Kg

#### Model: MHK 1-2x2D

Dimensions: 30x14.5x31cm

Power: 1600 watt-4x400 watt

Weight: 8 kg

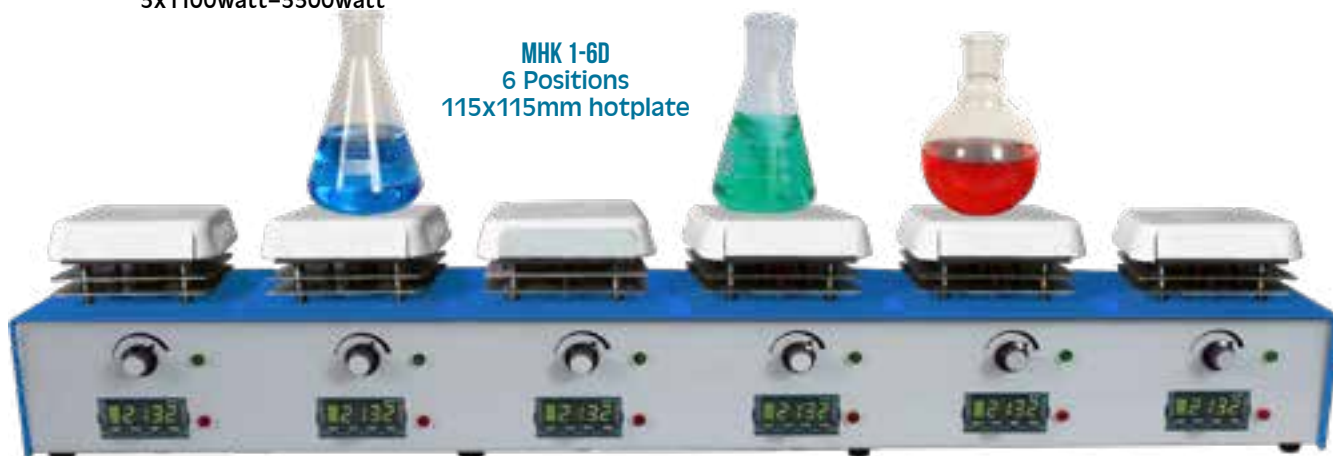
#### Model: MHK 4-3D

Dimensions: 63x23x13cm

3 positions, 175x175mm plate,  
3x1100watt=3300watt

- ▶ Heat to 500°C on plate surface in minutes
- ▶ Stir from up to 1600 rpm on each stirring position with individual controls.
- ▶ Plate size for all units is 115x115 or 175x175mm.
- ▶ Solid ceramic heater surface for excellent chemical resistance.
- ▶ Multi position hotplate stirrer with 2,3,4,6 positions.
- ▶ Individually controlled stirring and heating positions.
- ▶ Each position can be used to stir only, heat only or heat and stir at the same time.
- ▶ Ideal for a narrow bench-top or for applications needing support rack system.
- ▶ Stirrers are equipped with strong magnets & high torque motors, up to 8 Liter of water.

**500°C**



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WORK  
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# Heating Mantles

## SpillProof Heating Mantles



### SPECIALTY SPILLPROOF HEATING MANTLES

► Units are designed with a built-in stainless steel liner that gives electrical and mechanical protection against spillage and enables easy cleaning ► Built-in electronic controller regulates heating element from ambient to 750°C, 2 ranges: low & high ► Durable housing is chemically resistant ► Accept a large range of flasks ► For maximum operator protection, models are grounded should spillage or flask breakage occur ► All models include support rod holder at the back.

#### Features:

- Three in one design accommodates 250, 500 or 1000ml round bottom flasks (K-1).
- Three in one design accommodates 500, 1000 or 2000ml round bottom flasks (K-2).
- Different vessel sizes, spill proof heater.
- Includes rear bracket for support rod.
- Stepless heat control up to 750°C
- Heater on light.
- Element temperature range of ambient to 750°C.

#### Three Flask Size In One Mantle

##### Model K-1

- For flasks up to 1000ml.
- Stepless heat control.
- Operating temp. up to 750°C.

##### Model K-2

- For flasks up to 2000ml.



ANALOG MODEL	DIGITAL MODEL	TEMP. RANGE	CAPACITY	DIMENSIONS	WEIGHT	WATT
K-1	K-1D	up to 750°C	250-1000ml	W12xD17xD18cm	1.2kg	550
K-2	K-2D	up to 750°C	500-2000ml	W21xD20xD24cm	1.4kg	750

### E-SERIES, MULTI POSITION ROUND TOP EXTRACTION HEATER

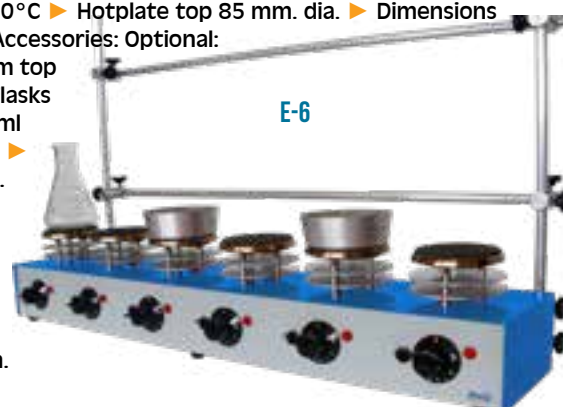
The Multi Heating Apparatus offers such versatility that is suitable for many laboratory purposes: extractions, distillations, digestions, evaporation etc. The 6 separate heat controls allow the heaters to be used for several different projects or multiple runs of the same project. The Multi Heating Apparatus in conjunction with inter-changeable top mould for round bottom flasks - solves the most varied heating problems.

- Optional: Aluminium top mould for round bottom flasks up to 250ml/500ml for extraction apparatus soxhlet.
- Digital temperature control.

**Model E-6** Six individual heat controls with pilot lights ► Built-in temperature regulator ► For 6 places, 220 Volt (on request 115 V), 2700 Watts (6x450 W) ► Approximate temp.: 40 - 450°C ► Hotplate top 85 mm. dia. ► Dimensions (WxHxD): 80x17x20 cm ► Accessories: Optional:

6 interchangeable aluminum top moulds for round bottom flasks up to 100 ml or 250 to 500ml (Kjeldahl flasks 500-800 ml) ► 4 support rods 800x12 mm. with 4 clamps.

**Model E-4** as described above, but for 4 places 220Volts 1800Watts (4x450W). DIM. (WxHxD): 60x17x20 cm.





# Heating Mantles

## SpillProof Heating Mantles & Stirrers

### SPECIALTY SPILLPROOF HEATING MANTLES WITH MAGNETIC STIRRERS

- ▶ Units are designed with a built-in stainless steel liner that gives electrical & mechanical protection against spillage and enables easy cleaning
- ▶ Built-in electronic controller regulates heating element from ambient to 750°C, 2 ranges: low & high
- ▶ Durable housing is chemically resistant
- ▶ Accept a large range of flasks
- ▶ For maximum operator protection, models are grounded should spillage or flask breakage occur
- ▶ All models include support rod holder at the back.

#### Three Flask Size In One Mantle

##### Model KM-1

- ▶ For flasks up to 1000ml.
- ▶ Stepless heat control.
- ▶ Operating temp. up to 650°C.

##### Model KM-2

- ▶ For flasks up to 2000ml.

#### Features:

- ▶ Three in one design accommodates 250, 500 or 1000ml round bottom flasks (KM-1).
- ▶ Three in one design accommodates 500, 1000 or 2000ml round bottom flasks (KM-2).
- ▶ Different vessel sizes, spill proof heater.
- ▶ Includes rear bracket for support rod.
- ▶ Stepless heat control up to 650°C
- ▶ Variable speed control up to 1800rpm.
- ▶ Heater on light.
- ▶ Element temperature range of ambient to 750°C.



KM-2



KM-1



KM-1D  
Digital Temp.  
control

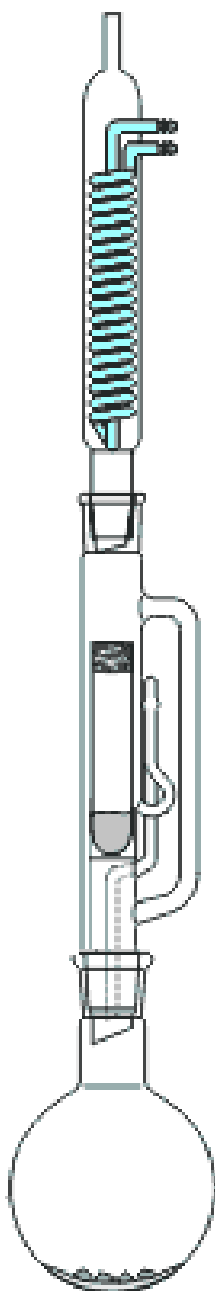
KM-2D  
Digital Temp.  
control

ANALOG MODEL	DIGITAL MODEL	TEMP. RANGE	CAPACITY	STIRRING	DIMENSIONS	WEIGHT	WATT
KM-1	KM-1D	up to 650°C	250-1000ml	up to 1600rpm	W16xD17xD23cm	2.3kg	550
KM-2	KM-2D	up to 650°C	500-2000ml	up to 1600rpm	W21xD20xD24cm	2.5kg	750



# Heating Mantles

## Multi Unit Kjeldahl Apparatus



- ▶ For flasks 250 up to 1000 ml.
- ▶ Spillproof–Stainless Steel Heater.
- ▶ Stepless–heat control.
- ▶ Operating temp.: up to 750°C.
- ▶ Includes 4 support rods and 4 clamps.
- ▶ Durable housing is chemically resistant.
- ▶ Built-in electronic controller regulates element temp. to 750°C, 2 ranges: low & high.
- ▶ Robust aluminium construction permits operation of the units as required by extraction and distillation processes.
- ▶ "Heat on" light for each recess indicates when power is being supplied to the heater.
- ▶ For maximum operator protection, models are grounded should spillage or flask breakage occur.
- ▶ Units are designed with a built-in stainless steel liner that gives electrical and mechanical protection against spillage & enables easy cleaning.
- ▶ Lower profile for space-saving convenience.
- ▶ Ideal for repetitive extracting (kjeldahl, soxhlet, and other

**Soxhlet Extractor** extraction procedure), refluxing & distilling laboratory applications.

- ▶ Analog controller built-in system.
- ▶ Rods & clamps are offered as standard.
- ▶ Ideal for all brands round flasks.
- ▶ Highly-processed aluminium case offers robust standing, easy handling.

### Soxhlet Extractors

For the extraction from solids with solvents. The solvent is recirculated continuously and distilled from the extracted sample before contacting the solid again. The extract is concentrated in the distillation flask. The method allows an effective separation with relatively small amounts of extracting solvents.

The complete apparatus consists of

- ▶ round bottom flask
- ▶ compact and robust designed extractor with NS 29/32 flask connection.

### K-SERIES, MULTI UNIT MACRO KJELDAHL APPARATUS



#### Model K-6, 6 Positions

Up to 6 flasks ▶ 220 Volt (or 110V), 6x550Watt ▶ Dimensions: (WxHxD) 80x19x20cm (D includes rear bracket for support rod) ▶ Nett weight: 6.8Kgs.



#### Model: K-4, 4 Positions

Up to 4 flasks ▶ 220 Volt (or 110 V), 4 x 550 Watt ▶ Dimensions: (WxHxD) 60x19x20cm (D includes rear bracket for support rod) ▶ Net weight: 4.8 Kgs.

CAT.NO.	EXTRACTOR (ML)	CONDENSER (NS)	FLASK (ML)	CONDENSER
5.3600.25	30	29/32	100	dimroth
5.3600.31	70	34/35	100	dimroth
5.3600.37	100	45/40	250	dimroth
5.3600.43	150	45/40	250	dimroth
5.3600.46	200	45/40	250	dimroth
5.3600.49	250	45/40	500	dimroth
5.3600.52	300	60/46	500	dimroth
5.3600.58	500	60/46	1000	dimroth
5.3600.70	1000	71/51	2000	dimroth

# Heating Mantles

## Analog & Digital



### MN-C/MN-D SERIES, METAL CASE MANTLES, ANALOG/DIGITAL CONTROL

MODEL MANUAL CONTROL	MODEL DIGITAL CONTROL	CAPACITY	POWER
MN-50C	MN-50D	50ml	60W
MN-100C	MN-100D	100ml	80W
MN-250C	MN-250D	250ml	200W
MN-500C	MN-500D	500ml	300W
MN-1000C	MN-1000D	1000ml	400W
MN-2000C	MN-2000D	2000ml	500W
MN-3000C	MN-3000D	3000ml	600W
MN-5000C	MN-5000D	5000ml	700W
MN-10LC	MN-10LD	10L	1300W
MN-12LC	MN-12LD	12L	1300W



#### Features:

Aluminum housing is chemical resistant, tough, lightweight and easy to clean ▶ Built-in controller regulated element temperature to 450°C ▶ 10 Series mantles sizes available from 50 to 12Liter ▶ Unique air flow through ventilation slots beneath & around the rim & case keeps the exterior safe to touch ▶ Flexible coiled heating element provides good heat transfer while absorbing shock minimizing risk of flask breakage ▶ Heating element and insulation form an easily replaceable heating cartridge ▶ A "Heater On" light indicates when power is being supplied to the heaters ▶ Aluminium housed case, rigid housing to support the weight of the vessel ▶ Provide uniform heating of vessel without the danger of open frame ▶ Covering only the bottom half of the vessels & provide full view of the contents of the vessel ▶ Fabric mantles for effective heating & protection of glass vessels from thermal shock ▶ MN-C Series manual control-proportional voltage control from 0-100% ▶ MN-D Series with external probe for precise control of the sample.



### MNS SERIES, HEAT AND STIR COOL CASE HEATING MANTLES

MODEL	MODEL FOR BEAKERS	CAPACITY	SPEED RANGE	POWER
MNS-250	BMNS-250	250ml	0-1200rpm	200W
MNS-500	BMNS-500	500ml	0-1200rpm	300W
MNS-1000	BMNS-1000	1000ml	0-1200rpm	400W
MNS-2000	BMNS-2000	2000ml	0-1200rpm	500W
MNS-5000	BMNS-5000	5000ml	0-1200rpm	700W

#### Features:

▶ Built-in electronic controller  
 ▶ Designed for stirring and heating of liquid  
 ▶ Heating cartridge can be quickly & easily replaced in the event of failure  
 ▶ Stirring is Independently controlled with a variable speed control up to 1200rpm  
 ▶ Built-in temp. control maintains element temp. from ambient to 450°C  
 ▶ Combines the traditional Electrothermal heating element with easily controlled solid state stirring  
 ▶ Vented case creates a unique air flow which allows housing to be safe to the touch when in use.

# Heating Mantles

## Digital Metal Case Mantles



### K-5, METAL CASE MANTLES, DIGITAL CONTROL, UP TO 450°C

- ▶ Digital set-point and read-out of actual temperature.
- ▶ PID microprocessor controller provides precise temperature regulation all over the temp. range, include the low temp close to the ambient
- ▶ External temp. sensor 200mm length, 3.2mm diameter
- ▶ Support device at the rear of the base to hold standard rod
- ▶ External sensor input.

#### Options:

- ▶ Programmer
- ▶ Separate Control box: You can have your controller separated for wide variety of applications for example for glove-box.
- ▶ With magnetic Stirrer.
- ▶ Analog economy control.

#### Features:

- ▶ Aluminum housing is chemical resistant, tough, lightweight & easy to clean
- ▶ Max. temp. 450°C
- ▶ Full pid temperature controller. Ensure high temp stability. Process accuracy. Dual display of set value & process
- ▶ 7 series mantles sizes available from 50 to 3liter
- ▶ Unique air flow through ventilation slots beneath & around the case keeps the exterior safe to touch
- ▶ Flexible coiled heating element provides good heat transfer while absorbing shock minimizing risk of flask breakage
- ▶ Heating element & insulation form an easily replaceable heating cartridge
- ▶ A "Heater On" light indicates when power is being supplied to the heaters
- ▶ Aluminium housed case, rigid housing to support the weight of the vessel
- ▶ Provide uniform heating of vessel without the danger of open frame
- ▶ Covering only the bottom half of the vessels & provide full view of the contents of the vessel
- ▶ Fabric mantles for effective heating and protection of glass vessels from thermal shock.



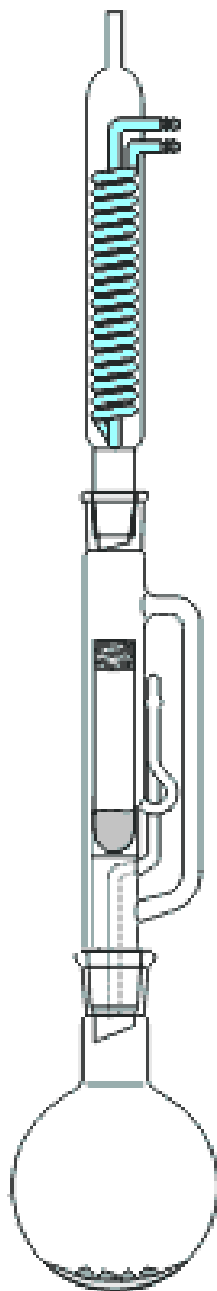
MODEL	CAPACITY	POWER
K-5-50D	50ml	60W
K-5-100D	100ml	80W
K-5-250D	250ml	200W
K-5-500D	500ml	300W
K-5-1000D	1000ml	400W
K-5-2000D	2000ml	500W
K-5-3000D	3000ml	600W



# Heating Mantles

## Analog/Digital Multi Channels

### K-5 SERIES/K-5D SERIES, MULTI ANALOG/DIGITAL POSITION HEATING MANTLES WITH 3/6 HEATING PLACES



- ▶ Choice of three or six recesses
- ▶ Build-in electronic controller
- ▶ Choice of heater only or heater/stirrer combination
- ▶ Vented case ensures case remains "cool to the touch".

#### Product Description:

- ▶ Individual built-in solid state electronic controls enable easy regulation of each heater, while removing sparking associated with mechanical switching.
- ▶ Units include three 0.5" (12.7mm) diameter support rods.
- ▶ The robust construction permits continuous operation of the units as required by routine extraction tests.
- ▶ Element temp. range to 450°C.
- ▶ Stirrer models include a stirring speed range of 50-1000 rpm.
- ▶ The coiled heating element is suspended within a thermal insulating cartridge to provide maximum heat transfer and support while removing sparking associated with mechanical switching.
- ▶ Heater cartridge

can readily be replaced when necessary.

- ▶ For additional operator protection a safety earth (ground) screen encloses the heaters.
- ▶ Unique air flow ensures unit is safe to the touch.
- ▶ Pilot lights indicate when power is on, supplied to heaters and supplied to stirrers.



K-5-6-1000

Analog



K-5-6-1000D

Digital

ANALOG	DIGITAL	CAPACITY	UNITS	TOTAL WATTS
K-5-3-250	K-5-3-250D	250 ml	3	600W
K-5-3-500	K-5-3-500D	500 ml	3	900W
K-5-3-1000	K-5-3-1000D	1000 ml	3	1200W
K-5-6-250	K-5-6-250D	250 ml	6	1200W
K-5-6-500	K-5-6-500D	500 ml	6	1800W
K-5-6-1000	K-5-6-1000D	1000 ml	6	2400W



# Analog/Digital Multi Channels+Stirrers Heating Mantles

## KM-5 SERIES/KM-5D SERIES, MULTI ANALOG/DIGITAL POSITION HEATING MANTLES+STIRRERS WITH 3/6 HEATING PLACES

- ▶ Choice of three or six recesses
- ▶ Build-in electronic controller
- ▶ Choice of heater only or heater/stirrer combination
- ▶ Vented case ensures case remains "cool to the touch".

### Product Description:

- ▶ Individual built-in solid state electronic controls enable easy regulation of each heater, while removing sparking associated with mechanical switching.
- ▶ Units include three 0.5" (12.7mm) diameter support rods.
- ▶ The robust construction permits continuous operation of the units as required by routine extraction tests.
- ▶ KM models incorporate a stirring module that allows the solution to be stirred and heated at the same time.
- ▶ KM stirrer models include stirring control for each heater.
- ▶ Element temperature range to 450°C.
- ▶ Stirrer models include a stirring speed range of 50-1000 rpm.
- ▶ The coiled heating element is suspended within a thermal insulating cartridge to provide maximum heat transfer and support while removing sparking associated with mechanical switching.
- ▶ Heater cartridge can readily be replaced when necessary.
- ▶ For additional operator protection a safety earth (ground) screen encloses the heaters.
- ▶ Unique air flow ensures unit is safe to the touch.
- ▶ Pilot lights indicate when power is on, supplied to heaters and supplied to stirrers.



KM-5-6-1000

Analog



KM-5-6-1000D

Digital

ANALOG	DIGITAL	CAPACITY	UNITS	SPEED RANGE	TOTAL WATTS
KM-5-3-250	KM-5-3-250D	250 ml	3	0~1200 rpm	600W
KM-5-3-500	KM-5-3-500D	500 ml	3	0~1200 rpm	900W
KM-5-3-1000	KM-5-3-1000D	1000 ml	3	0~1200 rpm	1200W
KM-5-6-250	KM-5-6-250D	250 ml	6	0~1200 rpm	1200W
KM-5-6-500	KM-5-6-500D	500 ml	6	0~1200 rpm	1800W
KM-5-6-1000	KM-5-6-1000D	1000 ml	6	0~1200 rpm	2400W

# Heating Blocks

## Dry Baths Incubators

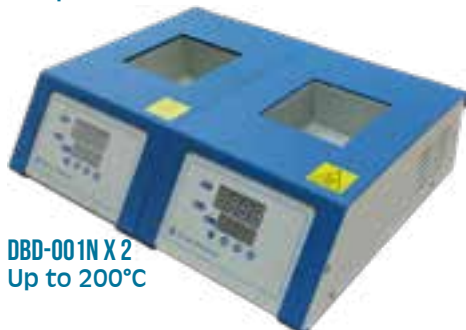
### DBD-001N/002N/004N, DRY BATH INCUBATORS

*Special Blocks  
On Request*



Useful for variety of applications in molecular biology and histology as well as clinical, environmental & industrial settings, including restriction digests, denaturing DNA, BUN, melting agar, coagulation studies, hybridization and Hot Start thermo-cycled reaction. The dry baths feature a broad temperature range, up to 150°C, and excellent uniformity. A microprocessor regulates the high wattage heater to provide precise, accurate control and rapid heating. The Aluminium block chamber ensures an even transfer of heat from the heating element to the block. Temperature is easily set using arrow keys while the value is shown on the large display. The user calibration function allows for easy calibration to in-house standards when required. Interchangeable blocks are available to accommodate a wide variety of tubes, plates and slides. Solid blocks are also available for custom machining. Each dry bath is supplied with a block lifter that enables the user to exchange blocks easily, even when the block is hot.

**Dual control: Independent temperature control**



**DBD-001N X 2**  
Up to 200°C

#### Features:

- ▶ Large block 96x96x49mm
- ▶ Precise microprocessor control.
- ▶ Broad temp. range, to 150°C (Optional: up to 250°C).
- ▶ Large digital with dual display.
- ▶ User friendly calibration.
- ▶ Rapid temperature increasing rate.
- ▶ Optional: RS-232 communication.

MODEL	TYPE	DESCRIPTION
301-01081-01	BK01	49 x Ø6mm
301-01081-02	BK02	49 x Ø7mm
301-01081-03	BK03	25 x Ø10mm
301-01081-04	BK04	25 x Ø12mm
301-01081-05	BK05	25 x Ø13mm
301-01081-06	BK06	12 x Ø15mm
301-01081-07	BK07	16 x Ø15mm
301-01081-08	BK08	12 x Ø16mm
301-01081-09	BK09	16 x Ø16mm
301-01081-10	BK10	12 x Ø19mm
301-01081-11	BK11	16 x Ø19mm
301-01081-12	BK12	9 x Ø20mm
301-01081-13	BK13	9 x Ø26mm
301-01081-14	BK14	4 x Ø28mm
301-01081-15	BK15	4 x Ø40mm
301-01081-16	BK16	49 x 0.5ml tubes
301-01081-17	BK17	25 x 1.5ml tubes
301-01081-18	BK18	25 x 2.0ml tubes

MODEL	DBD-001N	DBD-002N	DBD-004N
Display	LED Display		
Heating power	400W	800W	1600W
Unit dimension (WxLxH)	195x305x112 mm	290x305x112 mm	240x380x110 mm
Controller	PID Digital microprocessor controller		
Heating chamber	Molded aluminum alloy chamber		
Temp. control range	5°C Above ambient to 150°C (200°C)		
Temperature increment	0.1°C		
Temp. uniformity in working area at 37°C	±0.2°C		
Temp. accuracy in working area at 37°C	±0.2°C		
Temperature calibration	Yes		
Operating temperature	Ambient to 40°C		
Block material	Aluminum alloy		
Block type	Standard & customized type are available		
Data log	RS232		
Weight	approx. 2.85kg	approx. 3.95kg	-
Rated voltage	220V, option: 110V		

# Heating Blocks

## COD Reactors

### DBR-001N/002N/004N, DRY BATH INCUBATORS

#### Features:

- ▶ Safer & easier than traditional open reflux method.
- ▶ Save lab top space, power & water consumption.
- ▶ Reduce waste & maximize safety.
- ▶ Unique COD program makes it truly automatic.

#### For The Digestion Of:

- ▶ COD (150°C)
- ▶ TOC (120°C)
- ▶ Total chromium (100°C)
- ▶ Total nitrogen (100°C)
- ▶ Total phosphate (100°C).

Chemical digestion of the samples is a prerequisite such as: tests, determination of COD, TOC, total phosphate, nitrogen etc.

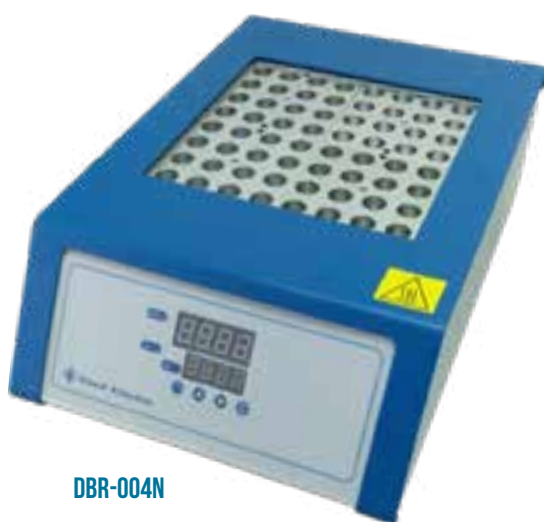
The required temperature and reaction time are programmed using the membrane keypad on the front of the reactor. When digestion is complete, the reactor automatically switches off & sounds an alarm. DBR-001 COD reactor is designed to meet USEPA 410.4 method. It can be used to digest closed I micro reflux COD vial and other samples which diameter is 16mm.

Further, it is safer and easier than traditional open macro reflux method. Unique COD program let DBR-001N/002N/004N to be a truly automatic reactor. When the reactor is powered on, just click the start/stop button, then it starts to heat to 150°C and keep for 2 hours then stop heating with an audio alarm. Samples are ready to be measured by colorimeter when they cool down.

DBR-001N/002N COD reactor is compatible with any COD detectors which use 16mm COD vials. In addition to COD program, DBR-001N/002N/004N is a microprocessor controlled block heater, with temperature range from 60°C to 200°C and timer from 0 to 999 minutes or continuous operation.



COD-200  
COD Detector



DBR-004N



DBR-001N



DBR-002N

MODEL	DBR-001N	DBR-002N	DBR-004N
Read out	4 Digital LED of set temperature, set time, process temperature, residual time display		
Timer	1~999 minutes with audible alarm and automatic shut off or continuous operation		
Accuracy	±2°C (at 150°C)		
Temperature	60°C~200°C, adjustable		
Block capacity	16x16mm Ø sample vials	32x16mm Ø sample vials	64x16mm Ø sample vials
Structure	Housing: aluminium steel with powder paint coating, Block: Anodized aluminum		
Power	AC110 or AC220V, 50/60Hz, 220Watt	AC110 or AC220V, 50/60Hz, 800Watt	AC110 or AC220V, 50/60Hz, 800Watt
Dimensions	W189xH116xD315mm	W290xH116xD315mm	W270xH110xD405mm
Weight	Net 4.5kg	Net 5.5kg	Net 6.0kg



# Slide Heaters



**HPS-8**  
Up to 45 slides

## HPS-1/6/7/8, SLIDE HEATERS

Our modern aluminium slide heater is designed for cytology, histology, pathology & other biological applications in industrial & clinical lab environments. Easy slide pickup, Excellent temp. accuracy, Uniformity, Stability.

### Application:

- ▶ Slide warming
- ▶ Slide drying
- ▶ In situ hybridization
- ▶ Slide incubation
- ▶ Histology
- ▶ Heictology
- ▶ Imuno histochemistry
- ▶ Fish.

Optional: Up to 42 slides.



**HPS-7**  
Up to 27 slides

Options: Programmable RAMP/SOAK 2 programs of 8 Segments each.

MODEL	HPS-1	HPS-6	HPS-7	HPS-8
Capacity	Up to 10 slides	Up to 21 slides	Up to 27 slides	Up to 45 slides
Temperature Adjust	Digital front panel			
Temperature Range	RT +5 - 99.9°C (°C/ °F selection)			
Digital Microprocessor	PID controller			
Temperature Stability	±0.1°C			
Accuracy	±0.2°C			
Power Consumption	400 Watt	900 Watt	-	-
Electrical Requirements	230V, 50/60Hz			
Dimensions	W130xH185xD145mm	W190xH200xD210mm	W195xH160xD310mm	W300xH160xD310mm
Weight	1.3Kg	2.4Kg	-	-

# Sand Baths

## SHP-4X2D/HP-400S, DIGITAL SAND BATHS

- ▶ Robust construction
- ▶ Eloxidised aluminium heating surface
- ▶ Good uniformity over the entire heating surface, including the corners and edges
- ▶ Temp. can be displayed in °C or °F.
- ▶ Temp. stability: ±1°
- ▶ PID temperature controller
- ▶ Digital set-point & read-out of actual temperature
- ▶ 220Volt/50Hz 3400watt.

MODEL	GHP-9S	SHP-4X2D	HP-400S	HP-600S
Working range	up to 400°C			
Stability	±1°C			
Setting & Readout	Digital			
Heater	1600W	3000W	3400W	4500W
Top-Plate(mm)	300x300mm	250x500mm	400x400mm	400x600mm
Dimensions WxHxD (mm)	300x220x300	500x220x250	400x270x400	400x270x600
Power source	220V 50Hz			



**HP-400S**  
400X400mm



**HP-600S**  
400X600mm



# Heating Tapes

## HEATING TAPES WIDTH 25MM UP TO 450°C



- ▶ Extremely flexible.
- ▶ Exceptional durability.
- ▶ Rapid temp. response.
- ▶ Max. Exposure temp. 450°C
- ▶ Choice of power plugs
- ▶ Temp. or voltage controller required.
- ▶ Electrical cable length 80cm.
- ▶ Perfect for heating of curved parts of irregular shapes such as valve, pump, vacuum line, pipe, flange, elbow, etc.
- ▶ It must be used with a separate temperature voltage controller.
- ▶ Insulation type fiber glass.
- ▶ Technical Data: - Heating Element: Ni-chrome wire.  
- Heating Element Temperature: Up to 450°C  
- Power Supply: AC220~230V, 50/60Hz
- ▶ Products are not waterproof.

MODEL	WIDTH (") X LENGTH (M)	WATTAGE
HT 1-1	25mm x 1meter	200 W
HT 1-1.5	25mm x 1.5 meter	250 W
HT 1-2	25mm x 2 meter	300 W
HT 1-2.5	25mm x 2.5 meter	350 W
HT 1-3	25mm x 3 meter	400 W
HT 1-4	25mm x 4 meter	460 W

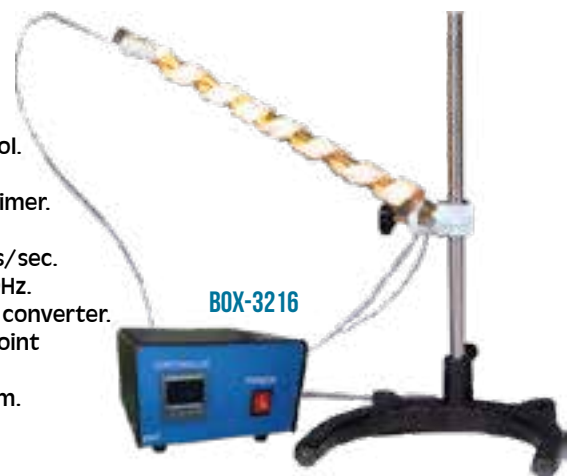
## Heating

## Temperature Controller/Programmer Box

**BOX-3216, PRECISE DIGITAL TEMPERATURE CONTROLLER FOR CONTROL OF HEATING TAPES, HEATING MANTLES, HOTPLATES, OVENS, WATER BATHS, IMMERSION HEATERS, INCUBATORS ETC.**



- ▶ Wide range of temperature controls to match most heating applications: mantles, hotplates, heating tapes, small ovens & other resistive heating loads up to 3500 Watt.
- ▶ Quick connections for load and temperature sensor.
- ▶ Digital dual display for set point and process temperature indication.
- ▶ Easy to operate.
- ▶ Non-volatile memory retains temp. settings during power Interruptions.
- ▶ Models are available for use with Type-K (other T/C optional).
- ▶ Supplied with Thermocouple Probe.
- ▶ Fuzzy modified PID control.
- ▶ Auto tune function.
- ▶ Soft start ramp & dwell timer.
- ▶ Bright dual color display.
- ▶ Fast sampling rate 5meas/sec.
- ▶ Power 110-250VAC 50/60Hz.
- ▶ High accuracy 18 Bit A/D converter.
- ▶ Max. temp. 1370°C dec point to 999.9.
- ▶ Size: W185xD190xH115mm.
- ▶ Weight: 1.4kg.



Available power sockets:



MODEL	FUNCTION	THERMOCOUPLE	TEMP. RANGE	POWER OUTPUT
Box-3216	Control with ramp to set point & 100 hrs timer	K	-50~1200°C	3500 watt 230V/50Hz
		T	-20~400°C	
Box-2416P4	Programmer with 4 programs of 8 segment	K	-50~1200°C	3500 watt 230V/50Hz
		T	-20~400°C	



### SM-450/ SM-450 L/SM-450C, SAMPLE KNIFE MILLS

#### Features:

- ▶ Compact size. The main body shell, container and lid are stainless
- ▶ The container unit and machine body are separated; users can take off the container unit for dry cleaning after using.  
(Users also can purchase a few container units for alternate using.)
- ▶ Useful to crush dried food, drugs, alumina, bones, grains, seeds, porcelain, mineral etc. (You can purchase the special processed blade for crushing harder materials like porcelain, mineral, etc.)
- ▶ Cooling-type mill is based on cooling the temperature by a water circulation system to reduce the temperature inside the container. (The increasing temperature inside of the container should be possible to destroy the samples.)
- ▶ Optional: -transparent lid to observe material inside cup.  
-Lid for small quantities.



MODEL	SM-450	SM-450L	SM-450C
Motor	1200W		
Speed (rpm)	0-30,000		
Body Size	Ø170 x 330H(mm)		
Cup Inner Size	Ø108 x 51H(mm)	Ø135 x 60H(mm)	Ø108 x 51H(mm)
Volume	300CC	400CC	300CC
Max. Capacity	150ml	200ml	150ml
Cooling jacket	No		Yes
Net weight	5.1kg		6kg
Power	AC110V/220V, 50/60Hz		



### RJM-102, LARGE BALL MILL

#### Features:

- ▶ Digital Large Ball mill, 2 rollers (Optional: rollers).
- ▶ Speed range: up to 600 rpm.
- ▶ Pot diameter: 120-300mm.
- ▶ Roller length: 650mm, Max. load: 40kg accept couple of mill jars together.
- ▶ Timer: up to 99 hours:59 seconds.
- ▶ Dimensions: W97xD36xH41cm.
- ▶ Power 400watt.

MODEL	RJM-102
Speed	0~600rpm
Timer	99hours: 59min
Pot size	12cm~30cm
Motor	300W
Outline Size (mm)	W100xD410xH380
Power	AC110/4A AC220V/2A

A horizontal cylinder is rotated at a predetermined speed that sets the balls into a tumbling and cascading motion which impact the solids in a very predictable and controllable fashion. Because the process takes several hours, the particles will not only be finely milled, but will exhibit a narrow particle size distribution. They are used widely in the chemical, paint, coatings, and ceramics industries.



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