BVSE™
An ISO - 9001-2015, ISO - 13485:2016,
GMP, CE Marking certified company

BVSE India Private Limited
(Leonardo Da Vinci inspived Company)
Mfg. of Scientific & Laboratory Equipments

1.TEST CHAMBERS

- Walk- In Plant Growth Chamber
- Seed Germinator
- Tissue Culture Room
- Walk-In Humidity/temp. Control Cabinet
- Insect Growth Chamber
- Photo Stability Chamber
- Environment Humidity/temp. Controlled Chamber

FEATURES:

- Outer construction of thick PCRC,/ pre coated corrosion resistant metal sheet.
- Inner construction of high grade SS-304/SS-316.
- Eco friendly.
- CFC free refrigerants.
- Onsite calibration and validation
- Specimen protection against condensation .
- Sturdy construction and light weight.
- Bench top / Reach In / Walk in Type Models Available
- Cooling: We use ISI marked high end CFC free compressors conforming to latest international standards and guidelines.
- Alarm: visual & audio alarm.
- Corrosion free interior & exterior, Easily movable with caster wheel .
- Auto power fluctuation protection control system in bult.
- Flat lavel indicator inbuilt.

1.1-WALK-IN PLANT GROWTH CHAMBER

Temperature Range	5°C to 60°C
Temperature Accuracy	*1°C or better
Temperature uniformity	5°C to 60°C
Temperature control	Microprocessor based/ PID Controller / PLC Based HMI
Audio Visual Alarm	Visual Acoustic
Temperature Sensor	PT 100/thermocouple
Display	LED / LCD/HMI (touch Screen)
Humidity Range	20% to 90% Relative Humidity
Humidity Accuracy	±2% or better Relative humidity
Humidity Sensor	Capacitive
Water Reservoir	25 ltrs or customized
Inner wall of chamber	Stainless steel SS 304
Out Wall of chamber	Powder coated cold rolled sheet
Door	Inner SS 304 & outer MS/SS Powder coated/ Powder coated rust protected material
Shelves (Wire Mesh)	Stainless Steel
Air Circulation Fan	Speed regulated In buit Air Circulation Fan
Insulation	PUF
Compressor	Single Stage
Cooling	CFC free
Refrigerant	R 404A
Castors	Lockable
Computer Interface (RS232)	Optional
Power Supply	220-230, Single phase
Working Chamber capacity	90Lits to20000Liter

Optional Special & latest attributes:

Bench Top / Reach in and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates- NABL certified lab test certificates, A class electric certificates.

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Bhopal Office Adress : S-2, Fortune Delight, Ahmadpur, Bhopal, (M.P.) Pin -462026,
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1.2-Germination Chamber

Technical Matrix

Chamber Construction	Single Chamber/Multi chambers
Temperature Range	5°C to +80°C or better
Temperature Accuracy	*1°C or better
Temperature Sensor	PT 100/themo couple
Humidity Range	Ambient to 99% RH or As per requirements
Humidity Accuracy	± 2% or better
Humidity Sensor	Capacitive
LLlumination	Optional Light / Dark control system comprising of fluorescent lights & control system.
Test Cycles	Control system with memory to preset test cycles as per requirements
Heat / Cool Rates	Heat / Cool rates customized to meet user requirements
Display	LED / LCD display / touch screen display.
Controller	Microprocessor / Micro controller based Controller / PLC based.
Data memory & Print	Optional data memory & print interface or added with printer facility.
Alarms	Customized alam system to warn various parameters.

SEED GERMINATION CONSTRUCTION

Outer Panels	Outer panels are made or rust proof power coated metal / CPRCA sheet / Stainless Steel.
Interior Panels	Interior panels are Made of Stainless Steel
Door	Standard hinged door with Double gasket seal between the door and the cabinet increase system efficiency.
Insulation	Polyurethane foam insulation with a thickness of 50 mm or more.
Shelves / Trays	Wire Mesh Stainless Steel Trays. (As per requirements) Stainless steel trays lift out for easy cleaning
Reservoir Drain	Recessed Reservoir Drain, with convenient drain hose, is easily accessible and a screened based prevents rodent infestation.
Castors	Castors for minimal effort mobility

SEED GERMINATION HEAT / REFRIGERATION SYSTEM

Heating System	Level, constant heat is continually maintained through a water media, by specially designed high purity magnesium oxide and helically wound nickel-chrome wire heating elements. Elements are totally enclosed for efficient heat transfer and operator safety. The warm air is evenly distributed throughout the chamber through efficient motor fans ensuring a very good temperature sensitivity.
Refrigeration system	refrigeration system with optional Backup refrigeration system. Uniform refrigeration is maintained through the use of air -cooled, high torque, hermetically sealed condensing unit. High quality cooling system components include: efficient fan circulation evaporator coil with thermal expansion valve, moisture-liquid indicator, filter drier, heat exchanger, and pressure control valve. All refrigerant lines are copper and fully insulated.
Compressor	Heavy duty Air-cooled compressor. The compressor is distinguished by its excellent performance, low noise level (<60dB) and minimal vibration.
Condenser	Highly efficient condenser with automatic condensate evaporating system.
Evaporator	Internal evaporator system Forced draught.
Refrigerant	Non-CFC/HCFC environmental friendly based on compressor capacity.
Air Circulation	Forced air circulation to maintain chamber uniformity.

SEED GERMINATOR AIR-HUMIDITY CIRCULATION

Humidity System	Unique forced air circulation design maintains an even, continuous, moist airflow throughout the cabinet. Perforated trays further enhance even humidity distribution to testing samples. Self-contained stainless steel water reservoir in each chamber assures a relative humidity of 90% Temperature variation between trays is ±0.5° C, top to bottom

Seed Germinator Control System

Control System Standard	The standard control system consists of Micro-processor based independent temperature controllers for Heat, Cool & Humidity mode with LED/LCD display. The illumination is controlled through solid state cyclic timer to control the photoperiodic cycle of the chamber. Optional alarm system for various parameters
Control System Advanced	The advanced control system features robust PID Controllers with process control settings or micro-controller/Micro-processor based Control system. The control system has various optional features such as LED/ LCD Display Printer Report Program, Data Acquisition Program, Timer, Light control, Adjustable alarm limits, and Process cycle settings etc. customized to meet end user requirements.
Working Chamber Size	Variable size as per user requirments
Wire Mesh Trays	Depends upon inner size of chamber
Power Supply	220 volts,50 Hz

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available.
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
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1.3-Plant Growth Chamber

Technical Matrix

Control	Inner	SS-304
	Outer	Powder coated rust proof metal/SS
	Door	Inner SS-304 and Powder coated rust proof metal
Temperature		
	Range	5 °C to 60 °C
	Deviation	± 1 °C or better
	Readability	± 1 °C or better
	Sensor	PT-100/thermocouple
Humidity Range	20 % to 99% (As per graph) or as per user requirments	
Humidity	Accuracy	± 2% RH
Humidity Sensor	Capacitive	
Water Reservoir	25 ltrs or as per user requirments	
Controller	PID controller/PLC based HMI	
Display	LED or LCD or HMI	
Adjustable alarm limits	Visual and acoustic	
Insulation	PUF	
Air Circulation Fan	Inbuilt	
Serial Data Port (RS 232)	Optional	
Capacity	5 cubic ft.to 500 cu.ft	
Shelves	As per chamber size	

Light Control (light Ratio adjustment)		
	Readability or Set ability	10%
	Light intensity (Middle chamber)	180 micro mol
	Both sides	100-150 micromol
Castors	Lockable	
Time cycle Inbuilt as per	requirments	
Power consumption	230 V, 50 Hz	

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available.
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
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1.4-PHOTO STABILITY CHAMBER

Photostability chambers are specifically designed to perform near UV and visual light testing with fluorescent lamps per ICH Q1B Guidelines, Option 2. This unit controls light and temperature conditions through an easy-to-use colour touch-screen interface. Uniform light distribution and high intensity levels allow quick response for forced degradation testing and confirmatory studies. The confirmatory studies should identify precautionary measures needed in manufacturing or in formulation of the product, and if light resistant packaging is needed.

At the end of the exposure period, the samples should be examined for any changes in physical properties (e.g., appearance, clarity, or colour of solution) and for assay degradation.

Technical Matrix

* Double walled with PUF insulation
* Stainless Steel trays
* Forced air circulation for uniform temperature
* Fluorescent tube light fitted in the centre of the chamber to provide illumination & produce visible light measured in lux
* U-shaped SS tubular heaters
* (Optional) Complete Operations driven through PLC with data logging capacity of upto 1000 readings & email facility
* All operations through a single Colour Touch Screen(optional)
* Safety devices: Low & high temperature cut-off settable thermostats

vAutomatic switch off of UV lights upon door opening

* Interior & Exterior SS 304. Interior is provided with mirror finish
* Full-length inner glass door, metal door with gasket & lock on the outside
* PU wheels for easy movement
* UV light of wavelength 365nm (measured in watt/sq. m.) fitted on top of the chamber
* CFC free cooling system consisting of hermetically sealed compressor coupled with evaporation coil & condenser
* High speed Ethernet based communication
* PT-100 Temperature sensor/thermocouple
* Safety thermostat switches off the lights upon temperature overshoot.
* Audio/Visual alarms for deviations

COMPLETE WITH DQ, IQ, OQ, PQ (OPTIONAL) & SOP & MAINTENANCE MANUAL

Optional -chambers are fully controlled via the PLC with features such as alarms for aging lamps, auto-switch off of UV lights upon door opening. Additionally, the chamber also provides precise humidity control. Inbulter floor lavel indicator

Power supply: 230/415 volts 50 Hz main supply. Also available with 60 Hz Cycle.

Temperature Range	10°C to 40°C	Temperature Accuracy	± 0.5°C	Temperature Uniformity	± 1°C

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
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1.5-SALT SPRAY TEST CHAMBER

The **salt spray test** is a standardized and popular corrosion test method, used to check corrosion resistance of materials and surface coatings. Usually, the materials to be tested are metallic (although stone, ceramics, and polymers may also be tested) and finished with a surface coating which is intended to provide a degree of corrosion protection to the underlying metal. It is Double Walled (Stainless Steel304/ 316 inside & Outside also Stainless Steel) or the whole body made with high grade polypropylene.

Control: Microprocessor based programmable digital controller cum indicator.

Features:

Temperature applicable as per standard Test method of salt water : 35° C±1°C
The saturated air barrel : 45°C±1°C
Test method for corrosive resistance : 50°C ±1°C
The saturated air barrel : 63°C±1°C.
Easy operation by programmable controller/timer/pressure regulating valve Computer interface with RS-232 port.
power fluctuation protection system in bult.
Powder coated rust protected material.
Speed regulated Inbuilt Air Circulation Fan

Technical Matrix

Temperature range	Ambient+5 to 60 °C
Temperature Accuracy	+ 1°C or better
Temperature Contro	IPLC based /Digital microprocessor based temperature controller cum indicator with PT 100 sensor/thermocouple
Material	Inside Stainless steel main body grade 316 Outside Powder coated Rust protected metal with transparent lid (toughened glass) to observe sample under test.
Air Regulator	Moisture cum oil filter and air regulator ranging from 0 to 30 psi is provided
Pressure gauge	Calibrated pressure gauge is provided for measuring inlet pressure
Atomizer	Provided for reliable atomizing.
Panel	Panel is provided with the following: ● Solid State Digital Programmable Temperature indicator cum controllers with auto-cut off facility of the main chamber and the reservoir. ● Digital Preset Timer with Memory backup and automatic shut off after pre-set duration for setting test duration up to 999 Hrs. ● Mounted Pressure gauge; regulator value and air filter.
Distillation Unit	● For producing distilled water inhouse (Optional) ● Table top model (Optional)
Fog collection unit	To check calibration i.e 1-2 ml/hour
Heating Elements	ISI Marked
Puff/	75 mm
Structure	Water Proof
Electrical Requirement	Single phase 220 V, 50 Hz 3 KW approx.

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available.
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
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2. CLEAN ROOM EQUIPMENTS

Clean Room Equipment To Avoid Contamination.

2.1 Laminar Airflow

Laminar Airflow Cabinet has been designed keeping the new age methodology to cater the best at the modest prices. We are also known as one of the best fume hood and Laminar airflow manufacturer . At this platform you can have a comprehensive range of the best clean room equipment right from fume hood, Air shower, Air curtain, Clean room, Laminar Air flow and so on. These all products have been prepared adding the best material to it. We believe in making our customer satisfied and contended. We have also coined our name as one of the best **Biosafety Cabinet Manufacturers** as well. As of now, we have imparted our service to many. We staunchly believe in making the trust of the customers and that is why every product is checked twice by the experts to ensure the quality of the product.

LAMINAR AIR FLOW
(HORIZONTAL/VERTICAL/
BENCH TOP MODEL)

Technical Specification for Laminar airflow
Laminar Cabinets Inner Chamber & Outer Chamber made of stainless steel high efficiency particular air filters, to achieve the air purification upto 0.3 Microns in Working area.
Working area(LXWXH) 2-6 ft. x 2-3 ft. x 2-3 ft.
Blower fitted with ¼ HP Motor, with RPM 1200 to 1400.
Pre-filters made of high grade nylon Net fixed in S.S. frame for first Stage air purification, through blower system.
Closed Inner Chamber fitted with HEPA having very accurate performance rate of air filtration, rated 99.99%, resulting in ceasing all air bore molecule of particle upto 0.3 micron in working Area of Laminar Bench.
Working area of Laminar Airflow Cabinets illuminated by fluorescent light ;
cabinets operated at 230V. Single Phase 50Hz. AC Supply.
Fitted with UV Germicidal lamp for sterilization.
Fitted with Acrylic Front Door sliding type
Fitted with Manometer for Measurment of HEPA Filters Choking system.
Fitted with Cock for Gas Connection.
It have 360-degree visibility.
HEPA filter monitoring with audible/visible filter change alarms.
Variable speed blower control and Lab event timer.
One-touch feature control
Switches and indicators : Individual switches and indicator lamps for blower motor, florescent lamp and UV lamp.
Low noise level.
Height-adjustable lab chair, Ergonomic foot rest.
Electrical connection : 230V, AC, 15 Amp 10.
Separate lighted power ON/OFF indicator switches for blower and lighting
power fluctuation protection system inbult..
Powder coated rust protected material.
Speed regulated Inbuilt Air Circulation Fan.

Technical Matrix:

Models	Horizontal / Vertical	Illumination	Fluorescent light illumination greater than 800 lux
Types	Bench Top / Floor Standing	ISI MARKED Motor	1/5 H.P. capacity operates with minimum noise level
Cabinet construction	PCRC SHEET / SS-304	UV light & Gas Burner	Inbuilt
Working Table	Stainless Steel SS 304	Cock for gas, air or vacuum line	Inbuilt
Transparent Front Door	5mm thick	Height of the working table	Provides comfortable 'SIT DOWN" working position for the operator.
Air flow	Unidirectional	Power Requirements	500-750 watts
Noise pressure(dB) (A)	<65 dB	Frequency	50Hz
HEPA Filter	99.99%	Nominal voltage	220-230 volts
Air-borne particles of size	0.3 micron	Working area	Customized
Pre filter unit	Washable pre filter unit		

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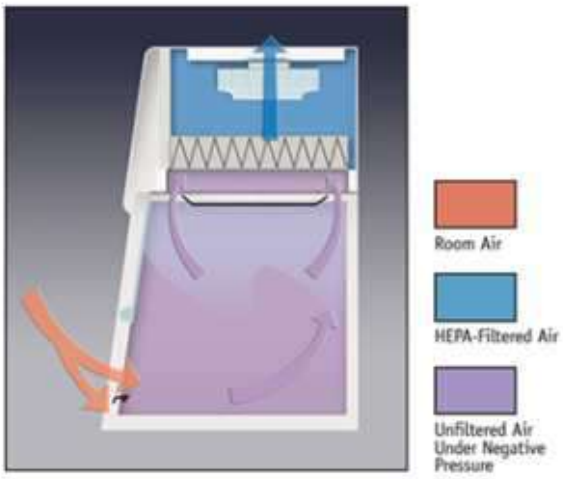
2.2 -BIOSAFETY CABINETS (CLASS-1,2,3)

Biosafety cabinets, also known as biological safety cabinets, are enclosed, ventilated laboratory workspace areas designed to protect the user and surrounding environment from pathogens. All exhaust air is HEPA filtered to remove hazardous agents such as viruses and bacteria. Biosafety cabinets are used in many laboratories including clinical and research labs. Biosafety cabinets are divided into three classes: **I**, **II** and **III**. Class **I** provides protection for the user and surrounding environment, but no protection for the sample being manipulated. Class **II** provides protection for the user, environment and sample, and is divided into four types: A1, A2, B1 and B2. The main differences are their minimum inflow velocities and exhaust systems. Class **III**, also known as glove boxes, provides maximum protection; the enclosure is gas-tight, and all materials enter and leave through a dunk tank or double-door autoclave. Choice of cabinet therefor depends on level of protection needed for the laboratory worker and the sample of interest.

There are multiple biological safety cabinet classes. But what are they and how are they different? Biological safety cabinet classes (or biosafety cabinet classes) are categories describing how the cabinet works and what it protects. These "categories" are Class I, Class II and Class III.

Class-I



A Class-**I** cabinetis defined as a ventilated cabinet for personnel and environmental protection. Class **I** cabinets do not offer product protection from contamination, significantly limiting their applications. They use unrecirculated airflow away from the operator. Class **I** cabinets have a similar airflow pattern to a fume hood but they also have a HEPA filter at the exhaust outlet. They may or may not be ducted outside. Class **I** cabinets are safe for use with agents requiring Biosafety Level 1, 2 or 3 containment

Class I Safety Enclosures

Purifier Class **I** Safety Enclosures and Purifier HEPA Filtered Enclosures protect you and your laboratory environment. They offer an economical alternative to Class **II** laminar flow cabinets when your applications do not require product protection.

Purifier Class **I** Enclosures protect the user from agents that require Biosafety Level 1, 2 or 3 containment but no product protection. These enclosures include an ultraviolet light that may be used in conjunction with surface disinfection to ensure thorough decontamination.

Purifier HEPA Filtered Enclosures, which do not include a UV light, protect the user from hazardous chemical powders, dust and allergens in diverse applications ranging from screening suspicious mail to weighing drug ingredients.

Features

- No ductwork required
- No installation required - plugs directly into a standard 110V or 220V electrical outlet
- Clear polycarbonate shell for 360° visibility
- UVTect® microprocessor controller
- UV and fluorescent lights
- Seamless plastic design -no joints or gaps in construction
- Lab event timer
- Digital UV light timer 01-59 minutes
- Access port for electrical cords
- power fluctuation protection system inbult..
- Powder coated rust protected material
- Speed regulated Inbuilt Air Circulation Fan.
- **Working size- customized**

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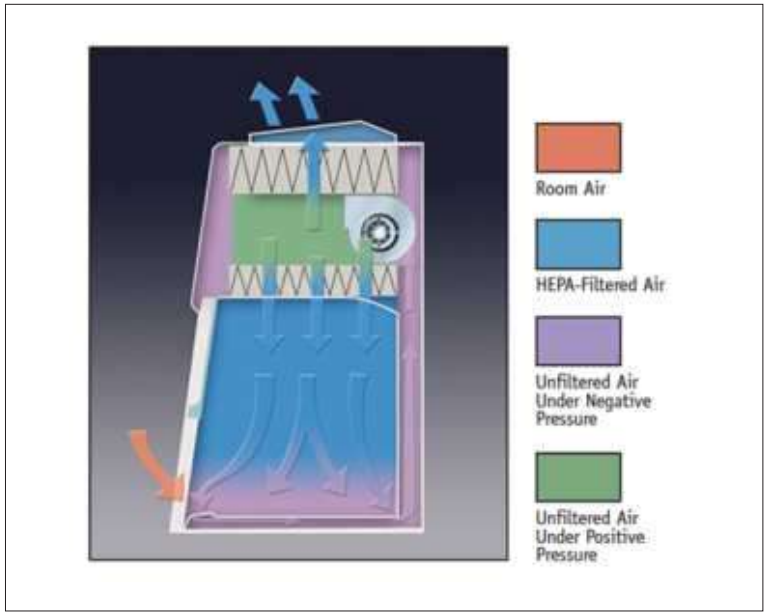
Class II

A Class II cabinet is defined as a ventilated cabinet for personnel, product and environmental protection for microbiological work or sterile pharmacy compounding. Class II BSCs are designed with an open front with inward airflow (personnel protection), downward HEPA-filtered laminar airflow (product protection) and HEPA-filtered exhaust air (environmental protection). These cabinets are further differentiated by types based on construction, airflow and exhaust systems. The types include A1, A2, B1, B2 and C1. They require all biologically contaminated ducts and plenums to be under negative pressure or surrounded by negative pressure ducts and plenums. Type B2 cabinets take this a step further, requiring all biologically contaminated ducts and plenums to be under negative pressure or surrounded by directly exhausted negative pressure ducts and plenums. Like Class I cabinets, Class II cabinets are safe for work using agents requiring Biosafety Level 1, 2 or 3 containment.

Type-A1



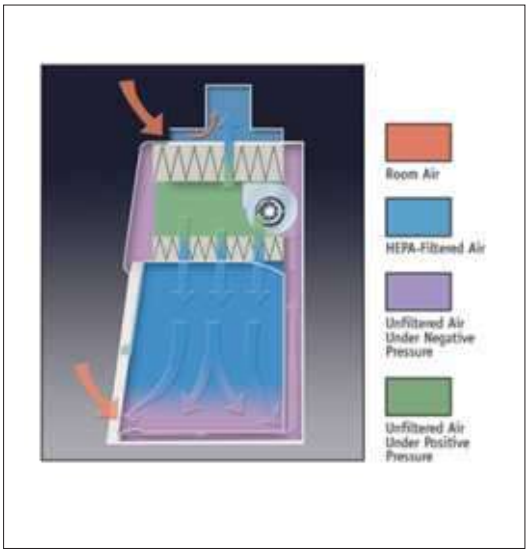
A Class II, Type A1 cabinet must maintain a minimum average inflow velocity of 75 fpm through the sash opening. They may exhaust HEPA-filtered air back into the lab, or may be exhaust outside using a canopy connection. They are suitable for work using biological agents without volatile toxic chemicals and volatile radionuclides, but not for sterile hazardous pharmacy compounding.

Type-A 2

A **Class-II Type A2**cabinet must maintain a minimum average inflow velocity of 100 fpm through the sash opening. Like Type A1 cabinets, they may exhaust HEPA-filtered air back into the laboratory, or may be exhausted outside using a canopy connection. Type A2 cabinets with a canopy connection are safe for work involving biological agents treated with minute quantities of hazardous chemicals. They may also be used with tracer quantities of radionuclides that won't interfere with the work if recirculated in the downflow air.

BSCs are compact-sized, low height, low energy, low noise biosafety cabinets, condensing the advanced safety and ergonomic features into a small footprint, and following features :

- The most energy efficient BSC in market, with DC-ECM Blower to provide stable airflow.
- ULPA filter, 10x safer than HEPA, cleaner ISO Class 3 work zone, at same filter life & cost as HEPA.
- Large performance envelope. Provides widest margin of operator and product protection.
- Anti-microbial coating, with silver ions to reduce bio-burden and lab contamination.
- Durable steel plenum with anti-microbial coating. Resist leak unlike plastic bag plenum.
- Double layer side wall with negative pressure. Prevents pathogens from escaping
- Raised Arm Rest, to comfortably place arms without grille blocking
- Easy to clean with 1 piece interior wall with curved corners, dished tray, and angled drain pan
- Centered, angled down controller, easy to operate from sitting position.
- **Lighting**High Efficiency Fluorescent at > 110 ft-cd (1200 lux) Intensity or better.
- **External Dimensions**(WxDxH) depends upon user requirments as well as inner /working area.
- **Class/Type**Class II, Type A2.
- **Recirculated/Exhausted Air** Recirculating or Exhausted with Canopy.
- **Air Inflow Rate**0.53 m/s (105 fpm) or better.
- power fluctuation protection system inbult.
- Powder coated rust protected material.
- Speed regulated Inbuilt Air Circulation Fan.



Applications

COVID-19, USP 800, Gene Therapy, Mammalian Cell Culture, Cancer Research, Academic Research, Mobile Labs.

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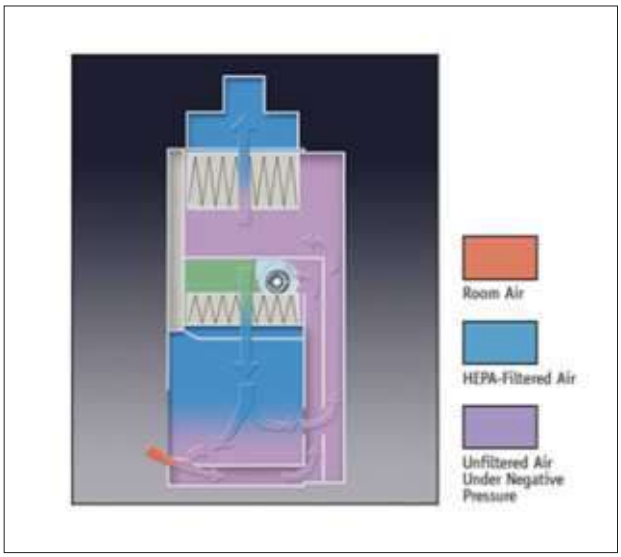
Type-B1

A Class II, Type B1 cabinet must maintain a minimum average inflow velocity of 100 fpm through the sash opening. They have HEPA-filtered downflow air composed mostly of uncontaminated recirculated inflow air and exhaust most of the contaminated downflow air through a dedicated duct that exhausts outside after passing through a HEPA filter. Similar to Type A2 cabinets, Type B1 cabinets are safe for work involving agents treated with minute quantities of toxic chemicals and tracer amounts of radionuclides if the chemicals or radionuclides won't interfere with the work if recirculated in the downflow air. Unlike a Type A2, a Type B1 cabinet is also suitable for work involving minute quantities of toxic chemicals and tracer amounts of radionuclides required as an adjunct to microbiology applications as long as the work is done in the directly exhausted rear portion of the cabinet (this portion is not marked and therefore ever-changing as the airflow pattern adjusts with the loading of the cabinet's HEPA filters)



Class II Type B1 Biological Safety Cabinet / Tissue Culture Hood (Biosafety Cabinet)

Class II type B1 biological safety cabinets are designed to protect the researcher from potentially dangerous samples, and the samples from contamination. These ventilated workstations are enclosed on three sides, have a positive pressure, and are used in microbiology labs, toxicology labs, and research labs. The units contain pathogens and toxic chemicals inside the work area while at the same time protecting the samples from environmental contamination. Air drawn in at a minimum inflow velocity of 100 ft/min is drawn in through a HEPA filter and then all of the air is exhausted through another HEPA filter. 40% of air is recirculated; 60% is exhausted from the cabinet. Consider space available, budget and requirements such as pressure monitors and remote alarms when selecting a unit for your laboratory.

Biological Safety Cabinet (BSC) may be used for work with minute quantities of volatile chemicals and tracer amounts of radionuclides if it does not interfere with the work in the re-circulated downflow. Engineered with a DC/ECM motor, consumes less energy, minimizes vibration, lowers noise output, increases filter life, all while minimizing the total lifetime cost of ownership. Standard oversized HEPA filters, optimally determined forward curved fans, and the HEPEX™ Zero Leak Airflow System ensure uniform airflow and proper filter loading thereby increasing filter life.

- **Dimensionsv**Varies with Model
- **Accessories**(Optional): Auto-Rising Leg Stand w/ Castor wheels, Adjustable Footrest, IV Bar w/ 6 Hooks, Elbow Rest Pads, Prop-up Work Tray, Portable UV light, BSC Airflow Monitor, Flex Duct Kit w/ 12" (30.5cm) Diameter, Custom Configurations
- **Material** Monolithic Stainless Steel
- **Type** Bench Top w/ Optional Base Stand
- **Electrical Requirements**115V / 60Hz
  230V / 50Hz
- **Lighting**Fluorescent; LED Option
- **Weight-**250-363 kg
- **Flow Rate**105 fpm (0.53 m/s)
- **Filter-**HEPA
- **Class/Type**Class II, Type B1
- **Recirculated/Exhausted Air**30% Recirculated / 70% Exhausted
- power fluctuation protection system inbult.
- Powder coated rust protected material.
- Speed regulated Inbuilt Air Circulation Fan.
- **Size(s)**customized
- **Sash Height** customized

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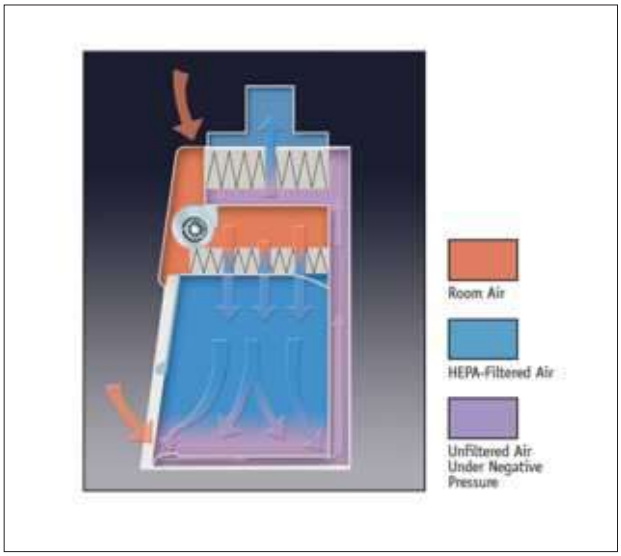
A Class Type-B2

cabinet must maintain a minimum average inflow velocity of 100 fpm through the sash opening. They have HEPA-filtered downflow air drawn from the lab or the outside air (not recirculated from the cabinet exhaust) and exhaust all inflow and downflow air to the atmosphere after filtration through a HEPA filter without recirculation in the cabinet or return to the lab. Because of this, they are sometimes referred to as 100% Exhaust or Total Exhaust cabinets. Type B2 cabinets are suitable for work involving biological agents treated with hazardous chemicals and radionuclides required as an adjunct to microbiology applications.



Class II Type B1/B2 Biological Safety Cabinet / Tissue Culture Hood (Biosafety Cabinet)

In order to protect the researcher from potentially dangerous samples and the samples from contamination, class II type B2 biological safety cabinets are used. The class II type B2 biological safety cabinets are ventilated workstations that are enclosed on three sides, have a positive pressure, and are used in microbiology labs, toxicology labs, and research labs to contain pathogens and toxic chemicals inside the work area while at the same time ensuring the samples, which can include tissue and cell cultures, are not contaminated by the environment outside of the safety hood. The air that is drawn into the class II type B2 biological safety cabinet is drawn in through a HEPA filter and then all of the air is exhausted through another HEPA filter to the outside, as opposed to recirculating into the hood or exhausted back into the lab.

Before buying a class II type B2 biological safety cabinet, consider your needs in regards to size your lab needs and can accommodate and whether it has a system to monitor pressure and exhaust and sound an alarm if things are out of your parameters.
These energy efficient cabinets require direct connection to external exhaust and provide personal and product protection from biological hazards and contamination as well as protection from volatile toxic chemicals used in the cabinet.

These cabinets are differentiated by:

- SmartFlow compensation to maintain downflow allowing effective use of downflow prefilter for extended HEPA filter life.
- Counter balanced window for easy operation.
- 8 inch (20cm) front opening with Type 304 stainless steel interior.
- **External Dimensions**Varies with size
- **Internal Dimensions**Varies with size
- **Class/Type**Class II, Type B2
- **Air Inflow Rate-**283 - 414 cfm (depending on size)
- **Size(s) -** customized
- **Lighting** LED Lights
- **Filter-**HEPA Filter
- **Sash Height-**8 inches or better.
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- Powder coated rust protected material
- Speed regulated Inbuilt Air Circulation Fan.

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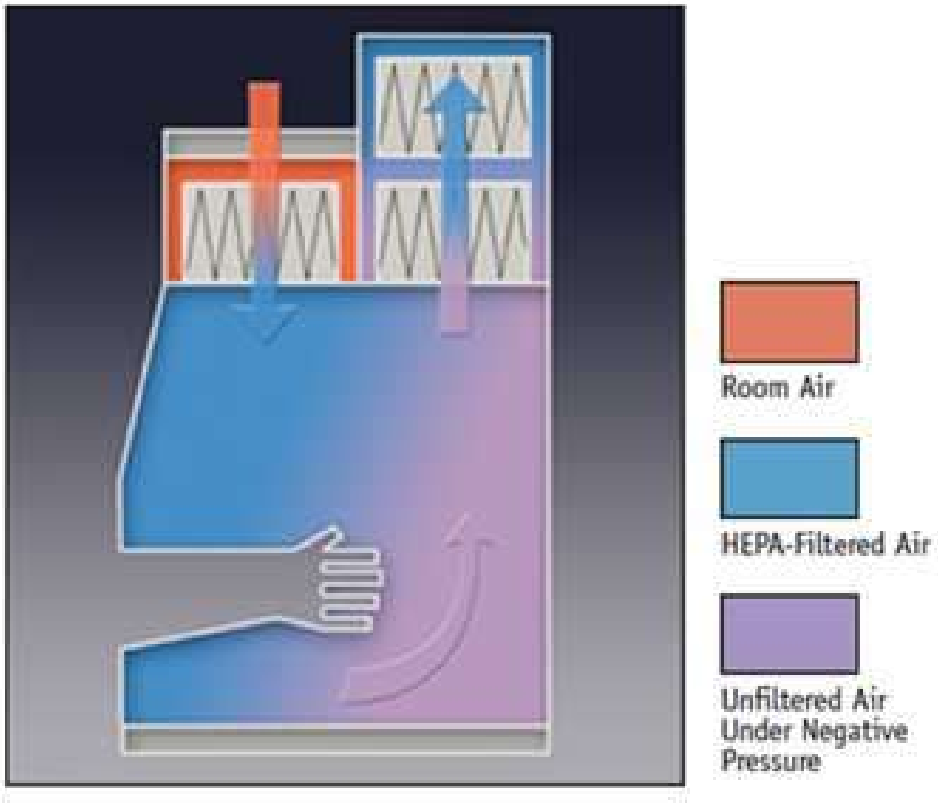
A Class Type-C1

A **Class-II Type C1** cabinet must maintain a minimum average inflow velocity of 105 fpm through the sash opening. Type C1 cabinets are unique in that they can operate as either a Type A cabinet when in recirculating mode or a Type B cabinet when exhausting. C1 cabinets can be quickly changed from one mode to the other by connecting or disconnecting the exhaust and having the cabinet recertified. The Type C1 also features a marked work area with clearly delineated spaces for storage and a work area with dedicated direct exhaust for use with hazardous vapors or radionuclides.



A **Class-II Type C1**

Cabinet must maintain a minimum average inflow velocity of 105 fpm through the sash opening. Type C1 cabinets are unique in that they can operate as either a Type A cabinet when in recirculating mode or a Type B cabinet when exhausting. C1 cabinets can be quickly changed from one mode to the other by connecting or disconnecting the exhaust and having the cabinet recertified. The Type C1 also features a marked work area with clearly delineated spaces for storage and a work area with dedicated direct exhaust for use with hazardous vapors or radionuclides.

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2.3 FUME HOODS / CHEMICAL HOODS

A Fume Hood is a type of local ventilation device that is designed to limit exposure to hazardous or toxic fumes &vapors in a lab. Fume hood is a single most essential component in a chemical laboratory furniture where chemical reactions are carried out. BVSE is an expert leading fume hood manufacturer in India. We have wide range of chemical fume hoods for your labs: be it an R&D lab, QC lab, Educational labs or a third party testing lab; Further, fume hoods have following broad types:-

- Bench top fume hoods
- Low bench fume hoods (Also called as Distillation fume hoods)
- Walk-in fume hoods (Also called as Floor mounted fume hoods)
- Perchloric acid fume hoods with wash down system
- Radioisotope fume hoods with HEPA filters
- Ductless fume hoods (with carbon filters) -optional
- power fluctuation protection system inbult..
- Powder coated rust protected material
- Speed regulated Inbuilt Air Circulation Fan.
- Air nutrilization (scrubber system) system (optional)

Most BVSE fume hoods are as per ASHRAE 110: 2016 and EN 14175: 2003 performance standards. Those also comply with SEFA-1 standard. Also, the fume hood performance can be tested in BVSE state of the art in-house fume hood test facility.

Technical Matrix:

Construction	Powder coated rust protected metal / Stainless Steel SS 304/polypropylene/FRP coated
Table	Stainless steel sheet table of SS-304 grade / Granite
Sink	PP sink with water tap
Coating	Epoxy coating (FRP lining-Optional)
Blower Assembly	Centrifugal lubricated bearing type ISI marked assembly high speed
Illumination	Fluorescent light illumination greater than 800 lux on work table.
Filter	HEPA
Air Flow Velocity	0.4m/sec or better
Suction Velocity	80 to 100 FPM or better on demand
Noise Level	65 db. or better on demand
Storage Cup Board	Inbuilt
Switches & Sockets	15/5 Amp.
FRP Lining	Optional
Ducting 150 mm dia PVC Rigid	Optional
Power Supply	220 V/50-60 Hz
Air netralization systems (scrubber system)	Optional
Working area	2ft. to 10ft. x2ft.x2ft.(WXDXH) or better on demand

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available.
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates-,NABL certified lab test certificates , A class electric certificates

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2.4 PASS BOX (STATIC / DYNAMIC)

Pass Box is a clean room equipmentswhich is rugged, custom designed, and are made up of stainless steel which can be installed in many ways while depending on the door or wall supporting the equipment. **Pass Box** are used in various pharmaceutical, food industries, and semi conductor to meet the demand of the most controlled conditions. Not only this, these are manufactured with powder coated stainless steel and other high quality components that can eradicate pollutants from the air. All these are ISO 9001:2008, ,CE,GMP certified. These machines also offer excellent performance while working in the clean room unit.

Technical Matrix :

Construction	PCRC Powder Coated / Stainless Steel 304
Model	Static / Dynamic
Viewing Window	Incorporated
Door	Mechanical or Electromagnetic Interlocking
UV Lamp	For sterilization/bacteria control
Accessories	Hour Meter, Fluorescent light, UV light, Buzzer and Indicator lamps
Filtration Efficiency	≥ 99.99% @ ≥ 0.3µm
Power Supply	220 / 230 Volts
Working Chamber Size	Customized size

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2.5 AIR CURTAINS

Technical Matrix :

Inner Construction	Stainless Steel SS 304
Outer Construction	Mild steel
Heavy duty cross flow fan	2 Nos.
Noise Level	Very Low
Consist of a fan and nozzle system	Creates A Jet Of High-Velocity Air Directed Across A Door Opening, providing a protective air shields.
The air shield minimizes	Heat, moisture, dust, fumes and insects through the doorway.
Use for	Commercial Entrance Air Curtains & For Pest Control
Air Velocity	18-22 m/sec2
Actual Door height	3000 mm

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2.6 POWER CONTAINMENT BOOTHS

Specification

Powder Containment Booths are machines that are primarily being used for controlling the hazardous emissions of dust, powders, or vapours during the process of drum tipping, dispensing, bag dispensing, or blend mixing, and in all these processes there is no risk involved in the same. It is a clean room equipments which is incorporated with a versatile air handling system that let's the user configure the working space and maintains the cleanliness levels to class 100. These machines are manufactured using high grade material and are high on utility as well as quality standards. These booths are manufactured and supplied in the market by BVSE, a 13 year old company in the market and are ISO 9001:2016, ,CE,GMP certified.Inbulter floor lavel indicator.

Technical Matrix :

Clean Level	ISO 5 (Class 100), Class A
Model	Sampling Booth / Dispensing Booth0
HEPA Filters	99.999% efficiency at 0.3 µm
Air Volume	Supply air volume ≤7500m3/h, Exhaust air volume ≤2250m3/h Adjustable or customer requirement
Air flow	90 FPM (0.45 m/s) 10 FPM (0.05 m/s) or customer requirementMaterialFully stainless steel
Air Velocity	0.35-0.65m/s, adjustableor customer requirement
Noise	≤75 db
Illumination	≥800 luxor customer requirement
UV lamp with UV timer	Inbuilt
Motor / Blower assembly	Direct drive, continuous duty ¼ HP with sealed bearings. Motor assembly is mounted on FRP casing to reduce noise & vibration and is dynamically balanced.
Plenum	In stainless steel 304 for distribution of air. Designed in negative pressure to prevent escape and / or bypass of HEPA filter by contaminated air and / or dust. Finish: Matt
Power Supply	AC 220V, 50-60
Work Area Size	L-1200xW-1200xH-2000/L-1800xW-1800xH-2000/L-2400xW-1800xH-2000 mm or customer requirement (Customized size)

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2.7 MODULAR CLEAN ROOMS
(SOFTWALL / HARD WALL)

Technical Matrix :

* Class	100000 to 10
* Air Velocity	0.45 to 0.5 m/s
* Noise level	STANDAR
* DInner Chamber	Stainless Steel SS 304
* Height	8 – 14 feet Height
* Adjustable Pressure	0.06W.C
* Sliding Door width	36, 48 and 60 inch Entrance
* TFL Light	4ft -04 nos. (white light)
* Wiring	Reloc Wiring System (optional)
* Chamber	Rust protected metal duly powder coated / Stainless Steel SS 304
* Walls, floors, ceiling tiles, lighting fixtures, doors and windows	are construction materials that must be carefully selected to meet clean room standards.
* Cleanliness required by a process. Smocks, coveralls, gloves and head & shoe cover	are clothing accessories commonly used in clean spaces.
* Room entrances such as sir locks and pass through	are used to maintain pressure differentials and reduce contaminants.
* HEPA filters	99.97% efficient
* Blower assembly	Dynamically & statically balanced motors & blower of standard make.
* Insulation Construction	Sealed
* Load	20 amp
* Working area	Customized

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2.8 CLEAN AIR SHOWER / CLEAN ROOM BOOTH

Powder Containment Booths are machines that are primarily being used for controlling the hazardous emissions of dust, powders, or vapours during the process of drum tipping, dispensing, bag dispensing, or blend mixing, and in all these processes there is no risk involved in the same. It is a Clean room equipmentswhich is incorporated with a versatile air handling system that let's the user configure the working space and maintains the cleanliness levels to class 100. These machines are manufactured using high grade material and are high on utility as well as quality standards.

* ISO 9001,CE,GMP certified.
* Power fluctuation protection system inbult..
* Powder coated rust protected material
* Speed regulated Inbuilt Air Circulation Fan.
* Inbulter floor lavel indicator

Air Shower Specification

Air Showers are serving to protect the environment of your cleanroom from unwanted contamination. These showers can enhance the performance of your cleanroom by removing surface contamination from cleanroom garments and clothing. **Air Showers** prevents contamination from from entering the clean space by blowing or removing it off.

Technical Matrix:

Pre Filter	Washable pre-filter unit (Non-Woven Synthetic Polyester)
HEPA Filters	Glass pleated non woven fabric filter with around 99.99% filtration efficient for removing 0.3 microns sized particles
Operation Time (Adjustable)	0-9,990 seconds
Face velocity	6000 ft./min + 20 feet
Air Flow Control	Solid State Control Unit
Illumination	Top mounted fluorescent 800 lux
Noise level	>60 dB
Add on features	Sequential feature operation by door mat magnetic switch.
Air flow	Multidirectional
Construction	Powder coated Rust protected metal / SS 304
Door	Anodized Aluminium doors with clear acrylic windows
Provided with the blower bearing	ISI mark on its motor
Centrifugal lubricated bearing type	ISI marked assembly
Adjustable air nozzles	Inbuilt
Air shower Filtration system	Inbuilt
Working Chamber Size	800 x 800 x 2000mm / 1100 x 1100 x 2100mm / 1500 x 1500 x 2100mm or as per customer requirements
Power Requirements	As per depends upon capacityNominal voltage220-230 Volts, 50 Hz Single

Optional Special & latest attributes:

HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates-,NABL certified lab test certificates , A class electric certificates

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2.8 CLEAN STORAGE CABINET

TISSUE CULTURE RACKS

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3- LABORATORIES REFRIGERATOR

3.1- REFRIGERATOR (2°C TO 8°C)

Laboratory refrigerators are equipment that are used to keep the temperature to its average of 2-4°C while storing different types of samples from whole blood, reagents, and culture media to biologicals and test samples. **Laboratory refrigerators** are incorporated with microprocessor controlled set points, alarms time and temperature monitoring and recording, temperature sensitive auto defrost systems, and electrical output signals. These **refrigerators** are easy to operate and are manufactured and supplied in the market by **BVSE**, and are ISO 9001,CE,GMP certified. Not only this, they are also used in variety of life sciences, clinical and industrial applications and are ideal for our laboratory daily needs.

- Power fluctuation protection system inbult.
- Powder coated rust protected material
- Inbuit floor lavel indicator.
- Battery backup system for display

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated rust protected metal
	Door	A large view window in the outer door provide a clear view of stored items
Temperature :	Range	2 to 8 °C
	Deviation	+.5°C or better
	Readability	+ 0.5°C or better
Temperature Sensor	PT 100/thermocouple	
Temperature Controller	Microprocessor based PID controller/ PLC based controller	
Adjustable alarm limits	Visual and acoustic	
Display	LED / LCD/HMI(touch screen)	
Serial Data Port (optional)	RS 232	
Refrigerant	CFC Free (R-134a)	
Insulation	High-density CFC free urethane foam	
Castors	Lockable	
Air Circulation Fan	Inbuilt	
Cabinet Type	Upright Cabinet	
Capacity	100-5000 Ltr	
Shelves	2/3/4/5/6 (depends on the capacity)	
Power Supply	220-230V, Single Phase, 50/60 Hz	

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
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3-2 DEEP FREEZER VERTICAL (-20°C to -86°C)

Deep Freezers Specification :

Deep Freezers are equipment which are primarily used to preserve and store food products, blood samples, medical equipment's, medicines and injections. These can be used for both industrial as well as domestic purposes. Also these **Deep Freezer** are used in restaurants and supermarkets to preserve the raw food for a longer period. These devices are available in different shapes and sizes and are also compact in design. The specifications and functions of the instruments varies as per the requirement of the consumer. power fluctuation protection system inbult..

* Powder coated rust protected material,* Inbulter floor level indicator * Battery backup system for display * Chart recorder(optional)

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated rust protected material/SS-304/ss-316
	Door	Inner SS-304/SS-316 and outer Powder coated rust protected material/SS-304/316
Temperature :	Range	Ambient to -20 °Cto -86°C
	Deviation	+ 1.0°C or better
	Readability	+ 1.0°C or better
Controller		Microprocessor based PID controller/PLC based controller
Display		LED / LCD/HMI(touch screen)
Adjustable alarm limits		Visual and acoustic
High Low Temperature Alarm		Inbuilt
Power Failure Alarm		Inbuilt
Insulation		PUF
Castors		Lockable
Capacity		4-25Cu.ft or customised
Suitable Stabilizer		Inbuilt
Power consumption		230 V, 50 Hz

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
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3-3 WALK-IN-COLD ROOM/CHAMBER

COLD ROOM / CHAMBER

The concept of storage of critical samples is no more limited to having a simple room with temperature between -20ºC to 8ºC.Such ineffective solutions lead to excursions in temperature conditions that affect the quality of the stored material over a period in time. BVSE Walk-In Cold Rooms ensure the temperature is uniform & within range throughout the room. Customer can also avail the option of 8 probe monitoring with data logging, trending & real-time alarms.
They are supplied at customer-site in a knock-down condition & can pass through standard sized doorways. They are assembled on-site. The installation & commissioning is accompanied with IQ, OQ, PQ protocols & complete documentation.
BVSE Cold Rooms can be utilized for multiple applications in the Pharmaceutical, Cosmetic, Food & Beverages, Dairy & other industries for all kinds of products intended for storage at low temperatures.

Power fluctuation protection system inbult.,.LED / LCD/HMI(touch screen)

Technical Specification :

Temperature Range	-20°C to 8°C
Temperature Accuracy	± 0.5°C
Temperature Uniformity	± 1°C
Humidity Range	40% RH to 95% RH(optional)
Humidity Accuracy	± 2% RH
Humidity Uniformity	± 3% RH

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
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3-4 BLOOD BANK REFRIGERATOR

Blood bank Refrigerators Specification :

Blood Bank Refrigerators are equipment that offer its consumers the best possible option for storage of the blood bank. These Refrigerators are manufactured with thick insulation, robust housing, automatic defrosting, easy to maintain interior container, and forced air cooling. They are primarily designed for cooling. All these machines offer temperature stability, robustness, and as per the needs and requirement of the user. Other than the specifications mentioned, they are incorporated with a lockable door, all sorts of safety features and remote warning with potential free contact.

power fluctuation protection system inbult. Inbulter floor lavel indicator. Powder coated rust protected material
Battery backup system for display. Chart recorder inbuilt .

Technical Matrix

Capacity	50-800 bags
Shelves (Wire meshed)	depends on the capacity
Cabinet Type	Upright cabinet
Compressor	Heavy-duty, industrial-grade, hermetically sealed
Door	Single/double door with full viewing glass window
PUF Insulation	75 mm
Refrigerant	CFC-free
Temperature Control	Microprocessor based PID controller/PLC based HMI
Temperature Range	2°C to 6°C
Temperature Accuracy	± 0.5°C or better
Digital Display	LED / LCD/HMI(touch screen)
Temperature Sensor	PT 100/thermocouple
Alarm	Yes
Power Failure Alarm	Yes
Door open light & alarm	Yes
Battery Backup	Only for display
Air Circulation Fan	Inbuilt
Noise level	<50 dB
RS 232 Interface	Optional
Temperature Chart Recorder	Optional
Data Logging Facility	Optional
Electrical Requirements	230V ,50Hz, Single Phase

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
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3.5-FREEZE DRYER/LYPHOLYZER (TABLE TOP/HIGH CAPACITY)

Freeze Drying Specification :
Freeze Drying is the process of moisture removal while maintaining the integrity of a biological product and its chemical structure and activities. This Freeze Dryer is used primarily for moisture removal from the biological origin without causing any significant change in the original characteristics. Freeze Drying is a highly followed process in the field of Chemistry, Pharmacy and in Food Conservation. Those biological which are heat sensitive can be freeze-dried without damaging their potency. Theses dried materials can be stored at room temperature for many years without losing their original quality.
power fluctuation protection system inbult..
Powder coated rust protected material.,Inbulter floor lavel indicator.
Battery backup system for display

Technical Matrix :

Temperature variation (time)	± 1°C or better
Temperature deviation (spatial)	± 1°C or better
Readability/Set ability	± 1°C or better
Temperature range	-2° c to -86° c or more
Sensor thermocouple	Type K
Controller	Microprocessor based PID controller/PLC based HMI
Display	LED/LCD/touch screen
Adjustable alarm limits (visual and acoustic)	Optional
Safety thermostats	Yes
Automatic setting	Yes
Adjustable limits	Yes
Vacuum pump capacity	250 LPM
Vacuum controller	Digital
Port	8 Nos. or more
Inner & top construction	SS 304
Outer wall	Powder coated Rust protected metal/SS-304/316
Capacity	3 -100 Liter
Insulation	PUF
Compressor	CFC free
Power Supply	220V single phase, 50 HZ A.C

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates-,NABL certified lab test certificates ,
A class electric certificates

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4-LAB INCUBATORS

4.1 -BACTEROLOGICAL INCUBATORS Bacteriological Incubators Specification

Bacteriological Incubators are primarily used in drying of slides, tissue culture, crystallization and microbiological incubation. All these oven and incubator are produced with double walled construction and the inner chamber is made up of stainless steel. The shelves of these equipment's are also made up of stainless steel and are adjustable to set a certain height. The heater incorporated in the device has a high grade imported nichrome wire inserted and this wire is placed at the bottom for uniform temperature all over the space. The LCD/LED/HMI based smart controller in the equipment is used to control temperature and LED/LCD/Touch Screen based display is provided with an audio-visual alarm as well.

Power fluctuation protection system inbult..
Powder coated rust protected material
Speed regulated Inbuilt Air Circulation Fan.
Inbulter floor lavel indicator
Battery backup system for display

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated MS
	Door	Inner SS-304 and outer MS
Temperature :	Range	Ambient + 5 to 60 °C
	Deviation	+ 0.5°C or better
	Readability	+ 0.5°C or better
Controller	Microprocessor based PID controller/PLC based HMI	
Sensor	PT-100/ thermo couple	
Display	LED / LCD/HMI (Touch screen)	
Adjustable alarm limits	Visual and acoustic	
Puff	Approx. 75 mm	
Air Circulation Fan	Inbuilt	
Heating Elements	ISI Marked	
Inspection Window in door	Inbuilt	
Wire Mesh Shelves	1/2/3 (depends on the working chamber size)	
Timer 1-999 hours	inbuilt	
Serial Data Port	Optional	
Power consumption	230 V, 50 Hz	
Working area	50 liter -500 liter or As per customer requirments	

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
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4.2- WALK - IN- INCUBATOR

Walk In Incubator Specification

Walk-in incubator is suitable for various applications where controlled environmental conditions of temperature, humidity and illumination are required. As the name suggests, the user can walk inside the incubator for the research or desired activities. **Manufactured under this** category these chambers are equipped with microprocessor based control units, high/low alarms and exceptionally accurate temperature/humidity control.

power fluctuation protection system inbult.
Powder coated rust protected material.
Inbulter floor lavel indicator
Battery backup system for display.

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated rust protected metarials
	Door	Inner SS-304 and outer powder coated rust protected material
Temperature :	Range	Ambient +5 to 60°C
	Deviation	+ 0.5°C or better
	Readability	+ 0.5°C or better
Humidity range	Optional	
Controller	Microprocessor based PID controller/ PLC based HMI	
Display	LED/LCD/HMI	
Air Circulation Fan	InbuiltInsulationPUF	
Compressor	CFC free	
Serial Data Port RS232	Optional	
Optional Accessories	Timer	1-999 hours
	Inspection window	In door
	LCD display	2 * 24 character display
	Adjustable alarm limits	Visual and acoustic.
	Real time program	Optional
Power consumption	230 V, 50 Hz	
Working area	Customized	

Optional Special & latest attributes:

Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
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4.3- BOD INCUBATORS

WALK IN INCUBATOR SPECIFICATION :

* Power fluctuation protection system inbult..
* Powder coated rust protected material
* Battery backup system for display

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated rust protected material/SS-304
	Door	Inner SS-304 and Powder coated rust protected material
Temperature :	Range	2 to 60 °C
	Deviation	+0.5 °C or better
	Readability	+0.5°C or better
Temperature Controller	`	Microprocessor based PID controller/PLC based HMI
Temperature Sensor		PT 100/thermocouple
Display		LCD / LED/HMI Tuch screen
Adjustable alarm limits		Visual and acoustic
Insulation		Puff
Compressor		CFC Free
Air Circulation Fan		Inbuilt
Shelves		1/2/3 (Depends on the working size)
Working Chamber Size		100-1000liter
Timer (1-999 hours)		inbuilt
Serial Data Port RS232		Optional
Castors		Lockable
Power consumption		230 V, 50 Hz

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
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4.4- CO2 INCUBATOR

CO2 Incubators Specification :
CO2 incubators particularly suggested for laboratory research to breed and maintain cell mores invitro. They offer high standard of performance to control in-vitro surroundings for maximum growth of tissue cells by correctly managing temperature, dampness, CO2 gas and infertility. **CO2 Incubators** also offers an atmosphere for the conservation of animal's tissue cell and mature haploid at close to body temperature. Modest gas control panel part available to control accurate setting state for your procedure needing hypoxic circumstances

Technical Matrix

Capacity	50-500 Liter	
Interior Dimension (W X D X H) mm	Depends upon capacity	
Exterior Dimensions (W X D X H) mm	Depends upon capacity	
No. of shelves (Supplied)	2 / 3 / 4 Nos.	
Temperature Range	2°C to 50°C	
Temperature Controller	Microprocessor based PID/PLC based HMI	
Temperature Uniformity	±0.35°C at 37°C	
Temperature Sensor	PT-100/thermocouple	
Display (Battery backup system for display)	LCD/LED/HMI	
Heating System	Direct heating system WATER/Air-Jacketed	
CO2	Range	0.1 -20%
	Sensor	infrared CO2 sensor
	Rate	≤ 5minutes
Humidity	Up to 95%	
Water reservoir system	3 liters	
Heating Elements	ISI Marked	
Insulation	75 mm (PUFF)	
Power Consumption	500W / 750W / 950W	
Power supply	220 V , Single Phase 50/60Hz	
CO2 Cylinder	Optional	
Regulator	Optional	

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
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4.5 - INCUBATOR SHAKER

The company makes All these equipment's are easy to operate, easy to install and are high on efficiency. In addition, these can be used for life sciences applications, ageing tests, growth studies, and biological cultures under various controlled temperature conditions. The interior of these equipment's are made up of stainless steel with a drain off facility for spill overs. There is also an automatic re start at the present speed in case of power failure. We offer these products under incubator shaker category.
ower fluctuation protection system inbult.
Powder coated rust protected material
Battery backup system for display.

Applications:

- Ideal for preservation of vaccines, study of synthesizing organisms, life cycle testing, shelf life studies, general incubation, refrigerated storage, cell culture process of animals & plants, microorganisms cultivation & desalting process of enzyme extract in Biology, Botany Virology, Oceanography, water pollution, sewage, agriculture, food and research departments.

BVSE Advantages:

- Inner Chamber with coving or without coving .
- Inner door - frameless - made of tempered safety glass. Single piece inner door panel eliminates crevices & reduces contamination problems.
- Shelves - adjustable - made of stainless steel wire mesh.
- Inbuilt validation port - to avoid gasket damage during validation.
- Automatic chamber illumination when door is opened.
- Custom built Controller for BOD Incubator with data storage, Ethernet connectivity to central work station and PC software.
- ISO/CE/GMP

Technical Matrix

Construction	Inner	SS-304
	Outer	Powder coated rust protected material
	Door	Inner SS-304 / Powder coated rust protected material with magnetic gasket, lock & key
Temperature :	Range	2 to 60 °C
	Deviation	+ 1 °C or better
	Readability	+ 1 °C or better
Controller	Microprocessor based PID controller/PLC based HMI	
Sensor	PT 100/ thermocouple	
Display	LED / LCD/HMI (touch screen)	
Shelves (made of stainless steel	SS 304)	2 No. (Wire Mesh) Batter
Platform	Dimension350x350mm or customized	
Shaking Speed	50 to 250 RPM	
Over Temp. Alarm	Inbuilt	
Puff	Insulation75 mm	
Shaking Platform Suitable For	16/32/64flaksof 250ml/500mlor customized	
Compressor	1/6 HP	
Cooling	CFC free	
Voltage Stabilizer 4 KVA	Optional	
Power consumption	220-230 V, AC Supply	

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
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BVSE™

An ISO - 9001-2015, ISO - 13485:2016,
GMP, CE Marking certified company

BVSE India Private Limited

(Leonardo Da Vinci inspived Company)

Mfg. of Scientific & Laboratory Equipments

5 - OVENS

▸▸ CLEAN ROOM OVEN ▸▸PHARMA OVEN ▸▸INDUSTRIAL DRYING OVEN
▸▸GLASSWARE DRYER ▸▸HOT AIR OVEN ▸▸BLOOD/FLUID WARMER

5.1-HOT AIR OVEN

Applications:

- BVSE Forced Convection Oven is ideally suitable for any laboratory application requiring a controlled temperature environment upto 300ºC.

BVSE Advantages:

- Glass window in-built into the door.
- Forced convection design ensures a high level of control accuracy and uniformity.
- Automatic cut off of heater & blower when door opened.
- microprocessor based Digital PID temperature controller/PLC based HMI with timer, alarms and auto tuning.
- Non contact type door switch.
- Aero dynamic internal design for achieving horizontal air circulation.
- Solid and plain bottom without electricals.
- Seamless round cornered edge of internal chamber ensures easy cleaning & prevents any leakage.
- Supplied with stainless steel wire mesh shelves. Shelf height adjustable in 25mm steps.
- Temp range: +50ºC to 300ºC.
- Control accuracy: ±0.5ºC.or better
- ISO/CE/GMP
- **NABL/class-A electrical certificates (optional).**
- Inner chamber size- variable(1x1x1fit to 10x10x4.5fit).or customized
- Display -LCD/LED/HMI.
- Innert atmosphere facility (optional)
- power fluctuation protection system inbult..
- Powder coated rust protected material
- Speed regulated Inbuilt Air Circulation Fan.
- battery backup for desplay inbuilt.

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates-,NABL certified lab test certificates ,
A class electric certificates

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5 - OVENS

5.2 VACUUM OVER (ROUND / RECTANGULAR)

Applications:

- BVSE Forced Convection Oven is ideally suitable for any laboratory application requiring a controlled temperature environment upto 250ºC.

BVSE Advantages:

- Glass window in-built into the door.
- Forced convection design ensures a high level of control accuracy and uniformity.
- Automatic cut off of heater & blower when door opened.
- microprocessor based Digital PID temperature controller/PLC based HMI with timer, alarms and auto tuning.
- Non contact type door switch.
- Solid and plain bottom without electricals.
- Seamless round cornered edge of internal chamber ensures easy cleaning & prevents any leakage.
- Supplied with stainless steel wire mesh shelves. Shelf height adjustable in 25mm steps.
- Temp range: +50ºC to 250ºC.
- Z- type Innert atmosphere facility (optional)
- Control accuracy: ±0.5ºC.or better.
- ISO/CE/GMP
- **NABL/class-A electrical certificates (optional).**
- Inner chamber size- variable (1x1x1fit to 10x10x4fit).
- Display -LCD/LED/HMI.
- Controller-Microprocessor based/PID/ PLC based controller
- Z-type Innert atmosphere facility (optional).
- power fluctuation protection system inbult..
- Powder coated rust protected material
- Speed regulated Inbuilt Air Circulation Fan.
- Battery backup for display.

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
Certificates-,NABL certified lab test certificates ,
A class electric certificates

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5.3 VMUFFLE FURNACE (UPTO-1800°C)

Applications:

- BVSE Forced Convection Oven is ideally suitable for any laboratory application requiring a controlled temperature environment upto 1100ºC.

BVSE Advantages:

- Glass window in-built into the door.
- Forced convection design ensures a high level of control accuracy and uniformity.
- Automatic cut off of heater when door opened.
- Digital microprocessor based PID temperature controller/PLC based HMI with timer, alarms and auto tuning.
- Non contact type door switch.
- Solid and plain bottom without electricals.
- Seamless round cornered edge of internal chamber ensures easy cleaning & prevents any leakage.
- Supplied with stainless steel wire mesh shelves. Shelf height adjustable in 25mm steps.
- Temp range: +50ºC to 1800ºC.
- Control accuracy: ±1ºC.or better
- ISO/CE/GMP
- **NABL/class-A electrical certificates (optional).**
- Inner chamber size- variable (1x1x1fit to 10x10x10fit).
- Display -LCD/LED/HMI.
- Z- type Innert atmosphere facility (optional)
- Power fluctuation protection system inbult..
- Powder coated rust protected material

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
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6 - SHAKERS

6.1- Orbital Incubator Shaker

ORBITAL SHAKER are used to perform orbital shaking underperformed conditions. Cell culture, microbiology, bacteriology, fermentations, enzyme reactions, tissue culture and many more. Also, they come up with various configurations some are heated or refrigerated, bench top or floor mounted and double layer. As the shaker and stirrer we supply incubators that can be customized and are available with a wide range of accessories. Further, they include programmability, illuminated controls, temperature uniformity, and adjustable speed and consist of stainless steel interiors.
* Power fluctuation protection system inbult. * Powder coated rust protected material *Speed regulated Inbuilt Air Circulation Fan.

Technical Matrix :

Inner Construction	Stainless Steel (SS 304)
Outer Construction	Powder coated rust protected material
Inspection Window	inbuilt
Insulation	ceramicblanket
Platform	Fitted with lotus clamps of nylon clamps
Temperature Range	Ambient+5 to 60°C
Temperature Accuracy	±1°C or better
Temperature Sensor	PT 100/thermocouple
Display	LED / LCD/HMI (touch screen)\
RPM Range	50 to 250 rpm (adjustable)
Orbit Diameter	16mmPlatform Size335 x 335 mm or customized
Flask Capacity	100-5000 ml
Power Supply	220-230 V, AC Supply

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
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6 - SHAKERS

6. 2- Rotory Shaker Horizontal

Rotory Shaker Horizontal are used to perform orbital shaking underperformed conditions. Cell culture, microbiology, bacteriology, fermentations, enzyme reactions, tissue culture and many more. Also, they come up with various configurations some are heated or refrigerated, bench top or floor mounted and double layer. As the shaker and stirrer we supply incubators that can be customized and are available with a wide range of accessories. Further, they include programmability, illuminated controls, temperature uniformity, and adjustable speed and consist of stainless steel interiors.
* Power fluctuation protection system inbult. * Powder coated rust protected material *Speed regulated Inbuilt Air Circulation Fan.

Technical Matrix :

* Construction	Duly powder coated rust protected metarial
* RPM Range	50 to 250 RPM
* Platform	Turned up edges & rubber sheeting
* Platform Size	30x30cm or more as per customers requirments
* Rotates Specimens	In horizontal plane in 1" circle
* Suitable to hold Erynmeyer flask	50ml to 5000 ml
* Heavy Duty	DC Motor
* Control through	Speed Regulator
* Accessories	0-60 Minutes Mechanical Timer Digital Timer Digital R.P.M
* Power Supply	220-230 V, AC Supply

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
RS 232/485 connectivity.
In built printer for printing graphs.
Over and under temperature specimen protection.
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7 - AUTOCLAVE

AUTOCLAVE(HORIZONTAL/VERTICAL) RECTANGULAR STEAM STERILIZER
CYLINDRICA STEAM STERILIZER HORIZONTAL STEAM STERILIZER

7. 1- Autoclave Front / Top Loading

Fully automatic autoclaves are offered with unique single lever lock for lid. autoclaves are offered in different sizes from 15 to 300 liters. These Fully Automatic Autoclaves have customized microprocessor based control system which ensure required sterilization accuracy, repeatability & safety.

Advantages:

- CE Certified
- Unique single lever lock for lid with single hand opening.
- Microprocessor Based Control ensures repeatability & a high accuracy.
- Conformance to National & International Standards.
- Low water detection.
- Spring loaded/reptureddisc safety valve for over pressure.
- Pressure interlock on door.

Technical Matrix :

* Construction	Duly powder coated rust protected metarial
* RPM Range	50 to 250 RPM
* Platform	Turned up edges & rubber sheeting
* Platform Size	30x30cm or more as per customers requirments
* Rotates Specimens	In horizontal plane in 1" circle
* Suitable to hold Erynmeyer flask	50ml to 5000 ml
* Heavy Duty	DC Motor
* Control through	Speed Regulator
* Accessories	0-60 Minutes Mechanical Timer Digital Timer Digital R.P.M
* Power Supply	220-230 V, AC Supply

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
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CYLINDRICA STEAM STERILIZER HORIZONTAL STEAM STERILIZER

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Advantages:

- CE Certified
- Unique single lever lock for lid with single hand opening.
- Microprocessor Based Control ensures repeatability & a high accuracy.
- Conformance to National & International Standards.
- Low water detection.
- Spring loaded/reptureddisc safety valve for over pressure.
- Pressure interlock on door.

Technical Matrix :

Electrically Operated
Without Vacuum Sterilization & Dry cycle
Initial thermal vacuum before sterilization
Digital DisplayDry cycle without opening the door
Inner Chamber SS 304 & Outer MS
Temperature 121°C / 134°C
Insulation 75 mm
Power Supply: 220-230V, Single Phase
Working size -15liter – 300liter

Optional Special & latest attributes:
Bench Top / Reach In and Walk in models available
HMI+PLC based controllers.
Coloured touch screen panel.
Data logging facility with data analysis software.
USB ports.
Open and close door updates through mobile network.
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