

## ④ Rotational Abrasion Tester

**BGD 523 Rotational Abrasion Tester** is applicable to determine abrasion resistance performance of various coatings. It is also used to determine abrasion resistance of paper, plastic, textile fabric, decorations, etc.

The principle of abrasion derived by the test sample, turning on a vertical axis, against the sliding rotation of 2 Abrading Wheels. The wheels are driven by the sample in opposite directions about a horizontal axis displaced tangentially from the axis of the sample. One of the abrading wheel rubs the specimen outward toward the periphery and the other wheel, inward to the centre. The area of abrasion from a pattern of crossed arcs of about 30sq.cm

The degree of abrasion for the specimen also depends on the load force (500g,750g or 1000g on each arm) being acted onto the axial of the 2Arms, which has a load pressure of 250g

It confirms to DIN 52347 53109 53754 53799

ISO 5470, 9352, 3573, 4586-2,7784-2

ASTM C217, D1044, D3389,D4060,D5342

### Feature

- ◆ Can select many different sorts abrasion medium for different tests
- ◆ Specimen turntable speed control options of both 60 rpm and 72 rpm.
- ◆ LCD display for accurate and convenient setting and monitoring to the whole test.
- ◆ Three different precise stainless steel weights (500g, 750g, 1000g) ensure the different requirements for different loads. Weights are marked to show total load on each wheel. This marking includes the weight of the abrading arm (250 grams)
- ◆ Abrading arms and fixing sleeve of abrading wheel have been calibrated and balanced before leaving factory.
- ◆ A vacuum system is included and equipped with cleaner to move the loose abrading's or any dirt
- ◆ A precision vacuum nozzle adjustment control allows the height to be modified for accommodating varying specimen thickness.
- ◆ A Quick Release Mounting Hub permits quick wheel mounting without the need of a locking nut.
- ◆ Equipped with S-11 Resurfacing medium disc from Taber company
- ◆ Equipped with a pair of standard abrasive rubber wheel CS-10 or CS-17 from Taber company

### Main Technical Parameters:

- ★ Platform speed:  $60 \pm 2r/min$  or  $72 \pm 2r/min$
- ★ Range of count: 0 ~ 9,999 times
- ★ Specimen size requirement:  $\Phi 100 \times \Phi 8$  (center hole)  $\times 3mm$   
Thickness: BGD 522  $\rightarrow 20mm \sim 25mm$ ; BGD 523  $\rightarrow 0 \sim 5mm$
- ★ Dimension of abrasive sheet:  $\Phi 50 \times \Phi 16$  (center hole)  $\times 13mm$
- ★ Load weight: 500g-750g-1000g
- ★ Main motor power: 25W 220V 50Hz
- ★ Overall dimension: 320  $\times$  280  $\times$  254 (length by width by height)
- ★ Net Weight: 20KG
- ★ **Ordering Information:**
- BGD 522---Rotational Abrasion Tester (for wood)
- BGD 523---Rotational Abrasion Tester (for paint film)
- CS-10---Taber Abrading Wheels
- CS-17---Taber Abrading Wheels
- CS-11---Taber resurfacing medium disc
- BGD 1368---180 # Emery cloth stripe (pack of 100)
- BGD 1372--- Fixing ring for soft specimen.
- BGD 2601---Glass Panel with circular hole (pack of 100)
- BGD 2328---Aluminum Panel with circular hole (pack of 100)



CS-10  
Standard abrasive rubber wheel



CS-17  
Standard abrasive rubber wheel



S-11  
Resurfacing medium disc

## ⑥ Falling Sand Abrasion Testers

**B**GD 529 Falling Sand Abrasion Tester is designed according to ASTM D 968. It's applicable to determine abrasion resistance performance of organic coating. Abrasive is allowed to fall from a specified height through a guide tube onto a coated panel until the substrate becomes visible. The amount of abrasive per unit film thickness is reported as the abrasion resistance of the coating on the panel.

- ◆ Funnel with fan-shaped switch is more convenient to operate
- ◆ The distance between guide tube and specimen holder is calibrated by special tool which comes with tester, more precise.
- ◆ Funnel installation height can be adjusted freely by below bearing.

### Main Technical Parameters:

- ★ Overall dimensions: 230 × 200 × 1500mm ( L × W × H )
- ★ Length of conduct pipe: 36 inch ( 914mm )
- ★ Inner diameter: 0.75 inch ( 19mm )
- ★ Volume of hopper: 3L
- ★ Weight of whole machine: 25kg
- ★ **Ordering Information:**
- BGD 529---- Falling Sand Abrasion Tester
- BGD 1370---- Standard Sand (25kg/package)



## ⑦ R.C.A. Paper Abrasion Wear Testers

**B**GD 530 R.C.A Paper Abrasion Wear Testers have been designed to test numerous shapes and finishes with ease and consistency. A simple change to the adjustable vertical shaft will allow for testing flat, convex, and concave shaped surfaces. They can be used to test painted and organic finishes, foil, and inked keypad lettering for resistance to abrasion and wear. These testers have become a standard in automobile, appliance, electronics, cell phone, plastics and coating industries.

International: ASTM F2357-04, Standard test method for determining the abrasion resistance of inks and coatings on membrane switches using the Norman Tool, Inc. "RCA" Abrader.

This tester is a standard to the auto, appliance, cell phone, plastics, and coating industries. It uses an inexpensive roll of throw away abrasion paper. All build-up error is eliminated and consistent readings are easily obtained.

### Main Technical Parameters:

- ★ Size: 890 ( L ) × 485 ( W ) × 410 ( H ) mm
- ★ Weight: 20KG
- ★ Power: 50HZ/220V
- ★ Packing List:
- ① Paper Roll ( 2 )                      ② 1/4" Roll of Paper ( 1 )
- ③ Wrench Set ( 1 )                      ④ Universal Vise ( 1 )
- ⑤ Extra O-Rings ( 5 )                  ⑥ Dust Cover ( 1 )
- ⑦ Handy Mag ( 1 )                      ⑧ Surface Gage & Indicator Set ( 1 )
- ⑨ Weights ( 55g, 175g, 275g )
- ★ **Ordering Information:**
- BGD 530---- R.C.A Paper Abrasion Wear Testers
- BGD 1360---- Special R.C.A Paper (40 rolls/box )



# Tensile Machines

The Tensile Machine is also called Tensile Testing Machine or Universal Material Testing Machine. It is mainly used for tensile test (you also can call it stress-strain tester), they usually clip both ends of the material sample in two clamps which are in a certain distance apart, both of clamps separate and extrude the sample at a certain speed, testing the stress change which happens to the sample, and end of the test until the machine destroyed; recording the maximum and displacement during the test at the same time, so you can calculate the tensile strength, shear strength, peeling strength, yield strength, ring crush strength etc through the software. The tensile test is one of the most widely used methods in studying material mechanical strength, and it needs to adopt the constant speed.

In the present market, the tensile machine has mostly been adopted the design of electromechanical integration, which is consist of Main Part, Mechanic Part, Hydraulic System, Force Measuring System etc, the Force Measuring System is made up of Force Sensor, Transmitter, Microprocessor, Load-driving Mechanism and Computer.

## ① Table Electronic Tensile Machine

**Introduction:** This is a Table Electronic Tensile Machine attached with the micro printer, it can not only can test the tensile strength, compressive strength and extension length of all kinds of material, semi finished products and products, but also do the experience of stripping, tearing, bending, flexural, compression etc. Therefore, it is widely applied in the field of metal, plastic, rubber, textile, synthetic chemicals, wire and cable, leather etc



### Main Technical Parameters:

- ★ Max. Capacity (Optional): 50N、100N、200N、500N、1000N
- ★ Test range of test force: 0.4% ~ 100 FS ( full range)
- ★ The indicated error of test force:  $\leq \pm 0.5\%$
- ★ The resolution of test force:  $\pm 1/250000$  of max. force, there is no grades in the whole process ,and the process keep the constant resolution
- ★ The valid length of tensile: 800mm (clamp is not included)
- ★ The error of indicated displacement:  $\leq \pm 0.2\%$  (indication)
- ★ The resolution of displacement: 0.015mm
- ★ The range of test speed: 50 ~ 500 mm/min(adjutable)
- ★ External dimensions: 55 × 45 × 135cm
- ★ Weight: 75Kg
- ★ Power Supply: 220V/50Hz
- ★ Power: 120W

### ★ Order Information:

BGD 572--- Table Electronic Tensile Machine



Wedge Clamp  
for Metal



Wedge Clamp  
for Hard Plastic



Eccentric Wheel Clamp



Plane Clamp



Film Clamper

## ② Computer Servo Tensile Machine

**Introduction:** Computer servo tensile machine is a new type of material machine which combines the electronic technology and mechanical transmission, it can make all kinds of function true, do the data analysis and print the test result by computer controls the operation of machine. Communicate between machine and computer usually adopts serials communication modes of RS232, it communicates through the interface (USB interface) which lies in the back of computer. It has wide accuracy acceleration and test force range, not only measuring and controlling the load and displacement in higher accuracy and sensitively, but also doing the control test by automatically of isokinetic load and displacement. It operates easily and convenient, especially applied in inspect instruments which is used for controlling products of produce line. This series of Servo Tensile Machines is mainly suit for nonmetal and metal test with test load less than 10kN.

These machines have a widely usage range, can test all sorts of materials, such as end products and semi-manufactures dumbbell specimen of plastic (cloth tube plate), rubber (plate tube), metal wire, tape, wheel, textile, acrylic, FRP, EVA, PE and shoes etc, testing their functions which include tensile strength, elongation, tearing, stripping, glue force etc.

### Characteristics:

- ◆ Standards: ASTM D 903、GB/T 16491、GB/T 1040、GB/T 8808、GB 13022、GB/T 2790 etc.
- ◆ Sensor with high accuracy ( transmission mechanism adopts high accuracy ball screw)
- ◆ Sampling frequency of Data: 200 times/s
- ◆ It can storage numerous testing results of reference points, counting the average and grasping the Max which exist on the point of broken by automatically.
- ◆ The setting range of broken proportions: 0~99%, you can set it according to the test demand of different specimen at you will, make the downtime true on different point.
- ◆ Safety set: Overload, urgent downtime set, up and down process limited set.
- ◆ The collection with synchronous puts into practice by true, 24 bites AD transformed, resolution is up to 1/500,000, and it oversteps the same industry level absolutely.
- ◆ It include the voice prompt during the test, and we are the unique
- ◆ Modular+ SQL technology + Crystal reporter + Database technology, it is very convenient for the create user setting reporter or more
- ◆ Thousands of clamps and clamps set for choosing
- ◆ With several sensors supported, it can satisfy with different range demands by assembling several sensors at the same time.

### The Characteristics of software:

- ◆ Support Windows XP/Vista operating system.
- ◆ With nine languages in Simplified Chinese, Traditional Chinese, English, Spanish, Russian, Japanese, French, German, Portuguese, the software interface can be converted at your will, the database field displayed name of test data translated automatically along with chosen words, make the data are easily to scan under the chosen words, and to meet the machine be used all over the world
- ◆ Support three types: SI international standard unit, kg-cm unit, Lb-Inch unit, six common units: N-mm-MPa,kN-mm-MPa, gf-cm-kgf/cm<sup>2</sup>, kgf-cm-kgf/cm<sup>2</sup>, Lb-Inch-kpsi, kP-Inch-kpsi, the unit is easy to convert. It is used to meet different area using.
- ◆ By using the USB2.0 communicate interface with Photoelectric isolation, it completely get rid of the computer serial interface or Circuit board serial interface damage caused by different earth wire, thus realizing hot-swap between the computers and test machine board.
- ◆ Software adopts permission grading management: tester permission, test management permission, test machine producer permission, both convenience and safety are included.
- ◆ Operator interface attached with Voice, Graph, image: using intuition and convenient, and it will decrease the operation error by voice mentioned, improving the reliability at the same time. It is very convenient for professional user with virtual dial display.
- ◆ MS-ACCESS database technology and SQL technology: it is not only applied for data preservation and processing standardization, but also convenient for connecting to Intranet or Internet; it can also connect Word or Excel etc software easily; the user can read original test data just through standard database.
- ◆ Modular programming: Crystal Reporter system and VBScript or JAVA Script can enlarge the user's reporter and parameters program by automatically calculate; the user can develop by secondary, it can make extruding, compression, bending, tearing, stripping, shearing etc test function true except for software bag. Every kinds of test function can support more than 20 pc of test reporter and parameters program by automatically calculate ( adopt VBScript or JAVA Script)
- ◆ The Curve Function: the main sheet shows real-time curve during the test, besides, there are other sheets which are used for curve deal, it can deal with six kinds of curve display (force-deform, force-time. Stress-strain, stress-time, strain-time, deform-

time curve), you can calculate elastic modulus, surrender point, hardening start point etc parameters in mouse through curve (attention: it usually calculates the mentioned parameters accurately by calculate automatically, the mentioned functions are supplement in special situations )

◆ multi-sensor support: it can support the sensor with five forces, sensor with five deform, expanded the test range greatly.



### Main Technical Parameters

Product → Technical Parameters ↓	Computer Servo Tensile Machine ( Single Column )	Computer Servo Tensile Machine ( Double Column )
Power system	Dongyuan servo machine	
Max. range (optional)	5、10、20、25、50、100、200kg	5、10、20、25、50、100、200、500kg
Unit convertible	g, kg, N, LB(supply with three units which include international standard, metric, inch, they can convertible by automatically)	
Measuring range of test force	0.4% ~ 100 FS (full range)	
Display error of test force	≤ ±0.3%	
Resolution of test force	1/500,000	
Resolution of displacement	0.015mm	
Display error of displacement	≤0.2%	
Max. Space of Tension	800mm (clamp is not included)	
Test speed	0.01 – 500mm/min ( stepless speed regulating )	
Valid test wide	Unlimited	300mm
Overall Size (L×W×H)	450×550×1350cm	600×420×1250mm
Weight	75kg	100 KG
Power supply	220V/50HZ; 15A or designation	
Power	200W	400W
Order information	BGD 573--Computer Servo Tensile Machine	BGD 574--Computer Servo Tensile Machine

### Notice: about the Elongation of Tensile Machine

The tensile machine attached with displacement measuring system is just used for measuring the cross distance of tensile head. If there is a required to the elongation, such as testing elongation of rubber products, thus another requirement is necessary with large-deformation test frame and large-deformation extensometer, if the metal with small elongation, small-deformation extensometer is enough(metal extensometer). Large-deformation and small-deformation is the absolute displacement between two points during the extruding. You can pick up the machine according to your company products' size, the small volume and tensile for choosing: tensile machine (single column). But with big size and tensile, the tensile machine (Double Column) is indeed, the processing of common tensile machine is about 600MM.

## ③ Universal Material Testing Machine

**Introduction:** It is a new material testing machine with powerful functions which combine electronic technique with mechanical drive. With controlling machine by computer, it accomplish all functions and deal with and analyze data, print testing results

This machine is driven by frequency conversion motor, servo motor drive movable cross-beam through gearing design to move up and down to accomplish force load. Use PC computer and interface board to collect data, store data, process data and print testing results. Can calculate maximum force, yield strength, average stripping strength, maximum distortion, yield point, elastic modulus parameters etc. Can process curve, support multi sensors, Figuring and Imaging operating windows, flexible processing data, support MS-ACCESS database etc, make the system function become more powerful...

These machines have a widely usage range, can test all sorts of materials, such as end products and semi-manufactures dumbbell specimen of plastic (cloth tube plate), rubber (plate tube), metal wire, tape, wheel, textile, acrylic, FRP, EVA, PE and shoes etc, testing their functions which include tensile strength, elongation, tearing, stripping, glue force etc.

### Character:

- ◆ Standards: ISO 527, ISO 604, ISO 178, ISO 1209, ASTM D 638, ASTM D 903
- ◆ High precision sensor (use high precision ball screw as driving mechanism)
- ◆ Frequency of collecting data: 200 times/second
- ◆ Can store many testing results of referenced points, calculate average value automatically, grab automatically max. value, force value at break.
- ◆ Set range of break point proportion: 0~99% , and can set freely according to different samples, accomplish stopped status at different position.
- ◆ Safety Device: Over loading, Emergency shut down, limitation device for above travel and under travel.
- ◆ Collect date synchronously, conversable full 24 bits AD codes,, resolution arrives 1/500,000, surpass all competitors.
- ◆ Voice prompts when testing, the unique technology in the field.
- ◆ Modularization+ SQL technology+ crystal report+ database technology etc make establishing user, customizing report and multi-reports become more easy.
- ◆ More than one thousand clamps and grippers for selection.
- ◆ Support multi-sensors, can equip with a few sensors at the same time for different range.

### Measure and Control System Introduction:

We use newest system which was developed in 2008. With strong functions and convenient application such as language conversion, translate automatically testing results, units conversion, manage sample shape, manage users, process data, generate report etc., This system uses newest tools --Visual Studio .Net 2005 which is developed by Microsoft . With strong function and friendly windows, it become a developing tool for new generation operation system, and arrive more than 90% areas and population of global.

### Software

- ◆ Support nine languages: English, Chinese, Traditional Chinese, Japanese, German, French, Spanish, Russian, Portuguese. Application programs and data (Access database storage) can be translated anytime.
- ◆ Support three units: Metric system ( N, kN, mm, MPa etc ) : British System ( Lb, kP, Inch, kpsi) and old system ( g, kg, Ton, cm, kg/cm<sup>2</sup> etc)
- ◆ Support many international testing standard: ISO, GB, ASTM, DIN, JIS ec. And also can add any standards. Manage testing methods for easy application.
- ◆ Testing report format: On the base crystal report and VS.Net report and can be export as Word、EXCEL、PDF document. Can add user's LOGO to report make the report become excellent.
- ◆ Super curve function: Curve can be moved freely, zoom, sign important parameter, sign parallel line of E value. Can print separately (high-resolution) or export as picture document (BMP or JEG) ; 169 theory curves.
- ◆ Can manage users at different grades, ensure safe management and convenient usage for data and software..
- ◆ Figuring and Imaging operating windows which can be modified for distinguishing different users. Can set showing or hiding showing area of windows.
- ◆ Support redevelop: Parameter calculation is written by VBS script whose source codes have been opened. Separate Report document is written by crystal report whose system parameters are stored in the database, convenient for redevelop by senior user.
- ◆ VBS scriptize control process, many control parameters can be imported or exported according to user's self-setting. Expand the use scope of machine.

◆ There are original setting to system, establishing standard, sample shape, management word etc functions among ten main procedures, convenient for debugging machine.

## Hardware

- ◆ Three-way independent simulant input channel, 24 bits AD converter, gain amplifier controlled by program.
- ◆ Use USB 2.0 insulated photoelectricity to connect computer, reduce disturb and increase reliability.
- ◆ Unit for testing force uses the newest high-speed, high resolution, high precision, no dividual grade AD converter which can arrive  $\pm 250000$  fractionized codes. It's superior to six grades amplifier and reach or approach advanced international standards.
- ◆ Unit for testing big distortion: this system use high-speed circuit system to accomplish four-quadrant collection of photoelectric encoder, solve all influence to testing results because of dithering under low speed and redirection thoroughly, and increase four times resolution to big distortion of test machine big distortion.
- ◆ Unit for testing displacement: use high-speed circuit system to accomplish four-quadrant collection of photoelectric encoder, solve all influence to testing results because of dithering under low speed and redirection thoroughly, and increase four times resolution to big distortion of test machine big distortion.
- ◆ Unit for controlling speed: full digital controlling unit and its speed regulation ratio arrive 1:50000, namely 0.001 ~ 500mm/min (precision : 0.1% ) , and can be tested under the whole range.

### Main Technical Parameters:

- ★ Max. Range: 1KN、2KN、5KN、10KN、20KN ( optional )
- ★ Precision Grade: 0.3 grade
- ★ Measuring range of test force: 0.4% ~ 100 FS ( Full range )
- ★ Display error of test force:  $\leq \pm 0.3\%$
- ★ Resolution of test force: (  $\pm 1/250000$  of max. test force, no classify grade in the whole range, and keep a constant resolution )
- ★ Display error of displacement:  $\leq \pm 0.2\%$  ( showing value )
- ★ Resolution of displacement: 0.015mm
- ★ Adjustable range of speed: 0.005% ~ 5% FS ( Full range )
- ★ Control accuracy of speed: Within  $\pm 2\%$  of set value when speed  $< 0.05\%FS/s$ ; Within  $\pm 0.5\%$  of set value when speed  $\geq 0.05\%FS/s$ ;
- ★ Adjustable range of deformation speed: 0.005% ~ 5% FS ( Full range )
- ★ Control accuracy of deformation speed: Within  $\pm 2\%$  of set value when speed  $< 0.05\%FS/s$ ; Within  $\pm 0.5\%$  of set value when speed  $\geq 0.05\%FS/s$ ;
- ★ Adjustable speed range of working platform: 0.001 ~ 500mm/min
- ★ Control accuracy of testing bench speed:  $\leq \pm 0.2\%$  of set value
- ★ Control range of constant force、constant deformation、constant displacement: 0.5% ~ 100% FS ( Full range )
- ★ Constant deformation、constant displacement: Within  $\pm 0.5\%$  of set value when speed  $\geq 10\%FS$ ; Within  $\pm 1\%$  of set value when speed  $< 10\%FS$ ;
- ★ Effective tensile space ( no including clamp ) : 1100mm
- ★ Effective test width: 380mm
- ★ Overall Size: 80 × 55 × 217 cm      Weight: 150 Kg
- ★ Power supply: 220V/50Hz      Power: 750 W



### ◆ Ordering Information:

BGD 570--- Universal Material Testing Machine

# Special Instruments For Ink and Printing

## Falling Rod Viscometer

This unit is designed to measure the time it takes for a precision rod to fall 10cm. After several "fall times" are measured, the viscosity and yield value of the ink can be calculated by using the software included with the instrument or by using your own technique. This test conforms to ASTM D 4040-10 and ISO 12644 . "Standard Test Method for Rheological Properties of Paste Printing and Vehicles by the Falling-Rod Viscometer"

The basic system consists of the instrument stand, rod and collar, and a 100 gm weight

### Main Technical Parameters:

- ★ Falling rod size:  $\phi$  12mm  $\times$  300mm
- ★ Falling rod weight: 132g      Timing precision: 0.01s
- ★ Viscosity range of interest: 2–200Pa.s ( Non-newtonian fluid )
- ★ Mass of the weight load: 25–50–100–200–200–500–1,000  
–1,000g (total 4075g)
- ★ Total weight: 140  $\times$  140  $\times$  300mm      Overall Size: 18kg
- ★ Power Supply: 220V 50Hz
- ★ **Ordering Information:** BGD 611---- Falling Rod Viscometer



## Intelligent Inkometer

Each type of ink has a different tack (viscosity) and this is why it is important to measure the tack of the ink. After all, this determines how an ink behaves on the press. How much force is required to distribute the ink over the roller evenly and is the ink suitable for specific types of paper? Too much tack could loosen fibers on the surface of the paper. It is also important for the correct color sequence on the printing press. With a four color press the tack value of the inks on consecutive towers of the press will have to be slightly less in order to prevent the last ink layer from pulling the previous ink layer from the paper.

**BGD 615 Intelligent Inkometer** is designed to measure the apparent tack of printing ink under conditions closely approximating the dynamic conditions of the ink-distribution system of a printing press. It also can measure the integrated forces involved in ink film splitting and the effects of roller speed, film thickness, temperature and solvent evaporation.

This Inkometer consists of three rollers: The center roller is a temperature controlled brass roller; The bottom roller is an oscillating rubber composition distribution roller; The top roller is a rubber composition roller attached to the measuring system which measures tack. And all rollers are available for testing standard and UV inks. The brass roller temperature is controlled by circulating a coolant mixture provided by a thermostatic bath.

### Features:

- ◆ The tack is reported in 0.1 gram-meters and represents the torque required to work the ink film at a known rate with predetermined film thickness and temperature.
- ◆ With big digital display shows the temperature, tack, roller speed and test time. Statistical reports can be viewed directly from the display.
- ◆ Highest accuracy and efficiency,

### Main Technical Parameters:

- ★ Brass roller speed range: 400 RPM, 800 RPM, 1200 RPM, 1600 RPM, 2000 RPM;  
Additional: Roller Testing Speeds – Programmable 100 to 2000 RPM ( 3000 RPM Optional customized )
- ★ Brass Roller Lateral Error:  $\pm$  0.3mm after leveling on workbench .
- ★ Roller Speed Accuracy:  $\pm$  2 RPM
- ★ Thermostatic Bath Pump Flow: 10L/minute ( Bath capacity: 8L )
- ★ Temperature Error:  $\pm$  0.1°C
- ★ Display Resolution: 0.1 unit of ink viscosity
- ★ Testing Accuracy:  $\pm$  0.3 unit of ink viscosity ( same testing condition )
- ★ Printing: Testing time, number, temperature, speed, viscosity values
- ★ Accessory: With a piece of ink injector which is very easy to dismantle and install.
- ★ Power Supply : 220 V, 50/60 Hz
- ★ Total Power: 1600W ( motor 800W, water tank 800W )      Noise :  $\leq$ 50 db
- ★ Dimensions: 750 x300x480mm      Net weight: 130 KG
- ★ **Ordering Information:** BGD 615--- Intelligent Inkometer



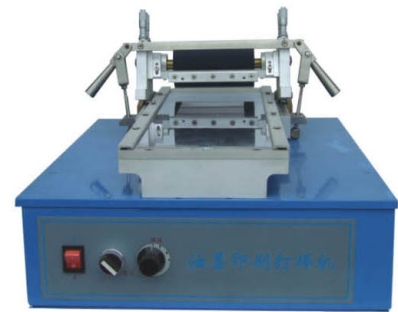


## Printing Proofer

High quality proofs using gravure, gravure-offset or flexo inks are produced instantly using the BGD Printing Proofer. Featuring electronically engraved printing plates and variable printing speeds of up to 45m/min, this is an essential tool for all those involved in the manufacturing or use of liquid inks. Ideal for R & D and computer colour matching data, quality control and presentation samples. And these Printing Proofer are very easy to clean and all parts are solvent resistant.

- ◆ Almost any flexible substrate can be printed or laminated
- ◆ Excellent printability ensured by micrometer control
- ◆ Multiple ink samples may be printed simultaneously for comparison purposes
- ◆ High printing speeds enable use of inks nearing press viscosity

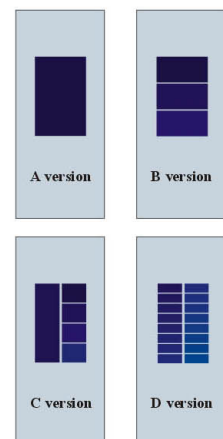
Ordering Information → Parameter ↓	BGD 622/1	BGD 622/2
Applicable for	Gravure Ink	Flexographic Ink
Motor Power	120W	120W
Impression roller	φ 76 × 130mm	φ 50 × 130mm
Roller Hardness	Shore A 55	Shore A 50
Printing Speed Wight	Four sorts : 20-30-40-45m/min	Four sorts : 20-30-40-45m/min
Printing Length	150mm	150mm
Power	220V 50Hz	220V 50Hz
Overall Size	500 × 425 × 350mm	500 × 425 × 350mm
	26kg	27kg



## Printing Plate

Printing plates for use with the Printing Proofer are electronically engraved in exactly the same way as production cylinders. A choice of one or more of the standard plates available will normally be satisfactory.

TYPE	Number of Lines (Lines/inch)	Density (%)	Remark
A1	150	100	Solid Area Plate
A2*	100	100	
B1	150	100-80-60	Single 3 Wedge Plate
B2*	150	100-90-80	
C1	150	100-90-80-70; 90	1+4 Wedge plate
C2*	300	100-90-80-70; 90	
C3*	175	100-90-80-70; 90	
C4*	175	80-60-40-20; 100	
D1	150	100-95-90-85-80-75-70-60 100-95-90-85-80-75-70-60	Double 8 Wedge Plate
D2*	150	40-35-30-25-20-15-10-5 80-75-70-65-60-55-50-45	



Note: "\*" are special plates and need custom-made

## Hand Proofer

Each Biuged Hand Proofer mainly includes a rubber transfer roll and a spring-adjustable mechanically engraved anilox roll (Pyramid type/surface is hard chrome plated). It gives customers more options for testing ink on polyethylene, cellophane, glassine, metallic foils, plastic films, paper and paperboard.

Moreover, what you see on the proof is what you'll print on press. Since proofer rolls are available in a full range of screens to duplicate your press requirements, you can make any changes in ink or screen before you get to the pressroom!

### How to produce a sample proof

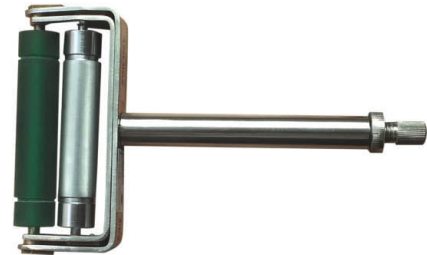
- ◆ Prepare a flat, clean sheet of the stock to be used.
- ◆ Adjust the anilox roller against the rubber roller by gradually turning the single vernier knob at the base of the hand proofer. A spring mechanism inside the handle makes it simple to position the rollers to get just the right amount of pressure.
- ◆ Put about 1/2 teaspoon of ink in the nip, rest the rubber roller on the stock, and draw the hand proofer toward you, smoothly and evenly.

That's all there is to it. What you see on the proof is what you'll get on your flexo press.

### Main Technical Parameters:

- ★ Proofing width: 70mm
- ★ The number of line: 100 ~ 300 ( LPI/Lines per inch; also can be customized )
- ★ **Ordering Information:**

BGD 220/1--120 Line Hand Proofer	BGD 220/2--160 Line Hand Proofer
BGD 220/3--180 Line Hand Proofer	BGD 220/4--200 Line Hand Proofer
BGD 220/5--250 Line Hand Proofer	BGD 220/6--300 Line Hand Proofer
BGD 1380--Metal Anilox roller	BGD 1381--Rubber roller



Line Screen Per Inch (LPI)	Line Screen Per Centimeter (LPC)	Volume BCM/in <sup>2</sup>	Volume cm <sup>2</sup> /m <sup>2</sup>
120	47.24	12.79	19.823
160	62.99	9.32	14.446
180	70.87	8.24	12.767
200	78.74	7.28	11.292
250	98.43	5.45	8.454
300	118.11	4.44	6.889



### Note:

1. This table is only available for Pyramid type
2. For Line Screen, divide Cell (LPI=Line Per Inch) count by 2.54 to get Lines per CM
3. For Volume, multiply BCM ( billion cubic micron per square inch ) by 1.55 to get cm<sup>3</sup>/m<sup>2</sup>

## Multi-section Ink Printing Proofer

**BGD 626 Multi-section Ink Proofing Press** is the newest product used for the testing the adaptability of ink printing. Compared with other types, it has many features as below:

- ◆ Distribute ink automatically and time and speed for distributing ink are adjustable.
- ◆ Used for lithography printing, letterpress printing or UV ink, UV flexographic ink
- ◆ Printing pressure and printing speed can be set according to the user's requirements.
- ◆ Can print different substrates, such as book paper, art paper, matt art paper, gray paperboard, film and tinplate etc.
- ◆ High repeatability and reproducibility.
- ◆ High quality, easy to clean and maintenance, simple and safe for operation.

### Main Technical Parameters

- ★ Effective size of coloured strips: 106mm×215mm (two colours) ; 106mm×215mm/45mm 215mm (three colour s) ; 45mm×215mm (four colours)
- ★ Printing Rubber: Common rubber or special rubber for UV ink (either-or)
- ★ Speed of distributing ink: There are three different speeds (550,700,900 rpm) on the control board.Operator also can dismantle shell of machine to do stepless speed regulation.
- ★ Printing speed: There are three different speeds (10,16,22 rpm) on the control board.Operator also can dismantle shell of machine to do stepless speed regulation.
- ★ Distributing ink time: 1~120 second (adjustable)
- ★ Print pressure: Can be adjusted precisely externally according to the substrate thickness ( $\pm 0\sim 800g$ )
- ★ Distributing ink pressure: Can be adjusted precisely externally according to the rubber using status
- ★ Power supply: AC 220V/50HZ; Power: 250W (saving electrical power design)
- ★ Dimensions of machine: 525×430×280mm
- ★ Weight: 75KG

### ★ Ordering Information:

BGD 626--- Multi-section Ink Printing Proofer

BGD 1145--- Ink Injector

BGD 1386--- Special roller for UV ink

### Note:

Ink Injector is used for compare ink and its colour, operator can control precisely thickness of coloured striped when printing. And also can get the dosage of spot colour ink in advance by calculation. Its size is  $\phi 20 \times 180mm$  and min quantitate unit is 0.00112CC



## Rub Resistance Tester

**B**GD 630 Rub Resistance Tester is applicable in rub abrasion resistance test of printing works, light sensitive layer of PS boards, and coating layers of relative products. It can help users to analyze the affairs of lower abrasion assistance, ink layer falling-off, lower printable of PS boards, and rigid of coating layers of other products.

- ◆ Wide voltage range design(110-220V; 50/60Hz), good compatibility
- ◆ Adjustable variable speed: 5~150 c.p.m
- ◆ Micro-computer control, LCD displays data.
- ◆ Parameters set freely and permanently storage.
- ◆ Control and resolve the problems of low bad abrasion resistance and easy falling-off of ink layer of printing works.
- ◆ By test, controls production technique efficiently, avoids loss of goods returns caused by bad quality.
- ◆ The specimen's coating and receptor rub each other under specified speed and pressure load. Determine the abrasion of coating or ink layer by testing the decrement of coating concentration or decrement of coating thickness.

### Main Technical Parameters:

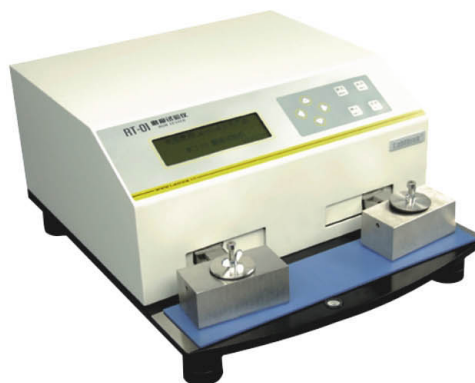
- ★ Motor Power: 50W 110V~220V 50/60Hz
- ★ Rubbing Pressure:  $10 \pm 0.2 N$  (abrasive head) ;  
 $10 \pm 0.2 N$  (additional weight)
- ★ Rubbing Speed: (5~95) times/min.(stepless speed regulation)
- ★ Rubber Pads Size: 25mm x 50 mm x 8mm (L x W x H)
- ★ Rubber Pads Hardness: 50Hs~53Hs
- ★ Rubber Medium: 80g/m<sup>2</sup> clean offset paper, the width is 50mm
- ★ Rubbing Distance: 60mm  
(We also can offer special rubbing distance as 100mm, 120mm and 155mm)
- ★ Settable Rubbing Times: 0~9,999
- ★ Suitable Specimen Size: 300 mm (L) x 60 mm (W)
- ★ Overall Dimension: 275 x 305 x 340mm (L x W x H)
- ★ Weight: 15Kg
- ★ Ordering Information: BGD 630---Rub Resistance Tester



**B**GD 632 Precise Rub Resistance Tester is designed and manufactured according to ASTM D 5264 and TAPPI T 830. It is applicable in abrasion resistance test of printed materials like labels, folding cartons, corrugated boxes, inserts, circulars, and other packaging materials having applied graphics on a flat substrate. It can help users to analyze the affairs of lower abrasion assistance, ink layer falling-off, lower printable of PS boards, and rigidity of coating layers of other products.

#### Main Technical Parameters:

- ★ Rubbing pressure: 8.9N ( 2lb ) ,17.8N ( 4lb )
- ★ Rubbing speed: 21, 42, 85,106cpm
- ★ Rubbing motion: to-and-fro arc motion
- ★ Rubbing times: 0~999,999
- ★ No. of specimens: 1~2 pieces
- ★ Dimension: 485 ( W ) ×390 ( D ) ×230 ( H ) mm
- ★ Power: AC 220V 50Hz/60Hz
- ★ Net weight: 40 kg
- ★ Standards: ASTM D5264 TAPPI T830
- ★ Configuration Standard: Mainframe, test block 8.9N ( 2lb ) , test block 17.8N ( 4lb ) , Rubbing pad
- ★ Optional: Non-standard test block
- ★ **Ordering Information:**  
BGD 632---Precise Rub Resistance Tester



### Characteristics

- ◆ Applicable in dry or wet rubbing or scuffing, wet bleed, transfer, wet smear and functional tests.
- ◆ Arc moving model, double testing station, high efficiency
- ◆ Manifold speeds, convenient and flexible.
- ◆ Micro computer controls, film front control panel
- ◆ LCD displays testing data
- ◆ Function of memory when power off, buzzer prompts automatically when test is finished.
- ◆ By test, controls production technique efficiently, avoids loss of goods returns caused by bad quality.
- ◆ The specimen's coating and receptor rub each other under specified speed and pressure load. Determine the abrasion of Coating or ink layer by test the decrement of coating concentration or decrement of coating thickness.

## Digital Emulsification Tester

**B**GD 675 Emulsification Tester is used to test fleetly the water demand of hectograph ink and its binder in laboratory. And it complies with ASTM D 4942. This instrument use double-frame stirrer rake through planetary stirring, with shearing, dispersion action, the non-dissolve liquid are dispersed and minimized. These liquid flow in the container circularly and achieve uniform emulsification situation. It is controlled by programmable controller and can show the working situation and parameters. This Instrument has such advantages as newest design, steady working, accurate measurement, high reliability and easy operation.

#### Main Technical Parameters:

- ★ Power Supply: AC220V 50HZ
- ★ Stirring Rotating Speed: 90/100/150 r. p. M
- ★ Container Size ( Inner Diameter × Height ) : 100 × 100mm
- ★ Stirrer rake Size ( w × h ) : 56 × 100mm
- ★ Overall Size: 330 × 150 × 460mm
- ★ Weight: 20kg
- ★ **Ordering Information:** BGD 675---Digital Emulsification Tester



## Automatic Drying Tester for ink

**A**utomatic Drying Tester for ink is applicable to test the ink drying time. This tester consists of a rotating cylinder, a weight wheel and touch screen. When it work, the rotating cylinder rotates at constant speed, meanwhile the weight wheel moves in line along the cylinder axis at the constant speed. Applcate the sample on the parchment ( film length is 30cm) , then stick the parchment on the rotating cylinder. Move the weight wheel to the starting point ( cylinder left) and set the needed time (from 5hours to 20 hours) which it go over the whole distance ( the length of cylinder) .If the ink don't dry completely, then the weight wheel would leave a mark on the parchment blank space, till the test is finish. Obtain the test results by counting the ink traces on the parchment and rotating cylinder working speed.

### Main Technical Parameters:

- ★ Power: 220V ± 22V 50Hz
- ★ Speed of weight wheel : 2mm/r
- ★ Settable time of whole distance: 5~20 (hour)
- ★ Circle Numbers of Whole distance: 120r
- ★ Overall dimensions: 500 × 200 × 220mm ( L × W × H )
- ★ Wheel weight: 100g
- ★ Weight: 17kg
- ★ **Ordering Information:**  
BGD 660---Automatic Drying Tester for ink



## Surface Tension Test Pens ( Dyne Test Pens )

**S**urface tension test pens were introduced to give an accurate measurement of graduated surface tension levels. The fluid is applied to the surface or substrate until a satisfactory dyne level is found.

Experience has shown that wetting is normally adequate when a continuous film of test fluid remains intact for 2 seconds. Breaking of the fluid into droplets in less than 2 seconds indicates a lack of wetting and a lower numbered test fluid should be tried. If the fluid remains intact for longer than 2 seconds, a higher numbered test fluid should be tried.

A clean, new cotton applicator should be used each time to avoid contamination of the solutions ensure the film surface is not touched or contaminated in the areas in which the tests are to be made.

These pens are widely used in PS、PE、PP、PET、PI、PC、NY、CPP、OPP、PVC etc.

Biuged offer 16 sorts different dyne value pens (30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,69 dyne) .Please select the correct type when ordering.

### Procedure:

- ◆ Draw with a pen on the test area of about 1 inch
- ◆ Check the time how long it takes the ink changes to small drop or makes peripheral shrinkage. After 2 seconds, there is nothing change, repeat the test with higher dyne pen.
- ◆ Suitable dyne is that takes 4 seconds till the ink changes to small drop or makes peripheral shrinkage.
- ◆ Surface energy should be more 10 dyne than ink, adhesive, coating.
- ◆ When the liquid drops in the surface of material, if surface energy of material is lower than surface energy of ink, the shape of ink is Marble.
- ◆ On the contrary to this, if surface energy of material is bigger than surface energy of ink, the ink uniformly spread on the surface

### ★ Ordering Information:

- BGD 1146---Surface Tension Test Pens (5ml)
- BGD 1147---Surface Tension Test Pens (12ml)
- BGD 1148---Surface Tension Test Pens (30ml)
- BGD 1149---Surface Tension Test Pens  
(Rechargeable 60ml)



# Universal Instruments of Laboratory

## Multifunction High Speed Dispersing Machine

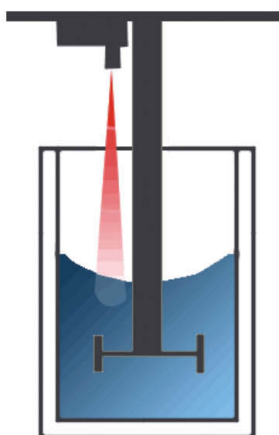
**B** 745 Multifunction High Speed Dispersing Machine is developed newly after collecting many customers suggestions, and also got many patents. Compared with traditional products, it adds many practical functions and let laboratory dispersing work become more scientific, high efficiency and easy.

### Main Features:

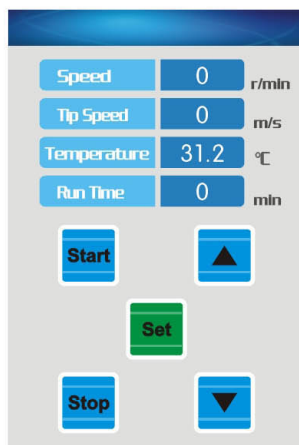
- ◆ New brushless DC motor: Has wider adjustable working speed, ultra-low noise when working (avoid electromagnetic noise from tradition AC motor) .Moreover, DC motor has a feedback system to working speeding and can monitor speed more precisely.
- ◆ Touch screen design: Setting working parameters become more simple and easy. All state parameters are shown directly and clearly, easy to operate.
- ◆ Show directly linear velocity of current dispersing blade, save time to calculate linear velocity by dispersing blade size and working speed for operator.
- ◆ New auto location clamping device for container: Rotate locking handle to fasten container at the central position automatically, safe, simple and convenient.
- ◆ High quality one body mixer shaft: Made up of high quality 304SS, anti-corrosion and easy to clean.
- ◆ Monitor sample temperature: With infrared temperature probe, can real-time monitor dispersed sample without touching sample. Operator also can set a certain temperature by touch screen for preventing sample changing because of over heat generating from milling.
- ◆ Timing device for dispersing: Operator can set dispersing time, the machine would be stopped automatically when arrive this time
- ◆ Can choose arc bottom container with double-layer and sand-mill blades for bead mill.

### Main Technical Parameters:

- ★ Motor Power: 1000W ( Brushless DC motor )
- ★ Adjustable working speed: 200 ~ 6,000r/min
- ★ Lift distance: 300mm
- ★ Overall Dimension: 450 × 450 × 700mm  
( motor is the lowest position )
- ★ Net Weight: 40KG
- ★ Come with dispersing blades:  $\Phi$  50mm and  $\Phi$  80mm, one each.
- ★ **Ordering Information:**  
BGD 745---Multifunction High Speed Dispersing Machine



Measure Sample Temperature with infrare



Operation Menu



## Versatile Sand-Milling dispersing-agitator

**B**GD 750 series Versatile Sand-Milling dispersing-agitator is a new product designed by our company. It is equipped with two sand-milling discs, two dispersing blades and a double-layer stainless steel container. With only one machine, operator can finish such as sand-milling, high speed dispersing and mixing. Furthermore, electric lift design is very convenient for female operator.

### Features:

- ◆ With Siemens squirrel-cage motor of frequency control (except BGD 740/1 and BGD 741/1) and use frequency converter to adjust working speed
- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Main parts are all made up of stainless steel, with perfect corrosion resistance
- ◆ Inlet and outlet of cooling water are equipped with fast joints, convenient for operator to install or remove quickly.
- ◆ Container is produced by a whole special mould, no welding line and bottom is arc structure, can be cleaned completely. Very convenient for operator to do the different color sample.
- ◆ Standard configuration: Two different size dispersing blades, two different size sand-milling blades, a stainless steel double jacket container.
- ◆ Power Supply: 220V 50HZ
- ◆ 550W and 750W is bench-structure, size is 45×42×65 cm;  
Others are console mode structure and size is 64×57×133 cm



Ordering Information	Motor Power	Speed (r/min)	Container Capacity	Lift Distance	Lift System	Dispersing blades	Sand-Mill blades
BGD 750/1	550W	100-7,500	1.5 L	230 mm	Spring lift by hand	50mm&60mm	45mm&60mm
BGD 750/2	750W	100-6,000	1.5 L	230 mm	Spring lift by hand	50mm&60mm	45mm&60mm
BGD 750/3	1,100W	1000-5,000	3 L	340 mm	Electric	60mm&80mm	90mm&100mm
BGD 750/4	1,500W	100-5,000	3 L	340 mm	Electric	80mm&100mm	90mm&100mm
BGD 750/5	2,200W	100-4,000	5 L	340 mm	Electric	100mm&120mm	100mm&130mm
BGD 751/1	550W	100-7,500	1.5 L	300 mm	Electric	50mm&60mm	45mm&60mm
BGD 751/2	750W	100-6,000	1.5 L	300 mm	Electric	50mm&60mm	45mm&60mm
BGD 752/2 (Explosio-proof)	750W	100-3,000	1.5 L	300 mm	Spring lift by hand	50mm&60mm	45mm&60mm

## High-speed Dispersing Machine (HSD Machine)

What is dispersing in the coating field? It means that in the manufacturing process solid materials are made to be distributed evenly in the liquid; in the process of dispersion, pull of particulates are broken down. The round saw tooth-type dispersion tray influenced by the electromotor will be dispersing in the container to effect the solid and liquid dispersion, moisturization, depolymerization. Its work principle description is mainly as follows:

- ◆ Make the serosity annular and cause powerful vortex, so the particulates of the serosity fall to the bottom vortex bottom,
- ◆ An 2.5-5mm eldge in the dispersion tray is formed a flow area in which the particulates are impacted intensely.
- ◆ Two beam currents outside the area are formed to make the serosiy fully circulated and turned over.
- ◆ What is below the dispersion tray is a current flow, serosity with different speed disperses mutually to effect the function of dispersion

Biuged offer many different High-speed dispersing machines,they are applicable to the stir, dissolution and dispersion of coating, paint, ink ,dyestuff, cosmetic goods, foodstuff, resin, adhesive, latex, medicine, petroleum, whose speed can be adjust at will.

### Features:

- ◆ With Siemens squirrel-cage motor of frequency control (except BGD 740/1 and BGD 741/1) and use frequency converter to adjust working speed
- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Main parts are all made up of stainless steel, with perfect corrosion resistance
- ◆ Standard configuration: Two different size dispersing baldes, and also can select different size sand-milling blades and stainless steel double jacket container to carry out milling function.
- ◆ Power Supply: 220V 50HZ
- ◆ 550W and 750W is bench-structure, size is 45×42×65 cm; Others are consol mode structure and size is 64×57×133 cm





Ordering Information	Motor Power	Speed (r/min)	Lift Distance	Lift System	Come with dispersing blades size
BGD 740/1	550W	0-7,500	230 mm	Spring lift by hand	50mm&60mm
BGD 740/2	750W	0-6,000	230 mm	Spring lift by hand	50mm&60mm
BGD 740/3	1,100W	0-5,000	340 mm	Electric	60mm&80mm
BGD 740/4	1,500W	0-5,000	340 mm	Electric	80mm&100mm
BGD 740/5	2,200W	0-4,000	340 mm	Electric	100mm&120mm
BGD 741/1	550W	0-7,500	300 mm	Electric	50mm&60mm
BGD 741/2	750W	0-6,000	300 mm	Electric	50mm&60mm
BGD 742/2 (Explosion-proof)	750W	0-3,000	300 mm	Spring lift by hand	50mm&60mm
BGD 742/5 (Explosion-proof)	2,200W	0-3,000	300 mm	Spring lift by hand	100mm&120mm

◆ **Optional Accessories :**

- |  |  |
|--|--|
| BGD 1410---35 mm dispersing blade        | BGD 1411---50 mm dispersing blade      |
| BGD 1412---60 mm dispersing blade        | BGD 1413---80 mm dispersing blade      |
| BGD 1414---100 mm dispersing blade       | BGD 1415---120 mm dispersing blade     |
| BGD 1416---150 mm dispersing blade       | BGD 1417---200 mm dispersing blade     |
| BGD 1451---0.5 L dispersing container    | BGD 1452---1.25 L dispersing container |
| BGD 1453---3 L dispersing container      | BGD 1454---5 L dispersing container    |
| BGD 1455---10 L dispersing container     | BGD 1456---20 L dispersing container   |
| BGD 1460---Stand for explosion-proof box |  |



**Note: All containers have double jacket for cooling water.**

## Air Pneumatic Mixer

These air pneumatic mixers are designed to be used in explosion-proof requirements environment, such as oil-based paints or some special solvents. They use compressed air (5kg/cm<sup>2</sup>/70psi) as power, and can be moved anywhere to finish mixing.

- ◆ Explosion-Proof (no electric and spark)
- ◆ Motor can rotate clockwise or counter-clockwise
- ◆ Motor will not be hot when the machine working



BGD 722



BGD 723



BGD 725



BGD 728



BGD 729

Parameters → Ordering Information ↓	Power	Max.Torque	Working Speed	Capacity	Structure
BGD 720 Air Pneumatic Mixer	0.1HP	0.64N.M	0-1100 r/min;	1-10 KG	Floor Mode
BGD 722 Air Pneumatic Mixer	0.25HP	1.56N.M	0-900 r/min	20-50 KG	Floor Mode
BGD 723 Air Pneumatic Mixer	0.25HP	1.56N.M	0-900 r/min	20-50 KG	Transportable ( With bench )
BGD 725 Air Pneumatic Mixer	0.5HP	4.8NM	0-720 r/min	50-200 KG	Transportable ( No bench )
BGD 728 Portable Pneumatic Agitator	0.5HP	----	0-700 r/min	10-50 KG	Portable
BGD 729 Portable Electric Agitator	1200W	----	0-550 r/min	10-50 KG	Portable

## Precise Digital Overhead Stirrer

These newest stirrers are of the highest quality. The core a direct current brushless motor is explosion-proof and overcomes the disadvantages of traditional stirrers. The stirrers can operate under high load for an extended period of time without any need for maintenance.

### Features:

- ◆ Direct current motor without brush, work silently and no need maintenance. Whole machine is explosion-proof.
- ◆ Indicator of over load, stop automatically when over-load. Individual safe circuit design, protect motor automatically under unexceptional situation.
- ◆ High axis concentricity, start and work steadily, can prevent sample spill over; Adjust torque automatically according to the sample viscosity.
- ◆ International safety certification: get CE, TÜV us and FCC safety certification issued by German TUV company.
- ◆ Close case can prevent liquid to splash into the machine and lead to corrosion to circuit.
- ◆ With back light LCD or LED display screen show fact speed, set speed or torque.
- ◆ RS 232 interface can connect computer for controlling stirrer and recorder rotate ( For 702 & 704 ).

### Main Technical Parameters

Ordering Information Parameters → ↓	BGD 701	BGD 702	BGD 703	BGD 704
Max. Stirring Capacity (water)	20 L		40 L	
Motor Rating Input	60 W		120 W	
Motor Rating Output	50 W		100 W	
Speed Range	0–2,200 rpm	50–2,200 rpm	0–2,200 rpm	50–2,200 rpm
Speed Display Accuracy	---	±3 rpm	---	±3 rpm
Display	LED	LCD	LED	LCD
Speed Display Resolution	1 rpm		1 rpm	
Max. Torque	40 N.cm		60 N.cm	
Max. Viscosity	10,000 mPa.s		50,000 mPa.s	
Chuck Range Diameter	0.5–13		0.5–13	
Dimension (W×H×D)	220×810×450 mm		220×810×450 mm	
Weight	2.4 kg	2.8 kg	2.4 kg	2.8 kg
Packing List	① LCD or LED digital overhead stirrer head-----1 pc ② Flat Base -----1 pc ③ Main Pole-----1 pc ④ Dispensing pole with four leaf-----1 pc			



BGD 702/704



BGD 701/703

## Lab Basket Mill (New)

**F**or paint, ink laboratory special requirements, Biuged develops a newest high quality Lab Basket Mill. Compared with the traditional products, main parts of milling basket, such as basket wall, milling blades and pump impeller, are made of strong abrasion resistance material---zirconia ( Other suppliers use stainless steel) , extend greatly the service time of mill and also reduce influence to color of sample milled in basket.

Moreover, in order to offer a convenience for customers to replace sample rapidly and clear the basket completely, we design the basket as easy to dismantle structure. Customers can inspect the grinding medium (beads) usage and replace it at any time.

### Features

- ◆ With 750W squirrel-cage motor of frequency control and use frequency converter to adjust working speed
- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Another dispersing blade is installed under the basket, disperse and mill the sample at the same time.
- ◆ Electric lift, easy and convenient to operate
- ◆ Double wall milling basket and double wall container for cooling rapidly
- ◆ Excellent mill results, can mill sample size to below 10 $\mu$ m shortly.

### Main Technical Parameters:

- ★ Motor Power: 750W
- ★ Working Speed: 0-3,00 r.p.m ( Adjustable )
- ★ Lift Distance: 300mm
- ★ Container Capacity: 3 L
- ★ Milling Basket Capacity: 260 ml
- ★ Suitable Added Amount for Mill Medium: 180ml
- ★ Suitable Mill Medium Size ( mm ) : 1.8mm-2.0 mm ( 400 gram )
- ★ Milling Blades Size:  $\Phi$ 60mm
- ★ Dispersing Blades Size:  $\Phi$ 80mm
- ★ Overall Size: 480 x 430 x 970 mm
- ★ Net Weight: 50KG
- ★ Power Supply: 220V 50Hz/60Hz
- ★ **Ordering Information:** BGD 756---- Lab Basket Mill



## Lab Basket Mill

**B**GD 755 series Lab Basket Mill is an integrated equipment, which combines milling and dispersing to reduce particle size for paint, coatings, inks and pigment dispersions applications. The basket mill integrates high speed dissolving and pump wheels, a very narrow particle size distribution can be achieved in this machine.

### Features

- ◆ Replaceable basket structure, easy to clean
- ◆ Easy to maintain and move from one batch to another different product production
- ◆ Little grinding media required
- ◆ Double wall milling basket and double wall container for cooling an heating is optional
- ◆ Excellent mill results



BGD 755/3



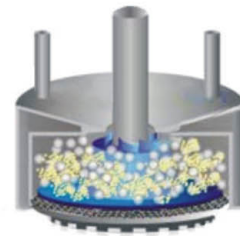
BGD 755/5

#### Main Technical Parameters:

- ★ Parameter of motor: 750 ~ 2200W; 220V 50Hz
- ★ Rotation speed: 0–2,880 r.p.m
- ★ Processing Capacity: 0.8–20L
- ★ Control Method: Stepless speed control, with digital speed display
- ★ Suitable Grinding Medium: 95% Zirconia beads, 1.6mm–1.8mm
- ★ Material: The part contacting with material is SS304
- ★ Lifting System:
  - For 550W and 750W---Spring Lift by hand/ lift platform;
  - For 1,100W or more Electric Lift automatically.

#### ★ Ordering Information:

- BGD 755/3---1100W Basket Mill ( 5L )
- BGD 755/4---1500W Basket Mill ( 10L )
- BGD 755/5---2200W Basket Mill ( 20L )



## Lab Horizontal Mill

**L**ab Horizontal Mill is an advanced wet process bead grinding machine for milling and dispersing to reduce particle size for paints, inks, pigment dispersion and other chemicals. It can achieve high milling efficiency and fine milling effect.

Motor-driven feeding device internal high-speed rotation, a negative pressure, through self-absorption effect, placed above the feed tank material inhaled and sent to the grinding chamber. The discs drive the grinding medium inside the grinding chamber to do irregular movements in all direction to put the materials under the action of constant collision and friction. At same time, the materials are separated from the grinding medium by the sieve and keep circulation from the tank to the grinding chamber to obtain smaller particle size, narrower particle size range.

### Features

- ◆ **High milling-efficiency and good fineness:** Big kinetic energy drive zirconia working-pole to make the grinding medium move irregularly, crash with high-speed, abrade mutually etc, (Can choose diameter from 1.4mm to 1.6mm zirconia beads)
- ◆ **Convenient operation:** With frequency converter, operator can start the machine and adjust working speed directly. Once pour sample into the hopper of machine, with automatic cycle function, the milling work can be finished automatically.
- ◆ **Low temperature-rise during milling:** Both of container and milling chamber are designed with double wall for cooling

sample. Normally, the temperature-rise is less than 10°C , which effectively prevent sample changing because of high temperature.(It is better to use a water chiller)

- ◆ Long lift-time: The whole machine is made up of stainless steel, more durable and easier to clean.

Main Technical Parameters:
★ Capacity: 0.6L–5L ( Standard container is 1.2 L; 0.6L、1.2L、 2L、 3L、 5L for option )
★ Milling Chamber Capacity: 0.5 L
★ Motor Power: 2.2 KW ( Siemens )
★ Working Speed: 0–3000 rpm
★ Power: AC 220V, 50HZ ( other power can be customized )
★ Overall Size: 880mm × 350mm × 480mm
★ Ordering Information: BGD 758---Lab Horizontal Mill



## Coating Fast Mixer

Having a high efficiency mixer for the dispersing job becomes more necessary. That is why we designed our coating fast mixer. BGD 760 mixers are a great mixing solution that are capable of handling an extremely broad range of materials for countless applications including automotive, chemical, wood finishes, marine, R&D, and various lab settings.

- ◆ Suitable for a wide range of mixing applications
- ◆ With two types for option:

**Carrying Can---** Shakes a variety of containers of all sizes and shapes ( User should prepare container by himself. The max. diameter of container is 180mm, the container height range is from 65mm to 180mm)

**Carrying Bottle---**Shakes eight glass bottles whose capacity is 200ml ( Each arm has four bottles ,and every bottle can finish dispersing of 150ml sample )

- ◆ Two different structures: Column type and Floor type, are suitable different applications
- ◆ With timer can automatically stop mixing cycle

Main Technical Parameters:
★ Motor: 550W 220V 50Hz
★ Crankshaft revolution: 660 r/min
★ Main shaft reciprocating stroke: 16 mm
★ Upper and lower maximum amplitude: 8 mm
★ Head arm swinging angle: 30°
★ Overall dimension: 790 × 520 × 1090 mm ( L × W × H )
★ Weight: 80Kg



Column Type



Floor Type

★ **Ordering Information:**

- BGD 760/1---Coating Fast Mixer ( Column type with carrying can )
- BGD 760/2---Coating Fast Mixer ( Column type with carrying bottle )
- BGD 760/3---Coating Fast Mixer ( Floor type with carrying can )
- BGD 760/4---Coating Fast Mixer ( Floor type with carrying bottle )

## Closed Paint Mixer/Shaker

These closed paint mixers and shakers, suitable size containers having sample which is needed to be dispersed are put into, then use the special clamping device to fix containers, set required working time. With high-speed rotating and shaking, sample can be dispersed efficiently. These machines are easy and convenient to operate, high-efficiency, no VOC leakage, no pollution etc advantages.

According working principle, these machines can be divided into two types: shaking type and rotating type. For shaking type, the container is shaken up and down, back and forth with high-speed. For rotating type, the container is rotated at revolution and rotation at the same time.

### Features:

#### Manual Type:

- ◆ Clamp the container by manual, can select clamping power freely, suitable for any size and type container.
- ◆ Safety interlock--- the machine will stop immediately when open its door, prevents the cabinet door from being opened while the machine is running.
- ◆ The supporting table for container can be pulled-out, rotated and fixed, save time and power for operator.

#### Automatic Type:

- ◆ Run self-checking program automatically before operation till all parameters are accordance with requirements then begin to work. In case of any abnormality, the machine will alarm by buzzer and indicate need to be set.
- ◆ Digital display will show the working status and run time, so that the operators can know the machine working status.
- ◆ With PLC microcomputer control---Detect and response automatically, adjust height to clamp container.
- ◆ Automatic fix or loosen container and offer the suitable working speed.
- ◆ Automatically check container size and according it to adjust suitable clamping power and rotating speed.
- ◆ Multi-grade intelligent timing inverter, adequate speed control ensures stable operation



BGD 763

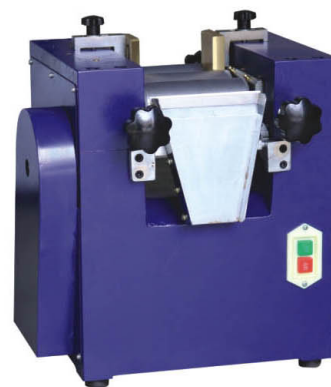


BGD 764

Ordering Information → Parameters ↓	BGD 763/1	BGD 763/2	BGD 764/1	BGD 764/2
Working Method	Shaking	Shaking	Rotating	Rotating
Clamping Container Method	Manual	Automatic	Manual	Automatic
Suitable Container Capacity	0.5L-20L			
Suitable Container Height	100mm-380mm		70mm-390mm	
Shaking Frequency	680~710 times/min		----	
Rotating Speed	----		Revolution: 130r/min Rotation: 260r/min	
Motor Power	0.75 KW			
Power Supply	110V or 220v, +-10% adjustable, 50/60HZ			
Net Weight/Gross Weight	195 KG/240KG	210 KG/245KG	200 KG/240KG	187 KG/228KG
Overall Size (H×W×D)	1050×860×710	1060×760×825	1035×800×810	1010×860×800

## Three Rollers Grinder

**B**GD 770 series Three Rollers Grinder is widely used in paste materials including inks, Paint, Pigment, Soap, Artificial leather, Plastics, Lubricant grease, Chocolate and so on. Especially for high viscosity and fineness material. The mill roller is made of high hardness alloy and anti-abrade, also equipped with cooling device for continuous operation.



BGD 770/1

### Main Technical Parameters

Ordering Information		BGD 770/1	BGD 770/2	BGD 770/3	BGD 770/4	BGD 770/5
Roller diameter(mm)		65	100	150	200	260
Working length(mm)		125	250	300	500	675
Speed (R.p.m)	Slow	26	28	34	19	23
	Middle	70	66	78	55	64
	Fast	145	152	181	155	183
Motor Power (kw)		0.75	1.5	2.2	4.0	7.5
Capacity (L)		5	30	60	100	150
Overall size (mm)		410x400x450	680x600x700	830x830x930	1180x1120x980	1680x1320x1150
Weight (kg)		80	300	500	800	2100

Note: we also offer three Rollers Grinders whose whole body are stainless steel

**B**GD 771 series Improved Three Rollers Grinder use good quality material as drive section, its transmission gear adopts oil-immersed way and the operative handwheel is transmitted by gear, with abrasion resistance, low voice, easy to repair etc. advantages. Moreover, Using gear adjust the roller and roller (but BGD 770, use spring to adjust) and make adjust become more easy. And the coppery baffle is designed as butterfly model, the operator can clean the coppery knife easily. Particularly it is suitable for grinding the products with high dispersive viscosity and size.

### Main Technical Parameters

Ordering Information		BGD 771/1	BGD 771/2	BGD 771/3
Roller diameter(mm)		150	260	305
Working length(mm)		300	675	760
Speed (R.p.m)	Slow	34	23	15.8
	Middle	78	64	47.4
	Fast	181	183	142
Motor Power (kw)		2.2	7.5	11
Overall size (mm)		920 × 880 × 1150	1690 × 1330 × 1300	1655 × 1490 × 1400
Weight (kg)		500	2000	3800



## Muller Laboratory Grinder

**B**GD 650 Muller Laboratory Grinder is a sturdy machine, enabling optimal and perfectly reproducible grinding and dispersion to be obtained in the laboratory. It has been designed to grind and discharge small amounts of raw materials for paint and varnish.

This unit consists of a steel frame holding two ground-glass plates, the lower of which is motor driven. A LCD screen can help operator set the total number of revolutions and automatically stops the motor once the user's defined number of revolutions has been met. Furthermore, it also can show the total after each test cycle.

An amount of raw material is spread over a limited area of the lower glass plate. The mixture is ground in successive stages, for example 50 revolutions each, at a pressure, of 445N. Between each stage, the mixture should be redistributed within the limited area.

The BGD 650 Muller Laboratory Grinder is suitable for preparing dispersions for testing mass color and tinting strength and preparing small samples for use in the quality control of pigments.

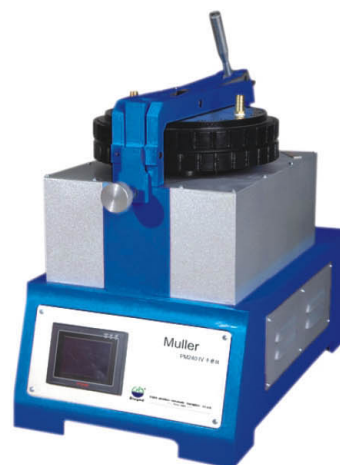
It can be used in accordance with ASTM D 387, ASTM D 332-B, ISO 8780-5, ISO 787/16.

### Features:

- ◆ Controlled intelligently by microcomputer, counting accurately, reliable working status
- ◆ Touch screen and user-friendly operation interface allow operator easily to set test parameters
- ◆ Use coupling with flexible connection method to connect reducer with motor, has big torque, no step to lose and self-protection.
- ◆ Grinding glass are made of heat-resisting, pressure-resisting and colorless sight glass after precise grind, with high flatness, strong and durable and no any influence to light colored sample.

### Main Technical Parameters:

- ★ Motor Power: 0.75KW
- ★ Power Voltage: 380V 50Hz ( 220V can be Customized )
- ★ Working Speed: 75 ± 5r/min
- ★ Load: 43Kg; 64Kg; 100Kg
- ★ Weights: 1.75kg; 5 kg; 6.4 kg      Grind Plate Diameter: 240mm
- ★ Digital Displaying Range: 0 ~ 9,999
- ★ Overall dimension: 530 × 360 × 480 mm ( L × W × H )      Weight: 80Kg
- ★ **Ordering Information:** BGD 650/1---Muller Laboratory Grinder



## Homogenizer

**B**GD 749 Homogenizer is a high speed dispersing instrument, It is based on the Rotor/Stator Technology. The shaft and rotor/stator can be disassembled for easy cleaning. You will receive the dispersing tools completely assembled for immediate use with your disperser.

The material is sucked in to the head axially, then accelerated using the rotor's high rpm rate, circumferential or peripheral velocity. The centrifugal acceleration between the outer rotor wall and the inner stator wall propels the material through the stator shearing slits.

This product is for laboratory use only and is used in chemical industry, cosmetic industry, pharmaceutical industry, paint industry as well as in universities and a wide range of medical laboratories. The unit is a high performance dispersing/homogenizing unit and also can be used as a high speed mixing unit with certain dispersing shafts.

The drive unit can be used, based on the dispersing shaft used for volumes from 10ml to 8,000ml. There is a wide range of dispersing shafts with diameters of 20mm, 30mm and 40mm stator diameters. It is to be mounted on a stand and not used as a handheld instrument.

### Features

- ◆ Top speed of high 10000-30000 rpm, reduces processing time significantly.
- ◆ Big safety switch for unexpected emergency stop.
- ◆ Smooth motor drive makes working, very safe and comfortable.
- ◆ Additional feature of automatic overload protection increases the life span of the motor.
- ◆ Smooth start also prevents unnecessary spills; Viscosity up to 10,000 mPa.s
- ◆ Continuously adjustable speeds for better results
- ◆ Light-weighted and small-dimensioned for better handling
- ◆ Triple safety of the drive, overload protection and smooth start against jerky work, safety switch



316L steel High quality dispersing tools as standard for better resistance to corrosion  
 Quick change system of the dispersing tools for a short changing time between preparations

**Main Technical Parameters:**

- ★ Voltage: 220V 50/60Hz or 110V 50/60Hz ; Power input/output: 500/380 Watt
- ★ Rotor speed: ( 22,7 ~ 36 m )/sec ; Weight: 1.3 kg
- ★ Sound Pressure Level : 79 dB(A) ; Double Insulated
- ★ Speed Setting: Infinitely Variable ; Relative Humidity: 85%
- ★ Permissible Ambient Temperature; 5°C – 40°C ; Protection Grade: Ip20
- ★ Permissible Period of Operation: 100%; Dimensions: 70 x 70 x 255mm
- ★ **Ordering Information:** BGD 749/1--- Homogenizer for solid-liquid mix  
 ( includes a BGD 749 drive ,a H Stand and a BGD 1430 dispersing shaft )
- BGD 749/2--- Homogenizer for emulsification  
 ( includes a BGD 749 drive ,a H Stand and a BGD 1431 dispersing shaft )

**Optional Accessories**

- BGD 1430---One body dispersing shaft for mixing solid and liquid ( 10ml ~ 5000ml )
- BGD 1431---One body dispersing shaft for emulsification ( 10ml ~ 5000ml )
- BGD 1432--- One body dispersing shaft for mixing small quantity solid and liquid ( 1ml ~ 50ml )
- BGD 1433---20mm Coarse Stator
- BGD 1435---30mm Coarse Stator
- BGD 1437---40mm Coarse Stator
- BGD 1439---30mm Standard Rotor
- BGD 1441---30mm Homogenizing Rotor
- BGD 1443---30mm Mixing Rotor
- BGD 1443---30mm Emulsification Rotor
- BGD 1434---20mm Fine Stator
- BGD 1436---30mm Fine Stator
- BGD 1438---20mm Standard Rotor
- BGD 1440---20mm Homogenizing Rotor
- BGD 1442---20mm Mixing Rotor
- BGD 1442---20mm Emulsification Rotor



## Economic Electrical Balance

**B**iuged offers a range of laboratory scales for accurate measurements during the development of a coating. The Biuged range of balances provides the user with a choice of standard, analytical or precision balance, with or without enclosed cabinet.

**Features**

- ◆ Calibration function
- ◆ Whole range of gross to net conversion
- ◆ Unit conversion ( g,CT,OZ,1b)
- ◆ Power: AC 220V±10% 50HZ±1HZ DC 9V
- ◆ Higher resolution
- ◆ LED indicator
- ◆ With RS-232 interface.

Ordering Information	Max Load Capacity	Resolution	The size of the weighing platform	Hurricane globe
HZY-A 100	100g	0.001g	Φ80mm	✓
HZY-A 200	200g	0.001g	Φ80mm	✓
HZT-A 100	100g	0.01g	Φ125mm	----
HZT-A 200	200g	0.01g	Φ125mm	----
HZT-A 300	300g	0.01g	Φ125mm	----
HZT-A 500	500g	0.01g	Φ125mm	----
HZT-A 600	600g	0.01g	Φ125mm	----
HZT-A 1000	1000g	0.01g	Φ125mm	----
HZT-A 2000	2000g	0.01g	Φ125mm	----
HZT-B 2000	2000g	0.1g	155 × 175mm	----
HZT-B 3000	3000g	0.1g	155 × 175mm	----
HZT-B 5000	5000g	0.1g	155 × 175mm	----
HZT-B 6000	6000g	0.1g	155 × 175mm	----



HZT



HZY

## Balance

The BL Precision Balance is an accurate, stable and robust balance which can be supplied with or without a plastic draft guard for higher accuracy of measurements.

The BL Precision Balances are protected against spray and dust according to the IP54 standard.

With the cable accessory, the BL can be connected to a computer for accurate recording of your data.

A range of User programmable metric and imperial measurement units can be displayed.



### ◆ Ordering Information

Ordering Information → Technical Item ↓	BL-120	BL-200	BL-410	BL-1200	BL-2000	BL-4100
Capacity (g)	120	200	410	1200	2000	4100
Readability (g)	0.001	0.001	0.001	0.01	0.01	0.01
Repeatability (g)	±0.001	±0.001	±0.001	±0.01	±0.01	±0.01
Linearity (g)	±0.002	±0.002	±0.002	±0.02	±0.02	±0.02
Keyboard	Six key	Six key	Six key	Six key	Six key	Six key
Pan Size	φ 120mm	φ 120mm	φ 120mm	φ 158mm	φ 158mm	φ 158mm
Draftshield	Standard	Standard	Standard	N/A	N/A	N/A
Security Lock Kit	Option	Option	Option	Option	Option	Option
Size W*H*D (in)	7*5.75*11	7*5.75*11	7*5.75*11	7*2.5*11	7*2.5*11	7*2.5*11
Interface	Bidirectional RS-232, ( standard on all models )					
Display	0.57 " LED ( all models )					
Power	7.2VDC ( 115VAC,60HZ adaptor provided )					

## Precise Analytical Balance

- ◆ Electric magnetic force balanced principle
- ◆ Auto zero-tracking
- ◆ Dynamic temperature compensation
- ◆ Zero in range ability
- ◆ LCD display
- ◆ Function of piece counting
- ◆ Over-loading warning
- ◆ RS232 communication
- ◆ Unit conversion (g oz ct kg lb)

### ◆ Ordering Information

Ordering Information → Technical Item ↓	FA1104	FA1604	FA2004
Weighing Capacity (g)	110	160	200
Readability (mg)	0.1	0.1	0.1
Repeatability (≤mg)	±0.1	±0.1	±0.1
Linearity (≤mg)	±0.2	±0.2	±0.2
Pan Size (mm)	φ 90	φ 90	φ 90



## Precise Analytical Balance

- ◆ High-sensitivity electric magnetic force balanced principle for ultra resolution
- ◆ Built-in dual-weight balanced calibration technology for ultra accuracy
- ◆ Digital multi-point linear calibration, which is convenient for balance calibration
- ◆ Internal weight calibration technology, which is convenient for periodical calibration and adjustment without dismantling the balance
- ◆ Pillar-free transparent glass draft shields for comfortable operation with enlarge weighting space
- ◆ Advanced design with SMT and switch power supply technology, which reduces the dimensions of the rear sensor, and leads to a compact appearance of the balance
- ◆ Six-key integrated display panel for easy operation; Big handles for easy movement

### ◆ Ordering Information

Ordering Information → Technical Item ↓	FB124	FB224	FB223	FB323	FB423
Weighing Capacity (g)	120	220	220	320	420
Readability (mg)	0.1	0.1	1	1	1
Repeatability (≤mg)	±0.1	±0.1	±1	±1	±1
Linearity (≤mg)	±0.2	±0.2	±2	±2	±2
Pan Size (mm)	φ90	φ90	φ90	φ90	φ90



## Special Balance for Paint

These special balances are designed for paint, ink and other chemical fields. They have large LCD display and RS 232 output interface, and whole balance are metal construction, more durable. They can be calibrated automatically by external weights, have overload protection and check weight alarm function (the user can according to your requirements to set the upper and lower limit of the weight. And also have four weighing units (G,Ct,Oz,Dwt) and three test modes: counter, percent and weighing.



ES-K Series



ES-P Series

Technical Item → Ordering Information ↓	Capacity	Readability	Pan Size	Features
ES-P5K	5 KG	0.1g	Φ240mm	<ul style="list-style-type: none"> <li>◆ Paint mixing especially suitable for bad environment conditions.</li> <li>◆ Adjusting counting factor and calculation function</li> <li>◆ Independent display, stainless steel stand bar of display, Angle, height and direction can be adjusted by three-dimensional</li> </ul>
ES-P8K	8 KG	0.1g		
ES-P10K	10 KG	0.1g		
ES-16K	16KG	0.1g	330 × 380mm	<ul style="list-style-type: none"> <li>◆ High precision &amp; fast response</li> <li>◆ Function of being connected with external displayer</li> <li>◆ Check weighing, the limits of weight could be setup</li> <li>◆ Optional independent displayer and stainless displayer support with adjustable angle, height and position when</li> </ul>
ES-20K	20KG	0.1g		
ES-30K	30KG	0.1g		
ES-60K	60KG	0.5g		

## Bench Scale

- ◆ LCD display; Rechargeable, both AC and DC can be used;
- ◆ Weighing display react swift, stable and accurate;
- ◆ Low battery will be informed by electricity amount indicator.

### ◆ Ordering Information

Ordering Information → Technical Item ↓	CAP	Division	Platter	Power
BWS T01-60	60KG	2g	400*500mm	AC: 220V DC: 4V
BWS T01-150	150KG	5g		
BWS T01-300	300KG	10g		
BWS T01-500	500KG	20g	460*600mm	



## Fast Moisture Tester

These new Moisture Analyzers are ideal for routine moisture analysis requiring precise results. They combine high quality and durable construction into a sleek, compact design and offer dependable, accurate results for a wide variety of moisture analysis applications.

- ◆ With a large capacity of 110grams or 90 grams, it is ideal for food, agriculture, chemical, pharmaceutical and other applications that require measurements up to 0.01% (0.001g).
- ◆ Simple to Operate Set up and operation is extremely easy. Just press and hold buttons to set drying parameters. Is ideal for routine tasks performed by operators of all skill levels.
- ◆ Compact, Easy-to-Clean Design The compact footprint is designed to take up less space.
- ◆ The easy-to-clean heating chamber is ideal for frequent use and inexpensive maintenance.

Ordering Information → Technical Item ↓	MB23	MB25	MB27
Capacity	110 g		90 g
Repeatability (Std Dev)	0.3% (3g sample) 0.2% (10g sample)	0.2% (3g sample) 0.05% (10g sample)	0.2% (3 g sample) 0.05% (10 g sample)
Readability	0.1%/0.01g	0.05%/0.005g	0.01%/0.001 g
Sample Size	3g to 20g typical, 0.5g min.		
Interface	Bidirectional RS-232		
Timer	1 – 99 minutes, 30-second increments to 60 minutes		
Heating Technology	Infrared (no glass)		Halogen
Temperature Range	50°C to 160°C in 5°C increments		
Power	100 to 240 VAC, 50/60 Hz		
Tare Range	To capacity by subtraction		
Operating Temp. Range	5°C to 40°C		
Display Type	Custom backlit LCD		
Displays	% moisture or % solids or weight (g), temperature, time		
Pan Size (Diameter)	90mm		
Dimensions (W×H×D)	17cm×13cm×28cm		17cm×14cm×28cm
Net Weight	2.3 KG		
Shipping Weight	3.9 KG		



MB 25



MB 27

## Precise Oven

### Main Technical Parameters

- ★ Interior of oven is made of special stainless steel by argon-arc-welding technology, and the exterior of oven is made of high-quality steel sheet with a beautiful and novel appearance.
- ★ Microprocessor PID temperature controller with temperature control protection, digits display and timing function ensures a precise and reliable temperature control. (intelligent programmable LCD temperature controller is an option)
- ★ Hot-air circulating system consists of a fan keeping running under a high temperature and proper air ducts to ensure a uniform distribution a high temperature in chamber
- ★ Independent alarm system for temperature-limiting ensures experiments run safely and no accident would happen. (Option)
- ★ Recorder and printer are options which can print or record set parameters and trace variation curves of temperature. (Option)
- ★ Temperature Stability:  $\pm 1^{\circ}\text{C}$
- ★ Temperature Control:  $0.1^{\circ}\text{C}$
- ★ Timing Range: 1~9,999min



### ★ Ordering Information

Ordering Information → Technical Item ↓	Electrical Supply	Temperature Range	Power	Cubage	Interior Dimension (mm) W×D×H	Overall Dimension (mm) W×D×H	Shelves
BGD 802	220V 50HZ	RT+10–250°C	850W	30L	340×320×320	620×530×490	2 pcs
BGD 804	220V 50HZ	RT+10–300°C	850W	30L	340×320×320	620×530×490	2 pcs
BGD 806	220V 50HZ	RT+10–300°C	1100W	50L	420×395×350	720×590×520	2 pcs
BGD 808	220V 50HZ	RT+10–250°C	1550W	80L	450×400×450	740×618×630	2 pcs
BGD 810	220V 50HZ	RT+10–300°C	1550W	80L	450×400×450	740×618×630	2 pcs
BGD 812	220V 50HZ	RT+10–250°C	2050W	136L	550×450×550	840×670×730	2 pcs
BGD 814	220V 50HZ	RT+10–300°C	2050W	136L	550×450×550	840×670×730	2 pcs
BGD 816	220V 50HZ	RT+10–250°C	2450W	220L	600×500×750	880×720×930	2 pcs
BGD 818	220V 50HZ	RT+10–300°C	2450W	220L	600×500×750	880×720×930	2 pcs
BGD 820	380V 50HZ	RT+10–250°C	3100W	420L	640×585×1355	780×750×1880	2 pcs
BGD 822	380V 50HZ	RT+10–300°C	3100W	420L	640×585×1355	780×750×1880	2 pcs
BGD 824	380V 50HZ	RT+10–250°C	4000W	620L	840×600×1355	980×800×1880	3 pcs
BGD 826	380V 50HZ	RT+10–300°C	4000W	620L	840×600×1355	980×800×1880	3 pcs
BGD 827/1	220V 50HZ	RT+10–400°C	2500W	50L	350×350×400	540×660×615	2 pcs
BGD 827/2	220V 50HZ	RT+10–500°C	2500W	50L	350×350×400	540×660×615	2 pcs
BGD 828/1	220V 50HZ	RT+10–400°C	3000W	100L	450×450×450	620×745×645	2 pcs
BGD 828/2	220V 50HZ	RT+10–500°C	3000W	100L	450×450×450	620×745×645	2 pcs
BGD 829/1	220V 50HZ	RT+10–400°C	3500W	220L	600×600×600	1000×1000×1300	2 pcs
BGD 829/2	220V 50HZ	RT+10–500°C	3500W	220L	600×600×600	1000×1000×1300	2 pcs

## One-body High-Temperature Oven (Muffle Kiln)

The new generation box resistance oven is integrated with the Company's years of experiences in design and manufacturing as well as foreign technologies. It is of various design patents and is especially supplied to the laboratories of factories, mines, universities and scientific research institutions for chemical element analysis and such high-temperature treatment as quenching, annealing and tempering of small castings. It can also be used for such high-temperature heating as baking, dissolving and analyzing of metals, graphite and ceramic.

### Features of Product

- ◆ Unique design of oven door for safe and easy operation to ensure that the high-temperature hot gas will not escape for inside the oven.
- ◆ Inert gas inlet and outlet reserved in the chamber.
- ◆ Micro-computer PID Controller: easy operation, accurate, reliable and safe control.
- ◆ Inside lining of fire-door and box panel are both made of stainless steel materials and are featured for corrosion-resistance and free deformation under high temperature.
- ◆ Light chamber for durable service ( refractory-brick chamber and ceramic-fiber chamber are optional )
- ◆ With excellent door seal, thermal loss is minimized and temperature evenness is increased in the chamber.



### Optional: 30-segment programmable controller

(each segment can setup "heating" or "stop" and the circulation of programmed temperature, time heating power is provided. )

Ordering Information → Technical Item ↓	Max Temp(°C)	Chamber Size W×P×H(mm)	Capacity	Power	Input Power	Heating Element
SX2-2.5-10	1,000	200×120×80	2L	220V/50HZ	2.5 KW	heating cord
SX2-4-10	1,000	300×200×120	7L	220V/50HZ	4 KW	heating cord
SX2-8-10	1,000	400×250×160	16L	380V/50HZ	8 KW	heating cord
SX2-12-10	1,000	500×300×200	30L	380V/50HZ	12 KW	heating cord
SX2-2.5-12	1,200	200×120×80	2L	220V/50HZ	2.5 KW	heating cord
SX2-5-12	1,200	300×200×120	7L	220V/50HZ	5 KW	heating cord
SX2-10-12	1,200	400×250×160	16L	380V/50HZ	10 KW	heating cord
SX2-4-13	1,300	250×150×100	4L	220V/50HZ	4 KW	heating cord
SX2-6-13	1,300	400×200×160	13L	380V/50HZ	6 KW	heating cord
SX2-8-13	1,300	500×200×180	18L	380V/50HZ	8 KW	heating cord
SX2-8-16	1,600	300×150×120	5.4 L	380V/50HZ	8 KW	Globar
SX2-12-16	1,600	400×250×160	13 L	380V/50HZ	12 KW	Globar
<b>Remarks</b>	① For every chamber, we offer two types inner material, one is "refractory-brick" marked with "N", the other is "ceramic-fiber" marked with "T", please mark it when you place order. ② Optional accessory: Programmable controller with 30-segments or 60-segments					

## UV Solidify Machine

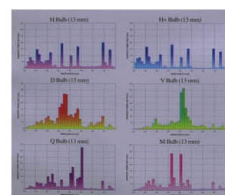
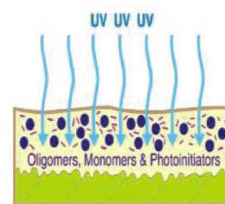
**U**V Solidify Machine is used widely for UV paint, UV glue, UV inks, UV gloss ink ; It is small, economic and practical as it's selling point, suit for small batches, trial production or used in small enterprise and also is welcomed in painting, glue manufacturers for research and development.

- ◆ Portable and small with one UV lamp installed, which is suitable for operation line and also handwork;
- ◆ Easy to operate; one of mass production models, components selected are standardized; simple operation and maintenance with low cost;
- ◆ Reasonable exhaust design with effective cooling system;
- ◆ Speed can be set free within the effective scope;

### Main Technical Parameters:

Ordering Information →	BGD 8212	BGD 8213	BGD 8313	BGD 8222	BGD 8223	BGD 8323
Parameters ↓						
Power supply	220VAC/50HZ			380VAC/50HZ		
Total power	2.2KW	2.2KW	3.5KW	5.0KW	5.0KW	7.2KW
UV lamp Power	2KW	2KW	3KW	2KW	2KW	3KW
Number of Lamp	1 pc	1 pc	1 pc	2 pcs	2 pcs	2 pcs
speed range	0-10 m/min					
Belt Material	Stainless steel or TEFLON					
Belt Width	200mm	300mm	300mm	200mm	300mm	300mm
Entrance Height	100mm					
Cooling System	Air Cooling					
Main Wavelength	365 nm					
Lamp Life	600hours , over 75% intensity					
UV lamp type/Unit power	High-pressure mercury lamp; 100w/m					

*We also accept the special custom-made UV Solidify machine order!!*



## UV Integrator (UV Radiometer Dosimeter)

The UV-Integrator is a high quality UV measuring instrument. It is used to measure UV energy of different light-sources, especially on printing machines and UV solidify machine. It is ideal to ensure quality control of printing and drying processes.

It is measuring an integral in the spectral range from 250-410 nm, with a peak at the area of 365 nm.

By addition of the incidence of the light quantities during the exposure cycle, relative values are calculated.

Because of uneven radiation distribution of the UV light source and different type of construction of the measuring devices by different manufacturers, different readings may appear under the same measurement conditions.

### Main Technical Parameters:

- ★ Spectral range: UV 250–410 nm
- ★ Measuring range: 0 to 5,000 mW/cm<sup>2</sup>
- ★ Display range: 0 to 999,999 mJ/cm<sup>2</sup>
- ★ Power source: 3V Lithium Battery ( Replaceable )
- ★ Shape: Disc structure, diameter is 95mm and height is 12mm
- ★ Weight: 160g
- ★ Work environment: While on the conveyer belt, it can withstand max.110°C for up to 10 seconds
- ★ Calibration period: one year
- ★ Ordering information: BGD 140--- UV Integrator



## Heating Bath

Heating Bath Provided to colleges, industrial and mining enterprises and scientific research departments for precise constant temperature and auxiliary heating. It is controlled by microprocessor and with timing function.

### Main Technical Parameters:

- ★ interior of bath is made of stainless steel with a beautiful and novel appearance.
- ★ Digits display, Microprocessor control with timing function.
- ★ Audible and visible tracking alarm indicates over temperature, which provide samples reliable protection.
- ★ Power Supply: 220V 50HZ
- ★ Temperature Stability: ± 0.5°C
- ★ Temperature Track Alarm: +2°C
- ★ Timing Range: 1 ~ 9999min



Ordering Information → Technical Item ↓	Temperature Range	Power	Cubage	interior Dimension (mm) W×D×H	Overall Dimension (mm) W×D×H
BGD 834	RT+5~99 °C	500W	11L	420 × 180 × 150	570 × 270 × 260
BGD 835	RT+5~99 °C	1000W	34L	600 × 300 × 190	750 × 400 × 300
BGD 836	RT+5~99 °C	400W	12L	320 × 240 × 160	460 × 280 × 190
BGD 837	RT+5~99 °C	600W	22L	450 × 300 × 160	610 × 340 × 190
BGD 838	RT+5~99 °C	1000W	30L	600 × 300 × 160	760 × 340 × 190



## Water/Oil Bath Kettle

Provided to colleges, industrial and mining enterprises and scientific research departments for precise constant temperature and auxiliary heating.

### Features

- ◆ interior of bath is made of stainless steel and the center lids can be removable discretionarily.
- ◆ High precision microprocessor temperature controller ensures a precise and reliable temperature control.
- ◆ Audible and visible tracking alarm indicates over-temperature, which provide samples reliable protection.

### ★ Ordering Information

Ordering Information → Technical Item ↓	Water Bath (with removable center lids)				Oil Bath	
	BGD 830	BGD 831	BGD 832	BGD 833	BGD 839	BGD 840
Electrical Requirements	220V 50HZ				220V 50HZ	
Input Power	500W	1000W	1500W	2000W	1000W	2000W
Temperature Range	From ambient+5 to 99°C				From ambient+5 to 200°C	
Temperature Stability	± 0.5°C				± 0.5°C	
Tracking Alarm	± 0.2°C				± 0.2°C	
Chamber Capacity	4.9L	9.9L	14.8L	19.8L	12 L	20 L
Interior Dimension ( mm ) W×D×H	150×300×110	300×300×110	450×300×110	600×300×110	250×250×200	400×250×200
Timing Range	1~9999min				1~9999min	
Note	Two holes	Double columns four holes	Double columns six holes	Double columns eight holes	---	---



Water Bath



Oil Bath

## Low Temperature Thermostatic Bath

**T**HD series Low Temperature Thermostatic Bath is widely used in the fields of biological engineering, medicine, food, chemical industry, chemical analysis, petroleum, etc, providing a constant high precise, controlled, temperature homogeneous place for users. Its temperature is controlled by microprocessor with PID regulator. It has such advantages as fastness in temperature rising and dropping, high precision in controlling temperature.



### Main Technical Parameters:

Ordering Information → Technica Item ↓	Range of Temperature (°C)	Fluctuating degree of temperature (°C)	Volume of inner container (mm)	Volume of inner	Szie of opening (mm)	Depeth (mm)	Pump flux (L/min)
THD-05	0 ~ 100	± 0.05	260 × 170 × 120	6 L	150 × 150	150	6
THD-0506	-5 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-0515	-5 ~ 100	± 0.05	300 × 250 × 200	15L	235 × 180	220	6
THD-0530	-5 ~ 100	± 0.05	400 × 325 × 230	30L	310 × 280	230	13
THD-1006	-10 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-2006	-20 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-2015	-20 ~ 100	± 0.05	300 × 250 × 200	15L	235 × 180	200	6
THD-2030	-20 ~ 100	± 0.05	400 × 325 × 230	30L	310 × 280	230	13
THD-3006	-30 ~ 100	± 0.1	250 × 200 × 120	6L	180 × 150	120	6
THD-3010	-30 ~ 100	± 0.1	250 × 200 × 200	10L	180 × 150	200	6
THD-3015	-30 ~ 100	± 0.1	300 × 250 × 200	15L	235 × 180	200	6
THD-3030	-30 ~ 100	± 0.1	400 × 325 × 230	30L	310 × 280	230	13
THD-4006	-40 ~ 100	± 0.1	250 × 200 × 120	6L	180 × 150	120	6
THD-08W	0 ~ 100	± 0.05	290 × 180 × 150	8L	155 × 155	150	10
THD-1008W	-10 ~ 100	± 0.05	290 × 180 × 150	8L	155 × 155	150	8
THD-2008W	-21 ~ 100	± 0.05	280 × 250 × 130	9 L	235 × 150	100	6
THD-1015W	-10 ~ 100	± 0.05	300 × 250 × 200	15 L	235 × 180	200	6

## Laboratory Freezers

Laboratory Freezers are designed to test the freeze-thaw-resisting test of paint or temperature variation resisting test of film.

### Main Technical Parameters:

- ★ Microprocessor temperature control
- ★ Digital temperature display
- ★ Alarms for over temperature and under temperature
- ★ Malfunction alarms for over/under temperature, and sensor error
- ★ Alarm signals audible and flashing
- ★ Highly efficient deafness compressor
- ★ CFC-free refrigerants
- ★ High density insulation with excellent insulation properties
- ★ Superior cooling performance with optimized evaporator and condenser
- ★ Drawer designs for convenience of storing and accessing materials
- ★ LED digital temperature display for easy observation
- ★ Wide applicable voltage tolerance of 187 VAC to 242 VAC
- ★ Door handle design for easy operation
- ★ Casters for easy moving unit



Horizontal



Vertical

Ordering Information → Technical Item ↓	Temperature Range (°C)	Volume (L)	Working Room Size (mm) L×W×H	Overall Size (mm) L×W×H
DW-25L92	-10 ~ -25	92	435 × 410 × 635	597 × 610 × 860
DW-40L92	-20 ~ -40	92	435 × 410 × 635	597 × 610 × 860
DW-25W198	-10 ~ -25	198	802 × 387 × 696	940 × 560 × 845
DW-25W 388	-10 ~ -25	388	1114 × 529 × 690	1240 × 745 × 845
DW-25L262	-10 ~ -25	262	480 × 462 × 1430	657 × 685 × 1665
DW-40W100	-20 ~ -40	100	500 × 385 × 625	680 × 600 × 805
DW-40W255	-20 ~ -40	255	1040 × 430 × 605	1243 × 633 × 838
DW-40W380	-20 ~ -40	380	1376 × 457 × 625	1550 × 633 × 838
DW-40L278J	-20 ~ -40	278	520 × 435 × 1230	736 × 6600 × 1810
DW-40L348J	-20 ~ -40	348	535 × 650 × 1228	715 × 840 × 1860

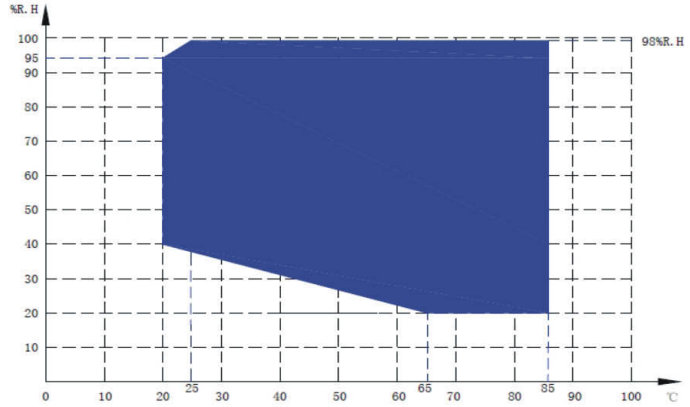
Note: "L" indicate Vertical; "W" indicate Horizontal

# High-Low Temperature & Humidity Cabinet (Climate Chamber)

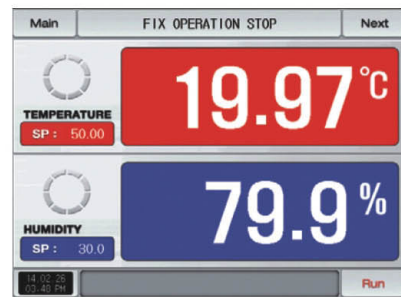
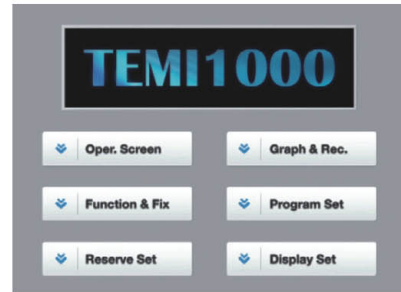
These new programmable cabinets with a precise system of temperature and humidity control, which provide various necessary environmental simulative conditions for industrial research and biotechnology tests. Widely applied in sterile tests and stability check-up of pharmaceuticals, textile and food processing as well as tests in material performance, packing and lifetime of industrial products.

### Main Technical Parameters:

- ★ Temperature Uniformity:  $\leq 2^{\circ}\text{C}$
- ★ Humidity Uniformity:  $\pm 2\% \text{RH}$
- ★ Temperature Stability:  $\pm 0.5^{\circ}\text{C}$
- ★ Humidity Stability:  $\leq 2\% \sim 3\% \text{RH} (\geq 75\% \text{RH})$   
or  $\leq \pm 5\% \text{RH} (\leq 75\% \text{RH})$
- ★ Temperature Increasing Rate:  $\geq 3.5^{\circ}\text{C} / \text{min}$   
(no-load, average value during the whole test)
- ★ Temperature Decreasing Rate:  $1^{\circ}\text{C} / \text{min}$   
(no-load, average value during the whole test)
- ★ Power Supply: 220V/380V; 50HZ
- ★ Total Power: 5.5KW



**Note:** Temperature and relative humidity influence each other, for Biuged Climate chambers, controllable area is remarked by blue area as above picture



Ordering Information	Temperature Range	Humidity Range	Total Power/ Max. Current	Working Room Size (W×H×D)	Overall Size (W×H×D)
BGD 897/100B	-20 ~ 150°C	20 ~ 98%	4.6KW/16A	400 × 500 × 500mm	900 × 1400 × 1150mm
BGD 897/100C	-40 ~ 150°C				
BGD 897/100D	-60 ~ 150°C				
BGD 897/225B	-20 ~ 150°C		5.5KW/22A	500 × 750 × 600mm	1000 × 1650 × 1250mm
BGD 897/225C	-40 ~ 150°C				
BGD 897/225D	-60 ~ 150°C				
BGD 897/408B	-20 ~ 150°C				
			11KW/12A (380V)	800 × 950 × 800mm	1300 × 1850 × 1400mm

## 1.0 Structure Feature

Chamber Structure	<p><b>Internal material:</b> 304# stainless steel with thickness is 1.2mm</p> <p><b>External material:</b> 1.2mm baking finish cold roll steel plate with advanced static electricity spray process.</p> <p><b>Heat preservation material:</b> polyurethane foam rubber with 100 mm thick</p> <p><b>Others:</b> install the positioning foot cup and movable trundles under the test chamber bottom; top of chamber equips automatic pressure relief hole, bottom of inner chamber equips drainage hole, can</p>
Air Adjustment Channel	Inside air space, recirculating wind channel and stainless steel cycle fan, through the top window and air diffuser, the wind will out uniformly from the top, let the reconciled temperature from the harmonic room diffuses to the test area, which could reach the purpose of control temperature uniformly.
Chamber Door	<ul style="list-style-type: none"> <li>◆ Single open door</li> <li>◆ Anti-explosion</li> <li>◆ Anti-condensation electric heating device</li> <li>◆ Vacuum auto-defog transparent window</li> <li>◆ Window floodlight</li> </ul>
Cable Port	Install a $\Phi 50$ mm test hole on the left of the machine, and equip related seal device for connecting with power test
View Window	Designed in the door with 230×270mm transparent electric radiant heating film with cavity toughened glass(equipped with anti-condensation function)
Control System	TEMI 1500 Touch Screen LCD, imported from Korea, floodlight switch, main power switch
Cooling System	Refrigeration system, heating device, fan, dewatering device, adjustable back window
Sample Shelf	Adopt 304# stainless bent into net sharp, easy for use, the distance between the material frame could be adjusted(the smallest distance is 50mm), standard equipped two pieces
Electrical Room	Main power breaker, controller, distribution plate, radiating fan, over temperature protector
Heating System	Adopt the scale heat rejection heating pipe P.I.D. control the heating so let the temperature gets the balance

## 2.0 Refrigerating System

Refrigeration Method	To keep the cooling rate and minimum temperature requirement, we use single stage refrigeration system
Refrigeration Compressor	Adopt low temperature compressor from European
Cooling System	Air-cooled scale condenser, circulating fan for heat dissipation
Evaporimeter	Finned tube heat exchanger
Throttling Device	Thermostatic expansion valve, capillary tube
Dry filter	Absorption for the residual water and acidic material from refrigerating fluid in refrigerating system, filtrate the solid impurity grain, copper cuttings of system, keep the normal working of expansion valve and capillary, in case of ice blockage and filth blockage
Refrigerating Fluid	Adopt environment protected refrigerating fluid R404A

## 3.0 Electrical Control System

Controller	Korea SAMWON, LCD touch screen controller TEMI 1500
Display Interface	<ul style="list-style-type: none"> <li>◆ Display screen dimension: 5.7 inches colorful touch screen conversational mode</li> <li>◆ Temperature set value ( SV ), current value ( PV ) displays directly</li> <li>◆ Can display the temperature output value</li> <li>◆ The execute program number, section, procedure time and time signal control condition can be displayed</li> <li>◆ Can display auto-calculus picture and procedure standby light-flooding picture</li> <li>◆ Can display record data and curve condition picture</li> <li>◆ Can display current curve and edit procedure curve and history running curves</li> <li>◆ Can display fault indicated and simple fault exhaust</li> </ul>
Communication	RS-232 communicate interface, can used as monitoring and remote control system, record the test data
Running Method	Program mode / definite value mode
Set Method	English interface, touch screen input
Procedure Capacity And Control Function	<ul style="list-style-type: none"> <li>◆ Operational procedure capacity: max:120 groups; one procedure could consist of 1 to 99 sections.</li> <li>◆ Operational memory capacity: 1200 sections, could repeat executive command: each command could repeat 999 times, the slope setting of the procedure could be set through the timer shaft, the jointing use could be set among the procedures, the procedure making can adopt dialogue type, easy to operate with edit, eliminate and insert function, 4 groups of time signal output control (can control the test sample ON/OFF option).</li> <li>◆ 9 groups of PID parameter setting, the procedure will have the overleap section, keep functions; can show the curve and data collection; date and time adjustment function; button and picture lock (LOCK) function; can connect the computer, 8 points of DI abnormal input and 10 points of DO signal control</li> </ul>

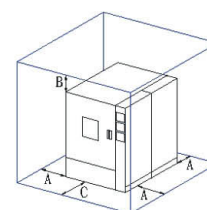
SD Storage Card	Used to store test date and test curve, standard storage capacity is 2G, storage time is about 2 years
Setting Range	Up/down limitation of maximum temperature range is 5°C
Display Resolution	Temperature: 0.01°C; time: 1min;
Memory Function when Power off	Can set recovery mode in case of power off : heating/ cold/ stop
Make an appointment function	Can set available machine time randomly, after turn on the power, the machine will run automatically
Input	PT100 type platinum resistor
Curve record function	Equip with battery protection RAM, can save the set value, sampling value and sampling time of the machine; Max record time is 60 days ( when the sampling cycle is 1.5min )
Software use environment	IBM PC compatible machine, above P II CPU, more than 128M RAM, simplified Chinese Windows2000 or simplified Chinese WindowsXP operation system.
Circulating fan	Low noise with many wing centrifugal fan
Heater	Import nichrome electronic heater and heater control mode is contactless equal cycle recurrent pulse adjust wide, SSR ( solid-state relay )
Control Mode	Anti-integral saturation PID, BTC balance adjust temperature control mode ( temperature test equipment )

#### 4.0 Humidify and Dehumidify System

Water Supply	Big water tank
Humidify And Dehumidify Method	Adopts outer humidify, compressor start to dehumidify, P.I.D controls the humidify volume to reach the need humidity
Water Quality Request	Resisitivity $\geq 500\Omega \cdot m$
Water Supplement Method	Chamber reserves the water supplement port and water level viewing window, please supply water when the water level is too low
Humidify Water Supply	Inner equipped with a micro water pump, and only needs to add water to the water tank. The water pump is automatically added to the humidifying boiler according to the water level in the humidifying boiler

#### 5.0 Safety Protection Device

Refrigerating System	Compressor overheat/over current/ over pressure, condensation fan overheat
Test Chamber	Over temperature limitation, fan/motor over temperature relay
Power	Earth leakage protection, overload protection, short-circuit protection
Installation Site Requirement	<ul style="list-style-type: none"> <li>◆ the distance between the wall and left/right/back should be at least 600mm(A/B)</li> <li>◆ the distance between the wall and the front side of the machine should be at least 1200mm(C)</li> <li>◆ please make sure the gate, gallery and elevator could pass the machine in case of affect to your company normal working</li> </ul>
Storage Environmental Requirement	Environmental temperature of the machine keep within 0°C ~ +40°C



Biuged-Designed Control System



Controller TEMI 1500



Refrigeration compressor from Europe

## Programmable Salt Spray (Fog) Cabinets

The salt spray test is a standardized test method used to check corrosion resistance of coated samples. Coatings provide corrosion resistance to metallic parts made of steel, zamak or brass. Since coatings can provide a high corrosion resistance through the intended life of the part in use, it is necessary to check corrosion resistance by other means. Salt spray test is an accelerated corrosion test that produces a corrosive attack to the coated samples in order to predict its suitability in use as a protective finish. The appearance of corrosion products (oxides) is evaluated after a period of time. Test duration depends on the corrosion resistance of the coating; the more corrosion resistant the coating is, the longer the period in testing without showing signs of corrosion.

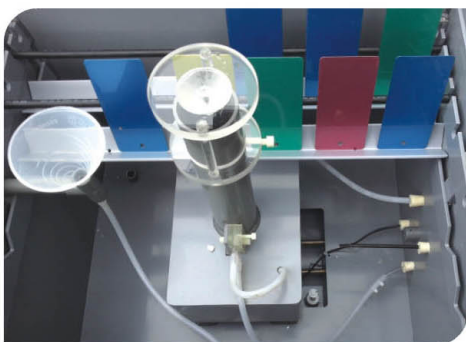
Salt spray testing is popular because it is cheap, quick, well standardized and reasonably repeatable. There is, however, only a weak correlation between the duration in salt spray test and the expected life of a coating (especially on hot dip galvanized steel where drying cycles are important for durability), since corrosion is a very complicated process and can be influenced by many external factors. Nevertheless, salt spray test is widely used in the industrial sector for the evaluation of corrosion resistance of finished surfaces or parts.

The apparatus for testing consists of a closed testing chamber, where a salted solution (mainly, a solution of 5% sodium chloride) is atomized by means of a nozzle. This produces a corrosive environment of dense saline fog in the chamber so that parts exposed in it are subjected to severely corrosive conditions.

Tests performed with a standardized 5% solution of NaCl are known as NSS (neutral salt spray). Results are represented generally as testing hours in NSS without appearance of corrosion products (e.g. 720 h in NSS according to ISO 9227). Other solutions are acetic acid (ASS test) and acetic acid with copper chloride (CASS test), each one chosen for the evaluation of decorative coatings, such as electroplated copper-nickel-chromium, electroplated copper-nickel or anodized aluminium.

Some sources do not recommend to use ASS or CASS test cabinets interchangeably for NSS tests, as it is claimed that a thorough cleaning of the cabinet after ASS or CASS test is very difficult. ASTM does not address this issue, but ISO 9227 does not recommend it and if it is to be done, advocates a thorough cleaning.

Biuged offer various Salt Spray Cabinets from 150L capacity to customized cabinets according to different requirements. All of cabinets not only can run NSS test but also CASS or ASS test



### Standards

**ISO 4611** 《Plastics Determination of the effects of exposure to damp heat, water spray and salt mist》

**ISO 7253** 《Paints and varnishes -- Determination of resistance to neutral salt spray (fog) 》

**ISO 9227** 《Corrosion tests in artificial atmospheres -- Salt spray tests 》

**ASTM B 117** 《Standard Practice for Operating Salt Spray (Fog) Apparatus 》

**ASTM B368** 《Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test) 》

**ASTM B 380** 《Standard Test Method for Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodokote Procedure 》

**ASTM G85 - 11** 《Standard Practice for Modified Salt Spray (Fog) Testing 》

**ASTM D 1735** 《Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus 》

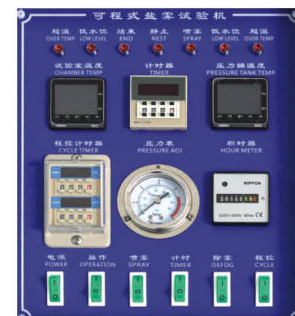
**DIN 50021** 《Salt Spray Testing 》

## Features

1.0 Structure Feature	
Chamber Structure	<ul style="list-style-type: none"> <li>◆ Cabinets are made of imported 1.5mm PVC ploy plate ( Nanya, Taiwan ) , max. durable temperature is 85 °C</li> <li>◆ Cabinet sealing cover is made of European 6mm acrylic sheets</li> <li>◆ Salt solution reservoir equipped with water level is designe in the chamber,easy to clean</li> <li>◆ Humidifying tower is made of SUS 304#, endurable high pressure and good thermal insulation effect.</li> <li>◆ Specimen supports designed specially ensure a adjustable position angle for each specimen in order to get a uniform fog and a big specimen in order to get a uniform fog and a big specimen capacity.</li> <li>◆ Use water to seal working room, ensure the corrosion fog not to leak.</li> <li>◆ Electric system is separated from water system, avoid water to enter electric control box to damage accessories</li> <li>◆ There is a hole used to drain off fog at the back and bottom of chamber, its damater is 48mm, just used other pipe to connect this hole to drain off the fog from the working room</li> </ul>
Chamber Sealing Cover	V shape , the top ange is 100° , prevent condensate water during the test from dropping to specimen surface and affect testing results.
Atomizing Tower	In order to ensure the working room to get uniform fog while spraying, this chamber use a special structure glass nozzle to atomize salt solution absolutely, then fog enter a subuliform tower installed in the working room and spray to all working room uniformly. The installation height of atomizing tower can be adjusted to control spray fog amount precisely.
Fog Collector	Fog collectors are tapered funnels whose diameter are 100mm and installed in the working room.At the bottom of the funnel, there is a silicone pipe which connect with graduated cylinder installed outside. These graduated cylinders are used to monitor spray fog amount
Heating System	For working room, heating tube is made of titanium alloy, water vapour heat the working room under the control of P.I.D
Salt Solution Supply	The salt solution prepared well is stored in salt solution reservoir, and flow into supplying container under the water level difference. This supplying container is equipped with an automatic water leveling device which can control automatically the max. water level to keep a certain distance with spray nozzels.
Humidifying Tower	Is made of SUS304# stainless steel, and its temperature can be set from RT–63°C and heating up time≤ 60 min, can add water automatically.Water level is monitored and system would alarm once exceed set level value.
Heater	Armoured titanium alloy electric heating tube ( at the bottom of working room ) Armoured SUS316# electirc heating tube ( Humidifying tower ) Heating controlling method: SSR
2.0 Fog Spray System	
Spray Fog Principle	Use Bernouilli's principle to absorb salt solution then atomize it Air Compressor→Oil–water Separator ( first ) →Air Storage Tank→Relief Valve→Total Solenoid Valve→Oil–water Separator ( second ) →Saturator→Pressure Regulating Valve→Solenoid Valve for spraying→Spray Nozzle
Spray Nozzle	Made of special glass, can control fog amount and spraying angle
Spray Pressure	Spray pressure can be adjusted from 0.07MPa to 0.17 MPa, in order to make sure the spray pressure generated from spray nozzle be within the range of standard requirments, it is divided into two steps, adjust air pressure to 0.2MPa to 0.3 MPa as the first step, then adjust to 0.07MPa to 0.17 MPa under the second step
Drain away Fog	Can drain away fog by manual or set a program to do it. Feed fresh compressed air to working room then drain away the fog of the working room quickly
3.0 Electronic Control System	
Controller	E5CC digital display temperature controller imported from Omron, Japan. control working room and humidifying tower temperature
Working Method	Worked at fixed value, starting and stopping is timed
Setting Method	English menu, input data by key
Display Resolution	0.1°C ( temperature )
Timer	Digital display , can set second, minute, 10 minutes, hour, 10 hours , max.is 9,999 hours, min.is 1 second
Programme Controller	Digital display , spray time and interval time can be set freely, infinite cycle. Timing unit: second, minute, 10 minutes, hour, 10 hours ( switch freely ) max.is 9,999 hours, min.is 1 second.
4.0 Safety Protection Device	
Cabinet	Over temperature protection, water leakage protection
Humidifying Tower	Over temperature protection, water leakage protection



Heating System	Anti-dry safety protection: all heaters of the cabinet are fitted with a temperature limit protection, which can effectively solve the problem of overheating , heating tube dried , abnormal water supply, short circuit and overload etc.
Water Supply	Water level protector for working room, low water level protector for humidifying tower
Power	Earth leakage protection, overload and short-circuit protection



### Main Technical Parameters:

- ★ Working Room Temperature Range: RT ~ 50°C
- ★ Humidifying Tower Temperature Range: RT ~ 63°C
- ★ Temperature Uniformity:  $\leq \pm 2^{\circ}\text{C}$  (No-load)
- ★ Temperature Stability:  $\leq \pm 0.5^{\circ}\text{C}$  (No-load)
- ★ Temperature Deviation of Working Room:  $\pm 1.0^{\circ}\text{C}$
- ★ Temperature Increasing Rate: RT→55°C less than 60 minutes ( working room ) ;  
Rt→63°C less than 60 minutes ( saturated barrel )

Ordering Information → Technical Parameters ↓	BGD 880/S	BGD 881/S	BGD 882/S	BGD 883/S
Working Room Size ( W×H×D), mm	1150×1090×672	1450×1200×842	2080×1285×1240	2480×1520×1450
Working Room Capacity (no including V shape cover)	108 L	270 L	480 L	800 L
Overall Size ( W×H×D), mm	600×400×450	900×500×600	1200×500×800	1600×500×1000
Qua. of V Shape sample holder/pole	4/6	6/12	8/16	10/22
Tank capacity for Salt Solution	15	25	40	45
Collectors	1	2	2	2
Max. Sample Capacity ( 15cm×7cm )	28pcs	70pcs	108pcs	120pcs
Method of Opening Cover	Manual	Manual	Pneumatic	Pneumatic
Total Power	2.2 KW	2.2 KW	3.8 KW	3.8 KW
Salt Solution Consumption	15 L/d	15 L/d	25 L/d	25 L/d
Water for heating Consumption	30 L/d	30 L/d	40 L/d	40 L/d
Compressed Air Consumption	1m <sup>3</sup> /h	1m <sup>3</sup> /h	2m <sup>3</sup> /h	2m <sup>3</sup> /h
Power Supply	220V; 50/60HZ			

## ISO Scratching Tool

**B** GD 1285 ISO Scratching Tool is a simple but effective instrument which is used to scratch the surface of samples in preparation for adhesion, salt spray and corrosion tests. The tool is held horizontally and pulled across the sample to produce the scratch.

It is be used in according with ISO 17872: 2007, ISO 2063, ISO 7253, BS 7479. There are two “V” shape cutters at one end , and two “U” shape cutters at the other end. All cutters are made of special tungsten steel and can be replaced easily. Having this scratch tool, operator can do “V” or “U” shape scratch easily and quickly.

- ★ **Ordering Information:** BGD 1285---ISO Scratching Tool
- BGD 1285/V---V shape cutter
- BGD 1285/U---U shape cutter



## Cyclic Corrosion Test (CCT) Cabinets

For most artificial accelerated tests in laboratory, getting a consistent testing results with outdoor is the most important purpose. Prior to cyclic corrosion testing, conventional salt spray (a continuous salt spray at 35 °C), was the most popular way to simulate corrosion in a lab. Because conventional salt spray methods failed to simulate the natural wet/dry cycles of the outdoors, test results frequently provided poor correlation to outdoors.

In a typical cyclic corrosion cabinets, all specimens are exposed to a series of different environments in a repetitive cycle that simulates the outdoors. Simple cycles, such as Prohesion, may consist of cycling between salt fog and dry conditions. More sophisticated automotive methods may ask for multi-step cycles that incorporate humidity, dry air or condensation, along with salt spray and dry-off.

Within one chamber, users can cycle easily through a series of the most significant corrosion environments. Even extremely complex test cycles can easily be programmed with the controller. Biuged CCT Cabinets can perform salt spray, Prohesion, and 100% humidity for most cyclic automotive tests.



### Standards

**ISO 4611** 《Plastics Determination of the effects of exposure to damp heat, water spray and salt mist》

**ISO 7253** 《Paints and varnishes -- Determination of resistance to neutral salt spray (fog) 》

**ISO 9227** 《Corrosion tests in artificial atmospheres -- Salt spray tests》

**ISO 11493** 《Corrosion of metals and alloys - Accelerated testing involving cyclic exposure to salt mist, "dry" and "wet" conditions》

**ISO DIN EN 16151** 《Corrosion of Metals and Alloys - Accelerated Cyclic Tests With Exposure to Acidified Salt Spray, "dry" and "wet" Conditions》

**ISO 16701** 《Corrosion of metals and alloys -- Corrosion in artificial atmosphere -- Accelerated corrosion test involving exposure under controlled conditions of humidity cycling and intermittent spraying of a salt solution》

**ASTM B 117** 《Standard Practice for Operating Salt Spray (Fog) Apparatus》

**ASTM B368** 《Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test) 》

**ASTM B 380** 《Standard Test Method for Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodokote Procedure》

**ASTM G85 - 11** 《Standard Practice for Modified Salt Spray (Fog) Testing》

**ASTM D 1735** 《Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus》

**DIN 50021** 《Salt Spray Testing》

### Features

#### 1. Cabinet Material

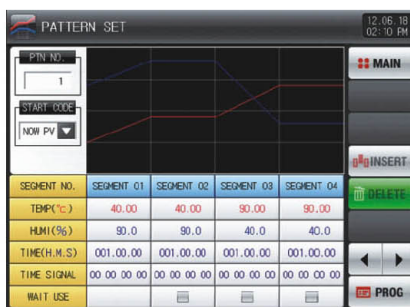
- ◆ Cabinet inner layer is made of 8mm thickness CPVC, the max. enduring temperature is 100°C;
- ◆ Cabinet outer layer is made of imported 6mm thickness PVC the max. enduring temperature is 85°C
- ◆ Inner box for controlling dry and humidity is made up of SUS 304# stainless steel, outer box is made of PVC. All insulation

Material is made of polyurethane (PU) epislastic plastic

- ◆ Sealing cover of working room is made of 8mm CPVC, with strengthening treatment. V shape , the top ange is 100°, prevent condensate water during the test from dropping to specimen surface and affect testing results. Moreover ,there is a transparent observing window made of tempered glass (400mm×400mm)
- ◆ Humidifying Tower: made of SUS304# stainless steel, enduring high pressure and good thermal insulation effect.
- ◆ Salt Solution Reservoir: made of CPVC, 25L capacity

## 2. Design Features

◆ **Working:** Sperate dry-wet test from salt spray test. When cabinet is working under salt spray testing, dry-wet controlling system would be closed automatically, avoid effectively salt fog to damage refrigeration system. When cabinet runs dry or wet test, system would switch to dry-wet controlling box by ventilation door, and salt spray testing would be stopped automatically. Intelligent TS time signals cycle the cabinet run dry, wet and spray salt test automatically.



◆ **Overall Design:** Left-middle-right arrangement for controlling box and working room: salt solution reservoir, water supply reservoir for humidifying, humidifying tower are on the left, working room in the middle and dry, wet controlling box on the right. Electric system is separated from water system, avoid water to enter electric control box to damage accessories.

◆ **Panel Supports:** A plane indexing rack is designed on the top of working room. Panel racks are divided into three layers: the upper layer is used to put round rod which is made of corrosion-resistant material, the middle layer is used to put V shape glass fiber rack. Through V shape rack and round rod position, the exposing angle of specimen panels can be adjusted to three different as 15°、30°、45°. The last layer is used to put big sample, a punched CPVC board is designed at the bottom of working room, this board is above the heating layer of cabinet (height from bottom is approx..250mm).with distributed uniformly holes design, it can avoid gathering too much solution, also be in favor of air-circulation in working room.

## 3. Spray Fog System

◆ **Spray Fog Principle:** Use Bernoulli's principle to absorb salt solution then atomize it, no any salt would crystallize at the spray nozzle and ensure a uniform fog distribution in whole the working room and continuous testing.

Air Compressor→Oil-water Separator (first) → Air Storage Tank→Relief Valve→Total Solenoid Valve→Oil-water Separator (second) →Saturator→Pressure Regulating Valve→Solenoid Valve for spraying→Spray Nozzle

◆ **Sprya Apparatus:** There is one or two atomizer towers in the middle of working room, ensure a uniform fog distribution in the room. At the bottom on atomizer tower, a salt solution supplying container is installed, in this container, there is a corrosion-resistant float for controlling water level which is used to control water level in the container automatically. Spray nozzle is installed above the container within 100mm height to ensure siphon range for spraying. On the top of spray nozzle, there are some extended CPVC pipes which ensure what the tested samples get are all fog ions, avoid condensate water because of incomplete atomization during the test from dropping to specimen surface and affect testing results. There is a subulate block whose height can be adjusted on the top of pipe, by adjusting the taper height, spraying amount can be adjusted to the standard requirements (1~2ml/80cm<sup>2</sup>·h)

◆ **Fog Collectors:** Tow fog collectors (tapered funnels whose diameter are 100mm) are used to monitor spray fog amount, one is near the atomizer tower and the other is far from. At the bottom of the funnel, there is a silicone pipe which connect with graduated cylinder installed outside. Operator can check the amount of collecting liquid in the graduated cylinders to judge if the spray fog amount is enough or not.

◆ **Spray Nozzle:** Made of special glass, can control fog amount and spraying angle

◆ **Spray Fog or Drain-away Fog:** Spray fog can be done by manual or setting a program. Draining-away fog also can be run by manual or setting a program (feed fresh compressed air to working room then drain away the fog of the working room quickly)

## 4. Main Components

◆ **Sealing System:** Cabinet body is sealed by high-temperature resistant and corrosion resistant silicone rubber, ensure corrosive gas don't leak. A air cylinder is designed to control cabinet's cover lifting up and down (by manual or automatically,

and speed can be adjusted by air pressure.) ,simple to operate. Moreover, specially designed air-door device can switch between salt spray test with temperature-humidity test, avoid effectively corrosive gas to enter the dry-wet controlling box and damage some components.

◆ **Air Circulation System:** There is a air room and a stainless steel wind turbine, through ventilation door, air is blown out through the air duct. Thus the air which have been adjusted to required temperature and humidity would be distributed to working room, then attain the goal which can ensure to get a stable working room with uniform temperature and humidity

◆ **Heating System:** Control heating amount by PID , then arrive a temperature balance. Humidifying and warming room adopts a Inconel heater, a wind turbine to supply air for a strong circulation. For working room, heating tube is made of titanium alloy heating tubes, heat air directly. For humidifying tower, uses a Armoured SUS316# electric heating tube to heat water. Pressured air enter the hot water, then overflow by the bubbles, thus get constant temperature and pure air for spraying

◆ **Humidifying and dehumidifying system:** adopt water steam to humidify and run the compressor to dehumidify. P.I.D control humidifying amount to get the required humidity.

◆ **Humidifying Tower:** Is made of SUS304# stainless steel.In order to ensure the pressured air for spraying is pure and with constant temperature, there is a specially designed heating apparatus for filtering air. Moreover, there are controlling water level apparatus, heating apparatus and controlling temperature system in this humidifying tower.At the bottom of tower, there are many small holes for overflowing pressured air.

The outside of humidifying tower connect with oil-water separator and pressure regulating valve of the air source. Pressure air to required value firstly then let air enter heating system, and water of humidifying tower through the small holes at the bottom of tower, and overflow by bubbles, then arrive the top of tower and supply the spray nozzle for spraying.

There are two water level sensors for supplying water automatically, one is near the bottom, the other is near the top, ensure humidifying tower's water level keep stably a required height , then ensure not only to get a pure saturated vapor, but also keep pressured air temperature be within required range for a long time. At the same time, there are also water level monitoring and limitation value alarm functions

## 5. Operation System

◆ **Imported programmable TEMI 2500 controller ( Touch screen ) :** 5.7 inches, 800× 480 lattice, TFT colorized LCD screen, show current working room temperature value and set temperature value, current RH value and set RH value, temperature current value and set value of humidify tower, set time and running time of test. At the same time, all shown temperature, RH and salt fog change datas can be recorded and downloaded in real-time

◆ **Programmable:** spray time and interval time can be set freely, max.continuous spraying time is 999.9 hours, max. spraying time for discontinuous spray is 99 hours and 59 minutes,max interval time ( no spray ) is 99 hours and 59 minutes; Can edit 120 programs, each program consists of 1~ 99 segments. Memory capacity is 1,200 segments and can execute command repeatedly ( each command can be executed for 999 times) .Different program time can be combined to run, segment time can be set from 1minute to 999 hours.

◆ **Communication Function:** RS-485/RS-232 interface, with local and telecommunication function. System come with a monitoring softwar ( need one COM port of PC ) , and can connect up to 16 computers. Operator can transfer freely all datas collected by monitoring software to EXCEL format

◆ **SD Card:** Come with a SD memory card, a software CD for PC. User can edit a program by software specialized for PC and store it in the SD card, then call out this program and store it in the controller. Of course, user also can copy the program in the controller to SD card, then store it in the PC to manage and analyze.

User also copy the testing data graph stored in the controller to SD card, then show or print it by PC software ( the printed data has a remark “no revise” ) , or transfer it to Access data file by Microsoft office.

Test data graph recorded by controller is : 2 routes temperature ( set temperature and real-time temperature ) ; 2 routes relative humidity ( set RH and real-time Rh )



Biuged-Designed Control System



Controller TEMI 2500



RS-232 Interface

## 6. Cooling System

◆ **Cooling methods:** Use a set compressor as cooling system, including a low-temperature cooling compressor imported from Europe, fined tube radiator, air-cooled scale-type condensation evaporator and throttle device ( thermal expansion valve/capillary ) , and use environment-friendly refrigerant R404a/R23 as this cooling medium of this system.

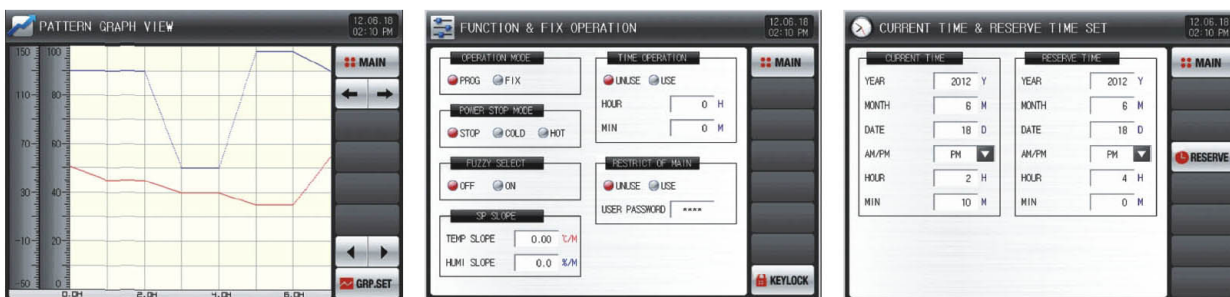
◆ **Features:**

A. All pipelines of system have passed by 22kg pressure leakage checking

- B. Heating system and cooling system is separated completely.
- C. With our company professional technology, design a special protection system to avoid high temperature and high pressure to start compressor
- D. All programs run cooling system are controlled by micro-computer completely.
- E. At the bottom of compressor, there is a drain pan which is used to collect condensation water generated from frosting
- F. Compressor comes with PTC temperature sensor, can protect itself once the temperature is over.
- G. With high or low pressure protection device, it can monitor the pressure of refrigerant when the chamber is working. Once the refrigerant pressure is higher than limiting pressure or lower than the lowest pressure set by system, it can alarm and power off till troubleshoot all problems.
- H. The whole cooling system is imported from imported brand, reliable quality and ensure a stable system.

**7. Safety Devices**

- ◆ **Cooling System:** For compressor, over-heat, over-load, over-pressure and over-temperature protection
- ◆ **Chamber:** Over limiting temperature protector, balance pressure automatically protector, prevent water at the bottom protector
- ◆ **Humidifying System:** Dry heating protector, water shortage protector for humidifying tube,
- ◆ **Heating System:** Over limiting temperature protector and short circuit protector for heating tube
- ◆ **Power:** Over-load protector, short circuit protector for main power. Over-load protector, short circuit protector, over the upper limit temperature protector, over-temperature protector for controlling wiring
- ◆ **Circulating Fan:** Over-load protector, over-temperature protector and anti-reversal protector



Ordering Information → Technical Parameters ↓	BGD 886/S	BGD 887/S	BGD 888/S
Working Room Size (W×H×D), mm	900 × 620 × 600	1200 × 760 × 1000	1600 × 760 × 1000
Working Room Capacity (no including V shape cover)	335 L	912 L	1216 L
Overall Size (W×H×D), mm	600 × 400 × 450	900 × 500 × 600	1200 × 500 × 800
Power/Max. Current	16KW/21A	23.6KW/28A	28KW/35A
Power Supply	AC 380V 3 phase 20A	AC 380V 3 phase 23A	AC 380V 3 phase 25A
Temperature Range	RT+10°C ~ 80°C		
Temperature Uniformity	± 2°C		
Temperature Stability	± 0.5°C		
Humidity Range	20% ~ 98%		
Humidity Uniformity	± 3% RH		
Humidity Stability	± 2% RH		
Salt Fog Precipitation	0.5 ~ 2ml/ 80cm <sup>3</sup> .h ( Adjustable )		
Spray Method	Continuous or Cyclical		
Required Work Environment	Tem.: 5~30°C; RH: 45%~85%RH; Barometric Pressure: 86kPa~106kPa		
Required Air Supply	Air consumption: 1m <sup>3</sup> /h, Pressured air without water and oil which has been dried and filtered, pressure is ( 0.4 ~ 0.8 ) Mpa		
Required Water Supply	Supplied by tap water, which is used for humidifier to pressure, heat and filter air. Water pressure should be ( 0.2 ~ 0.4 ) Mpa Note: Distilled water or deionized water is required for preparing spray solution, water consumption is near 20L/24hour under continuous spraying )		

**Note:** Temperature uniformity and stability datas are tested under 25°C environment temperature, RH = 85% and no any samples

# Accelerated Aging Test Chambers

Many polymer materials are often be damage by natural environmental factors which from Earth's surface and atmosphere when used outdoor. This affects their useful life. In order to properly assess their useful life in the outdoors, using the environmental testing equipment to simulation of each kinds of natural climatic conditions , study weather resistance of each kinds of products in the laboratory has become a widely and effective method.

For accelerated aging test, two most universal light sources in the world are Fluorescent UV lamp and Xenon lamp. Fluorescent UV lamp just simulates the UV part of full sunshine, so it's too difficult to get the consistent testing result between exposed sample and practical use sample. But xenon lamp can simulate the spectrum distribution of full spectrum sunshine. So, using the xenon lamps as light source to evaluate the fact lifetime of high polymer materials has higher feasibility.

As the earliest company in China who works on researching and developing accelerated aging test chambers, Biuged has rich experience and unique advantage in research and manufacture these aging chambers. Most of our aging testers are equipped with the same light source as Amercian similar products, thus ensure the test results have the comparability and repeatability. Moreover, considering the experimenters operation habits, we developed our own intellectual property rights controlling system. At the same time, Biuged has a lot of seasoned engineers who can offer strong and timely technical supporting.

According to different fields and different laboratories' requirements, Biuged developed more than ten different types aging chambers which cover from UV light accelerated aging testers to Xenon light accelerated aging testers, from bench type to console mode and cabinet type, from flatbed samples holder to rotating samples holder. For any experimenter, he always can find a suitable aging tester for his own application.

Now, there are more than one thousand Biuged's aging test chambers who are working everyday in all over the world. High efficiency and stable working status, affordable price , precise and accurate test results and professional technical supporting make Biuged products become preferred aging testers in many fields.

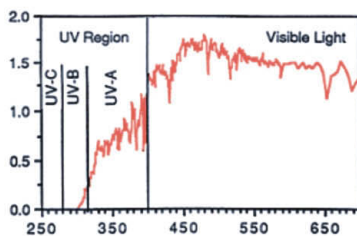
## UV Light Accelerated Aging Test Chambers

### Test Principle

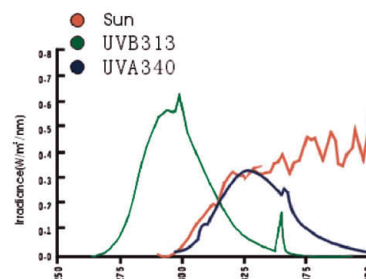
The ultraviolet rays of sunlight are the main factor who damage weathering resistance of most materials. We use UV lamps to simulate the short wave part of sunlight, it produce few visible lights and infrared lights. According to different testing requirements, we choose different wavelength UV lamps, this is because each type UV lamps produce different irradiance energy and wavelength. Generally speaking, UV lamps can be divided into UVA and UVB.

Different types fluorescent UV lamps are used in different fields, for example:

- ① **UVA-340 Lamp:** UVA-340 Lamp can highly simulate short-wave ultraviolet light of sunlight, the wavelength range is from 365 nm to 295 nm.
- ② **UVA 351 Lamp:** Simulates UV sunlight which has passed through the windows. It is excellent for testing materials aging process indoor.
- ③ **UVB 313 Lamp:** UVB-313 lamp emits stronger shortwave ultraviolet light compared with the ultraviolet rays on Earth, thus can accelerate material aging process. However, this lamp may cause some unrealistic material damage. It is mainly used in quality control, research and development, and the test of the materials with strong weather resistance.



Distribution of Sun Spectrum



The Spectrum comparison of UV and Sun

# UV Light Accelerated Aging Chamber

**BGD 852 Bench UV light Accelerated Aging Chamber** is an economic and easy-to-use machine which can meet some customers' requirements. It is equipped with 3 pcs 20W UV lamps as light sources. Operator can set the total illumination time, temperature, spray time etc to simulate the natural environment which would cause the damaged factor to samples.

This chamber can isolate 18 pcs standard panels (Size is 150×70mm). Samples are installed a column form rotating sample rack. During the test, the sample rack rotate uniformly and ensure every sample get the same irradiance energy, increase the comparability and repeatability of testing results.

## Features:

- ◆ Touch screen and user-friendly operation interface allow handlers set the test parameters and monitor all the test process easily.
- ◆ Equipped with professional UV lamps who has high irradiance energy: 0.90W/m<sup>2</sup> (UVA new lamp)
- ◆ Full stainless steel inner working room with sandwich design, never getting rusty and leakage. Also prevent water vapour coming from working room from entering electrical box and damaging electron components.
- ◆ Built-in water level switch, it will alarm and stop running automatically when under low water level.

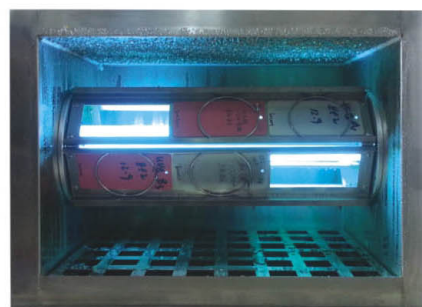


### Main Technical Parameters:

- ★ Total power: 1.2 KW
- ★ Power voltage: 220 ± 22V/50 ± 0.5Hz
- ★ Setable temperature range of working room: RT+5°C ~ 60°C
- ★ Setable range of test time: 1h ~ 9,999h
- ★ Setable range of spray time: 1min~9,999min
- ★ Setable range of spray interval time: 1min~9,999min
- ★ Rated life of lamp: 1,000h
- ★ Wave length of lamps: 313 nm (UVB Lamps) or 340 nm (UVA Lamps)
- ★ Lamp power: 3 pcs; each lamp is 20 W
- ★ Spray water: 2L/min
- ★ Capacity for test panels: 18 pcs standard size panels
- ★ Specification of sample: 150mm × 70mm
- ★ Cabinet Size: 930 × 460 × 630mm (L × D × H):
- ★ Net Weight: 72kg

### ★ Ordering Information:

- [BGD 852--- Bench UV Light Accelerated Aging Chamber](#)
- [BGD 8100--- UVB lamps \(20W/313nm\)](#)
- [BGD 8101--- UVA lamps \(20W/340nm\)](#)



Working Room



Operation Menu

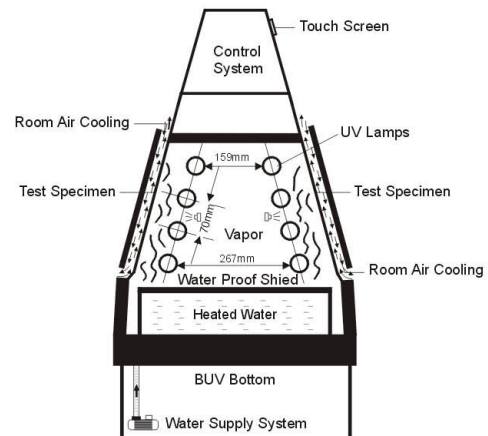
# UV Light Accelerated Weathering Tester

**B**GD 855 & 856 UV Light Accelerated Aging Test Chamber ( hereinafter referred as BUV ) adopts fluorescent UV lamp as the light source. Its inner temperature and humidity can be properly controlled to obtain the periodic condensation on the sample for fully evaluating the damaged factor caused by sunlight, moisture and temperature (materials aging phenomenon includes fading, disluster, intensity reduction, cracking, flaking, chalking, and oxidation).

Fluorescent UV light can emulate the effect of sunshine, while condensation and water spray system can emulate the effects of rain and dew. During the test, radiation energy and temperature are controllable. A typical test cycle generally carries out under strong irradiation of UV light or in the dark and wet condensation period with 100% relative humidity. These tests generally applied in the fields of paint and coatings, automotive industry, plastic, wood, glue, etc

## Test Methods & Material Standards

- ◆ ISO 11507 《Paints and varnished-Exposure of coatings to artificial weathering- Exposure to fluorescent UV lamps and water》
- ◆ ISO 4892-1 《Plastics-Methods of exposure to laboratory light sources-Part 1: General Guidance》
- ◆ ISO 4892-3 《Methods of exposure to laboratory light sources-Part 3: Fluorescent UV lamps》
- ◆ ASTM D 4587 《Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings》
- ◆ ASTM D 4329 《Standard Practice S for Fluorescent UV Exposure of Plastic》
- ◆ ASTM G-151 《Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that use laboratory light sources》
- ◆ ASTM G-154 《Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Non-Metallic Materials》
- ◆ BS 2782:Part5, 《Method 540B (Methods of Exposure to Lab Light Sources) 》
- ◆ SAE J2020 《Accelerated Exposure of Automotive Exterior Malts Using a Fluorescent UV/Condensation Apparatus》
- ◆ JIS D 0205 《Test Method of Weather-ability for Automotive Parts》



BUV Test principle

### Main Technical Parameters:

- ★ Light Source: UV-A (wave length 340 nm) or UV-B (wave length 313 nm) ; 40W × 8 pcs (The normal use-life is 6,000 hours)
- ★ The range of Irradiance: 0.1 W/m<sup>2</sup> ~ 1.0 W/m<sup>2</sup>
- ★ Temperature Range: Black Panel temperature ( BPT ) : RT+10°C ~ 80°C
- ★ Interior of cabinet: Stainless steel –SUS 304 material
- ★ Exterior of cabinet: Powder coating on SUS 304
- ★ Insulating Area: 5,175cm<sup>2</sup>/828in<sup>2</sup>
- ★ Sample Capacity: 48 pieces of standard specimen ( 75 × 150mm standard samples ) or 15 pieces of 100 × 300mm
- ★ Adjustable range for water supply: 0–4LPM
- ★ Water Consumption: 7L/day ( for condensation ) ; 4L/minute ( for spray )
- ★ Overall Size: 1,360 × 520 × 1,310mm ( L × W × H )
- ★ Net weight: 161 kg                      Total Max. Power: 3KW
- ★ Power: 220VAC ± 10%    50/60Hz; 15A ( Max Electric Current )



## Feature

◆ **Original UVA or UVB lamps from American, ensure the comparability of testing results.**

All UV machines use fluorescent UV lamps produced by American as testing light source, comparing with other type lamps (including Xenon Lamps), UV lamps are more stable. Its spectrum power distribution won't change as the lamps weathering, even to 6,000 hours. Thus more repeatable testing results can be achieved easily, and decrease changing lamps times and reduce the running cost.

Furthermore, these lamps from American are produced on the base of more than 40 years' experience and fluorescent technology. It is designed specially and tested with most serious quality control.

◆ **With Original Intellectual Property Rights and Initiated in China, our ballast can extend the lamp life to 6,000 hours, save use-cost greatly for users.**



Original UV lamps from America



Four sensors monitor UV irradiance

◆ **Irradiance can be controlled automatically (with the closed-loop system, the value of irradiance is more precise and steady. Only for BGD 856)**

The superiority of BGD 856 UV Light Accelerated Aging Test Chamber is that it can be controlled and adjusted automatically during testing process. As it is well known, the energy in testing process is the main factor in polymer materials aging. In order to ensure reproducibility and comparability of testing results, the UV energy is a very important technical indicator. We adopt the principles which similar with Sun-eye automatically monitor the testing process throughout the energy value, when the lamp energy is less than the expected value, the system can automatically monitor the difference and automatically replenish energy immediately.

◆ **Irradiance can be calibrated automatically (Only for BGD 856)**

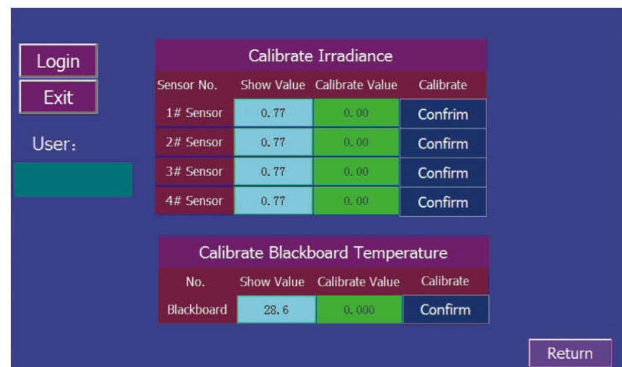
As any other lamps, UV lamps energy of UV also decreases as time increase. The control system would compensate it automatically through strengthening the voltage of lamps. But as the using time become longer and longer, the energy of lamps decrease continuously. For some high set point of irradiance, UV couldn't keep this irradiance any longer, and now the system of UV would reminder failure the error of irradiance is too large and shut off the machine. Now, the operator should calibrate the UV by standard calibration radiometer. If machine still can't get the set point after calibrating, the user should replace the two pcs lamps corresponding to the relative sensor and calibrate again.

UV is calibrated by BGD Calibration Radiometer which is produced by our company. User can use one radiometer to calibrate some UV, radiometer can test fluorescent UV lamps. It is not only used to calibrate the UVA lamps, but also to do UVB lamps. For UVB lamps, it has been calibrated well under the wave length 313 nm with  $W/m^2/nm$  unit before delivery. For UVA lamps, it has been calibrated well under the wave length 340 nm with  $W/m^2/nm$  unit.

Calibration Radiometer is made up of radiometer and sensor (see picture as below) :



Calibration Radiometer



UV Calibration Windows

The sensor of BGD 8118 calibration radiometer is very sensitive to ultraviolet rays, but don't have any action to visible light, and just have a little response for infrared light even can be ignored. So other rays can't bring any influence for this radiometer.

◆ **Water Spray and Condensation function**

**Water spray**

For some applications, the water spray can simulate end-use environmental conditions better. Water spray can effectively simulate heat shock or mechanical erosion caused by dramatic temperature changes or rain. In some practical application conditions, such as a sudden brush in a sunshine day, can bring heat shock because the temperature of the material changes drastically. This heat shock severely tests the properties of many materials. BUV water spray can simulate this heat shock and / or stress corrosion.

BUV spray system design with 12 nozzles, each side has 6 pieces in the test chamber. Spray system can run a few minutes and then shut down. This transitory water spray can cool the samples quickly, creating heat shock conditions.

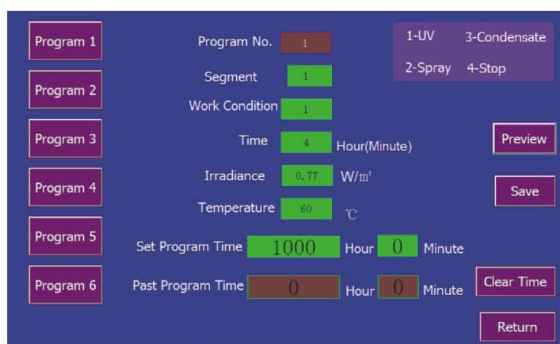
**Condensation**

In many outdoor environments, materials are placed in wet condition for over 12 hours each day. Studies have shown that the main factor of this wet condition outdoor is caused by dew, not rain. BUV simulates the outdoor moisture erosion through the unique condensation capabilities. In the condensation cycle during the test, water on the bottom of the chamber is heated to obtain superheated steam filling the test chamber. Hot steam makes the chamber maintain 100% relative humidity, and maintain a relatively high temperature. Sample was fixed on the wall of test chamber. Thus the sample surface is exposed to the ambient air of test chamber. The other side of the sample is exposed to the natural environment which has a cooling effect, bringing internal and external surfaces of the sample with temperature difference, and the temperature difference leads to the test surfaces always have drips caused by condensation process.

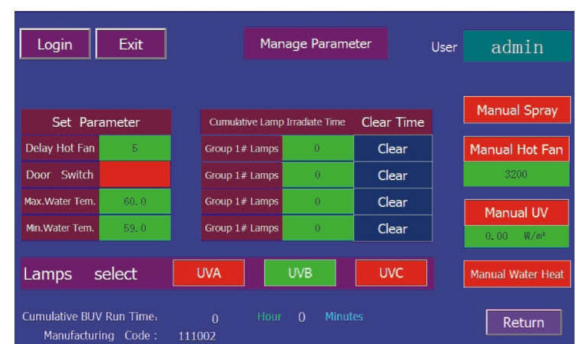
◆ **Control the temperature automatically with high precision Pt 100 temperature sensor of black board.**

In each cycle, the temperature can be controlled at a set value. At the same time, the black panel thermometer can monitor the temperature. Temperature increase can accelerate the aging process, and the temperature control for reproducibility of the test is also very important.

**BST (Black panel thermometer)** consists of a PT100 sensor and a metal panel painted by black coating, and be exposed to the same condition as test panels. It's used to monitor exposing test panels surface temperature during test. BST can be set any value according to different requirements and also be controlled automatically during the whole test. It also can be calibrated periodically.



BUV Set Test Program Windows



BUV Set Test Parameter Windows

can be set any value according to different requirements and also be controlled automatically during the whole test. It also can be calibrated periodically.

◆ **Confirms to many test standards. Operator can set different program freely.**

According to different standards or test methods, operator can edit different test programs. For each program, it can be set as 10 segments, and each segment can set different work conditions (four types: Irradiation, water spray, condensation and finish) as well as relevant test parameters.

BUV can permit operator to edit six test programs at most and save it permanently. Generally speaking, if the operator has set and saved one program in the BUV, for next test, if he still use this same program, just choose this program and run BUV directly, no need to set again.

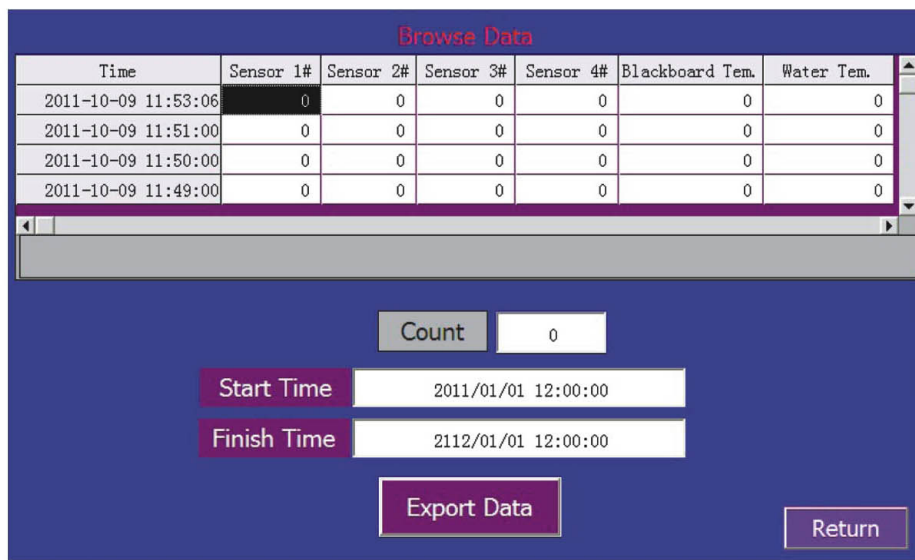
◆ **Controlled by touch screen with friendly windows, user can check any parameter during test**

BUV all controllings and showings are finished by a high definition colorful touch screen. Menu operation interface is very

convenient for operator to use and maintain BUV. During the working, all parameters are show on the touch screen.

◆ **Real-time collect and store data, all testing data can be converted EXCEL format automatically and be saved.**

There is a USB interface at the BUV back, through this interface, operator can export all running parameters at any period by a U disk. It's convenient for operator to search and do statistics for BUV, and achieve the real unattended running.



BUV Import Data Windows

MCGS_Time	Sensor 1#	Sensor 2#	Sensor 3#	Sensor 4#	Blackboard Tem.	Water Tem.
2011-7-8 12:04	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:06	0.77	0.77	0.77	0.77	59.9	32.4

Format of Import Data

◆ **Come with TCP/IP Ethernet interface, the user can tele-control BUV through TCP/IP internet.**

With this interface, operator only need to set reasonable IP address, then can monitor BUV working status at any place. Even operator is not in his laboratory, he still can run and maintain BUV. Moreover, this function is also convenient for Biuged to help our customers to solve all problems and do some necessary after service. Settle completely user's troubles back at home.

◆ **Come with a booster pump, even the user's external water pressure is not enough, BUV still can work normally with this booster pump.**

◆ **Alarm and protection functions: Low water level protection, over-temperature protection switch, leakage protection, heating overload protection, big error for irradiance, lack.**



◆ **Ordering Information:**

- BGD 855 : Basic BUV--- Basic UV Light Accelerated Weathering Tester ( No irradiance control )
- BGD 856 : BUV---UV Light Accelerated Weathering Tester
- BGD 8110 : UVB lamps (40w/313nm)
- BGD 8111 : UVA lamps (40W/340nm)
- BGD 8118 : Calibration Radiometer (310nm&340nm)
- BGD 8130 : Sample Shelf

# Xenon Light Accelerated Aging Test Chambers

## Test Principle

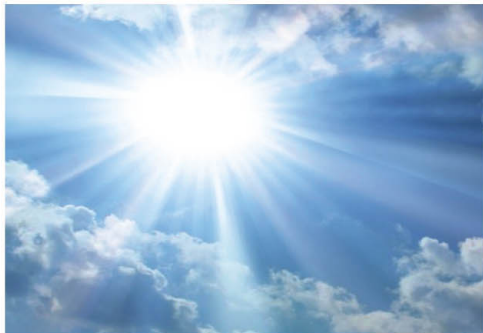
Artificial weathering of coatings or exposure of coatings to filtered xenon-arc radiation is carried out in order to obtain the degree of change in a selected property after a certain radiant exposure H, and/or the radiant exposure which is required to produce a certain degree of ageing. The properties selected for monitoring should preferably be those which are important for the practical use of the coatings. The properties of the coatings exposed are compared with those of unexposed coating prepared from the same coating materials at the same time and in the same way (control specimens) or with those of coatings exposed at the same time whose behavior during testing in exposure apparatus is already known (reference specimens).

Xenon lamp is full of xenon, and would send out light because of xenon discharge. The energy distribution of spectrum through this way is very close to sunshine, and its color temperature is near 6,000K. Furthermore, xenon lamp has a stable character, its spectrum energy distribution wouldn't change at all within the limited lifetime, this is because its spectrum distribution among continuous spectrum part don't have any relation to input power of lamp. As a special light source, xenon lamp has a good consistency for electric parameters, and it is easy to light, once light on, it can output a steady light energy at once. Furthermore, during working, the electric parameter won't be influenced by any external conditions.

Xenon Lamp light can emulate the effect of sunshine, while water spray system can emulate the effects of rain and dew. During the test, radiation energy and temperature are controllable. A typical test cycle generally carries out under strong irradiation of Xenon light and periodic precipitation. These tests generally applied in the fields of paint and coatings, automotive industry, plastic, wood, glue, etc.

**BGD series Xenon Light Accelerated Aging Test Chambers** (hereinafter referred as B-SUN) use Xenon lamps as artificial light source, and can modify the full spectrum sun light. Controlling the temperature, humidity. Its inner temperature and humidity can be properly controlled to obtain the periodic precipitation on the sample for fully evaluating the damaged factor caused by sunlight, moisture and temperature (materials aging phenomenon includes fading, disluster, intensity reduction, cracking, flaking, chalking, and oxidation).

Based on sample holder type, B-SUNS are divided into flatbed type and rotating drum type.



Simulated Sun with full spectrum



Simulated Rainfall

## Test Standards

**ISO 11341** 《Paints and varnishes-Artificial weathering and exposure to artificial radiation--Exposure to filtered xenon-arc radiation》

**ISO 12040** 《Graphic Technology - Prints and Printing Inks - Assessment of Light Fastness Using Filtered Xenon Arc Light

**ISO 16474-1** 《Paints and varnishes -- Methods of exposure to laboratory light sources -- Part 1: General guidance》

**ISO 16474-2** 《Paints and varnishes -- Methods of exposure to laboratory light sources -- Part 2: Xenon-arc lamps》

**ASTM D3451** 《Standard Guide for Testing Coating Powders and Powder Coatings》

**ASTM D3794** 《Standard Guide for Testing Coil Coatings》

**ASTM D4303** 《Standard Test Methods for Lightfastness of Pigments Used in Artists' Paints》

**ASTM D5010** 《Standard Guide for Testing Printing Inks and Related Materials》

**ASTM D6577** 《Standard Guide for Testing Industrial Protective Coatings》

**ASTM D6695** 《Standard Practice for Xenon-Arc Exposures of Paint and Related Coatings》

**ASTM G151** 《Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources》

**ASTM G155** 《Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials》

**ISO 4892-1** 《Plastics Methods of Exposure to Laboratory Light Sources Part 1: General guidance》

**ISO 4892-2** 《Plastics - Methods of Exposure to Laboratory Light Sources - Part 2: Xenon-arc lamps》

**SAE J2412** 《Accelerated Exposure of Automotive Interior Trim Components Using a Controlled Irradiance Xenon-Arc Apparatus》

## All B-SUN Types

Ordering Information→ Parameters ↓	BGD 865 Bench Xenon Chamber	BGD 866 Small Xenon Chamber	BGD 867 Cabinet Xenon Chamber	BGD 862 Big Xenon Chamber
Xenon Lamps	1 piece 1.8KW air-cooled American xenon lamp or 1 piece 1.8KW air-cooled Chinese lamp ( Optional )		3 pcs 1.8KW air-cooled American xenon lamps	1 piece 6.5 KW water-cooled American xenon lamp
Filters	Extended UV filters	Daylight Filters	Daylight Filters	Daylight Filters
Sample holder	Flatbed	Flatbed	Flatbed	Rotating drum
Samples Capacity (150×70mm)	9 pieces	9 pieces	27 pieces	65 pieces
Edit Program	No	Yes ( 6 programs )	Yes ( 6 programs )	Yes ( 6 programs )
Spray Function	No	Yes ( front of panel )	Yes ( front of panel )	Yes ( front & back )
Dark Function	No	Yes	Yes	Yes
Control BPT.	Yes	Yes	Yes	Yes
BPT. Range	RT+30°C ~ 90°C	RT+30°C ~ 90°C	RT+20°C ~ 90°C	RT+20°C ~ 110°C
Control Irradiance	Yes	Yes	Yes	Yes
Irradiance Range (300~400nm)	30 ~ 100W/m <sup>2</sup> ( Chinese lamp ) 50 ~ 120W/m <sup>2</sup> ( American lamp )		50 ~ 120W/m <sup>2</sup>	30 ~ 150W/m <sup>2</sup>
Monitoring method to irradiance	1	3	3	3
Monitor cumulative Energy	No	Yes	Yes	Yes
Control work room relative humidity	No	No	Yes	Yes
Export test data	Yes	Yes	Yes	Yes
Alarm Function	Yes	Yes	Yes	Yes
Calibration Function	Yes	Yes	Yes	Yes
Pure water machine	No	Optional	Yes	Optional

### B-SUN Filter

Biuged mainly offers three different filters to meet with different testing requirements.

① **Daylight Filters:** used to simulate noon summer direct sunlight, they can offer the best correlation to the natural exposures for most fact applications. Materials which are typically used outdoors like exterior coatings or outdoor rubbers should be tested using Daylight Filters. This test is called as “Artificial Weathering Test”

② **Window Glass Filter:** Using 3mm thickness window glass to produce spectra equivalent to sunlight coming through normal window glass. This spectrum can also simulate some indoor lighting such as the harsh lighting found in a typical commercial or office environment. They are used for indoor materials such as printing materials or textiles. This test is called as “ Exposure to artificial radiation Test”

③ **Extended UV filters:** These filters allow excess UV, below the normal cut-on of natural sunlight, used to simulate sunlight which doesn't come through atmosphere .They are used to produce faster or more severe test results. This test is called as “Artificial Accelerated Weathering Test”

### Monitoring Method to Irradiance

In the system of xenon test , measuring and controlling irradiance is very important. The spectrum range of xenon lamp is from 295nm to 3,000nm. In the newest standards ( such as ISO 11341-2004, ASTM G 155-05, ISO 4892-2: 2003 etc ) , irradiance is recommended to be measured and controlled by point ( narrow band ) or broad band.

**Narrow band: 340 nm or 420 nm**

**Broad band: 300-400 nm**

Choosing narrow band or broad band depends on different simulated environment or different material.

**340 nm narrow band:** for outdoor and evaluate physical performance of material

**420nm narrow band:** for indoor and evaluate fading of material

**300nm-400nm (TUV) :** for small special standards.

## ① Bench Xenon Test Chamber

**B**GD 865 is a small, simple and economic xenon test chamber. It uses a low power air-cooling xenon lamp to produce enough big irradiance energy in a small space. Moreover, through a special catoptrical system to ensure every exposure sample get the homogeneous irradiance distribution.

BGD 865 is equipped with extended UV filters, thus permit UV which is below the normal cut-on of natural sunlight to pass (equal to simulate sunlight which doesn't come through atmosphere). They are used to produce faster or more severe test results. This test is called as “Artificial Accelerated Weathering Test”.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

### Characters

- ◆ Small Size, easy to install, use and practically maintenance-free.
- ◆ The xenon light source correspond with international standards; ensure reproducibility and comparability of testing results.
- ◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate the change of light intensity caused by ageing or other factors.
- ◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.
- ◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process
- ◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection when opening door.
- ◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the test process easily.
- ◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray
- ◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into a USB drive, achieving unattended operation.

### Main Technical Parameters:

- ★ Xenon Lamp: one 1.8KW xenon lamp (imported from America or Chinese lamp)
- ★ Filter: Extended UV filter (Also can choose daylight filter or window glass filter)
- ★ Irradiance monitor methods: 340nm or 420nm (Narrow band) or 300nm ~ 400nm (Broad band) (Choose anyone before ordering)
- ★ Lamp Lifetime: Near 1,500 hours
- ★ Exposure Area: 1,000 cm<sup>2</sup> (can put 9 standard samples 150 × 70mm)
- ★ Adjustable Irradiance Range:  
Chinese lamp: 30 ~ 100 W/m<sup>2</sup> (300~400nm) or 0.3~0.8 W/m<sup>2</sup> (@340nm) or 0.5 ~ 1.5 W/m<sup>2</sup> (@420nm)  
American lamp: 50 ~ 120 W/m<sup>2</sup> (300~400nm) or 0.3~1.0 W/m<sup>2</sup> (@340nm) or 0.5 ~ 1.8 W/m<sup>2</sup> (@420nm)
- ★ Adjustable Black Board Temperature Range: RT+30°C ~ 90°C (Depends on environment temperature and setting irradiance value)
- ★ Interior Material of Chamber: Stainless steel –SUS 304 material
- ★ Exterior Material of Chamber: Powder coating
- ★ Overall Size: 950 × 570 × 535mm
- ★ Net Weight: 93KG (130KG Gross weight)
- ★ Power Supply: 220V 50/60HZ (Alternative)  
Max Current 13A Max. Current 16A; Max.Power 2.6 KW

### ★ Ordering Information:

- BGD 865---Bench Xenon Test Chamber (Equipped with Chinese lamp)
- BGD 865/A---Bench Xenon Test Chamber (Equipped with American lam)
- BGD 8155---Xenon Lamps (1.8 KW)
- BGD 8156--- American Xenon Lamps (1.8 KW)
- BGD 8140---Xenon Calibration Radiometer (340nm)
- BGD 8141---Xenon Calibration Radiometer (420nm)
- BGD 8142---Xenon Calibration Radiometer (300nm ~ 400nm)



BGD 865 A Bench Xenon Test Chamber				2018-11-04 15:24:30
		Set Value	Actual Value	Lamp time
> Calibrate	Irradiance	0.51 @340nm(W/m <sup>2</sup> )	0.51 @340nm(W/m <sup>2</sup> )	45.0 h
> Storage	BPT Tem.	65.0 °C	64.80 °C	Clear Lamp time
> Event	Test time	1000.0 h	45.0 h	Clear run time
		<input type="button" value="Run"/> <input type="button" value="Stop"/>		

Operation Menu

## ② Small Xenon Test Chamber

Compared with BGD 865, BGD 866 adds spray function. Spray function is used to simulate rain and humidity when the material is used at outdoor. Furthermore, operator can set the cumulative energy (Total irradiance energy) obtained by sample to stop a test procedure.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

### Characters

◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time. Every procedure includes up to 10 segments setting data.

◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.

◆ With spray function, can set spray time and spray interval time.

◆ The xenon light source correspond with international standards; ensure reproducibility and comparability of testing results.

◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate the change of light intensity caused by ageing or other factors.

◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.

◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process

◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection when opening door.

◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the test process easily.

◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray

◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into a USB drive, achieving unattended operation.

### Main Technical Parameters:

- ★ Xenon Lamp: one 1.8KW xenon lamp ( imported from America or Chinese lamp )
- ★ Fliter: Daylight filter ( Also can choose extended UV filter or window glass filter )
- ★ Lamp Lifetime: Near 1,500 hours
- ★ Exposure Area: 1,000 cm<sup>2</sup> (can put 9 standard samples 150 × 70mm)
- ★ Adjustable Irradiance Range:  
Chinese lamp: 30 ~ 100 W/m<sup>2</sup> (300~400nm) or 0.3~0.8 W/m<sup>2</sup> (@340nm) or 0.5 ~ 1.5 W/m<sup>2</sup> (@420nm)  
American lamp: 50 ~ 120 W/m<sup>2</sup> (300~400nm) or 0.3~1.0 W/m<sup>2</sup> (@340nm) or 0.5 ~ 1.8 W/m<sup>2</sup> (@420nm)
- ★ Adjustable Black Board Temperature Range: RT+30°C ~ 90°C  
( Depends on environment temperature and setting irradiance value )
- ★ Interior Material of Chamber: Stainless steel –SUS 304 material
- ★ Exterior Material of Chamber: Powder coating
- ★ Overall Size: 925 × 600 × 1050mm
- ★ Weight: 135 KG ( 176KG Gross weight )
- ★ Power Supply: 220V 50/60HZ ( Alternative ) ;  
Max. Current 16A; Max.Power 2.6 KW

### ★ Ordering Information:

- BGD 866---Samll Xenon Test Chamber ( Equipped with Chinese lamp )
- BGD 866/A---Samll Xenon Test Chamber ( Equipped with American lamp )
- BGD 8155---Xenon Lamps ( 1.8 Kw )
- BGD 8156---American Xenon Lamps ( 1.8 KW )
- X-1800--- American Xenon Lamps ( 1.8 KW )
- BGD 8140---Xenon Calibration Radiometer ( 340nm )
- BGD 8141---Xenon Calibration Radiometer ( 420nm )
- BGD 8142---Xenon Calibration Radiometer ( 300nm ~ 400nm )
- BGD 8170---Pure Water Machine ( 50L/h )



### ③ Cabinet Xenon Test Chamber

**B**GD 867 is a standard xenon chamber who has many functions. It is equipped with three xenon lamps imported from America and daylight filter, can meet with all standards' requirements.

BGD 867 can hold 27 pieces samples, not only has spray function ,but also can control the relative humidity of working room.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

#### Characters

- ◆ Three xenon lamps imported from America can offer higher irradiance energy, meet with all test standards' requirements.
- ◆ Can set and control automatically the relative humidity of working room.
- ◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time.

Every procedure includes up to 10 segments setting data.

- ◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.
- ◆ With spray function, can set spray time and spray interval time.
- ◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate

the change of light intensity caused by ageing or other factors.

- ◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.
- ◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process
- ◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection

when opening door.

- ◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the

test process easily.

- ◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray

- ◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into

a USB drive, achieving unattended operation.

#### Main Technical Parameters:

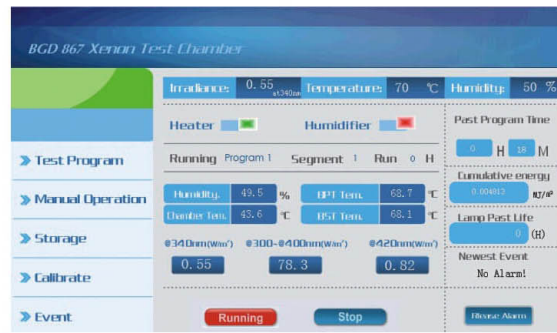
- ★ Xenon Lamp: Three 1.8KW xenon lamps ( imported from America or Chinese lamp )
- ★ Filter: Daylight filter ( Also can choose extended UV filter or window glass filter )
- ★ Lamp Lifetime: Near 1,500 hours
- ★ Exposure Area: 2,800 cm<sup>2</sup> (can put 27 standard samples 150 × 70mm)
- ★ Adjustable Irradiance Range:
  - 0.3 ~ 1.0 W/m<sup>2</sup> (Single point of control: 340nm)
  - 0.5 ~ 1.8 W/m<sup>2</sup> (Single point of control: 420nm)
  - 30 W/m<sup>2</sup> ~ 120 W/m<sup>2</sup> (Full spectrum : from 300 ~ 400nm)
- ★ Controlling irradiance point: 340nm or 420nm or 300nm ~ 400nm ( show at the same time )
- ★ Adjustable Black Board Temperature Range: RT+20°C ~ 90°C
- ★ Adjustable relative humidity of working room: 30% ~ 75% ( Light ) ; 50% ~ 95% ( Dark ) ;
- ★ Interior Material of Chamber: Stainless steel –SUS 304 material
- ★ Exterior Material of Chamber: Powder coating
- ★ Overall Size: 970 × 920 × 1850mm
- ★ Net Weight: 335KG
- ★ Power Supply: AC: 380V 50/60HZ, Max. Current 12 A ( Also can choose single phase 220V, Max. Current 36 A )
- ★ Ordering Information:
  - BGD 867---Cabinet Xenon Test Chamber
  - BGD 8156---American Xenon Lamps ( 1.8 KW )
  - BGD 8140---Xenon Calibration Radiometer ( 340nm )
  - BGD 8141---Xenon Calibration Radiometer ( 420nm )
  - BGD 8142---Xenon Calibration Radiometer ( 300nm ~ 400nm )
  - BGD 8170---Pure Water Machine ( 50L/h )



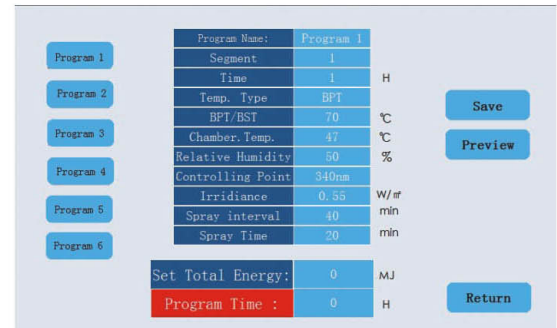




BGD 8170 Purity Water Machine



Operation Menu



Set Program

## ④ Big Xenon Chamber

**B**GD 862 is a multi-function big xenon light accelerated weathering testers which is equipped with one piece high power (6.5KW) water-cooling xenon lamp, its exposure area arrive 6,500cm<sup>2</sup>

### Powerful functions and reliable test results

- ◆ Meet with all international standards of xenon test.
- ◆ Equipped with ATLAS xenon arc lamp , filter and components, ensure to get high and same running parameters. Test results have a good reliability and repeatability comparing with import machines.
- ◆ Automatic rotating drum-type sample rack with three floors structure maximizes exposure uniformity over all specimens
- ◆ 6,500cm exposure area , can hold different shapes and sizes samples.
- ◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.
- ◆ Chinese or English operation window

### Can set and control automatically many test parameters

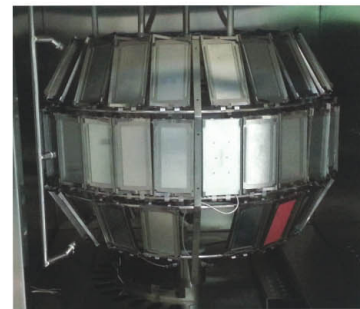
- ◆ Irradiance energy can be set and accurately controlled (340nm or 420nm or 300nm~400nm) . The "Solar Eye" control system can monitor and automatically compensate the change of light intensity caused by ageing or other factors.
- ◆ Working room temperature, BPT (black panel temperature) and BST (black standard temperature) can be set and controlled automatically. With high precision Pt 100 temperature sensor, all these temperatures could be moitored accurately.
- ◆ Working room relative humidity can be set and controlled automatically. With ultrasonic wave humidifying system, the working room can obtain more stable and uniform humidity distribution.
- ◆ Can set spray way to sample (front spray or back spray) , spray time and spray interval time.

### Simple, easy to use

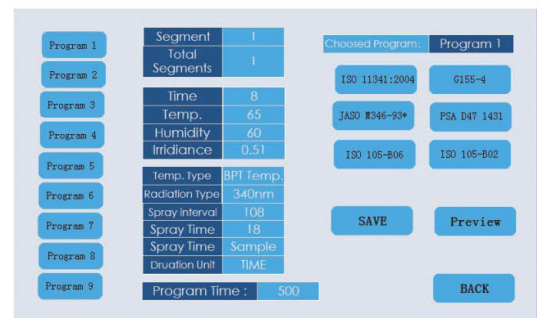
- ◆ Colorful touch screen and user-friendly operation interface allow operator to set the test parameters and monitor it easily.
- ◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time. Every procedure includes up to 10 segments setting data.
- ◆ With USB interface, operator can export any test parameters with Excel format at any time, convenient to check B-SUN's running status at any time.
- ◆ Pure (deionized) water machine is optional. With high purity water, operator can get a more reliable testing result. Chamber has alarm function for monitoring water.

### Safe and reliable

- ◆ Many alarm protections: Big irradiance difference, water conductivity is over limits, too high temperature of cooling water, too low flow rate of cooling water, over-temperature, heating problem. B-SUN will stop running automatically and show the alarm information in the operation window.
- ◆ Can select TCP/IP Ethernet interface, the user can tele-control the machine through TCP/IP internet. Convenient to help customers to solve all problems and do some necessary after service.



Working room



Touch-screen

## Main Technical Parameters

Ordering Information → Technical Item ↓	BGD 862 Xenon Tester Chamber		
Xenon Lamp	6.5 KW water cooling long arc xenon lamp		
Light Filter	Import originally from ATLAS, can simulate indoor or outdoor sunshine spectrum		
Exposure Area	6,500 cm <sup>2</sup>		
Wave Length of Xenon Spectrum	Can select 300–800nm ( simulate sunshine, filtrate all wavelength under 300nm ) or 280–800nm ( Add UV wave, keep some short-wave of UV )		
Adjustable Irradiance	0.35 ~ 1.5 W/ m <sup>2</sup> (Single point of control: 340nm)    0.5 ~ 2.7 W/ m <sup>2</sup> (Single point of control: 420nm) 30 W/m <sup>2</sup> ~ 150 W/ m <sup>2</sup> (Full spectrum : from 300 ~ 400nm)		
Lifetime of lamps	2,000 hours		
Adjustable BPT	RT+20°C~110°C		
Temperature stability	± 1°C		
Temperature uniformity	≤2°C		
Temperature Declination	≤ ± 1°C		
Adjustable Humidity	Light: 10%–85%    Dark: 10%–95%		
Rotate speed of sample	1 ~ 7r/min ( circle as lamp centre )		
Spray Function	Can set spray continuous time and spray period		
Water demands	High purity deionized water ( Conductivity<2us/cm )		
Flow of Deionized Water	Adding humidity: 0.2L/min; Spray: 0.2L/min		
Overall Size	1,200 × 1,200 × 2,000mm ( L × W × H )		
Net Weight	500 KG		
Machine producing deionized water	Size: 620 × 650 × 1600mm ( L × W × H ) Weight: 120KG		
<b>Structure</b>			
Cabinet Material	Whole chamber is made up of good quality stainless steel ( SUS304 )		
Chamber Door	Simple door to left with filter window; silicon rubber seal the door edge		
Sample Crack	Stainless steel material, its position in the chamber can be adjusted ( up, middle or down ) , Sample crack rotate around the centre of lamp		
Controller	Siemens programmable controller. LCD touch–screen		
Way of adding humidity	Add humidity by ultrasonic humidifier		
Black panel thermometer	Heat insulate type black standard thermometer		
Cooling System	Cooled by compressor and forced–air blast system		
<b>Security Protections And Error Protections</b>			
Xenon Lamp Protect	Protection to cooling water for xenon lamp shortage. Protection to big electric current to xenon lamp Protection to big irradiance deviation for a long time		
Water Shortage Protection	Water shortage, cooling water to lamp shortage, low flow rate of cooling water, water shortage when heating		
Power Source Protection	Over–power, over–electric current, shortage phase and wrong phase sequence		
Working Room Temperature Protect	Individual over–temperature protection of working room temperature. Over–temperature protection for BPT and BST		
Pure System Protect	Monitor the conductivity of pure water at real–time ( Once the conductivity ≥ 2us/cm, the machine will stop and alarm )		
Protection to Radiation	Xenon lamp will turn off automatically when opening the chamber door, in case xenon lamp radiate operator		
<b>Installing Environment Requirements</b>			
Power Source	380V ± 10% 3–phases 4 lines or 220V ± 10% 2–phase; 50 or 60Hz; Max.electric current ≥ 40A Max.power is 8KW		
Air Outlet	There should be air outlet in the indoor for convenient to connect vent pipe		
<b>Standard Accessories</b>			
Xenon---	1 pc ( Can select Atlas or other Chinese brand )	Sensor---	2 pcs ( OSRAN )
Xenon Lamp Filter---	1 set ( Can select Atlas or other Chinese brand )	Simens Control System---	1 set
Human-computre Interface---	1 pc ( Touch Screen )	Specimen Holders---	65 pcs
Black Panel Temperatruue Holders---	2 pcs ( include 2 PT 100 )	Irradiance Calibration Holder---	1 pc
<b>Optional Accessories</b>			
BGD 8171---	Purity Water System ( 50L/min )	BGD 8140---	Radiometer ( 340nm ) ;
BGD 8141---	Radiometer ( 420nm ) ;	BGD 8142---	Radiometer ( 300 ~ 400nm ) ;

# Others

## Surface Roughness Tester

**S**urface Roughness Tester is widely used in production site to measure surface roughness of various machinery-processed parts, calculate corresponding and clearly display all measurement parameters.

Specifications		Ordering Information	
		BGD 930	BGD 931
Standard		ISO4287,DIN4768,JIS B,ANSI 146.1	
Measuring range	Ra	0.005 ~ 16 $\mu$ m/1.000 ~ 629.9 $\mu$ inch	0.050 ~ 10 $\mu$ m/1.000 ~ 400.0 $\mu$ inch
	Rq	0.005 ~ 16 $\mu$ m/1.000 ~ 629.9 $\mu$ inch	-----
	Rz	0.020 ~ 160 $\mu$ m/0.780 ~ 629.9 $\mu$ inch	0.020 ~ 160 $\mu$ m/0.780 ~ 629.9 $\mu$ inch
	Rt	0.020 ~ 160 $\mu$ m/0.780 ~ 4000 $\mu$ inch	-----
Accuracy		$\leq \pm 10\%$	
Resolution		0.001 $\mu$ m ( reading < 10 $\mu$ m )	
		0.01 $\mu$ m ( 10 $\mu$ m $\leq$ reading < 100 $\mu$ m )	
		0.1 $\mu$ m ( reading $\geq$ 100 $\mu$ m )	
Fluctuation of display value		$\leq 6\%$	
Profile digital filter	Filtered profile	RC,PC-RC,GAUSS	-----
	Non- filtered profile	D-P	-----
Sensor	Radius	5 $\mu$ m	10 $\mu$ m
	Material	Diamond	Diamond
	Measuring force	4mN ( 0.4gf )	16mN ( 1.6gf )
	Probe angle	90 $^{\circ}$ C	90 $^{\circ}$ C
	Vertical radius of guiding head	48mm	48mm
	Maximum driving stroke	17.5mm/0.75inch	
	Cutoff length	0.25mm,0.8mm,2.5mm	
Driving speed	Measuring	Sampling length = 0.25mm When Vt=0.135mm/s	
		Sampling length = 0.8mm When Vt=0.5mm/s	
		Sampling length = 2.5mm When Vt=1mm/s	
	Returning	Vt=1mm/s	
Evaluation length		1 ~ 5L selectable	
Metric/Imperial		Conversion	
Auto off		$\surd$	
Memory		7 Groups	-----
Pc interface		RS-232C	-----
Built in Li-ion battery		Rechargeable	
Operating condition	TEMP	0 ~ 50 $^{\circ}$ C	
	Humidity	< 85%RH	
Dimension		140 x 52 x 48mm ( 5.5 x 2.2 x 1.9inch )	
Net weight		420g	



BGD 930



BGD 931

### Optional accessories:

- BGD 1290---RS-232 or USB cable
- BGD 1291---Software
- BGD 1292---Sensor for deep groove
- BGD 1293---Sensor for curve surface
- BGD 1294---Measuring stand

# Temperature Tracker

**B**Temperature Tracker is a user-friendly device. It takes just a few minutes to learn how the entire system works. It's excellent suited for industrial oven and laboratory oven temperature profiling. Mandatory test in Qualicoat, QIB and GSB accredited laboratories.

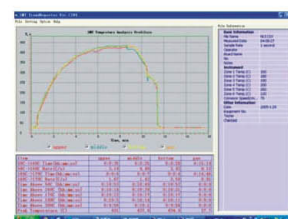
Temperature Tracker is mainly made up of Oven datalogger, analysis software and insulation box.

**Oven datalogger:** Oven datalogger is the heart of temperature tracker. It designed to measurement temperature and store them for a specified amount of time. This instrument measures continuously but only stores readings at certain intervals defined by the operator. The maximum recording period depends on the number of sensors being used and the specified recording interval.

It offers easy-to-use, high quality temperature logging for industrial paint and powdercoat cure ovens. The oven data tracker is fitted with a large display for easy menu-driven operation and quick display of measurement results.

**Analysis software:** allows user to analyse the logged temperature data and create detailed reports. Advanced oven profiling features like cure data analysis, ideal cure and tolerance bands, together with a wide range of display, report and printing options, make Oven Logger the most flexible temperature logging solution available.

**Insulation Box:** A high quality insulation box with outer shield of high-grade stainless steel. The anodized aluminum inner box is shielded with a carefully formulated mixture of insulation material, which makes the combination suitable to resist high temperatures for long time. This insulation box is absolutely silicone free, and therefore very suitable for applications in automotive and wet paint coatings.



Soft-ware

Ordering Information → Technical Item ↓	One-Channel	Four-Channel		Seven-Channel	
	BGD 951	BGD 954/1	BGD954/2	BGD 957/1	BGD 957/2
Number of Channels	1	4	4	7	7
Temperature range	-100°C ~ 300°C	-100°C ~ 300°C	-100°C ~ 500°C	-100°C ~ 300°C	-100°C ~ 500°C
Duration	45min for 200 °C 60min for 150°C	60min for 300°C 120min for 150°C	60min for 500°C 120min for 300°C	60 min for 300°C 120 min for 200°C	60min for 500°C 120 min for 300°C
Division	0.1°C	0.1°C		0.3°C	0.5°C
Accuracy	0.5%	0.5%		0.5%	
Storage	Can store 32,000 readings. Record per seconds for 5 hours	Every channel can store 16,000 readings. Record per seconds for 5 hours		Record per seconds for 4 hours	Record per seconds for 3 hours
Sampling period	1s, 10s	1s, 2s, 3s, 4s, 5s, 6s, 10s, 20s, 30s, 1min programalbe		1s, 2s, 3s, 5s, 8s,10s,12s, 20s,40s, 60s programmable	
Setting Software	① Can select sampling period ② Print the Tem.Curve with Computer ③ Check the data with EXCEL	① Can select sampling period ② Show the real-time Tem.curve ③ Can save many groups datas		① Select or unselect channel with yes or no ② Verify the accuracy separately for each channel ③ Easy to choose sample rate ④ Switch ON/OFF	
Analysis software	No	① Display Tem. datas; ② Calculate heating rate between tow Tem.levell ③ Calculate total time above two different Tem ④ Calculate peak Tem. ⑤ Compare different Tem. profile; ⑥ Print Report			
Standard Disposition	◆ Oven datalogger ◆ 2 pcs Thermocouple ( 0.5m, 1.5m ) ◆ USB cable ◆ Setting software ◆ Manual	◆ Oven datalogger ◆ 4 pcs temperature sensors ◆ USB cable ◆ Setting software and Analysis software ◆ Insulation box ◆ Manual		◆ Oven datalogger ◆ 7 pcs temperature sensors ◆ USB cable ◆ Setting software and Analysis software ◆ Insulation box ◆ Manual	
Size (mm)	φ63 × 160	110 × 125 × 300	135 × 155 × 300	100 × 120 × 280	130 × 160 × 300

## Professional Thermocouple Thermometer

**B**GD 948 is a professional contact-type precise thermometer with white backlight LCD, it has two channels K-type thermocouple to measure temperature. It's widely used in many fields needed to measure temperature.

### Features:

- ◆ Use K-type thermocouple to test temperature, resolution can arrive 0.1 °C
- ◆ With temperature compensation, ensure accuracy when measuring temperature.
- ◆ Reading value can be converted °C/°F
- ◆ Auto. Power-off
- ◆ Hold max. value and hold test results.
- ◆ Can change thermocouple

### Main Technical Parameters:

- ★ Temperature Range: -50~1300°C
- ★ Accuracy: ±1°C~±1.5°C
- ★ Resolution: 0.1°C
- ★ Error: ±0.5%±1°C
- ★ Power Supply: 9V battery ( work for 48 hours )
- ★ Size/Weight: 165×76×43 mm/403g
- ★ Accessories: 9V battery, Holster with stand, Type K temperature probe and gift box with carrying case.
- ★ **Ordering Information:**  
BGD 948--- Professional Thermocouple Thermometer



## Infrared Thermometer

**T**hese series Infrared Thermometers provide much faster and accurate readings for most surface temperature measurements. One or two laser points converge to a single spot when the unit is at the optimal distance from the object being measured.

- ◆ Non-contact measurement with laser pointer.
- ◆ Unique flat surface, mini modern housing design
- ◆ Backlighting illuminates display for taking measurements at night or in areas with low background light levels
- ◆ Low battery indication and overrange indication
- ◆ Auto data hold when trigger released and auto Power Off
- ◆ User selectable °C or °F

Ordering Information → Technical Item ↓	BGD 950/1	BGD 950/2	BGD 950/3
Range	-50~380°C	-50~700°C	-50~1000°C
Distance to Spot Size (D:S)	12:1	10:1	30:1
Emissivity	0.95	0.95	0.1~1.0step step ( adjustable, step 0.01 )
Accuracy	± 1.5%		± 1.0%
Response Time	<1second		<150 millisecond
Resolution	0.1°C		0.1°C
Laser Type	Single Laser		Dual Laser
Size	160×82×42 mm		146×104×43 mm
Weight	177g		163g



## Digital Thermometer and Hygrometer

- ◆ Simultaneously displays temperature, humidity and time together with the function of indicating human bodycomfort
- ◆ Function of alarm setting
- ◆ Range: Indoor temperature:  $-30^{\circ}\text{C}\sim 50^{\circ}\text{C}$  ( $-22^{\circ}\text{F}\sim +122^{\circ}\text{F}$ ) ; Outdoor temperature:  $-50^{\circ}\text{C}\sim 70^{\circ}\text{C}$  ( $-58^{\circ}\text{F}\sim +158^{\circ}\text{F}$ ) ; Humidity: 20%~99%
- ◆ Resolution: Temperature:  $0.1^{\circ}\text{C}$ ; Humidity: 1%
- ◆ Power: one 7# Alkaline battery
- ◆ Size: BGD 945--- $111\times 101\times 21.5$  (mm)
- ◆ Screen Size: BGD 945--- $81.5\times 64.5$  (mm)
- ◆ **Ordering Information:**  
BGD 945---Digital Thermometer and Hygrometer ( Big Screen )



BGD 945

## Temperature & Humidity Meter

This is a professional three-in-one temperature&humidity meter. Use temperature sensing resistor to measure temperature, use precise capacitive sensor to measure humidity. It can used to measure air relative temperature, air humidity, wet bulb temperature and absolute humidity

### Features:

- ◆ Fast response time
- ◆ High accuracy and high performance
- ◆ Max. hold and data hold function
- ◆ Dual display & backlight
- ◆ Dew point & wet bulb temperature

### Main Technical Parameters:

- ★ Air Temperature:  $-30\sim 100^{\circ}\text{C}$  ( Accuracy:  $\pm 1^{\circ}\text{C}\sim \pm 1.5^{\circ}\text{C}$  )
- ★ Relative Humidity: 0~100%RH ( Accuracy:  $\pm 2\%\text{RH}\sim \pm 4\%\text{RH}$  )
- ★ Dew Point Temperature:  $-30\sim 100^{\circ}\text{C}$  ( Calculated by measuring relative humidity and air temperature )
- ★ Wet Bulb Temperature:  $0\sim 80^{\circ}\text{C}$  ( Calculated by measuring relative humidity and air temperature )
- ★ Absolute Humidity:  $0\sim 500\text{g}/\text{mm}^3$ ,  $0\sim 218.5\text{gr}/\text{ft}^3$  ( Calculated by measuring relative humidity and air temperature )
- ★ Response Time: < 15 seconds
- ★ Power Supply: 9V battery ( work for 48 hours )
- ★ Size/Weight:  $300\times 75\times 50$  mm/400g
- ★ **Ordering Information:**

BGD 943---Professional Temperature& Humidity Meter



## Multifunctional Digital Moisture Meter

**B**igued Instruments offers a series of moisture tester, they are applicable of wooden articles, building materials, wood fiber material, Chinese traditional medicine, tobacco, cotton paper, building, soil and other fiber materials.

Ordering Information → Technical Item ↓		BGD 922		
Model with suffix		P	S	PS
Sensing type		Pin type	Search type	Pin & Search type
Wood over 150 species		✓	✓	✓
Building moisture ( Range )		0–50% ( Concrete )		
Measuring range	Moisture	0–80%		
	TEMP	-----		
Calibration		Automatic		
Resolution		0.1		
Display		LCD display		
Accuracy	Moisture	± ( 0.5n+1 )		
	TEMP	-----		
Power supply		4 × 1.5V AAA ( UM–4 ) battery		
Battery indicator		Low battery indicator		
Dimension		165x62x26mm		
Weight ( No battery )		119g	114g	175g



BGD 922/PS



BGD 922/P

## Spatulas for Paint and Ink Applications

**T**he spatulas are widely used in the Paint and Ink Applications. The different sizes of the spatulas allow the user to select the correct size of the spatulas for the applications.

They are made up of stainless steel with high tenacity. With tail knife can prize up coating container easily.

Ording Information	Products	Overall Length (mm)	Spatula Length (mm)	Max. Spatula Width (mm)	Wooden Handle Length (mm)
BGD 1201	Rhombic Spatulas	194	114	19	80
BGD 1202	Rhombic Spatulas	270	155	26	105
BGD 1203	3.5 " Vertical Spatulas	190	90	15	100
BGD 1204	4 " Vertical Spatulas	205	105	20	100
BGD 1205	5 " Vertical Spatulas	235	125	25	110
BGD 1206	6 " Vertical Spatulas	265	145	30	120
BGD 1207	7 " Vertical Spatulas	290	170	30	120
BGD 1208	8 " Vertical Spatulas	320	200	33	120
BGD 1209	9 " Vertical Spatulas	350	230	33	120
BGD 1210	10 " Vertical Spatulas	370	250	34	120



Ording Information	Products	Overall Length (mm)	Spatula Length (mm)	Max. Spatula Width (mm)	Wooden Handle Length (mm)
BGD 1212	12 " Vertical Spatulas	415	295	35	120
BGD 1214	14 " Vertical Spatulas	485	365	36	125
BGD 1216	16 " Vertical Spatulas	513	385	75	115
BGD 1230	3 " Flat hacking Knives	175	80	32	95
BGD 1231	6.7 " Flat hacking Knives	325	175	88	125
BGD 1232	6.5 " Flat hacking Knives	300	165	75	125
BGD 1233	6 " Flat hacking Knives	285	158	63	115
BGD 1234	5.5 " Flat hacking Knives	255	135	45	105
BGD 1235	4.5 " Flat hacking Knives	240	135	45	120
BGD 1236	Ink Knife	90	90	70	0
BGD 1250	Knife-Shaped	240	120	22	110
BGD 1251	Shovel-Shaped	250	155	45/24	95
BGD 1252	Four Colors Plastic Spatulas (S)	295	150	5	145
BGD 1253	Four Colors Plastic Spatulas (M)	295	150	60	145
BGD 1254	Four Colors Plastic Spatulas (L)	270	115	70	155
BGD 1255	White Plastic Spatulas (S)	290	185	45	105
BGD 1256	White Plastic Spatulas (M)	290	185	60	105
BGD 1257	White Plastic Spatulas (L)	290	185	76	105



BGD 1252



BGD 1253



BGD 1254



BGD 1255 BGD 1256 BGD 1257



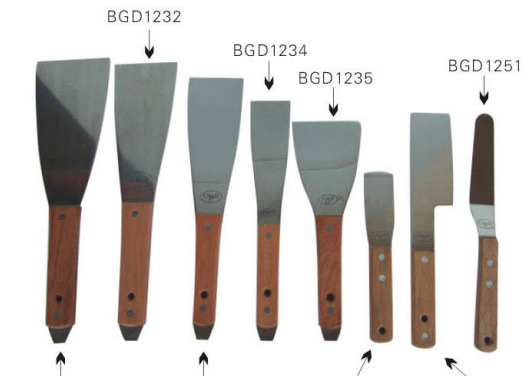
16" 14" 12" 10"



9" 8" 7" 6"



BGD1202



BGD1231 BGD1232 BGD1233 BGD1234 BGD1235 BGD1251

## Sealing Clamper

Sealing Clamper is designed with international standard barrel and used to seal the coating barrels quickly. It can be used easily and widely!

### Main Technical Parameters:

- ★ Diameter of barrelhead: 300mm ( 18L-20L )
- ★ Thickness of barrelhead: 0.40.5mm
- ★ The max power of clampers: 800N
- ★ Power of handle working:  $\leq 680 \pm 50N$
- ★ Size: 858 × 355mm
- ★ Weight: 11 ± 1KG
- ★ **Ordering Information:** BGD 910---sealing clamper(20L)



## Digital Calipers/Micrometer

Digital Caliper with high accuracy and high LCD display for easy to read, available in carbon steel & stainless steel material ;

- ◆ Zero setting at any position;
- ◆ Metric/inch interchangeable system;
- ◆ Power on/off at any position, invariable measuring origin (ZERO) ;
- ◆ Display window uses special quartz glass, high scratch-resistance ;



BGD 962



BGD 960

### Main Technical Parameters:

Ordering Information → Technical Item ↓	BGD 960	BGD 961	BGD 962
Range	0-150mm ( 6 inch )	0-500mm ( 20 inch )	0-25mm
Graduation	0.01mm ( 0.0005 inch )		0.001
Value Stability	0.01mm ( 0.0005 inch )		0.001
Max moving speed	1m/s		---
Power Supply	1.5 V SRW		1.5 V SRW

## Duck Billed Valve

Duck Billed Valve is mainly applicable to control discharge of discharge orifice of various vessel. It has features, such as rapidity, facility, good sealing.

### ★ Ordering Information:

- BGD 986/1---1 inch Duck Billed Valve
- BGD 986/2---1.5 inch Duck Billed Valve
- BGD 986/3---2 inch Duck Billed Valve



## Biuged Brand Test Substrates

If coatings tests are to be reliable and reproducible, they must be performed on a substrate which is reasonably consistent from test to test. Unfortunately, ordinary commercial sheet steel displays wide variations in the surface properties which affect the bonding of coatings.

### The Standard Test Substrate

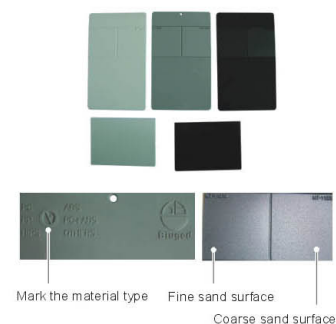
Biuged brand test substrates provide a uniform and consistent surface for testing paints, coatings and adhesives. Panels are available in a variety of substrates, surface finishes, sizes and shapes. They are used to minimize metal variability as a source of bias in critical tests and they are economical enough to be used for sales samples and batch records.

**Panel Options.** Panels are available in steel and aluminum, bare and pretreated. Most panels are flat and rectangular, but we do have special shapes such as automotive styling panels which mimic the side of an automobile. In addition, custom panels can be manufactured to specification.

**Consistent & Convenient.** The Biuged production process is specifically tailored to minimize variability of metallic surfaces. We buy all of our substrates direct from selected mills which control surface texture to our specifications. Our inventory of over a million panels means that 95% of our orders are shipped from stock.

**Economical.** Due to high volume production, our panels cost less than one might expect. Equally important, the convenience of pre-cleaned, safe, standardized panels reduces the expensive time lab personnel could spend cleaning and handling panels.

Description	Ordering Information	Size ( mm )	Minimum Packing	Pretreat
Steel Panels	BGD 2310	120 × 50 × 0.5	300 pcs	Polishing
	BGD 2311	150 × 70 × 0.5	180 pcs	Polishing / hole and Circinal corner
	BGD 2312	120 × 50 × 0.8	300 pcs	Polishing
	BGD 2313	150 × 70 × 0.8	180 pcs	Polishing / hole and Circinal corner
	BGD 2314	120 × 50 × 1.0	300 pcs	Polishing
	BGD 2315	150 × 70 × 1.0	180 pcs	Polishing / hole and Circinal corner
Special Processing Steel Panels	BGD 2317	150 × 70 × 0.8	180 p	With CathodicElectrophoresis paint
	BGD 2318	150 × 70 × 0.8	180 pcs	Spray Sand ( Ra 4.5 ~ 5.5 )
	BGD 2319	150 × 70 × 0.8	180 pcs	Phosphated
Stainless Steel Panel	BGD 2341	Customized	----	304 mirror surface
	BGD 2342	Customized	----	304 brushed surface
	BGD 2343	Customized	----	316 material
Aluminum Panels	BGD 2320	120 × 50 × 0.5	300 pcs	Chromated
	BGD 2321	150 × 70 × 0.5	180 pcs	Chromated
	BGD 2322	120 × 50 × 0.8	300 pcs	Chromated
	BGD 2323	150 × 70 × 0.8	180 pcs	Chromated
	BGD 2324	120 × 50 × 1.0	300 pcs	Chromated
	BGD 2325	150 × 70 × 1.0	180 pcs	Chromated
ABS Plastic Panels	BGD 2400	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2401	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
PC Plastic Panels	BGD 2410	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2411	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
HIPS Plastic Panels	BGD 2420	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2421	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
ABS+PC Plastic Panels	BGD 2430	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2431	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface



Plastic Panels



Steel Panels



Aluminum Panels

# BIUGED-Charts

BIUGED INSTRUMENTS offers a wide range of drawdown cards and charts for virtually any application and coating material. Stringent equality control during the production process assures that they have the most consistent color and gloss in the industry. Test charts are easy to use and an economical substrate to test a variety of coating properties, such as opacity, spreading rate, and flow & leveling behavior. They are used for testing architectural, industrial, automotive, wood finishes or even cosmetic products (e.g. nail polish). Depending on the material properties of the product to be tested and its usage different types of drawdown cards are available.

## Selection of test charts dependent on coating technology

Depending on the types of solvent used in paint formulations a drawdown chart needs to be more or less solvent resistant. The resin type requires different solvent types and dependent on the polarity of the solvent, the organic ingredients will be more or less activated. Therefore, BIUGED offers two types of drawdown cards and charts.

### Clear-coated Charts

- ◆ Are ideal for a wide range of coating systems: water and solvent borne technologies
- ◆ Guaranteed non-fluorescent paper in compliance with ASTM D 344
- ◆ Repeatable color and gloss-lot after lot
- ◆ Superior adhesion characteristics, especially with latex paints
- ◆ Rugged design (0.5 mm thickness) to prevent warping and bending after the coating is applied.
- ◆ Package is shrink-wrapped with low permeability plastic to prevent moisture absorption during shipping and storage.

### Film Laminated Charts

- ◆ With excellent solvent resistance
- ◆ Repeatable color and gloss-lot after lot
- ◆ Smooth, structure free surface
- ◆ Superior adhesion properties and flexibility
- ◆ With 0.5mm thickness
- ◆ Double film laminated will not warp and bend-even in high humidity environments.

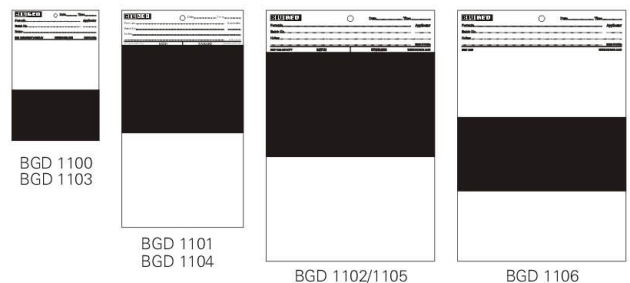
## Selection of test charts dependent on application

### 1. Opacity Charts

- ★ Comprised of a simple combination of black and white areas.

The reflectance of black area  $< 1$ ;  
reflectance of white area:  $80 \pm 2$ .

- ★ With ample for reflectance measurement
- ★ With the lot number printed on every chart



### ★ Ordering information:

Ordering Information	Description	Material	Dimensions (mm)	Qty/Box
BGD 1100	Opacity charts	Film Laminated	150 × 100	1,000
BGD 1101	Opacity charts	Film Laminated	250 × 140	500
BGD 1102	Opacity charts	Film Laminated	289 × 194	500
BGD 1103	Opacity charts	Clear-coated	150 × 100	1,000
BGD 1104	Opacity charts 2A	Clear-coated	250 × 140	500
BGD 1105	Opacity charts	Clear-coated	289 × 194	500
BGD 1106	Opacity charts 3B	Clear-coated	289 × 194	500

## Opacity Measurement

Essential sales criteria for architectural paint are hiding power and yield. In other words:

---How many layers are necessary for complete coverage?

---And how many cans will be needed?

$$\text{Opacity (\%)} = \frac{Y_{\text{black}}}{Y_{\text{white}}} \times 100 (\%)$$

100% opacity means complete hiding, no difference can be seen between the drawdown over black and white.

### Procedure

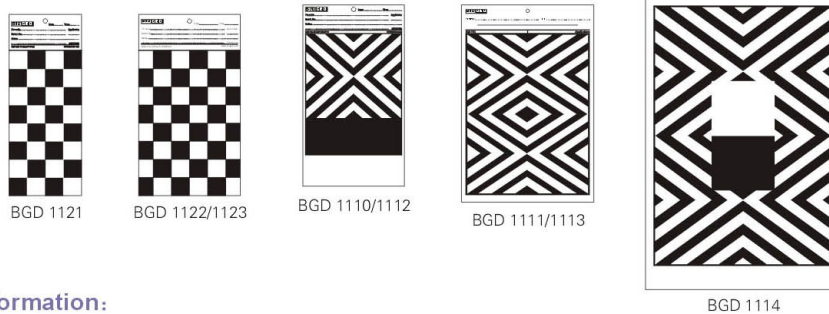
A uniform paint film is applied on a black/white contrast chart. After air drying the drawdown can be objectively evaluated using the BIUGED opacity meter. The operator is menu guided through the measurement procedure and the opacity value is displayed automatically in a second.

The same procedure can be applied for transparent films and plastics.

## 2. Checkerboard Charts/Spreading Rate Charts

Large size drawdown charts, referred to as display or spreading rate charts, were designed for visual evaluation of hiding powder. The diagonal striped patterns or the checkerboard respectively have a strong visual impact and emphasize variations in film opacity.

In order to calculate the spreading rate ASTM D 344 uses Forms 8H and 10H. In this test the paint is spread uniformly on a defined test area (0.1 square meters ~ 1 square foot) and the spreading rate is calculated from the weight and density of the applied coating.



### ★ Ordering information:

Ordering Information	Description	Material	Dimensions (mm)	Qty/Box
BGD 1110	Opacity-Display Charts	Film Laminated	250×140	500
BGD 1111	Display Spreading Charts	Film Laminated	289×194	500
BGD 1112	Opacity-Display Charts 9A	Clear-coated	250×140	500
BGD 1113	Display Spreading Charts 8B	Clear-coated	289×194	500
BGD 1114	Opacity-Display Spreading Rate 12H	Clear-coated	438×286	250
BGD 1121	Checkerboard Spreading Rate Charts	Film Laminated	250×100	1000
BGD 1122	Checkerboard Spreading Rate Charts	Film Laminated	250×140	500
BGD 1123	Checkerboard Spreading Rate Charts	Clear-coated	250×140	500

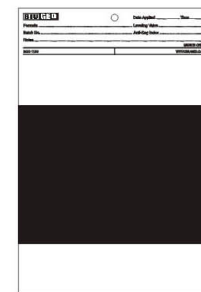
## 3. Sag and leveling Test Charts

This drawdown chart is designed for use with BGD 225 sagging tester or BGD 226 leveling tester.

The extra large black area allows measurements to be made over the black area only, in accordance with specifications that require the operator to ignore the leading and trailing edges of the drawdown.

### ★ Ordering information:

BGD 1109---Sag and Leveling Test Charts (289×194mm; 500pcs/box)



BGD 1109

## 4. Plain White Drawdown Charts

These drawdown charts are plain white with the coating on one side with no text or label on top.

### ★ Ordering information:

BGD 1132---Plain White Drawdown Charts (150×100 mm; 1,000pcs/box)

BGD 1133---Plain White Drawdown Charts (250×140 mm; 500pcs/box)



BGD 1133

**Biuged accepts any order for customized special charts!!**

## Zirconia Beads

**T**he Zirconia-beads is the ideal grinding medium produced by introducing advanced equipments and technics, widely used in the field of painting, printing ink, paper printing, packing, dye and medicine, etc.

- ◆ High efficiency of grinding: As the density of Zirconia beads is high, grinding kinetic energy is larger at same speed; efficiency of grinding is 2-3 times higher than that of general porcelain beads, getting better effect.
- ◆ Impact resistance, low consumption: As the content of  $ZrO_2$  in TZP Zirconia beads is high, it has the advantages of high density, high toughness, low consumption, no fragmentation and no peeling, etc., as well as little pollution to grinded object; the consumption is 4-10 times lower than that of general porcelain beads.
- ◆ Good stability: excellent stability, resistant to acid and alkali
- ◆ Good fluidity: good roundness, smooth surface, no air hole, reflecting polish, easy to clean; good fluidity between beads; little abrasion to equipments;
- ◆ Low cost: The abrasion of Zirconia beads is the lowest in all grinding medium at present. Compared with oversea products, our Zirconia beads is lower in abrasion, favorable price, it is honored as the best bead in the world at present. To use this product, it will greatly reduce synthesis cost for users, such as medium consumption, electrical consumption, labor force and equipments; realize dual output and improve quality in the condition of not adding any equipment. The earlier you use it, the earlier you will get benefit.

Properties	ZR60	ZR80	ZR95
ZrO <sub>2</sub> content	50%--60%	80%	94.5%
Density	≥ 4.0g/cm <sup>3</sup>	≥ 5.3g/cm <sup>3</sup>	≥ 6.0g/cm <sup>3</sup>
Bulk	2.3g/cm <sup>3</sup>	3.3g/cm <sup>3</sup>	3.7g/cm <sup>3</sup>
Crushing strength	> 1.5KN ( φ 2mm )	> 1.8KN ( φ 2mm )	> 2KN ( φ 2mm )
Mohs' hardness	8	9	9
Self consumption	≤ 0.01g/Kg.h	≤ 0.01g/Kg.h	≤ 0.01g/Kg.h
Specification	φ 0.5– φ 7.0mm	φ 0.5– φ 7.0mm	φ 0.2– φ 3.5mm



### NOTE:

- ◆ To select Zirconia beads in types, sizes and quantity in accordance with adhesion, rigidity and dispersal and grinding requirement of the grinded materials.
- ◆ To clean Zirconia beads and mill's inside before the grinding processes.
- ◆ To input the grinded materials firstly and a certain amount of Zirconia beads later. To add continuously Zirconia beads till 70%85% of the mill is full.
- ◆ To forbid to keep Zirconia beads running with little grinded material for a long time, The mill is easily broken when the Zirconia beads inside at high speed operation.
- ◆ To add fresh Zirconia beads to ensure the quality efficiency of grinded materials.
- ◆ **Ordering information:** BGD 1340---ZR 60 Beads (25kg)  
BGD 1341---ZR 80 Beads (25kg)  
BGD 1342---ZR 95 Beads (25kg)



# Grinding Glass Beads

## ① Normal beads:

As blasting, road-marking and grinding media, it has features of crystal, steady chemical change and low cost.

### Main Technical Parameters:

- ★ Chemical composition:  $\text{SiO}_2$   $\text{Al}_2\text{O}_3$  CaO MgO  $\text{Na}_2\text{O}$
- ★ Proportion:  $2.45\text{g}/\text{cm}^3$
- ★ Artificial Proportion:  $1.5\text{g}/\text{cm}^3$
- ★ Micro-rigidity:  $\approx 635\text{kg}/\text{mm}^2$
- ★ Diameters: 0.2–0.4mm; 0.4–0.6mm; 0.6–0.8mm;  
0.8–1.0mm; 1.0–1.5mm; 1.5–2.0mm;  
2.0–2.5mm; 2.5–3.0mm; 3.0–3.5mm;  
3.5–4.0mm; 4.0–4.5mm; 4.5–5.0mm;



### ★ Ordering information:

BGD 1300---Normal glass beads ( 25kg )

## ② Intensive Beads:

Silicate of boron grinding glass beads has features of tenacity, wear resistance, steady chemical change and 7.2 PH-value are suitable both for grinding materials with low, middle adhesion and blasting processes.

### Main Technical Parameters:

- ★ Chemical composition:  
 $\text{SiO}_2$   $\text{Al}_2\text{O}_3$  CaO BaO  $\text{Na}_2\text{O}$   $\text{B}_2\text{O}_3$
- ★ Proportion:  $2.5\text{g}/\text{cm}^3$
- ★ Artificial Proportion:  $1.5\text{g}/\text{cm}^3$
- ★ Micro-rigidity:  $\geq 680\text{kg}/\text{mm}^2$
- ★ Diameters: 0.6–0.8mm; 0.8–1.0mm; 1.0–1.5mm;  
1.5–2.0mm; 2.0–2.5mm; 2.5–3.0mm;  
3.0–3.5mm; 3.5–4.0mm



### ★ Ordering information:

BGD 1320---Intensive glass beads ( 25kg )

## ③ Standard Screen Mesh/Filter Mesh

Standard sieve (also called test screen, the standard test sieve, sieve particle size analysis, particle size calibration screen, check the screen size, sub-sample screening). Mounted on slap-type test sieve shaker (Tyler analysis of vibrating sieves and the United States (rotational separation sieve) Ro-Tap RX-29, RX-30 on the same principle) or standard screen machines used for a variety of powder materials, grain degree of composition grading. Widely used in abrasive, ground Kan, metallurgy, pharmacopoeia, chemical and building materials industry, materials, accurate particle size screening and detection.

Moreover, Biuged also supply a series filter mesh from 2 mesh to 635 mesh which are widely used in Filter for consumer electrical goods, oil filters, humidifier filters, metallic mesh filter, ect. There are two types material : stainless steel and Nylon.

### Main Technical Parameters:

- ★ Fine sieve frame and durable, with no leak tight,
- ★ Screen mesh standard sieve mesh precise number and mesh size of tags
- ★ Test sieves of metal perforated plate, the main test for large mesh sieve (greater than 3 mm)
- ★ According to international standards ISO3310-2: 1990 R20 / 3, R20, R40 / 3 series.
- ★ Stainless steel screen material.



### ★ Ordering information:

BGD 1376---Standard Screen Mesh

BGD 1377---Stainless Steel Filter Mesh

BGD 1378---Nylon Filter Mesh

## RAL Formula Guide

The RAL CLASSIC Colour Collection with its 210 colours is indispensable in many areas.

Many products are internationally available in these colours. RAL Colours with four digit numbers will continue to be important for colour decision also in the future.

### RAL K5

- ◆ U-shaped protective cover.
- ◆ Full page colour area of 5 x 15 cm.
- ◆ Ideally suited for colour combination and colour comparison.
- ◆ Choice of semi-matte or gloss.
- ◆ Example of a RAL Classic colour "RAL 4010"



### RAL K7

The RAL K7 Colour fan deck contains all 210 colours from the RAL CLASSIC colour range and is the definitive guide for selecting and verifying colour for paint and coatings to international standards.

The RAL K7 forms part of the RAL CLASSIC collection of accurate, easy to use resources offering a simple 4-digit code system for ease of selection, making the RAL K7 a definitive guide for professional colour use

*The RAL K7 Colour fan deck boasts numerous features, including:*

- ◆ Contains all 210 RAL CLASSIC Colours
- ◆ Five colours per page
- ◆ Simple 4-digit coding system
- ◆ Colour swatches measure 2cm x 5cm
- ◆ Fan deck size 5cm x 15cm
- ◆ Gloss finish



## PANTONE Plus Series Formula Guide (2016 Version)

The PANTONE Plus Series Formula Guide (Solid Coated & Uncoated ) is an essential tool for printers, pre-press professionals and graphic designers and replaces the previous PANTONE Formula Guides.

The PANTONE Formula Guide (Solid Coated & Uncoated), consists of a two-volume set of swatchbooks, offering 1,867 PANTONE colours, 84 more than the previous edition, printed on coated and uncoated paper making up this two volume fan book set.

The PANTONE Formula Guide (Solid Coated & Uncoated) offers a simple chromatic arrangement of swatches, is formulated with the same 14 previous base inks and the new colours are printed with uniform ink film thicknesses for easy matching on press.

The PANTONE Formula Guide (Solid Coated & Uncoated) offers numerous features, including:

- ◆ 1,761 solid PANTONE Colours 336 new additions
- ◆ Same reference numbers as previous edition new numbers begin at 7548
- ◆ Icons indicate whether a colour is achievable in CMYK or RGB
- ◆ Includes ink mixing formulas
- ◆ Printed on coated and uncoated text-weight, FSC certified paper
- ◆ ColorChecker Lighting Indicator aids lighting evaluation
- ◆ Simple index system for easy referencing

★ **Ordering information:**

GP 1601N---Pantone Forumula Giude



GP-1601N



# Equipments

## ① Single-shaft High Speed Dispenser

**Single-shaft High Speed Dispensers** are commonly used in chemical for mixing and distribution with variable frequency speed adjustment; Currently available for customers to choose from the ordinary or the explosion-proof models.

Items of this equipment with blade distributor, oar distributor or anchor distributor are designed on request with variable specifications of power. With hydraulic lift system, these machines' lift distance and centre distance between the base and the scattered axes.

If required, User-friendly hydraulic lift system of 180° rotation is available, it easily operated. quest with variable specifications of power, lift distance and centre distance between the base and the scattered axes.



Ordering Information → Main Technical Parameters ↓	BGD 8011	BGD 8013	BGD 8015	BGD 8017	BGD 8018
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	9 KW	13 KW	17 KW	21 KW	25 KW
Working Travel (mm)	900	900	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Suitable Container Capacity (L)	300 ~ 500	300 ~ 600	400 ~ 700	500 ~ 800	500 ~ 1000
Including Dispensing Blades (mm)	Φ250、Φ280	Φ250、Φ280	Φ280、Φ300	Φ280、Φ300	Φ300、Φ320
Overall Size (cm)	170×80×180	175×80×180	180×90×180	195×90×205	195×90×205

## Dispersion Blades

Dispersion blades are mainly applied to pulverize, grind, and stir liquid, emulsion or solid-liquid material as below industrial fields: coating, paint, ink, pigment, dye, adhesive, daily chemicals, food and medicine. Dispersion blade are daily consumptive parts for dispersing machine, grinder, pulverizing mill, stirring machine, emulsifying machine, etc.

Classify Method	Dispersion Blades		
	Flat saw type	Paddle type	Disc type
Dispensing Machine	high viscosity dispersion blade	medium/low viscosity dispersion blade	Interior teeth dispersion blade for medium/low viscosity
No. of Dispersion Blade Layers	single layer dispersion blade	bilayer dispersion blade	multi-layer dispersion blade column
No. of teeth	Multit teeth	Three teeth	
Teeth Structures	single side teeth dispersion blade	Double sides dispersion blade.	
Teeth Position	interior teeth dispersion blade	Peripheral teeth dispersion blade.	

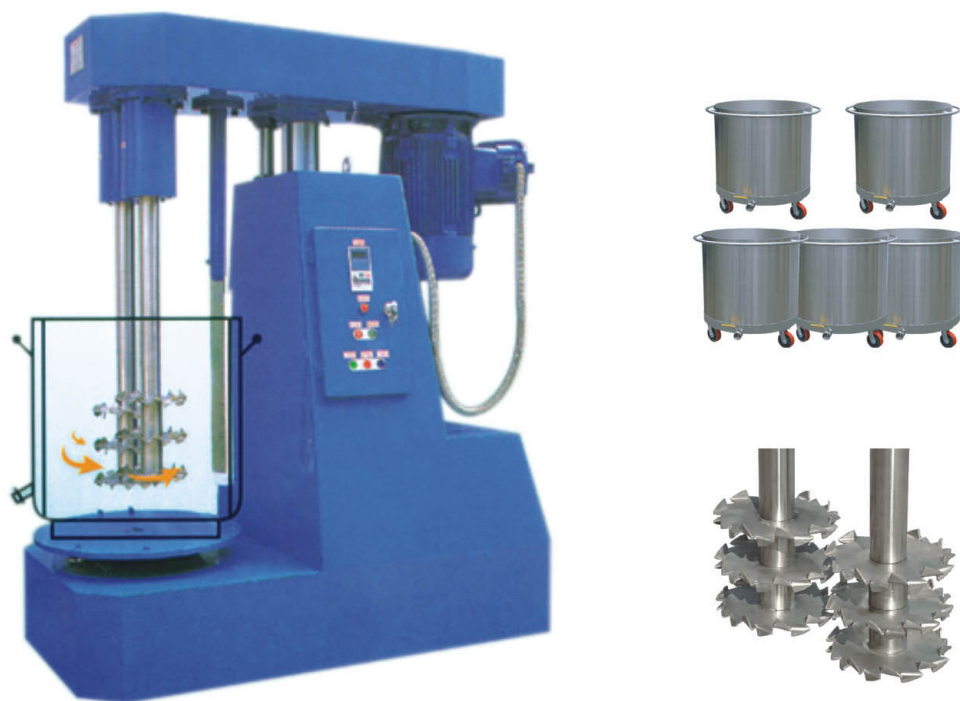


## ② Dual-shaft High Speed Dispenser

The perfect combination of BGD series of speed-adjustable stringed-plate dual-axle distributor and BGD series of basket-type fast high grinders and distributors enables the mixing, distribution, grind and package of materials with very high stickiness to be finished in one consecutive process at one machine, 10-20 times more efficient than ordinary distributor and grinder, Ground materials as fine as 5-10  $\mu\text{m}$ , this is absolute breaking-through in the mixing, distribution, grind and package of materials with very high stickiness, and is widely used for high-glass atom ash, sticker pulp, rendering, cosmetics, food, salve, ink etc.

### Characteristics:

- ◆ Stringed plates on dual-axle ensures fast mixing and dispersion.
- ◆ Rotary blade unit inside the cylinder prevents the mixture from sticking to the wall and ensures thorough dispersion
- ◆ Speed-adjust unit makes it easy to change speed.
- ◆ Cooling system in the secret compartment of the bucket provides effective protection for temperature -sensitive materials.
- ◆ Hydraulic lift.
- ◆ User-friendly service vehicle accessory to the machine eases laborintensity.



Ordering Information → Main Technical Parameters ↓	BGD 8021	BGD 8023	BGD 8025	BGD 8027	BGD 8028
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	10 KW	14.5 KW	18.5 KW	22.5 KW	26.5 KW
Working Travel (mm)	800	1000	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Including Single-layer Stainless Steel Container (L)	2 × 100L	2 × 150L	2 × 200L	2 × 300L	2 × 400L
Including Dispersing Blades (Dia.mm)	170 or 180	180 or 200	200 or 210	220 or 230	230 or 250
Overall Size (cm)	155 × 75 × 175	175 × 80 × 175	175 × 80 × 175	190 × 85 × 205	190 × 90 × 205

**Note:** Each shaft is equipped three same diameter dispersing blades, these total six blades are distributed well-proportioned at two shafts.

### ③ Basket Grinding Machine

This is a new model of fast high grinder for materials with high or middling stickiness, one type with variable frequency speed adjust and the other with electric frequency speed adjust; A model of ordinary design and a model of explosion-proof design are currently available for customers to choose from.

#### Characteristics:

- ◆ Basket design renders a thorough change of the traditional mode of grind
- ◆ Basket lift design makes the machine user-friendly while feeding and discharging
- ◆ Dual-blade design at the bottom of the basket frees the ground material of circulation assist, saving energy and reducing cost.
- ◆ Circulation cooling design in the secret compartment between the basket wall and inner container wall provides effective protection for temperature-sensitive material.
- ◆ Blade at the basket bottom feeding upwards, all-round interactive collision spurred by the back and cross flows and convection between the ground materials and intermediary agent in the basket renders fast grind and distribution, ensuring the fineness of ground material.
- ◆ Speed of grind is adjustable, which makes it suitable for the grind of varieties of materials and, further more, saves grind time.
- ◆ Temperature-control system precisely surveys and controls the temperature while grinding.
- ◆ Rotary blade design inside the cylinder prevents material from sticking to the wall, making the grind more thorough and the better-distributed.
- ◆ User-friendly service vehicle with machine eases labor-intensity.
- ◆ Timer relay controls grind time, making the machine more user
- ◆ Hydraulic lift.



Ordering Information → Main Technical Parameters ↓	BGD 8051	BGD 8053	BGD 8055	BGD 8057	BGD 8058
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	9 KW	13 KW	17 KW	21 KW	25 KW
Working Travel (mm)	800	1000	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Including Single-layer Stainless Steel Container (L)	2 × 100L	2 × 150L	2 × 200L	2 × 300L	2 × 300L~450L
Including Tool Car	No	Yes	Yes	Yes	Yes
Including 95% Zirconia Beads	18 KG	18 KG	28 KG	28 KG	38 KG
Overall Size (cm)	155 × 75 × 175	165 × 90 × 180	165 × 90 × 180	165 × 90 × 190	165 × 90 × 190

## Standards and Relative Instruments:

ISO Standards	ASTM Standards	Other Standards	Instruments	Page
ISO 1514			Biuged Brand Test Substrates	141
ISO 1518-1			Automatic Scratch Tester	64
ISO 1519			Cylindrical Mandrel Tester	68
ISO 1520		DIN 53166 DIN 53232 BS 3900	Cupping Tester	71
ISO 1522	ASTM D 4366	DIN 1522	Pendulum Hardness Tester	63
ISO 1524	ASTM D 333 ASTM D 1210	BS 3900-C6 BS 3900-E9	Fineness of Grind Gauge	15
ISO 2115	ASTM D 2354		Min.Film Forming Temperature Tester	22
ISO 2409	ASTM D 3359 ASTM D 3002	BS 2409 DIN 2409 EN 2409	Cross Hatch Adhesion Tester	59
ISO 2431	ASTM D 5125		ISO Flow Cups	2
ISO 2555 ISO 2884 2	ASTM D 2196		Rotary Viscometer	5~11
ISO 2592			Open Cup Flash Point Tester	32
ISO 2719 ISO 3679	ASTM D 93		Closed Cup Flash Point Tester	32
ISO 2808	ASTM D 1212 ASTM D 4414		Wet Film Comb Thickness Gauges Rolling Wheel Thickness Gauges	54
ISO 2808 ISO 2360 ISO 2178	ASTM B 499 ASTM D 1186 ASTM D 1400 ASTM D 7091	DIN 50981 DIN 50984	Dry Film Thickness Gauge	55~56
ISO 2811	ASTM D 333 ASTM D 1475 ASTM D 2805	DIN 53217 BS 3900-A 19 DIN 53217	Specific Gravity (SG) Cups	18
ISO 2813 ISO 7668	ASTM D 523	DIN 67530 DIN 2813 EN 2813 EN 7668	Glossmeter	49~53
ISO 2815		DIN 53153 EN 2815 BS 2815	Buchholz Indentation Hardness Tester	66
ISO 3248			Precise Oven	103
ISO 3668	ASTM D 1729		Color Assesment Cabinet	25
ISO 3906 ISO 6504 ISO 2814	ASTM D 2805 ASTM E 97	DIN 55984 BS 3900-D6/D7	Reflectance Meter/Opacity Meter	21
ISO 4624	ASTM D 4541 ASTM D 7234		Pull off Adhesion Tester	60
ISO 4630-1			Gardner Color Comparator with C Illuminant	26
ISO 6272.1			BGD 306 Impact Tester	70
ISO 6272.2	ASTM D 2794		BGD 305 Impact Tester	70
ISO 6819 ISO 6860	ASTM D 522 ASTM D 1737	BS 3900-E11 DIN 53150 DIN 66669	Conical Mandrel Bend Tester	68

ISO Standards	ASTM Standards	Other Standards	Instruments	Page
ISO 7253 ISO 4623-1	ASTM B 117		Salt Fog Cabinets	113
ISO 7619	ASTM D 2240	DIN 53505	Shore Hardness Meter	66
ISO 7724	ASTM D 2244 ASTM E 308 ASTM E 1164	DIN 5033 DIN 5036 DIN 6174	Spectrophotometer	46
ISO 7784-2			Rotational Abrasion Tester	75
ISO 11341 ISO 4892.2	ASTM D 6695 ASTM G 155 ASTM D 3451		Xenon Chamber Tester	126~133
ISO 11507			UV Light Accelerated Weathering Tester	122
ISO 11998		DIN 13300 BS 3900-F17	BGD 526/2 Wet Abrasion Scrub Tester	72
ISO 13803	ASTM E 430		Haze Glossmeter	
ISO 15184	ASTM D 3363	BS 3900-E19	Pencil Hardness Tester	62
ISO 17132	ASTM D 4145	EN 13523-7	T-bend Tester	69
	ASTM C 346 ASTM C 584 ASTM D 2457		Special Glossmeter	53
	ASTM D 1200 ASTM D 333 ASTM D 365		BGD 125 Ford Cups	2
	ASTM D 2486		BGD 526/1 Wet Abrasion Scrub Tester	72
	ASTM D 2794	JIS-K5400	Dupont Impact Tester	69
	ASTM D 2801		BGD 226/1 Leveling Tester	20
	ASTM D 333 ASTM D 968 ASTM D 1395 ASTM D 2205		BGD 529 Falling Sand Abrasion Testers	76
	ASTM D 3450		BGD 526/3 Wet Abrasion Scrub Tester	72
	ASTM D 3730 ASTM D 4400		Sagging Tester	19
	ASTM D 4138		Paint Inspection Gauge	
	ASTM D 4212 ASTM D 816 ASTM D 1084		BGD 126 Zahn Cups	3
	ASTM D 4213		BGD 526/4 Wet Abrasion Scrub Tester	72
	ASTM D 4828		BGD 526/5 Wet Abrasion Scrub Tester	72
	ASTM D 5264		Rub Resistance Tester	
	ASTM D 562	BS 3900-A7-1	Krebs Stormer Viscomter	12
	ASTM D 5895/A		Line Drying Time Recorder	23
	ASTM D 823		Automatic Film Applicator	38~40
	ASTM D 823 ASTM D 3258		Applicator	34~36
	ASTM F 2357-04		RCA Paper Abrasion Wear Testers	76
		BS 3962-6	Cross Cutting Rule	59
			BGD 521 Solvent Resistance Tester	74
		NYPC	BGD 226/2 Leveling Tester	20
		DIN 53211	BGD 127 DIN Flow Cups	4
		DIN 53778	BGD 526/6 Wet Abrasion Scrub Tester	72
		DIN 55667	Conductivity Meters	29

## How to order

1. Read carefully product introductions in which you are interesting. Call or e-mail to Biuged sale engineer if your need more detailed information or have any further question.
2. Ask for an official quotation issued by Biuged
3. Negotiate the following necessary items as below with Biuged sales before confirming your order.
  - ① Price terms (EX-works, FOB, CIF etc)
  - ② Delivery details (Destination, Delivery time and transporter)
  - ③ Payment terms
  - ④ Any other special requirements (Special power supply, The third party certification. Training and technical support etc.)
4. Place your official order to Biuged by fax or e-mail. In case of any unexpected misunderstand, please ensure all following information are included in your order
  - ① Your company detailed information (Consignee, address and tel. number etc)
  - ② Products name, Ordering information and order quantity
  - ③ Expected delivery time
5. Biuged make a Proforma Invoice with our bank information
6. Customer do the payment and send the swift copy to Biuged.
7. Biuged prepare all necessary documents for customer to clear custom. We would ask you to confirm these documents before we send the original one.
8. Send out the goods and relative documents which are confirmed by customer.
9. When the goods arrive, please examine it immediately. If find the package has been damaged seriously, please refuse to receive it. We will ask for compensation to the transporter.
10. If find any defects of quality or loss of quantity, please notify us in writing within 5 days after your receipt.

## Warranty

1. Biuged compact our products are warranted against defects in materials and workmanship for a period of 12 months from the date of delivery. During the warranty period, defects of quality shall at Biuged discretion be either repaired or replaced by Biuged free of charge. The customer has to permit Biuged enough time and opportunity to remove the problem. Biuged is entitled to appoint third parties carry out the necessary repairs.
2. This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Biuged
3. Any consumable materials, accessories, easily damaged parts are exclude in this principle

## Calibration

1. Biuged promises all products have been calibrated by our laboratory before leaving factory, and can accord with relative standard requirements as described. We also confirm these products can meet all functions under proper installation and use.
2. Generally speaking, the instruments don't need to be recalibrated during our warranty period under proper use. After warranty period, any requirement for calibration service would be charged.
3. If customer need the calibration certification issued by the third part, we will charge the relative cost.

## Bank Information

**BENEFICIARY NAME:** BIUGED INSTRUMENTS CO., LTD

**A/C No:** 8000 866 1610 9048

**SWIFT CODE:** GZCB CN 22

**BANK NAME:** BANK OF GUANGZHOU

**ADD(BANK):** NO.10,12,14 HUANGCON XI ROAD, ZHONGSHAN AVENUE, TIANHE DISTRICT.GUANGZHOU.CHINA

**ADD(COMPANY):** RM.101,NO.3,SI CHENG RD., GAOTAN SOFTWARE PARK. TIANHE DIST., GUANGZHOU.CHINA



# International

# Agent



## Iran

**Company:** Dornica Vision Aria Co.  
**Add:** Unit no.4, 2nd Floor, No.431, Jalal Al Ahmad Str., Tehran, Iran  
**Tel/Fax:** +98 21 44299852 & 53 & 56 & 57  
**Webist:** www.dornicaco.com **E-mail:** sharifi@dornicaco.com  
**Contact Person:** Mohammad Reza Sharifi  
**Mobile No.:** +98 912 2460580



## Sri Lanka

**Company:** Tradekem (Pvt) Ltd.  
**Add:** 273/A, IDH Road, Kotikawatte, Angoda, Sri Lanka.  
**Tel:** 0094 112 578060/61; 0094 112 549045;  
**Fax:** 0094 112 549040  
**E-mail:** jagath@tradekem.net, sachithra@tradekem.net



## Spain

**Company:** ALTAKEM CHEMICALS S.L.  
**Add :** Plaza Castilla, 3 - Planta 18 A. Madrid, Spain  
**Tel :** ( +34 ) 91 411 89 92  
**E-mail :** comercial@altakem.com  
**Website:** www.altakem.com



## Indonesia

**Company:** PT Colorindo Chemtra  
**Add:** Perkantoran Taman Kebon Jeruk Blok AX No.18, Jl.  
 Raya Meruya Ilir, Jakarta Barat 11630, Indonesia  
**Tel :** +62 21 5890 6040  
**Fax :** +62 21 5890 5987  
**E-mail :** info@colorindochemtra.com www.colorindochemtra.com



## Egypt/Libya

**Company:** X-Cell Chemicals Ltd.  
**Add:** 20 Almaza St., Heliopolis, Cairo  
**Tel:** 00202 2690 4711  
**Fax :** 00202 2417 8356  
**Mobile:** 002 0100 7000 346 / 002 0100 7609 600  
**E-mail:** xcellchem@xcellchemicals.com; xcellchem@gmail.com



## Netherlands/Germany/France/Belgium

**Company:** Solvica B.V  
**Add:** P.O.Box 202 8250 AE Dronten The Netherlands  
**Tel:** +31 (0) 88 3310661  
**E-mail:** martin.schut@solvica.com  
**Website:** www.solvica.com



## South Africa

**Company:** SCR Chemicals (Pty) Ltd  
**Add:** Unit 35, APD Industrial Park, Elsecar Street, Kya Sands,  
 Northriding, Johannesburg, South Africa  
**Tel:** +27(0)11 7081299  
**E-mail:** trippy@scrchemicals.co.za



## Turkey

**Company:** AOB Test Systems Laboratory and Quality Control Instruments  
**Add :** Büyükdere Mahallesi Bostan Sokak Yazgan APT N:2 D:1 34453  
 Sarlyer - istanbul / TÜRKİYE  
**Tel :** 0090 2122425463  
**Fax :** 0090 2122425943  
**E-mail :** info@aoblab.com  
**Website:** www.aoblab.com



## Colombia

**Company:** AQUATERRA S.A.S<sup>®</sup>  
**Add:** Calle 17, # 96A 60, Bogota, Colombia.  
**Tel:** + 57- 1 4044747  
**Contact:** Mr. Gustavo Correa  
**Email:** gcomercial@aquaterra.com.co



## Argentina

**Company:** Spec Chem SRL  
**Add:** Colombres 73, Villa Adelina (1607),  
 Buenos Aires, Argentina  
**Tel:** (54 11) 4717 0345  
**Email:** spechem@spechem.com.ar



## Russia

**Company:** Tecsa Ltd.  
**Add:** 3/1, Argunovskaya street, Moscow, 129075, Russia  
**Tel:** +7 495 232 04 82  
**E-mail:** info@tecsa.ru  
**Contact:** Rimma Hafizova



## United Kingdom

**Company:** Sprayquick Systems Ltd  
**Add:** Unit 9 Stuart Rd Bredbury Stockport Cheshire Sk6 2SR  
**Tel:** +44 (0) 161 494 0678  
**Fax:** +44 (0) 161 494 0749  
**Email:** info@sprayquicksystems.co.uk  
**Website:** www.sprayquicksystems.co.uk



## Thailand

**Company:** Koventure Co.,Ltd  
**Add:** 563 Moo4 Bangpoo Industrial Estate Soi10, Sukhumvit Road,  
 Praeksa, Muang Samutprakarn, Samutprakarn 10280 Thailand  
**Tel:** +66 2 315 9145  
**Fax:** +66 2 316 5399  
**Email:** koventure@purity.co.th



## Brasil

**Company:** Mastro Representacoes Comerciais Ltda.  
**Add:** Rua Artur Rocha, 920 Porto Alegre RS Brazil  
**Tel:** +5551 3222-9249 **Contact:** Stefano Mastronardi  
**Email:** info@mastroquimica.com.br  
**Website:** www.mastroquimica.com.br



## Nigeria

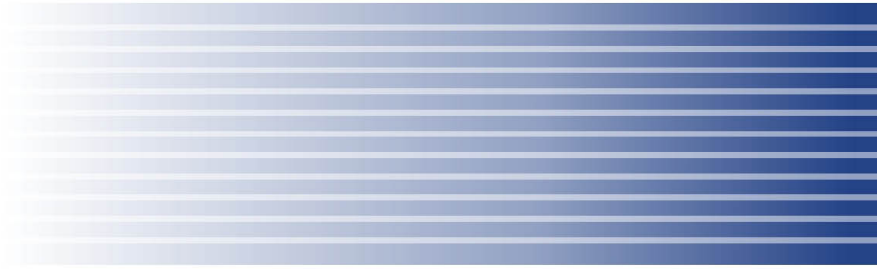
**Company:** Chizzy Nigeria. Limited  
**Add:** Opposite Saddle Club, Olowora Junction, Isheri Road  
 Olowora, P.O.Box 7880 Ikeja, Nigeria  
**Tel:** +234 809 3028722 & +234 809 9910984  
**E-mail:** Chizzyltd@yahoo.com, info@chizzyltd.com



## Lebanon, Syria & Jordan

**Company:** Uniforce Chemicals SARL  
**Add:** Sector 2, St. 84, Bldg. 258, 2nd Floor,  
 PO Box: 40-131 Baabda Lebanon  
**Tel:** 00-961-5-921489 / 00-961-5-468421  
**Fax:** 00-961-5-923638  
**E-mail:** uniforce@cyberia.net.lb admin@uniforce.biz

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