

BGD 186

Intelligent

Krebs Stormer Viscometer

Operation Instruction



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About Us

Biuged Laboratory Instruments (Guangzhou) Co. Ltd. has been focusing on developing and innovating high-quality and high-precision instruments for 50 years. We are the biggest and most professional manufacturer of testing instruments for paint, coating, ink and printing field in China. All our products are in according with ISO, ASTM, EN standards etc and get CE Certification.

Originally founded in 1963, Biuged have grown to an internationally recognized company with many worldwide customers base which includes the worlds leading paint and coatings manufactures.

At the same time, Biuged has a young, motivate and vibrant team. Our R&D department continually investigates new product design ideas, in conjunction with the major standards committees. In order to supply up to date instrumentation for the Quality Control of coatings, we always apply the advanced contemporary techniques and experience to our new products. Our manufacturing department ensures that all our products are built to the highest quality, every instrument undergoing rigourous calibration and testing before it leaves our premises.

Moreover, Biuged has own independent Calibrate laboratory and more than 40 agents and offices all over the world. We are also the major member of Chinese Standardization Technology Committee of Paint and Pigment.

Produce the highest cost-effective products and offer the most professional service are Biuged mission. Satisfying our customers' needs are our ultimate wishes.

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1.0 Introduction

BGD 186 is the newest Intelligent krebs Stormer viscometer which used to measure the paints and other coatings which indicate the viscosity by KU values. It is an upgraded and modified product of BGD 184 or STM-IV Stormer viscometer, through LCD show "KU" , "cp" , "g" value at the sample temperature at the same time. Meanwhile, it connects to the main part via a temperature probe, it can also show the temperature values of the measured samples.

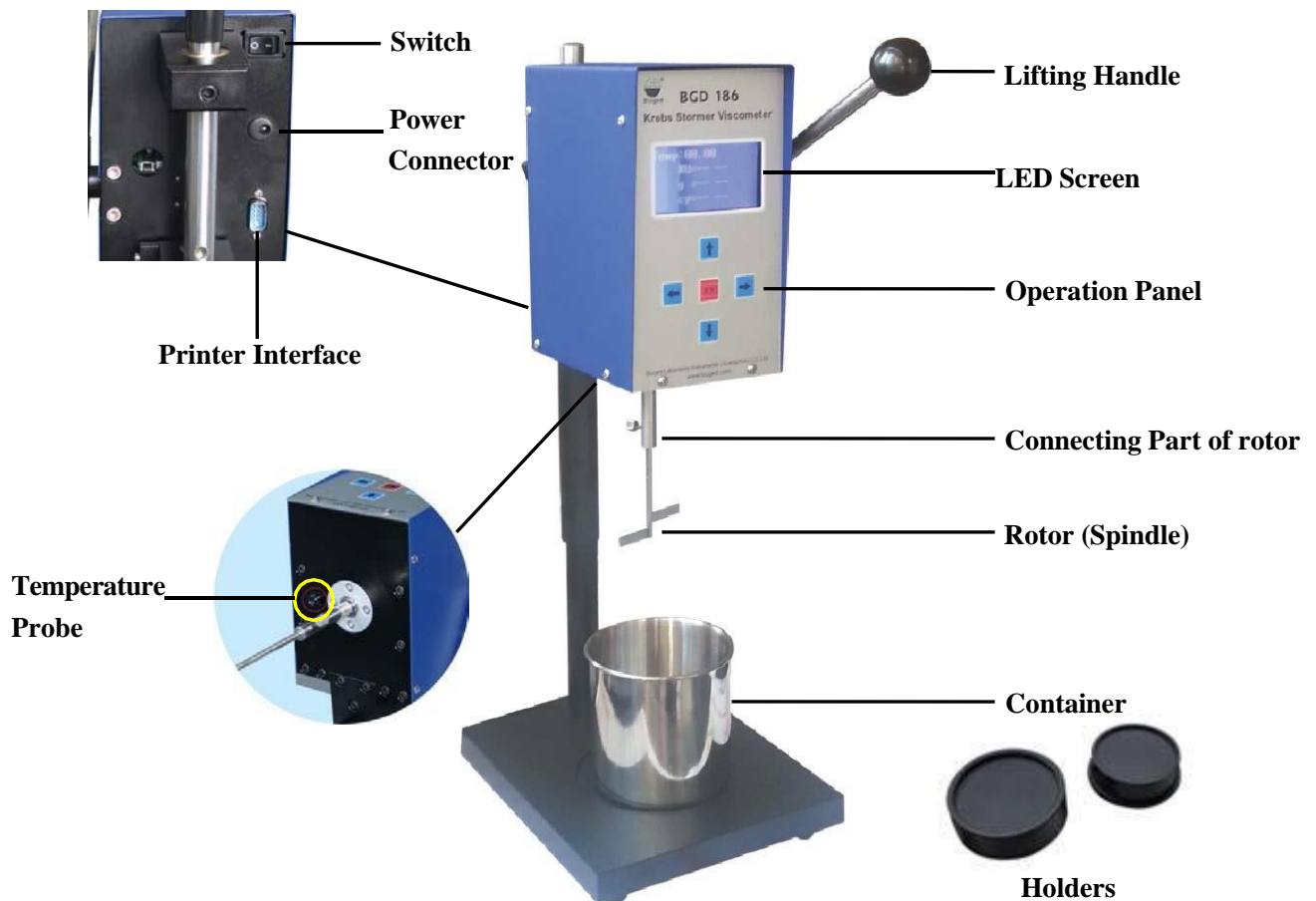
BGD 186 is controlled by microprocessor, A paddle type spindle is driven at 200r/min by specific constant speed motor. The reaction torque of the spindle rotating at 200rpm is converted to a logarithmic function which display in KU (Krebs) Units by microprocessor. It is usually use for marking the viscosity of brush coating and roller coating. The instrument adopts special method of calculation ,it can delete data which deviated from the centre area automatically, it improved index of repeatability in measurement. The operator just need to let the spindle immerse into sample until a required depth. Then, they can read out the KU values or the CP value of the tested samples from the display screen directly.

The Stormer Viscometer adopts single slice microprocessor. A paddle type spindle is driven at 200rpm by a constant speed motor. The reaction torque of the spindle rotating at 200rpm is converted to viscosity in Kreb Units by microprocessor.

An operator immerse the spindle into the fluid. If the correct amount of fluid has been put into the container, the surface of the fluid will be at the immersion mark of the spindle. The operator can directly read out the KU values or the CP value of the tested samples from the display.

This instrument are designed according with ASTM D 562 and GB 9269.

2.0 Structure & Parts



3.0 Main Technical Parameters

- ◆ Measuring Range: 40.2 KU-141.0 KU (KU value); 27 cp -5,250 cp
- ◆ Accuracy: $\pm 1.5\%$ of full scale range;
- ◆ Repeatability: $\pm 1.0\%$ of full scale range;
- ◆ Rotor speed: 200r/min ± 0.5 r/min;
- ◆ Volume of a container: approximately 500ml;
- ◆ Lifting range: 90mm
- ◆ Input voltage: 110~220V/50~60Hz
- ◆ Power: 10W
- ◆ Overall dimensions: 210mm \times 180mm \times 500mm (L \times W \times H)
- ◆ Net Weight: 7.0 KG

4.0 Operation

4.1 Preparations:

4.1.1 Take out the instrument from the package; put it on a stable and smooth table.

4.1.2 Take out the spindle from the package, loosen the locking screw of connecting part of spindle, then insert the spindle (Spindle's gap face to locking screw), tighten the locking screw.

Take out the Stainless steel cup, cup holder, Lifting handle from the accessories box, install the machine according to the Picture one. Lifting handle should be tightened.

4.1.3 Take out the power line from the package, insert it to the electric outlet which located at the back of instrument.

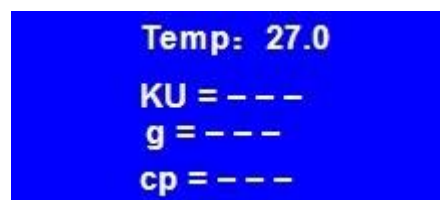
4.1.4 If you ordered mini-printer, connect it to the printer interface which is located at the back of instrument.

4.1.5 Adjust temperature of measured sample to (23 ± 0.5) °C and keep it during the whole test. Instrument also should be kept at the same temperature.

4.2 Operate

4.2.1 Turn on

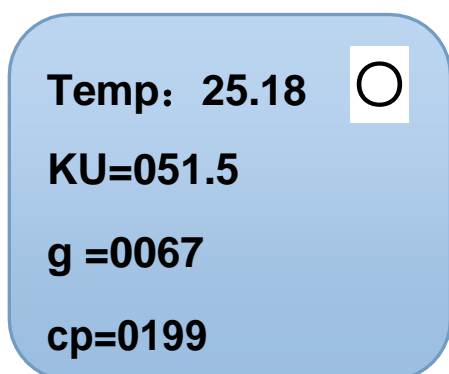
4.2.1.1 Turn on the power switch. Then the top of the display interface displays the current temperature of the sample surface, the screen shows KU, g, cp "-----" which are going to be measured.



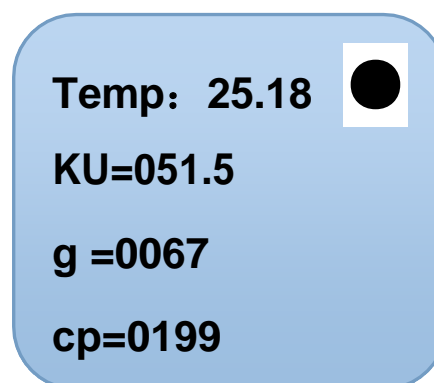
4.2.2 Test

4.2.2.1 Take out the container, and pour into sample which have been stirred well. Make its liquid level is same as the spindle's mark (If don't have enough sample, operator can use two holders to add height of container). Pressing down the lifting handle, spindle begins to rotate after immersing into the sample. At

this moment, the screen will show the viscosity values of measured sample.



If top right corner of screen shows hollow circle, it means the machine is testing and value is unstable



Solid circle means measurement has been finished and tested value is stable and can be recorded

Note: During the period of testing, you should pay attention to hold on lifting handle in order to make sure that the liquid surface is level with the spindle's mark. (1mm error is allowed). The instrument contains a special algorithm internal control procedures, it would not only show the current real-time viscometer's value of the tested sample but also can filter out interference caused by numerical beating (1% FSC is allowed to change).

4.2.3 Pause or Continue

If this instrument needs to be stopped when working, just lift up the lifting handle, spindle would stop rotating, under this situation, the machine would automatically enter into standby mode, if need continue to test, just press down the lifting handle .

4.2.4 Emergency:

In case of emergency (such as the spindle is not rotating, but the machine appears some abnormal noises), you need to stop it immediately. Operator can turn off the power switch directly, then contact the manufacturer.

4.2.5 Notice

4.2.5.1 After finishing test, the machine power should be shut off , then clean instrument.

4.2.5.2 During the test, if spindle stop rotating and screen show “Over rang, Please restart” , please shut off the instrument immediately. It means sample viscosity is too high and has been beyond of instrument's testing range.

4.2.5.3 Because temperature will influence viscosity of sample, please note the temperature change during the whole test.

4.2.5.4 “cP” value measured by Krebs Stormer Viscometer is just for reference, and isn't comparable with “cP” value measured by other type viscometers.

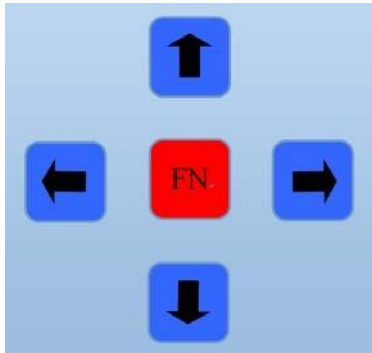
5.0 Operation Panel

5.1 Select Language

There are Chinese language and English language in this machine, operator can switch freely

between these two languages.

Turn on the machine and after finishing self-checking, press “↓” button then enter set language windows(see below picture); then press “→” button to switch language. Press “FN” to save and return to the testing window; press “←” to return the testing windows directly .



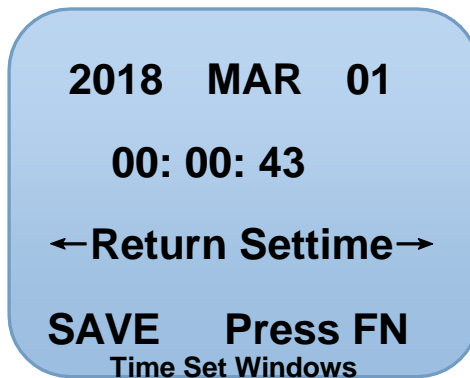
Operation Panel



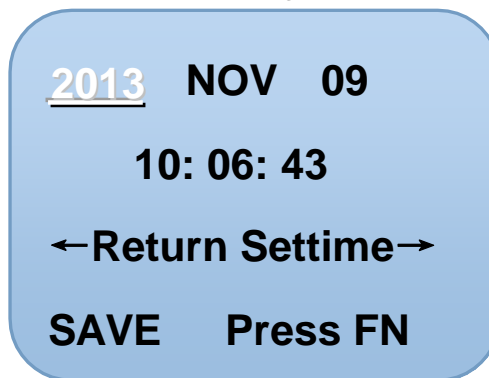
Set Language Windows

5.2 Check time and set time

5.2.1 Turn on the machine and after finished self-checking, press “→” button to enter time windows (see below picture) .



5.2.2 Press button “→” to move the cursor (Date which will be revised begin to flicker), press “↑” and “↓” to adjust value. After finishing setting, press button “FN” to save and press “←” to return. If don't want to save, just press “←” to return to the testing window.



Set time Windows

5.3 Print

Operator can choose mini-printer to print testing data. Be sure connect printer to instrument correctly. During testing procedure, press “FN” button , and printer can print the current shown values.

6.0 Calibrate

6.1 Krebs Stormer Viscometer is precise instrument and need to be calibrated every one year.

Biuged has calibrated precisely every Krebs Stormer Viscometer with standard silicone oil which calibrated by "South China National Center of Metrology". User don't need to calibrate it within one year.

If machine is worked under overload or improper operation and lead to big test results difference, then operator should calibrate this machine.

6.2 Standard silicone oil for calibration (Optional Accessory)

Ordering info	KU value	Dynamic viscosity (cP)
BGD 1600/L	67.2	500
BGD 1600/M	86.3	1,000
BGD 1600/H	106.6	2,000
BGD 1600/T	121.5	3,000

Note:

- ① The viscosity values in the table ① ambient temperature under 25 °C test data
- ② Each viscosity oil viscosity is measured in the attached report data on the subject when ordering
- ③ standard viscosity value is valid for one year for each oil viscosity, late submission should be re-calibrated

6.4 Calibration Procedure

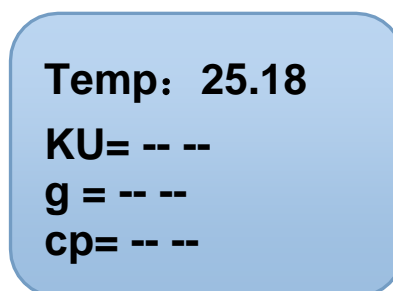
6.4.1 Prepare Standard oil for calibration

It's recommended that the KU value of oil should be between 80.0 ~ 100.0 (800 ~ 1,600 mPa.s) ,and ensure the viscosity value of oil is true, then search its relevant "g" value

Notice:

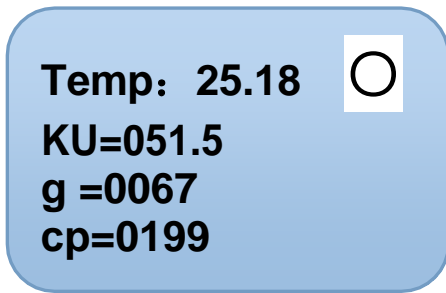
- ① **Whole calibration procedure should be done under standard laboratory environment (Temperature:25±2 °C; Relative humidity: 50±5%) , viscometer and oil should be put in this environment for 24 hours at least.**
- ② **Test current temperature of oil again before start calibration, ensure the difference between current temperature with that temperature when calibrate oil is less than 0.2°C**

6.4.2 Turn on the power of viscometer, machine begin to self-checking, and after that, it enter testing windows as below picture.

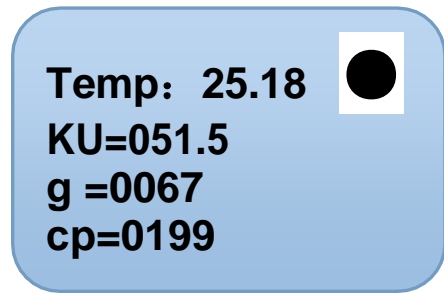


6.4.3 Put standard oil on the working platform, press down lifting handle and make sure the liquid

surface is coincides with the impeller's mark. Now viscometer begin to test, and LCD screen will show in turn as below:

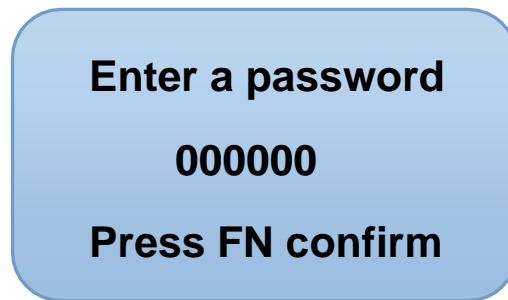


If top right corner of screen shows hollow circle, it means the machine is testing now and value is unstable

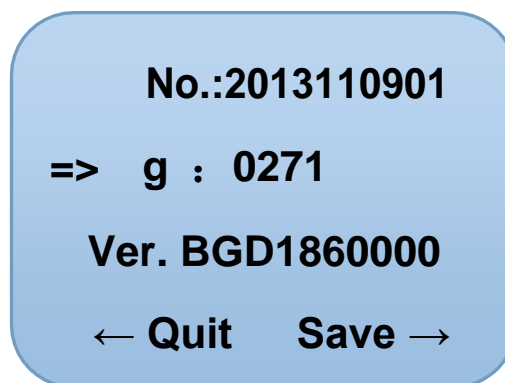


Circle has become solid, finish testing and value is stable and can be read

6.4.4 Keep on testing (rotor is rotating), press “↑” button and viscometer will enter next windows as below:



6.4.5 Input password: Press “←” and “→” button to remove cursor, press “↑” and “↓” to adjust value (original password is 000025, if not please contact Biuged) , after inputting password then press “FN” button to confirm, and it will enter calibration windows as below:



6.4.6 Press “FN” button to move“=>”cursor to the second line “g”

6.4.7 Press “→” button, now the value behind “g” begin to glitter, press “↑” and “↓” button to adjust “g” value to standard value of oil

6.4.8 Press “**FN**” button to move cursor “=>” to the last line (now, the “**g**” value is still glittering) , press “→” button to save (The whole screen will flash and operator can hear a slight vibrancy) .

6.4.9 Press “←” button to quit calibration system. Calibration is finished.

Notice:

- 1. Whole calibration procedure is done under testing windows: let viscometer test standard oil first , when test results come out then enter calibration windows. Keep lifting handle on pressing down status**
- 2. Don't press “←” button after finishing inputting “g” value, otherwise “g” value will stop glittering, data couldn't be save and calibration procedure is failed.**

7.0 Notices

7.1 After the test, user should turn off the power immediately, clean-up the equipment.

7.2 This instrument has precision measurement chassis parts, handling should be gently.

7.3 This instrument is special equipment, if not professionals do not disassemble the instrument housing, so as not to affect the instrument measurement accuracy.

7.4 Temporary instrument when not in use, the instrument should be maintained at a high lift handle limit device, rather than making it punishable by a lower position, or it may generate lift inflexible phenomenon.

7.5 If the sample viscosity is too high, the instrument overload, mixing blades stop rotating at this time, abnormal sound in the host, in order to protect the equipment, the test must be stopped immediately, to reduce the load.

7.6 In order to maintain the authenticity of the data, the instrument should be regularly checked once a year to the company, or send the relevant supervision departments measurement calibration test once.

7.7 The Krebs Unit is a special measure of viscosity that is not based on the Newtonian model of flow. The ASTM test method D 562 was originally developed around the special conditions of an instrument that used gravity to drive a paddle spindle at 200 rpm. The weight required to achieve 200 rpm varied depending upon the viscosity of the fluid under test. The Krebs unit was developed through the correlation of the weights used and the time required for 100 revolutions of the paddle. The ASTM standard also provide a correlation from Krebs Units to the scientific measure of viscosity in centipoise.

The Centipoise scale is available through a correlation originally defined in the ASTM test method. Since this value is based on the Krebs Unit, it is not equivalent to centipoise values determined using other types of viscometers, such as the rotary viscometers. The centipoise values displayed on BGD 186 are for reference only. Comparisons to measured values from other instruments should not be made.

8.0 Maintenance

Biuged Instruments offers free one-year warranty (calculated from the date of delivery) ; paid and provide lifelong maintenance and calibration.

8.1 The machine is warranted in respect of materials and workmanship for 12 months from the date of purchase. Any defective parts within the machine arising during the warranty period, shall be replaced free of charge subject to our inspection.

8.2 Any defective parts within the machine arising out of the warranty period: shall be replaced at client's expense.

8.3 Under the following conditions, we will not be responsible for the replacement during the warranty period:

- Without invoice or receipt.
- Damaged by wrong assembling or disassembling.
- Damaged by wrong or careless operation.
- Damaged by wrong operating under improper condition.
- Damaged by broken packing during transportation.

9.0 Packing List

1. Main instrument	1	pc
2. Stainless steel container	1	pc
3. Spindle	1	pc
4. Container Holder	2	pcs (big and small , each one)
5. Power Cable	1	pc
6. Instruction Manual	1	pc
7. Verification Certificate	1	pc

10.0 Others

For more information regarding this product, spares, accessories etc. or if you would like to have a Biuged full catalogue, please contact your local agent or visit our website at www.biuged.com

