

Rotary Abraser

BEVS2816

User Manual

(V202401)



Please read this manual carefully before using the device and keep it for future reference.

Company Profile

Time of Establishment: January 2003

Professional R&D and Manufacturing:

Intelligent testing equipment, intelligent robotic testing and inspection system for paint and coating, plastic, ink industry chain, new energy, new materials, biodegradation and other fields

Industry Innovation and Leader:

Patents: 100+ by the end of 2023

The first in the industry to use advanced touch screen technology for all electronic products

The first in the industry to make R&D of intelligent robotic testing and inspection system

The first in the industry to apply AI technology to physical performance testing instruments

Enterprise Strength:

National high-tech enterprise

Specialization, refinement, characteristic and novelty enterprise of Guangdong Province

Innovative Enterprise of Guangdong Province

Service Field: Universities, Research institutes, Intelligent manufacturing industry, Intelligent testing industry cluster

Global Distributors: 80+ by the end of 2023

Global Customers: 30,000+ by the end of 2023

Global Network

30K+ Clients



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Chapter 1 Overview

1.1 Introduction

BEVS 2816 Rotary Abraser is equipped with an advanced touchscreen interface and voice control system, allowing precise control over rotation count, speed, and start/stop functions. By adding weights, the abrasion wheel applies a specific load to the material on the turntable, creating relative sliding motion to simulate wear. The system calculates the abrasion index, making it an excellent choice for R&D, laboratories, and field testing.

1.2 Features

- Touchscreen control
- Voice control
- Adjustable abrasion count and speed
- Automatic debris removal
- Bilingual operation menu (Chinese & English)
- Voice activation
- Voice prompts
- Auto-reset function

1.3 Application

Abrasion resistance testing is essential in many processes of coating and ink production to evaluate the durability of different materials and products. This tester operates by driving a rotating turntable with a motor, causing relative sliding motion between the abrasion wheel and the test specimen. As a result, material wear occurs, allowing users to observe the specimen's wear condition or compare its weight before and after testing to calculate the abrasion index.

The test specimen is placed on a rotating turntable and abraded using a specified grinding wheel under a predetermined load. After reaching the set number of revolutions, the specimen is removed for evaluation. The abrasion index is calculated using the following formula:

$$\text{Abrasion Index} = (\text{Weight Loss} / \text{Number of Revolutions}) \times 1000$$

This tester is widely applicable for abrasion testing of leather, synthetic materials, coatings, paper, floor tiles, plywood, glass, natural rubber, and more.

1.4 Box Contents

- BEVS 2816 AI Rotary Abraser ×1
- Weight 500g (labeled) ×2
- Weight 750g (labeled) ×2
- Weight 1000g (labeled) ×2
- Balancing weight ×2
- Abrasion Wheels ×2
- Vacuum Cleaner ×1

1.5 Operating Environment

- Temperature & Humidity: 15–30°C, relative humidity 0–80% (non-condensing).
- Avoid direct sunlight and placement near heat sources such as stoves.
- Do not use in environments with excessive dust, smoke, or chemical gases.
- Keep away from strong magnetic field sources, such as speakers.
- Not suitable for use at altitudes above 2,000 meters.
- Indoor use only. Exposure to rain or other environmental factors may damage the instrument.

Chapter 2 Safety Instructions

Before using this machine, operators must carefully read the safety instructions and become fully familiar with the installation and operation procedures, including but not limited to all the contents in the user manual.

2.1 Disclaimer

2.1.1 Disclaimer of Product Information Accuracy

Due to product upgrades and other changes, the company makes no guarantee regarding the accuracy of the information provided in this manual. Users should independently verify product information before purchasing and follow the operating instructions in the manual during use.

2.1.2 Disclaimer of Usage Risks

Users must follow the operating instructions in the manual and observe safety precautions during use. The company is not liable for any personal injury, property damage, or other losses resulting from the use of the equipment.

2.2 Equipment Lifespan

With proper maintenance and care, the equipment can be used continuously as long as all functions remain normal.

2.3 Safe Usage Instructions

- Operators, maintenance, and repair personnel must be professionally trained, capable of assessing risks, aware of safety procedures, and able to anticipate potential hazards before operating the equipment.
- Operators and maintenance personnel must thoroughly read and understand the operating instructions.
- After the equipment has stopped operating, the abrasion disc should not be touched until it has come to a complete stop to avoid personal injury.
- Safety switches should never be removed or modified. When performing maintenance or repairs, the main power supply should be turned off.
- Safety warning labels on the equipment should not be removed and must be kept clean and clear at all times.
- If the equipment malfunctions, it should be immediately shut down, and a qualified technician should inspect and repair it promptly.
- Operators should avoid wearing loose clothing, secure their sleeves, and tie long hair under a work cap to prevent accidents.
- The work area around the equipment should be kept clean, bright, and organized. Adequate lighting is necessary, and no clutter should be placed nearby to avoid inconvenience to the operator.
- The equipment should be connected to a power outlet with a ground wire, ensuring that the voltage meets the equipment's requirements and the power supply is sufficient.
- Follow the operating steps strictly as outlined in the manual.
- Do not approach or touch the abrasion disc and related components while the equipment is running.
- The equipment should not be used in flammable, explosive, or damp environments.
- If any details are unclear in the manual, please contact the manufacturer immediately.

2.4 Improper Usage

2.4.1 Overloading: If the friction force of the test sample is too high or if weights that are too heavy are selected, the equipment may be overloaded. Prolonged overloading can cause the equipment to overheat, leading to potential damage or even fire hazards.

2.4.2 Improper Startup: Starting the equipment in violation of operating procedures can result in equipment damage or even personal injury.

2.4.3 Neglecting Maintenance: Failing to perform regular maintenance can cause equipment malfunctions or shorten its lifespan.

2.4.4 Improper Operation: Using the equipment for abrasion testing requires certain skills and experience. If the operator lacks sufficient understanding of the abrasion tester, improper operation or accidents may occur.

2.5 Troubleshooting Measures

2.5.1 Power Failure

First, check if the power cable is loose. If the connection is loose, try reconnecting it. If it cannot be plugged in, inspect the power cable for damage. If damaged, replace the cable or send it for repair.

2.5.2 Equipment Damage (Burned Out)

Immediately cut off the power supply and ensure the safety of surrounding personnel. Then, check the damaged area and analyze the cause of the damage. Finally, resolve the issue through repair or by replacing damaged parts.

2.5.3 Overheating

First, cut off the power supply and check if the cooling system is functioning properly. If there is an issue with the cooling system, find a better cooling solution. If the cooling system is working correctly, inspect the internal fans for dust or debris, clean them, and then restart the equipment.

2.5.4 Noise from the Equipment:

This could be caused by a malfunctioning internal component. First, cut off the power and analyze the cause. If it's a hardware issue, replace the internal components. If it's a software issue, update or replace the relevant programs.

2.5.5 Fire

In the event of a fire, immediately cut off the power supply and ensure the safety of surrounding personnel. Attempt to extinguish the fire using a fire extinguisher or other firefighting equipment. If the fire cannot be controlled, call emergency services for help.

2.5.6 Mechanical Failure

Stop using the machine, cut off the power supply, identify the cause of the failure, and repair it. After repair, perform a test before resuming use.

2.6 Precautions in Special Situations

2.6.1 Power Outage

In the event of an unexpected power outage, first cut off the power supply. Once power is restored, follow the corresponding steps to either resume operation or stop the testing process.

2.6.2 Extended Downtime

Keep the equipment clean and dry, cut off the power supply, and, if necessary, store the equipment back in its original packaging.

2.7 Other Safety Warnings

2.7.1 Secure the Sample

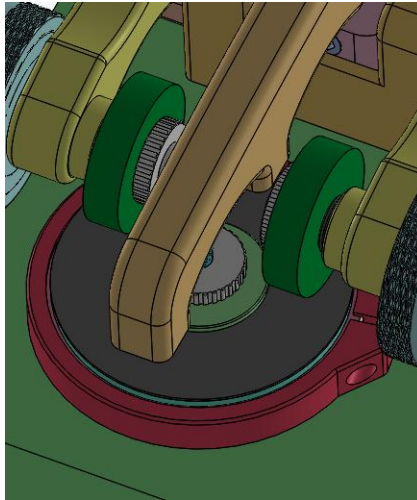


Fig 2.1

During use, always ensure that the sample is properly secured to prevent any movement or accidents.

2.7.2 Secure the Abrasion Wheel

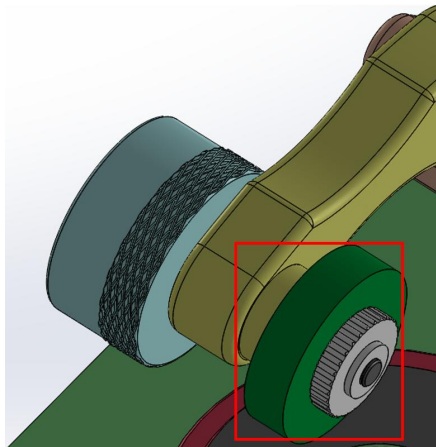


Fig 2.2

During use, always ensure that the abrasion wheel is properly secured to prevent any movement or accidents.

Chapter 3 Machine Structure and Working Principle

3.1 Structure

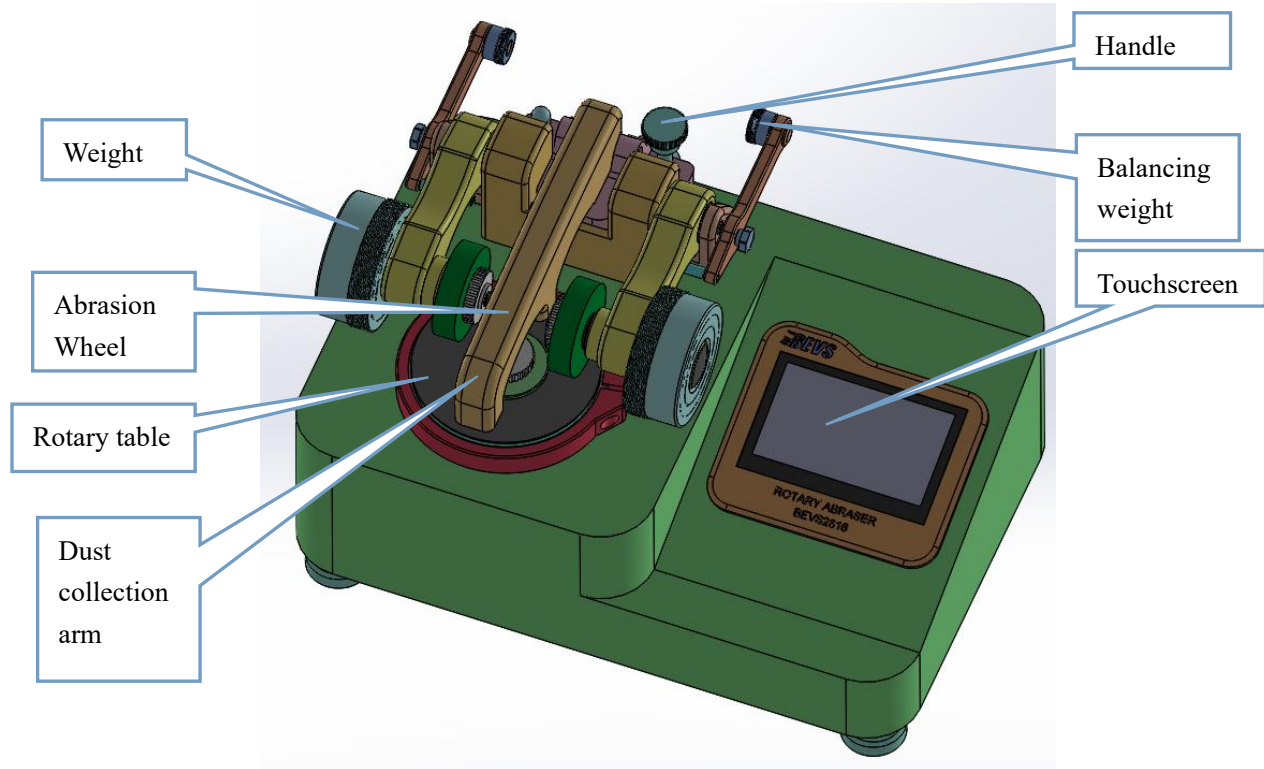


Fig 3.1

The overall structure of the equipment is shown in Figure 3.1. The working principle involves the user controlling the motor to rotate the turntable, which in turn causes relative sliding motion between the abrasion wheel and the sample on the turntable, resulting in material wear.

3.2 Parts

3.2.1 Rotary Table

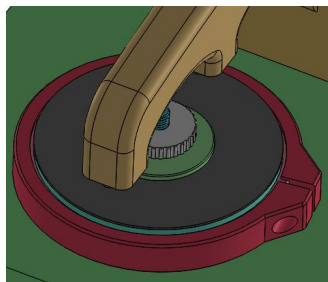


Fig 3.2

Rotary table is used to rotate the sample, creating relative sliding motion between the abrasion wheel and the sample, which causes material wear. During this process, debris generated by the wear of the sample is sucked away by two nozzles on the dust collection arm.

3.2.2 Weight bar

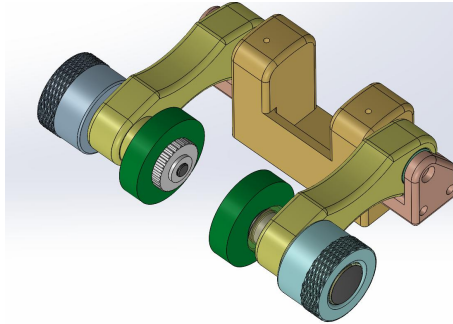


Fig 3.3

During wear testing, it is essential to select the appropriate grinding wheel and abrasive medium based on the material, as well as weights of varying sizes, to meet different testing requirements.

The abrasion index calculation formula is:

$$F = [(m_1 - m_2) / R] * 100$$

Where:

F --- Abrasion value (mg/100r)

m1 --- Mass of the specimen before abrasion (mg)

m2 --- Mass of the specimen after abrasion (mg)

R --- Number of abrasion cycles (r)

3.3 Relationship Between Components and Mechanisms

3.3.1 Sample Fixing

Properly fix the sample

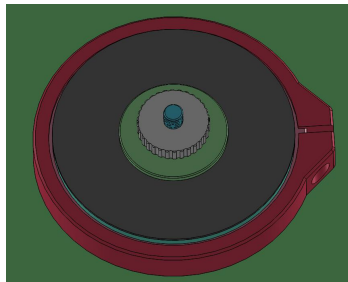


Fig.3.4

3.3.2 Abrasion Wheel Fixing

Properly fix the abrasion wheel

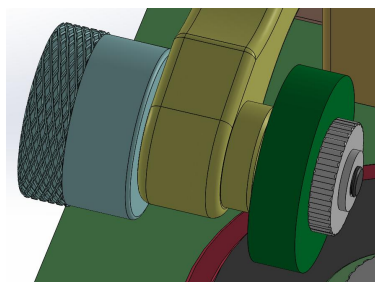


Fig 3.5

3.4 Auxiliary Devices

The dust collection arm is connected to an external vacuum cleaner.

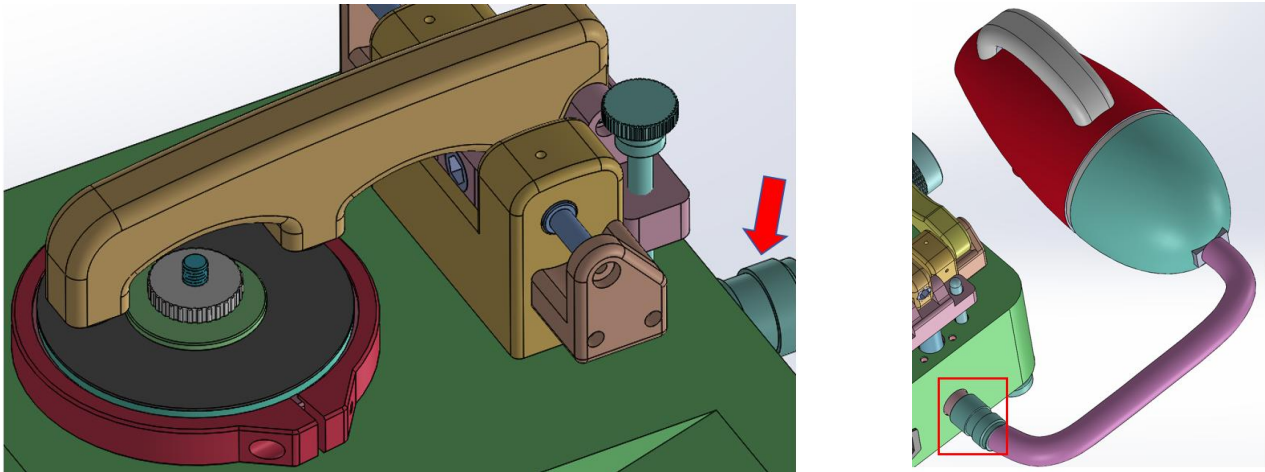


Fig 3.6

A vacuum hose with a connector can be attached to the dust collection port reserved on the abraser.

Chapter 4 Technical Specifications

4.1 Main Functions

- Touchscreen control
- Voice control
- Adjustable abrasion cycles and speed
- Automatic debris removal
- Chinese and English operation menus
- Voice activation function
- Voice prompt function
- Automatic reset function

4.2 Main Parameters

- Speed range: 1-99 r/min
- Power supply: 220V/110V, 50/60Hz
- Power: 150W
- Weight: 10kg
- Dimensions: L350 × W235 × H200 mm

Chapter 5 Weight and Dimensions

5.1 External Dimensions and On-site Requirements

The maximum external dimensions of the equipment are 350 x 290 x 215 mm (L x W x H) (excluding the vacuum cleaner). The detailed dimensions are shown in the figure below.

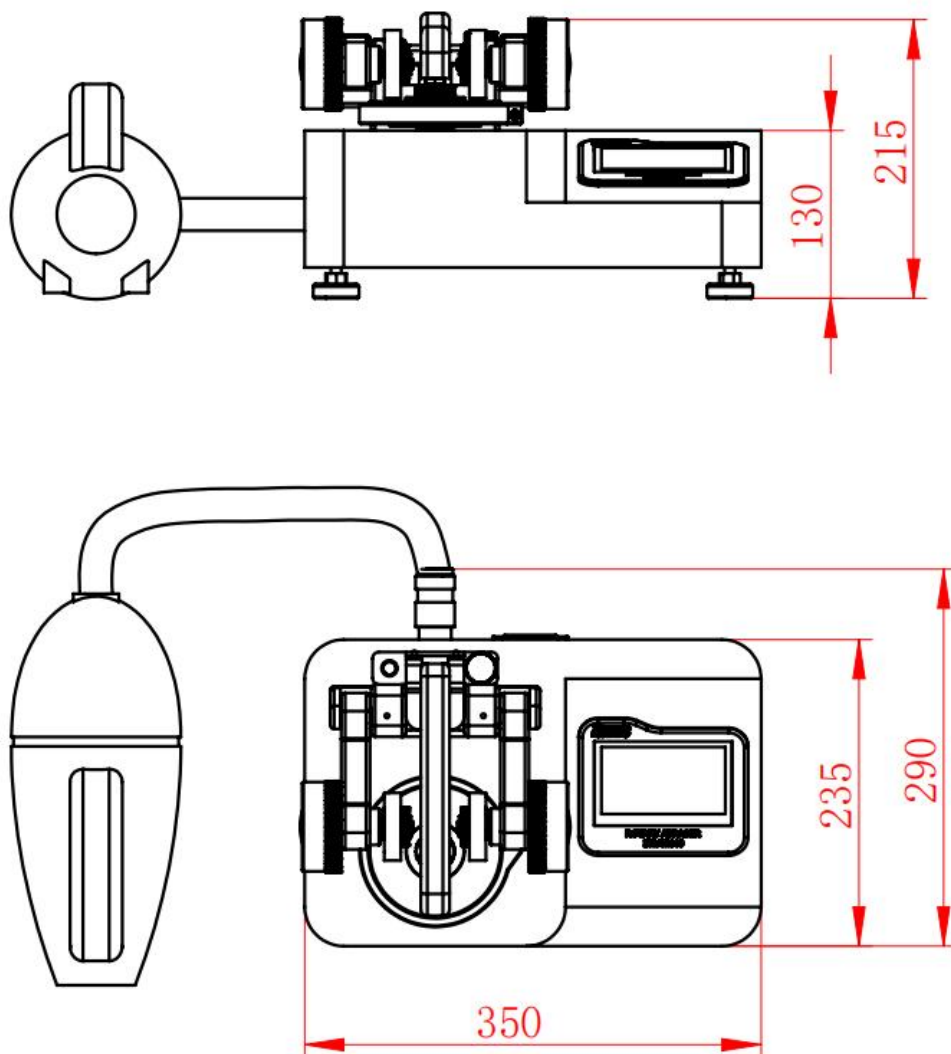


Fig 5.1

The on-site requirement for installation is at least 400 × 300 × 250 mm (L × W × H).

The wooden box used for packing dimensions are approximately 500 × 400 × 300 mm (L × W × H).

5.2 Weight

Net weight: 10KG

Gross weight: approx. 50 kg (including the wooden box used for packing)

Chapter 6 Installation and Commissioning

6.1 Installation Guidelines

The equipment requires at least two people for handling. The equipment must be placed on a stable and level test bench, ensuring the platform can support at least 20 kg.

6.2 Installation Method

Install the sample and abrasion wheel according to the procedure outlined in 3.3 of Chapter 3.

6.3 Adjustment Method

Adjust the distance between the nozzle and the turntable by turning the manual screw. Turning clockwise brings the nozzle closer to the sample on the turntable, while turning counterclockwise moves the nozzle away from the sample. Adjust it to the appropriate position to suction away the debris generated during the abrasion process of the sample.

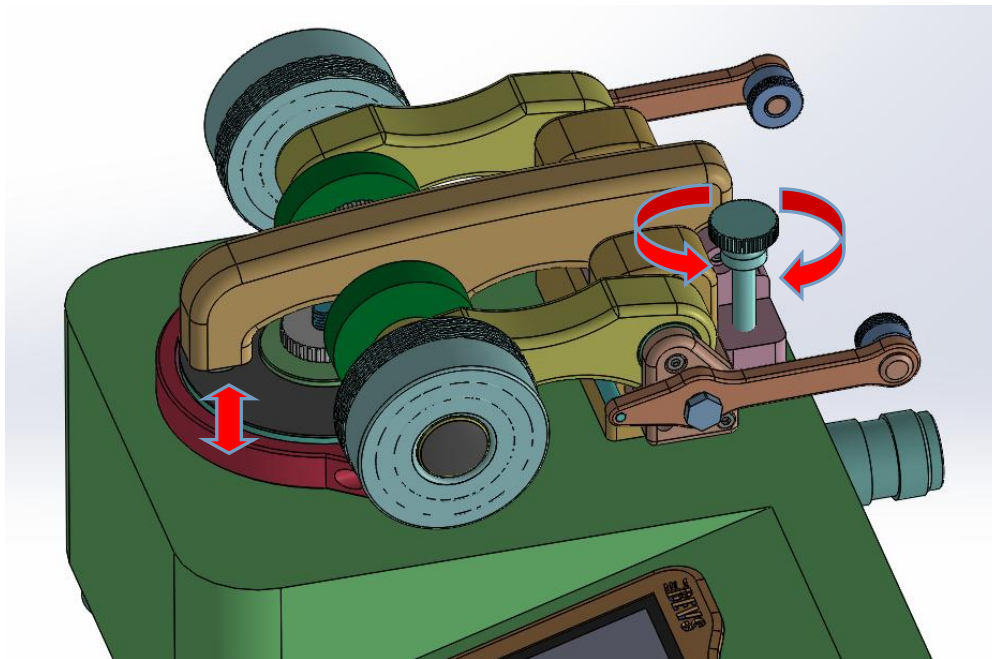


Fig 6.1

6.4 Installation Verification

6.4.1 Is the abrasion wheel securely fixed?

Check the fastening nuts of the abrasion wheel to ensure it is not loose.

6.4.2 Is the turntable securely holding the sample?

Check that the turntable nuts are tightened properly and ensure the sample is securely fixed without any looseness.

1.1.6.5 Quick Test Run

- 6.5.1 Double-check to ensure correct installation.
- 6.5.2 Make sure the power supply voltage matches the equipment requirements. This equipment requires a 220V, 50Hz power supply.
- 6.5.3 Inspect the equipment's exterior for any abnormalities.
- 6.5.4 Connect the power cable.
- 6.5.5 Ensure the emergency stop switch is released.
- 6.5.6 Turn on the power switch.
- 6.5.7 The display should show the startup interface.
- 6.5.8 The display will show the main interface as shown in Figure 6.3. Click or use voice control to check the operation status.

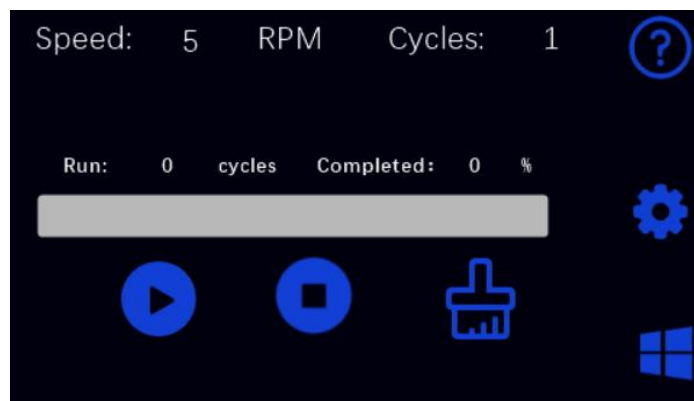


Fig 6.3

Note: Do not click the run button until the installation has been correctly checked and confirmed.

Chapter 7 Operation

7.1 Preparation and Inspection Before Use

- 7.1.1 Double-check to ensure the installation is correct.
- 7.1.2 Ensure the power supply voltage meets the equipment requirements. This equipment requires a 220V, 50Hz power supply.

7.2 Instructions Before Use

7.2.1 Sample Preparation

Install the sample according to the sample fixation method in Section 3.3.

7.2.2 Abrasion Wheel Installation

Install the abrasion wheel according to the fixation method in Section 3.2.

Note: This operation should be carried out by experienced personnel who are familiar with the test samples to avoid potential accidents.

7.3 Software Operation

7.3.1 Startup Interface

Upon powering on, the system will enter the startup screen and after a 2-second delay, it will transition to the main interface.



Fig 7.1

7.3.2 Set Abrasion Speed and Number of Cycles Based on the Tested Product Requirements

A. Click to enter the settings page.

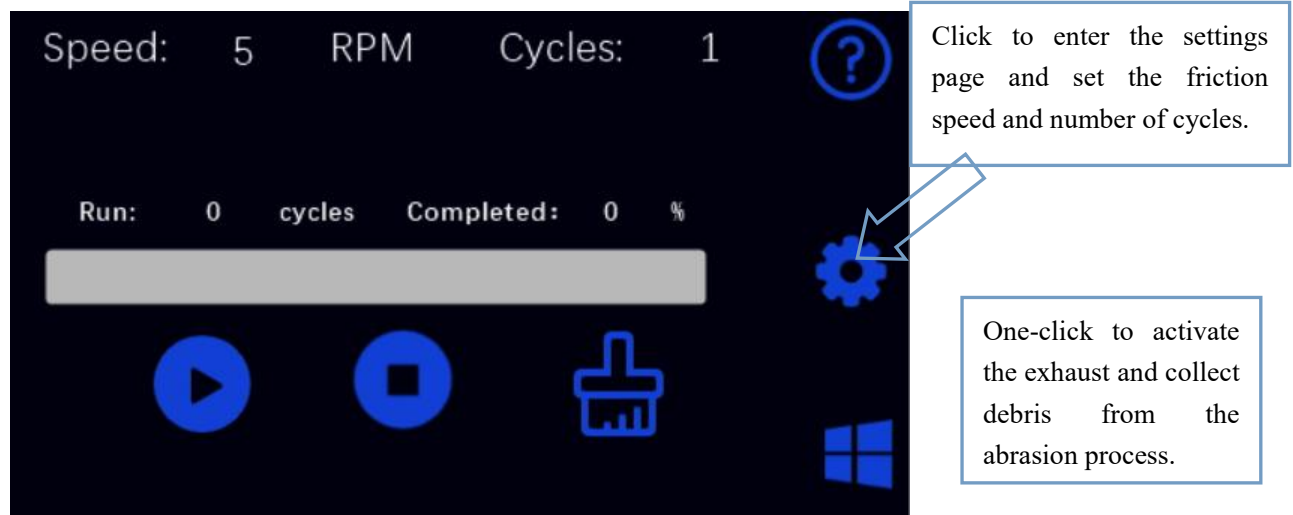


Fig 7.2

B. Parameter Settings

Click the corresponding blue box to set the parameters. The maximum speed is 9999 RPM, and the maximum number of cycles is 9999.

Other parameters, apart from speed and cycles (which are program-controlled), should be filled in based on actual conditions for generating reports. Once the data is set, save it to apply the changes.

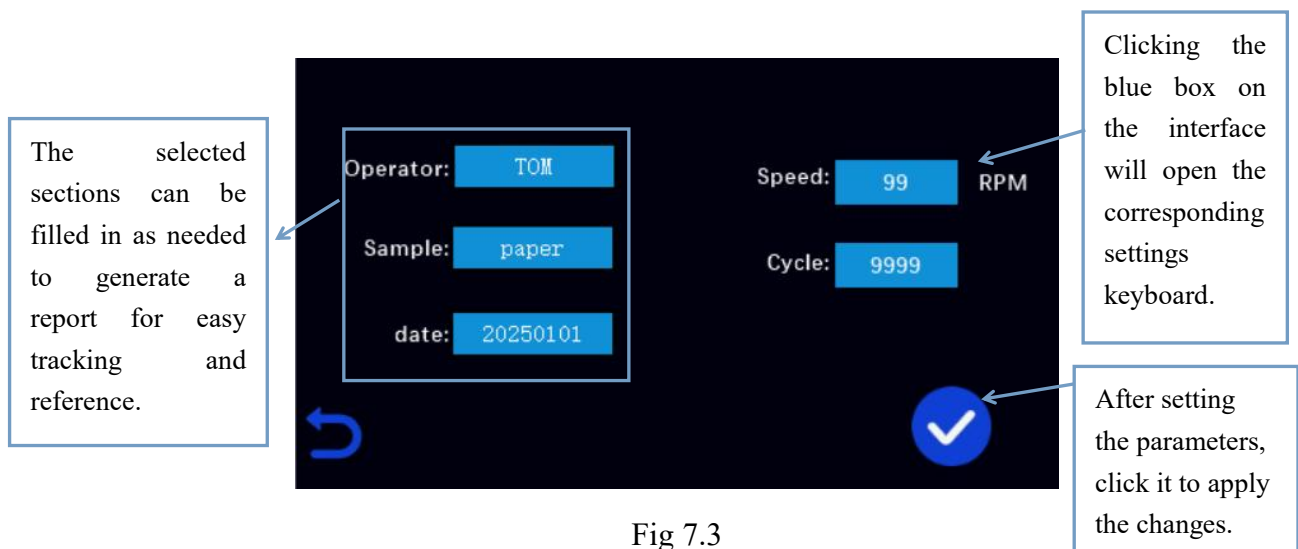


Fig 7.3

7.3.3 Once all test conditions are met, click  to start the abrasion test. The button will change to , and clicking it again will stop the test. During the process, the number of test cycles completed and the progress will be displayed.

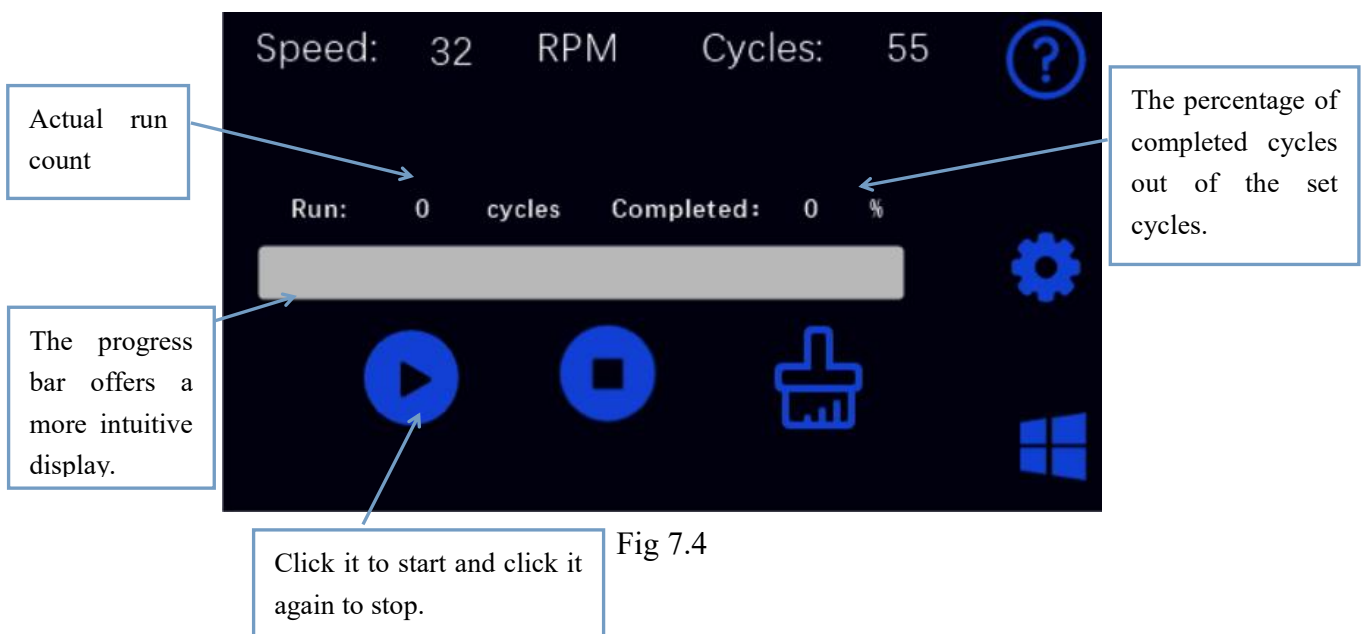


Fig 7.4

7.3.4 When the test count is reached, the instrument will automatically stop. Clicking  will prompt a dialog asking whether to save. Clicking Confirm will open the storage preview screen.

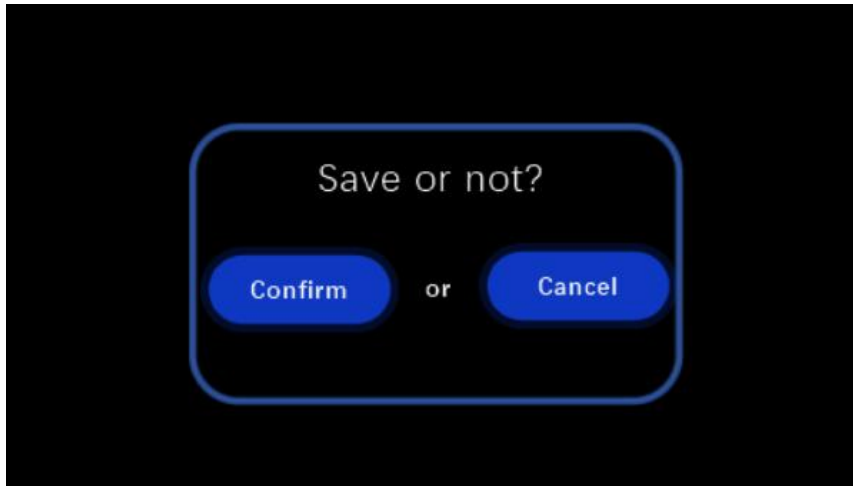


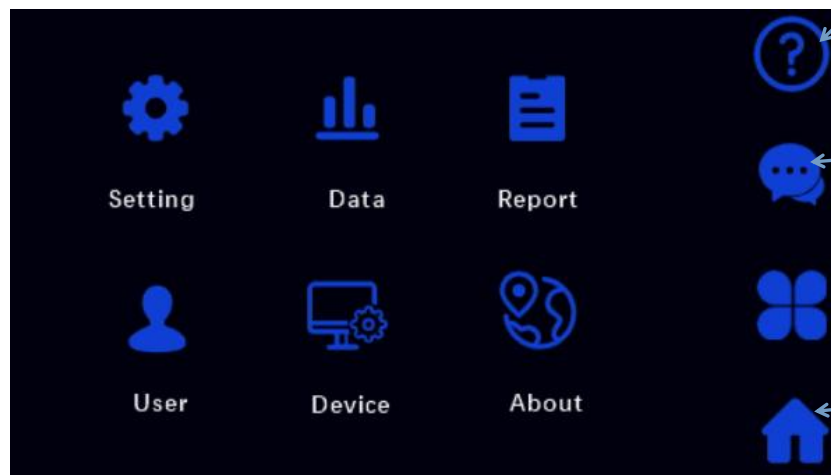
Fig 7.5



Fig 7.6

7.4 Menu Function Overview

Click the  on the main menu to access the menu interface.



Company website and equipment operation videos/manuals

For business and after-sales inquiries.

Back to the main menu

Fig 7.7

7.4.1 Settings

Similar to the Settings on the main menu, this section is used to set the abrasion count, abrasion speed, and other parameters.

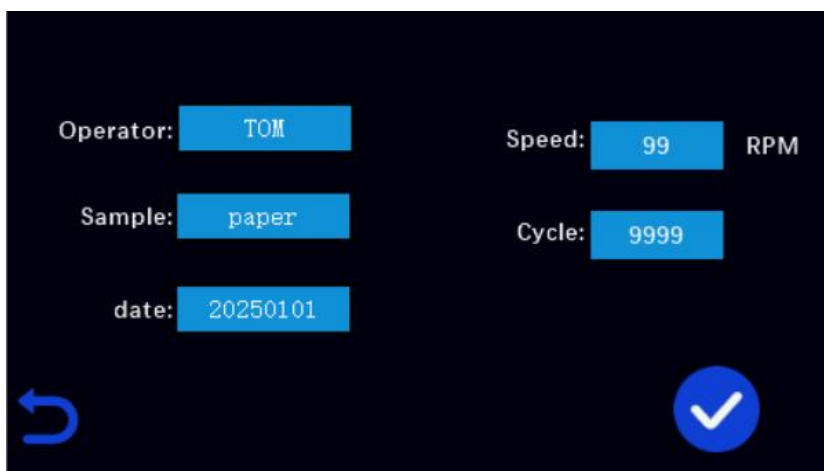


Fig 7.8

7.4.2 Data

Stored data can be viewed and traced here.

The section outlined with black lines represents the stored information

NO.	Operator	Sample	Date	Speed	Init-Cycles	Fin-Cy
33	TOM	paper	20250101	99RPM	100	120
32	TOM	paper	20250101	99RPM	100	120
31	TOM	paper	20250101	99RPM	100	120
30	TOM	paper	20250101	99RPM	100	120
29	TOM	paper	20250101	32RPM	100	120

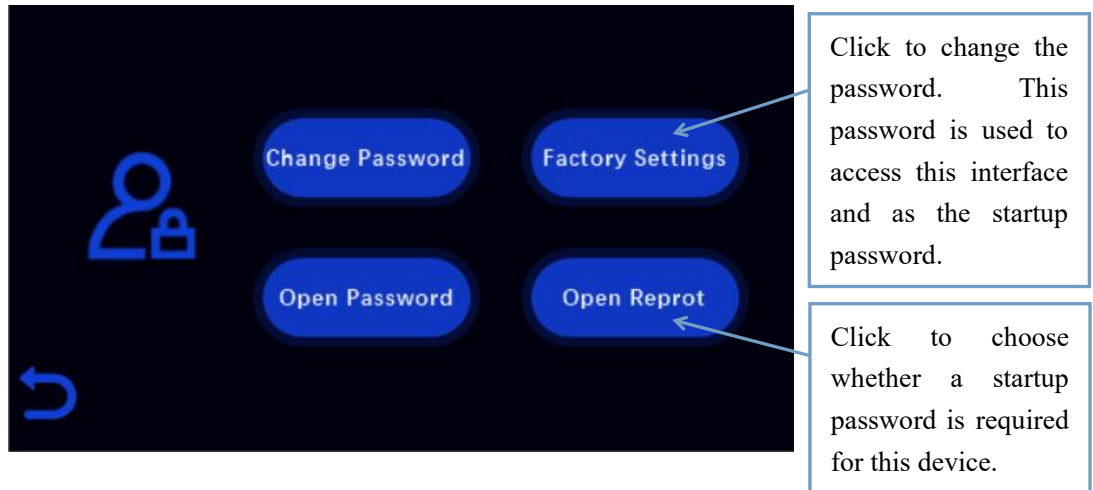
You can flip through pages to find previously saved data. The stored data is sorted with the most recent entry first. A maximum of 1000 entries can be stored.

You can delete a specific data entry or delete all data.

Last page Next page Del check Delete all

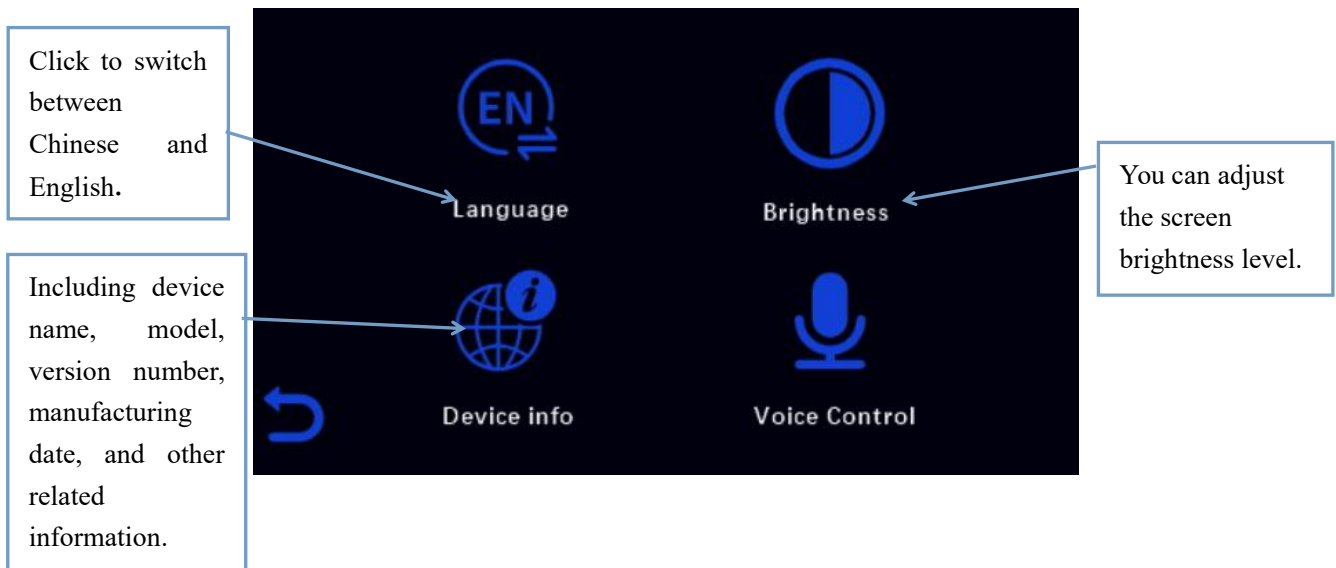
7.4.3 User

To access the user interface, you must first enter the default password 123456. Once logged in, you can set whether a startup password is required and change the startup password. The startup password is the same as the one used to access the User interface.



7.4.4 Instrument

This option allows you to select between Chinese and English, adjust the brightness, and view device-related information (such as the manufacturing date, model, etc.).



7.4.5 About

Company information and contact details.



Chapter 8 Fault Analysis and Troubleshooting

Common equipment faults and their solutions are shown in Table 8.1.

Fault	Cause	Solution
Screen freezes	Circuit or device interference	Restart the device
Screen not turning on	Loose power cable or faulty instrument fuse	Reinsert the power cable or replace the fuse
Abnormal rotary table rotation	Motor or connection issue	Contact the manufacturer or authorized distributor

Table 8.1

Chapter 9 Safety Protection Mechanisms and Faulty Handling

9.1 Safety Protection Mechanisms

9.1.1 Motor Overload Protection Mechanism: Automatically protects the motor in case of overload.

9.1.2 Overtemperature Protection Mechanism: Protects the machine when the temperature exceeds safe limits.

9.2 Fault Handling Methods

When a fault occurs, stop the device immediately. Do not operate the device with a fault. Contact the local distributor or manufacturer promptly to arrange for professional maintenance personnel to inspect and repair the equipment.

Chapter 10 Maintenance and Servicing

10.1 The turntable motor should not operate under overload conditions for extended periods. Prolonged overload operation can cause the motor to overheat, affecting its lifespan. In the event of overload or temperature protection, turn off the wear tester and wait for the temperature to decrease before restarting the device for normal operation.

10.2 The abrasion wheel should be replaced once it reaches a certain level of wear.

10.3 Keep the surface of the weights clean when not in use.

Chapter 11 Transportation and Storage

11.1 Transportation

The equipment is packaged in a wooden crate for shipment, with foam protection around the device to prevent movement during transit. For secondary transportation, the original wooden crate and foam packaging should be used to protect the equipment and prevent damage during transport.

11.2 Storage

The equipment should be stored in an environment with a temperature range of 5-40°C and a relative humidity of 0-80% (without condensation).

Chapter 12 Unpacking and Inspection

Unpacking Precautions:

Before unpacking, ensure the packaging is undamaged. Damage to the packaging during transportation may result in damage to the equipment:

- (1) If the packaging is damaged, keep relevant photos, videos, and other evidence to claim compensation from the shipping company for the loss.
- (2) Check the unpacking list and ensure that all equipment and accessories are complete.

Box Contents

- BEVS 2816 AI Rotary Abraser ×1
- User manual ×1
- Certificate of Conformity ×1
- Packing list×1
- Weight 500g (labeled) ×2
- Weight 750g (labeled) ×2
- Weight 1000g (labeled) ×2
- Balancing weight ×2
- Abrasion Wheels ×2
- Vacuum Cleaner ×1

Chapter 13 Warranty and Other Services

13.1 All sold instruments come with a one-year free warranty (starting from the delivery date) and lifetime paid maintenance and calibration services. Warranty terms (for mainland users only):

13.2 For instruments with natural damage after one year or any instruments damaged due to improper use, the user will be responsible for the round-trip shipping costs, replacement parts, and repair labor fees.

13.3 For machines with damage caused by human error (such as self-modifying the wiring), we will not provide repair services or support.

13.4 To determine whether the damage is due to natural causes or human error, the user must provide the damaged machine or parts. Otherwise, the damage will be considered human-caused, and no repair services will be offered.

13.5 Warranty Proof: A receipt with the company seal, the sales delivery note, or the warranty label affixed to the instrument can all serve as valid warranty proof. If none of these are available, the user will not be eligible for warranty services.

Note: Any disassembly or repair of the machine without our prior consent may result in additional charges!

Chapter 14 Ordering Information

BEVS 2816 AI Rotary Abraser