

DIN Abrasion Tester

Operation Manual



This manual details the machine settings and technical parameters. Please keep them in a safe place. Please read the instructions

Foreword

Thank you for choosing our company's products, the company will not only provide you with quality products, but also provide reliable after-sales service.

In order to ensure the personal safety of the user and the integrity of the instrument, please read this operation manual thoroughly before using the instrument, and pay attention to the precautions for its use. This operating manual details the design principles, standards, construction, operating specifications, calibration, maintenance, possible fault conditions, and troubleshooting methods, electrical diagrams, etc. of this instrument. All the “test regulations” and “standards” mentioned in this operation manual are for reference only. If you feel that there is any objection, please review the relevant standards or data.

Special statement:

- This operation manual cannot be used as a basis for making any request to the company.
- The right to interpret this operation manual is in the company.

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Safety attention

1. Symbols on security:

In this manual, the safety precautions and the following important items are listed when using the instrument. To prevent accidents and dangers, be sure to observe the following hazards, warnings, and cautions:

Danger:



This symbol indicates that the operator may be harmed if the instruction not followed.

Warning:



This symbol represents that the instrument may be damaged if the instruction is not followed.

note:





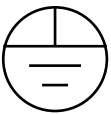
The symbol shown here is indicated as having the potential to affect test results and quality.

【Note】



This symbol shows the auxiliary instructions for this product in operation.

1. On this instrument, the following symbols indicate cautions and warnings.

	Warning mark	This symbol indicates where it is necessary to refer to the operating manual.
	Dangerous voltage mark	This symbol indicates a high voltage hazard.
	Ground protection mark	Indicates the ground terminal on the instrument.

Overview

1. Use:

- This machine is suitable for the wear resistance of elastic materials, rubber, tires, conveyor belts, soles, soft synthetic leather and other materials.

Second, the principle:

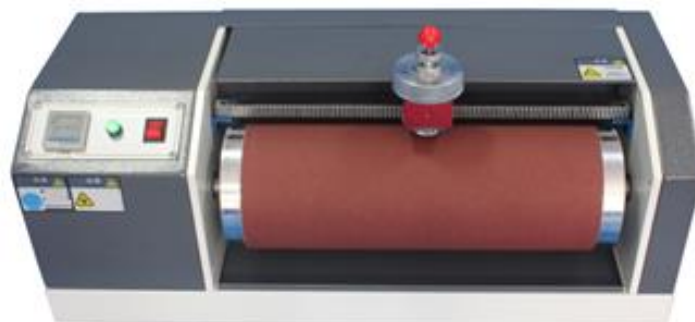
- Under the specified contact pressure and a given area, the sample is at an angle to the sandpaper to determine the wear of the sample on a certain level of sandpaper.
- The sandpaper bag is attached to the surface of the roller, and the sample is pressed against the roller with sandpaper to make the sample move laterally along the roller. The abrasion is generated at one end of the cylindrical sample, and the quality loss value of the sample is measured. The density of the sample is used to calculate the volumetric wear.

According to the standard

- This test machine meets the requirements of DIN-53516, ISO/DIS-4649, BS903 PART9 and GB-9867.

Instrument description

1. Appearance of the instrument (Figure 1):



2. Instrument specifications (Table 1):

Project	specification
Test piece load	2.5N \pm 0.2N 5 N \pm 0.2N
Jig lateral displacement	4.2 \pm 0.04mm/roller per turn
Roller diameter	Φ (150 \pm 0.2)mm
Roller length	460mm
Roller speed	40 \pm 1r.p.m
Wear stroke	40m (20m) is equivalent to the number of roller rings 84 (42)
Wear rate	0.32m/sec
inclination	3° (the angle between the test piece holder and the vertical surface of the roller)
Dimensions	70cm \times 30cm \times 30cm
Weight	61kg
power supply	AC 110V or AC 220V / 1ph 100W

Table 1

Instrument installation

1. the power supply conditions: Please configure the correct power supply and voltage according to the serial plate on the machine.

Danger:

The input voltage error range should be within $\pm 10\%$ and the machine should be properly grounded to prevent damage caused by leakage of the machine.

2, the operating environment requirements: temperature 23°C

3, the instrument needs to be placed on a level table top.

Operating specification


Prepare the test piece:

1. Prepare standard glue:

1.1 Confirm that the standard glue is within the validity period, otherwise it cannot be used.

1.2 The size specification of standard glue is: $\Phi 16\text{mm}$, thickness is more than 6mm.

【Note】

 Standard glue can be molded with standard mold or drilled with DIN drill, and the test piece cannot be punched out.

■ The standard glue can be glued to a material with a thickness of about 3mm and a hardness of not less than 80IRHD and $\Phi 16\text{mm}$ (such as resin glue). This will help the standard glue to be fixed on the chuck while increasing the use time of the standard glue.

2. Test piece production:

2.1 The size of the test piece is: Φ 16mm, thickness 2mm-14mm.

【Note】



- The test piece can be taken by DIN drill or standard mold, and the test piece cannot be punched.
- The thickness of the test piece is not less than 2mm.
- The test piece thickness is greater than 2mm and less than 6mm, with a suitable adhesive, sticking to a hardness of not less than
- 80IRHD, Φ 16mm material (such as resin glue), make the thickness greater than 6mm but their total thickness is not
- Can exceed 14mm.
- If the test material is loose and empty, it is best to stick a hardness of not less than one on each cut test piece.
- 80IRHD, Φ 16mm material (such as resin glue). This allows the test piece to be firmly fixed to the chuck.
- Above, the test pieces will not deform on the chuck, but their total thickness cannot exceed 14mm.
- The above are the recommended standards. Please refer to the relevant standards for details.

2.2 Standard state of the test piece: Before the test, it is placed at a temperature of 23°C for more than 48 hours.

2.3. Number of test pieces: Three or more pieces of the same material should be tested.

the operation steps:

1. Replace sandpaper:

1.1 Take a length of 4731mm, a width of at least 400mm but cannot exceed the length of the roller paper, the average thickness of about 1-2mm.

1.2 Take three double-sided adhesives with the same length, no more than 0.2mm thick and 25-50mm wide, evenly added on the surface of the drum, and each double-sided adhesive should be parallel to the axis of the roller.

1.3 When fixing the sandpaper, the direction of the arrow behind the sandpaper should be toward the rear of the machine. It must be tightly attached to the roller. The front and rear ends of the sandpaper must be aligned and parallel to the axis of the roller.

1.4 When the two ends of the sandpaper are bonded and the gap is less than 2mm, they cannot be overlapped.

1.5 After the replacement of the sandpaper, it is necessary to grind the sandpaper one or two times with a metal piece (with no load) (the operation method is as follows).

【Note】



- One of the double-sided tapes is glued at both ends of the sandpaper.
- The roller must be kept free of dust and clean. When replacing the old sandpaper, the double-sided tape on the roller should be cleaned. The sandpaper after grinding is clean.

2. Using standard glue to correct the amount of sandpaper abrasion between 180mg-220mg is as follows:

2.1 Lift the entire bracket up (Figure 3).



image 3

2.2 clamping standard glue

2.2.1 Loosen the nut counterclockwise, then the collet will become larger as shown in Figure 4. The standard glue (the standard glue can be used last time, as long as its thickness or standard gluing material on the standard glue) The thickness is greater than 6mm-14mm) can be placed in the chuck, press the test piece and lock the nut clockwise as shown in Figure 5.

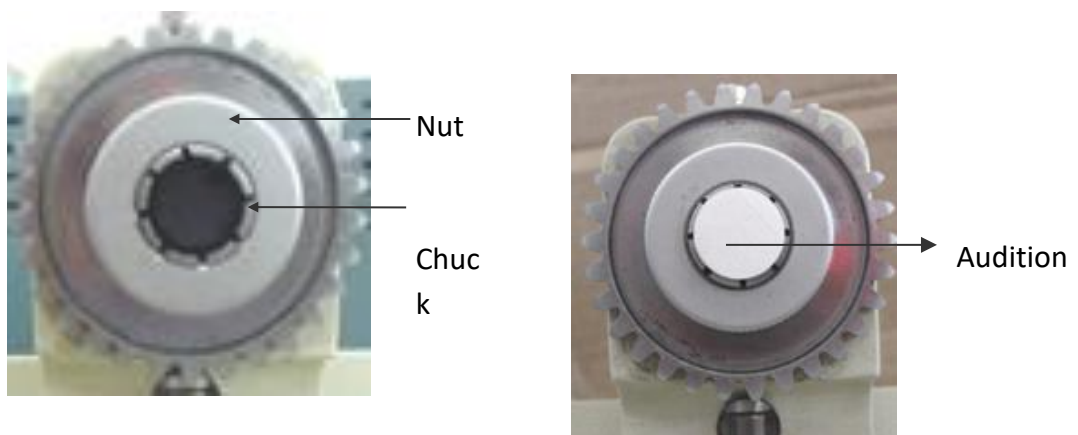


Figure 4

Figure 5

2.2.2 Place the metal thickness block on the standard plastic chuck. Adjust the bolt as shown in Figure 6 in a clockwise or counterclockwise direction so that the standard glue is parallel to the metal thickness block (so that the standard glue exposes the chuck about 2 mm).

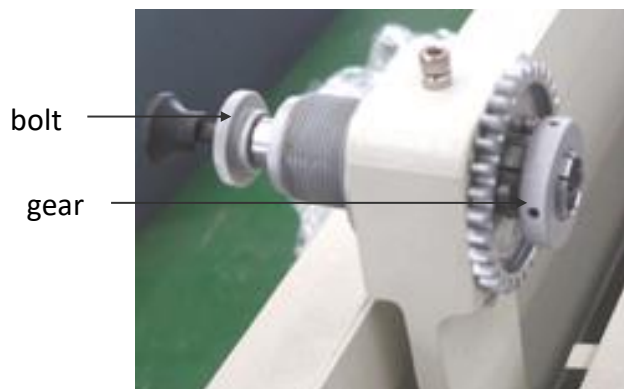


Image 6

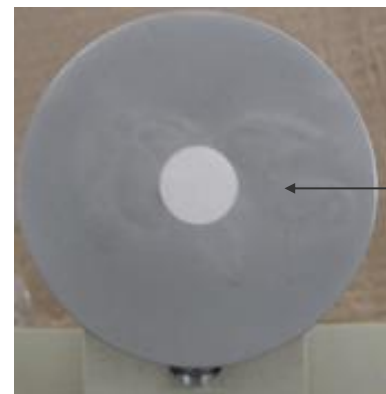


Image 7

2.3 Then move the entire bracket to the starting point position and place it on the screw gear as shown in Figure 8.

2.4 Place the 2.5N, 5.0N weight on the load block as shown in Figure 9.

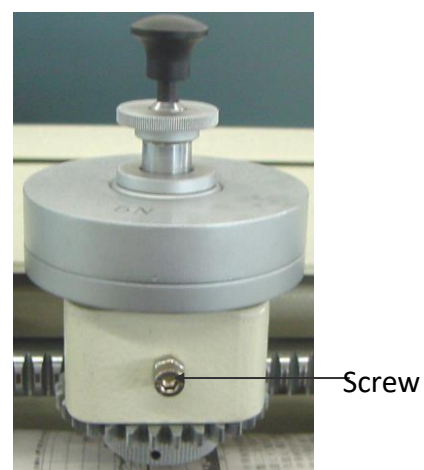


Figure 9

Figure 8

2.5. Start the test:

2.5.1 Connect the correct power supply, turn on (power button) and press (test button) to pre-grind the yarn to make the pre-grinding of the test paper (about pre-grinding to half of the whole stroke, press (stop button) to stop. Standard glue as a mark).

2.5.2 Remove the standard glue from the chuck, remove the residual rubber particles on the surface, and weigh it with the balance (W1) to the nearest 0.1mg.

2.5.3 Return the entire bracket to the starting point and re-clamp the test piece of section 2.5.2.

2.5.4 Press (test button) again and start grinding to 40m stroke (about 84 turns), that is, press the (stop button) after the whole stroke of the machine.

2.5.5 Remove the standard glue from the chuck, remove the residual rubber particles on the surface, and weigh again with the balance (W2) to the nearest 0.1 mg.

【Note】



Clean the sandpaper with a brush while grinding.

When testing, the screw will be loosened as shown in Figure 9. If it is locked, it cannot rotate.

2.5.6 Test at least three standard gels and take the average.

2.5.7 Calculate the loss of standard rubber wear by the following formula: $Q=W1(20M)-W2(40M)$

【Note】



■ ■ Analyze the loss of standard rubber wear and determine whether the abrasion of sandpaper is between 180mg and 220mg.

■ ■ If the abrasion amount of the sandpaper is more than 220mg, the sandpaper is too thick, and the sandpaper must be used again.

■ Grinding once (without load), after grinding, the dust on the sandpaper must be removed, and then the standard glue is used in the above manner until the wear loss reaches the standard.

■ If the amount of sandpaper worn is less than 180 mg, new sandpaper must be replaced.

3. Test the test piece:

3.1 After learning the wear loss of the standard glue, the test piece can be tested.

3.2 Test the weight of the test piece (method such as the operation method of the standard glue), test the three test pieces, and take the average.

3.3 Calculate the wear loss of the test piece: Δm =the weight of the test piece pre-grinding - the weight of the whole stroke of the test piece.

3.4 Measure the density (S) of the test piece with a specific gravity balance. (Note: The specific gravity of the balance should be self-contained!!)

1.5 After the test is over, turn off the power.

3. Result determination:

Calculate the amount of wear of the test piece by substituting the numerical value into the following formula $A(\text{mm}^3)$ ◦

$$A = \frac{\Delta_m \times 200\text{mg}}{S}$$

Description: Δ_m : Test piece wear loss

Q: Standard rubber wear loss(mg)◦

S: Proportion of test strips(mg/mm^3)◦

Note:

1. Due to the low wear resistance of the test materials (such as small particle rubber, EVA and polyether polyurethane), you can reduce 1-2N

At the same time reduce the number of revolutions from 84 to 42 or 21. The relative displacement of the material to the sandpaper is about 20m or 10m. The sample wear is multiplied by 2 or 4, but the method used is indicated in the report.

2. If the test piece does not rotate, remove the gear as shown in Figure 6, replace it with the round wheel attached to the company and fix the chuck.

Figure 9 locking screw.

Maintenance program

1、 Cleaning: Keep the machine clean at all times, and wipe the ash of the machine with a cotton cloth before and after each test to keep it clean.

2、 Anti-rust: Spray anti-rust oil on the surface of the machine regularly.

3、 Lubrication: Regularly add lubricant to the machine's transmission components (such as bearings) (you can use ordinary lubricants).

Troubleshooting

Failure situation	Possible cause	Solution
<ul style="list-style-type: none">• Turn on the power switch and the power switch indicator is not lit.	<ul style="list-style-type: none">• Power supply instrument or line failure.• Input power does not meet the requirements.• The machine fuse is	<ul style="list-style-type: none">• Please ask the electrician to check and repair the power supply line.• Provide the prescribed power supply.• Replace the fuse of the same specification capacity.
<ul style="list-style-type: none">• Turn on the power and burn the fuse.	<ul style="list-style-type: none">• The input voltage is abnormal.• The motor burned out and shorted.• There is something in the line that causes a short circuit.	<ul style="list-style-type: none">• Use the three-meter AC voltage file to determine the voltage is 220V.• Replace or repair the motor.• Eliminate debris in the line.

<ul style="list-style-type: none">• Press the (test) button and the machine will not work.	<ul style="list-style-type: none">• • Motor or (test) key wire is loose.	<ul style="list-style-type: none">• Fixed or soldered loose wire.
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