

Texture Analyzer (RapidTA+)

Simple Operation Manual

⚠ This is a simplified version; for complete functionality and data analysis, please refer to the full manual.



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RapidTA[®]
Texture analyzer

General operating procedure (simplest procedure):

- 1. Power on.
- 2. Weight correction.
- 3. Install the necessary fixtures or probes.
- 4. Perform height adjustment (this step may be omitted depending on the fixture or pattern).
- 5. Conduct formal experiments and save the files.

Contents

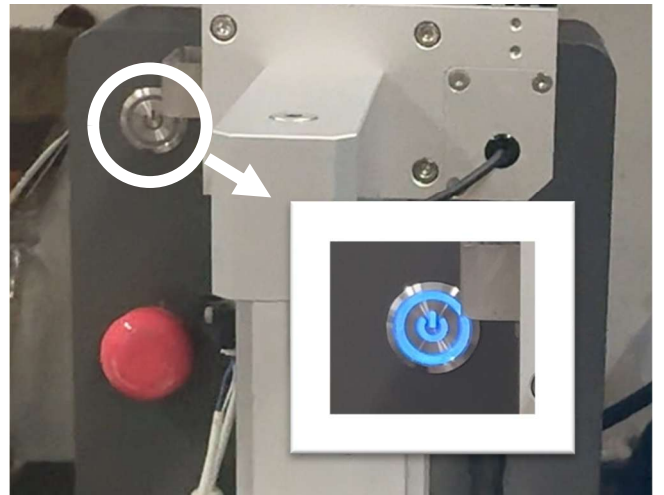
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Power on

1. Turn on the computer and start the screen.



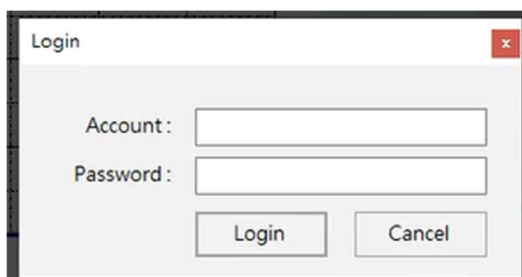
2. Press the property analyzer switch. The indicator light will turn blue and emit a “Bump” sound, which is normal.



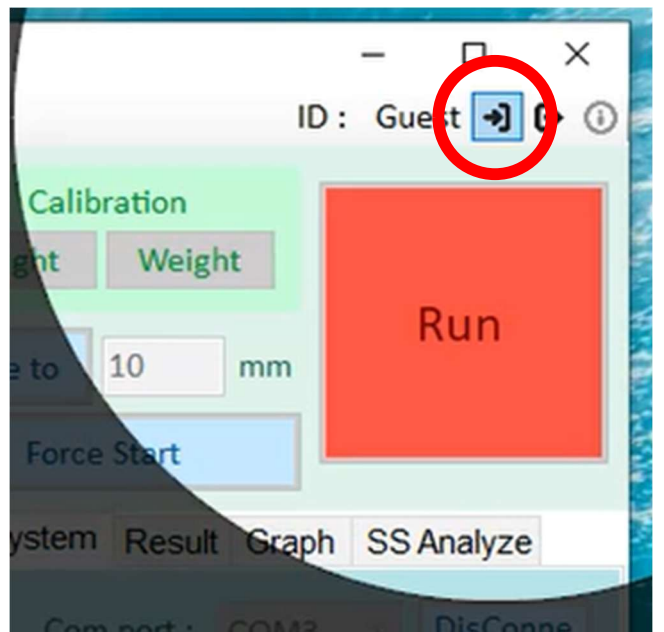
3. Open the physical property instrument operating software.



4. Click “Login” in the upper right corner of the software. After the dialog box appears, press “Ctrl + H” on your keyboard.

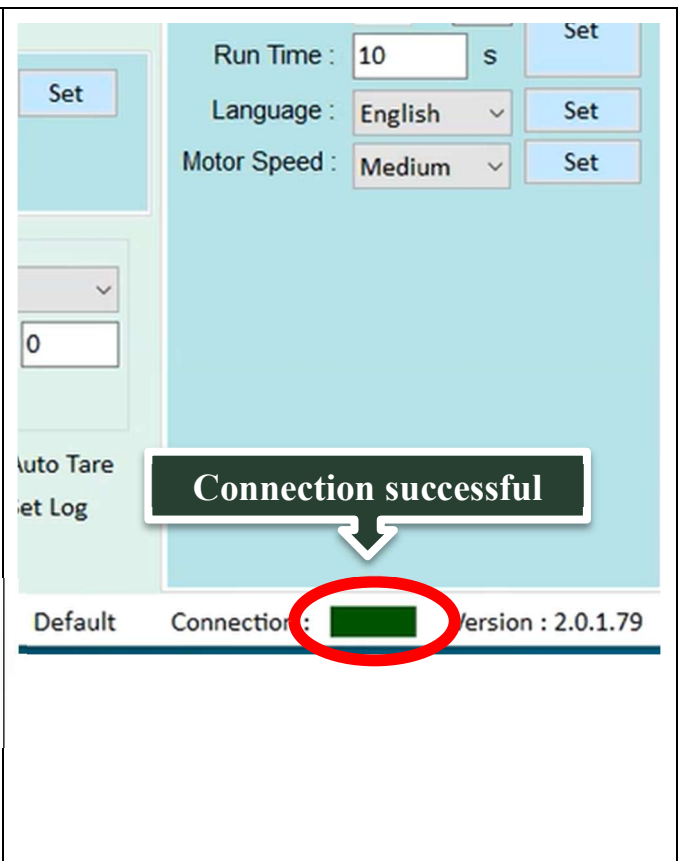
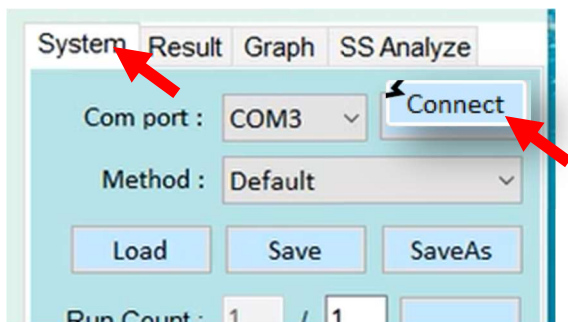


→ The dialog box disappears, and the interface buttons become clickable.



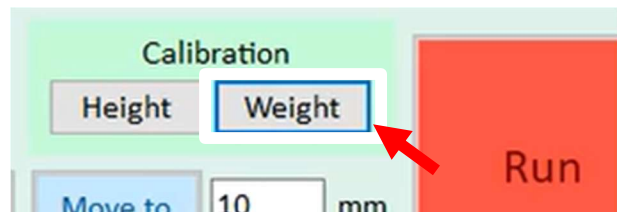
5. Check the connection status in the lower right corner of the interface: green indicates that it is connected.

- ◆ Red indicates no connection
→ Select the System tab →
Set COM Port to COM3 →
Click Connect.

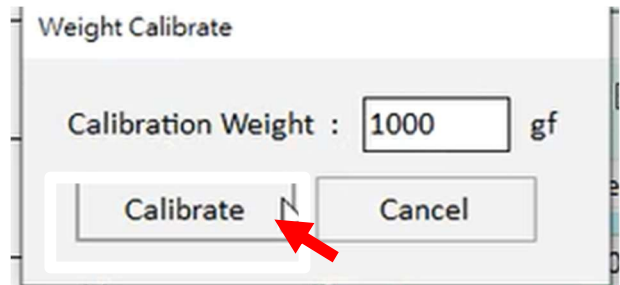


Weight Calibration

1. Click "Weight" in the software interface.

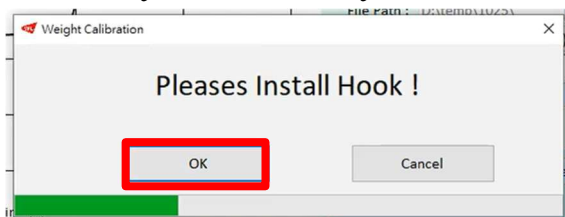


2. After the dialog box appears, confirm that the Calibration Weight is 1000 gf, and then click "Calibrate".

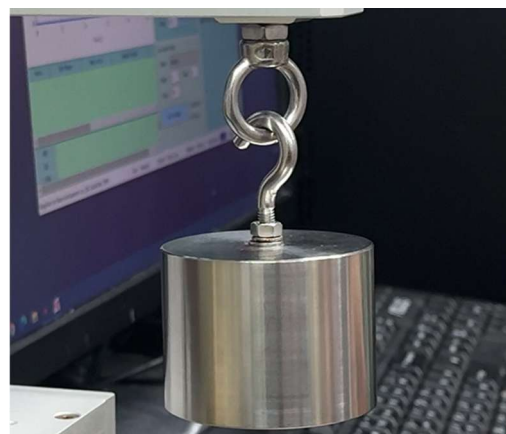
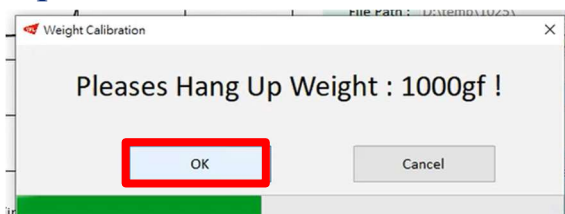


3. After the dialog box appears, install the hook and tighten it counterclockwise, then press "OK".

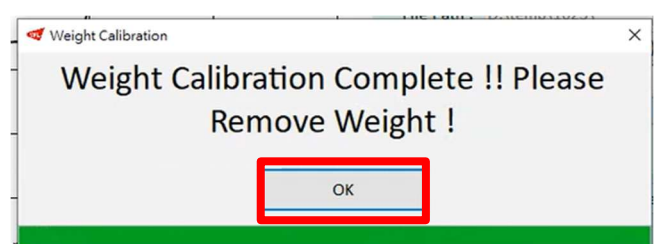
- ◆ Lock securely without wobbling.
Don't overtighten to ensure easy disassembly.



4. After the dialog box appears, place the weights on the table to avoid violent shaking, and then press "OK".



5. When the message box on the right appears, it means that the weight calibration is complete. → Click "OK" → Remove the weights and hooks to complete the calibration.



Choose a Fixture or Probe

◆ Currently, the fixtures include:

	General Test (Cylindrical probe) (Compression/TPA Test)	P. 7
	General Test (Pressure plate probe)	P. 9
#67	Warner Bratzler Stainless Steel Blade Set (Cutting test)	P. 8
#78	Double C-Clamp Fixture (Tensile test)	P. 9
#81	Three-Point Bending Fixture	P. 10
#85	Syringeability Test Fixture (Suitable for 3 mL syringes)	P. 11
#89	Film Puncture (1 mm Ball Probe) Tset	P. 12
#90	Film Puncture (5 mm Ball Probe) Tset	P. 12

◆ Other Probes:

Acrylic Cutting Blade



General Test (Cylindrical probe)

- **Test** : Compression test, Total Texture Analysis (TPA).
- **Result** : Hardness, Elasticity, Chewiness.
- **Application** : Bread, cakes, Meat, and other types of food.
- **Model** : Strain(c)

⚠ **High calibration required**

Recommended parameters:

Trigger	= 5 (gf)	Starting point
Target	= 50 (%)	Strain
Hold	= 0 (sec)	Holding Time

※ Suitable for food testing for senior citizens: Probe: 20 mm cylinder, Mode: TPA_strain(c), Recommended parameters: Trigger = 5, Target = 70, Hold = 2.

©The test content, results, modes, and parameters are suggestions only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and literature data.

The fixture components include :



Precautions:

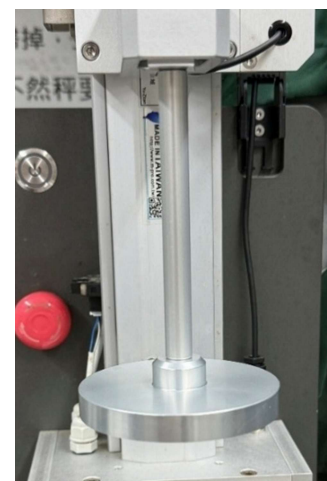
1. The **20 mm** probe is made entirely of aluminum and is easily damaged. Please avoid collisions during operation. **After use, be sure to store it in the designated box.**



General Test (Pressure plate probe)

Same as above.

The fixture components include :



#67

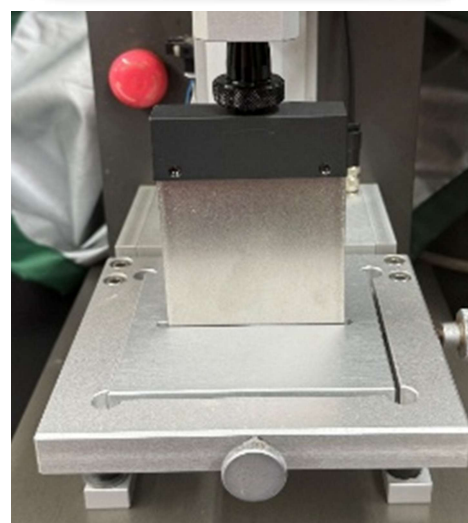
Warner Bratzler Stainless Steel Blade Set (Cutting test)

- **Test** : Cutting test
- **Result** : Cutting force, brittleness.
- **Application** : Vegetables, fruits, meats and their processed products, baked goods, etc.
- **Model** : Distance (c)

Recommended parameters:

Trigger	= 5 (gf)	Starting point
Target	= 50 (mm)	Downward distance
Hold	= 0 (sec)	Holding Time

©The test content, results, modes, and parameters are suggestions only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and literature data.



The fixture components include :



Precautions:

1. When connecting the probe to the instrument, maintain an **8 mm (0.8 cm) gap**. Do not remove the two washers to avoid sensor damage.
2. Align the blade with the center hole and adjust slightly until it engages smoothly to avoid fixture damage.



3. Use a flat cutter (left) for materials that are not easy to move; use a triangular cutter (right) for materials that are easy to slide or cylindrical (such as sausages, meatballs, etc.).

#78

Double C-Clamp Fixture (Tensile test)

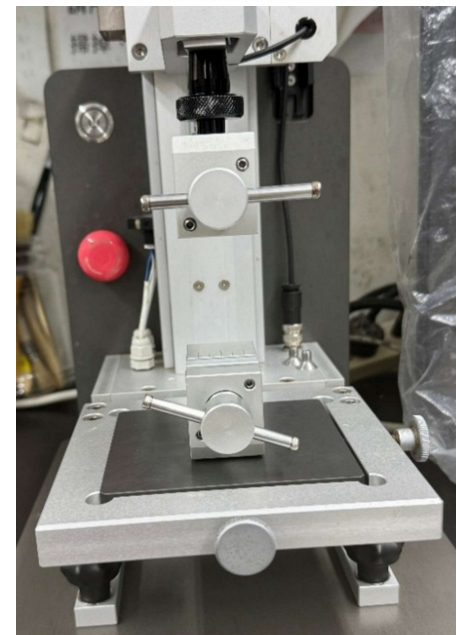
- Test : Tensile test
- Result : Tensile strength, ductility.
- Application : Candy, cheese, noodles, etc.
- Model : Distance (t)

⚠ When using the stretch mode and setting Distance(t), Trigger must be set to a negative value.

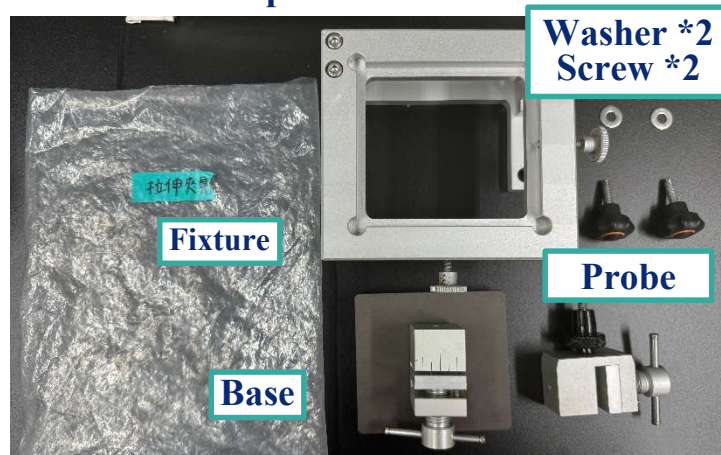
Recommended parameters:

Trigger	= -5 (gf)	Starting point
Target	= 30 (mm)	Downward distance
Hold	= 0 (sec)	Holding Time

©The test content, results, modes, and parameters are suggestions only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and literature data.



The fixture components include :



Precautions:

1. When connecting the probe to the instrument, maintain an **8 mm (0.8 cm) gap**. Do not remove the two washers to avoid sensor damage.



#81

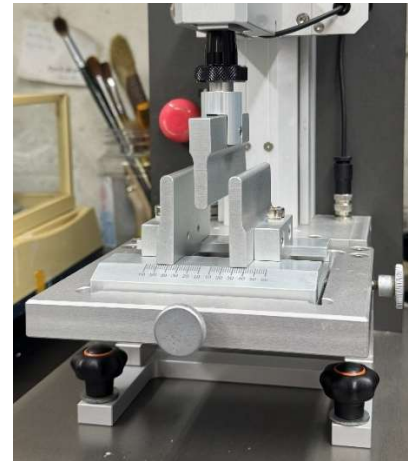
Three-Point Bending Fixture

- **Test** : Hardness, tensile strength and flexural strength tests.
- **Result** : Toughness, fracture point.
- **Application** : Cookies, crackers, cookies, lasagna, and pretzels, etc.
- **Model** : Distance (c)

Recommended parameters :

Trigger	= 5 (gf)	Starting point
Target	= 25 (mm)	Downward distance
Hold	= 0 (sec)	Holding Time

©The test content, results, modes, and parameters are suggestions only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and literature data.

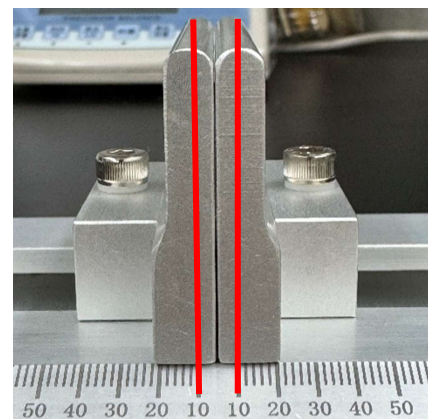


The fixture components include :



Precautions:

1. When connecting the probe to the instrument, maintain an **8 mm (0.8 cm) gap**. **Do not remove the two washers to avoid sensor damage.**
2. The distance between the base points is indicated by using the midpoint of the distance between the highest points on both sides as the reference point. For example, 10 mm:



#85

Syringeability Test Fixture (For 3 mL Syringes)

- **Test** : Extrusion and Resistance Test.
- **Result** : Injectability and Flow Resistance.
- **Application** : Gels, Medical Foods, Semi-solid Foods, and Related Products.
- **Model** : Distance (c)

⚠ **High calibration required**

Recommended Parameters:

Trigger	= 5 (gf)	Starting point
Target	= 25 (mm)	Downward distance
Hold	= 0 (sec)	Holding Time

© The test contents, results, mode, and parameters are provided as recommendations only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and relevant literature.



The fixture components include:



Precautions:

1. When connecting the probe to the instrument, maintain an **8 mm (0.8 cm) gap**. **Do not remove the two washers to avoid sensor damage.**
2. Please bring your own syringe.
3. For syringes of other capacities, please contact extension 5140 in advance; additional accessories may be required.



#89

Film Puncture (1 mm Ball Probe)

- Test : Puncture Test
- Result : Penetration Force, Toughness
- Application : Fruits, Meat Products, Films
- Model : Distance (c)

⚠ High calibration required

Recommended Parameters:

Trigger	= 5 (gf)	Starting point
Target	= 25 (mm)	Downward distance
Hold	= 0 (sec)	Holding Time

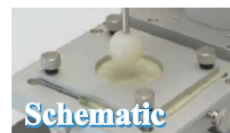
© The test contents, results, mode, and parameters are provided as recommendations only. Actual settings should be adjusted according to experimental requirements, sample characteristics, and relevant literature.

The fixture components include:



Precautions:

1. The probe tip is extremely small and fragile. **Avoid any collision.** Users are liable for compensation if damage is caused by impact.
2. Place the sample at the center of the base and cut it to an appropriate size for secure fixation.

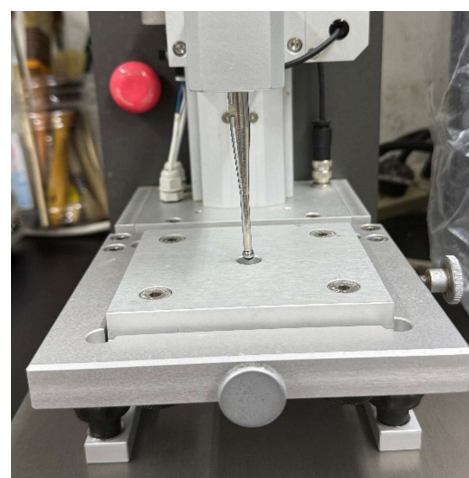
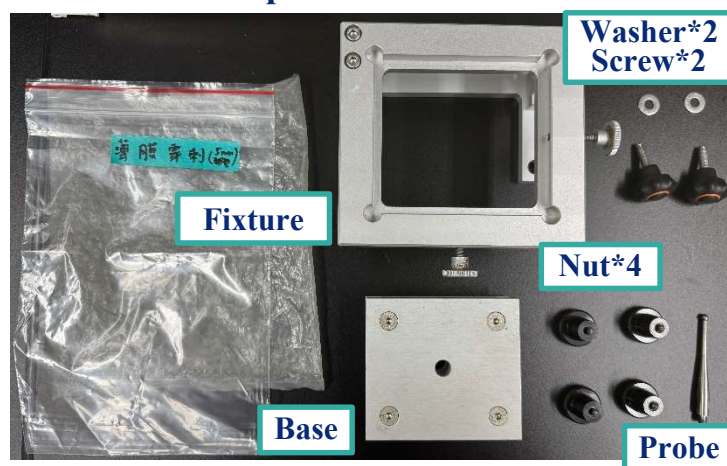


#90

Film Puncture (5 mm Ball Probe)

Same as above.

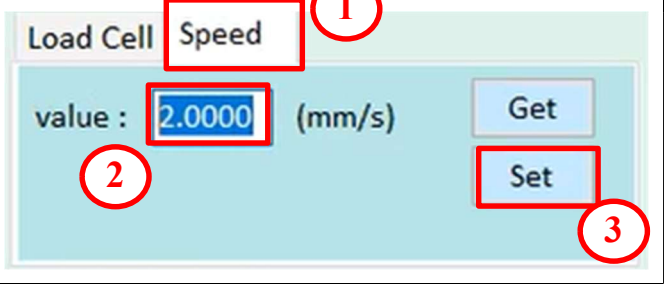
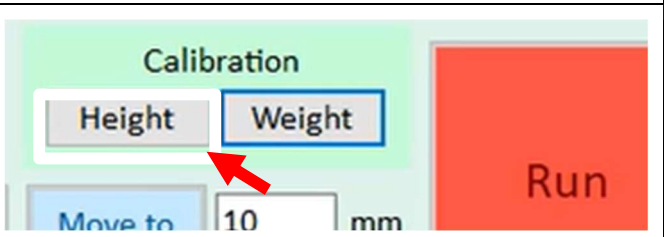
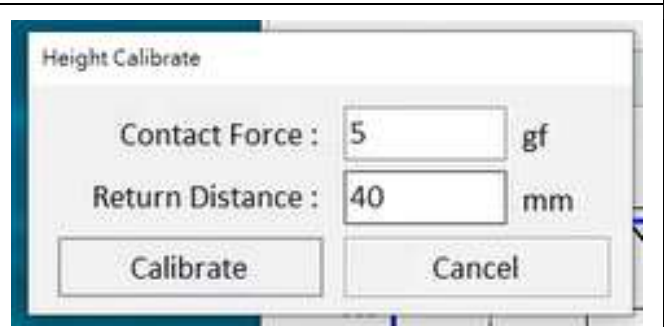
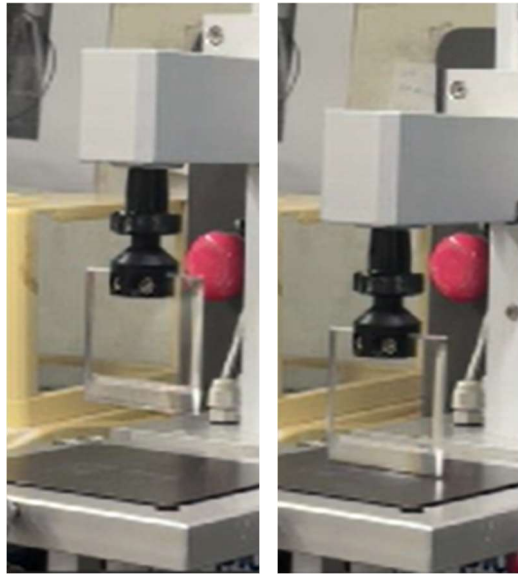
The fixture components include :



Precautions:

1. Ensure the probe tip is positioned at the center hole of the base during setup.

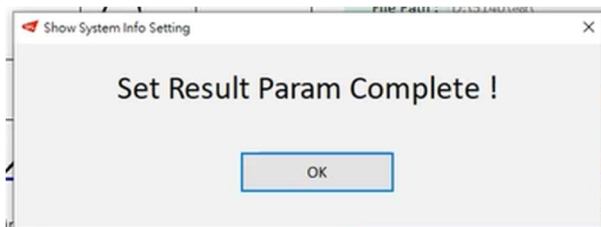
Height calibration

1. Set the probe speed in the software interface: go to the Speed tab → enter the required value (recommended 2 mm/s, adjustable depending on experimental needs) → click "Set" to confirm.	
2. Click "Tare" in the software interface to reset the force value to zero.	
3. Click "Height" in the software interface.	
4. Set Contact Force (5 gf recommended) and Return Distance (sample height + 5 mm) in the dialog box, then click "Calibrate" to start calibration.	
5. The instrument will automatically perform height calibration. After the probe contacts the base, it should rebound smoothly without any noise. (The image shows an acrylic cutting blade; in actual operation, use the required probe for height calibration.) ◆ If an abnormal situation occurs (loud collision noise and the probe does not rebound), immediately press the emergency stop button (red rotary switch located below the instrument power switch) to stop the instrument. Restart the software and begin again from the weight calibration step. Also notify members of Laboratory 5140.	

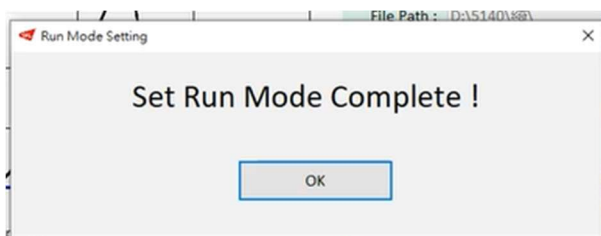
Formal Experiment & File Saving

1. File naming: Enter the file name in the “File Name” field → click the folder icon to select the save location → click “Set” to confirm.

2. Click the “Result” tab → set Result Mode to “Basic” (select “TPA” if using TPA mode) → set Calc. Name to “all” → click “Set Param” → in the pop-up dialog, click “OK” to complete the settings.



3. Set the test mode and parameters (refer to “Fixture or probe selection” and relevant literature if needed) → click “Set Test Mode” → in the pop-up dialog, click “OK” to confirm and complete the setup.

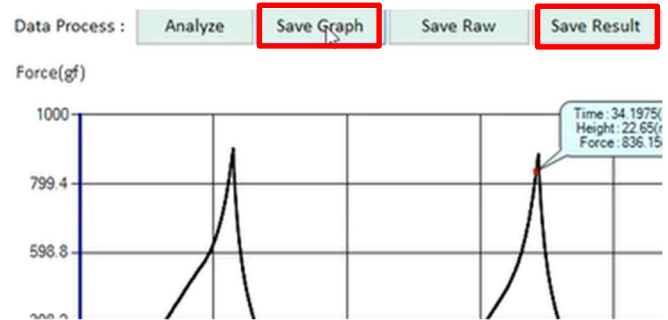


4. After placing the sample, click “Run” to start the test. The icon will change to “Run/Stop”; when it returns to “Run”, the measurement is complete.

5. Data Saving :

- A. Click “Save Graph” to save the result plot file.
- B. Click “Save Result” to save the calculated results as a separate file.
- C. The raw data will be automatically saved to the previously specified directory.

◆ For other analysis methods, please refer to the instructional videos or the full user manual.



6. After the experiment, please ensure the following tasks are carried out:

- A. Clean the instrument and fixtures.
- B. Disassemble and return fixtures to their original positions.
- C. Shut down software, computer, and instrument.
- D. Cover with dust cover.
- E. Complete the logbook.

⚠ The threads are prone to rust; keep dry after cleaning.

⚠ After cleaning the probe, wipe it dry with lens paper.

◆ Leave only after completing all procedures. Please follow the guidelines to avoid affecting subsequent users.

