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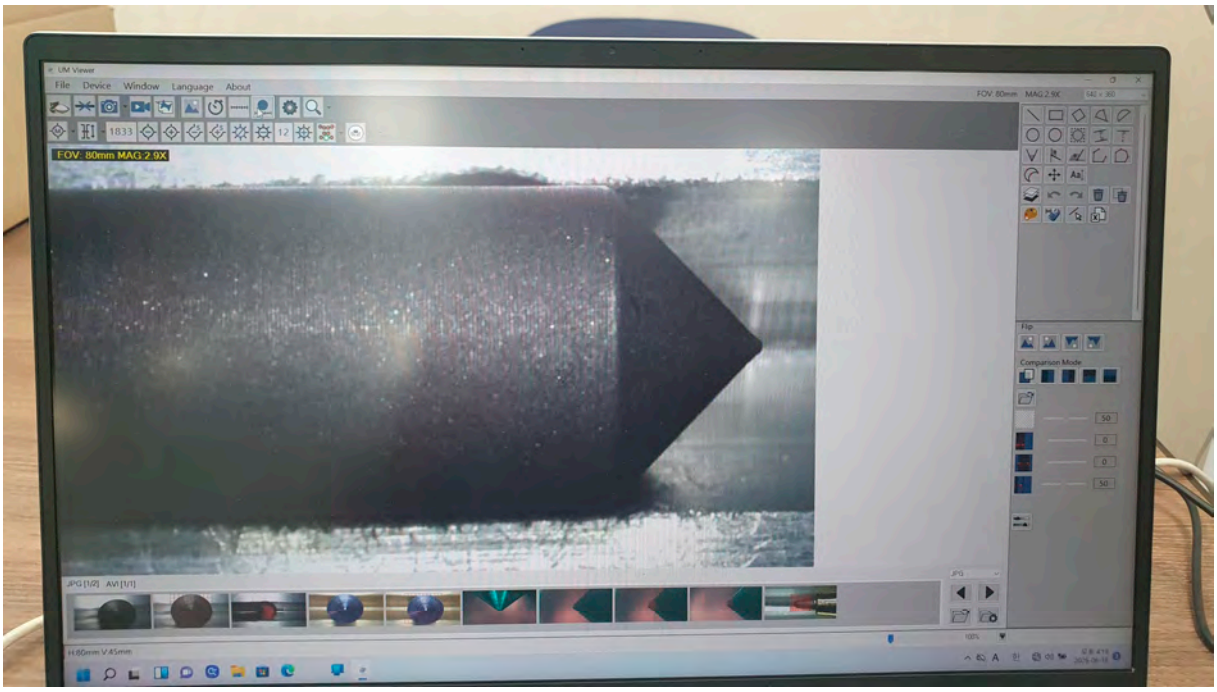
[Confirmation of Stylus Pin Condition before Using]

To verify the condition of the stylus pin before measurement, the procedures described in **"GemTec manual CERCHAR Tester RCAT-1 Measurement of Wear Flatness Widths 2026-04-22.pdf"**, under **"◈ Preparations before Measuring Wear Flatness Width"** (Pages 3~8), must first be completed. These procedures include:

I. Installation of the Driving Software
II. Execution of the Driving Software
III. Connecting a Laptop (or Computer) to the Microscope
IV. Focusing the Microscope

However, in order to determine whether the stylus pin satisfies the ASTM D7625-22 requirement specified in **Section 8, "Preparation of Apparatus"**, namely a **conical angle of 90°**, the stylus pin should **not** be positioned upright in the stylus pin insertion port. Instead, it should be laid horizontally in the groove of the stylus pin holder, as shown in the photograph below.

Therefore, since the stylus pin must be placed horizontally rather than vertically, the distance(s) for **"Fixing the focal distance"** or **"Fixing the sensor position"** should be adjusted accordingly.



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[Confirmation of Stylus Pin Condition before Using]

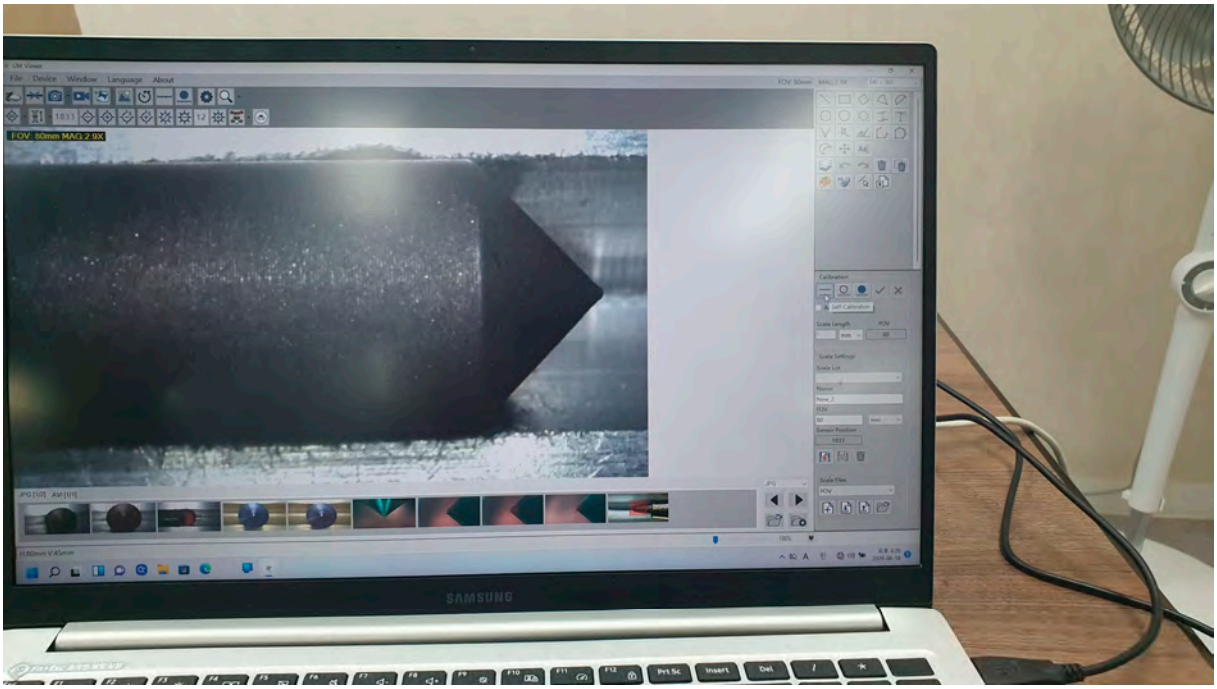
V. Calibration for precise measurements

1. To obtain accurate measurement results, use the Auto-Calibration Tool, which automatically corrects the scale (graduation) and distortion of the image/measurement axes.

In order to measure length, distance, diameter, etc. with a digital microscope, calibration is essential to convert screen pixels into actual length (mm). This calibration is performed using the Auto-Calibration Tool.

1.2 Main Function Button (Fig 1-4) (UMViewer_Users_Manual_V3_7_EN.pdf)

Among the buttons above, press button  to display the calibration menu at the bottom of the auxiliary program, as shown on the below screen. From this menu, click button  to perform the auto-calibration.



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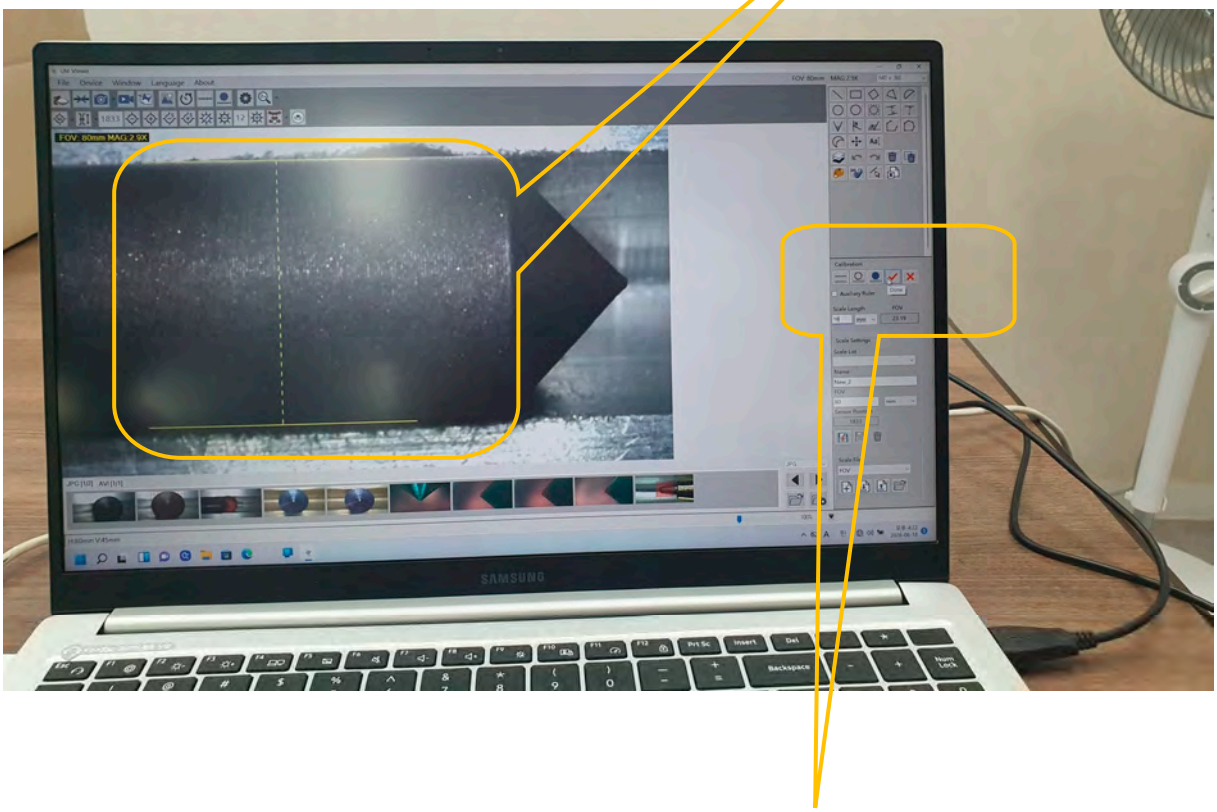
[Confirmation of Stylus Pin Condition before Using]

2. After clicking the button, set the reference line for calibration by defining the straight-line distance corresponding to the stylus pin diameter displayed on the screen. As shown in the figure below, click at one end of the stylus pin diameter, drag the mouse cursor to the opposite end, and then release the mouse button.



3. In the Scale Length field shown in the screen above, enter 10 mm, which is the diameter of the stylus pin, and then click the done  button to complete the calibration. Once the calibration is completed, the FOV value displayed in the status bar at the top of the screen will be updated, and the magnification will also be corrected accordingly.

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[Confirmation of Stylus Pin Condition before Using]

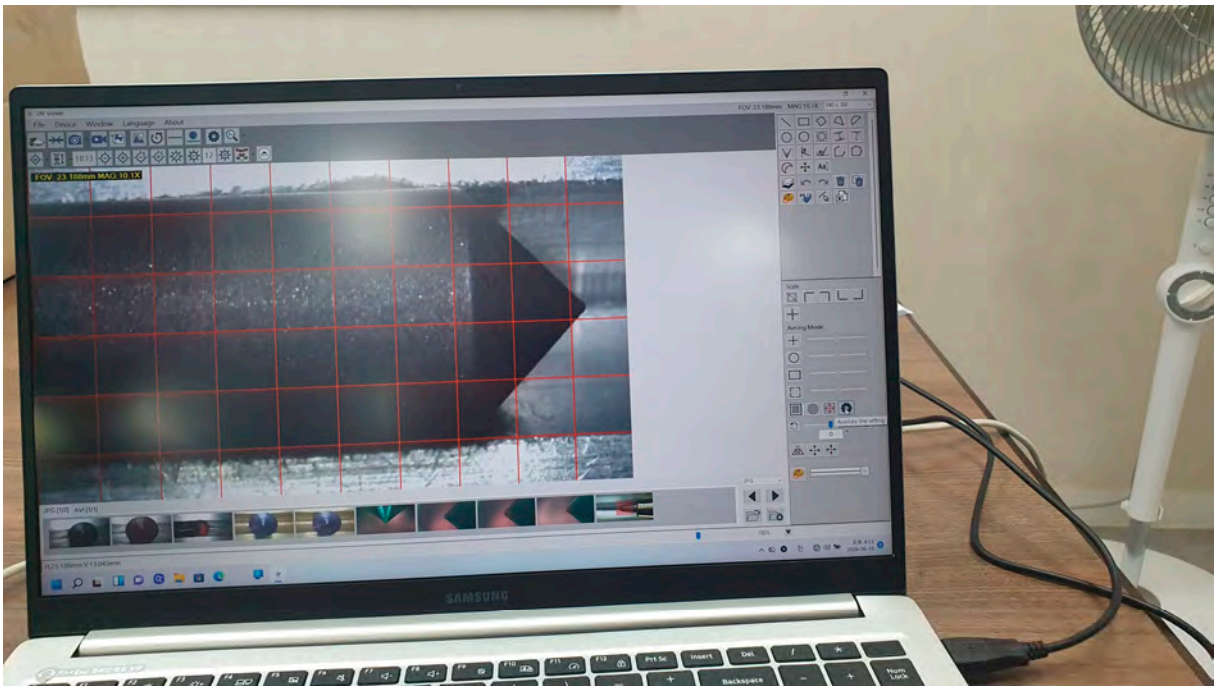
VI. Confirmation of Conical angle of 90°

※ Since all stylus pins manufactured and supplied by our company are produced with a 90° conical angle, no additional verification is normally required. However, for confirmation purposes, the following procedure may be performed.

To verify that the conical angle of the stylus pin is 90°, create a right-angle (90°) reference using the Grid Auxiliary Lines / Crosshair Ruler, and compare it with the profile of the stylus pin as described below.

1.2 Main Function Button (Fig 1-4) (UMViewer_Users_Manual_V3_7_EN.pdf)

1. Click the  button in the **Main Function Button**. A small window titled **"Aiming Mode"** will appear in the lower-right corner of the screen. From the buttons in this window, click the  button (**Grid Auxiliary Lines / Crosshair Ruler**). As shown in the figure below, the grid lines are displayed across the entire screen, which may make the image difficult to view. Therefore, click the  button (**Auxiliary Line Set**) to open the **Auxiliary Line Settings** window.



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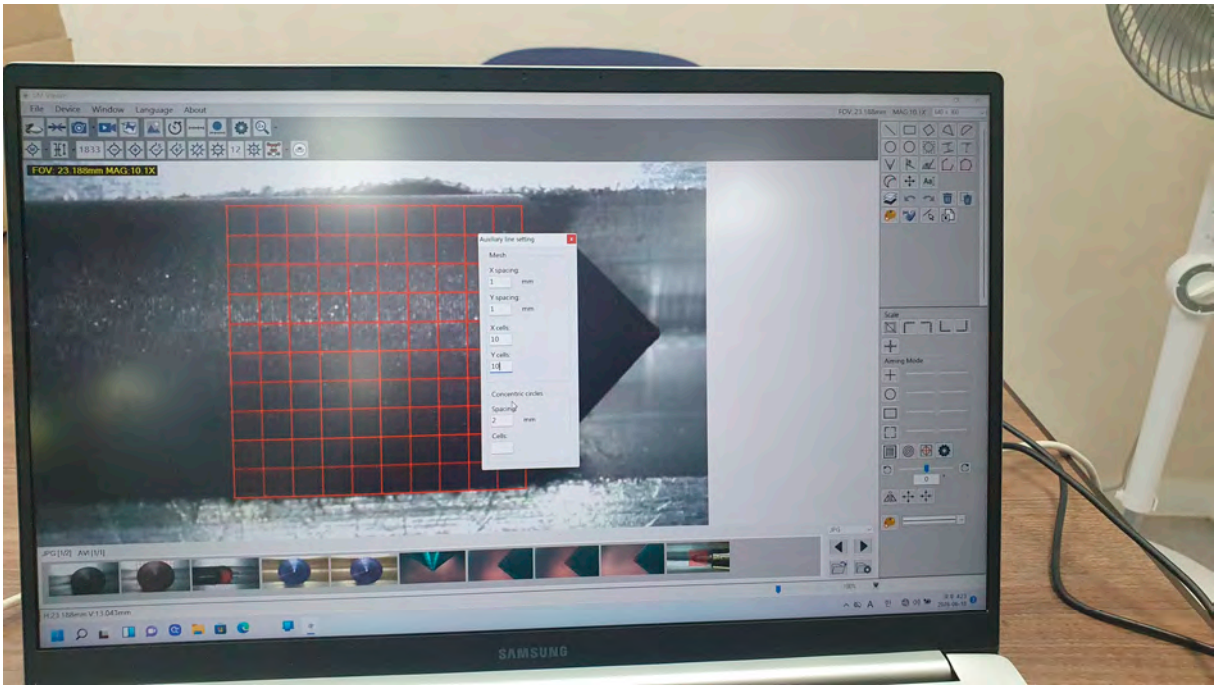
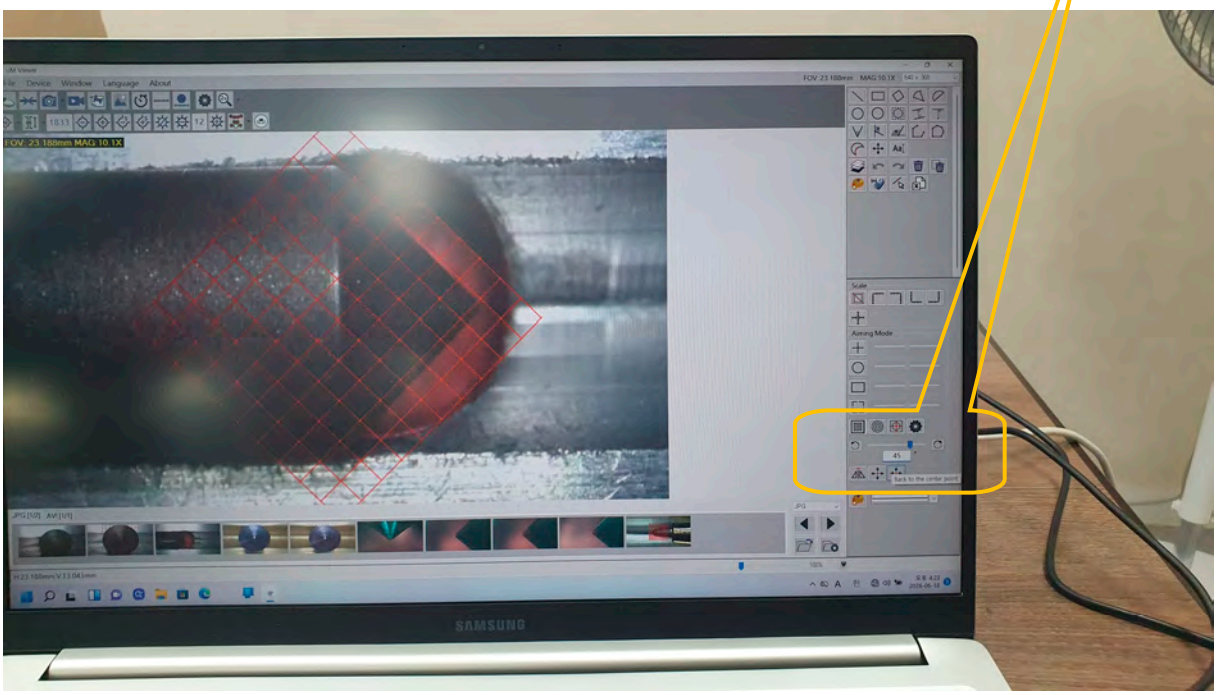
[Confirmation of Stylus Pin Condition before Using]

2. Set the X spacing and Y spacing of the grid to 1 mm, and set the number of X cells and Y cells to 10, respectively, as shown below. Then press the Enter key. The auxiliary lines will then be displayed as shown in the figure below.



3. Next, to align the auxiliary lines with the inclination of the stylus pin, enter 45 in the angle input field. As shown in the figure below, the auxiliary grid lines will rotate by 45°.



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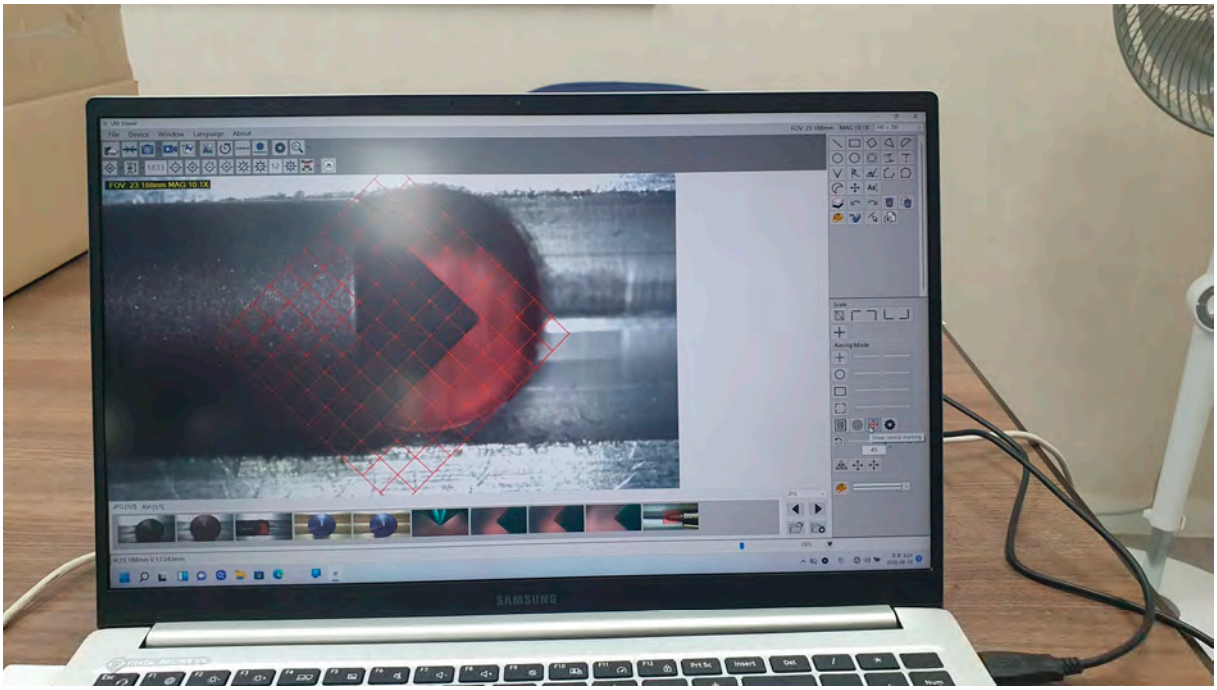
4. Using the Micrometers, adjust the auxiliary lines until they are aligned with the sides of the stylus pin. Once the alignment has been completed, confirm that the conical angle of the stylus pin is 90°



5. Saving the Current Screen

Press the Snapshot button  among the main function buttons to save the current working screen as a JPG or PNG file in the default image folder.

1.2 Main Function Button (Fig 1-4)

VII. Measuring the width of wear of tip

Measure the wear flat width at the tip of the stylus pin by referring to "**GemTec Manual CERCHAR Tester RCAT-1 Measurement of Wear Flatness Widths 2026-04-22.pdf**", Pages 14~19, following the procedures described under:

I. Using Micrometers

II. Using the  (Measurement of Distance between Lines) Function in the Sub-program