

ramé-hart instrument co.

Calibration Instructions For DROPimage Advanced

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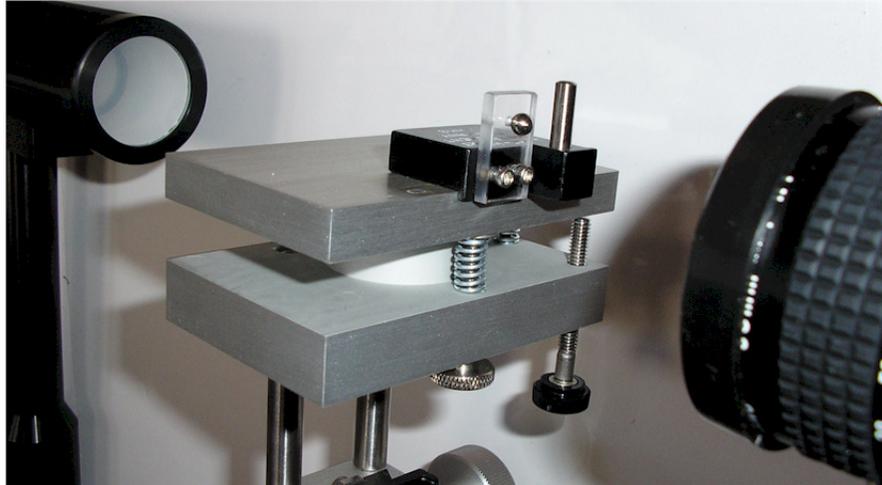
How to Calibrate – DROPimage Advanced

1. First, the goniometer and DROPimage Advanced program must be set up completely and ready for use. The light source should be turned on and the camera ready to use. (Make sure the lens cap is taken off the camera.)

For setup instructions, refer to “F1 Series User Guide”

2. Now, take the calibration tool and place it on the stage. The text on the calibration tool should be facing up. The rectangular glass plate with the ball bearing should be facing the camera. The lip on the bottom of the calibration tool should be set right over the edge of the stage, allowing the tool to slide side to side.

See photo for example:

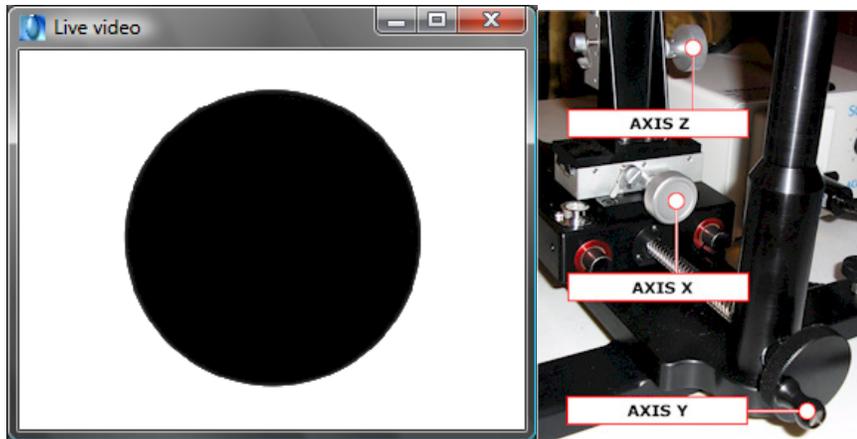


3. Next, use the **Z axis** (knob that raises the stage up and down; see photo below) and **X axis** (knob that slides the stage from side to side; see photo below) tools to center the black sphere into the Picture: 640 x 480 Window of the program. However, you will notice that the black sphere probably is not in focus.

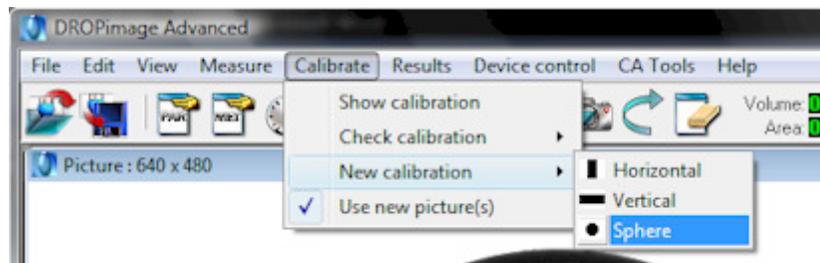
Next, you will need to use **Y axis** (knob that moves the entire stage backwards and forward; see photo below) and the knob on the light source to focus the sphere. First use the Y axis to move the entire stage so that the sphere is now crisp and has no blurred edges. You will notice that there are also many specks and dots (which are dust) around the black sphere. To get rid of them, now you must adjust the light intensity with the light source so that the specks are completely gone and the black sphere is completely crisp.

In some situations, there will appear white specks or reflections in the black sphere. It is important to get rid of them by using either the optional shade feature to block other unnecessary light sources or simply anything that blocks all unnecessary light causing the reflections.

Also, to make the sphere as focused as possible, remove as much dust as possible off the calibration tool.



- Once, the sphere is centered and focused, the next step is to calibrate it. Click on **Calibrate** which is located in the pull down menu. Click on **New Calibration**, and then click on **Sphere**. See photo for complete step 4 shown.



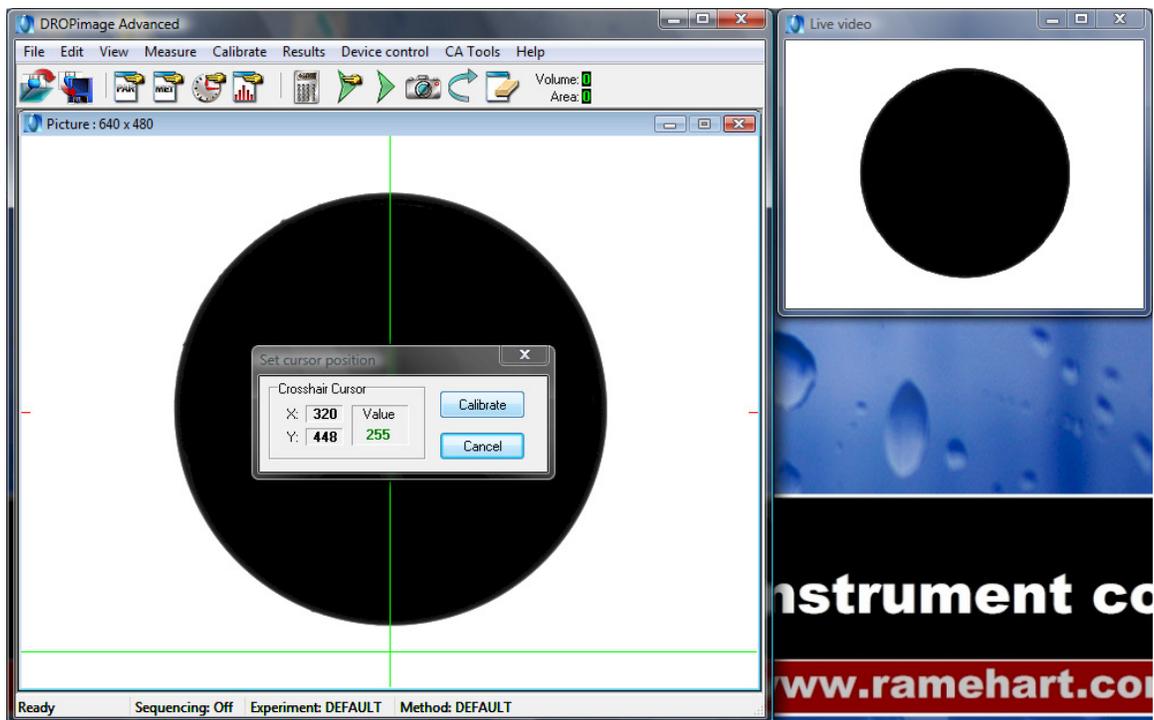
- Next, a small pop-up window should appear on the Picture: 640 x 480 screen, with **Sphere Calibration** written in the title bar. In the window there is measure of the **diameter** of the focused black sphere. The default setting is 4.000. If any other value is present, change it to 4.000. This refers to the diameter of the ball in mm. The **number of runs** measurement is not important at this point. If the measurement is 4.000, click on OK to proceed to the next step.



- Next, a new window pop-up should appear on the **Picture: 640 x 480** window along with new 2 green lines going horizontal and vertical.

First, adjust the green lines to a point under the black sphere where the vertical green line should pass through the center of ball. This is done by simply clicking on the Picture: 640 x 480 screen and the 2 green lines will then move to where the click was made. There should be a space between the horizontal green line and black sphere. Also, the horizontal green line should not be all the way against the wall of the Picture: 640 x 480 window screen.

Second, once the green lines are in place, click on the **Calibrate** option that is located in the new window that popped up.

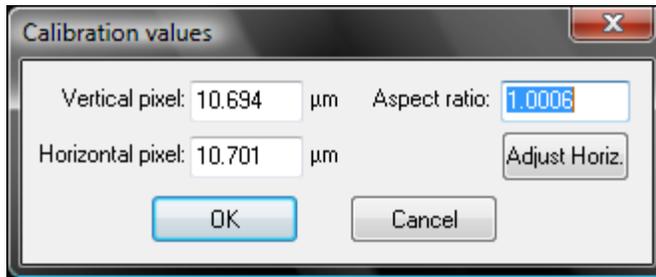


- Next, another small window should pop up and should have the **vertical pixel, horizontal pixel, and aspect ratio** information given.

First, notice the data given for the aspect ratio. This number should be 1 or extremely close to it. The tolerance for deviation

from 1 is +/-0.0015, meaning the number that is given for the aspect ratio can range from 1.0015 to .9985. The data given for the horizontal and vertical pixels is not important at this point. If the aspect ratio is located within the allowed range, then click on OK to proceed.

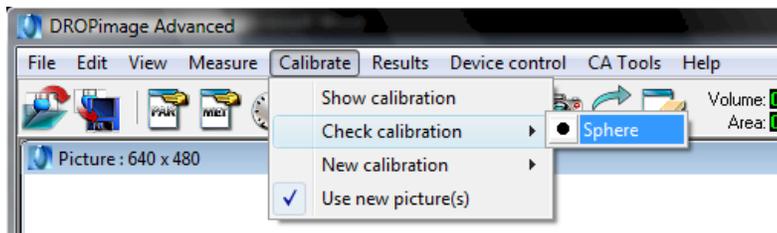
See photo for example of step 7



8. After, you have clicked **OK**, the calibration process is now complete. Every month or time that the goniometer is moved or added on to, it is recommended to re-calibrate using the exact same steps used to the first time, starting from step 1. Also, on a daily basis, it is recommended to **CHECK** the calibration. The process for checking the calibration is located on the next page.

How to Check Calibration

1. To check a previous Calibration, the goniometer and the DROPimage program must be set up and ready to use. First, click on **Calibrate** located in the main menu bar of the DROPimage program. Next, in the drop down window, click **Check Calibration**, and then **Sphere**. See photo for step 1 process:



2. A new small window should pop-up with **Check calibration** in the title bar. As before when the calibration took place, the diameter needs to be 4.000. Check the diameter to be 4.000 and click on **OK** to proceed.

See photo for step 2 process:

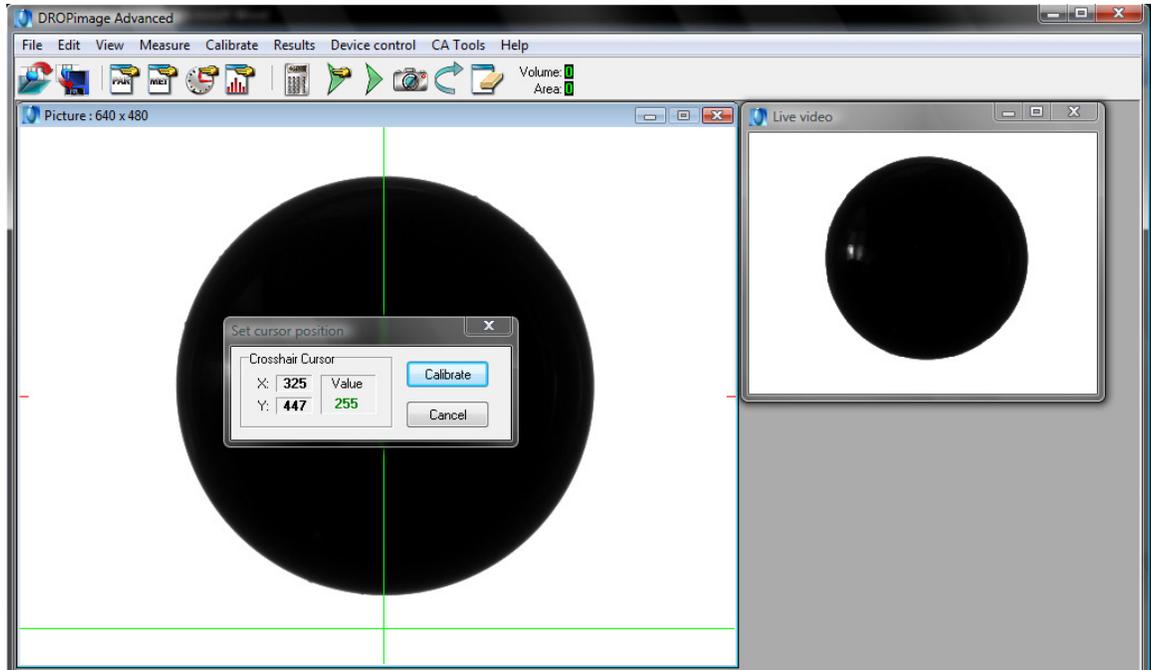


3. Next, exactly as Step 6 in the Calibration process, a new window pop-up should appear saying **Set cursor position**, on the Picture: 640 x 480 window. There should also appear 2 green lines going horizontal and vertical.

First, adjust the green lines to a point under the black sphere where the vertical green line should pass through the center of ball. This is done by simply clicking on the Picture: 640 x 480 screen and the 2 green lines will then move to where the click was made. There should be a space between the horizontal green line and black sphere. Also, the horizontal green line should not be all the way against the wall of the Picture: 640 x 480 window screen.

Second, once the green lines are in place, click on **Calibrate** that is located in the new window that popped up

See photo for complete step 3 shown.



- Next, a new small window should pop up and say **Check calibration values** in the title bar. The window contains information about the Stored Values, New Values, and the Deviation. The Stored Values and New Values numbers are not important at this point. Notice the numbers for the Deviation percentages which are written in red. An acceptable deviation is under 1%. If the Deviation is greater than 1%, the instrument should be recalibrated. Click close to finish the Checking Calibration process.

See photo for complete step 4 shown.

