

Issues:

How to calibrate the Tracker?
 What are the parameters influencing the measurement?

Introduction

The drop tensiometer is sensitive to different parameters. Users often lose time with some parameters that are not important. In this application note we are going to explain what is very important to do before the measurements to have a correct value of the surface tension.

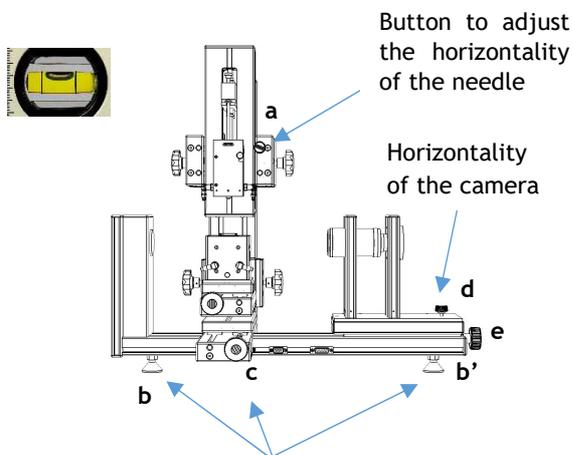
Checklist

Before calibrating the device, you must check different parameters.

Physic parameters

- The Device has to be straight
- Electronic box is switched on and the light of the tracker works.

Use a level and adjust the verticality with foot **b**, **b'**, **c** to make the device straight.



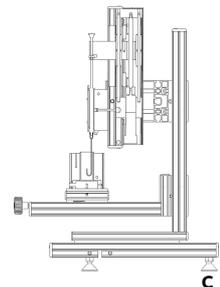
Three feet to adjust the verticality of the device.

Influence of the verticality:

Button “**a**”: will not have a big influence, visually try to have the needle straight.

Button “**b**”: the foot has a moderate influence like, you must adjust it with a level on the base of the cuvette support

Button “**c**”: it has a big influence, because it changes the alignment of the drop with the camera. The drop has to do axis symmetric. Use Level to adjust it if it is not straight.



Button “**d**”: Parameter with moderate influence, it must be adjusted with a level after adjusting the foot.

To adjust the foot, use Allen Key or turn screw.

- Aperture of the device has to be adjust:

For USB camera it must be around **5**

For the other camera it must be between **8 and 16**.



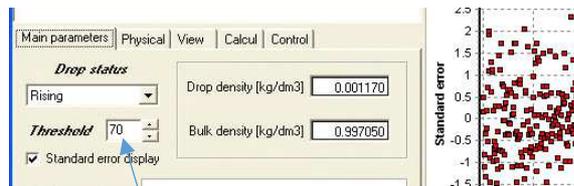
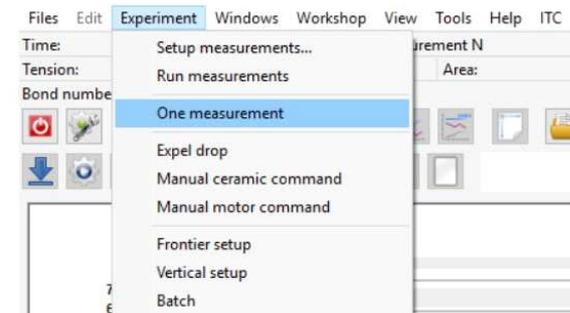
Ring to adjust the aperture

Aperture mark

Software parameters

Threshold must be adjusted at 100.

In One measurement



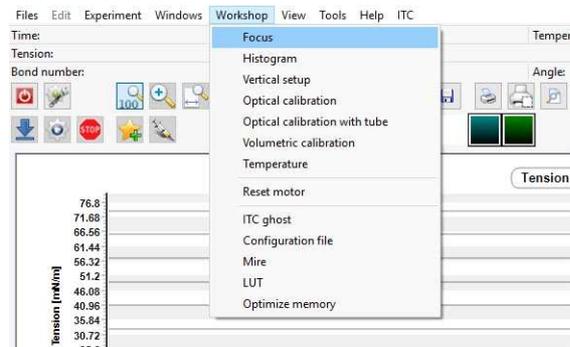
Put 100

Calibration

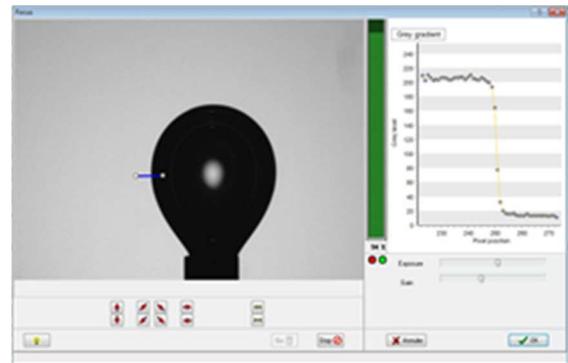
Focus

This step is necessary to adjust the transition black and white. To do so, a bubble in water is used, therefore you need a cuvette and a curved needle.

Once the system is ready open **Focus** in:



To adjust grey level, the white gradient must be around **200-220** and the black one around **20-50**.

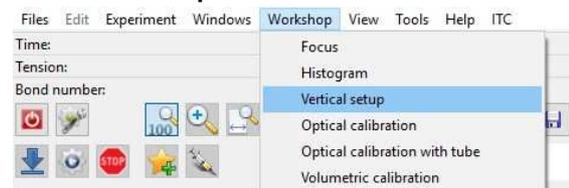


The percentage in the green bar level helps you (for the recent version) to adjust more precisely the sharpness and the grey level. Adjust the sharpness with button "e" see picture 1. You have to do this step each time you change of solution (if the solution is more/less trouble).

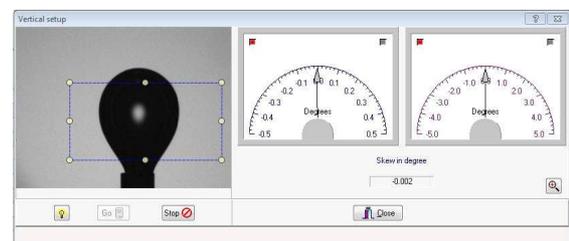
Verticality of the camera

This parameter is important, but it just need to be adjusted when the device is moved.

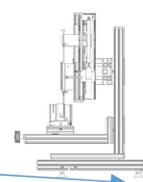
In Vertical setup



Create a bubble and draw a square like in the picture below:



If the bubble it is not straight it means that the camera it is not straight, since a bubble is always straight. Adjust the verticality between 0-0.2° with the feet "c".



Optical calibration

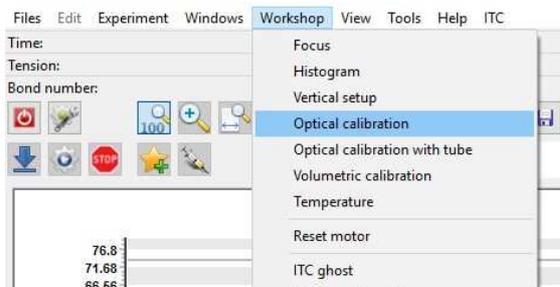
You have to do that each time you change the zoom of the lens. If you just adjust the sharpness with button “e” you do not need to calibrate it.



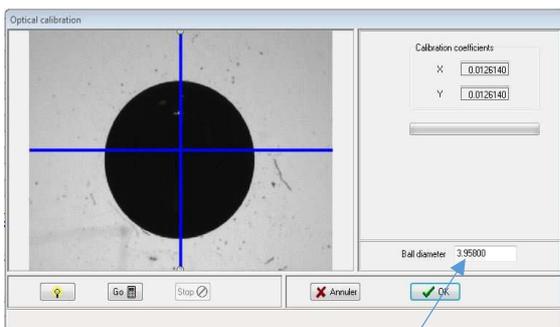
Replace the cuvette support with a calibration ball.



In Optical calibration:

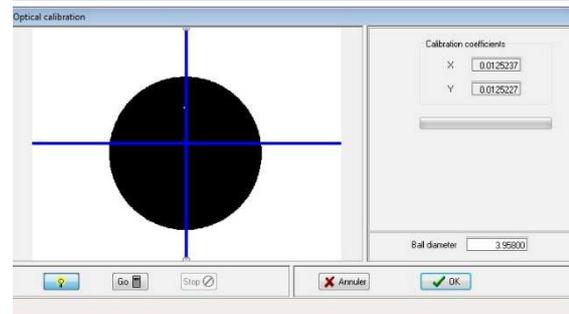


The blue cross cursor must be within the ball, in black area.



The diameter of the ball must be entered here

Check if the ball shape is correct, no dust or other artefact. Click on the bulb light to see what the software take account.

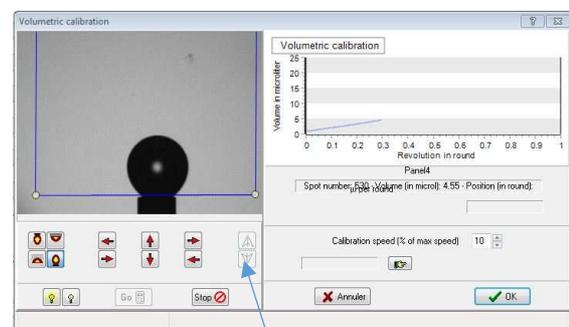
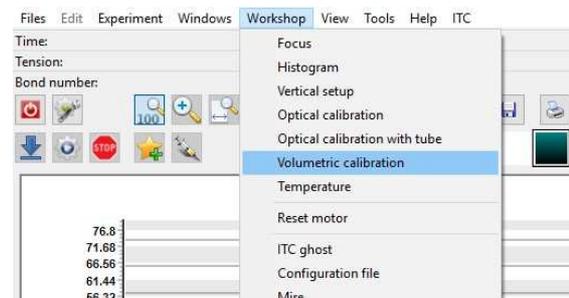


Click on Go then OK.

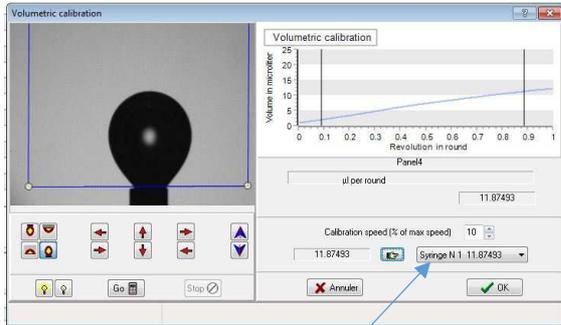
Volumetric calibration

The volumetric calibration must be done when the size of the syringe is changed and when you do oscillation in volume mode. In volume mode there is not adjustment by the motor to compensate a leak or other perturbations. Only the area mode can do that.

In Volumetric calibration:



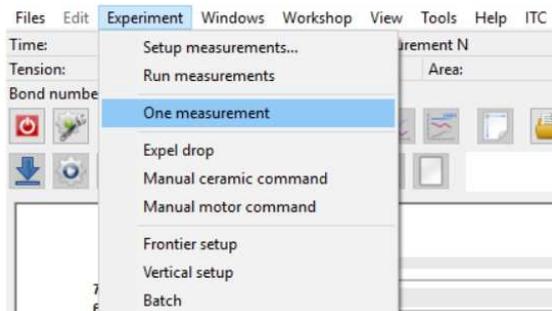
Create meniscal with this arrow and click on go



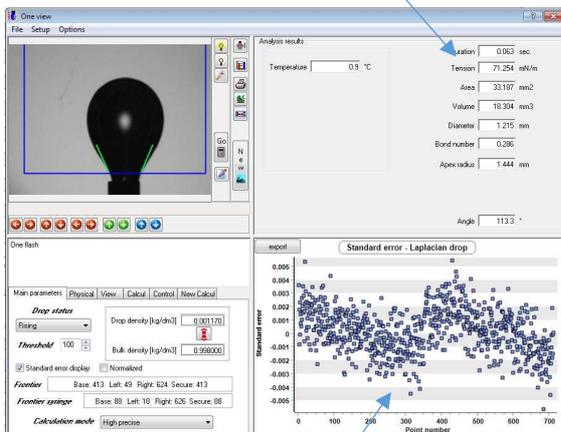
Choose the syringe and click on the hand to valid the value.

Validation of the calibration

In **One measurement**:



Check if surface tension value is correct



Check if the cloud is correct (Homogeneous around 0)

After, you can create and save in .cfg file.

Frequencies or conditions to do a calibration

Calibration	When
Focus	Each time if the solution has not the same turbidity
Vertical Setup	If the device move. If the camera move
Optical Calibration	If the user change the zoom by the lens of the camera. NOT if the sharpness is doing by the button "e"
Volumetric calibration	If the user use oscillation in volume