Agrosta®WONDERFAST / Durofel
Digital Firmness and size measurement of soft fruits

The Agrosta®Wonderfast / Durofel version has been designed in 2020 in order to provide a top accurate machine for testing automatically Cherries, Blueberries, Tomatoes, Cranberries and Grapes
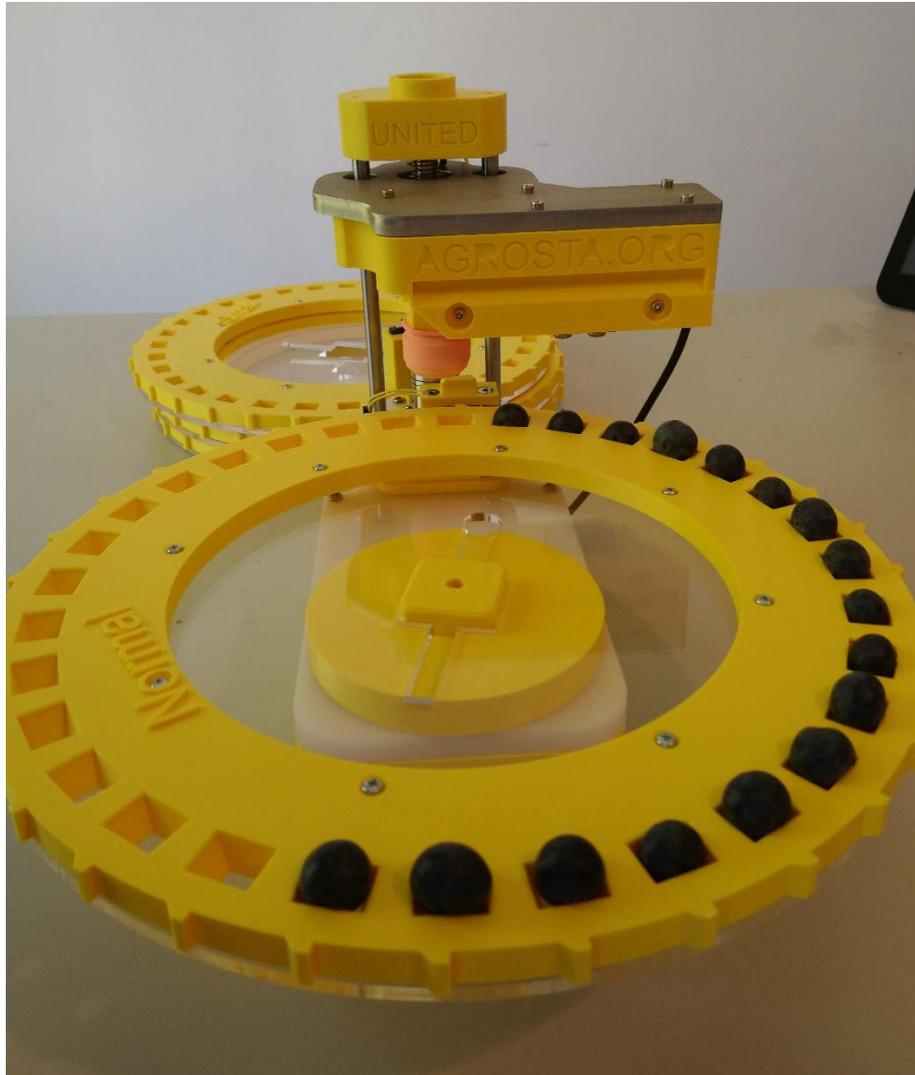
Many thanks for having acquired an Agrosta instrument

Your package contains :

- The machine itself
- 2 turntables (According to your request, 2 identical or 2 different turntables)
- A manual with certificate of conformity
- A 110V / 220 V power supply
- A Usb stick with the software
- A Usb cable

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The Agrosta®Winterfast / durofel version is entirely designed and assembled in France. The motherboards come from USA, and the shield boards are made in Hong Kong and USA.

The Agrosta®Winterfast / durofel version is not waterproof! It is a precision instrument; please take care to avoid dropping or knocking it.

The Agrosta®Winterfast / durofel version comes with two years guarantee

- Minimum Durofel : 7%
- Maximum Durofel : 100% (Shore A Scale)
- Resolution: +/- 1%
- Software compatible with Windows XP, 7, 8 and 10
- The size is provided in mm (The user has to enter the initial size, between the sensor head, and the bottom of the cup of the turntable)

Fruits like Blueberries, Blackberries, Strawberries and Raspberries are destroyed during measurement
This has no effect on the measurements, as the machine records only the maximum pressure

The software is compatible with Windows Vista, XP, 7, 8 and 10

1/ Install Driver

- Don't connect your machine
- Insert USB stick in your computer

Nom	Modifié le	Type	Taille
CH341SER	14/04/2018 10:23	Dossier de fichiers	
INSTALL	14/04/2018 10:23	Dossier de fichiers	
Agrosta_Driver.EXE	24/01/2017 01:17	Application	238 Ko
INSTALL.EXE	26/02/2014 10:39	Application	212 Ko
INSTALL.ZIP	16/02/2018 15:50	Archive WinRAR ZIP	11 735 Ko

- Double click on "Agrosta_Driver" – Follow setup procedure

2/ Connect Usb cable between instrument and your computer

3/ Wait a few seconds till it is recognized (Driver linked to device)

4/ Install Software from USB Stick

CH341SER	27/08/2019 14:07	Dossier de fichiers	
INSTALL	29/08/2019 17:00	Dossier de fichiers	
Agrosta_Driver.EXE	24/01/2017 01:17	Application	238 Ko
autorun.inf	03/08/2019 16:27	Informations de c...	1 Ko
BelleSoftPubli.mp4	29/08/2019 16:56	Fichier MP4	309 095 Ko
INSTALL.EXE	30/10/2017 11:38	Application	232 Ko
INSTALL.ZIP	29/08/2019 17:00	Dossier compressé	19 304 Ko

- Double click on "INSTALL.EXE"
- Follow Setup procedure

5/ Connect Power plug

6/ The software starts after setup
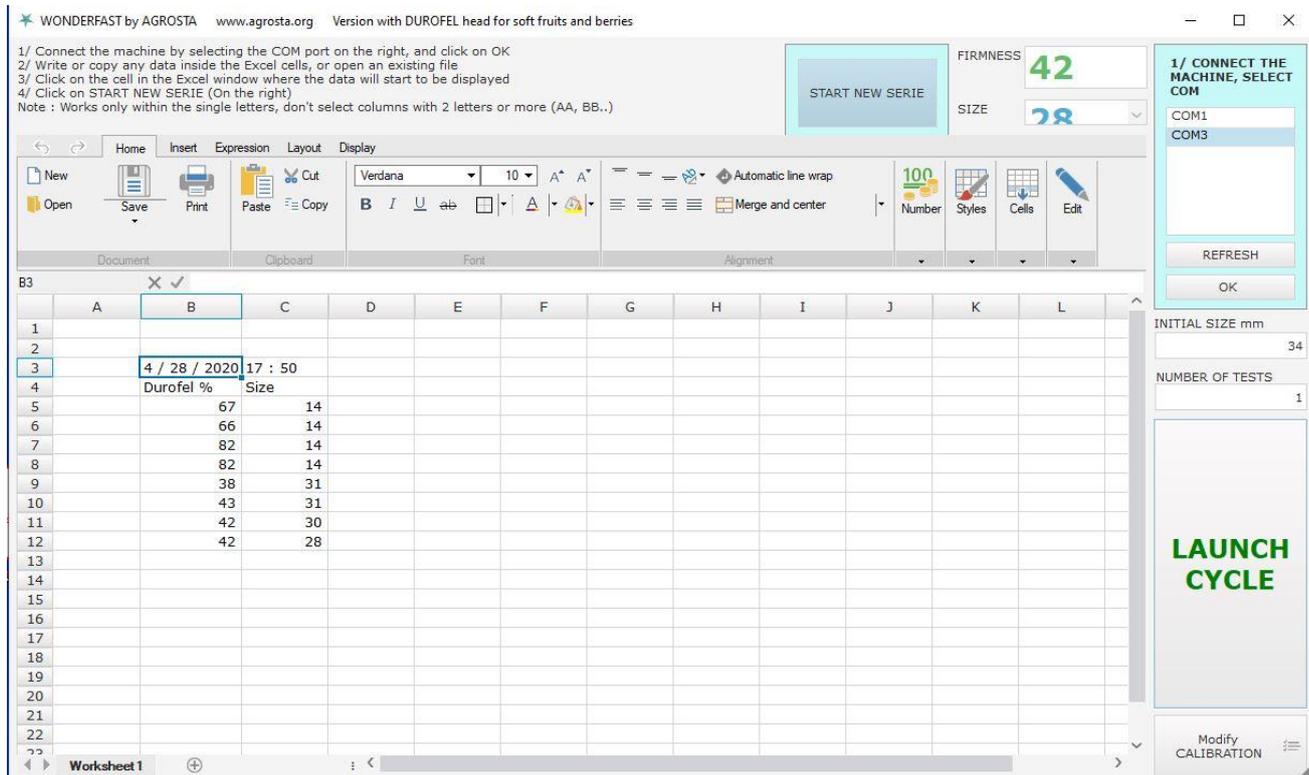
- On the right/top of the window appears a list of COM ports
- Select the one corresponding to your machine
- Usually, the last COM port corresponds to your machine
- Click 2 times on "OK"

7/ Start a new Serie

The software comes with a light version of Excel :

- You can open any Excel file

- Or use the blank sheet that appears when you start the soft

- Click on the cell where you want the data to start to be displayed

- Then click on "START NEW SERIE" : Date / time and column headers will be displayed

- You an click in any other cell in order to add any other information (like sugar contant..)

- Or start another batch in another position of the sheet

- At the end of your tests, you can record the Excel file

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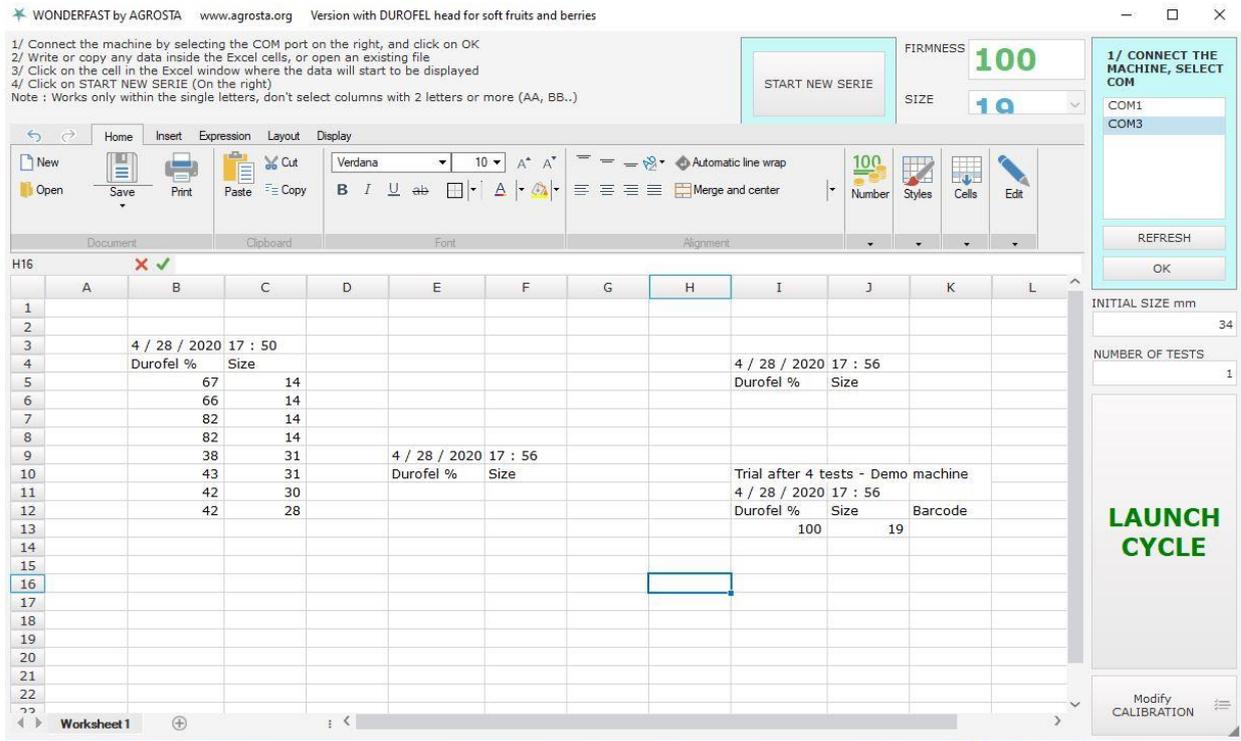
- You can use a barcode reader, and select the cell where you want the barcode reference to appear

8/ Launch a cycle

- Define the number of tests you want to perform (The number of fruits placed on the table, between 1 and 32), enter this value in the corresponding field
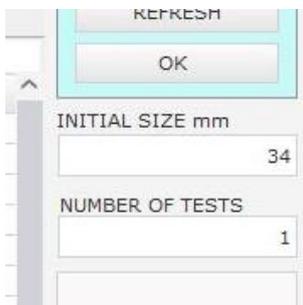
- For blueberries, if the table is full of fruits, this value is 32
- If you want to make continuous testing (remove and replace berries during the cycle), you can put a value like 1000 – The machine will then test 1000 fruits / If you want to stop, remove the USB plug and the Power plug / Then reconnect and restart the software

- Place the table : Switch between 2 cups as on photo hereafter / The machine will start with the cup on the right side :
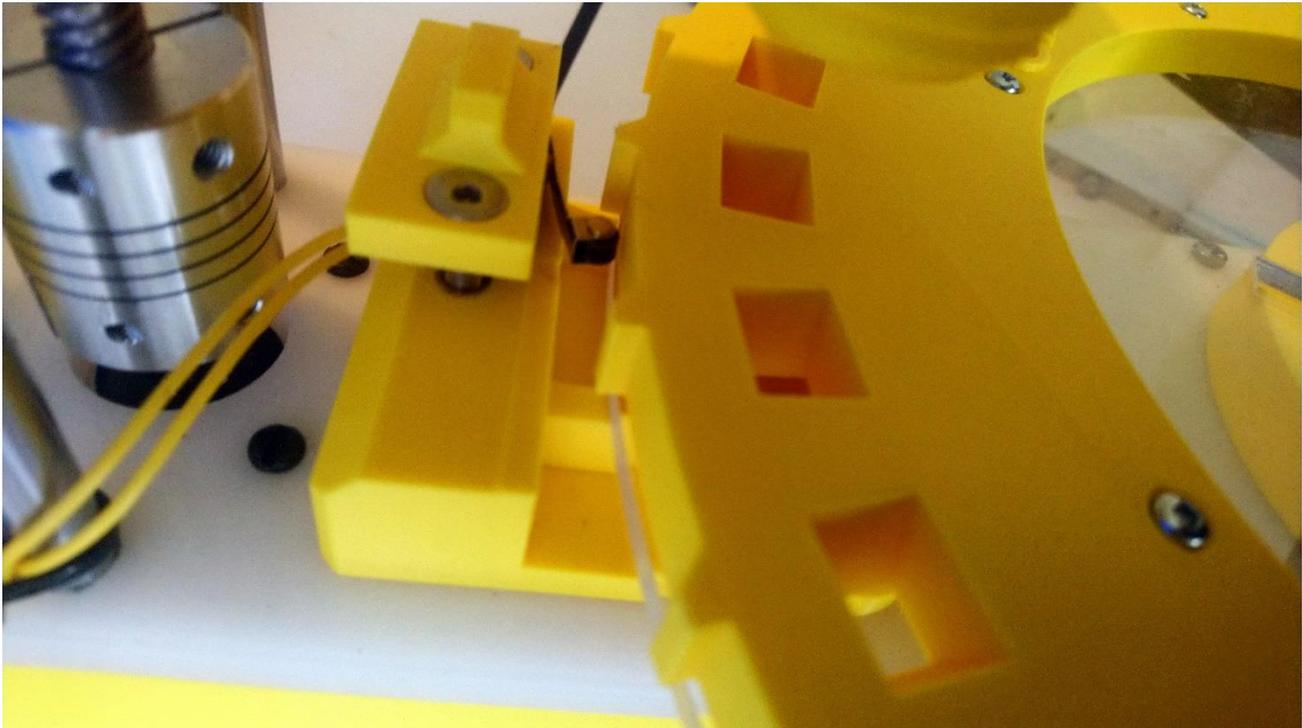
- Click on "LAUNCH CYCLE"

9/ Adjust the size measurement

- You need to enter the initial size in mm (Distance between the sensor head and the middle of the cup height of the turntable you are using)
- Enter this value in the field "Initial size"

- Make some tests with fruits for which you know the size, and adjust the initial value : Adding 1mm to initial size adds 1 mm to fruit size

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Bottom of sensor to top of turntable is X mm

Depth of the hole is 10mm
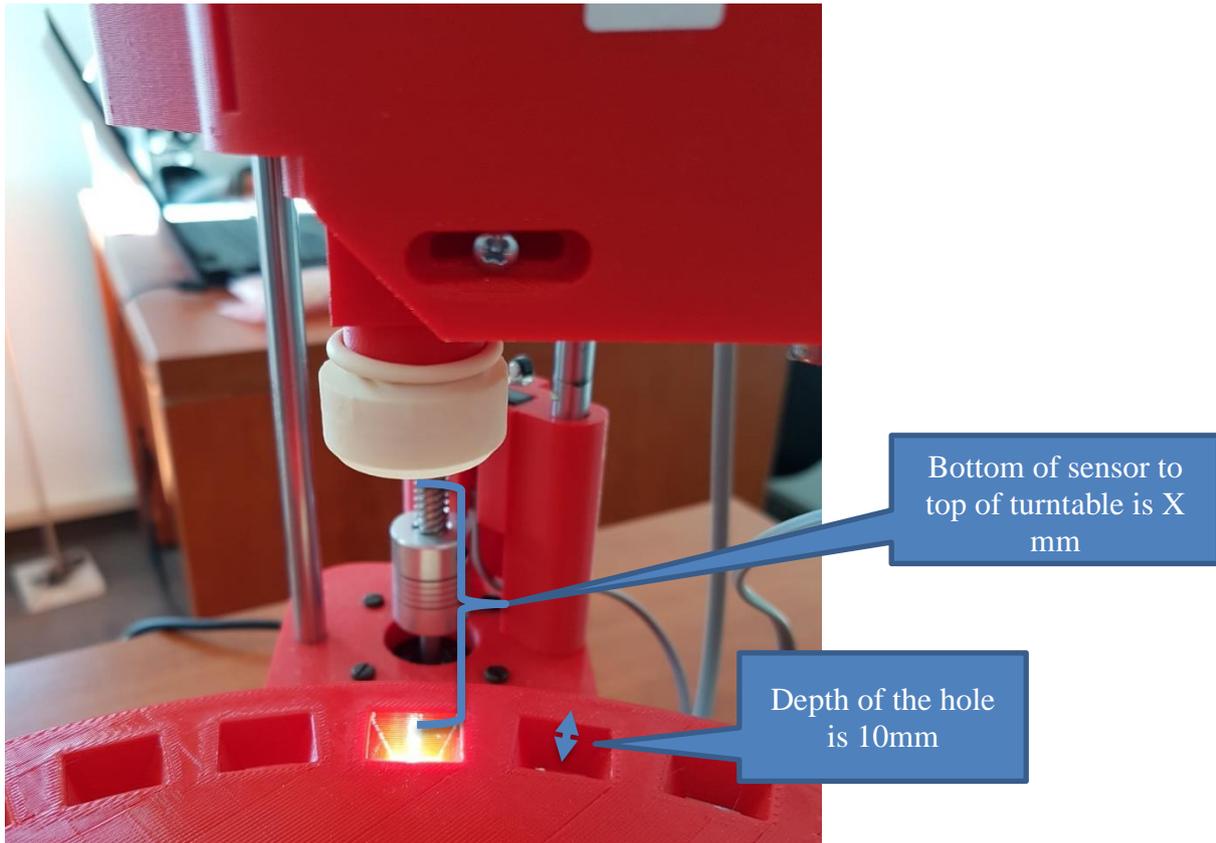
Different measurement values between handheld Agrosta 100 and Agrosta Winterfast / durofel version :

This difference of measurements appears only on blueberries, this is due to the fact that, when measured with handheld devices, the Blueberries are maintained between 2 finger which apply an overpressure on the fruit. When placed inside the cups of the turntable machine, the blueberries are free, that's the reason why the values are lower – The difference is around 16% according to our experience = Multiply the values obtained by 1.16, but can vary depending how users of Handheld devices maintain the fruits.

The mature blueberries are smashed by the machine, which is not a problem, as the machine records only the maxi pressure during the cycle (It detects when it touches the fruit, starts to search the maximum each 100 milliseconds, and continues to move down) When the fruit breaks the pressure becomes lower, but the maximum pressure is already recorded.
In this case, remove and clean the tip on a regular basis (each day) in order to avoid fruit juice blocking the system, be careful when screwing and unscrewing the plastic abutment.

The fruit must exceed the level of the turntable of 3mm at least !
- With very small berries, the tray touches the endstop and goes back before it has finished to measure
- The sensor has to move approx. 3mm after it has touched the berry
- In some cases, the sensor touches the berry, but cannot move 3 mm more as the endstop is touched after maybe 1 or 2mm, and once the endstop is touched, the tray goes back
- **In this case, the software gives a value "TOO SMALL" = Incomplete measurement :**

4 / 29 / 2020	15 : 36
Durofel %	Size
37	20
48	23
TOO SMALL	11
41	20
40	16
31	16
43	15
41	22
41	21
44	18

- The solution in this case is to use a turntable with smaller cups
- When placing small berries in the cups, block each berry in order to avoid a movement down while measuring, which implies bad measurement and lower values

WARNING

- When placing blueberries in the cups of the turntable, take care to **LOCK** very carefully each berry !!
- If a berry can move down during measurement, you will obtain very low values (Remember that 0.25mm represents 10% Durofel Index = if your berry moves down by 0.25mm, the value measured will be 10% too low)
- That's the reason why we provide turntables with different cup sizes

11/ Cleaning

- Keep the machine free of any fruit juice : Unscrew the abutment and remove the tip in order to clean the tip and tip chamber with hot water
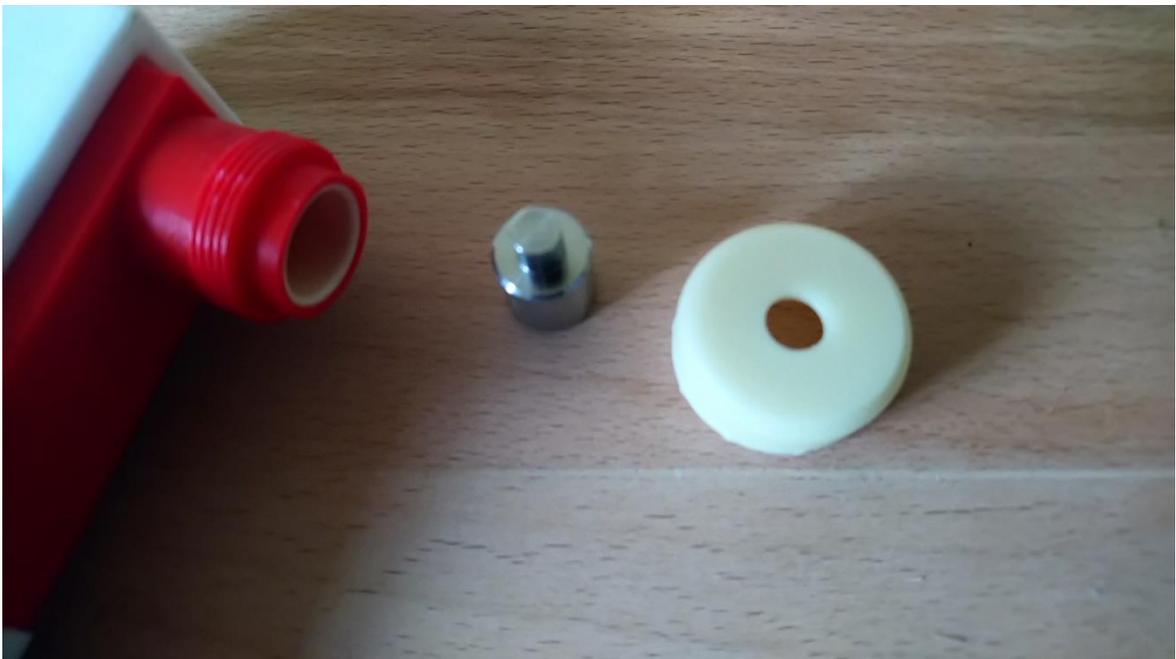
Place the tip protection (Protection covering) :
It shall not be too loose nor too much tightened, place it before starting the machine as shown on the photo
(Absolutely required for Blueberries, recommended for others)
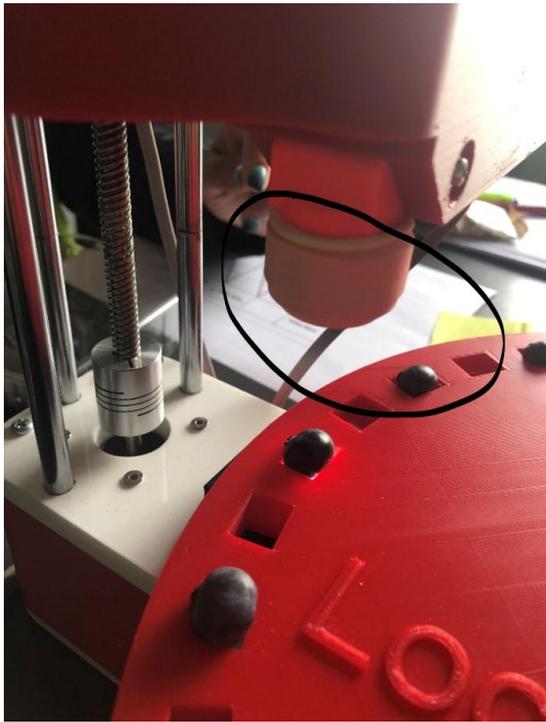
– **The sensor does not like the fruit juice at all**

– Either you use this glove (Standard finger cot that can be found in any country) or you unscrew the abutment and clean the tip, chamber and abutment each time a fruit is broken and juice flows (First solution with glove is recommended) / Take care to change the glove if damaged!

11/ Calibration modification (for experts only)

Take care that any change in those fields is definitive, and the machine will lose previous calibration
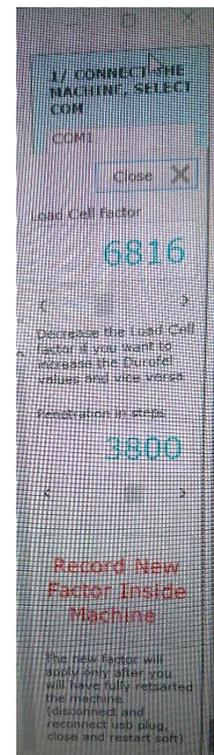
PROCEDURE FOR CALIBRATION CHECK

If you apply the following procedure for checking the calibration of Agrosta Winterwood machine, and obtain values between 96% and 100 % Durofel, you have the guarantee that your machine is well calibrated

WHY ?

The Winterwood machine measures according to the Durofel Standard. The Durofel Standard is based on the Shore A standard :

Durometer hardness test
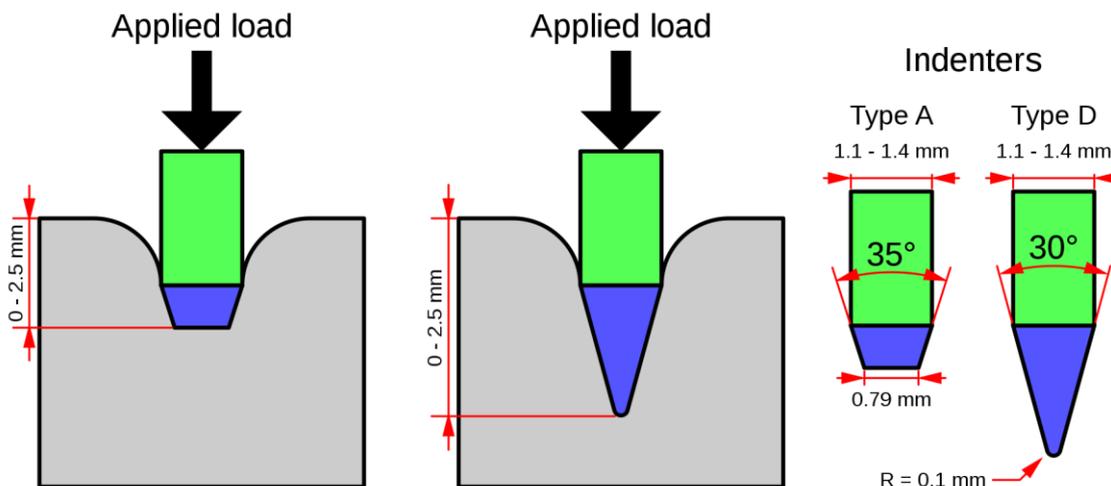
In the Shore A standard, the tip (represented in green and blue) is linked to a calibrated spring. This spring applies the load, and the tip retracts more or less according to the sample hardness

In the Winterwood sensor head, the CALIBRATED SPRING is attached to a CALIBRATED LOAD CELL – The pressure measured on the load cell is interpreted by the machine and corresponds to a certain retraction length (100 % corresponds to a pressure of 806 grams for the tip fully retracted)

In case of failure of :
- THE CALIBRATED SPRING : If it becomes too soft : When the tip will be fully retracted, the pressure applied will be less than 806 grams, and you won't obtain more than 96% Durofel
- THE CALIBRATED LOAD CELL : If the load cell starts to provide false values, the spring pressure will never reach the right value

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The only possibility of obtaining a value between 96% and 100% (With faulty calibration) would be that the two components are faulty and compensate each other, which corresponds to a probability close to zero - Because the wear of the components causes them to drift in the same direction

HOW ?

- Take in hand a piece having a flat hard surface (Or the calibration template when provided)
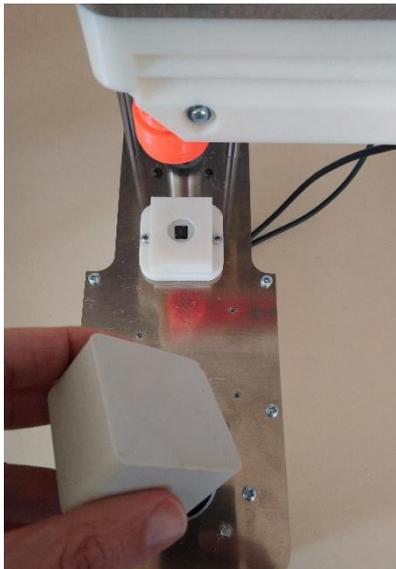
  - Remove the tip protection if installed, and remove the turntable

  - Open the software and connect the machine, start a cycle of measurement

  - During the movement of the sensor tray down : Place the flat piece in front of the sensor, and press strongly, wait one second

- Remove the flat piece before the sensor tray reached the bottom of the machine

- Read the value measured, if it is between 96% and 100 % Durofel, you are sure that your machine is well calibrated