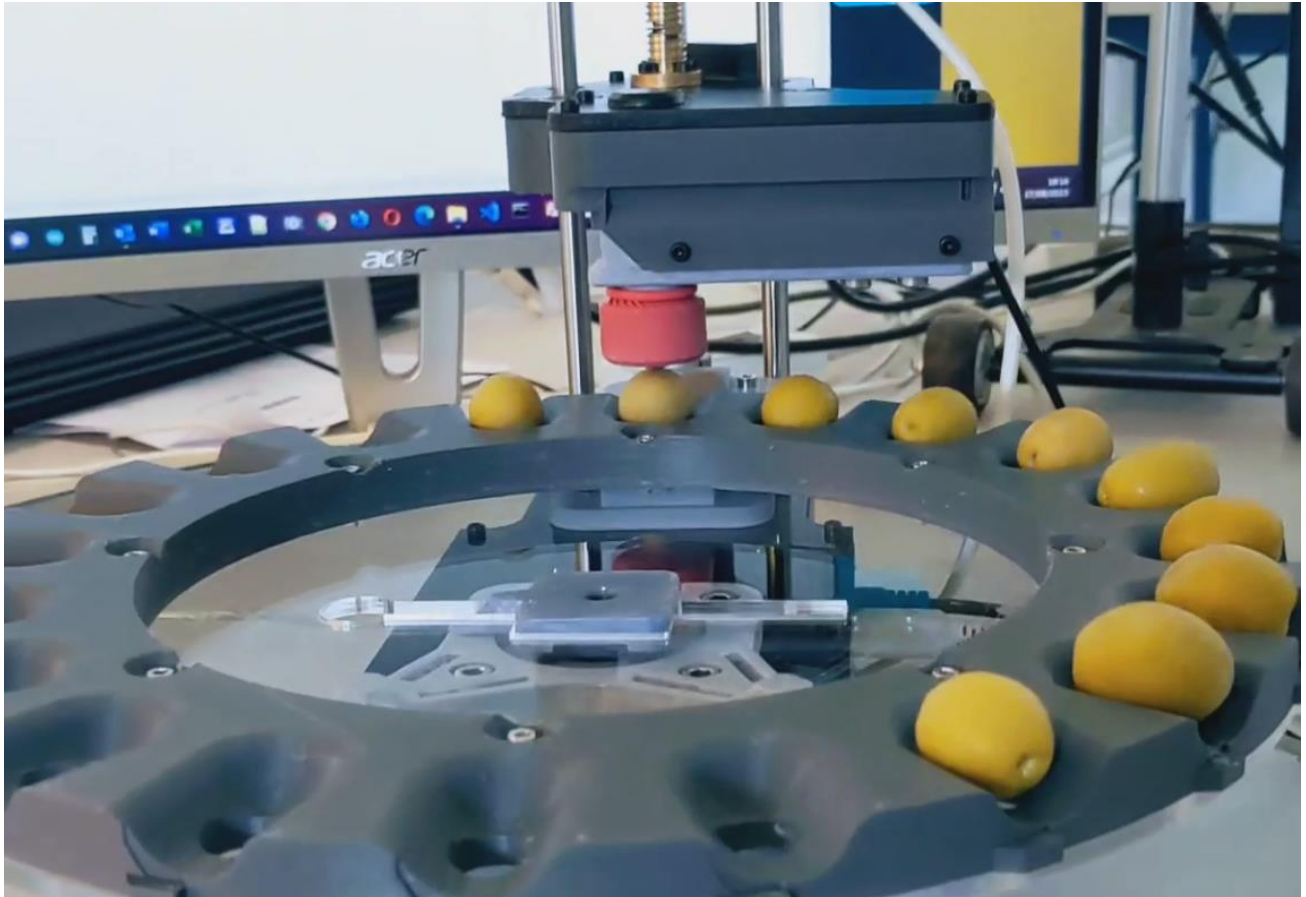


The Agrosta®Wonderfast / Durofel version has been designed in 2020 in order to provide a top accurate machine for testing automatically Cherries, Blueberries, Tomatoes, Cranberries and Grapes



*Color non contractual*

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

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.

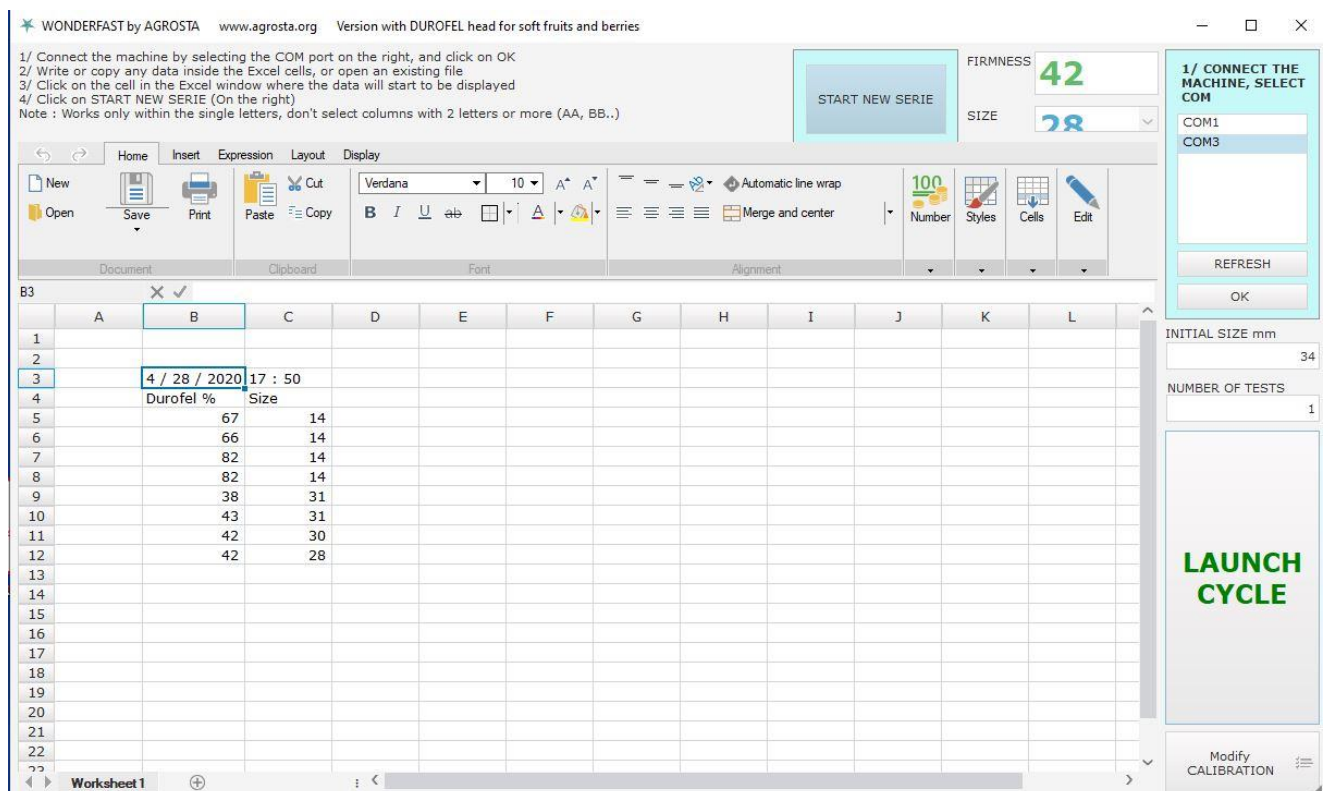
The Agrosta®Winterfast / durofel version is not waterproof! It is a precision instrument; please take care to avoid dropping or knocking it.

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



WONDERFAST by AGROSTA www.agrosta.org Version with DUROFEL head for soft fruits and berries

1/ Connect the machine by selecting the COM port on the right, and click on OK  
 2/ Write or copy any data inside the Excel cells, or open an existing file  
 3/ Click on the cell in the Excel window where the data will start to be displayed  
 4/ Click on START NEW SERIE (On the right)  
 Note : Works only within the single letters, don't select columns with 2 letters or more (AA, BB..)

START NEW SERIE

FIRMNESS 42  
 SIZE 28

1/ CONNECT THE MACHINE, SELECT COM  
 COM1  
 COM3  
 REFRESH  
 OK


Durofel %	Size
67	14
66	14
82	14
82	14
38	31
43	31
42	30
42	28

INITIAL SIZE mm 34  
 NUMBER OF TESTS 1  
 LAUNCH CYCLE  
 Modify CALIBRATION

## 1/ Install Driver

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

 Agrosta Winterwood.EXE	29/04/2021 09:...	Application	33 769...
 Agrosta_Driver.EXE	24/01/2017 01:...	Application	238 Ko




- In 2023, there are 2 drivers to install, install DRIVER1 and then DRIVER2

## 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

 Agrosta Winterwood.EXE	29/04/2021 09:...	Application	33 769...
 Agrosta_Driver.EXE	24/01/2017 01:...	Application	238 Ko



- Double click on "INSTALL"
- Follow Setup procedure

## 5/ Connect Power plug

## 6/ The software starts after setup

WONDERFAST by AGROSTA www.agrosta.org Version with DUROFEL head for soft fruits and berries

1/ Connect the machine by selecting the COM port on the right, and click on OK  
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 Note : Works only within the single letters, don't select columns with 2 letters or more (AA, BB..)

FIRMNESS **42**  
SIZE **28**

START NEW SERIE

1/ CONNECT THE MACHINE, SELECT COM  
COM1  
COM3  
REFRESH  
OK

INITIAL SIZE mm 34  
NUMBER OF TESTS 1

**LAUNCH CYCLE**

Modify CALIBRATION

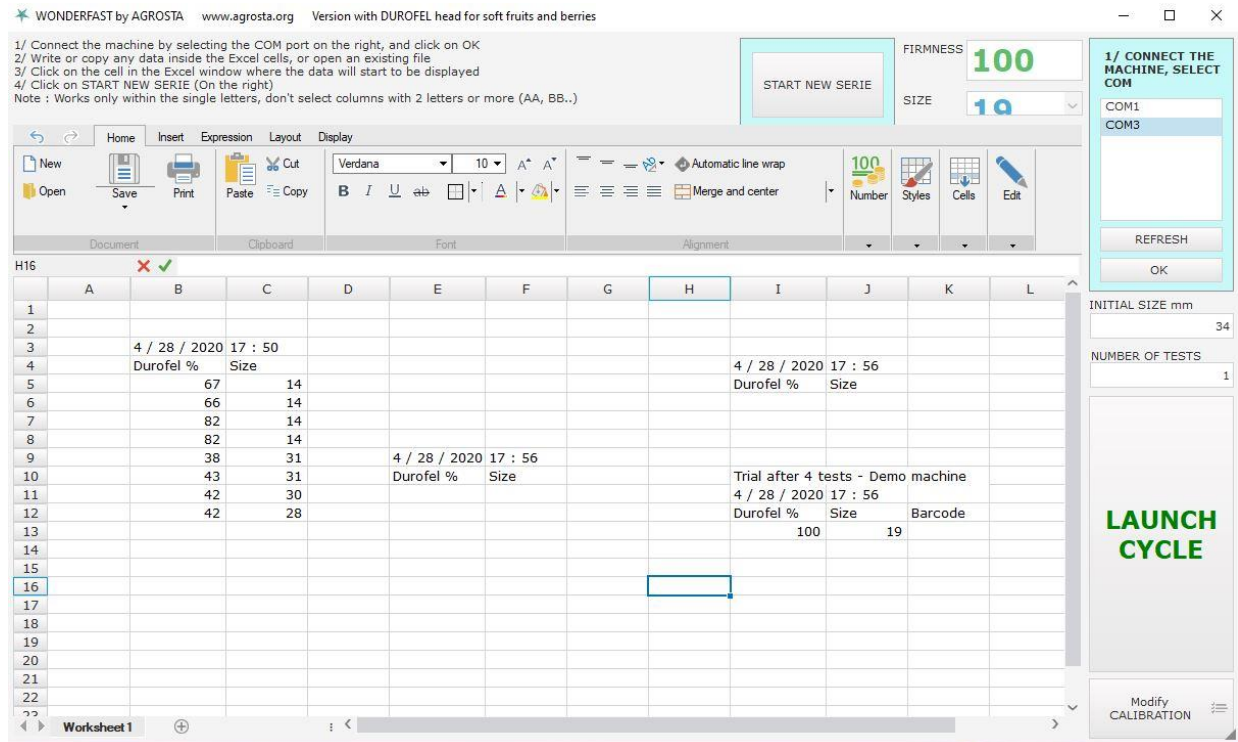
	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3		4 / 28 / 2020	17 : 50									
4		Durofel %	Size									
5		67	14									
6		66	14									
7		82	14									
8		82	14									
9		38	31									
10		43	31									
11		42	30									
12		42	28									
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												

- 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 :

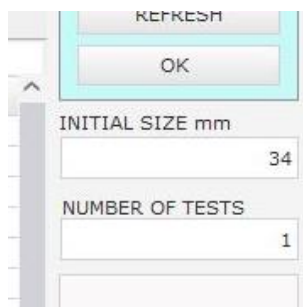
- You can open any Excel file
- Or use the blank sheet that appears when you start the soft
- Click on the cell where you want the data to start to be displayed
- Then click on "START NEW SERIE" : Date / time and column headers will be displayed
- You can click in any other cell in order to add any other information (like sugar content..)
- Or start another batch in another position of the sheet
- At the end of your tests, you can record the Excel file



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

## 8/ Launch a cycle

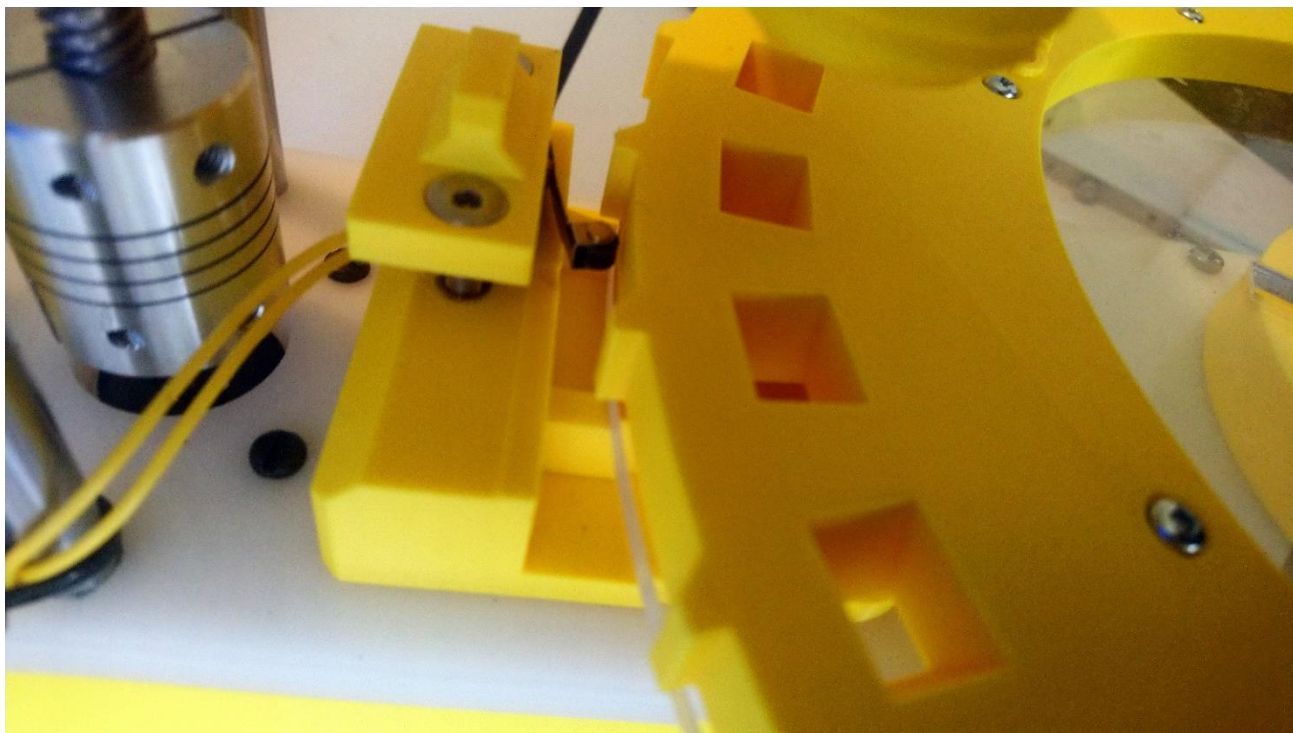
- Define the number of tests you want to perform (The number of fruits placed on the table, between 1 and 32), enter this value in the corresponding field



- 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



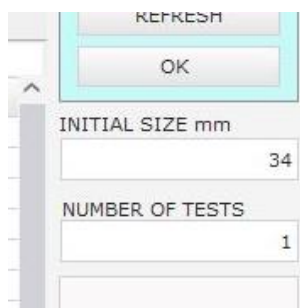
- Place the table : Switch between 2 cups as on photo hereafter / The machine will start with the cup on the right side :



- Click on "LAUNCH CYCLE"

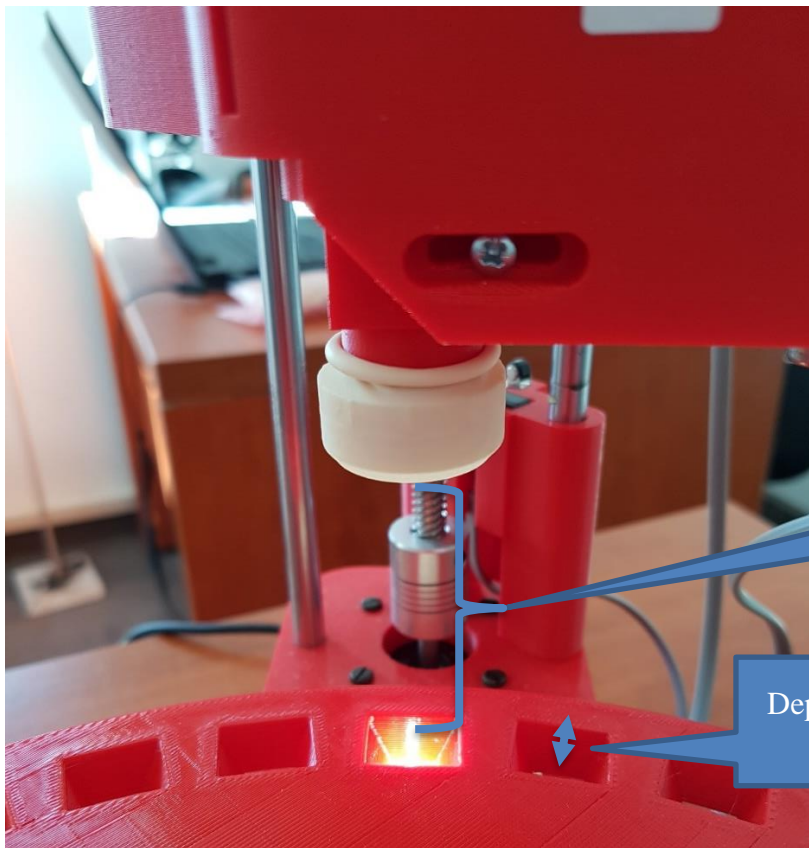
## 9/ Adjust the size measurement

- 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"



REFRESH	
OK	
INITIAL SIZE mm	34
NUMBER OF TESTS	1

- 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



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 :**

Durofel %	Size
37	20
48	23
<b>TOO SMALL</b>	<b>11</b>
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



- 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

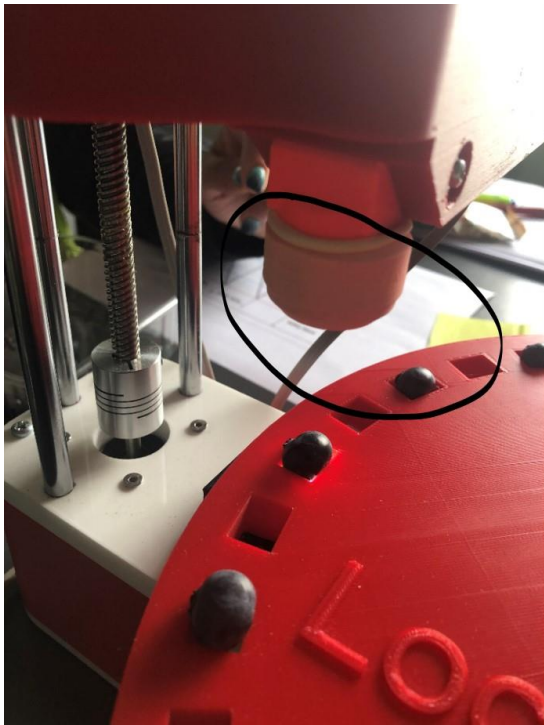
## 10/ Cleaning

- 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



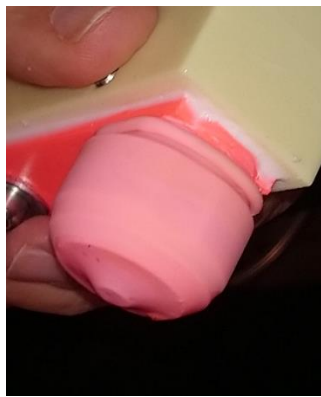
Place the tip protection (Protection covering) :

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)



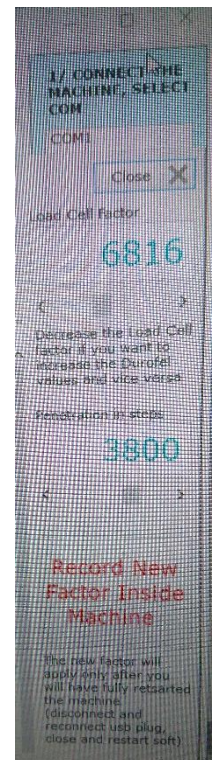
– **The sensor does not like the fruit juice at all**

– 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



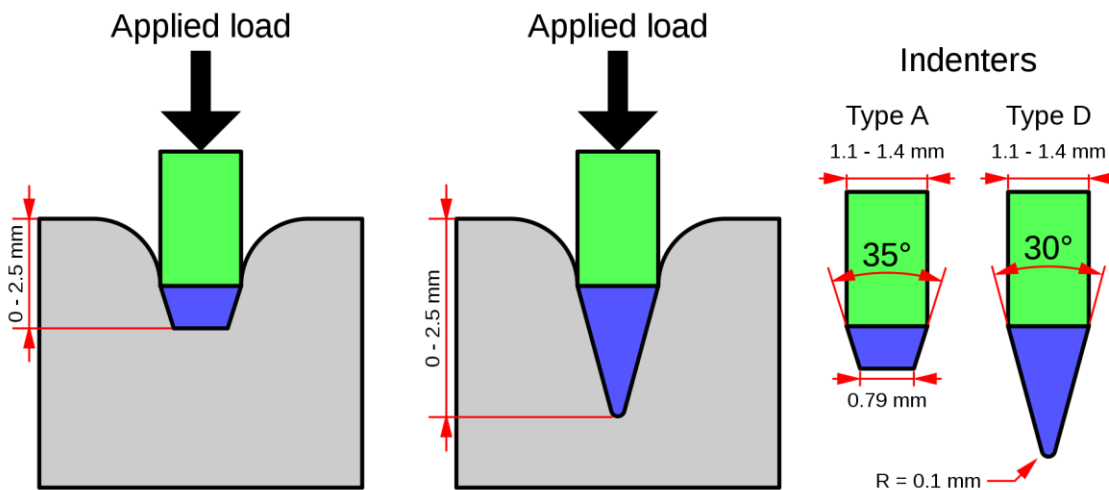
# PROCEDURE FOR CALIBRATION CHECK

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)

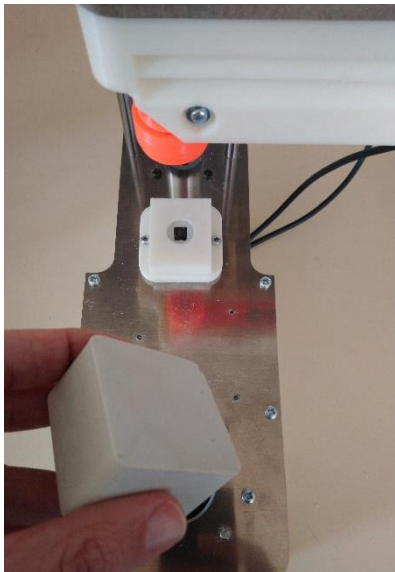
In case of failure of :

- 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

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

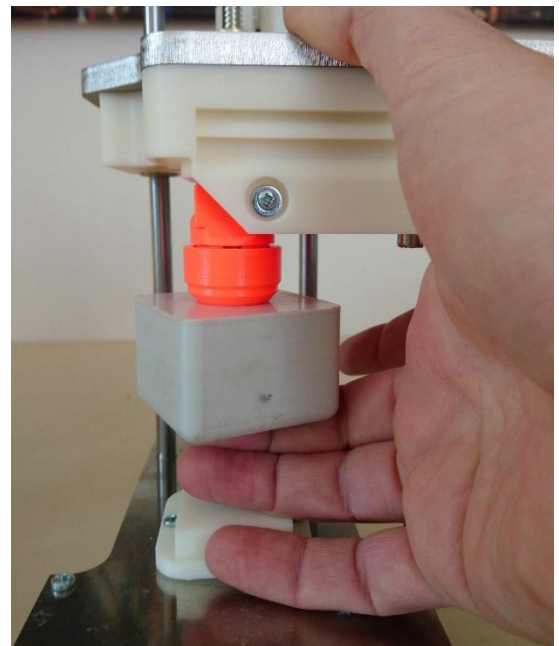
## HOW ?

- 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



# OPTIONAL COLORIMETER (WINTERWOOD)

The color is taken from under the table

The screenshot displays the 'WONDERFAST by AGROSTA' software interface. At the top, it shows 'FIRMNESS 68' and 'SIZE 19'. The main area is an Excel spreadsheet with the following data:

Durofel %	Size	Purple	Blue	Green	Yellow	Orange	Red	Ctiff Cherry
76	21	25	10	40	27	66	68	1
68	25	24	10	40	26	66	67	1
69	28	20	6	39	21	60	57	2
64	23	21	6	38	22	59	57	2
67	34	23	5	38	19	49	44	3
74	24	24	7	39	20	50	45	3
66	26	20	4	38	19	47	30	4
58	30	18	4	38	19	47	30	4
75	28	19	4	37	18	46	11	5
70	29	18	4	38	19	47	11	5
64	34	22	5	38	18	45	6	6
71	20	18	4	35	18	41	6	6
70	19	16	3	33	16	38	4	7
68	19	18	3	37	18	42	3	7
AVERAGE / STDEV								
	68,57							
	4,8							

On the right side, there are control panels for 'Table positioning' (set to 2), 'LOAD CELL FACTOR' (set to 6744), and 'Penetration in steps' (set to 3800). A 'LAUNCH CYCLE' button is visible at the bottom of the right panel.

6 different colors are measured  
They give relative value  
For all of them, the maximum is given by a pure white (100) and the minimum by a pure black (0)  
They correspond to the following wavelengths :  
450 / 500 / 550 / 570 / 600 / 650 nm

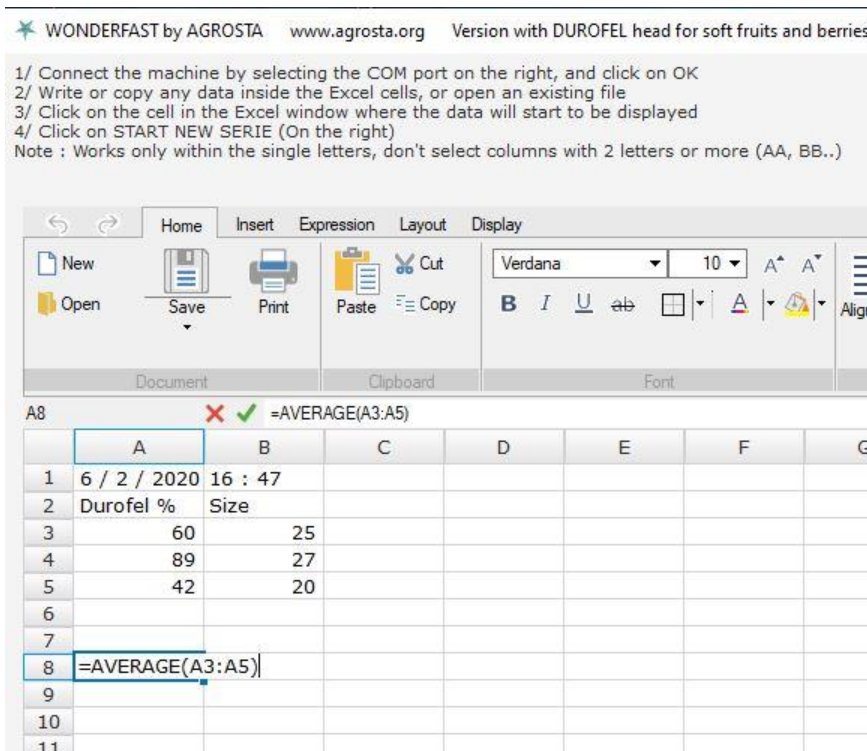


# EXCEL FUNCTIONS

All standard Excel functions can be used inside the software, like =AVERAGE() for average or =STDEV() for standard deviation  
And many more.. in the tab “Expression”

WONDERFAST by AGROSTA    www.agrosta.org    Version with DUROFEL head for soft fruits and berries

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2/ Write or copy any data inside the Excel cells, or open an existing file  
3/ Click on the cell in the Excel window where the data will start to be displayed  
4/ Click on START NEW SERIE (On the right)  
Note : Works only within the single letters, don't select columns with 2 letters or more (AA, BB..)



The screenshot shows the software interface with an Excel spreadsheet. The ribbon menu includes Home, Insert, Expression, Layout, and Display. The spreadsheet data is as follows:

	A	B	C	D	E	F	G
1	6 / 2 / 2020	16 : 47					
2	Durofel %	Size					
3	60	25					
4	89	27					
5	42	20					
6							
7							
8	=AVERAGE(A3:A5)						
9							
10							
11							

When you have finished a batch, obtain quickly the statistics by clicking on the button STATISTICS on top center of the window (New feature 2021)

DUROFEL head for soft fruits and berries

on OK  
played  
ers or more (AA, BB..)

START NEW SERIE    STATISTICS

FIRMNESS   
SIZE

1/ COM1  
MACH1  
COM1

Alignment    Number    Styles    Cells    Edit

font

OK (C)  
INITIAL S

