LAMY RHEOLOGY INSTRUMENTS

USER MANUAL

TX-700

VERSION N° TX-700-UK02/2023

TABLE OF CONTENTS

1 GENERAL VIEW OF YOUR INSTRUMENT

2 FEATURES OF YOUR INSTRUMENT

- **Touch Screen**

The New TX-700 line is entirely equipped with one 7'' colour touch screen. It is giving you a greater comfort to work and a clearer view of data and results of analysis and curves without external software.

- **Strong double rod frame**

Our instruments frames are very strong. They are composed of 2 high rods that allow an easy and sure displacement with a high precision and any vibrations.

- **PT100 temperature probe**

Your TX-700 has one Pt100 probe including. This probe can give you either the room temperature where the measurement is made or directly the sample temperature if size is enough large.

- **Load cell sensor**

We have developed a series of various load cells according to your needs. On request you could ordered to have the possibility to change by yourself the load cell on your TX-700.

3 STATUS ICONS

	No device is connected to the instrument
	Only one device is connected to the instrument
	Two devices are connected to the instrument
	Temperature given by the Pt100 probe
	Access to the instrument parameters
	Go to main menu
	Go to previous menu

4 CONTENT AND INSTALLATION OF YOUR INSTRUMENT

4.1 Installation

The installation of the TX-700 is very easy. Indeed, right after you install a measuring probe you are able to start your measurements.

Components of your TX-700 are:

- One measuring Load cell
- One strong stand
- One adjustable turntable
- One Pt100 sensor
- One or several measuring probe according your need

At rear side, please connect the power supply voltage cable and Pt100 sensor (if you need to use it).

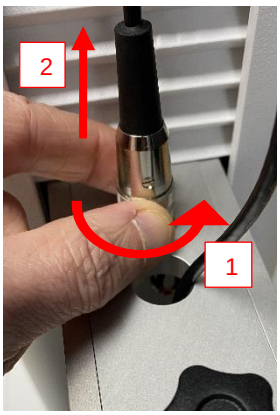
On the right side of the device connect RS232 cable if you must remote the unit form a computer.

Screw the probe to the load cell and adjust the turntable in function of sample height.

To switch on your TX-700, please switch on the ON/OFF button located on the rear part of instrument above the power supply plug.

4.2 Load cell change

Step 1: TURN OFF the device before make any sensor change



Step 2:

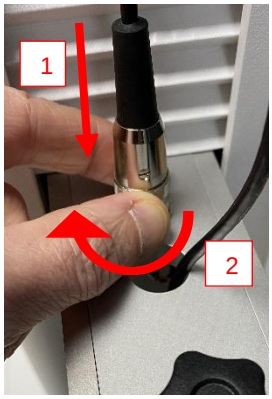
Unscrew the ring and pull up the connector.

Step 3:

Hold and unscrew the previous sensor.

Step 4:

Realign the new sensor and screw it.



Step 5:

Reinsert the connector aligning the tips with the holes. Then screw the ring to block the connector.

Step 6: Turn on the device then go to the “Settings” menu, “Sensor and calibration”.

- Go to the “Sensor scale” menu
- Adjust the force according to the scale of the new sensor.
- If you want to calibrate the force sensor, see section 9.
- Return to main menu. You can now perform the new measurement.

5 PRIMARY CONCEPTS

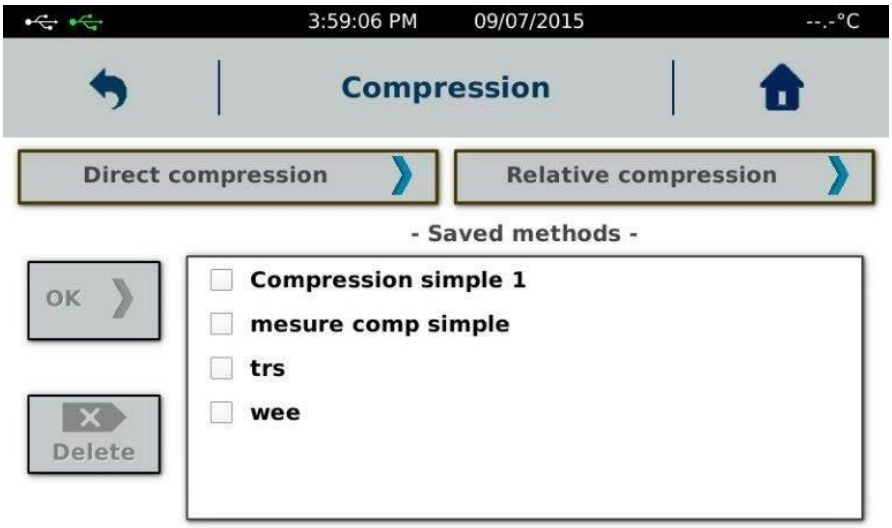
5.1 Main menu

The main menu allows you to choose from the different tabs of your TX-700. This menu allows you to select the measurement mode you want to use and also to read the measurement files saved with the “Results” tab. The “Remote control” mode is used if you wish to connect the TX-700 to a computer in order to control it using the optional RheoTex software.

5.2 Compression mode

“Compression” is the TX-700 basic test. Indeed, it makes it possible to carry out a compression test at a defined speed and over a given distance. The maximum force Fmax is measured and saved. It is possible to display the force at a fixed distance (in case the sample breaks during the measurement).

Select Direct Compression, Relative Compression or a method previously saved in the TX-700 memory.

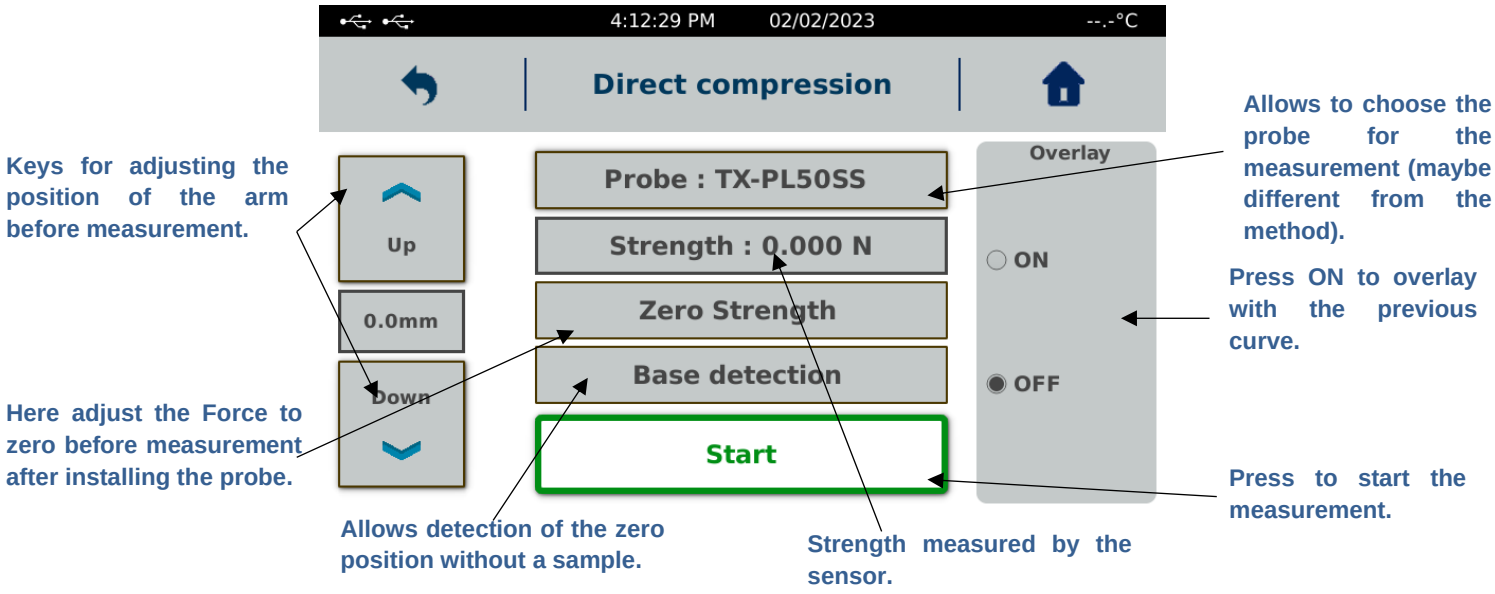


5.2.1 Direct compression

To perform a simple compression measurement with a constant compression speed and over a given distance in mm in the sample.

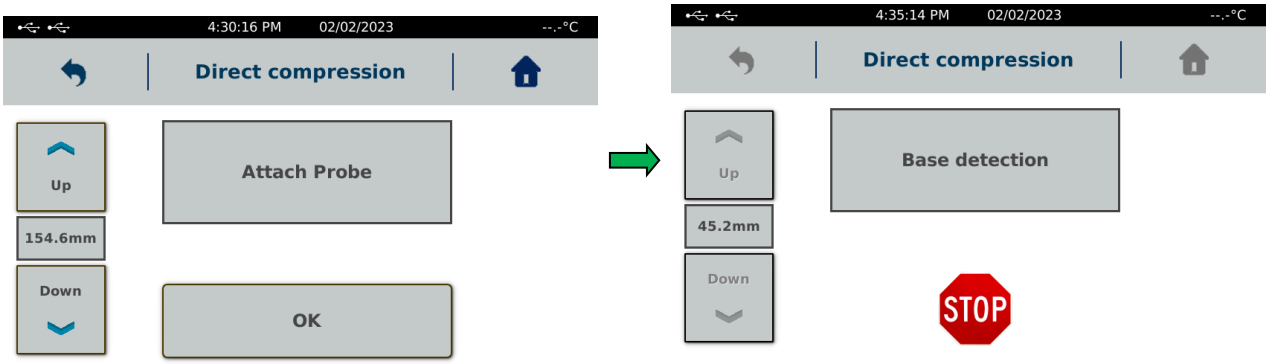
If you choose to save the method, it will be in the “saved methods” box.

The Start measurement menu appears by pressing "Validate".

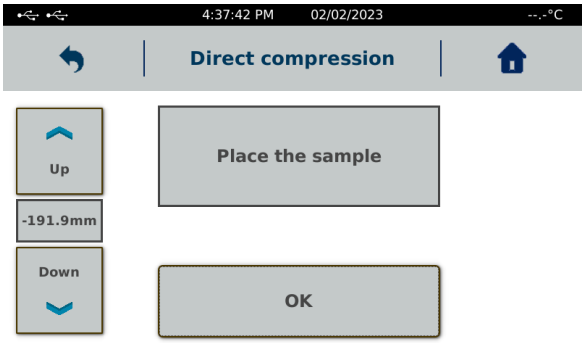


The "Base detection" function is interesting if you want to measure the sample height when it will be in contact with the probe during the compression test (defined in your method with the "Strength to start" parameter).

Manually approach the probe to the lower support before starting the detection to reduce the time for this action. The instrument asks to confirm the probe installation. Then click on "OK" for the instrument to search for the base (position 0mm).



Once detected, the position between the “Up” and “Down” arrows is set to zero. The instrument goes back to the initial position before the base detection. You can use the elevator arrows if space to install the sample is not enough. The instrument tells you that you can install the sample.

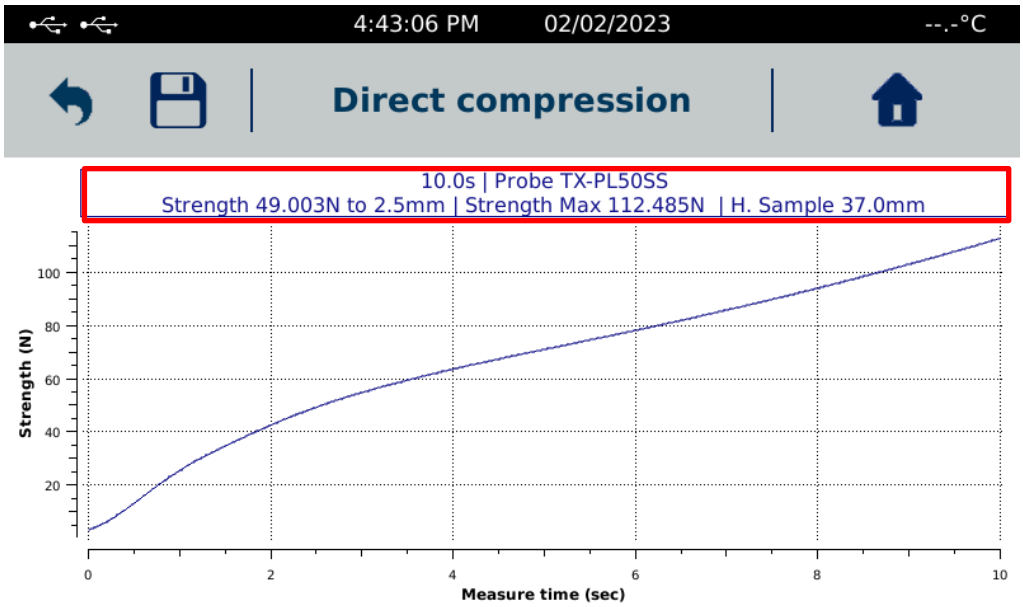


If you click on “Ok” the instrument returns to the next view.

You can now start your measurement by clicking on “Start”.

Direct Compression Curve and Results.

All values and the complete measurement curve are displayed as follows:

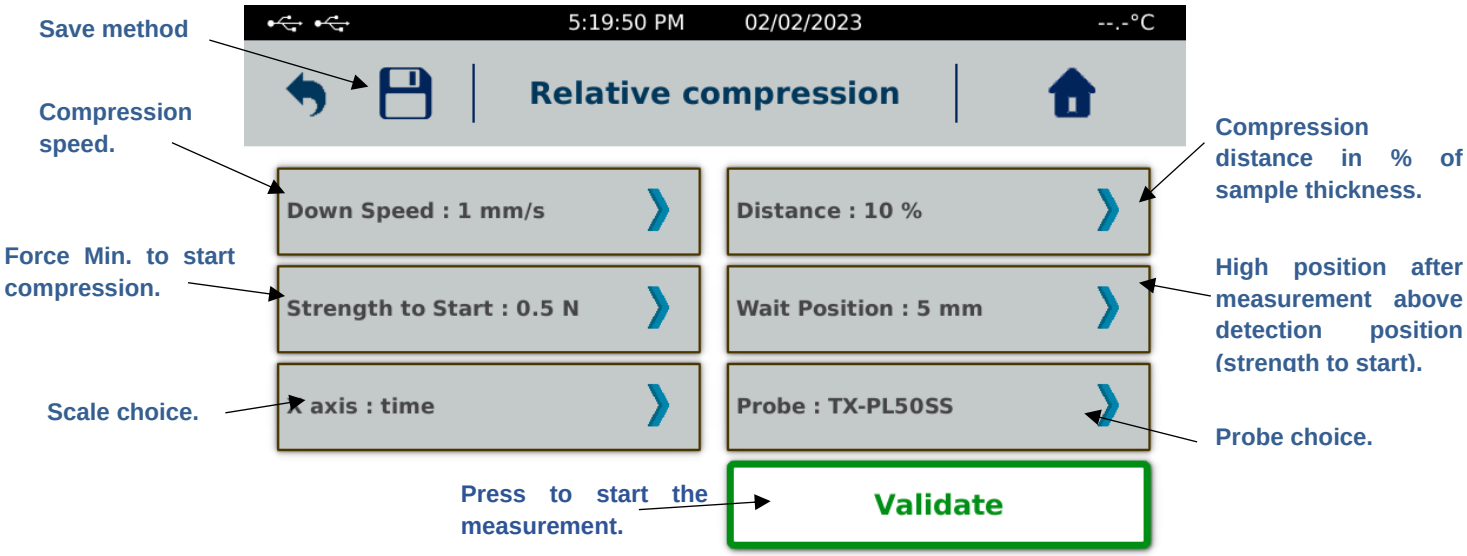


The instrument displays the measured curve with the following informations: Measurement time, probe used, strength measured at a given distance (see method), maximum force measured and height of the sample (according to “Force to start” used in the method and whether base detection was performed before measurement).

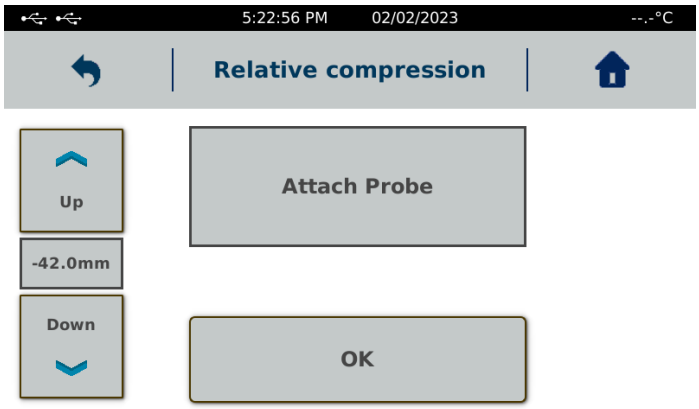
When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.2.2 Relative compression

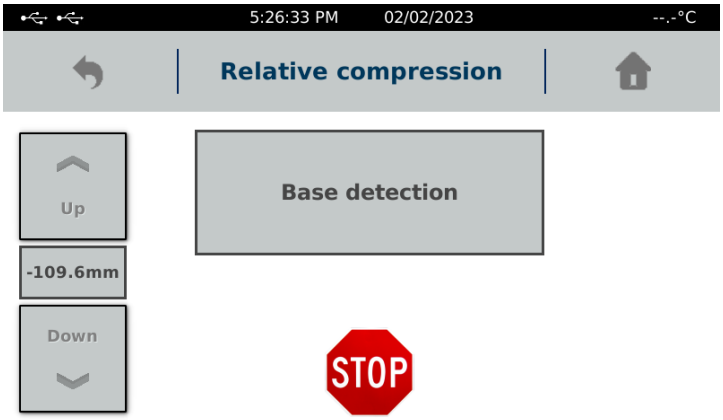
To perform a relative compression measurement with a constant compression speed and over a distance given in % of the sample total height.



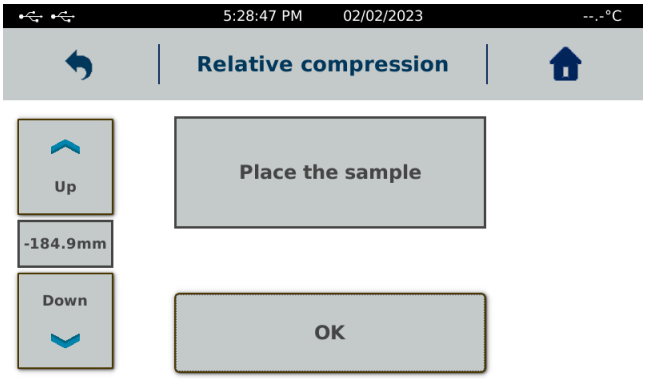
The "Relative Compression" mode requires that the zero position be detected, i.e., the base on which the sample will be placed. Click on “Validate” to obtain the following screen.



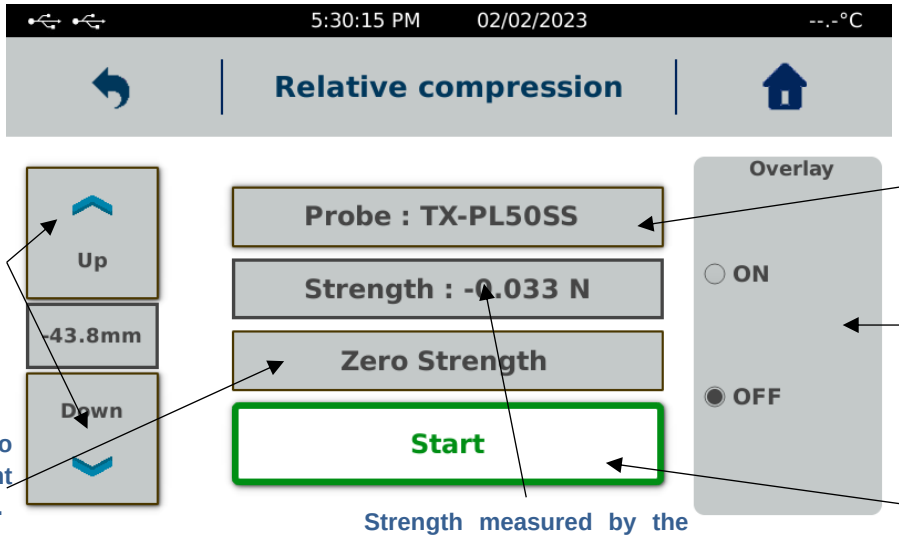
Install the probe and adjust the starting position of the arm with the Up and Down keys to reduce the time of this action. Press "OK". During the detection phase, the following message appears.



When the probe touches the plate, the arm goes back to its initial position. The following message appears. You can place your sample on the base.



By clicking ok, you will get the following screen.



Keys for adjusting the position of the arm before measurement.

Here adjust the Force to zero before measurement after installing the probe.

Allows to choose the probe for the measurement (maybe different from the method).

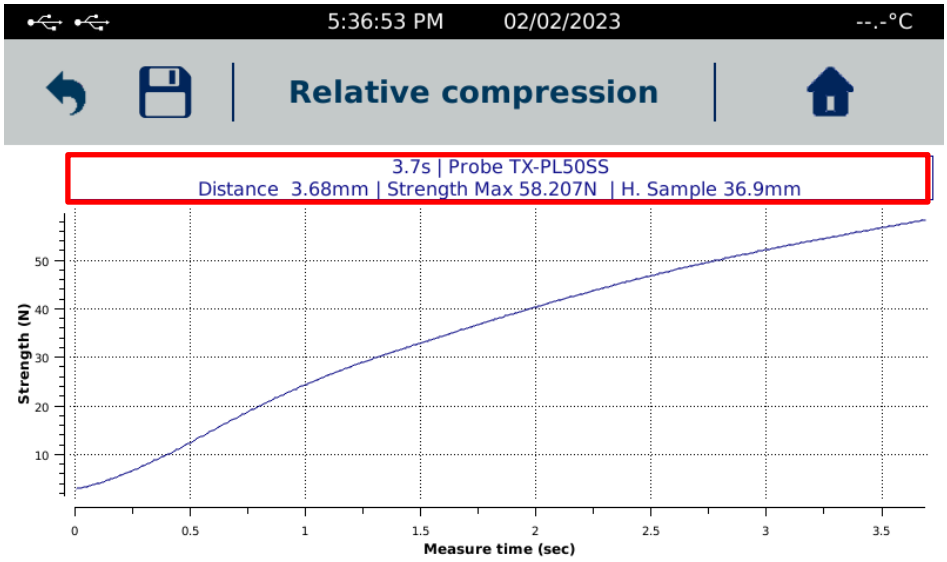
Press ON to overlay with the previous curve.

Strength measured by the sensor.

Press to start the measurement.

Curve and Result of Relative Compression Mode.

All values and the complete measurement curve are displayed according to.



The instrument displays the curve measured with the following informations: Measurement time, probe used, distance reached corresponding to the depth expressed in % (see method), maximum force measured at the depth in % and height of the sample (according to “Force to start” used in the method).

When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.3 Compression / Relaxation mode

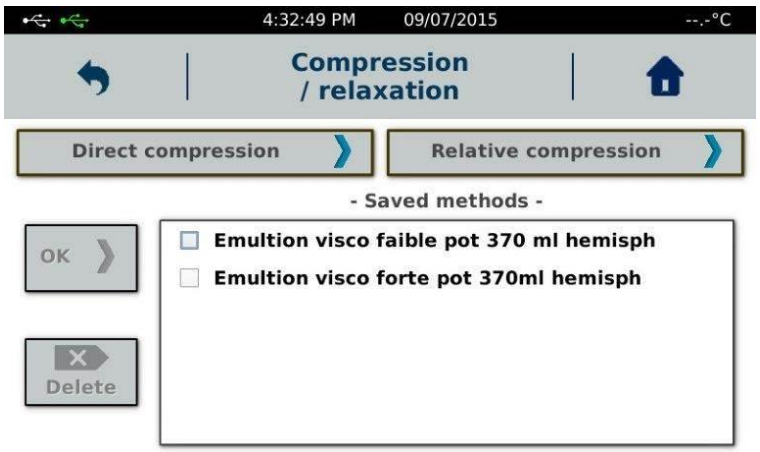
"Compression / Relaxation" allows you to add a relaxation time to a compression phase. When the instrument reaches the desired position, the force is measured continuously and its evolution gives a % of Relaxation, inverse value of the sample Elastic power:

% Relaxation = [(Fmax – Feq)/ Fmax] x 100

With Feq corresponding to the force measured at the end of the relaxation period and Fmax the force measured at the position before the relaxation phase.
In order to really define the sample elasticity, avoid the destruction of its structure during the Compression phase. Destruction can occur through the probe use by causing ruptures (cones, cleavers, etc.) or because compression distance is too large. In these cases, the Relaxation phase becomes unnecessary.

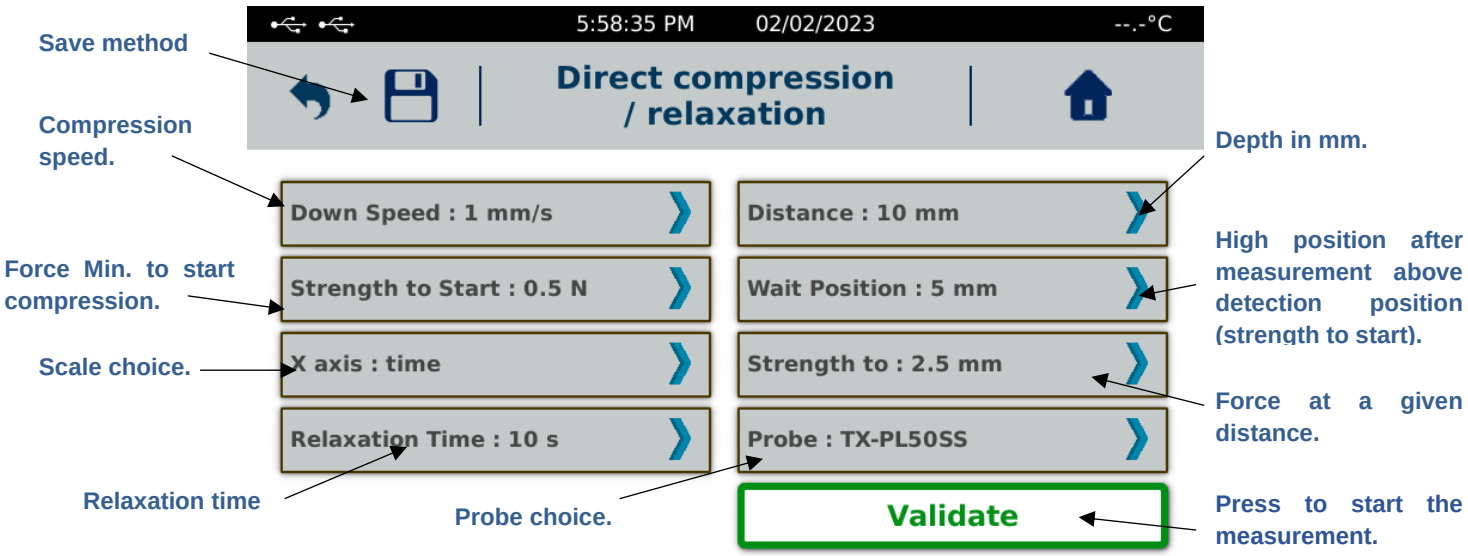
To use this mode, select **Compress./Relax** in main menu.

You will get the following view.

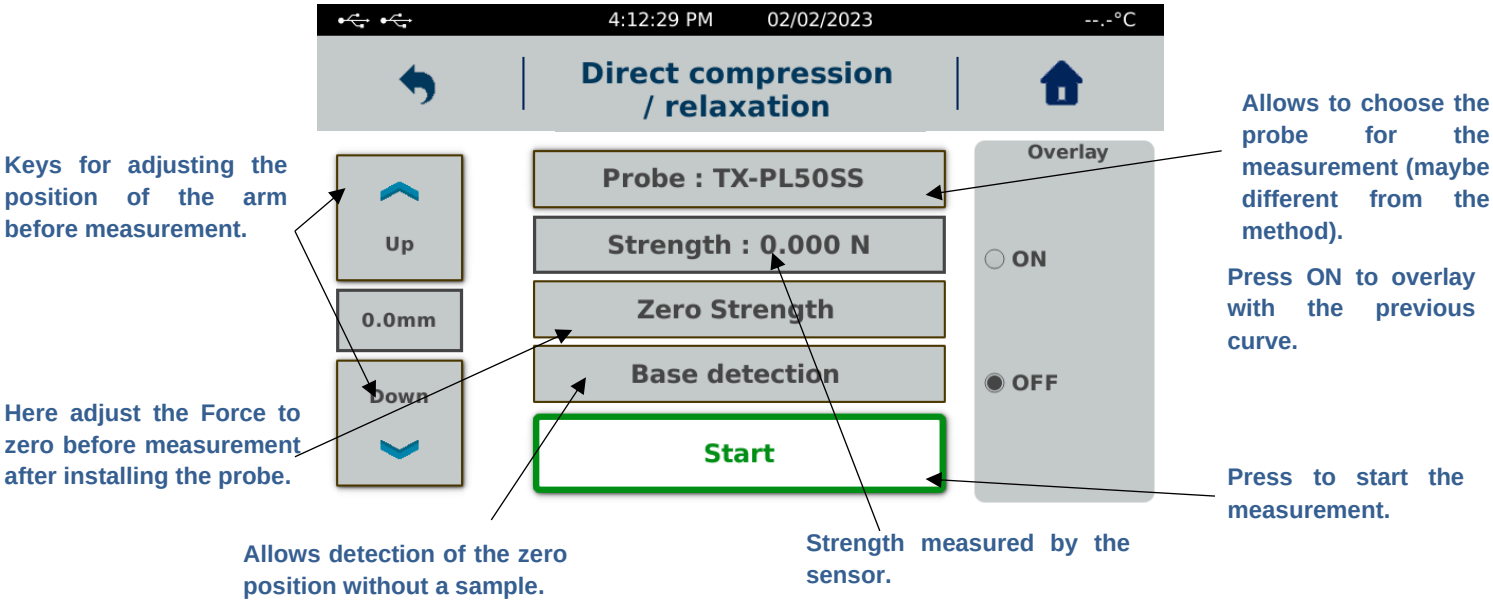


5.3.1 Direct compression / relaxation

To perform a direct compression measurement followed by a relaxation with a constant compression speed and over a given distance in mm in the sample.
Select direct compression or a method previously saved in the memory of the TX-700.

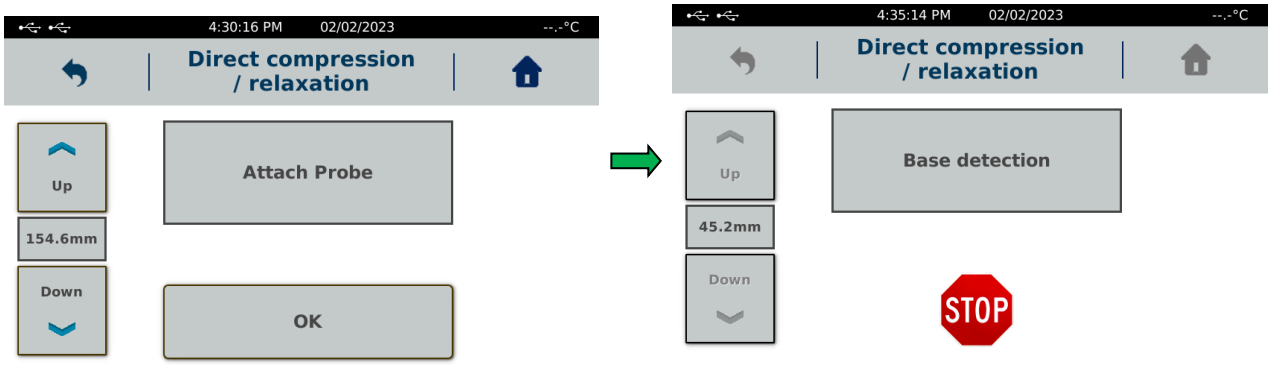


The Start Measurement menu appears when you validate:



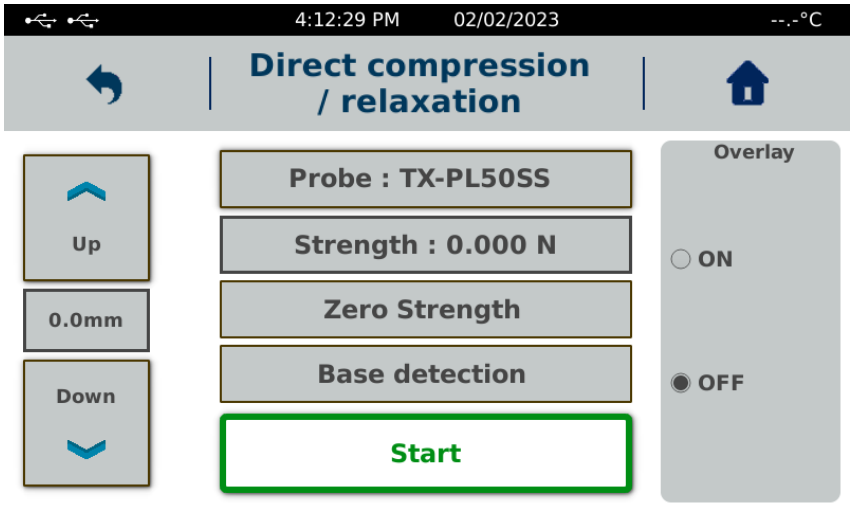
The "Base detection" function is interesting if you want to measure the sample height when it will be in contact with the probe during the compression test (defined in your method with the "Strength to start" parameter).

Manually approach the probe to the lower support before starting the detection to reduce the time for this action. The instrument asks to confirm the probe installation. Then click on "OK" for the instrument to search for the base (position 0mm).



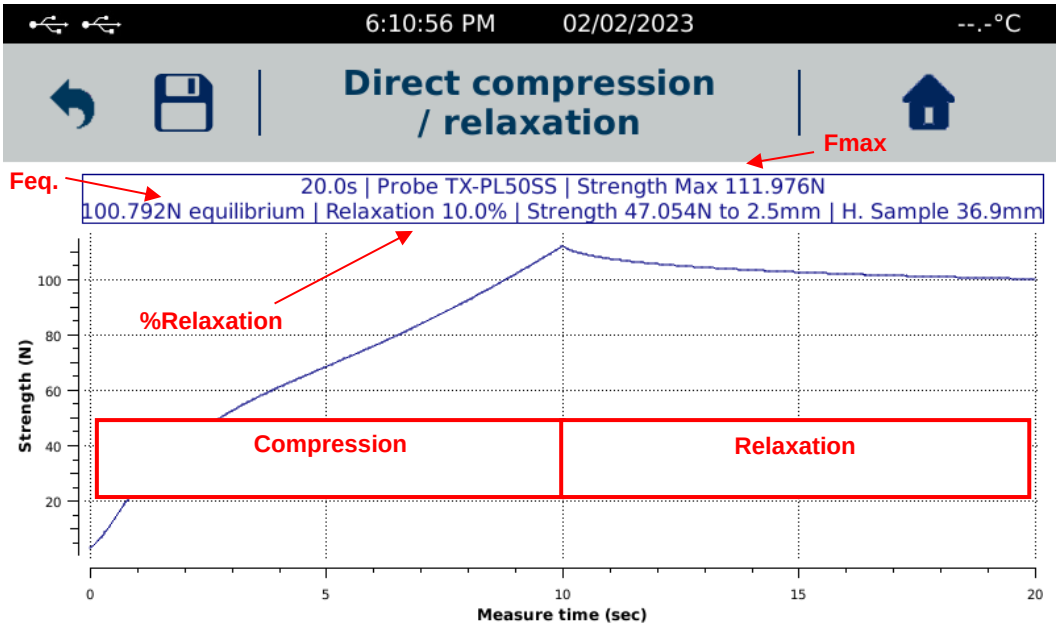
Once detected, the position between the “Up” and “Down” arrows is set to zero. The instrument goes back to the initial position before the detection of the base. You can use the elevator arrows if there is not enough space to install the sample. The instrument tells you that you can install the sample.

If you click on “Ok” the instrument returns to the next view.



You can now start your measurement by clicking on “Start”.

Curve and Result of the Compression Relaxation Mode.
All values and the complete measurement curve are displayed according to:

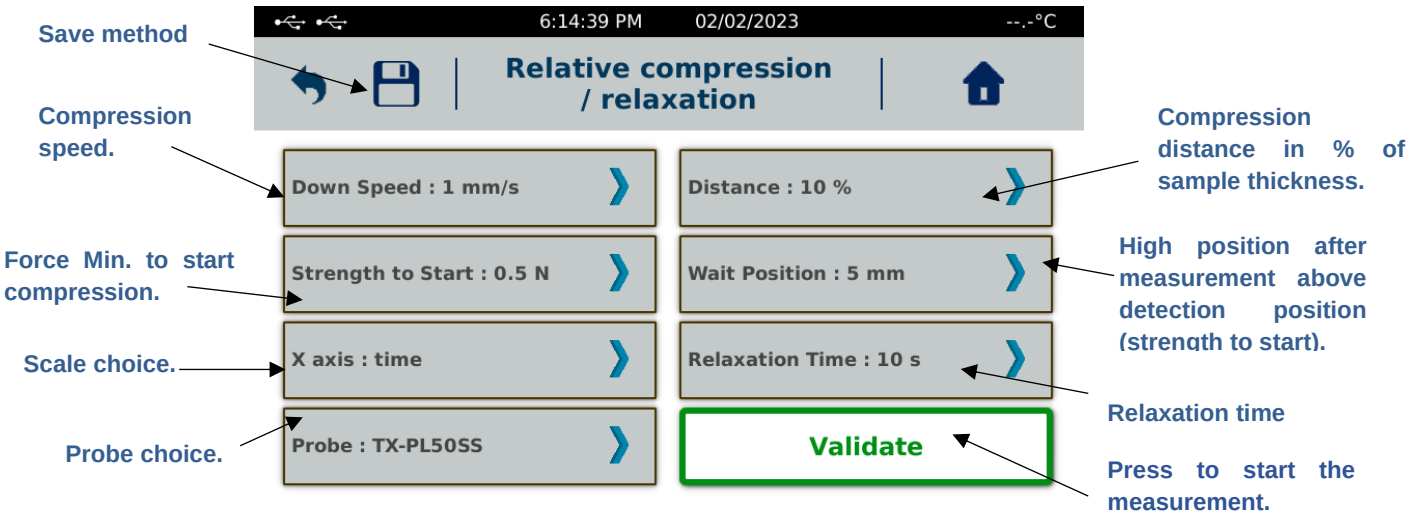


The instrument displays the measured curve with the following informations: Measurement time, probe used, maximum force measured at the final position of the compression phase, force at equilibrium (at the end of the relaxation period), % relaxation, force measured at a given distance (see method) and height of the sample (depending on “Force to start” used in the method and if the detection of the base was carried out before the measurement).

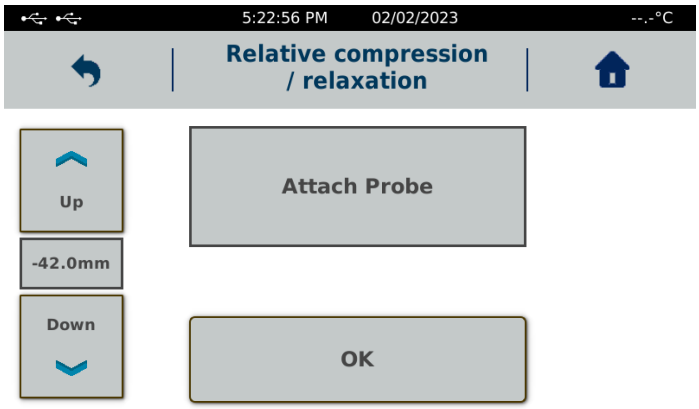
When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.3.2 Relative Compression / Relaxation

To perform a measurement of relative compression followed by relaxation with a constant compression rate over a given distance in % of the sample total height.
Select Relative Compression or a method previously saved in the TX-700 memory.

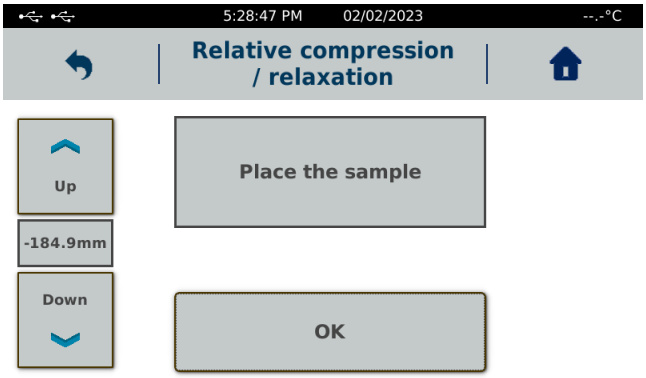


The "Relative Compression" mode requires that the zero position be detected, i.e., the base on which the sample will be placed. Click on “Validate” to obtain the following screen.

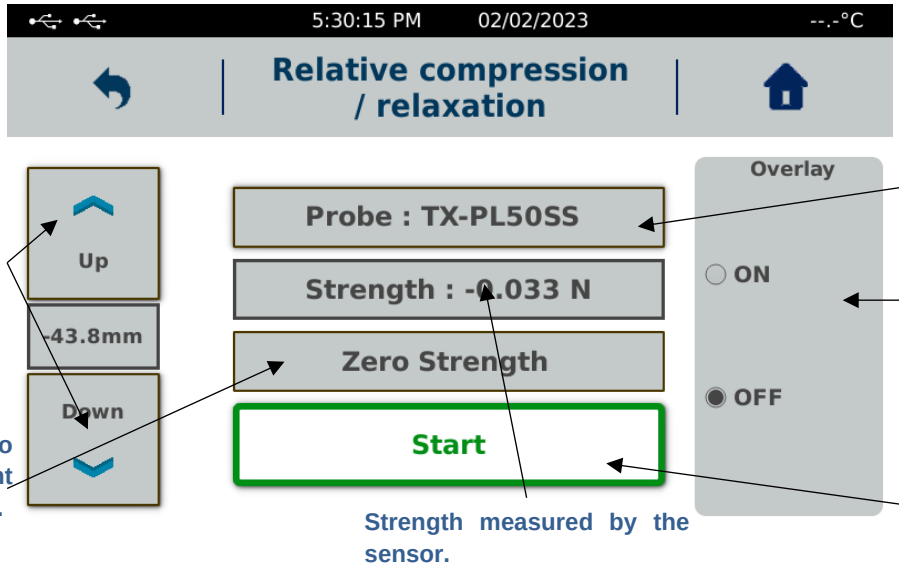


Install the probe and adjust the starting position of the arm with the Up and Down keys to reduce the time of this action. Press "OK". During the detection phase, the following message appears.

When the probe touches the plate, the arm goes back to its initial position. The following message appears. You can place your sample on the base.



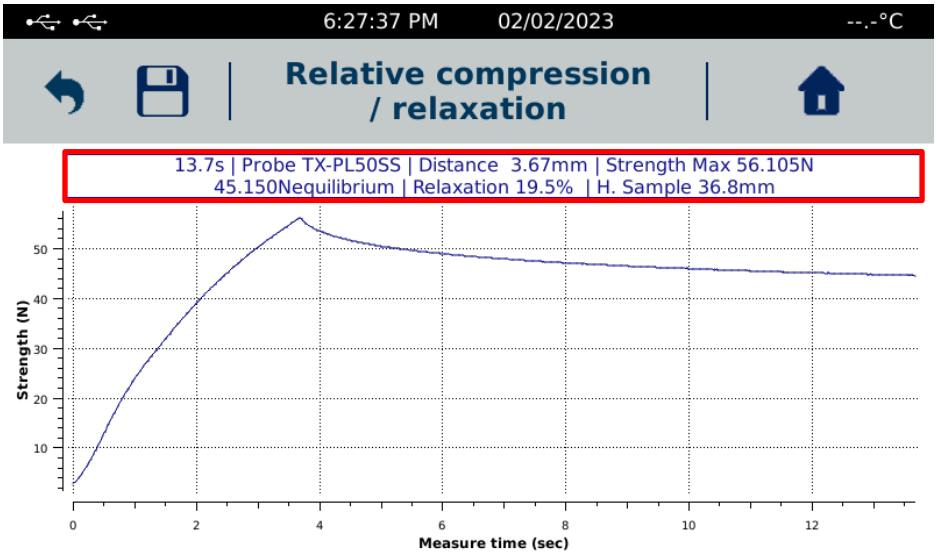
By clicking ok, you will get the following screen.



Start the measurement by clicking on “Start”.

Curve and Result of Relative Compression/Relaxation mode.

All values and the complete measurement curve are displayed according to:



The instrument displays the curve measured with the following informations: Measurement time, probe used, distance reached corresponding to the depth expressed in % (see method), maximum force measured at the depth in %, force at equilibrium (at the end of the relaxation period), % relaxation and height of the sample (depending on “Force to start” used in the method).

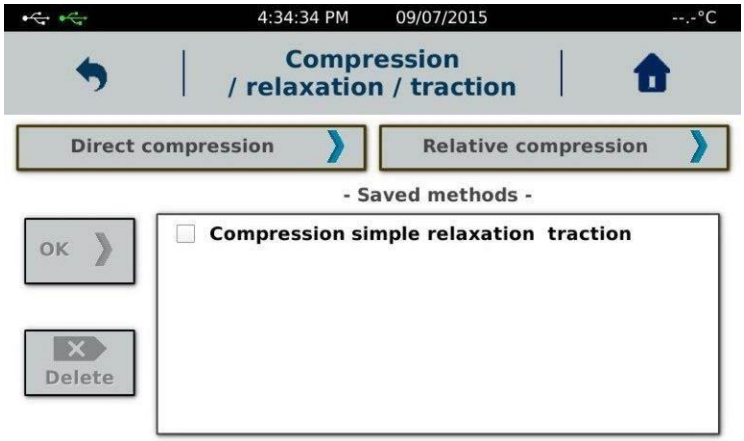
When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.4 Compression / Relaxation / Tensile mode

"Compression / Relaxation / Tensile" allows you to add a Relaxation Time to a compression phase and to continue the force measurement during the ascent phase until the "high position" with a defined speed. During this phase the strength is measured continuously and gives access to Fmin, the most important negative value (Adhesion Strength) as well as curve below 0 which characterizes the adhesiveness of the sample.

To perform this mode, select Compress./Relax./Tensile from the Main menu.

You will get the following view.

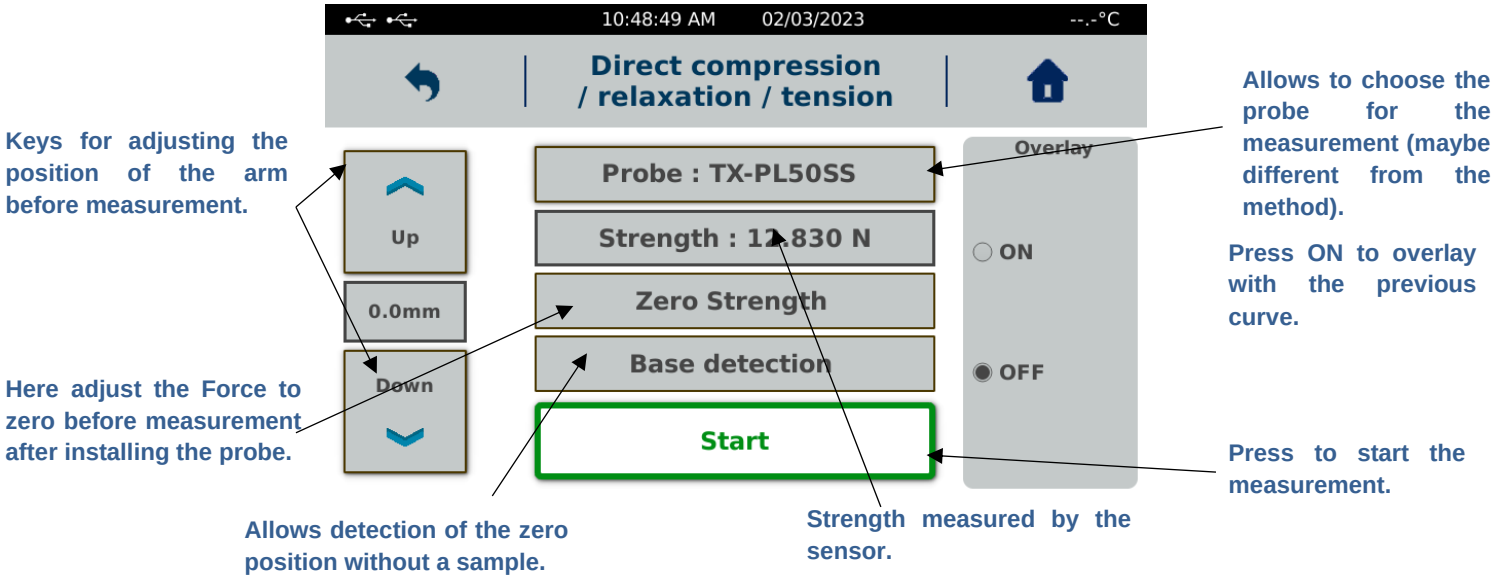


5.4.1 Direct Compression / Relaxation / Tensile

To perform a direct compression measurement followed by a relaxation with a constant compression speed and over a given distance in mm in the sample then to measure the force during the ascent of the probe at a defined speed.

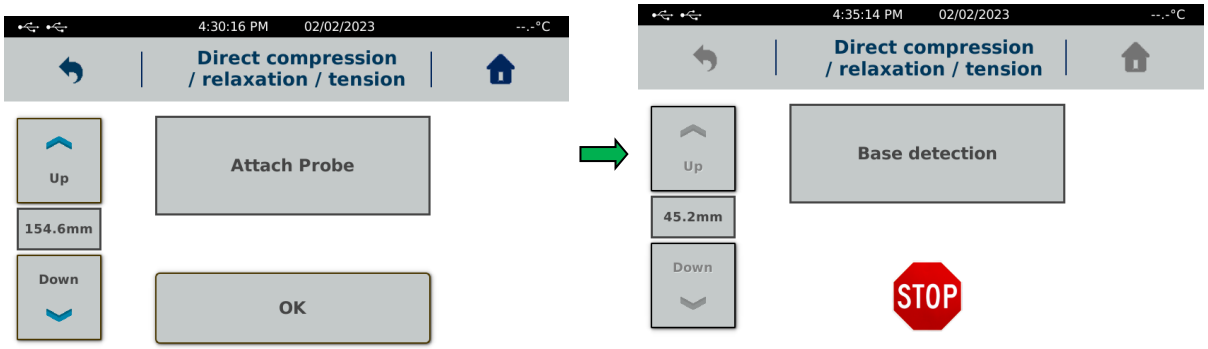
Select Simple Compression or a method previously saved in the memory of the TX-700.

The Start Measurement menu appears when you validate:



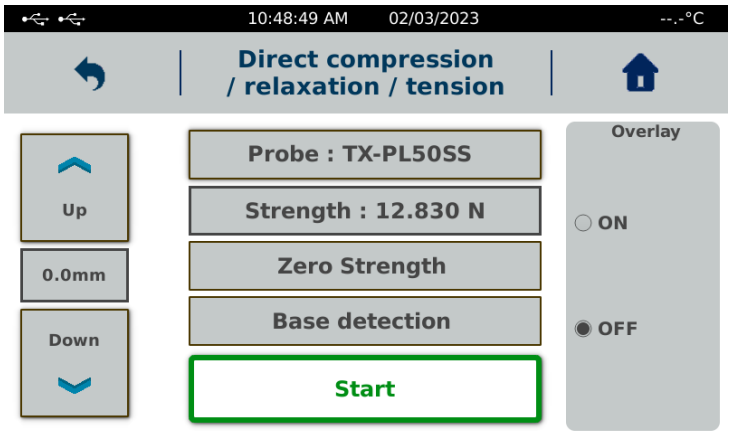
The "Base detection" function is interesting if you want to measure the sample height when it will be in contact with the probe during the compression test (defined in your method with the "Strength to start" parameter).

Manually approach the probe to the lower support before starting the detection to reduce the time for this action. The instrument asks to confirm the probe installation. Then click on "OK" for the instrument to search for the base (position 0mm).



Once detected, the position between the “Up” and “Down” arrows is set to zero. The instrument goes back to the initial position before the detection of the base. You can use the elevator arrows if there is not enough space to install the sample. The instrument tells you that you can install the sample.

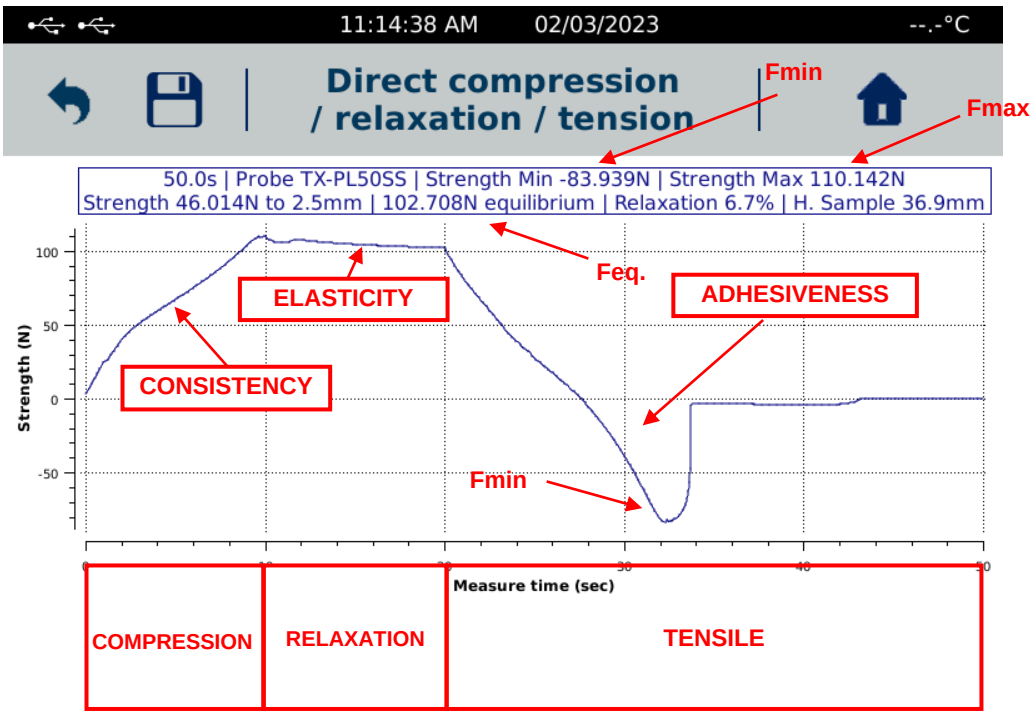
If you click on “Ok” the instrument returns to the next view.



Start the measurement by clicking on “Start”.

Curve and Results in Compression Relaxation Traction

All values and the complete measurement curve are displayed according to:



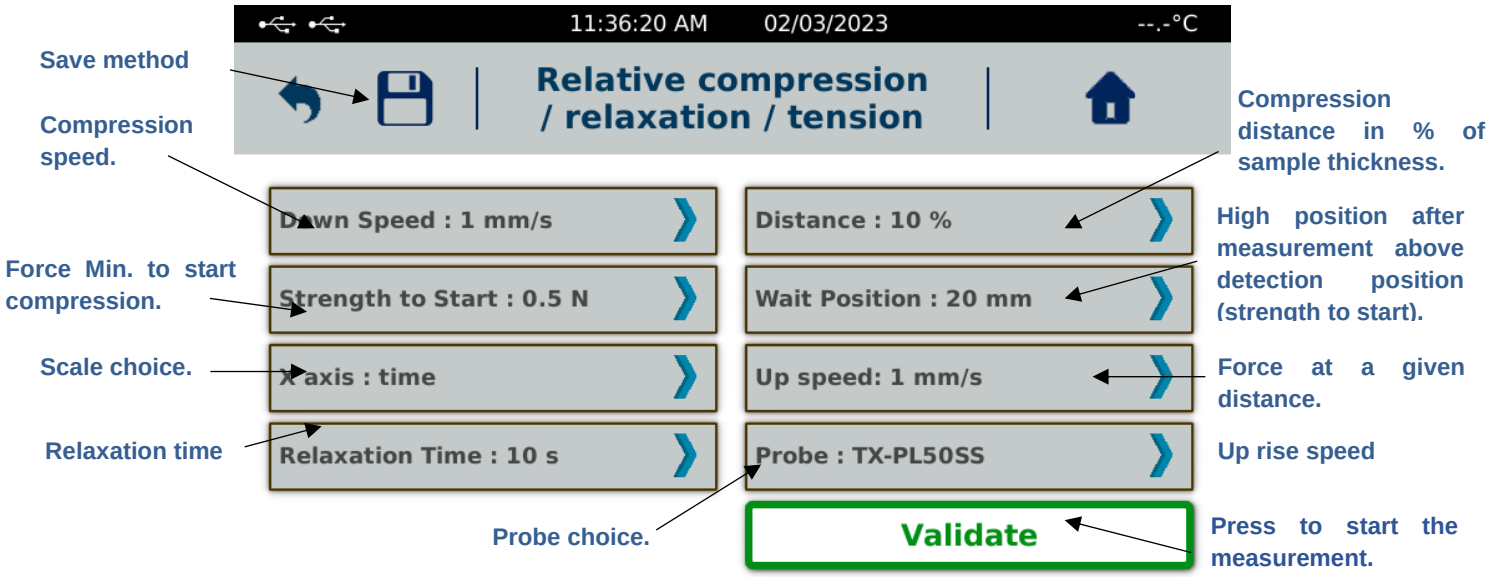
The instrument displays the curve measured with the following informations: Measurement time, probe used, minimum force measured, maximum force measured at the final position of the compression phase, force measured at a given distance (see method), force at equilibrium (at the end of the relaxation period), % relaxation and height of the sample (depending on the detection threshold used in the method and if the detection of the base was carried out before the measurement).

When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the "  " icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

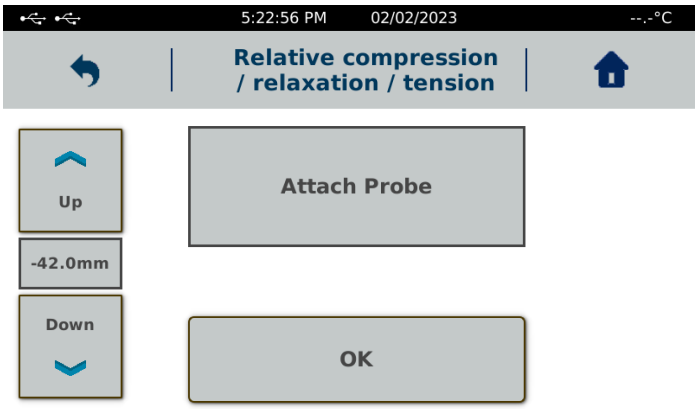
5.4.2 Relative Compression / Relaxation / Tensile

To perform a Relative compression measurement followed by a relaxation with a constant compression speed and over a distance given in % of the total height of the sample then to measure the force during the ascent of the probe at a defined speed.

Select Relative Compression or a method previously saved in the memory of the TX-700.

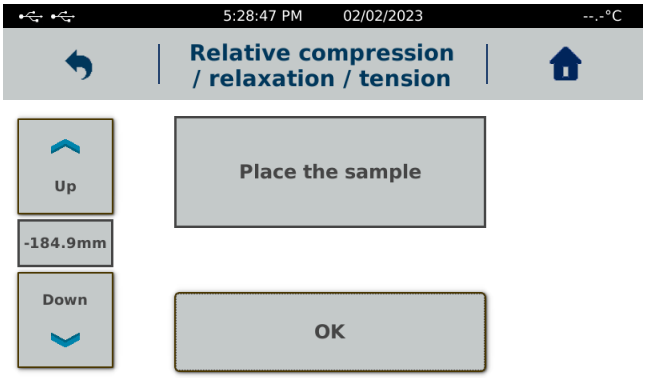


The "Relative Compression" mode requires that the zero position be detected, i.e., the base on which the sample will be placed. Click on "Validate" to obtain the following screen.

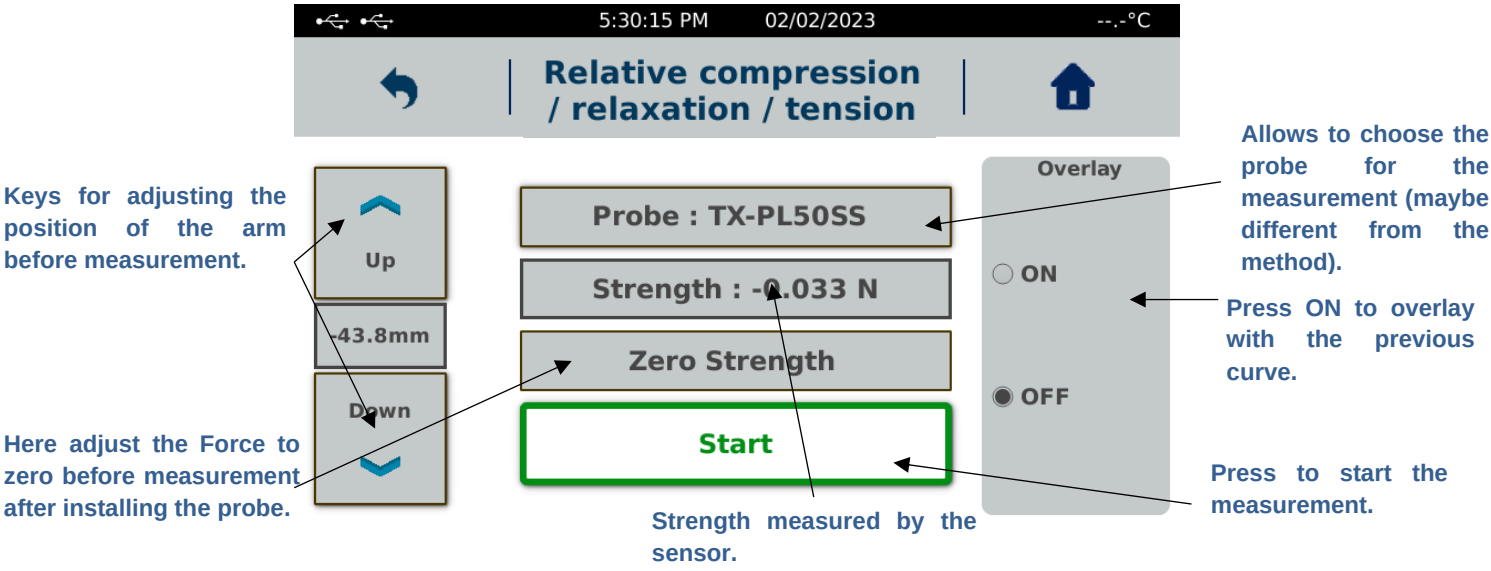


Install the probe and adjust the starting position of the arm with the Up and Down keys to reduce the time of this action. Press "OK". During the detection phase, the following message appears.

When the probe touches the plate, the arm goes back to its initial position. The following message appears. You can place your sample on the base.



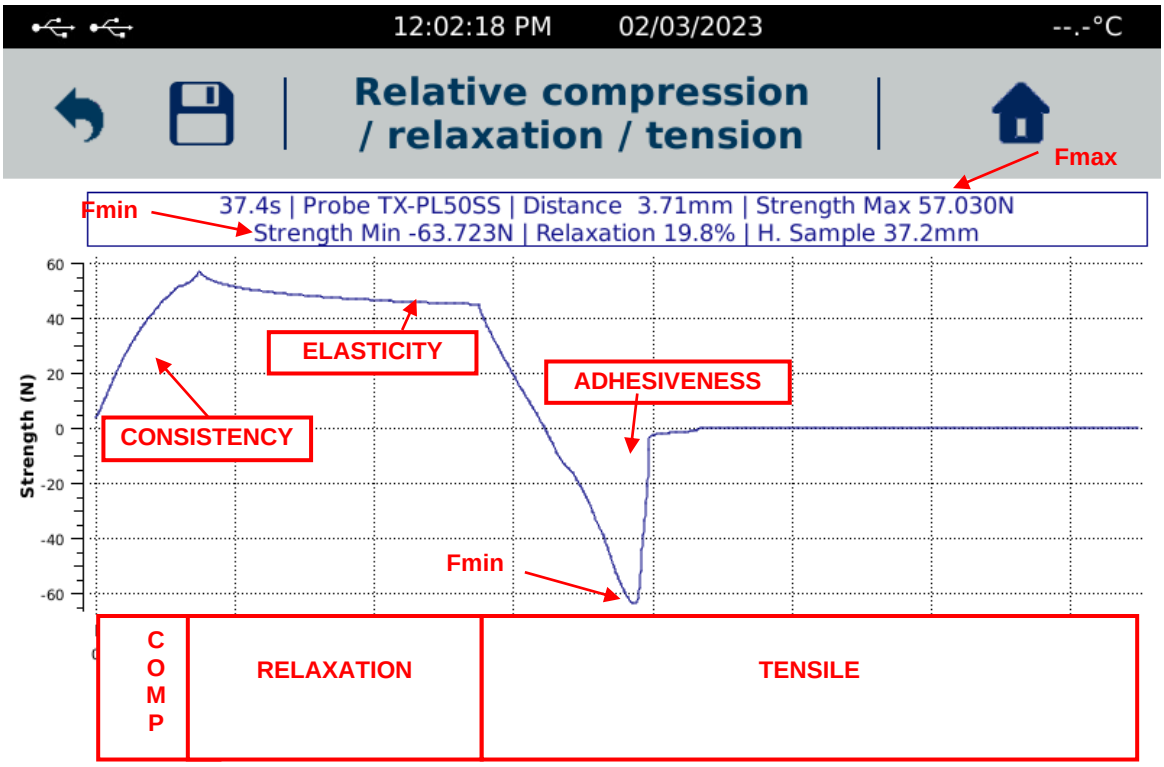
By clicking ok, you will get the following screen.



Start the measurement by clicking on “Start”.

Curve and Results in Compression Relaxation Traction

All values and the complete measurement curve are displayed according to:



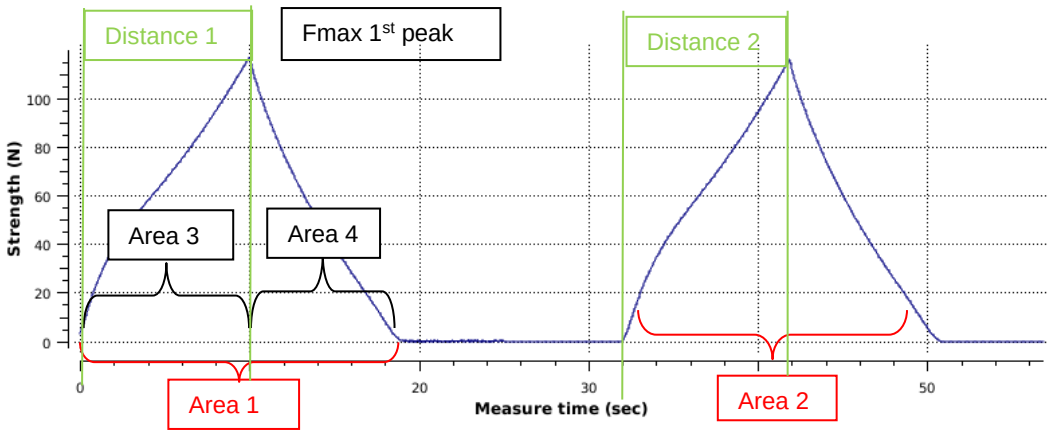
The instrument displays the curve measured with the following information: Measurement time, probe used, distance reached corresponding to the depth expressed in % (see method), maximum force measured at the depth in %, minimum force measured, % relaxation and height of the sample (depending on “Force to start” used in the method).

When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.5 TPA cycle

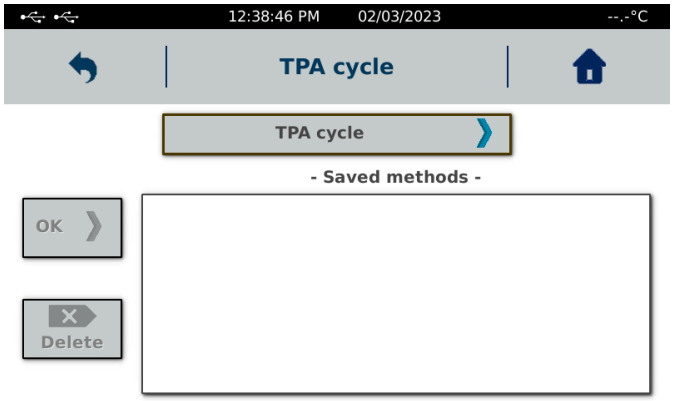
"TPA Cycle" allows you to perform the standardized TPA cycle which consists of 2 sequences of Compression/Traction phases with an optional pause between them.

These 2 cycles give access to the following parameters:

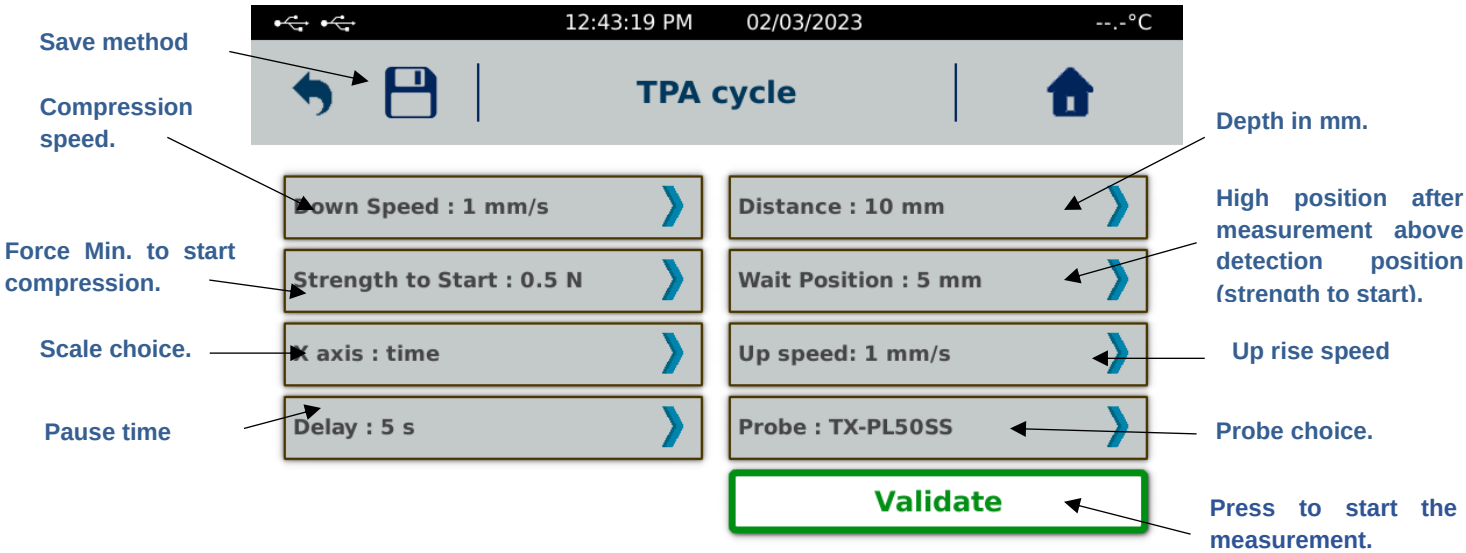


Hardness = Fmax on first peak.
Cohesiveness = (Area 2) / (Area 1)
Springiness = (Distance 2) / (Distance 1)
Gumminess = Hardness x Cohesiveness
Chewiness = Gumminess x springiness
Resilience = (Area 4) / (Area 3)

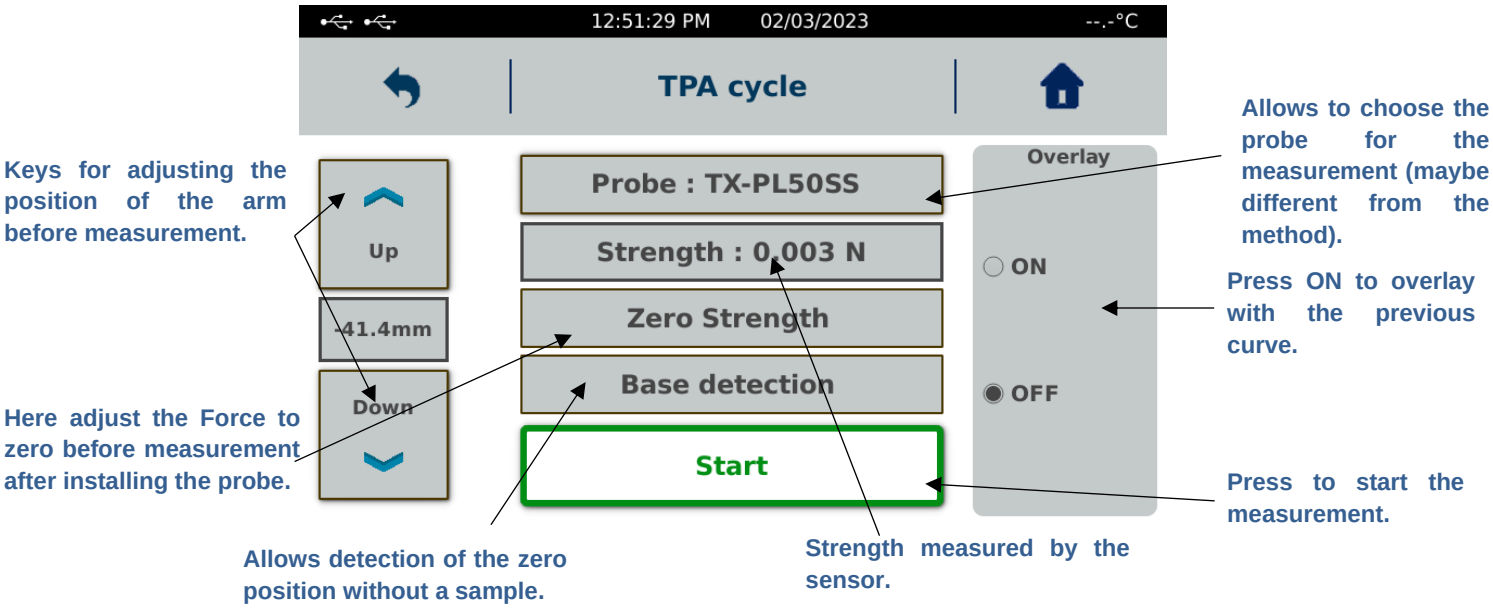
To perform this mode, select **TPA Cycle** from the Main menu.



Select “TPA Cycle” to define a method or choose a method previously store in the memory of the TX-700.

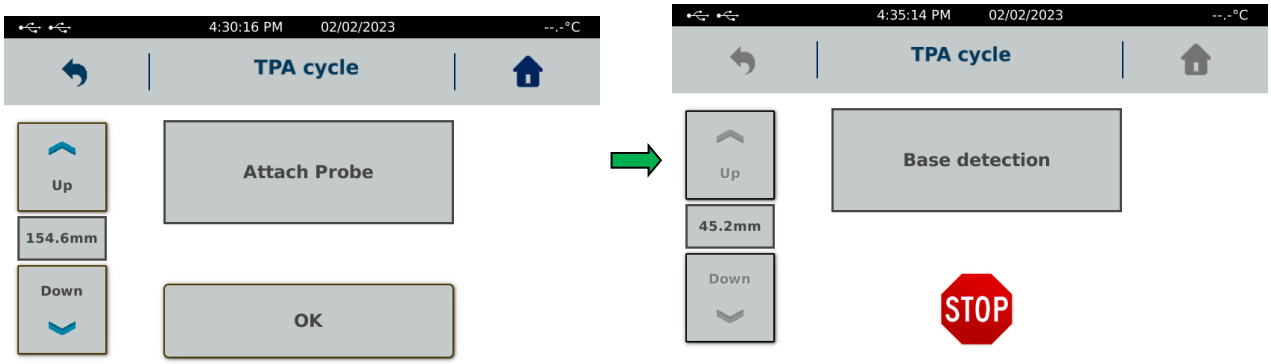


The Start Measurement menu appears by clicking on validate.

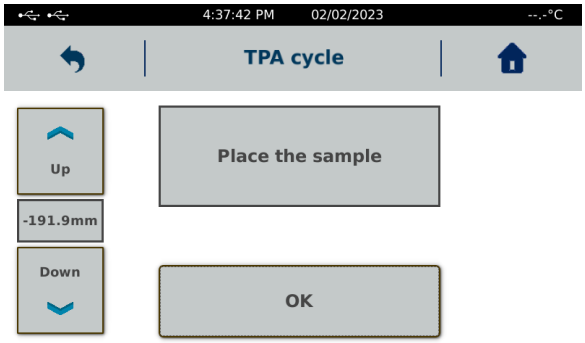


The "Base detection" function is interesting if you want to measure the sample height when it will be in contact with the probe during the compression test (defined in your method with the "Strength to start" parameter).

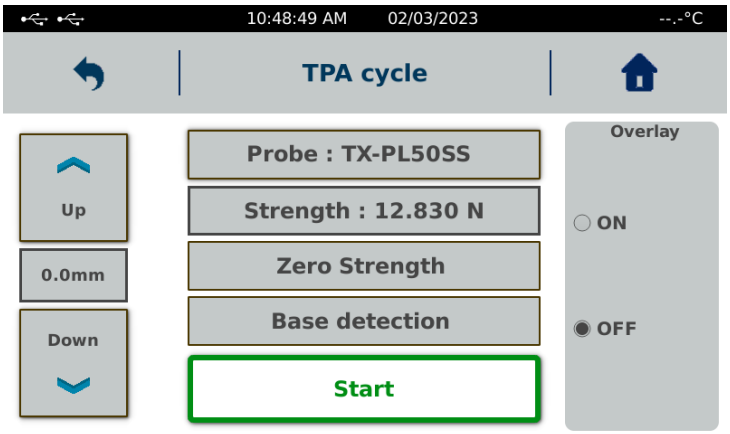
Manually approach the probe to the lower support before starting the detection to reduce the time for this action. The instrument asks to confirm the probe installation. Then click on "OK" for the instrument to search for the base (position 0mm).



Once detected, the position between the “Up” and “Down” arrows is set to zero. The instrument goes back to the initial position before the detection of the base. You can use the elevator arrows if there is not enough space to install the sample. The instrument tells you that you can install the sample.



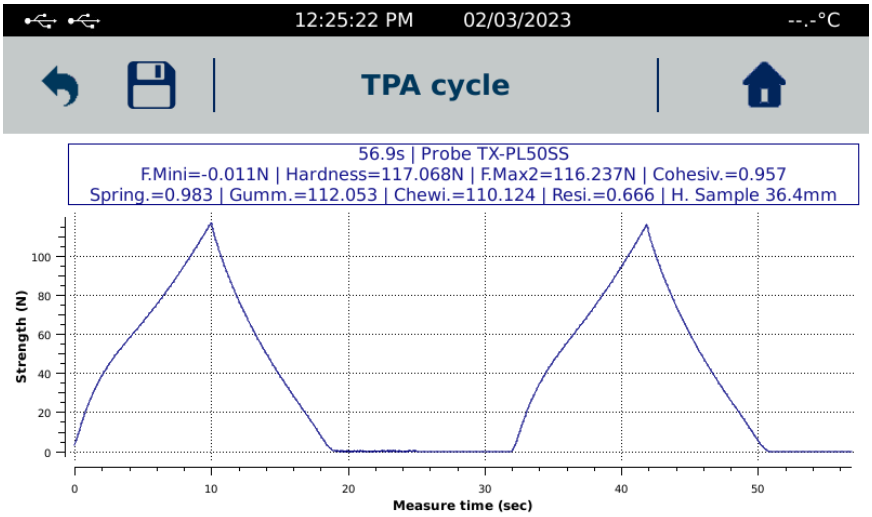
If you click on “Ok” the instrument returns to the next view.



Start the measurement by clicking on “Start”.

TPA Cycle Mode Curve and Results

All values and the complete measurement curve are displayed according to:



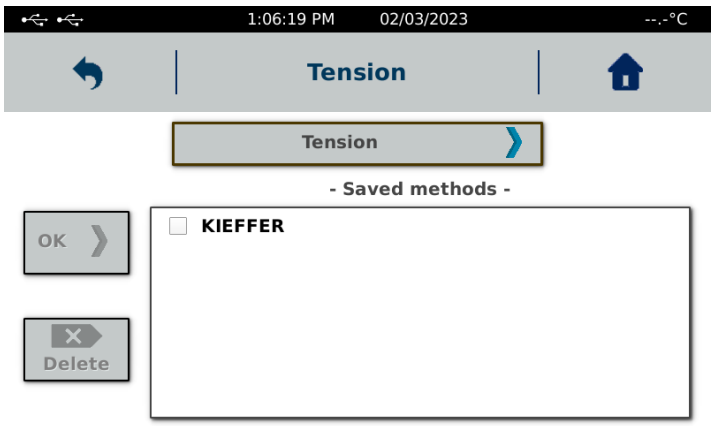
The instrument displays the measured curve with the following informations: Measurement time, probe used, Minimum force, Hardness (maximum force at the first peak), Maximum force at the second peak, Cohesiveness, Springiness, Gumminess, Chewiness, Resilience and height of the sample (depending on “Strength to start” used in the method).

When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

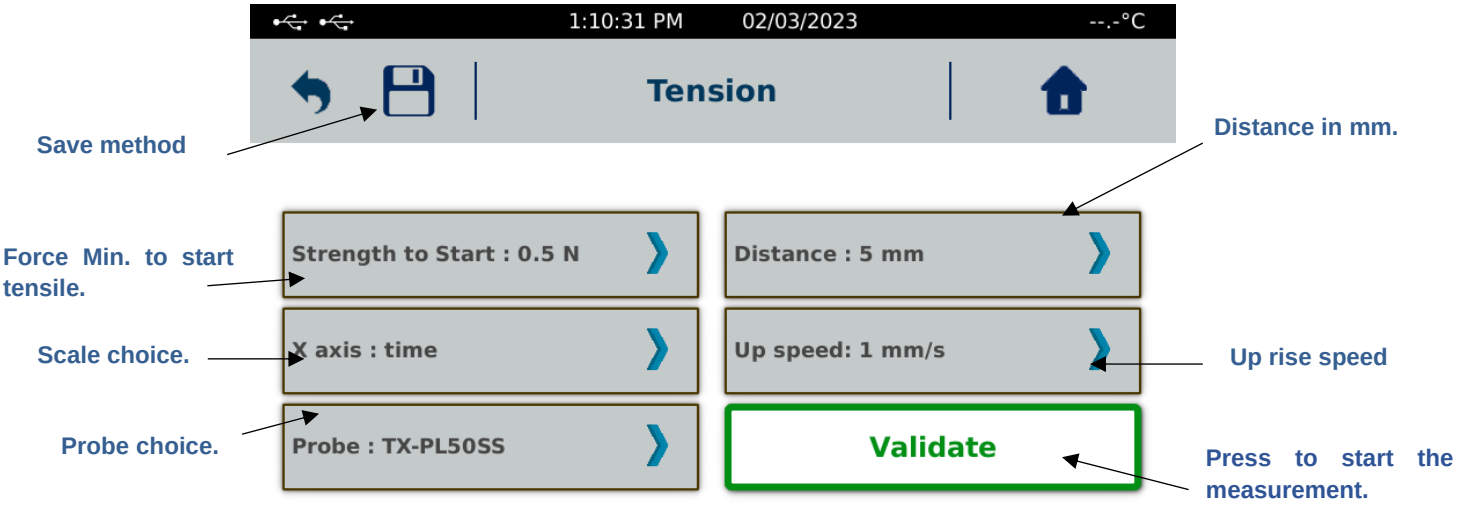
5.6 Tensile Mode

"Tensile" allows you to perform a tensile test to measure the breaking force of a solid sample or to measure the elasticity of a sample. You must use a tensile jaw type probe and define the up-rise speed as well as the distance to be pulled. The force value Fmax measured corresponds either to the breaking force of the product or to the maximum resistance over the pulling distance performed (no breaking).

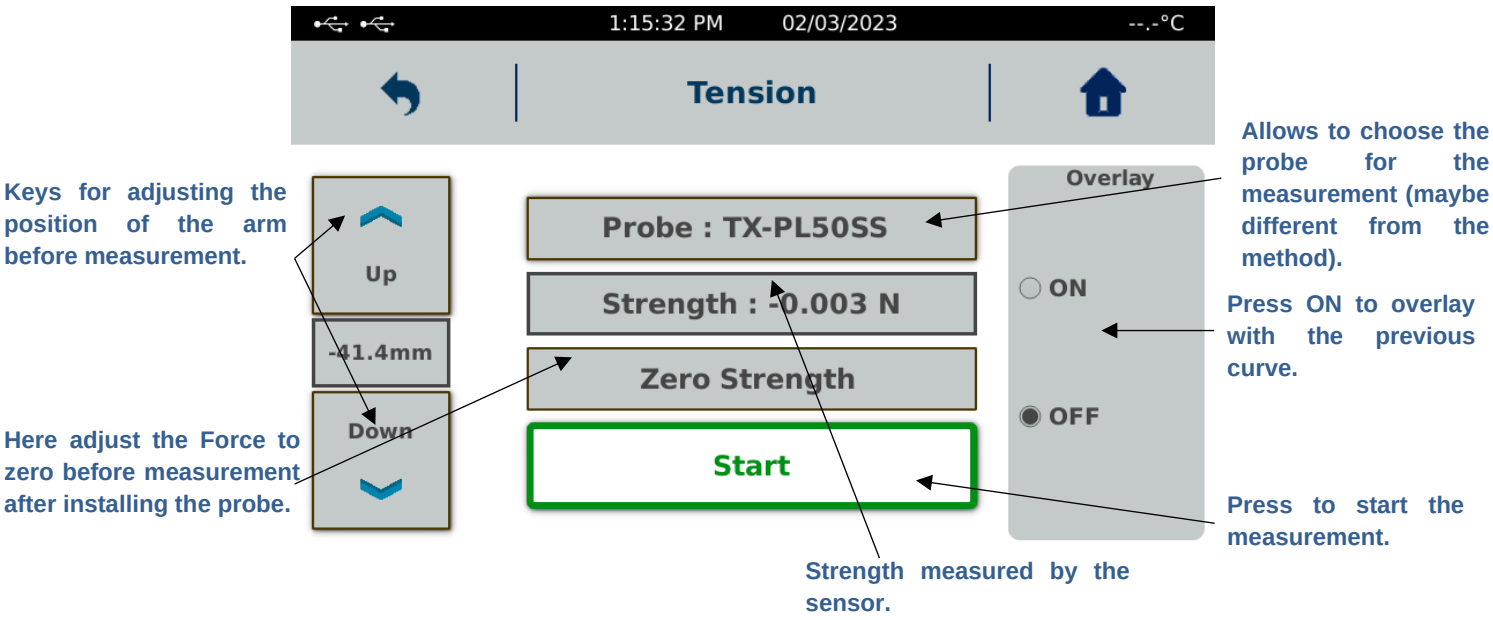
To use this mode, please select Tensile.



Select “Tensile” to define a method or select a method saved in the TX-700 memory.



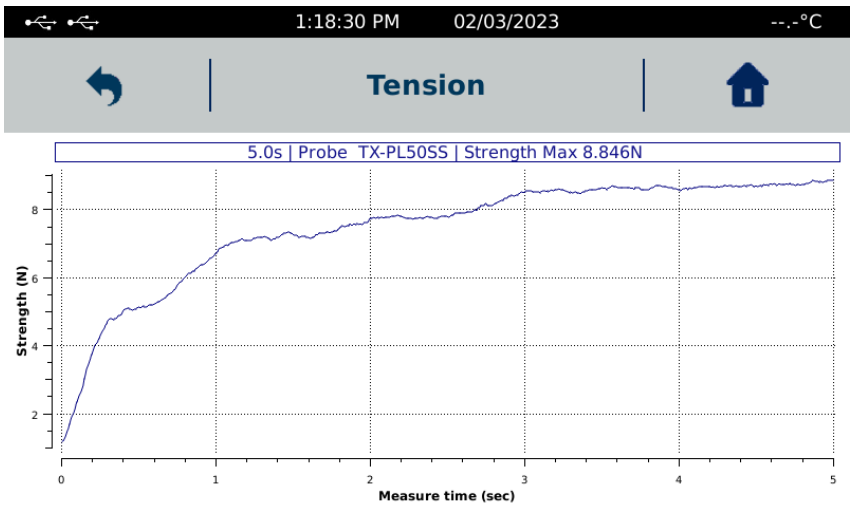
The Start Measurement menu appears by clicking on validate.



Start the measurement by clicking on “Start”.

Curve and results in Tensile mode

All values and the complete measurement curve are displayed according to:



The instrument displays the measured curve with the following informations: Measurement time, probe used and maximum force.

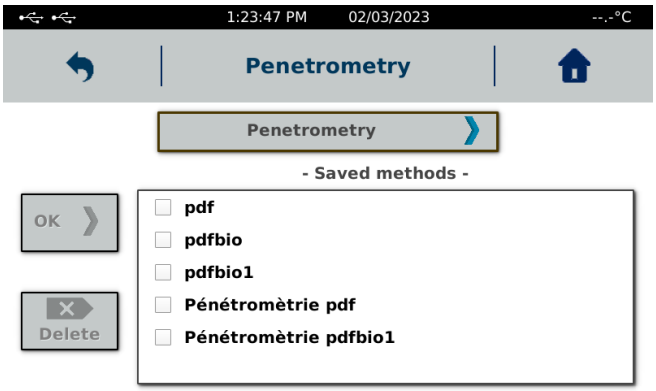
When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

5.7 Penetrometry

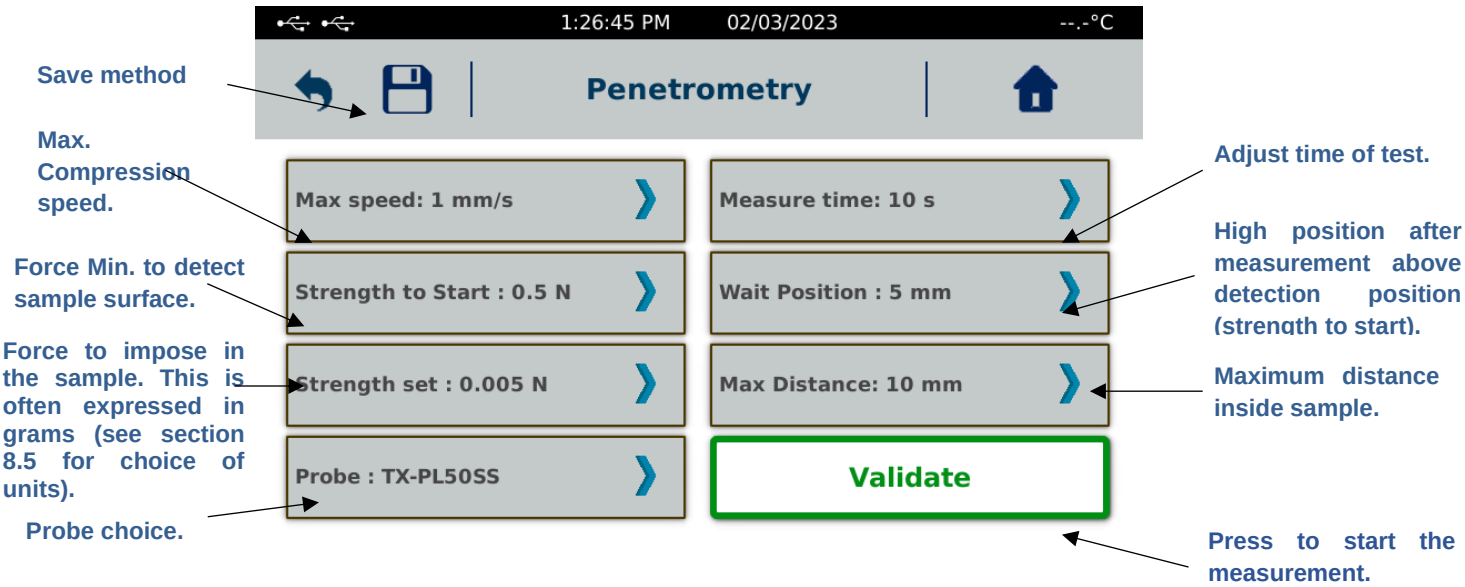
"Penetrometry" allows a Constant Force test over defined time. The result of the measurement is quantified as the distance travelled by the probe in the sample during the measurement time according to its consistency. We deduce its degree of firmness.

To use this mode, please select “Penetrometry”.

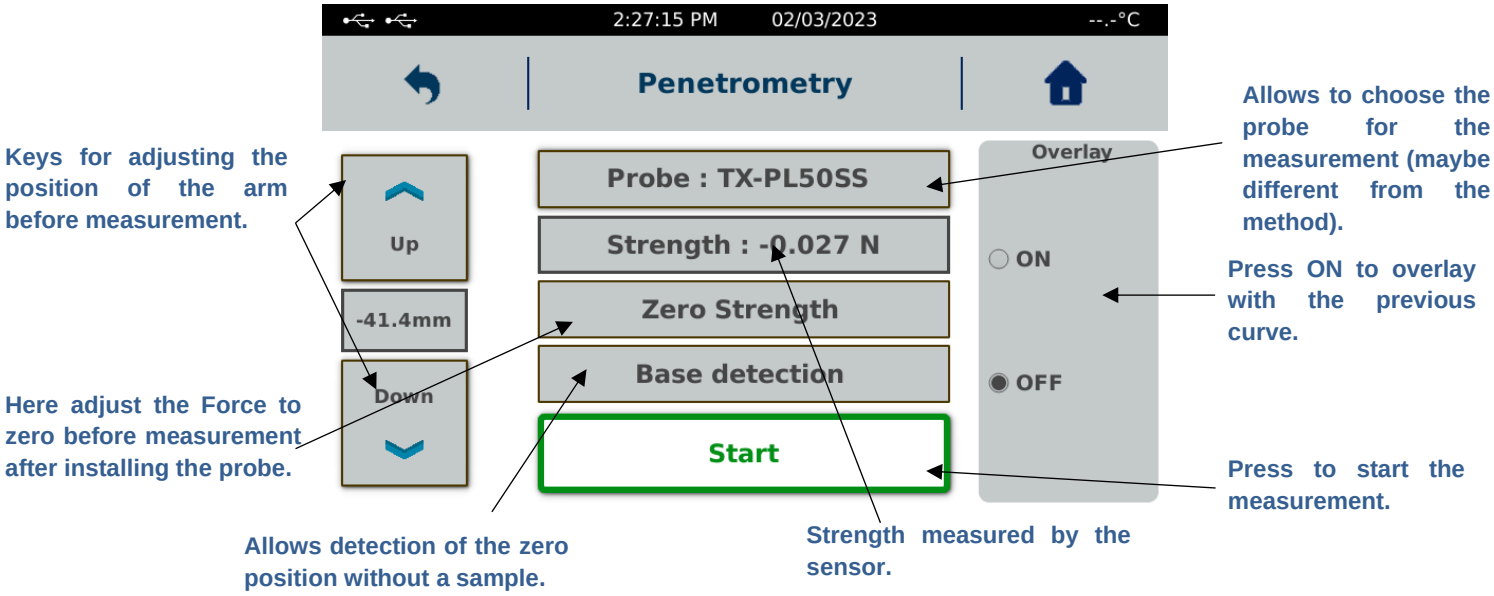
You will get the following view.



Select “Penetrometry” to create a method or select a method saved in the memory of the TX-700 after clicking on “Ok” to edit it. Then you arrive at this window.

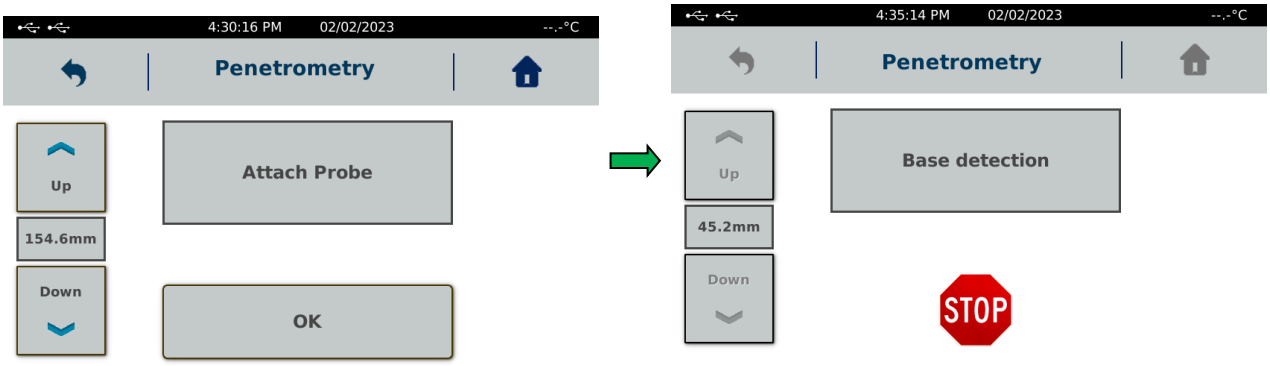


The Start Measurement menu appears if you select “Validate”.

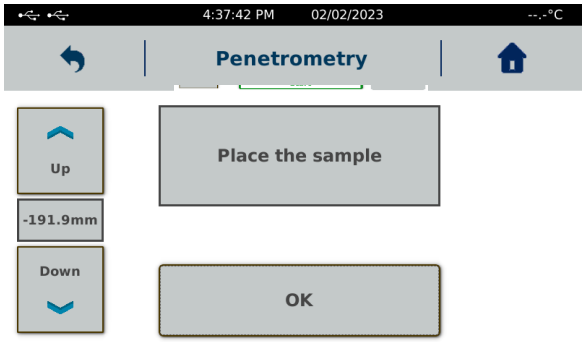


The "Base detection" function is interesting if you want to measure the sample height when it will be in contact with the probe during the compression test (defined in your method with the "Strength to start" parameter).

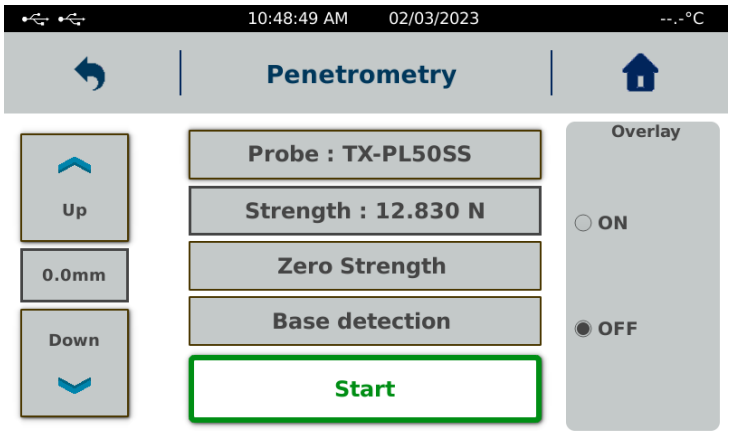
Manually approach the probe to the lower support before starting the detection to reduce the time for this action. The instrument asks to confirm the probe installation. Then click on "OK" for the instrument to search for the base (position 0mm).



Once detected, the position between the “Up” and “Down” arrows is set to zero. The instrument goes back to the initial position before the detection of the base. You can use the elevator arrows if there is not enough space to install the sample. The instrument tells you that you can install the sample.



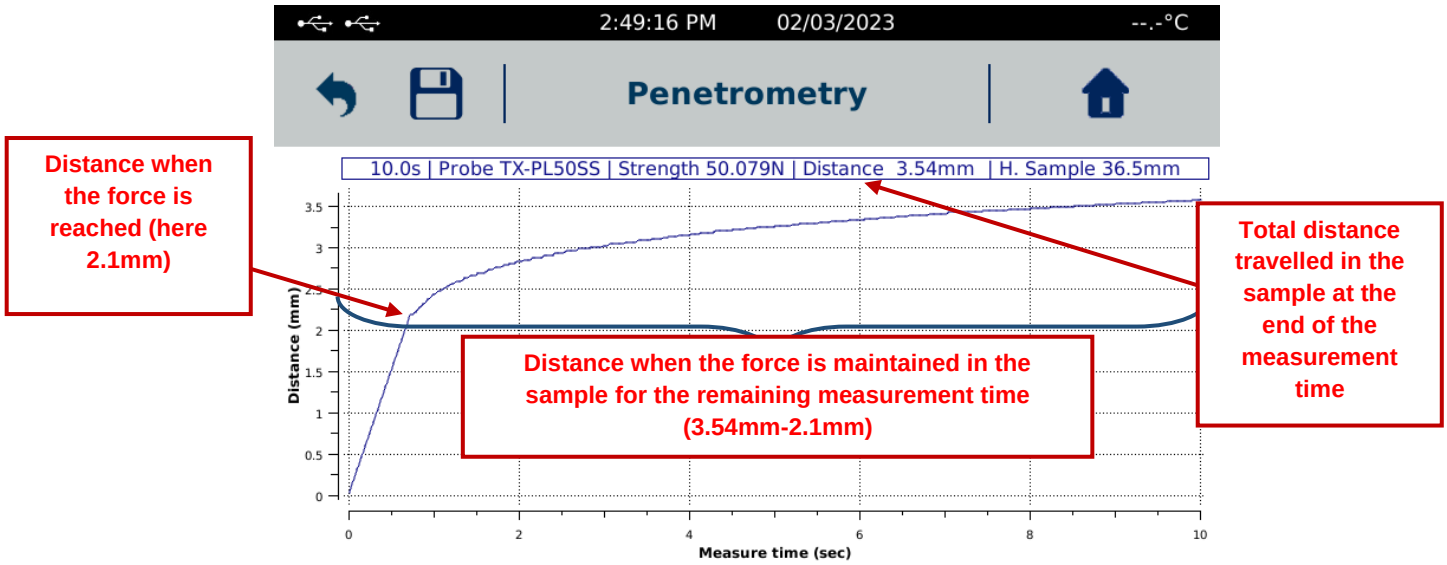
If you click on “Ok” the instrument returns to the next view.



Start the measurement by clicking on “Start”.

Curve and results in Penetrometry mode

All values and the complete measurement curve are displayed according to.



The instrument displays the measured curve with the following informations: Measurement time, probe used, Force imposed at the end of the measurement, final distance reached in the sample and height of the sample (according to detection threshold used in method and whether base detection was performed prior to measurement).

When printer is connected, corresponding icon is present and you can print measurement results. You can also save the data file by pressing the “” icon on the touch screen. You will be invited to create a file name for saving and you will be able to find it in the instrument's memory (see section 6).

6 RESULTS

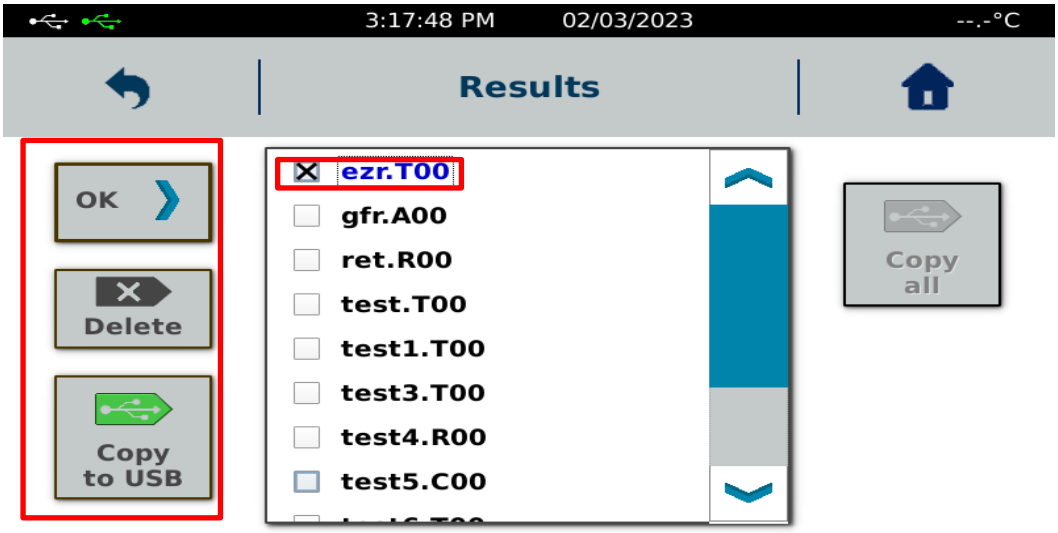
Results allows you to read and export the data files saved in the TX-700 memory during your measurements.

To select this mode, go to View Results in the Main menu.

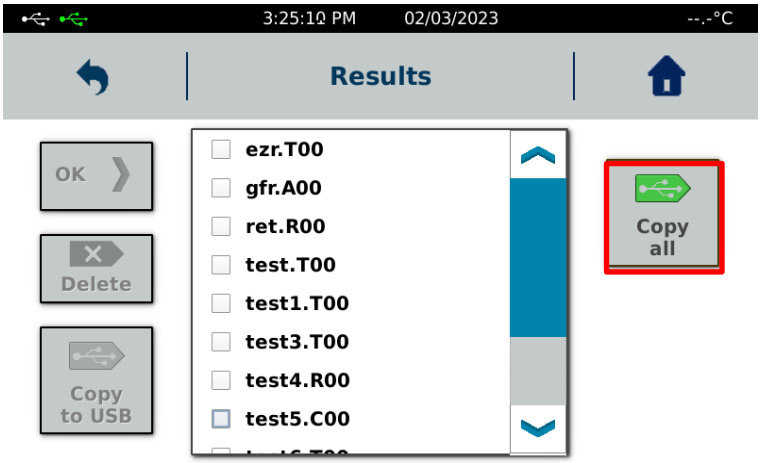
The list of stored files appears, in which you can select the one to open (a cross appears on the selected file), then press OK. You can also delete it by pressing Delete, or copy it to a USB key by clicking on USB key if it is connected to the TX-700.

Depending on the method used, the files roots are different depending on:

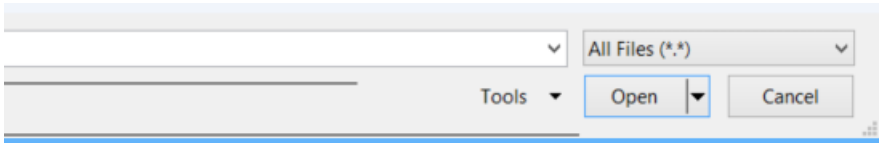
Compression mode: « X.C00 »
Compression / Relaxation mode: « X.R00 »
Compression / Relaxation mode / Tensile: « X.T00 »
TPA cycle: « X.A00 »
Tensile mode: « X.X00 »
Penetrometry: « X.P00 »



To export ALL the data files saved in the internal memory, connect a USB key to the TX-700, an icon at the top left of the screen turns green and "COPY ALL" is lit.
Just click on this icon to transfer the files to the USB key.

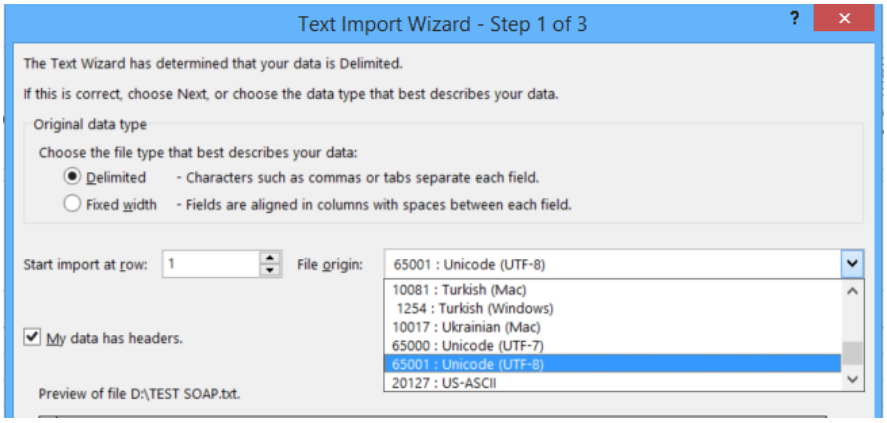


The format of data generated and saved by the TX-700 is ASCI type (*.txt). Once your data has been copied to the USB key, you can open the files using the EXCEL spreadsheet. To do this, simply copy the data from the USB key to your computer. Then open Excel, then choose “File”, “Open” taking care to select the option “All files *.*”.

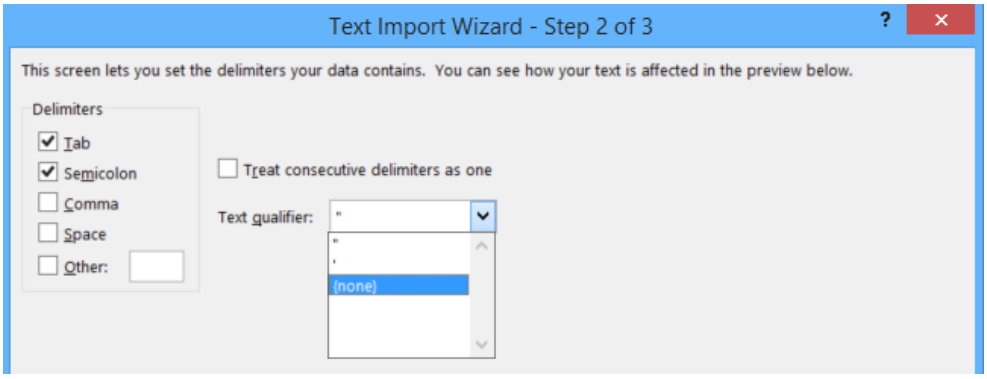


Find your file and click “Open”. Excel will offer you to convert your data by displaying three successive windows.

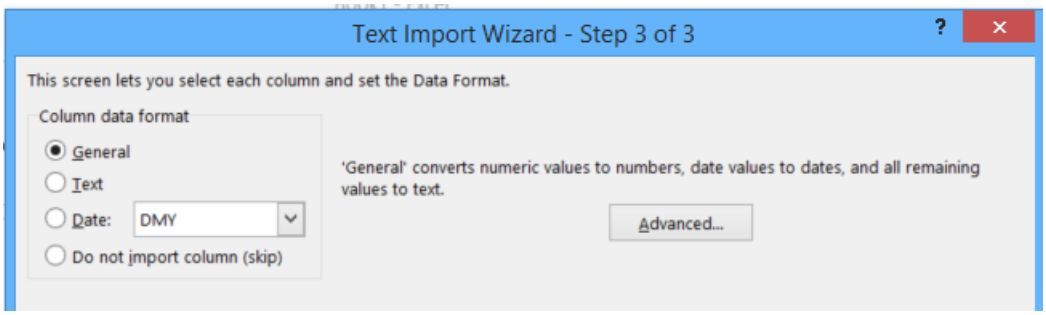
Select “Unicode UTF8” and “My data has Header” (last selection available according Office version) and click “Next”.



On second step, it will be necessary to choose the option “Tab” and "Semicolon" for columns separation. For “Text qualifier”, you should set “none”.



On last step, please choose “General” and click “Finish”.

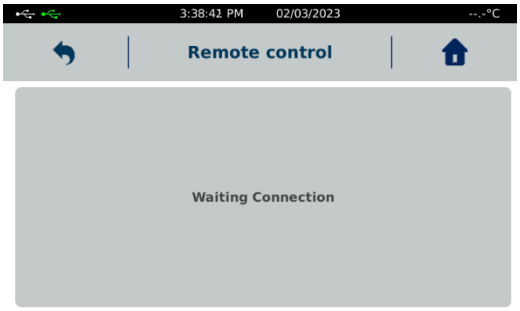


You can then see your measurement results with the possibility to save a new file in Excel format.

7 REMOTE CONTROL

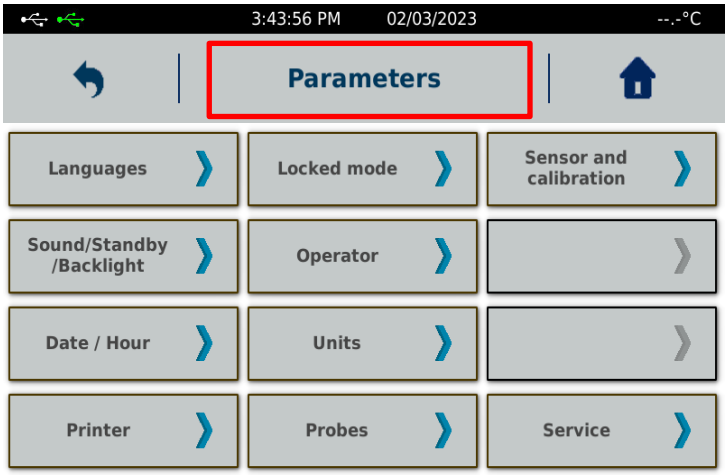
This tab allows the connection of the TX-700 with a computer to be controlled by the RheoTex software (optional). Only the use of the "RS232" port present on the TX-700 can be used. A USB/RS232 cable must be used for communication (supplied with the RheoTex software).

A “Waiting for connection” message indicates that the TX-700 is waiting for communication with the RheoTex software (see RheoTex software user manual for configuration). When communication is open, the TX-700 displays Force and distance values.



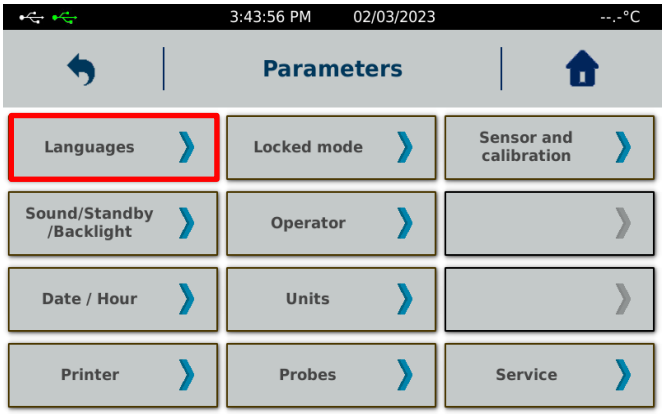
8 PARAMETERS

On TX-700 you can define several parameters by clicking on the parameter's icon on the main screen.



8.1 Languages

To choose the languages of your device, please select Languages in Parameters Menu

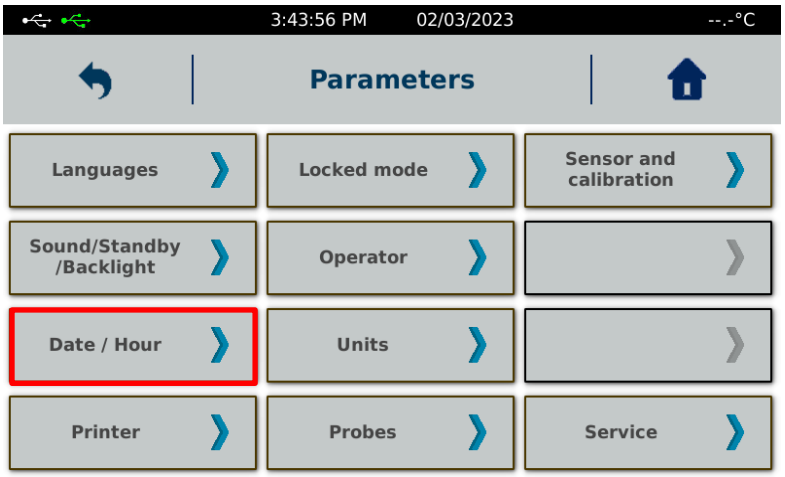


Select language you want and press OK.

The TX-700 will turn itself off. You will need to turn it back on using the ON/OFF button on the back.
This menu also allows you to see which firmware version is installed on the instrument.

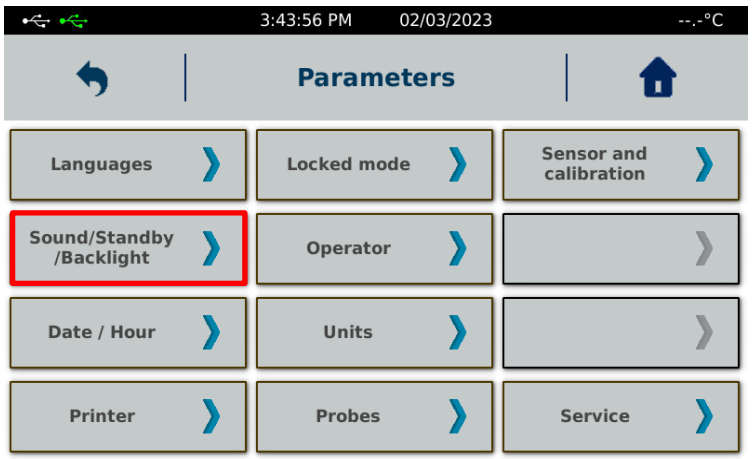
8.2 Date / Hour

To adjust the date or time of your TX-700, please select Date / Hour in Parameters Menu

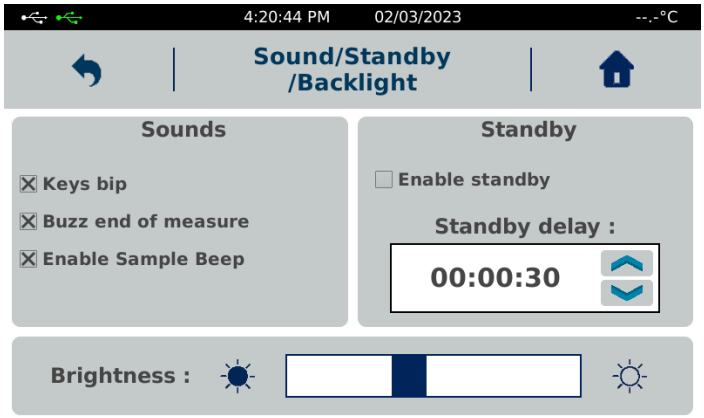


Adjust the second, minute and hour for time. Then day, month and year for the date. Finally press OK.

8.3 Sounds/Stand-by/Backlight



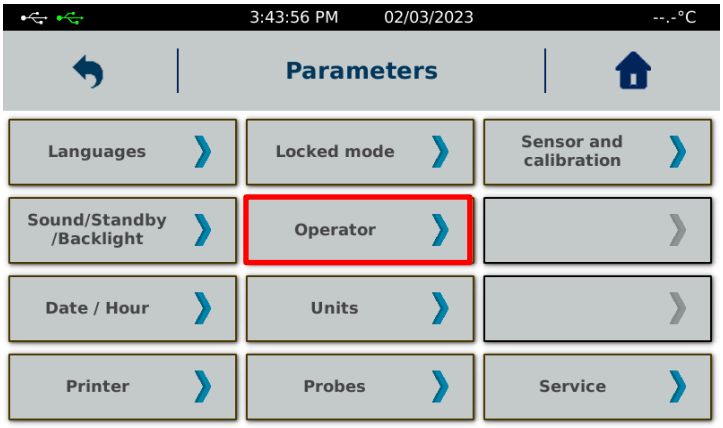
This menu allows you to choose the following parameters:



Sounds: YES => you will hear a "beep" when you touch the touch screen, a "buzz" at the end of the measurement and a beep when the probe detects the sample.
Backlight => To adjust the light of the TX-700 screen.
Standby => To define the time after which the screen goes to standby if the function is activated.

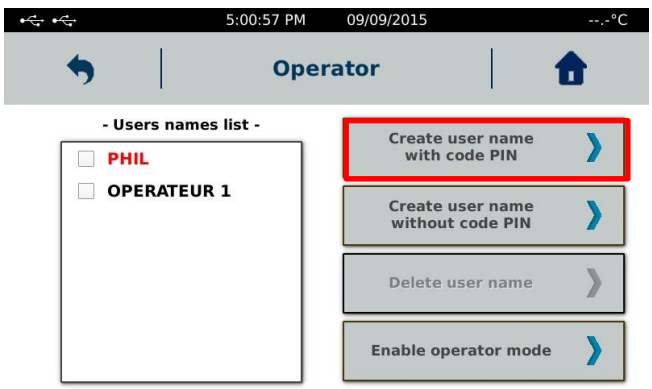
8.4 Operator

This menu allows you to create and manage the operator codes of your TX-700 users and block access to certain TX-700 parameters according to:
- Creation of Operator name with or without access CODE.
- Selection of an Operator name for identification of a user during his measurements.
- Enable or disable the Operator mode.



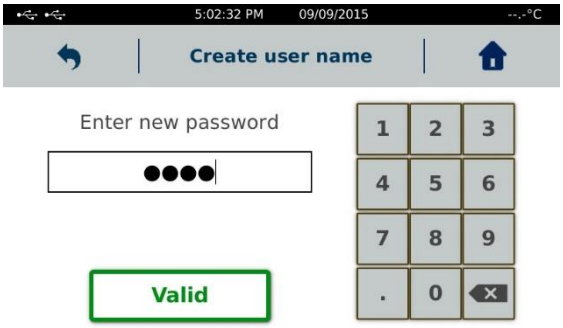
8.4.1 Creation of user name

This mode allows you to create an operator with or without a PIN code.
The first operator will be the administrator of the device (name in red).
Select “Create user name with code pin” tab to implement one new user name with code identification.

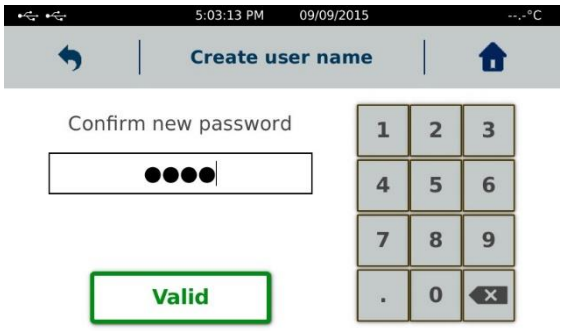


Enter the User Name you want using the digital keyboard.

Enter the Password you want. This new user must to be enter when he wants to use the TX-700.



Confirm this password.

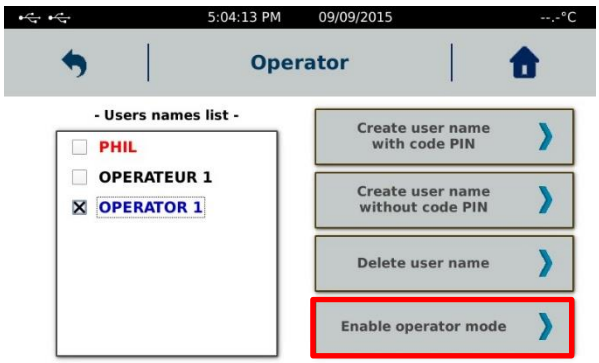


8.4.2 Selection of one user name

Select the user's name you want to use. A cross indicate the user's name selected.

8.4.3 Activation of the user mode

Press “Enable Operator Mode” to activate this mode.



8.4.4 Deactivation of the operator mode

Select the user Name in RED and ONLY THIS USER NAME, and then enter its code. After this, you could press on “Disable operator mode” to deactivate this mode you want to; in order he will appear on measurement reporting.

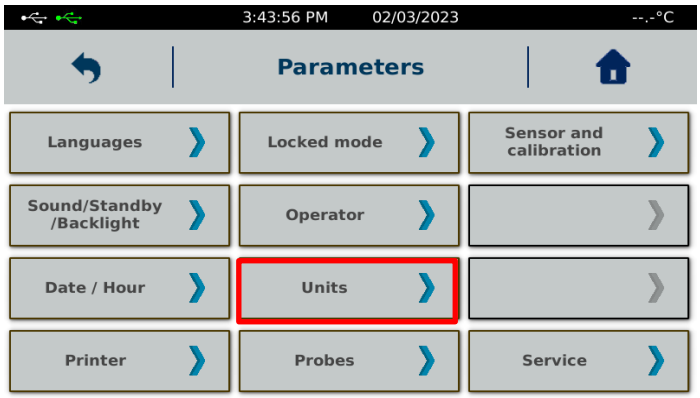
8.4.5 Identification of operator mode

The selected User Name appears on the Main Menu and also and all measurement data. It is saved into files and also printed with results.

If you click on the name (see red box above), the instrument offers you either to change operator, or to turn off the instrument.

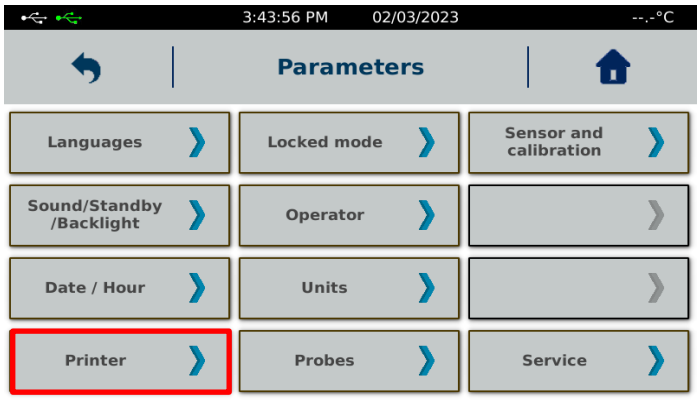
8.5 Units

The Units menu allows you to choose between Newton and Grams as the strength scale unit for your measurements.



8.6 Printer

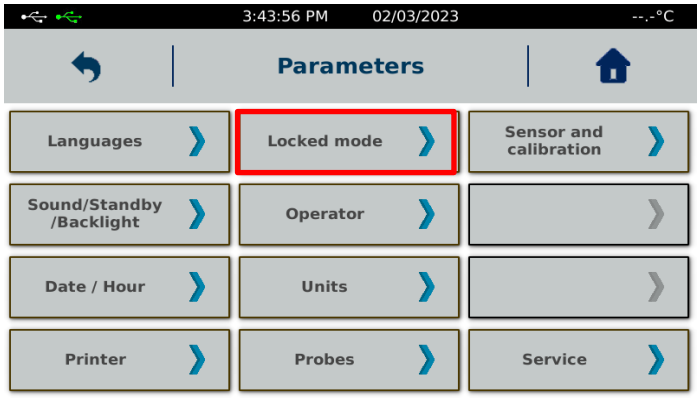
This tab enables to define the printer you want to eventually connect to TX-700 in order to print the data and curve (not on DYMO 450).



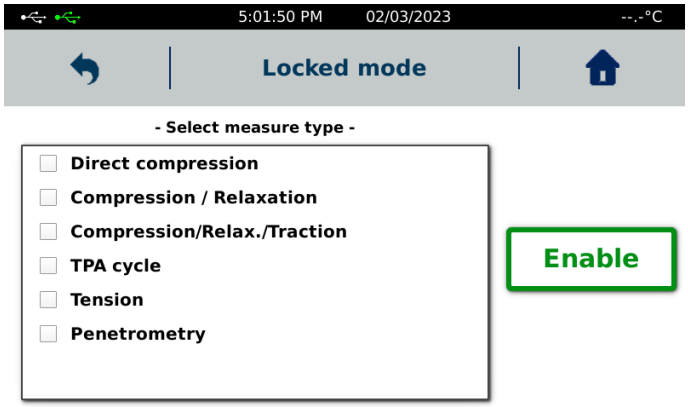
You could remove previous defined printer, valid the new one you have connected and print a test to confirm your choice. Press OK to confirm this choice before using the connected printer.

8.7 Locked mode

This parameter allows you to lock method mode made in order to avoid any change in parameters or type of measurement.

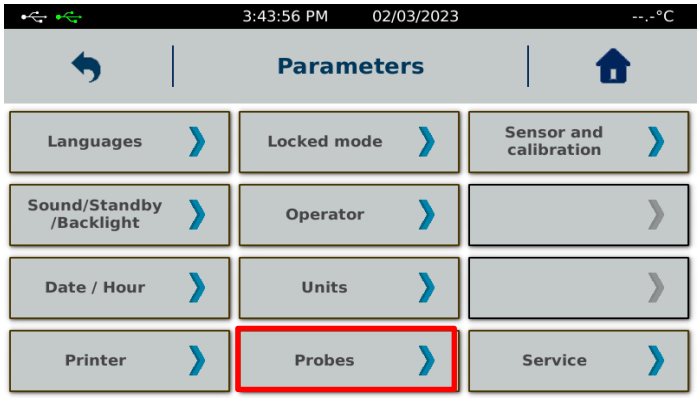


You must choose the measuring mode you want to do and select it. A cross appears beside it. You select “Enable” tab to lock this mode with the last method you made on it.

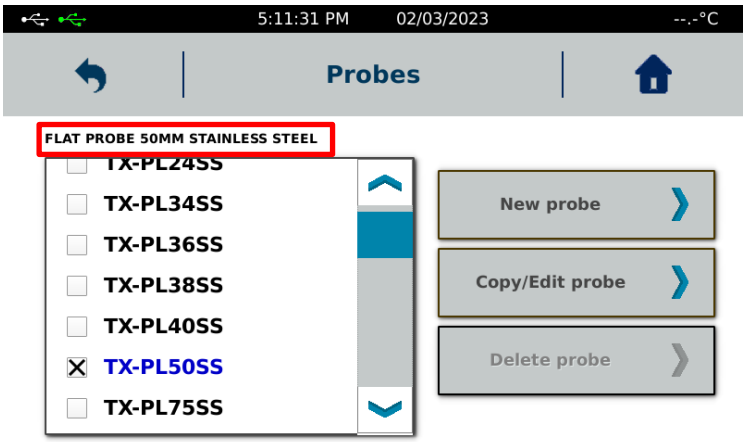


8.8 Probes

This menu allows you to manage the list of probes and fixtures that you can use for the creation of your methods and for your measurements.



Some tools are stored in the instrument memory by default. They cannot be deleted but can be copied or edited to create a new tool.



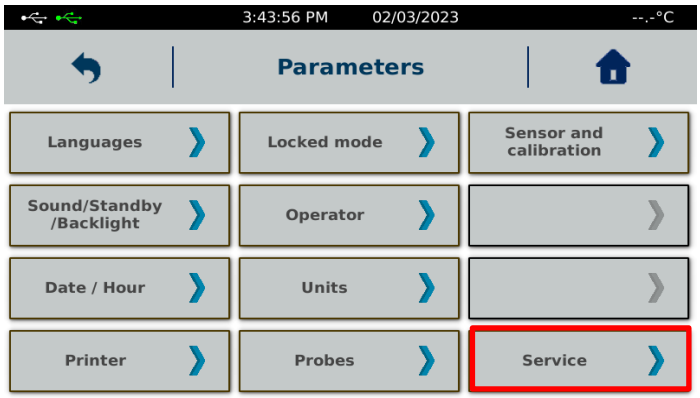
You can also create a new measurement tool by clicking on "New probe".
By selecting a probe, you get a brief description of it.
You will find below a short description of each measuring tool family:

- - TX-HS for ½ sphere probe.
- - TX-PL for flat probe (disk).
- - TX-CY for cylinder.
- - TX-CO for cone.
- - TX-2CO for double cone.
- - TX-NE for needle.
- - TX-SP for sphere.
- - The number after these first letters indicates the diameter.
- - H indicates height.
- - SS means stainless steel.
- - PG for Polycarbonate (plexiglass).
- - AL for aluminium.
- - DL for Delrin.
-

The list of fixtures that can be used with the TX-700 are given in section 10.2.

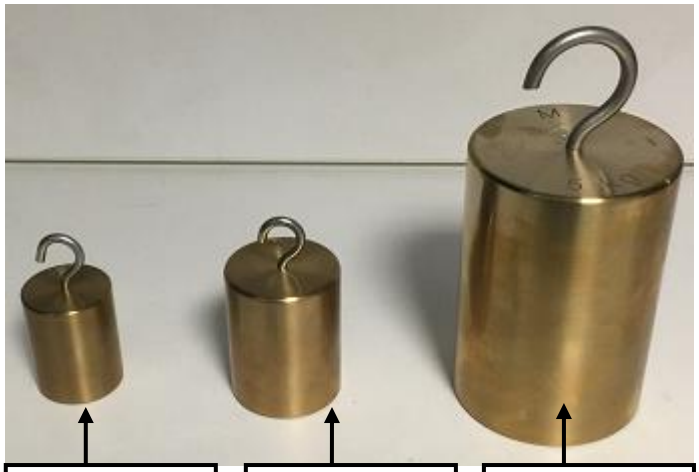
8.9 Service

This menu is exclusively reserved for Lamy Rheology technicians or their distributors. It allows the adjustment of the instrument internal parameters or to carry out its calibration.



9 VERIFICATION OF YOUR INSTRUMENT

A certified weight is enough to control the TX-700. LAMY RHEOLOGY offers three different calibration kits depending on the strength sensor capacity of your texture analyzer. Each comes with a holder to screw on the TX-700.



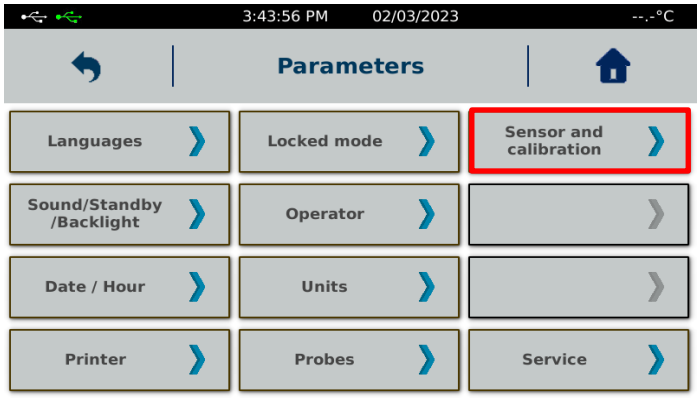
Weight 500g for sensor 10-20N (Included in calibration kit PN 150060)

Weight 1Kg for sensor 50-100-250N (Included in calibration kit Ref 150070)

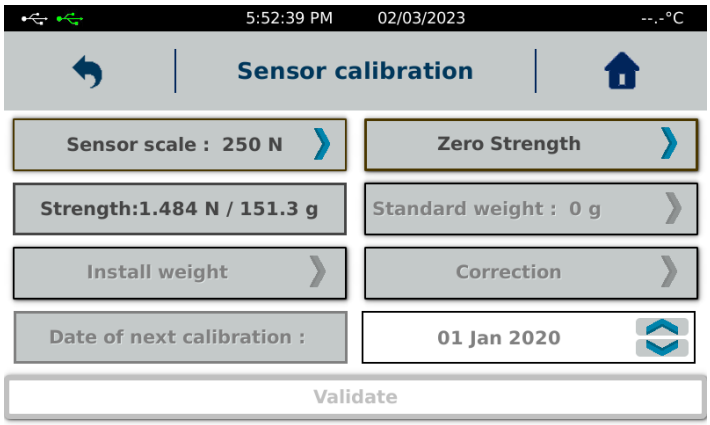
Weight 5Kg for sensor 500N (Included in calibration kit PN 150080)

Holder

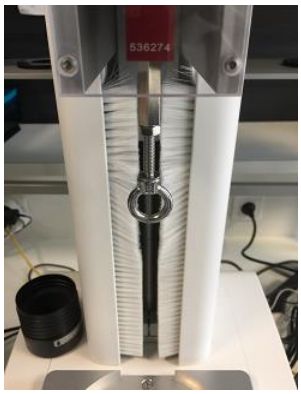
The first step is to select the “Sensor and calibration” tab in the settings menu.



You will get the following view.



Choose the scale of your load cell. Screw the hook on load cell.



Click on "Zero strength" to take into account the hook weight. The force measured by the instrument must be very close to 0N. Indicate the weight value in "g" that you wish to use. Attach the weight and validate by clicking on “Install weight”. Wait for the weight to stop moving and click on the "Correction" button to calibrate your instrument. Check that the force measured is very close to the value of the weight with an accuracy of 0.5% of the full scale of your force sensor. That is to say: 5g for a 1Kg (10N) sensor, 10g for a 2Kg (20N) sensor, 25g for a 5Kg (50N) sensor, 50g for a 10Kg (100N) sensor, 125g for a 25Kg (250N) sensor and 250g for a 50Kg (500N) sensor. If the value is correct, you can indicate the next calibration date and the instrument will warn you when it is reached. If you are unable to obtain the correct value, please contact your sales contact or LAMY RHEOLOGY.

10 PROBES, FIXTURES AND ASSEMBLY INSTRUCTIONS

10.1 Probes list

½ Sphere probes.

DESIGNATION	PROBE TX-700	ITEM
1/2 SPHERE PROBE D:8MM SS	TX-HS8SS	130079
1/2 SPHERE PROBE D:12.7MM DELRIN	TX-HS12.7DL	130123
1/2 SPHERE PROBE D:16MM SS	TX-HS16SS	130174
1/2 SPHERE PROBE D:30MM SS	TX-HS30SS	130019
1/2 SPHERE PROBE D:40MM SS	TX-HS40SS	130049

Flat probes.

DESIGNATION	PROBE TX-700	ITEM
FLAT PROBE D:15MM SS	TX-PL15SS	130255
FLAT PROBE D:24MM SS	TX-PL24SS	130224
FLAT PROBE D:34MM SS	TX-PL34SS	130080
FLAT PROBE D:36MM SS	TX-PL36SS	130081
FLAT PROBE D:38MM SS	TX-PL38SS	130082
FLAT PROBE D:40MM SS	TX-PL40SS	130083
FLAT PROBE D:50MM SS	TX-PL50SS	130101
FLAT PROBE D:75MM SS	TX-PL75SS	130175
FLAT PROBE D:100MM SS	TX-PL100SS	130200
FLAT PROBE D:160MM SS	TX-PL160SS	130177
FLAT PROBE SQUARE L:50MM H:10MM PMMA	TX-PLC50H10PG	130143

Conical probes.

DESIGNATION	PROBE TX-700	ITEM
CONICAL PROBE D:25MM A:20° SS	TX-CO25A20SS	130020
CONICAL PROBE D:30MM A:45° SS	TX-CO30A45SS	130047
CONICAL PROBE D:30MM A:30° SS	TX-CO30A30SS	121023
CONICAL PROBE D:30MM A:60° PMMA	TX-CO30A60PG	130110
CONICAL PROBE D:40MM A:90° SS	TX-CO40A90SS	130183
CONICAL PROBE D:30MM A:45° PMMA	TX-CO30A45PG	130219
CONICAL PROBE D:24MM A:30° PMMA	TX-CO24A30PG	130217
CONICAL PROBE DOUBLE A:90/30° SS	TX-2CO90-30SS	130048

Cylidrical probes.

DESIGNATION	PROBE TX-700	ITEM
CYLINDRICAL PROBE D:2MM H:35MM SS	TX-CY2H35SS	130077
CYLINDRICAL PROBE D:3MM H:35MM SS	TX-CY3H35SS	130063
CYLINDRICAL PROBE D:3MM H:30MM SS (BEVELLED)	TX-CY3H30SS	130045
CYLINDRICAL PROBE D:4MM H:35MM SS	TX-CY4H35SS	130078
CYLINDRICAL PROBE D:5MM H:35MM SS	TX-CY5H35SS	130156
CYLINDRICAL PROBE D:6MM H:35MM SS	TX-CY6H35SS	130066
CYLINDRICAL PROBE D:6MM H:100MM SS	TX-CY6H100SS	130130
CYLINDRICAL PROBE D:10MM H:30MM PEEK	TX-CY10H30PK	130118
CYLINDRICAL PROBE D:10MM H:40MM SS	TX-CY10H40SS	130124
CYLINDRICAL PROBE D:10MM H:56MM SS (ROUNDED END)	TX-CY10H56SS	130172
CYLINDRICAL PROBE D:11.3MM H:25MM SS (KOBE)	TX-CY11.3H25SS	130264
CYLINDRICAL PROBE D:12MM H:35MM PMMA	TX-CY12H35PG	130160
CYLINDRICAL PROBE D:12MM H:34MM SS	TX-CY12H34SS	130164
BLOOM PROBE D:12.7MM H:30MM PMMA	TX-BLMPG	130046
BLOOM PROBE D:12.7MM H:30MM DELRIN	TX-BLMDL	130136
BLOOM PROBE D:12.7MM H:30MM SS	TX-BLMSS	130122
CYLINDRICAL PROBE D:18MM H:40MM SS	TX-CY18H40SS	130159
CYLINDRICAL PROBE D:20MM H:20MM ALUMINIUM	TX-CY20H20AL	130137
CYLINDRICAL PROBE D:20MM H:40MM SS	TX-CY20H40SS	130099
CYLINDRICAL PROBE D:20MM H:40MM PMMA	TX-CY20H40PG	130098
CYLINDRICAL PROBE D:20MM H:10MM PMMA	TX-CY20H10PG	130140
CYLINDRICAL PROBE D:25MM H:40MM SS	TX-CY25H40SS	130037
CYLINDRICAL PROBE D:25MM H:40MM ALUMINIUM	TX-CY25H40AL	130116
CYLINDRICAL PROBE D:25.4MM H:35MM PMMA	TX-CY25.4H35PG	130218
CYLINDRICAL PROBE D:30MM H:30MM ALUMINIUM	TX-CY30H30AL	130061
CYLINDRICAL PROBE D:35MM H:40MM ALUMINIUM	TX-CY35H40AL	130117
CYLINDRICAL PROBE D:35MM H:40MM PMMA	TX-CY35H40PG	130119
CYLINDRICAL PROBE D:36MM H:40MM ALUMINIUM	TX-AACC36	130176
CYLINDRICAL PROBE D:38.1MM H:20MM PMMA	TX-CY38.1H20PG	130215
CYLINDRICAL PROBE D:40MM H:20MM PMMA (CONIQUE 170°)	TX-CY40H20PG	000680
CYLINDRICAL PROBE D:50MM H:50MM ALUMINIUM	TX-CY50H50AL	130126
CYLINDRICAL PROBE D:50MM H:50MM PMMA	TX-CY50H50PG	130161
CYLINDRICAL PROBE D:50.8MM H:20MM PMMA	TX-CY50.8H20PG	130216

Needle probes.

DESIGNATION	PROBE TX-700	ITEM
NEEDLE PROBE D:3MM H:80MM SS	TX-NE3H80SS	130179
NEEDLE PROBE D:1MM H:43MM SS	TX-NE1H43SS	130211

Sphere probes.

DESIGNATION	PROBE TX-700	ITEM
SPHERICAL PROBE D:2MM SS	TX-SP2SS	130212
SPHERICAL PROBE D:5MM SS	TX-SP5SS	130205
SPHERICAL PROBE D:7MM SS	TX-SP7SS	130207
SPHERICAL PROBE D:12.7MM SS	TX-SP12.7SS	130191
SPHERICAL PROBE D:19.5MM SS	TX-SP19.5SS	130134
SPHERICAL PROBE D:20MM SS	TX-SP20SS	130149
SPHERICAL PROBE D:25MM SS	TX-SP25SS	130127

Various probes.

DESIGNATION	PROBE TX-700	ITEM
CLEAVER PROBE L:25MM A:60° SS	TX-CR25A60SS	130064R
MESH PROBE D:50MM SS	TX-MESH	130158R
KNIFE PROBE (10 STAINLESS STEEL BLADES)	TX-CKA	120012R

10.2 Fixtures list

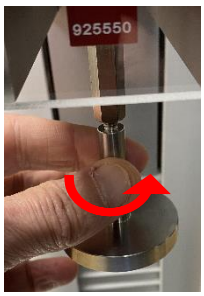
DESIGNATION	FIXTURE TX-700	ITEM	ASSEMBLY
FILM TENSILE FIXTURE	TX-FTF	130092R	10.3.9 (p54)
3 POINTS BEND FIXTURE	TX-TPBF	130091R	10.3.3 (p50)
KRAMER 5 BLADES FIXTURE	TX-KFBF	130094R	10.3.7 (p53)
FILM COMPRESSION FIXTURE	TX-FCF	130031R	10.3.6 (p52)
LIPSTICK CANTILEVER FIXTURE	TX-LCF	130147R	10.3.5 (p52)
WIRE SHEAR FIXTURE	TX-WSF	130076R	10.3.22 (p63)
SYRINGE ACTUATOR FIXTURE	TX-SAF	130145	10.3.10 (p54)
FIXTURE BASE TABLE	TX-FBT	310106R	10.3.2 (p50)
EXTRUSION FIXTURE	TX-ECF	100200	10.3.8 (p53)
MINI OTTAWA FIXTURE	TX-MOF	130097	10.3.1 (p55)
UNCOOKED PASTA FIRMNESS/STICKINESS FIXTURE	TX-UPFSF	130152R	10.3.14 (p57)
VOLODKEVICH BITE JAWS FIXTURE	TX-VBJF	130068	10.3.13 (p56)
MOHRS PROBE	TX-MP	130165R	
SLIDING FRICTION FIXTURE	TX-SFF	120013R	10.3.20 (p61)
DOUGH STICKINESS FIXTURE	TX-DSF	121017	10.3.12 (p55)
PASTA TENSILE FIXTURE	TX-PTF	130168R	10.3.21 (p62)
SPREAD TEST FIXTURE	TX-STF	130157R	10.3.17 (p59)
WARNER-BRATZLER FIXTURE	TX-WBF	130074R	10.3.4 (p51)
THREE RINGS PROBE CUTTING	TX-TRPF	130186	
KIEFFER DOUGH EXTENSIBILITY FIXTURE	TX-KDEF	130148	10.3.26 (p67)
COMPRESSION TOP PLATE FIXTURE	TX-CTPF	130153	10.3.16 (p58)

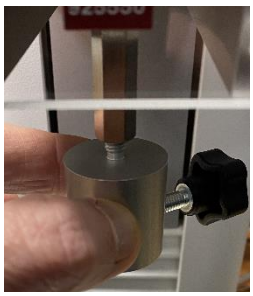
DESIGNATION	FIXTURE TX-700	ITEM	ASSEMBLY
MULTIPLE PROBE FIXTURE	TX-MPF	130170R	10.3.15 (p58)
PIZZA TENSILE FIXTURE	TX-PZTF	130054R	
CONFECTIONARY PENETRATION FIXTURE	TX-CPF	130190	10.3.18 (p59)
ADJUSTABLE VICE FIXTURE	TX-AVJ	130208	
90° PEEL FIXTURE	TX-PF90	130051R	10.3.24 (p65)
ROLLER TENSILE FIXTURE	TX-RTF	130194	10.3.19 (p60)
GENERAL PEELING JIG FIXTURE	TX-GPJF	310105R	10.3.23 (p64)
RAFT STRENGTH FIXTURE	TX-RSF	130021	
MUCO ADHESION FIXTURE	TX-MAF	130181	10.3.25 (p66)
TABLET COATING ADHESION FIXTURE	TX-TCA	900025	
TABLET COMPRESSION FIXTURE	TX-TCF	600500	
TUBE EXTRUSION FIXTURE	TX-TEF	130131R	
COOKED PASTA FIRMNESS/STICKINESS FIXTURE	TX-CPFSF	130139R	
FLAT DOUGH EXTENSIBILITY FIXTURE	TX-FDEF	130151R	
JUNIOR PUNCH FIXTURE	TX-JPF	130167	
HAIR COMBABILITY FIXTURE	TX-HCF	130178	
BOTTLE STICKER PEELING FIXTURE	TX-BSPF	130187R	
AMPOULE BREAKING FIXTURE	TX-ABF	130188	
STAINLESS STEEL BEAKER D:25MM H:35MM WITH HOLDER	TX-BHF	130250	
BI-LAYER SHEAR FIXTURE FOR TABLET AND CAPSULE	TX-BLSF	400043	
CAPSULE EXTRACTION FIXTURE	TX-CEF	400630	
CAPSULE TENSILE FIXTURE	TX-CTF	450010	

10.3 Assembly instructions for probes and fixtures

10.3.1 Installation of probes and upper part of fixtures

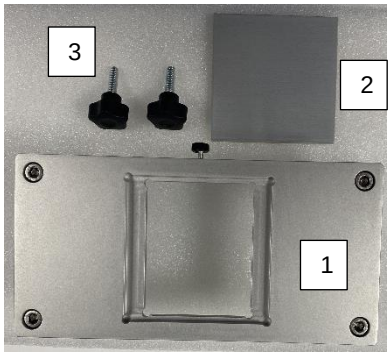
Most probes attach simply by screwing them directly onto the force sensor. This is the case for all those that do not require a particular orientation. For other and for certain upper parts of the fixtures, an intermediate tool (TX-UPH, UNIVERSAL PROBE SUPPORT FOR TX-700, article 000648) is delivered and used. For example, this is the case for the TX-PLC50H10PG square flat probe or the TX-CKA blade probe. Screw the TX-UPH support onto the force sensor then insert the probe or upper part. Orient it correctly and lock it using the screw provided for this purpose.



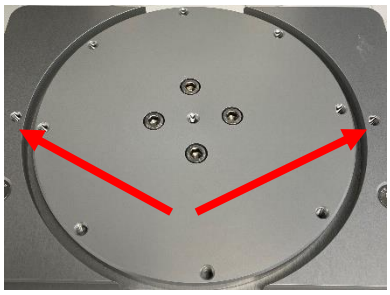


10.3.2 Universal Fixing Table TX-FBT

This table allows the installation of many fixtures. It is delivered assembled.

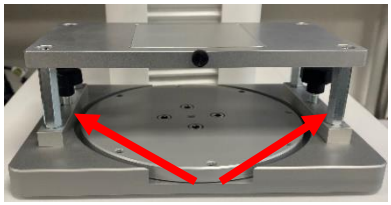


1 - Table
2 - Tray
3 - Hand screw



Step 1:

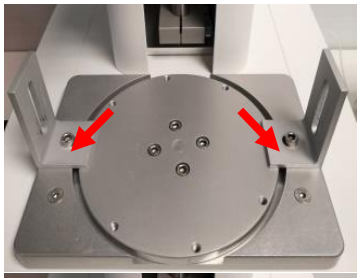
Thumbscrews are used to secure the table to the holes in the TX-700 base. It is necessary to position the turntable of the TX-700 to the lowest position.



Step 2:

Positioning the table using the thumbscrews allows for some necessary freedom when the fixtures are installed on it to achieve optimized alignment. Position the table so that the small screw is in front of you to fix the tray.

10.3.3 3-point bending fixture TX-TPBF

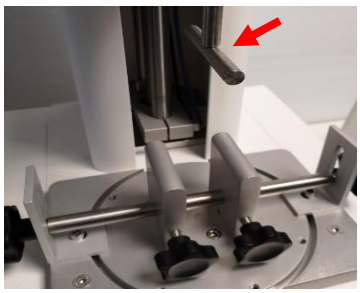


Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The side uprights are fixed to this base using the screws provided (M6*12).

Step 2:

The horizontal fixing bar, equipped with 2 adjustable supports, is screwed to the uprights using the black thumbscrews (M8*20).



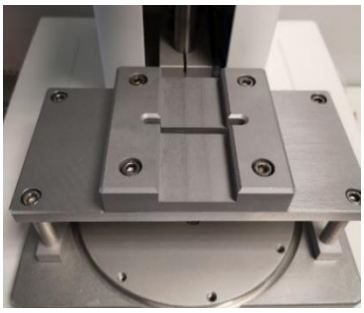
Step 3:

The arm of the TX-700 is keeped up to provide you space during upper part installation.

The T-shaped probe associated with the bending cell is mounted on the TX-UPH adapter and aligned perpendicular to the sample to be tested (see section 10.3.1).

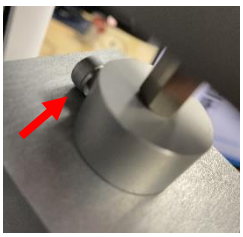
The 3-point flexion fixture TX-TPBF is generally used with Compression and Compression/Relaxation modes.

10.3.4 Warner – Bratzler fixture TW-WBF



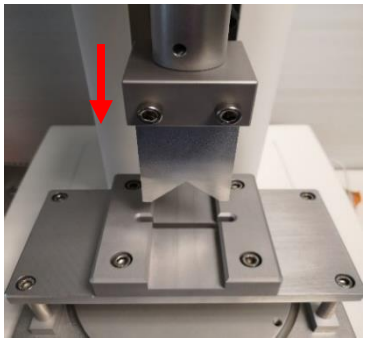
Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The Warner-Bratzler bench is attached to this base using the supplied black hand screws (M6*20) as for the TX-FBT universal table (see section 10.3.2).



Step 2:

The Warner-Bratzler blade holder (V or straight) is fixed on the support supplied with the bench. This bracket is screwed into the force sensor. The screw is locked using the key provided.

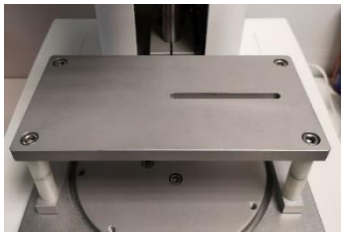


Step 3:

The correct blade path in the slot is checked before the measurement start by adjusting the position using the support for the blade holder (see step 2) and using the thumbscrews used to fix the table on the TX-700 base.

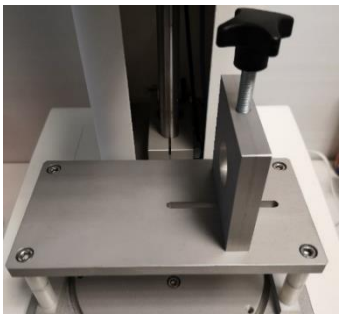
The Warner – Bratzler fixture TW-WBF is generally used with the Compression mode.

10.3.5 Lipstick test fixture TX-LCF



Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The lipstick test bench is attached to this base using the supplied black thumbscrews (M6*20) as for the TX-FBT universal table (see section 10.3.2).



Step 2:

The vertical fixing plate allowing the lipstick fixing is screwed on the bench using the lower thumb screw. The slot in the test bench provides efficient adjustability.

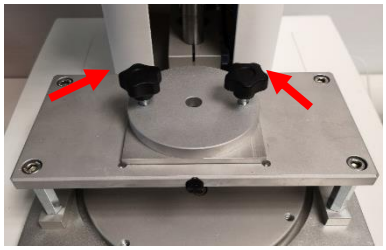
Step 3:

The probe associated with the cell is installed on the TX-UPH universal support. The sample is holding by the upper hand screw and adjustments can be made by positioning it in the universal support (see section 10.3.1) and using the screw of vertical fixing plate (see step 2) .

The lipstick test fixture TX-LCF is generally used with the Compression mode.

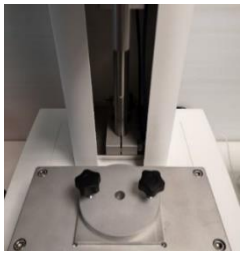
10.3.6 Film compression fixture TX-FCF

Install the table TX-FBT according to section 10.3.2.



Step 1:

The plate is placed on the table TX-FBT. The two thumbscrews assist to hold the film in place during compression.



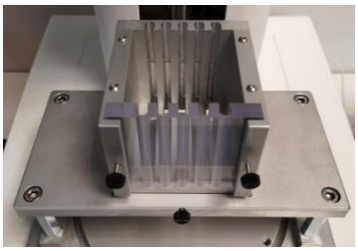
Step 2:

The puncture probe is installed on the sensor and the correct probe alignment with the cell is verified by adjusting the two thumbscrews of the TX-FBT table (see section 10.3.2).

The film compression fixture TX-FCF is generally used with the Compression, Compression/Relaxation and Compression/Relaxation/Tension modes (for testing on adhesive tape, for example).

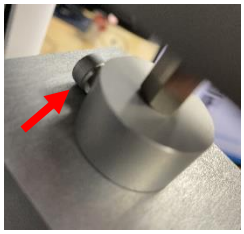
10.3.7 Kramer 5 blades fixture TX-KFBF

Install the table TX-FBT according to section 10.3.2. Do not fully tighten thumbscrews.



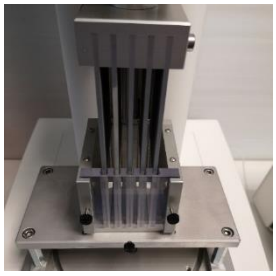
Step 1:

The Kramer cell (ridged inner edges) is inserted into the cutout of the table TX-FBT.



Step 2:

The TX-700 arm is raised so as not to interfere when installing the 5-blade probe. The upper part with the 5 blades is fixed on the support delivered with the bench. This support allowing freedom for the blades orientation is screwed into the force sensor. The screw is locked using the key provided.



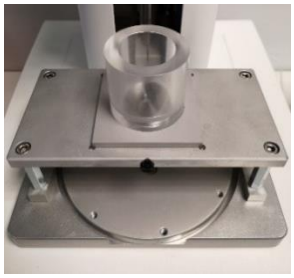
Step 3:

The correct probe descent (without hindrance) in the grooves is checked before carrying out the measurement by adjusting the hand screws of the TX-FBT table (see section 10.3.1) or the positioning of the blade holder in its support (see step 2).

The 5 blade Kramer fixture TX-KFBF is generally used with the Compression mode.

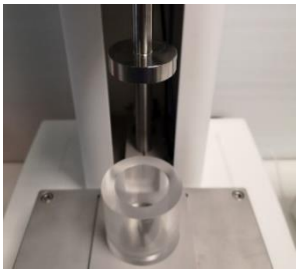
10.3.8 Extrusion cell fixtureTX-ECF

Install the table TX-FBT according to section 10.3.2. Do not fully tighten thumbscrews.



Step 1:

The lower part of the extrusion cell is placed on the TX-FBT bench. A disc is inserted inside according to the extrusion mode chosen: With a 4 or 8 mm diameter hole for direct extrusion and without a hole for retro-extrusion.

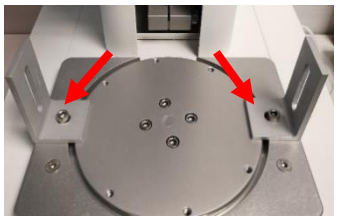


Step 2:

The probe is screwed onto the sensor (see section 10.3.1) according to the extrusion mode chosen (TX-PL38SS probe for direct extrusion and TX-PL34SS probe for retro-extrusion). The arm is lowered slowly in way to make the probe perfectly coincide with the plexiglass cylinder. The screws of the TX-FBT table are tightened once the probe is in place.

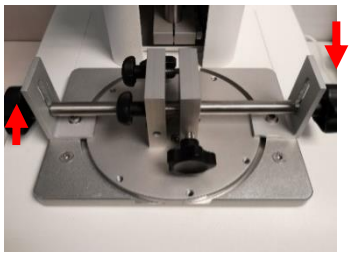
The Extrusion cell fixtureTX-ECF is generally used with the Compression.

10.3.9 Film Tensile Fixture TX-FTF



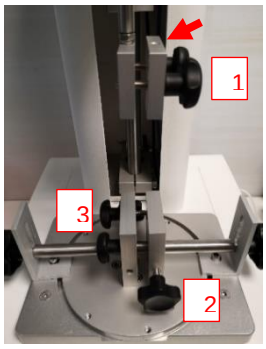
Step 1:

The TX-700 turntable is lowered to a minimum in way to not interfere with the installation. The side uprights are fixed to this base using the screws provided (M6*12).



Step 2:

The horizontal fixing bar, equipped with the 2 adjustable traction supports, is screwed to the uprights using the black thumbscrews (M8*20).

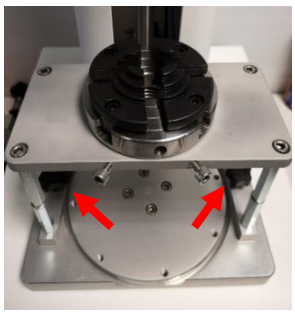


Step 3:

The upper part is inserted into the universal support TX-UPH (see section 10.3.1). The specimen is clamped using the thumbscrews from the top (1). Lower the upper part and align the position of the two adjustable traction supports to align it with the upper part. Lock the position using the hand screw (2). Block the film in the lower part using the two thumbscrews (3).

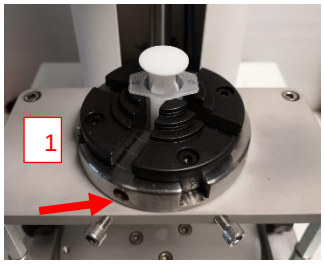
The film tensile fixture TX-FTF is generally used with the Tensile mode.

10.3.10 Syringe test fixture TX-SAF



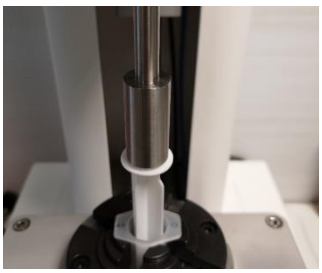
Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The syringe test bench is attached to the device using black thumbscrews (M6*20) as for the TX-FBT base (see section 10.3.2).



Step 2:

The syringe is inserted in the center of the adjustable plate and is blocked using the tool provided by inserting it into the hole provided for this purpose (1).



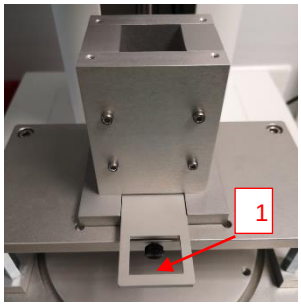
Step 3:

A 40mm plate is attached to the sensor (see section 10.3.1). Lower the TX-700 arm to position the probe at the syringe plunger. Center the probe by playing on the hand screws of the fixing table (see step 1).

The Syringe Test Stand TX-SAF is typically used in Compression mode.

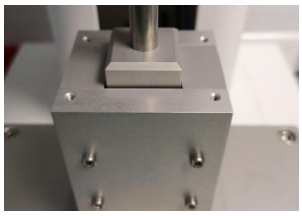
10.3.11 Mini Ottawa fixture TX-MOF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.



Step 1:

The mini-Ottawa cell is set up on the bench. The exchangeable perforated blade is placed in the lower part of the cell (1).



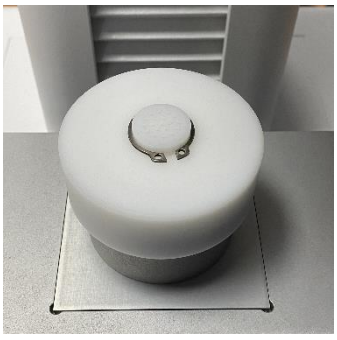
Step 2:

Raise the TX-700 arm as far as possible. The upper part is installed on the TX-UPH support (see section 10.3.1). Slowly lower your arm to bring it closer to the cell. Align the upper and lower part by playing on the table TX-FBT thumbscrews and the TX-UPH support.

The Mini Ottawa fixture TX-MOF is generally used with the Compression mode.

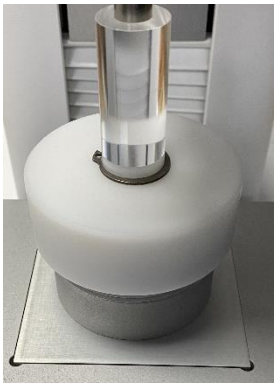
10.3.12 Dough Stickiness fixtureTX-DSF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.



Step 1:

The bucket with its lid is already screwed onto the plate. Position it on the table TX-FBT. Screw the TX-CY20H40PG probe onto the force sensor (see section 10.3.1).



Step 2:

Slowly lower the arm of the TX-700 to present it facing the central part of the lid equipped with a circlip. Align the two parts by playing on the table TX-FBT. Once the position has been found, lock the hand screws of the table TX-FBT (see section 10.3.2).

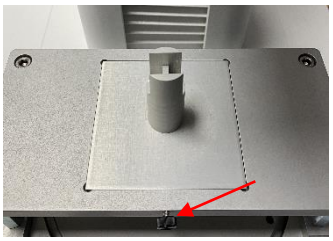
Step 3:

The lid can be completely unscrewed to fill in the cup with the dough. When the lid is repositioned, it will push on the dough which will come out through the holes present in the central part of the lid.

The Dough Stickiness fixture TX-DSF is generally used with the Compression/relaxation/traction mode (set a relaxation time to zero).

10.3.13 Volodkevich jaw fixture TX-VBJF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.

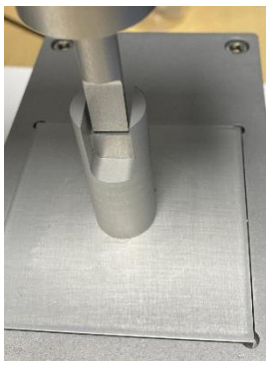


Step 1:

Place the plate equipped with the lower jaw on the TX-FBT table. You can lock it with the small screw. The jaw can be oriented in two ways.

Step 2:

Insert the upper jaw in the support TX-UPH (see section 10.3.1). Orient it like the lower jaw.



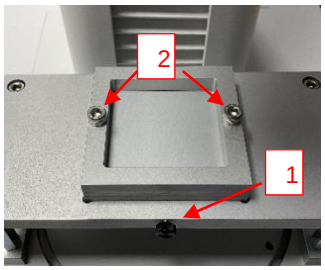
Step 3:

Slowly lower the TX-700 arm so as to present the two jaws. Play on the hand screws of the TX-FBT table to adjust the position of the lower jaw and on the TX-UPH support for the upper jaw to align them correctly. Block all the screws once the ideal position is obtained.

The Volodkevich jaw fixture TX-VBJF is generally used with the Compression mode.

10.3.14 Uncooked pasta firmness/stickiness fixture TX-UPFSF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.

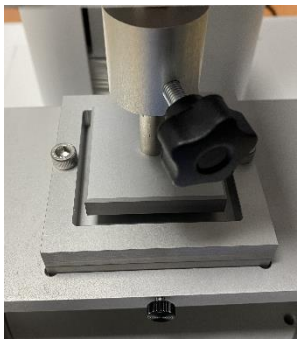


Step 1:

Place the plate equipped with the pasta support on the table TX-FBT. You can lock it using the small screw (1). The two screws present on this support make it possible to block the pasta (2).

Step 2:

Insert the upper square plate into the TX-UPH support (see section 10.3.1). Orient it to align it with the bottom bracket.



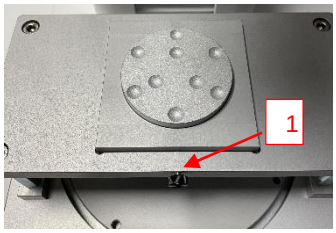
Step 3:

Slowly lower the arm of the TX-700 so as to present the two parts. Play on the hand screws of the table TX-FBT to adjust the position of the lower support and on the support TX-UPH for the upper plate in order to align them correctly. Block all the screws once the ideal position is obtained.

The Uncooked pasta firmness/stickiness fixture TX-UPFSF is generally used with Compression/relaxation/tensile modes.

10.3.15 Multi-point probe fixture TX-MPF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.

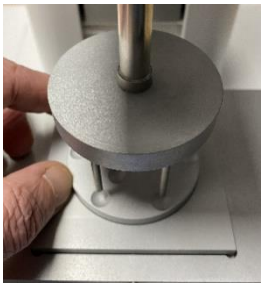


Step 1:

Place the plate equipped with the lower multi-point support on the table TX-FBT. You can lock it using the small screw (1). The multi-pointed bottom support remains free motion.

Step 2:

Screw the upper part with the spikes directly into the force sensor (see section 10.3.1).



Step 3:

Slowly lower the TX-700 arm so as to present both parts. Play on the hand screws of the table TX-FBT (see section 10.3.2) and on the multi-point lower support rotation to align and center the points on the lower depressions. Block all the screws once the ideal position is obtained.

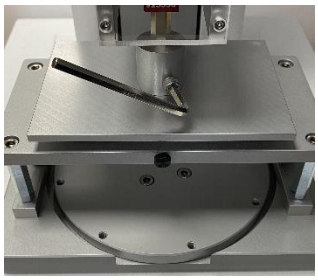
The Multi-point probe fixture TX-MPF is generally used with Compression or Compression/relaxation modes.

10.3.16 Compression top plate fixture (10X15CM) TX-CTPF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.

Step 1:

Insert the 10x15cm tray into the support TX-UPH (see section 10.3.1). Orient it to align it with the table TX-FBT then block.



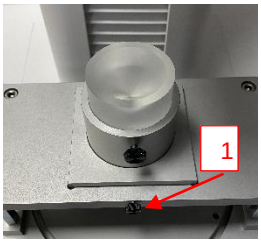
Step 2:

Slowly lower the arm of the TX-700 so as to present the two parts. Play on the hand screws of the TX-FBT table to adjust the position of the table and on the TX-UPH support for the top plate in order to align them correctly. Block all the screws once the ideal position is obtained.

The Compression top plate fixture (10X15CM) TX-CTPF is generally used with Compression or Compression/relaxation modes.

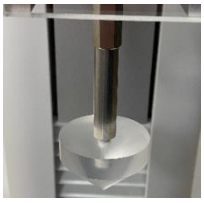
10.3.17 Spreading test fixture TX-STF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.



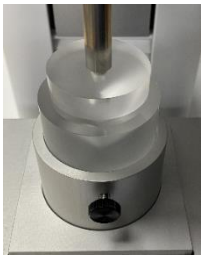
Step 1:

Place the plate equipped with the lower support with a bucket on the table TX-FBT. You can lock it using the small screw (1).



Step 2:

Screw the upper part with the cone directly into the force sensor (see section 10.3.1).



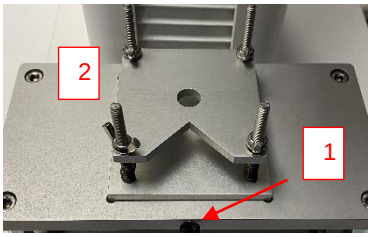
Step 3:

Slowly lower the TX-700 arm so as to present the two parts. Play on the hand screws of the table TX-FBT to adjust the position of the table and on the support TX-UPH for the upper part to align them correctly. Block all the screws once the ideal position is obtained.

The Spreading test fixture TX-STF is typically used in Compression, Compression/Relaxation and Compression/Relaxation/Tension modes.

10.3.18 Confectionery penetration fixture TX-CPF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.



Step 1:

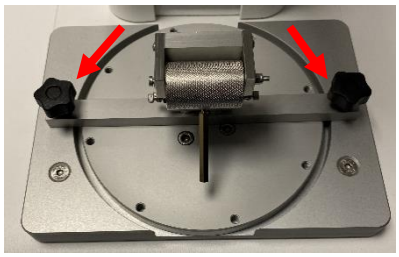
Place the plate equipped with the lower support for holding the samples on the TX-FBT table. You can lock it using the small screw (1). The four butterfly screws are used to hold the sample during measurement.

Step 2:

Install the upper probe TX-CY6H35SS on the force sensor (see section 10.3.1). Slowly lower the arm of the TX-700 so as to present the two parts. Adjust the TX-FBT table thumbscrews to adjust the position of the table and center the top probe with the hole in the candy rack. Block all the screws once the ideal position is obtained.

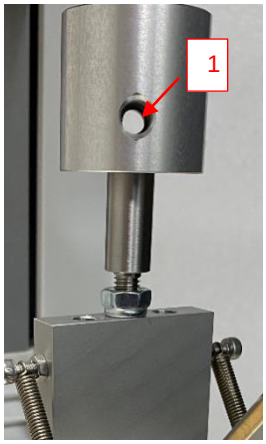
The Confectionery penetration fixture TX-CPF is typically used in Compression, Compression/Relaxation and Compression/Relaxation/Traction modes.

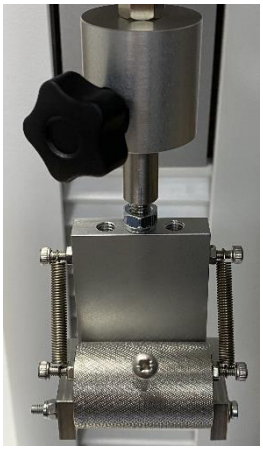
10.3.19 Roller tension fixture TX-RTF



Step 1:

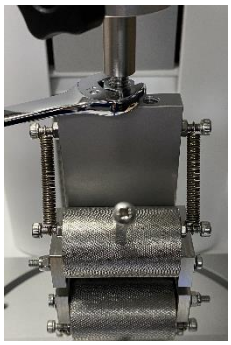
The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The bottom bracket is secured to the base using the two thumbscrews. Present the roll in front of you.





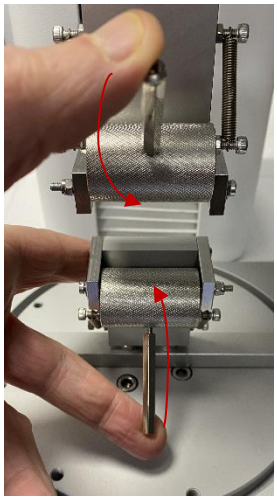
Step 2:

Insert the upper roller support into the TX-UPH support (see section 10.3.1). Orient to align the two holes (1). Screw the hand screw in the axis of the upper support to block it.



Step 3:

Slowly lower the arm of the TX-700 so as to present the two parts. To reorient the upper roller, use the wrench to unscrew the nut, turn the upper roller to align it with the lower roller, then lock the nut.

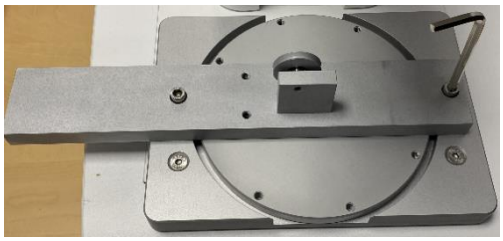


Step 4:

To install the sample, gently activate the rods present on the two rollers. This will cause the rollers to move away from their support. By releasing these rods, the rollers will block the sample.

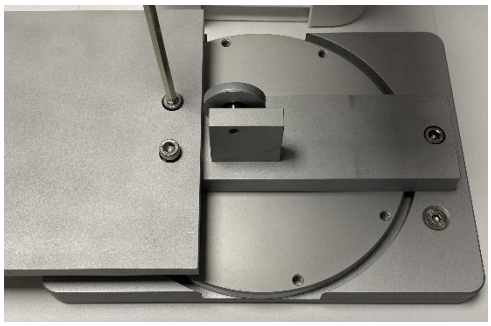
The Roller tension fixture TX-RTF is generally used with Tensile mode.

10.3.20 Friction slidding fixture TX-SFF



Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The lower support with the pulley is fixed on the base using the two M6 screws and the key.

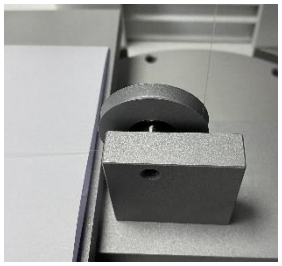


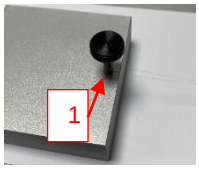
Step 2:

Position the sample holder, orient it correctly and screw it onto the support with the pulley using 2 M6 screws.

Step 3:

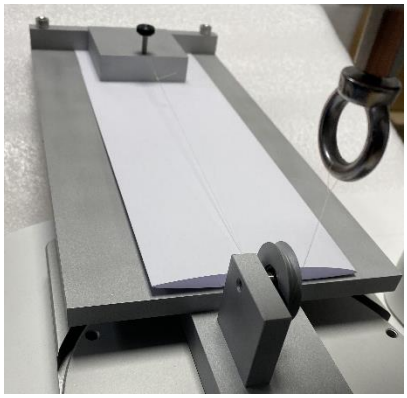
On the other end of the sample holder, install the bar to block the sample on its support. Screw the ring with the wire attached onto the force sensor (see section 10.3.1).





Step 4:

Lower the arm of the TX-700 enough to pass the wire through the pulley and block it with the screw present on the "shoe" (1).

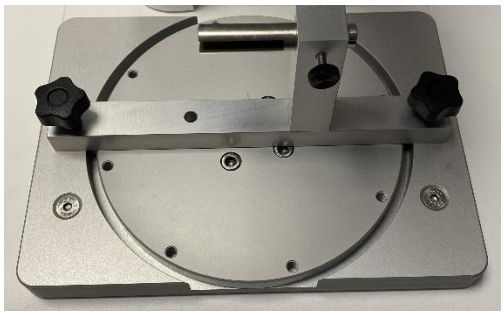


Step 5:

Lower the arm of the TX-700 far enough to position the "scrubber" against the bar at the end of the sample holder. The face of the "scrubber" in contact with the sample can be modified according to the needs of the measurement using a double-sided adhesive tape.

The Friction slidding fixture TX-SFF is generally used with tensile mode.

10.3.21 Pasta tensile fixture TX-PTF



Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The bottom bracket is secured to the base using the two thumbscrews.

Step 2:

The upper part is screwed using the hand screw on the force sensor (see section 10.3.1).

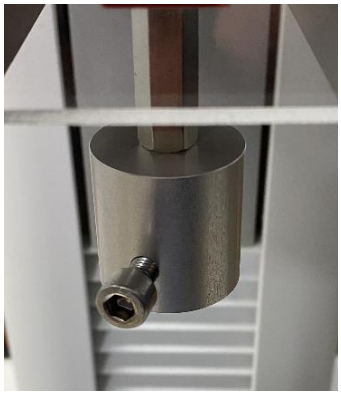
Step 3:

Slowly lower the arm of the TX-700 so as to present the two parts. To reorient the upper part, unscrew the hand screw (1) and align the two parts correctly then lock the hand screw (1). The small screws (2) hold the two sample holders in the desired position.

The Pasta tensile fixture TX-PTF is generally used with tensile mode.

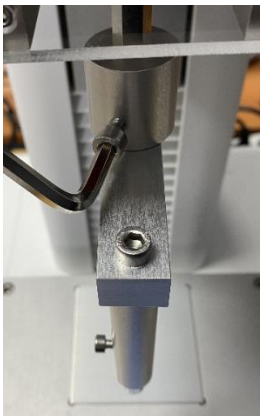
10.3.22 Wire Shear Fixture TX-WSF

This accessory can be used with simple rotating plate or with the table TX-FBT (see section 10.3.2 to install this table).



Step 1:

Install the holder TX-UPH (see section 10.3.1).



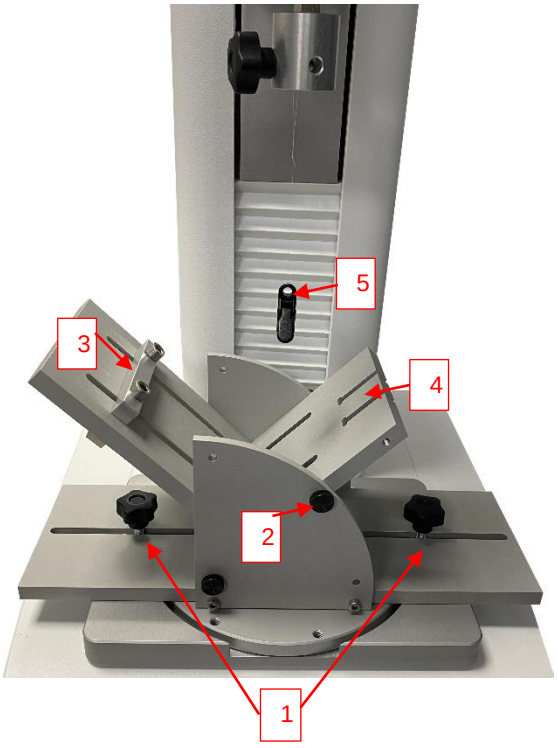
Step 2:

Insert the Wire fixture inside holder TX-UPH. Align it and lock it with the screw.

The Wire Shear Fixture TX-WSF is generally used in compression mode.

10.3.23 General Peeling Jig Fixture TX-GPJF

The turntable of the TX-700 is lowered to a minimum so as not to interfere with the installation



Instal the two screw (1) on TX-700 base. Don't fully tighten thumbscrews.

The screw (2) (two screw on both side) allow you to change orientation of cup holder with 3 angles: 0°, 45° and 90°.

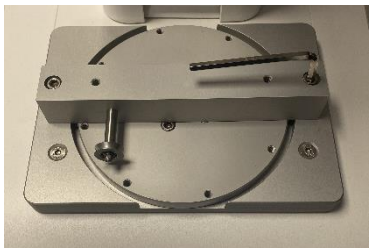
Part (3) can be moved to lock cup on its holder. Cup will be also lock with strap by passing it inside part (4).

The small clamp (5) will be hanged on lid of cup.

When correct positionning is achieved, you can fix screw (1).

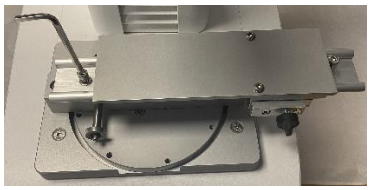
The General Peeling Jig Fixture TX-GPJF is generally used with tensile mode.

10.3.24 90° Peel Fixture TX-PF90



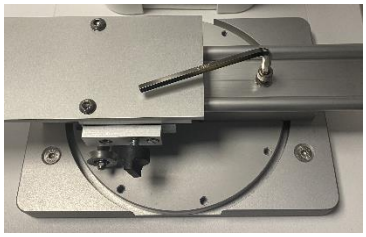
Step 1:

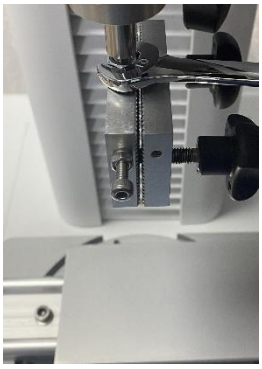
The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. The bottom bracket is secured to the base using the two M6 screws.



Step 2:

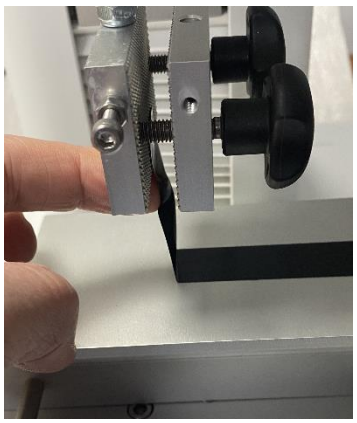
Position the sample holder, orient it correctly and screw it onto the bottom bracket by using 2 M6 screws.





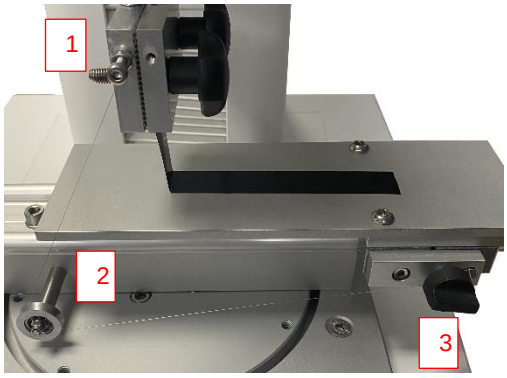
Step 3:

Screw the universal holder TX-UPH on load sensor and instal the upper jig inside. You can use nut with tool provided to align upper part with sample holder. Loosen it, change orientation of jig and tighten it to lock.



Step 4:

Mode down the jig at desired position. Stick the sample on holder and keep free part to install it inside jig. Lock sample inside jig by using the two thumbscrews.



Step 5:

Attach the cord on screw 1, pass it on pulley and attach it on screw 3. Don't turn too much this screw 3 otherwise sample holder will not be able to move while test. Try to tension this cord.

The 90° Peel Fixture TX-PF90 is generally used with tensile mode.

10.3.25 Muco Adhesion fixture TX-MAF

Step 1:

The TX-700 turntable is lowered to a minimum so as not to interfere with the installation. Place the magnetic stirrer on base.

Step 2:

Remove lid of sample holder by unscrew thumbscrews. Place sample (mucosa) and replace lid and lock it with thumbscrews.

Step 3:

Stick double face tape on upper probe TX-BLMPG and stick tablet on it.

Step 4:

Place stirrer on bottom part of sample holder.

Step 5:

Place entire sample holder inside 600ml beaker. Screw upper probe TX-BLMPG on force sensor.

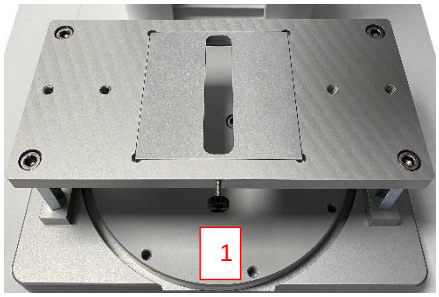
Step 6:

Move down arm of TX-700 to place upper probe near to sample holder. Align it with hole. Move up arm, fill in beaker with water or other medium and turn ON magnetic stirrer.

The Muco Adhesion fixture TX-MAF is generally used with Compression/relaxation/tensile modes (relaxation time phase need to be set at 0) .

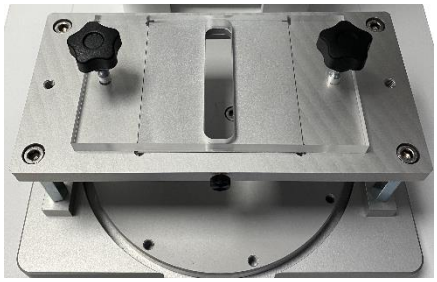
10.3.26 Kieffer Dough Extensibility Fixture TX-KDEF

Install the table TX-FBT (see section 10.3.2). Do not fully tighten thumbscrews.



Step 1:

Place the bottom aluminium part on table TX-FBT. You can lock it using the small screw (1).



Step 2:

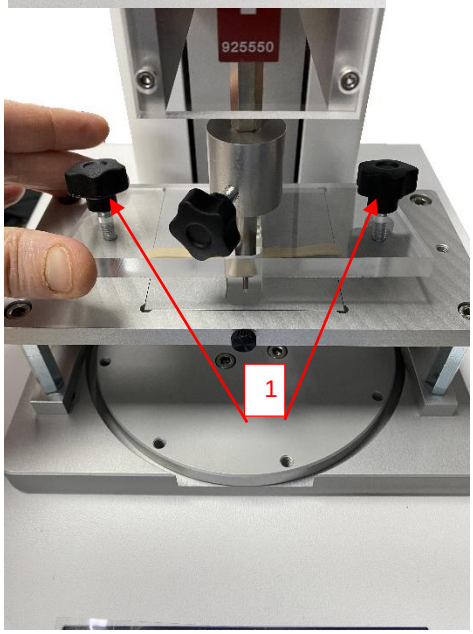
Place the PMMA part of Keiffer cell. Don't fix it with thumbscrews.

Step 3:

Screw the universal holder TX-UPH on load sensor and instal the upper probe inside it. Please be sure that it is aligned with slit from lower part.

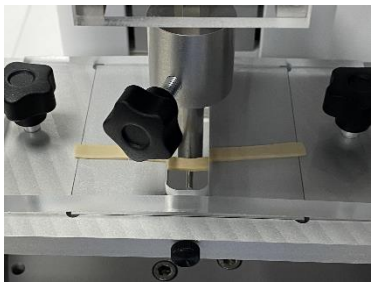
Step 4:

Move down arm until upper probe goes through slit inside sample holder. Align upper part and lock it with thumbscrew from universal support TX-UPH. Block the screws from table TX-FBT once the ideal position is obtained.



Step 5:

Move a little bit PMMA part from holder, place your sample to be sure that it will be pulled when upper probe will move up. Replace PMMA part and fix it with thumbscrew (1).



The Kieffer Dough Extensibility Fixture TX-KDEF is generally used with tensile mode.

11 TECHNICALES SPECIFICATIONS

Device Type: Texture Analyser is working on Compression and Tensile mode.

Force sensor available:

10 N (1 kg), Resolution 0,001 N (0,1 g)

20 N (2 kg), Resolution 0,001 N (0,1 g)

50 N (5 kg), Resolution 0,001 N (0,1 g)

100 N (10 Kg), Resolution 0.01 N (0.1 g)

250 N (20 kg), Resolution 0,01 N (1 g)

500 N (50 kg), Resolution 0,01 N (1 g)

Accuracy: +/- 0,5 % of full scale

Speed range: From 0,1 to 10 mm/s +/-0,2 %

Movement: Total: 200 mm / Resolution: 0.01 mm

Temperature: The TX-700 is equipped with probe Pt100 to measure temperature from -20°C to 120°C.

Display: Touch screen 7''

Display settings: Strength – Speed – Distance – Temperature - Time – Probe or Fixture – Day/time – Strength unit choice: Gramme or Newton

Languages: French/English/Turkish/German/Italian

Compatible Accessories: All probes and fixture

Power supply: 90-240 VAC 50/60 Hz

PC port: Port RS232

Printer Connexion: Port USB HOST Compatible PCL/5

Options: Calibration Kit: 10-20N (REF 150060), 50-100-250N (REF 150070), 500N (REF 150080), Software (N311000+N311777+T103000)

Dimension and Weight: Dimension: P610 x L340 x H800, Weight: 22 kg

12 ANNEXES

Some of information and properties given on this following table can be done only by external software as Excel.

AVAILABLE METHODS FOR OUR TEXTURE ANALYZER:

METHODS	PROPERTIES	PROBES & FIXTURES	LOAD CELLS
COMPRESSION	Compressibility, compactability, springiness, relaxation, crush strength, firmness, elastic, work/ load/ deflection at rupture, maximum load.	Flat probes - Cylindrical probes (p52), TX-FCF (p54), TX-MOF - TX-UPFSF (p55), TX-CTPF (p56).	100N -250N -500N (p50-51).
PUNCTURE PENETRATION	Firmness, gel strength, dipping consistency, product toughness, fracture force, 'cake' breaking strength, semi-solid consistency, actuation force.	Cylindrical probes - ½ Spherical probes - Spherical probes - Needles - Conical probes (p52), TX-FCF - TX-SAF (p54), TX-MPF - TX-CPF - TX-AVJ (p56).	10N-20N-50N-100N-250N-500N (p50-51).
CUTTING SHEARING	Bite force, firmness, toughness, shear force.	Knife probe - Clever probe - Mesh probe (p52), TX-KFBF - TX-WSF - TX-ECF (p54), TX-VBJF - TX-MP - TX-STF -TX-WBF (p55), TX-TRPF (p56).	50N-100N-250N-500N (p50-51).
FRACTURE BENDING	Brittleness, snapping force, tip strength, flexibility, force to bend, bend modulus, fracture force, flexure modulus.	TX-TPBF - TX-FCF - TX-LCF (p54).	100N-250N-500N (p50-51).
TENSILE	Tensile strength, tensile 'break point', extensibility, stretchiness, elongation, burst point, tensile modulus, strength and strain to fracture, fracture toughness.	TX-FTF (p54), TX-PTF (p55), TX-KDEF - TX-RTF (p56), TX-RSF (p57).	10N-20N-50N-100N-250N-500N (p50-51).
ADHESION	Adhesiveness, stickiness, tackiness, peel force, cohesiveness, tailing, stringiness, legging, work of adhesion.	TX-FCF (p54), TX-UPFSF - TX-DSF (p55), TX-PF90 - TX-GPJF (p56), TX-MAF (p57).	10N-20N-50N-100N-250N-500N (p50-51).

• Touch screen protector (Ref. 000630).

• Calibration Kit : 10-20N (Ref. 150060) ; 50-100-250N (Ref. 150070) ; 500N (Ref. 150080).

• RheoTex software (Ref. N311000+N311777+T103000)

• Load sensor : 10N (Ref. N150010); 20N (Ref. N150020); 50N (Ref : N150050); 100N (Ref. N150100); 250N (Ref. N150250); 500N (Ref. N150500).

• Emergency stop button (Ref. 100700)

CE Conformity

The following instrument: *Texture analyser TX-700*

Is approved in accordance with European directive:

Electromagnetic compatibility 2004/108/CE

Security of low voltage equipment 2006/95/CE

This conformity is insured by the respect of harmonized standards:

EN61326-1 (January 2013)

EN61010-1 (October 2010)

Date: 03 March 2023

Eric Martino

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