



Measurement of the volumetric capacity of anilox rolls

User manual

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ANILOX Research Technologies

1. Instrument configuration

The instrument is composed of a user interface module, connected to a probe by a flexible cable:



2. Change the batteries

Please note that a new AniCheck device is delivered with the batteries already inserted. Follow the instructions below to change the batteries:

- Loosen the screw of the battery compartment on the back-side of gauge and open the battery
- Compartment lid (e.g. by using a coin).
- Insert the batteries supplied with the gauge into the battery compartment. Respect polarities (as shown below).
- Close lid and fix screw of battery compartment lid.



3. Switching on and off the instrument

ON / OFF button
(press during 2 seconds to
switch on)

- Switch on : press the red button on the left during 2 seconds.
- Switch off : press briefly the red button



4. Knobs

Calibration
(chapter 7)

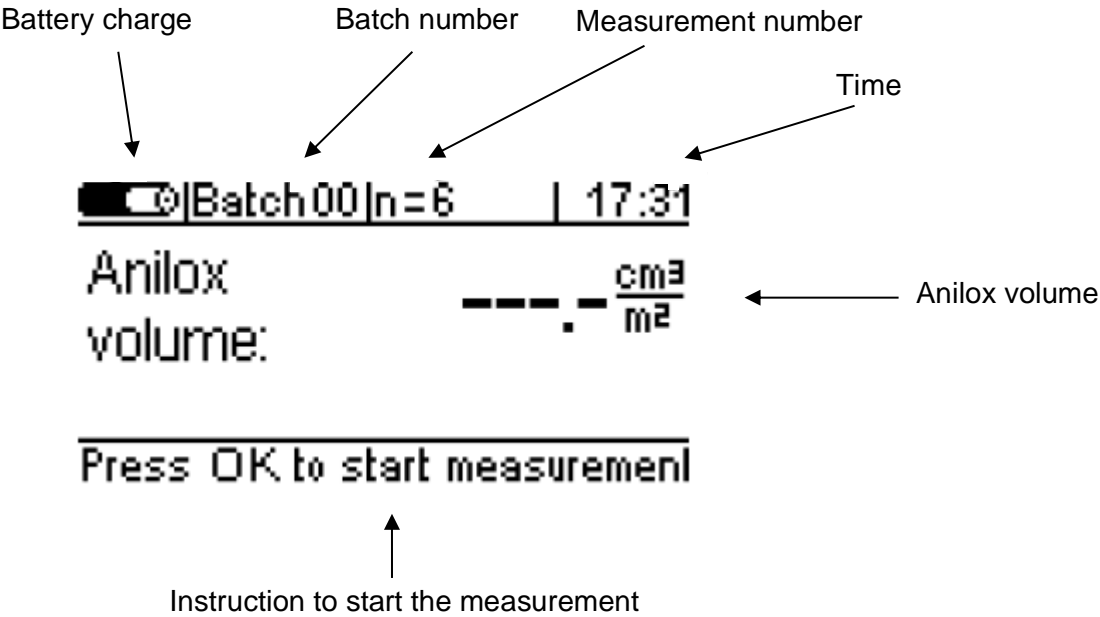
Parameters
(chapter 8)

Storage of the measurements,
and measurement statistics
(chapter 6.3)



5. Initial screen

The initial screen contains the following information:

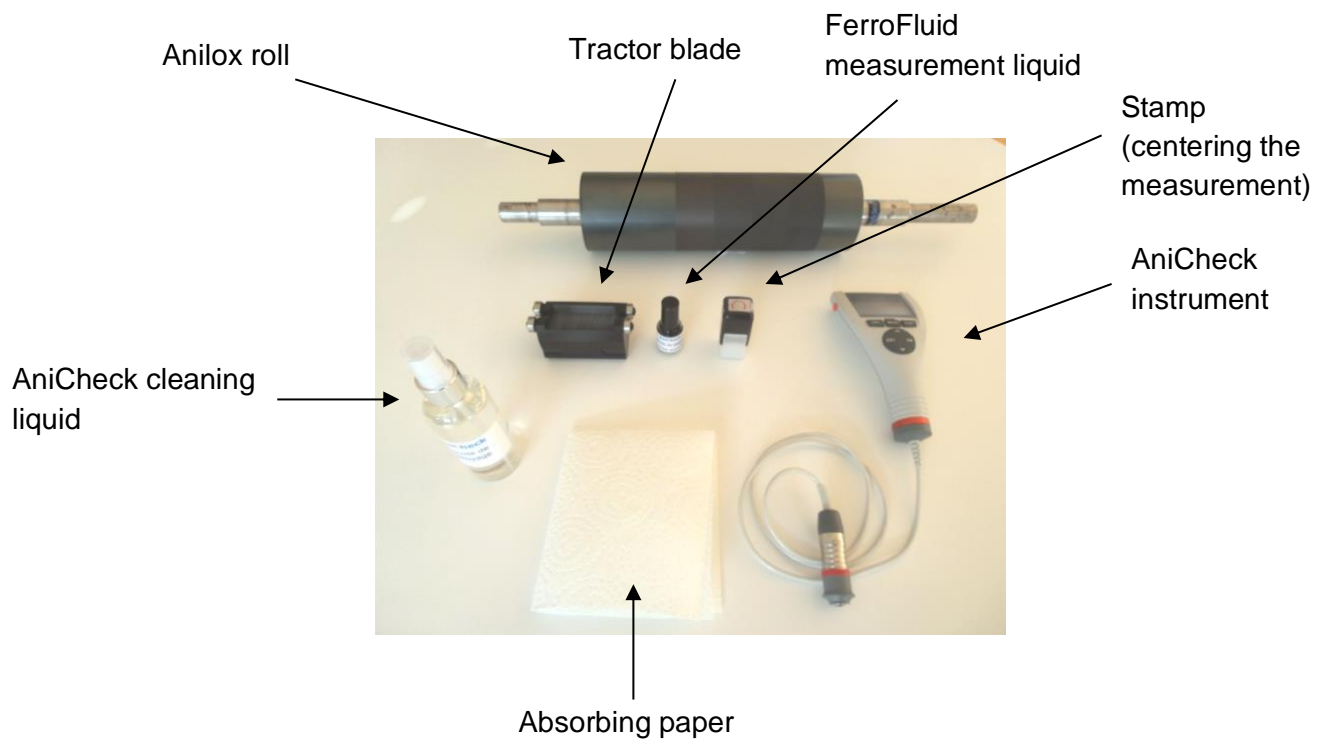


6. Performing a measurement

6.1 Preparation

The following components are necessary in order to perform a measurement of the anilox volume :

- Anilox roll to be measured
- AniCheck instrument
- Tractor blade
- FerroFluid (FerroFluid)
- Stamp (used for centering the measurement)
- Absorbing paper
- Cleaning liquid



6.2 Measurement

AniCheck instrument

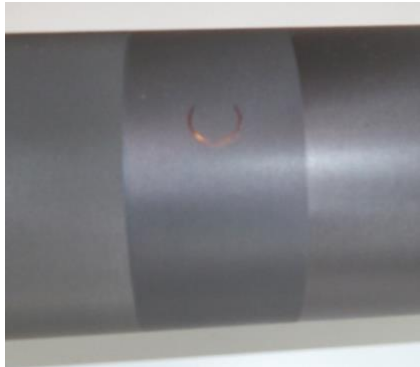
Anilox roll

Action



Use the stamp in order to mark the measurement zone


```
Batch00|n=1 | 10:37
-----
Volume      cm³
anilox:    --- m²
-----
Pressez OK pour mesurer
```



The measurement zone lies inside the circle. The probe has to be positioned in the circle.



Press OK to start the measurement sequence

 Make the first measurement with no fluid.
Time remain: 15 sec



Do the *first* measurement by applying the probe on the anilox surface, without FerroFluid.

This measurement has to be done within 15 seconds.



Make the second measurement with no fluid.

Time remain: 2 sec



Do the *second* measurement by applying the probe on the anilox surface, without FerroFluid.

This measurement has to be done within 10 seconds.



Make the third measurement with no fluid.

Time remain: 2 sec



Do the *third* measurement by applying the probe on the anilox surface, without FerroFluid.

This measurement has to be done within 10 seconds.

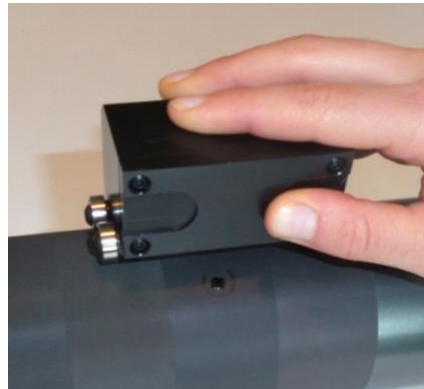


Apply the FerroFluid on the roll surface, in the form of a line about 1 cm long.



Apply and spread the fluid on the surface. (OK)

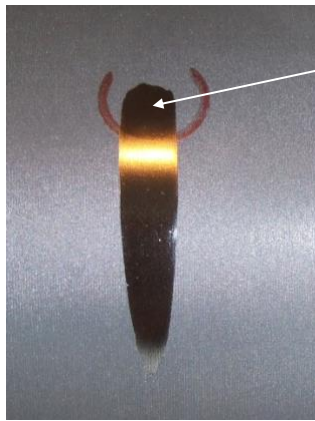
Time remain: 111 sec



Carefully spread the liquid with the tractor blade

This step has to be done within 120 seconds (2 minutes)





The probe has to be positioned in the circle



Make the first measurement on the fluid.

Time remain: 4 sec



Do the *first* measurement by applying the probe on the anilox surface with the liquid. This measurement has to be done within 10 seconds.



Make the second measurement on the fluid.

Time remain: 0 sec



Do the *second* measurement by applying the probe on the anilox surface with the liquid. This measurement has to be done within 10 seconds.



Make the third measurement on the fluid.

Time remain: 2 sec



Do the *third* measurement by applying the probe on the anilox surface with the liquid. This measurement has to be done within 10 seconds.

Batch00 | n=7 | 17:43

Anilox volume: **2.8** $\frac{\text{cm}^3}{\text{m}^2}$

Press OK to start measurement


The volumetric capacity of the anilox roll is shown on the screen.

It is displayed either in cm^3/m^2 or in BCM/in^2 (see section 8.1 to change the unit)



Clean the FerroFluid on the roll surface with the AniCheck cleaning fluid.



 Time intervals between measurements on the fluid must not exceed 10 sec.

Press OK for initial menu.

If the time limit for a measurement is exceeded, a warning message is displayed.

Validate by pressing OK.

The measurement process has to be restarted from the beginning.



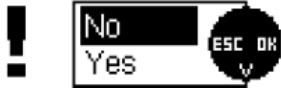
Clean the probe tip after the measurement, with the wipe provided in the kit.

Warning : do not use alcohol to clean the probe tip.

Preferably use the wipes from the box provided in the kit. Alternatively a soft dry absorbing paper can be used.



Are you sure ?



A measurement can be interrupted at any time by pressing ESC.

The interruption has to be confirmed by selecting "Yes" and pressing OK.

6.3 Memory

The AniCheck instrument automatically stores all measurements (up to 10000 measurements).

6.3.1 How to read the measurements :



Press the STAT knob



Select the function "Readings" with the arrows.

Validate by pressing OK.

Batch 00 Readings $\frac{\text{cm}^3}{\text{m}^2}$

All stored measurements are displayed.

When there are more than 4 measurements, press the up/down arrows of the central knob to display more measurements.

3	NFe	5.02
4	NFe	4.85
5	Fe	5.78
> 6	Fe	4.47

Measurement number

Roll base material:
NFe: aluminum base
Fe: steel base

Measured volume

6.3.2 Delete the measurements :



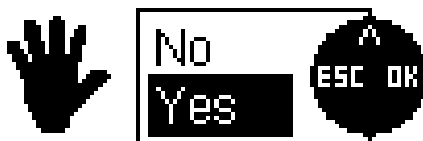
Press the STAT knob



Select the function "Delete" with the arrows.
Validate by pressing OK.



Select "Yes".
Validate by pressing OK.



Warning : all stored measurements are deleted

6.3.3 Statistics :



Press the STAT knob



Select the function "Statistics" with the arrows.
Validate by pressing OK.

Batch 00 Statistics					
Number of measurements	→	n	7	\bar{x} 4.88 $\frac{cm^3}{m^2}$	← Mean value
Max value	→	↑	5.78 $\frac{cm^3}{m^2}$	σ 0.50 $\frac{cm^3}{m^2}$	← Standard deviation
Min value	→	↓	4.19 $\frac{cm^3}{m^2}$	v 10.2%	← Variance

Notice: statistics are useful when several measurements are done on the same roll

7 Transfer of measurements to a smartphone or a computer

The measurements are automatically stored in the instrument. See the section 6.3 on how to read and manage these stored measurements. There are two possibilities to transfer the measurements to another device : to an Excel file on a computer via the MSoft software, or to an Android Smartphone via the MiniView application.

7.1 Transfer to an Excel file on a computer (PC)

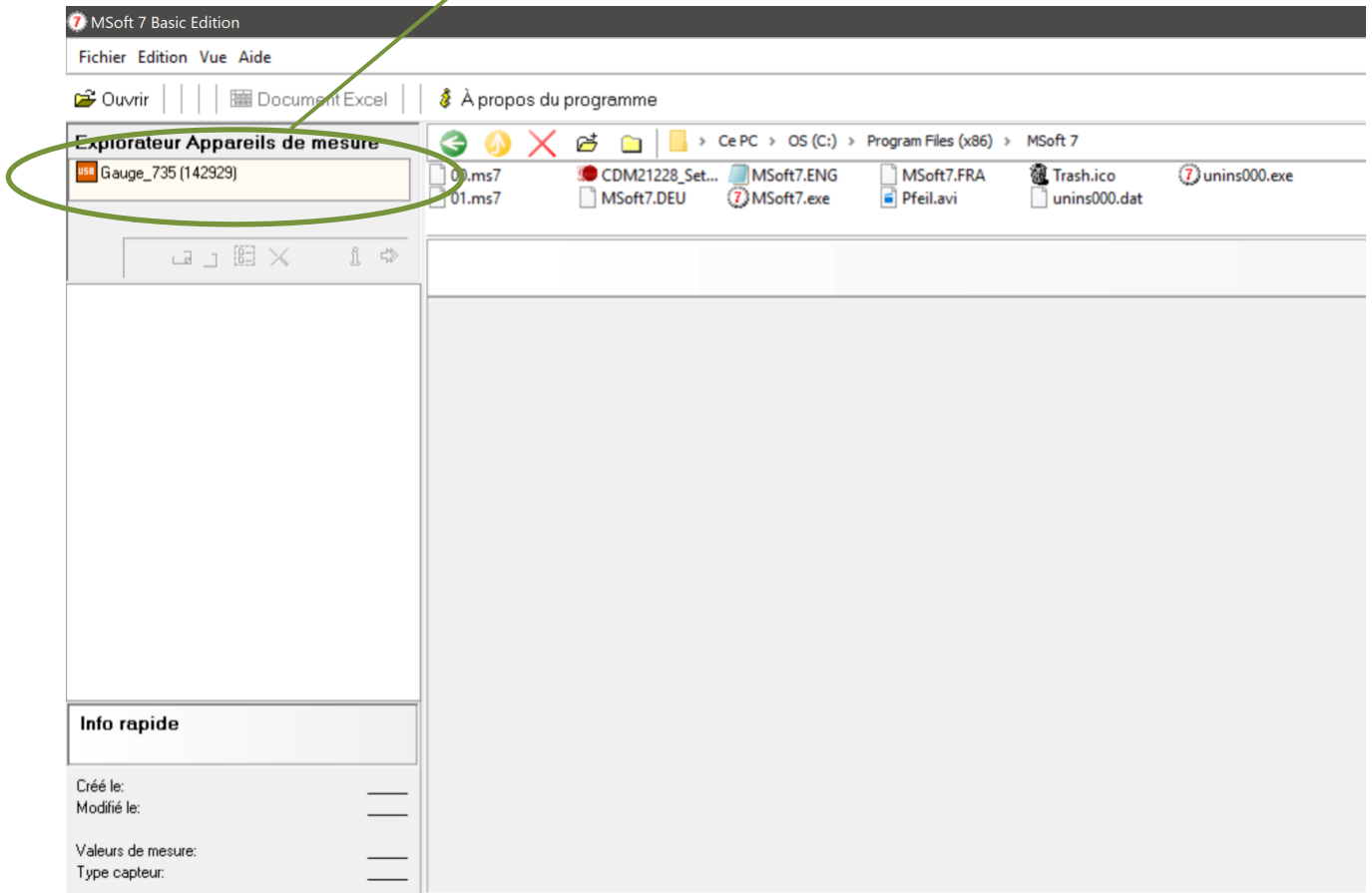
This functionality is only available on a PC computer (no availability on Apple or Linux computer).

- Download and install the MSoft software, which is available for download on the Anilox Research Technologies web site (www.aniloxresearch.com).
- Link the Anicheck instrument with the PC via the supplied USB cable (one such cable is part of the original Anicheck kit).
- Switch on the Anicheck instrument.
- Start the MSoft software on the PC.

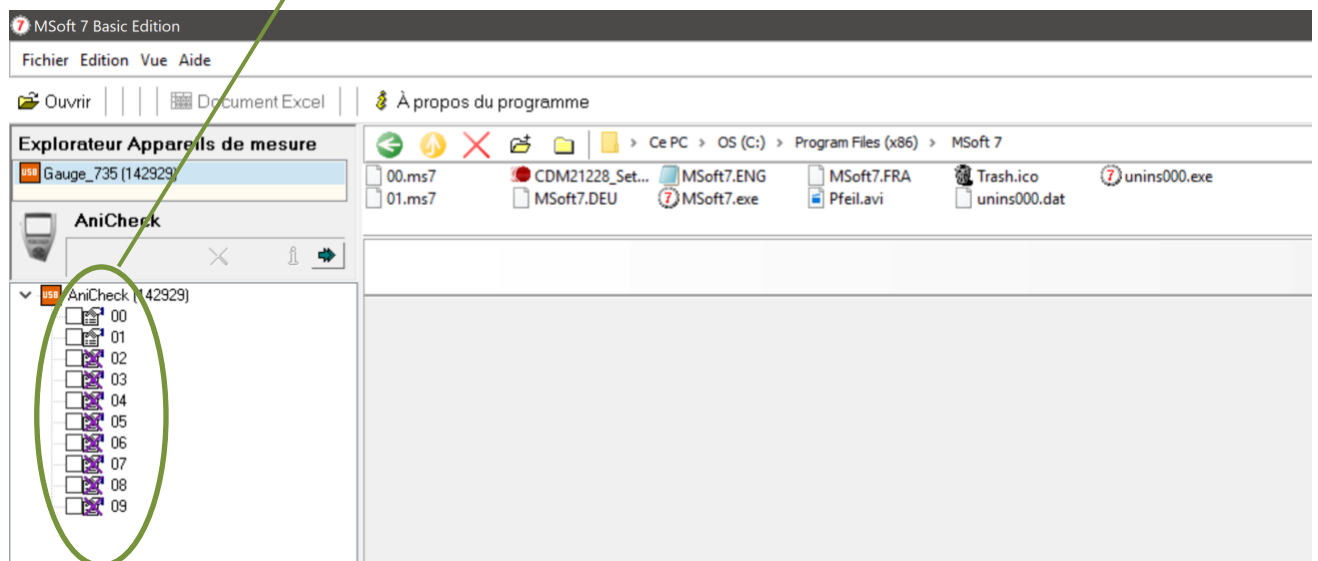


The following pictures show the MSoft screen :

Your Anicheck instrument appears here.
Click on this area to select it.

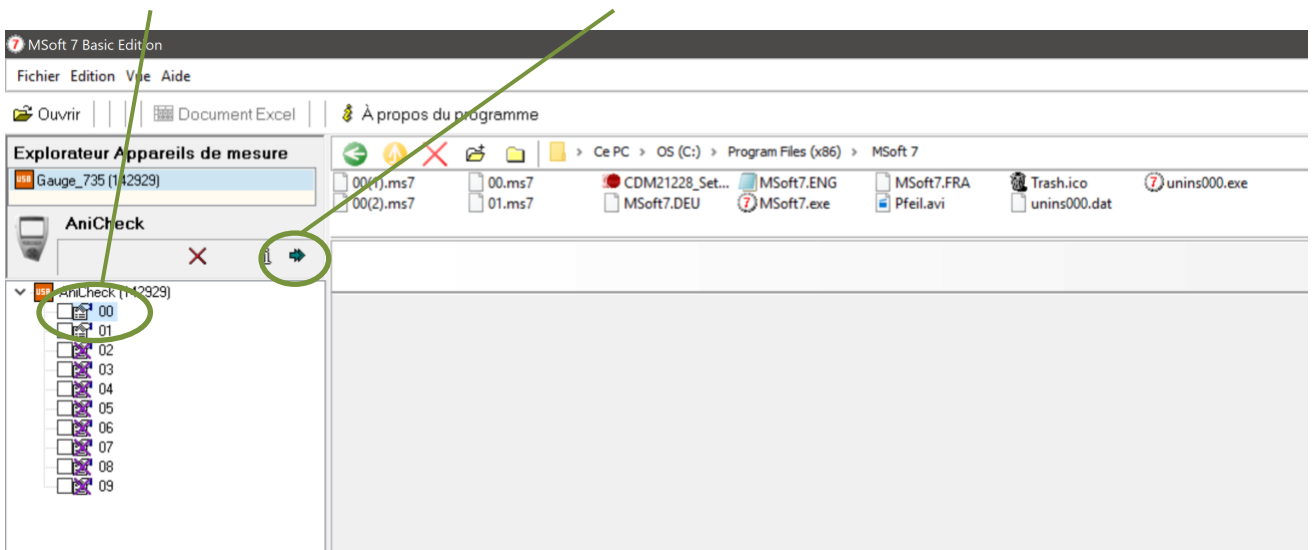


The measurement batches stored in the Anicheck appear in this section. When there is a cross it indicates that the batch is empty (no measurement)



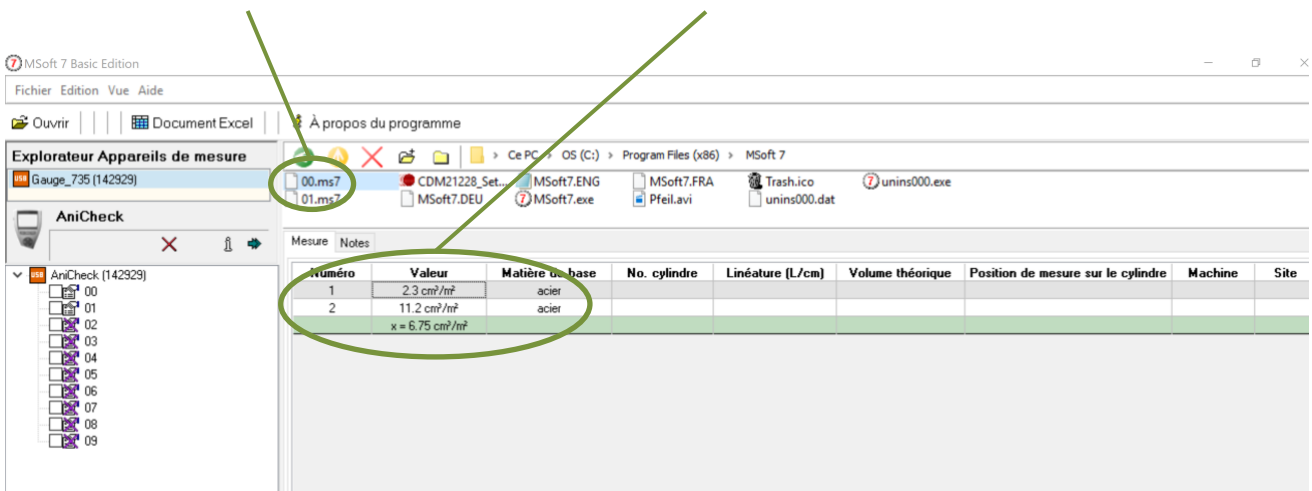
Click on the batch of measurements that you want to transfer

Then click on this arrow in order to activate the transfer

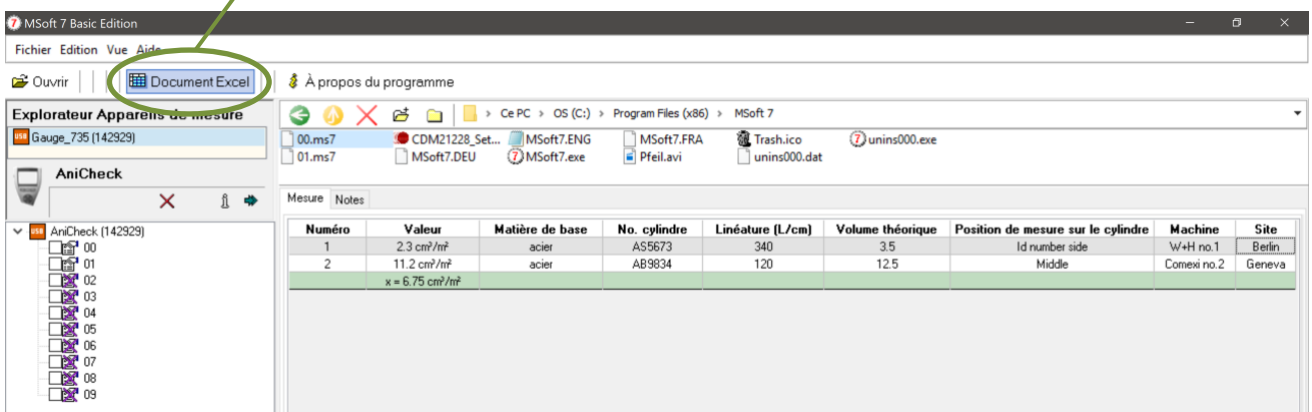


The stored batches appear in this section and can be selected to be displayed

The measurements of the selected batch appear here



Click in « Excel document » to activate the transfer of the measurements to an Excel file



You can then access to the measurements in Excel :

The screenshot shows an Excel spreadsheet with the following data:

Lectures uniques									
Numéro	Valeur	Unité de mesur	Matière de base	No. cylindre	Linéature (l/cm)	Volume théorique	Position de mesure sur le cylindre	Machine	Site
1	2.3	cm ³ /m ²	acier	A55673	340	3.5	Id number side	W+H no.1	Berlin
2	11.2	cm ³ /m ²	acier	AB9834	120	12.5	Middle	Comexi no.2	Geneva

7.2 Transfer to an Android smartphone

Available only on Android. There is no app for Iphone or other operating systems. This consists of a basic application that transfers the measurements of a batch to a smartphone to be displayed on the screen and saved as a text file.

Download and install the MiniView application from Google Play on your android smartphone:



MiniView

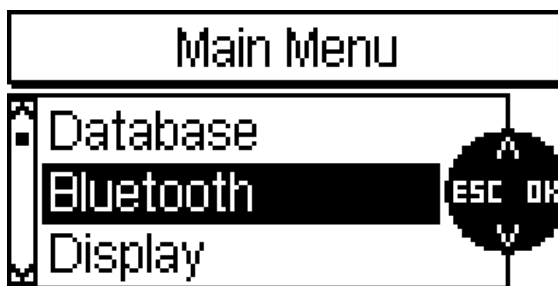
ElektroPhysik Dr. Steingroever GmbH & Co. KG



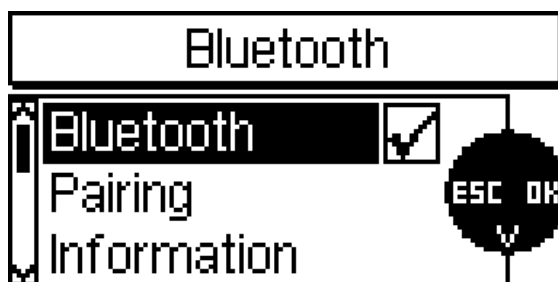
You have first to activate the Bluetooth on the Anicheck and pair it with your smartphone :



Press the MENU knob.

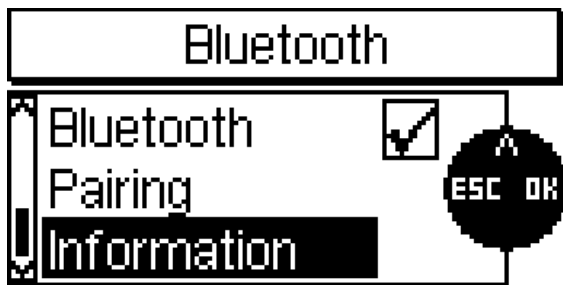


Select the Bluetooth menu

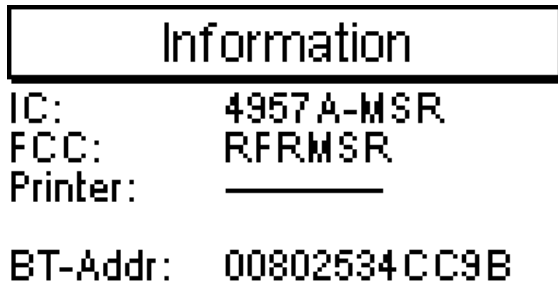


Press the OK button in order to activate the Bluetooth.

Then activate the bluetooth search on your smartphone in order to pair it with the Anicheck.

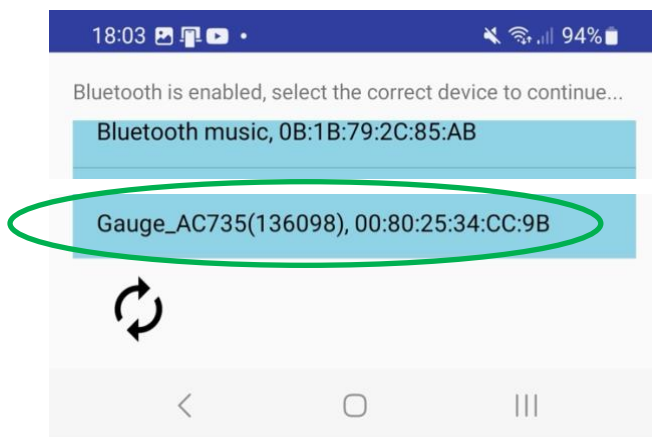


If your smartphone does not see the Anicheck, then enter the Information menu



And start again the search on your smartphone from this menu in order to make the pairing.

Once the Anicheck is paired to the smartphone you can launch the MiniView app :



Select the Anicheck from the list displayed. The gauge number is displayed on the back of the Anicheck unit.

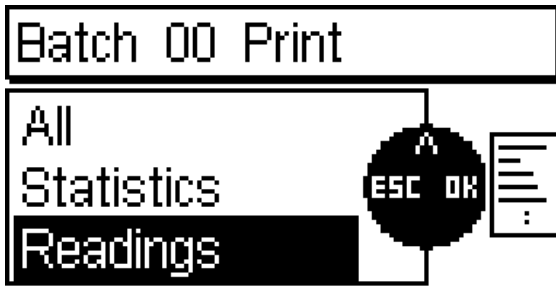
An empty screen then appears, ready to receive information from the Anicheck.



Press the STAT knob



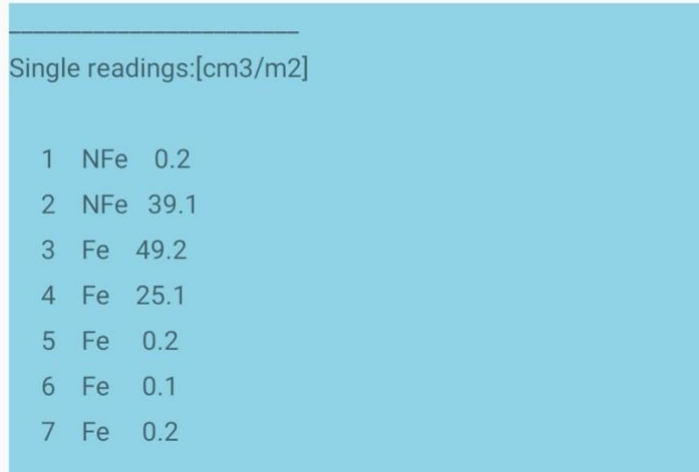
Select the Print menu



You can then select “Readings”, which will transfer only the measurements



Connected to Gauge_AC735(136098), 00:80:25:34:CC:9B



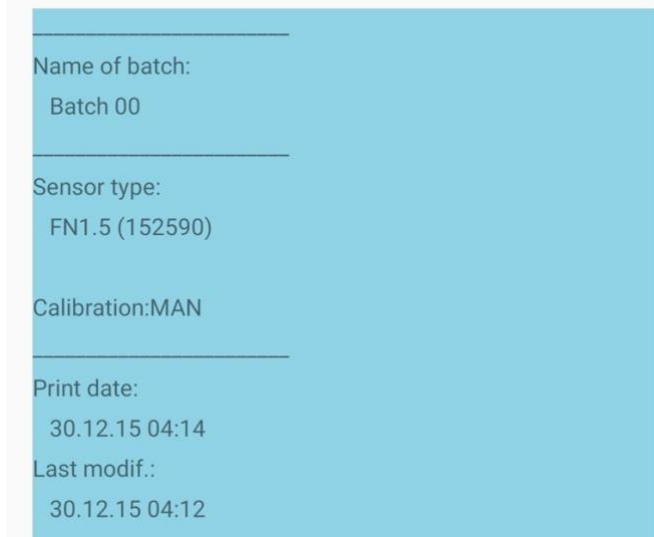
All measurements of the selected batch are displayed in the MiniView application



You can also select “All” in order to get the statistics along with the measurements.



Connected to Gauge_AC735(136098), 00:80:25:34:CC:9B



The statistics are first displayed

Statistics:[cm3/m2]

Readings = 7
Average = 16.30
Std. dev. = 21.30
Minimum = 0.13
Maximum = 49.2
Var.-Coef. = 130.6 %

Readings = 7
Average = 16.30
Std. dev. = 21.30
Minimum = 0.13
Maximum = 49.2
Var.-Coef. = 130.6 %

Single readings:[cm3/m2]

1 NFe 0.2
2 NFe 39.1
3 Fe 49.2
4 Fe 25.1
5 Fe 0.2
6 Fe 0.1
7 Fe 0.2

Notes:



And then the measurements

This data can be stored as a text file in the smartphone.

8 Calibration

The calibration of the unit is recommended once per month, or when the instrument is used in varied conditions of temperature (for example when performing a measurement outside at 10°C, and then inside at 25°C).

Screen



Action

Press the CAL knob

Calibration

Use the steel plate supplied with the gauge to calibrate the sensor.



Apply the probe on the steel plate (dark grey color).

This plate was supplied with the instrument, in a small wallet.

Zero calibration

1.05

Cal 0.00

n 1 = 1.05

ESC OK

"n1" appears in the bottom left portion of the screen. It indicates that the first measurement is done.

Zero calibration

1.00

Cal 0.00

n 5 = 1.10

ESC OK



Apply the probe 4 more times (so it makes 5 in total).

"n5" appears in the bottom left portion of the screen.

Press OK

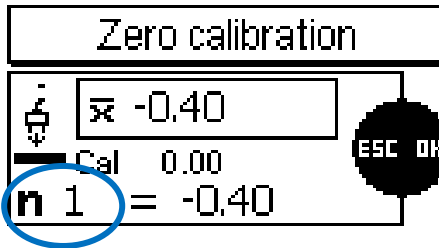
Calibration

Use the alu. plate supplied with the gauge to calibrate the sensor.

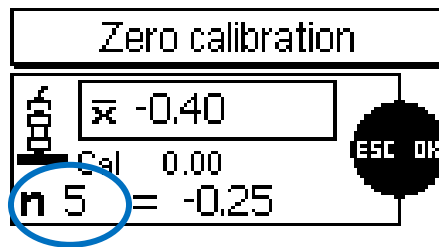


Apply the probe on the aluminum plate (light grey color).

This plate was supplied with the instrument, in a small wallet.



"n1" appears in the bottom left portion of the screen. It indicates that the first measurement is done.



Apply the probe 4 more times (so it makes 5 in total).

"n5" appears in the bottom left portion of the screen.

Press OK.

The calibration is completed. The device reverts to the home screen.

Advanced calibration

The procedure outlined above is suitable to the vast majority of aniloxes. In some special cases an advanced calibration is recommended (e.g. for very thick ceramic coating: more than 700 microns). The advanced calibration has to be performed in "coating thickness" mode (see chapter 7.5 of this manual). It is described at chapter 6.2.2.2 (two-point calibration) of the manual "Coating thickness gauge".

9 Automatic detection of probe contamination

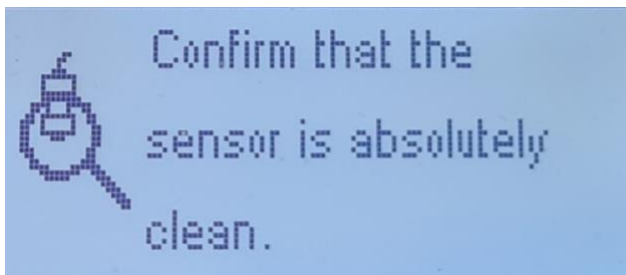
The probe must be wiped after each measurement with an absorbing paper. After a measurement session, the probe has to be cleaned with a towel impregnated with white spirit first (or an equivalent liquid), and then with a towel impregnated with acetone. If the manual cleaning of the probe is either not done or not efficient enough, the warning below will appear.

When the cleaning indication message still appears after manually cleaning the probe, it indicates that some measurement liquid has penetrated inside the probe. In this case the unit has to be returned to Anilox Research Technologies for a full maintenance.



When this message appears the probe has to be cleaned with a towel impregnated with white spirit first (or an equivalent liquid), and then with a towel impregnated with acetone. Then press the ESC button

If after cleaning this message still appears and no measurement can be done, the unit has to be returned to Anilox Research Technologies for maintenance.



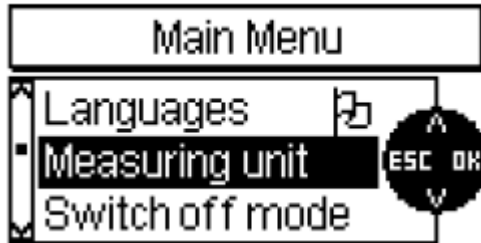
Confirm that the cleaning is done by pressing the ESC button

10 Parameters

10.1 How to change the measurement unit

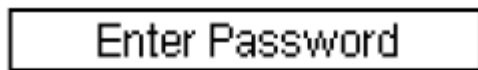


Press the MENU knob



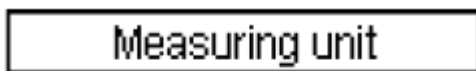
Select the function "Measuring unit" with the arrows.

Validate by pressing OK.



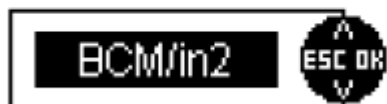
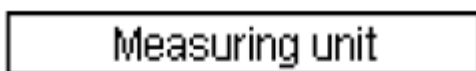
Enter the password.

Validate by pressing OK.



Select the desired unit with the arrows (either cm³/m² or BCM/in²).

Validate by pressing OK.



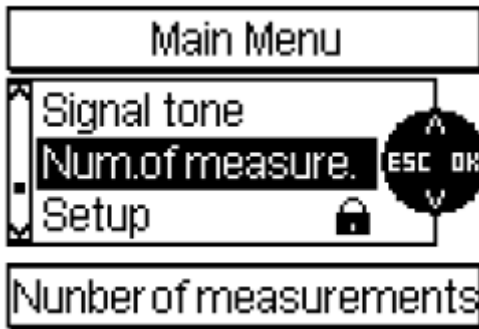
10.2 Number of a times the probe is applied on the surface

The probe is applied several times on the roll surface in order to improve the precision (averaging process). This is done either on the dry surface or on the wet surface (i.e. with the FerroFluid spread). The bigger this number of probe applications, the better the precision of the measurement.

The number of probe applications can be selected from 3 to 5, with the following procedure:

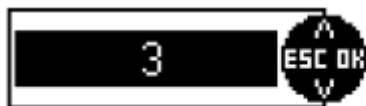


Press the MENU knob



Select the function "Num. of measure." with the arrows.

Validate by pressing OK.



Select the number of times the probe will have to be applied on the anilox surface (dry and wet).


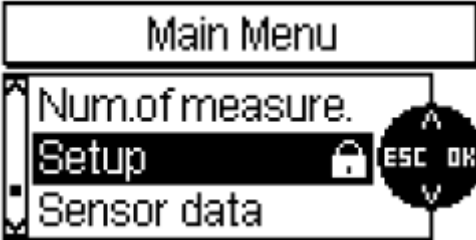



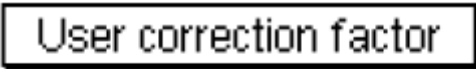
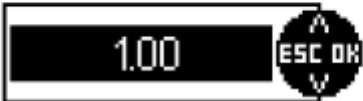
Validate by pressing OK.

10.3 Correction factor

The anilox manufacturers are known to use an anilox measurement method that is specific to their process. This difference in the measurement method from one manufacturer to another can lead to variations in the volume measured up to 20%.

The AniCheck instrument measures the true anilox volume. However, it may be useful in some cases to make the AniCheck reading compatible with the measurement method of an anilox manufacturer. To this end, a "correction factor" can be entered: it can be selected from 0.8 to 1.2 by steps of 0.01. The anilox volume computed by the AniCheck is multiplied by the correction factor. It is this multiplied volume that is displayed.

Procedure to enter a correction factor:

	Press the MENU knob.
	Select the function "Setup" with the arrows. Validate by pressing OK.
	Enter the password. Validate by pressing OK.
	
	Select the function "Correction factor" with the arrows. Validate by pressing OK.
	
	Select the desired correction factor by pressing the up arrow on the down arrow. Validate by pressing OK.

Batch00|n=7 | 17:56

Anilox
volume: $\text{---.---} \frac{\text{cm}^3}{\text{m}^2}$

User correction factor: 0.95

Press OK to start measurement


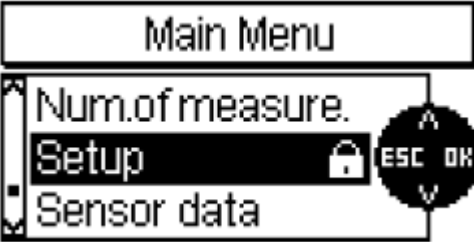


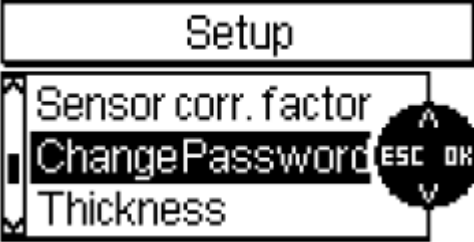


When a correction factor is introduced, it is displayed on the initial screen

10.4 Password

Several functions are protected by a single password.

The instrument is delivered with a preset password: press 5 times the OK knob.


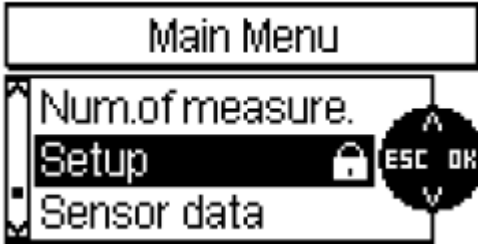



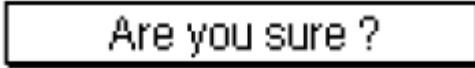
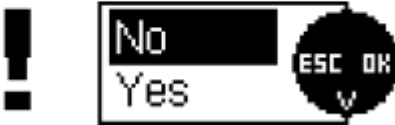
The password can be changed with the following procedure:

	Press the MENU knob.
	Select the function "Setup" with the arrows. Validate by pressing OK.
	Enter the password. Validate by pressing OK.
	
	Select the function "Change password" with the arrows. Validate by pressing OK.
	Enter the new password. Validate by pressing OK.
	

10.5 Coating thickness measurement mode

The AniCheck instrument is also capable of performing the measurement of the thickness of a non-conductive coating on either a steel base (coating thickness up to 1.5 mm), or a non-ferrous base (e.g. aluminum, coating thickness up to 0.7 mm). for more information on the thickness measurement mode, please consult the dedicated chapters of this manual.

The AniCheck unit is switched from the anilox measurement mode to the thickness measurement mode with the following procedure :

	Press the MENU knob.
	Select the function "Setup" with the arrows. Validate by pressing OK.
	Enter the password. Validate by pressing OK.
	
	Select the function "Thickness" with the arrows. Validate by pressing OK.
	Select "Yes" with the arrows. Validate by pressing OK. The instrument then switches to the thickness measurement mode.
	When the instrument is switched off and on, it always goes in the anilox measurement mode. This procedure has to be repeated in order to select the thickness measurement mode.