



ScaleTools



Operating Manual

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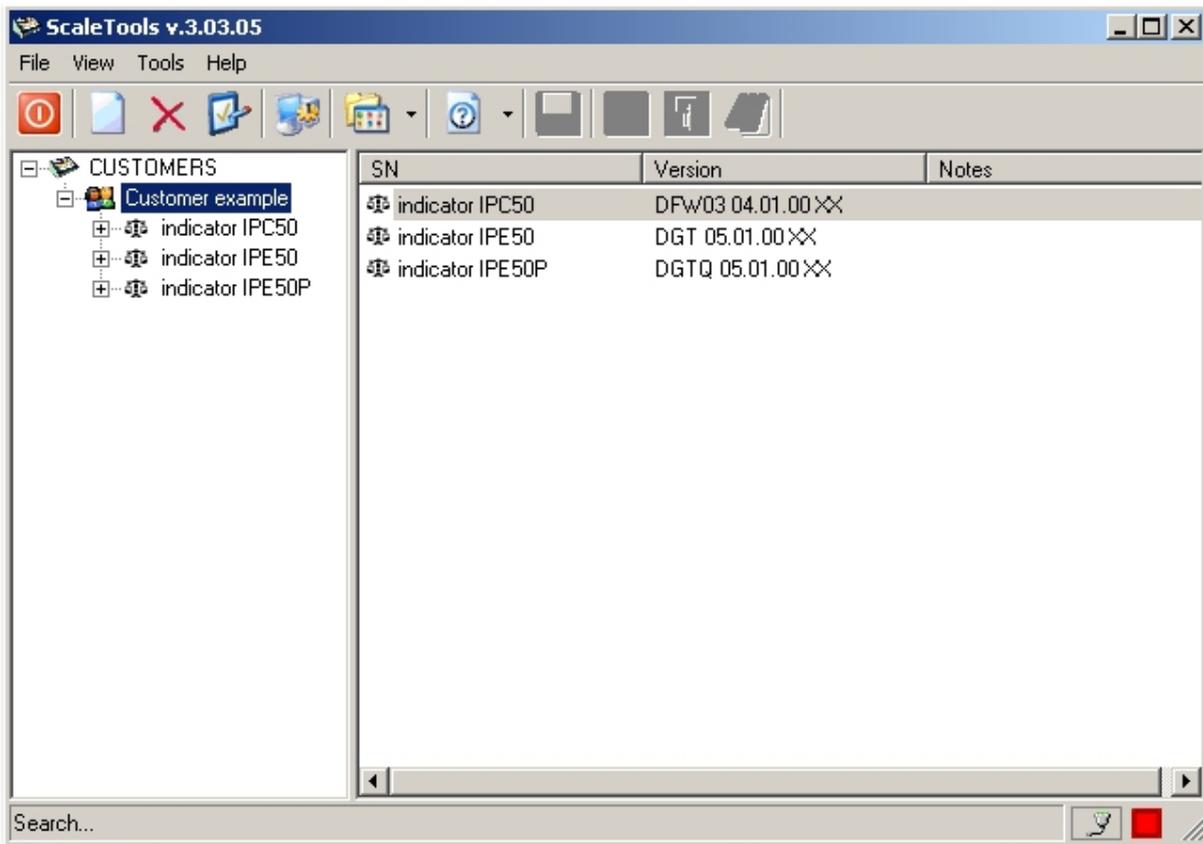
1 INTRODUCTION

The Scaletools.net software allows the management of the IPC50/IPE50 (DFW/DGT) series' indicators: there is a customer database in which it is possible to store the indicators which are used. By receiving and transmitting directly the instrument data directly from PC, it is possible to recall the desired configurations and/or transfer them on a similar instrument without repeating the programming from keyboard.

The indicator must be in mode "SETUPE ENVIRONMENT" and that the port RS232 is selected as serial port communication on the unit serie IPE50 (PC SEL : 232) and the communication is made on the port RS232.

MAIN FUNCTIONS

- Programming of the printout heading for the IPC50/IPE50 indicator.
- Back-up, restore and modification of the available data on the indicators (set-up, calibration).
- "Weigh Console" application: display of the current weight on the PC with possibility of receiving the standard weight string from the indicator by pressing a key on the PC.



2 PC MINIMUM REQUIREMENTS AND PROGRAMME INSTALLATION

PC MINIMUM REQUIREMENTS

- Pentium 4 with 256 Mb Ram
- 200 MB of empty space on disk
- Windows XP operating system
- Monitor with 800x600 minimum resolution, 256 colours
- A RS232 serial port.
- Installation of the following components:
 - Run-time Visual Basic 5.0
 - Microsoft Data Access Component
 - Microsoft .net Framework
 - Microsoft Jet 4.0 Service Pack 8 for Windows XP

INSTALLATION

1) By launching the installation file, the following screenshot will appear:

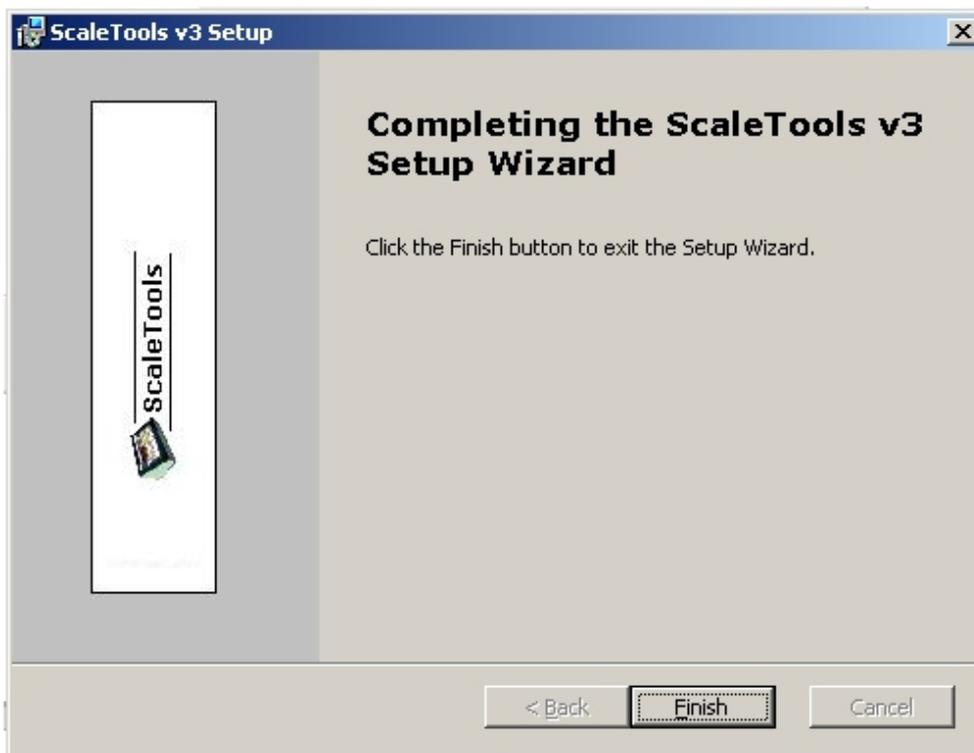


Press on "Next" to continue.

2) Accept the license terms (select "I accept the terms in the License Agreement") and press on "Next" to continue:



3) Follow the installation steps; at the end the following window will appear:



4) Click on "Finish" to end the procedure; it's now possible to open the Scaletools using the connection created on the desktop.

3 THE MAIN MENU

- **File:**
 - **New**
To create a new object (a customer, a scale, a print format, etc.).
 - **Open**
To modify the data of the selected object.
 - **Delete**
To cancel the selected object.
 - **Save**
To save the modifications made.
 - **Exit**
To exit the programme.

- **View:**
 - **Details**
To view the details of the objects.
 - **Icons**
To view the objects in a large icon format.
 - **Small Icons**
To view the objects in a small icon format.
 - **Refresh**
To update the screen data.

- **Tools:**
 - **PCX2ITA**
Reserved
 - **Instrument Setup**
Allows to receive, modify, transmit and file the complete set-up of an indicator, if supported.
 - **Weigh Console**
Programme for viewing on PC the weight displayed by the indicator and receive it by pressing a key (see section 9.1 "Weigh Console");
 - **Serial Port Configuration**
To configure the parameters relative to the PC communication port (see section 5 "Configuration of the communication and connection status");
 - **Options**
Allows setting the database file path.
 - **Install Label View Driver**
Reserved

- **Help:**
 - **About**
To view information regarding the ScaleTools version in use. Press "OK" to exit.

4 THE TOOLBAR



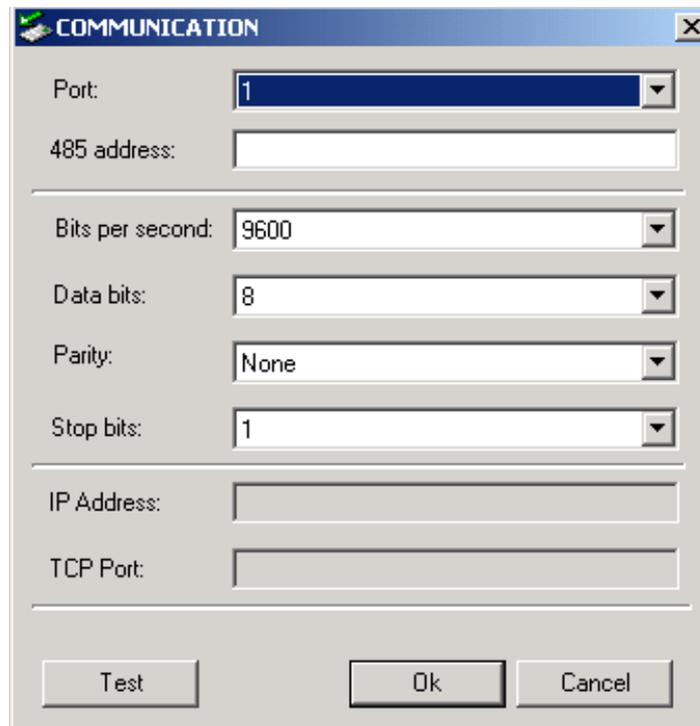
-  **Exit:** to exit the programme.
-  **New:** to create a new object (a customer, a scale, a print format, etc.).
-  **Delete:** to cancel a selected object.
-  **Open:** to modify the selected object data.
-  **Options:** allows setting the database file path.
-  **View:**
 - Details: to view the objects' details.
 - Icons: to view the objects in a large icon format.
 - Small Icons: to view the objects in a small icon format.
-  **Help:**
 - About: to view information regarding the ScalesTools version in use.

5 CONFIGURATION OF THE COMMUNICATION AND CONNECTION STATUS.

- **Configuration of the communication**

Allows setting the parameters relative to the communication between the PC and the weight indicator.

- With the mouse's left key click on the  icon which is in the lower right section of the status bar, or from the main menu select **TOOLS >> SERIAL PORT CONFIGURATION**; the following window will appear:



- "Port" specifies which PC serial port (COM) is connected to the weight indicator.
- "Bit per second", "Data bit", "Parity" and "Stop Bit", must be compatibly set with the indicator's configuration (see the indicator's technical manual).
Note: on the indicator it is necessary to configure the data transmission mode as "upon request" and the communication protocol as "standard" (see the indicator's technical manual).
- By pressing "Test" a test programme is started in order to verify the correct setting of the configuration parameters: either the "Test successful" or "Test Failed" message will appear.
- Confirm with "OK" or press "Cancel" in order to not save the changes made.

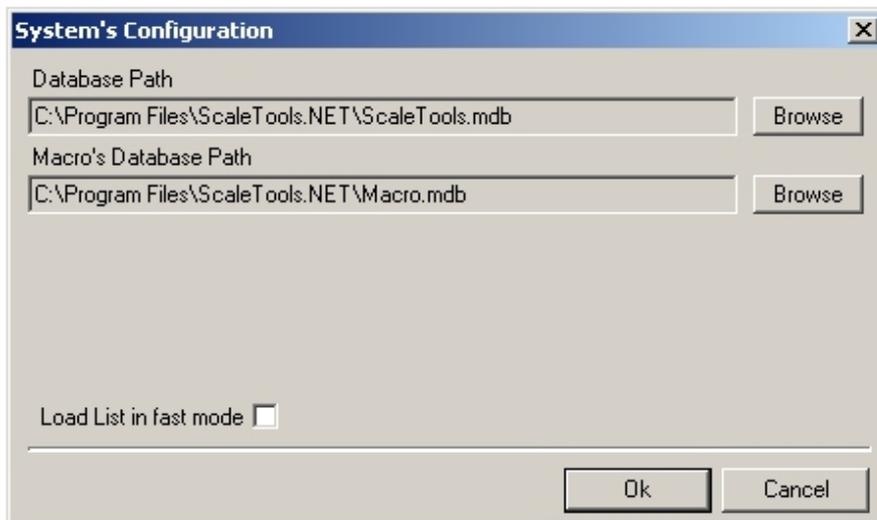
- **Status of the connection**

An icon on the bottom, on the left of the window indicates the status of the data transmission between the PC and the indicator:

-  (green) indicates that the communication is correct.
-  (yellow) indicates that it is waiting for a data transfer.
-  (red) icon indicates communication problems: check the serial communication parameters on the PC as well as on the indicator.

6 SETTING THE DATABASE FILE PATH.

Select the **TOOLS >> OPTIONS**; the following window will appear:



- Press the **"Browse"** key of the "Database Path" field if one wants to change the path of the file.
- Select the new path.
- Confirm with **"OK"** or press **"Cancel"** to not save.
- Close and reopen the programme.

NOTES:

- By selecting "Load List in fast mode" the database elements are loaded only in the moment in which these are selected; with a very full database, the Scaletools will have a much quicker start than in the "normal" mode.
- Leave the other paths as suggested by the default.

7 "CUSTOMERS" MANAGEMENT MENU

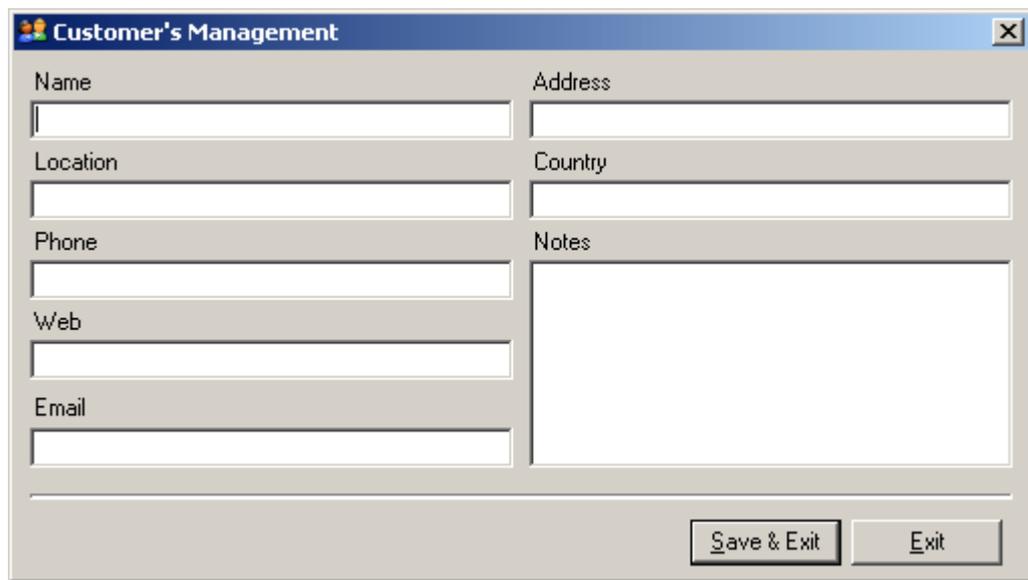
Allows managing the data of the customers and the relative scales through a tree menu system.

7.1 CREATION OF A NEW CUSTOMER

With the left key of the mouse click on the "CUSTOMERS" item in left window and:

- Choose from the "New" main menu, or
- Choose the "New" item from the toolbar, or
- With the right key of the mouse select the "New Customer" item.

The following window will appear:



The screenshot shows a window titled "Customer's Management" with a close button in the top right corner. The window is divided into two columns. The left column contains input fields for "Name", "Location", "Phone", "Web", and "Email". The right column contains input fields for "Address" and "Country", and a larger text area for "Notes". At the bottom right of the window, there are two buttons: "Save & Exit" and "Exit".

- Enter the customer name in the "Name" field (obligatory field) and possibly the other available fields.
- Confirm with "Save & Exit": the inserted customer will appear in the tree menu on the left.

7.2 MODIFYING DATA OF A CUSTOMER

- With the left key of the mouse click on the desired customer.
- Press "Open" from the toolbar, or
- With the right key of the mouse select "Edit Selected Customer", or
- Select the desired customer in the window on the right; click with the right key of the mouse and select "Edit Selected Customer".
- Modify the desired fields.
- Confirm with "Save & Exit", or just "Exit" to not save.

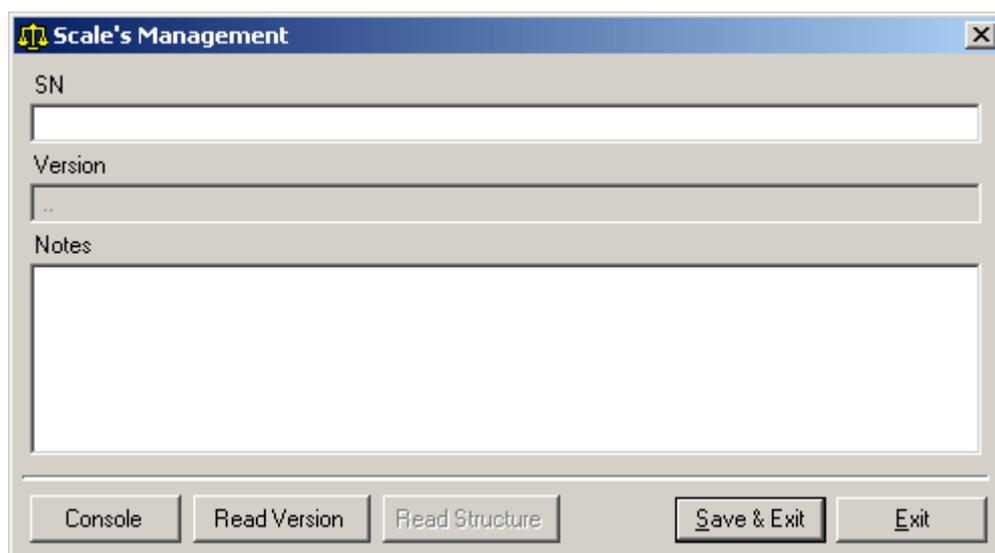
7.3 CANCELLATION OF A CUSTOMER

- With the left key of the mouse click on the desired customer.
- From the main menu choose "Edit" and "Delete" (or the CTRL+D fast keys), or
- From the toolbar press "Delete", or
- With the right key of the mouse click on the selected customer and choose "Delete Selected Item"
- Confirm the request of the cancellation.

8 GUIDE TO THE OPERATIONS

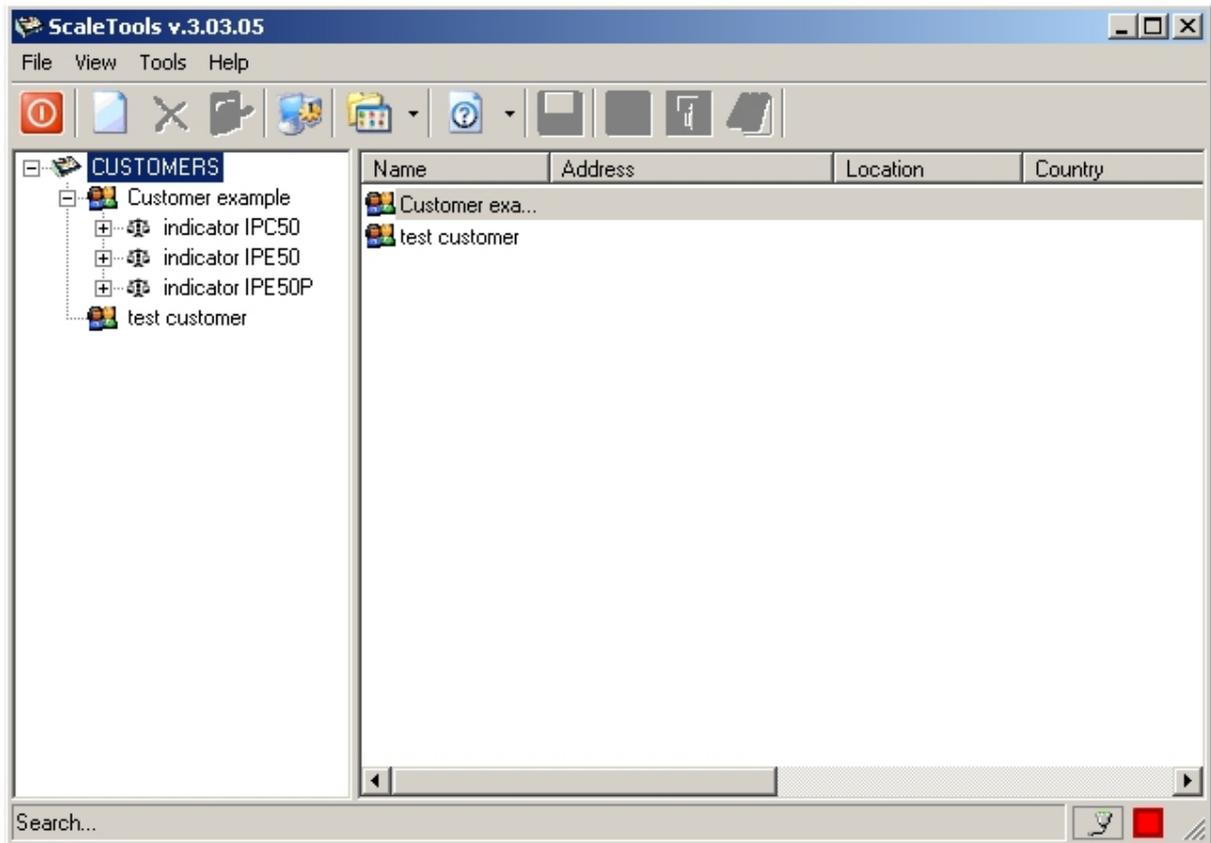
8.1 INSERTING A SCALE

- With the left key of the mouse click on the customer to whom you want to link the scale with.
- From the main menu select "File" and "New" (or the CTRL+N fast keys), or
- From the toolbar select the "New" button, or
- With the right key of the mouse click on the desired customer and choose the "New Scale" item.
- The following window will appear:



- In the "SN" field enter the name which one wants to link to the scale.
- In the "NOTES" field enter any useful annotations.
- Press the "Read Version" button: the connected indicator version as well as the structure of the databases will be received automatically.
- In case of communication problems, there will be an error, which can be caused by an incorrect serial port connection or a wrong parameter setting.
- If the databases are not provided for on the indicator, the "Archive Structure not Available" message will be given.

- Confirm with “Save & Exit”; the scale will appear in the tree menu on the left:

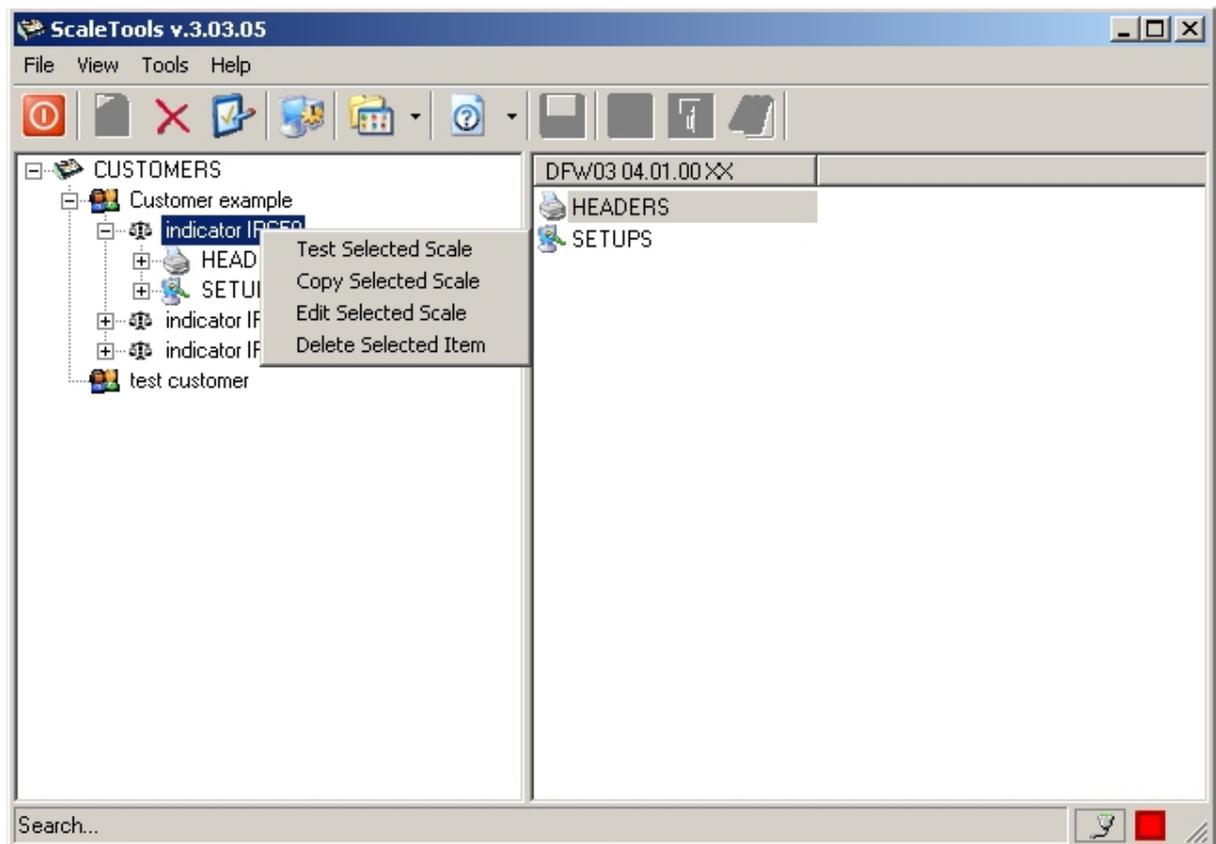


NOTES:

- By pressing “Console” the “Weigh Console” application is opened (see section 9.1 “Weigh Console”).

8.2 OPERATIONS ON THE SCALES

With the right key of the mouse select the scale of the desired customer; one has the possibility of executing various operations:



- **Test Selected Scale**
Allows carrying out the connection test with the indicator.
- **Copy Selected Scale**
To make a copy of a scale, maintaining the same version and notes and changing just the "SN" descriptive field.
- **Edit Selected Scale**
To modify the scale's features.
- **Delete Selected Item**
To cancel the scale.

8.2.1 MANAGING PRINTOUT HEADERS

If a IP50 (DFW) and IPE50 (DGT) series' indicator (from the version 3.00.04) is connected, there will be an item in the tree called "HEADERS":



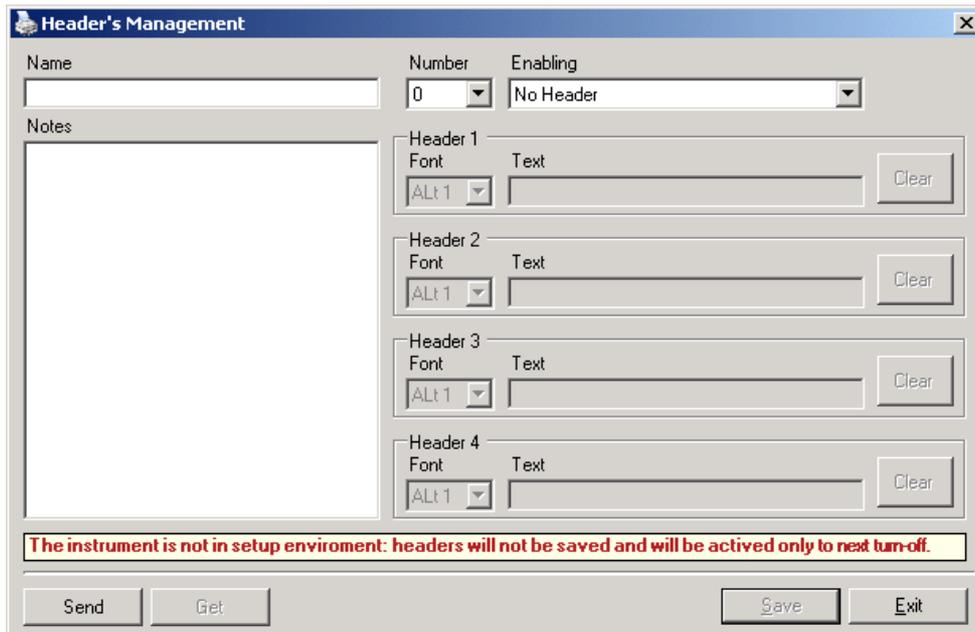
With this menu it is possible to transmit to the indicator a print header of up to 4 lines of 24 characters each.

CREATION OF A NEW HEADER

With the right key of the mouse click on the "HEADERS" item:

- Choose from the "New" main menu, or
- Choose the item "New" from the toolbar, or
- With the left key of the mouse click on the "New Header" item.

The following window will appear:



- In the "Name" field enter the name of the header.
- In the "Number" field select the number of lines which you want to use (up to 4).
- In the "Enabling" field select the mode in which the header will be printed:
 - "Print header only in the first totalization" (in other words, only after the zeroing of the total).
 - "Print header in each totalization" (with each weigh).
 - "Print header in each totalization and in the total" (with each weigh and also in the total).

- For each required line, enter in the **"Font"** field the type of character height (normal, Alt1, or double, Alt2) and in the **"Text"** field the text contents (up to 24 characters); the **"Clear"** key allows the quick cancellation of the entire relative line.
- Use the **"Save"** key to save and go out with the **"Exit"** key.
- The new header will appear in the tree menu on the left.

MODIFYING A HEADER

With the right key of the mouse click on the desired header and select **"Edit Selected Header"**.

CANCELLATION OF A HEADER

With the right key of the mouse click on the name of the desired header and select **"Delete Selected Item"**.

TRANSMISSION OF THE HEADING TO THE INDICATOR

- With the right key of the mouse click on the name of the desired heading and select **"Edit Selected Header"**.
- Press on the **"Send"** key: the header will be instantaneously transmitted to the indicator.

NOTE

If the connected indicator was in the normal weighing status, the heading will be lost when the instrument is turned off; this message will be highlighted in the header compilation window:

The instrument is not in setup environment: headers will not be saved and will be activated only to next turn-off.

In order that the heading is permanently stored, it is necessary that before its transmission, the instrument is in the SET-UP environment (see the indicator's technical manual).

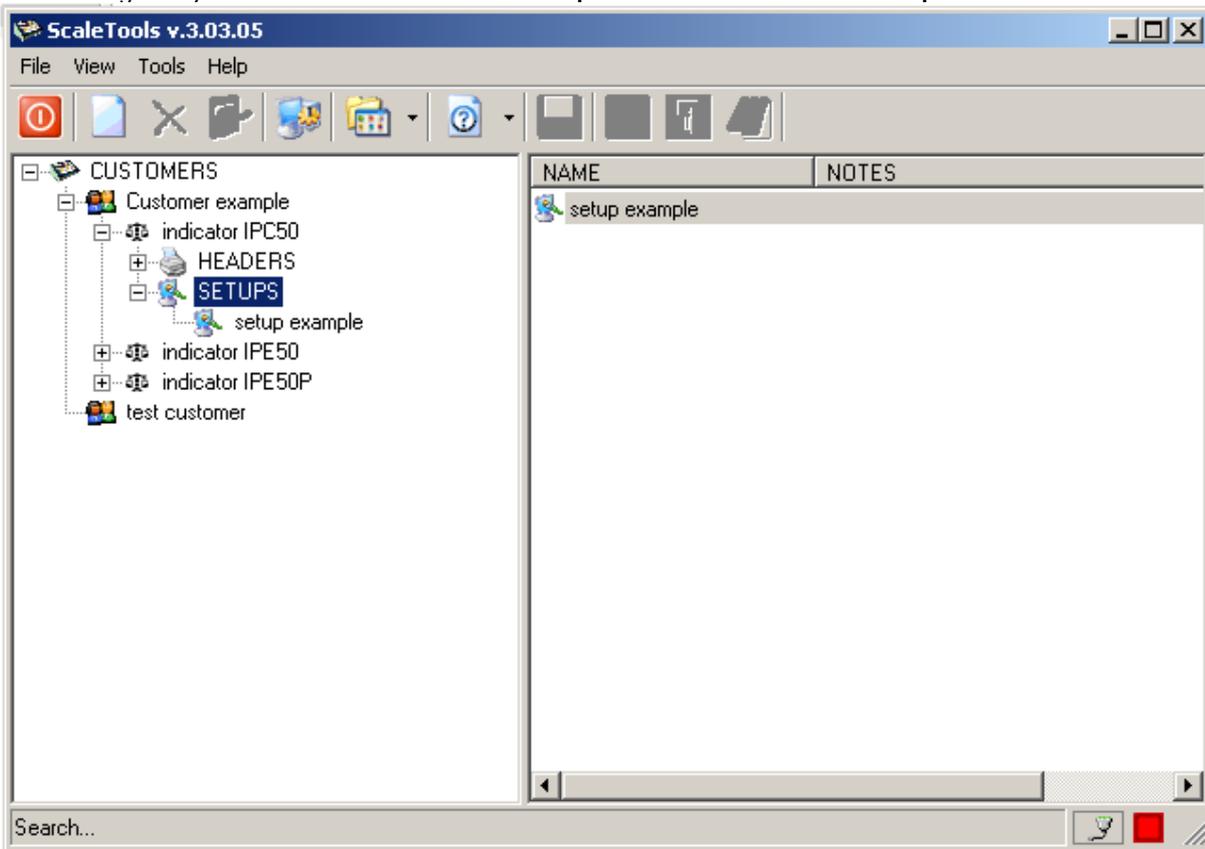
In this way, when the transmission of the header is done, one must exit the instrument's set-up environment, saving the made changes.

RECEPTION OF THE HEADER FROM THE INDICATOR

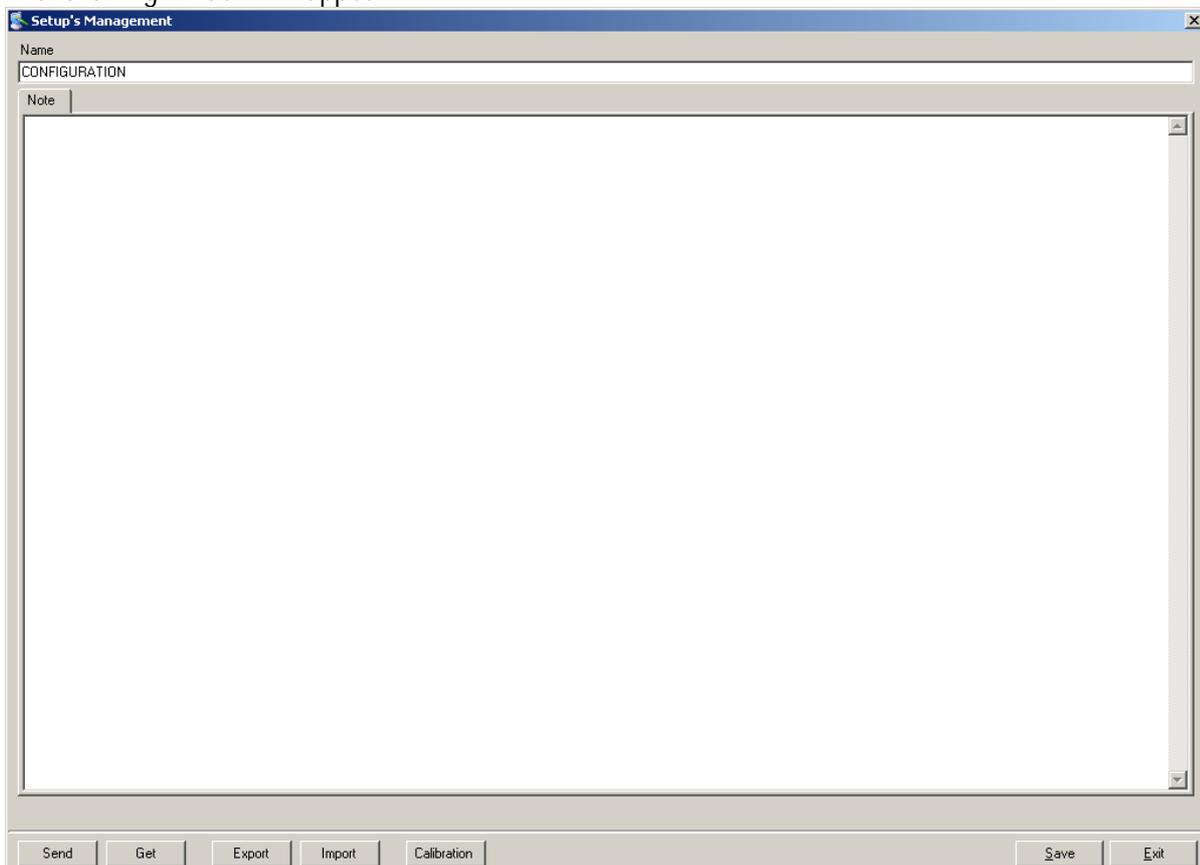
- With the right key of the mouse click on the name of the desired header and select **"Edit Selected Header"**.
- Press on the **"Get"** key: the header on the indicator will be received on the PC.

8.2.2 SETUP MANAGEMENT AND CALIBRATION

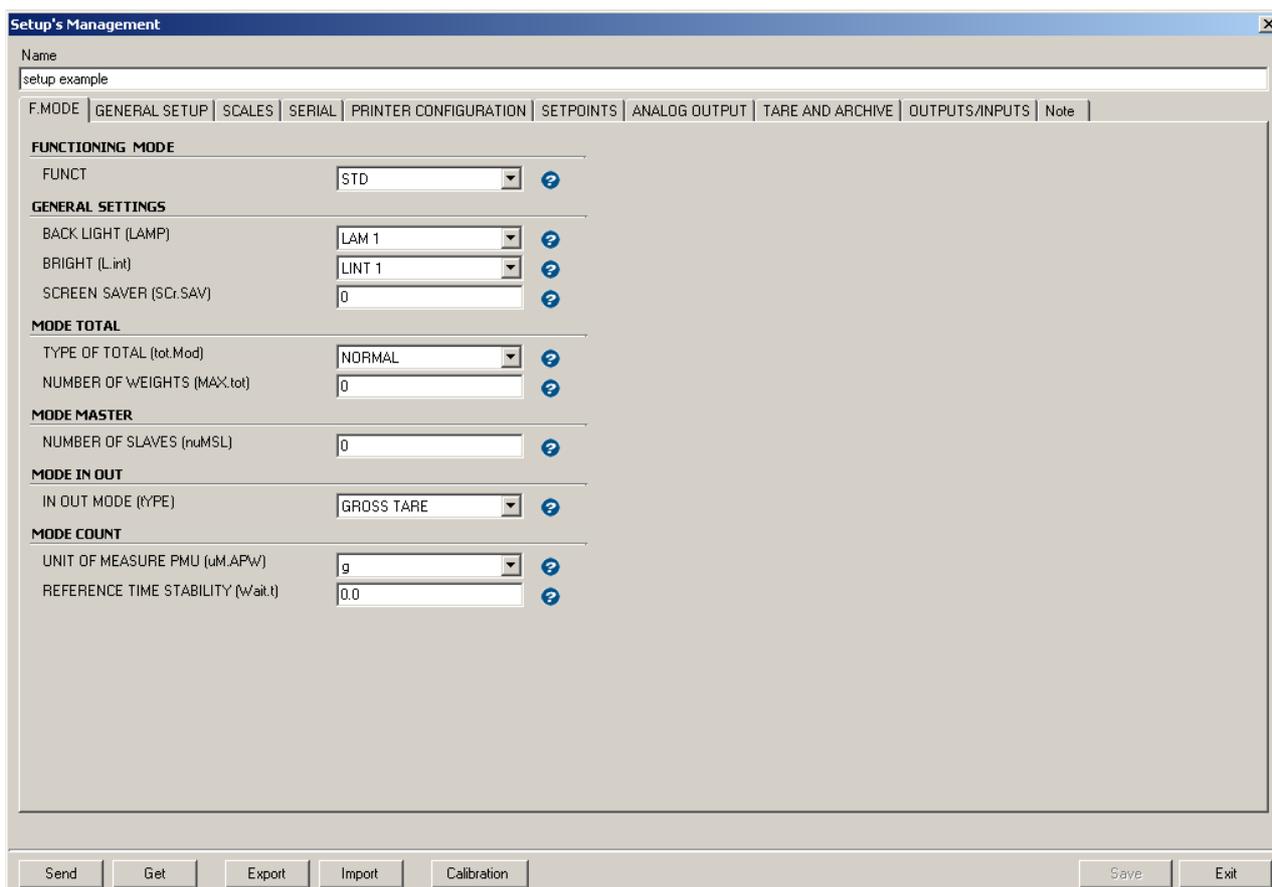
With the right key of the mouse click on the "Setup" item and select "New Setup".



The following window will appear:



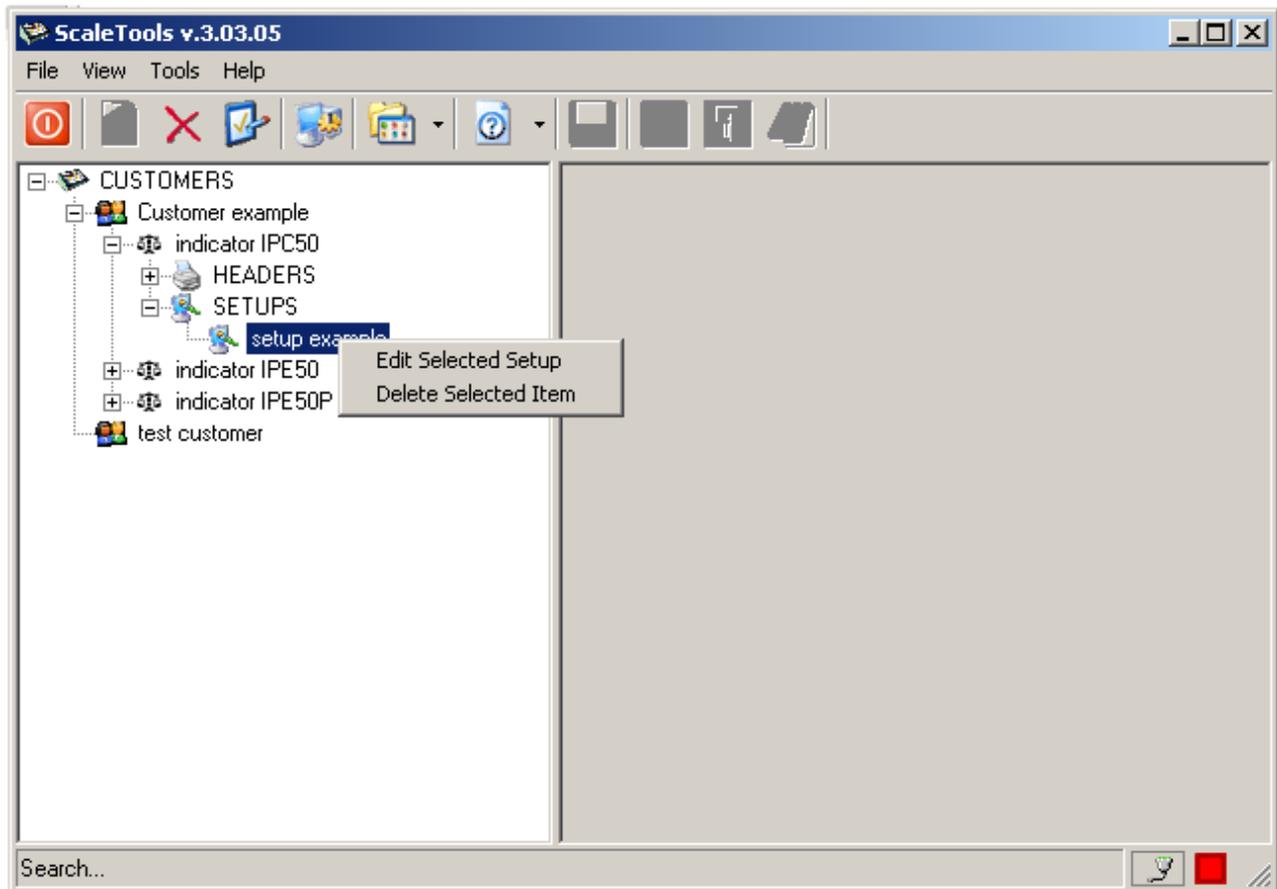
- In the "Name" field one can enter the name of the Setup; in the "Notes" field one may enter the notes useful to the user.
- Save using the "Save" key.
- By pressing "Get" one may receive the complete Set-up of the connected indicator; **the indicator must be in the COMPLETE Set-up environment (in other words, if a protection password exists, it must be entered correctly).**
- After a few instants a window will appear containing the Set-up parameters, subdivided in folders; here is an example of a set-up received by the IPC50 indicator:



- Each step shows what is contained in the indicator's set-up (shown in between the parentheses) and by pressing on the question point next to it, an info window will appear explaining the parameter:



- After having modified the desired parameters, save using the **"Save"** key.
- Press on **"Send"** to transmit the set-up to the indicator.
- To store the set-up just transmitted, go on the indicator and exit from the set-up environment and confirm with **ENTER** the saving request.
- Press **"Exit"** on the PC to exit the Set-up management (the name given to the Set-up will appear in the tree on the left).
- To modify or cancel an existing set-up, with the right key of the mouse click on the desired set-up and select, respectively, **"Edit Selected Setup"** or **"Delete Selected Item"**:



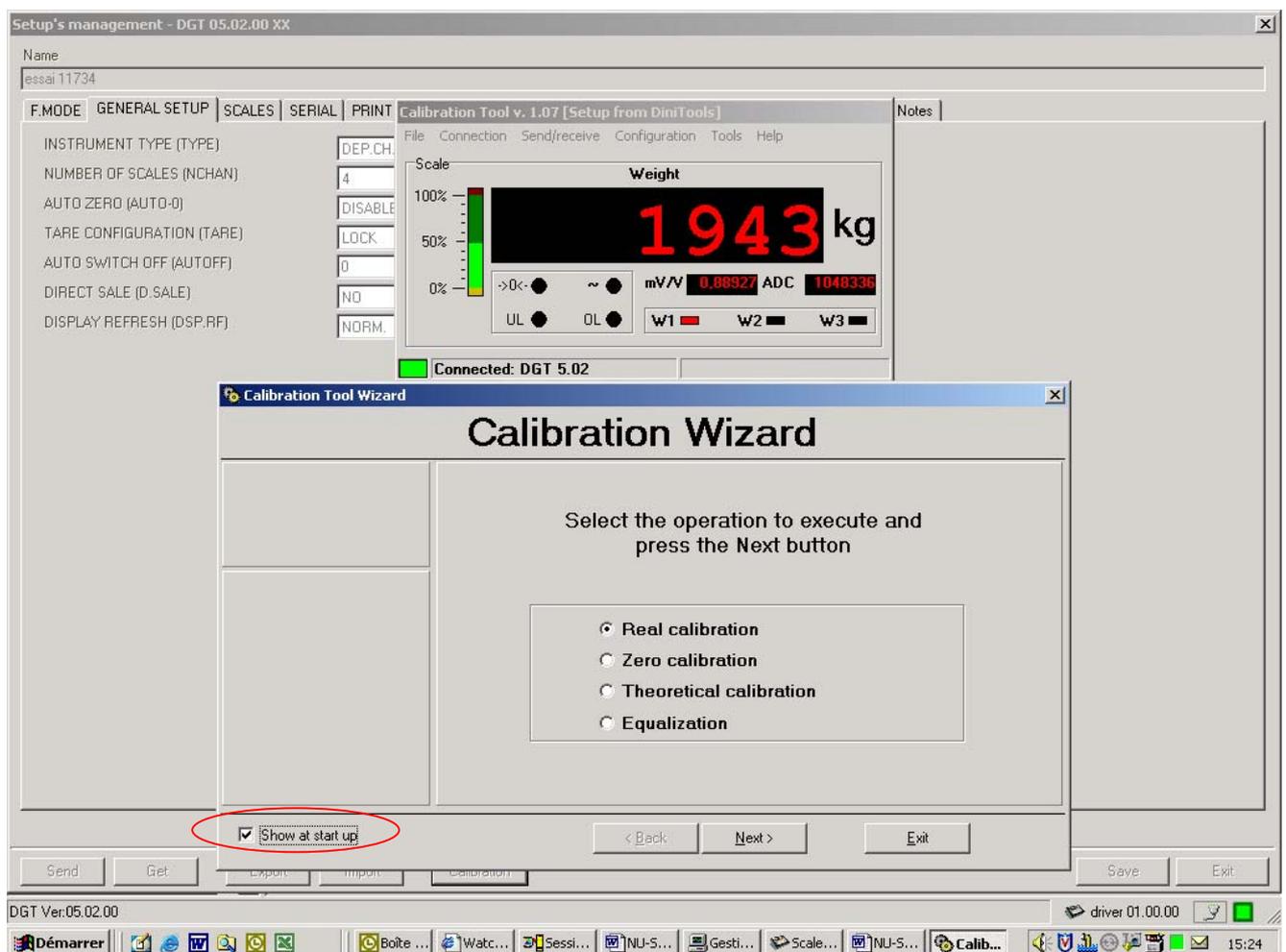
CALIBRATION OF THE INDICATOR

By pressing on the “Calibration” key, a programme opens up which allows to calibrate from the PC; the metrological data used (capacity, division, decimal point, etc...) are those previously configured in the “General Setup” and “Scales” screens.

The programme offers various possibilities:

- Calibration with Sample Weights
- Zero Calibration
- Theoretic Calibration
- Pre-calibration of the indicator

To facilitate the operations, the programme is fitted of a “wizard” function which guides the user step by step:

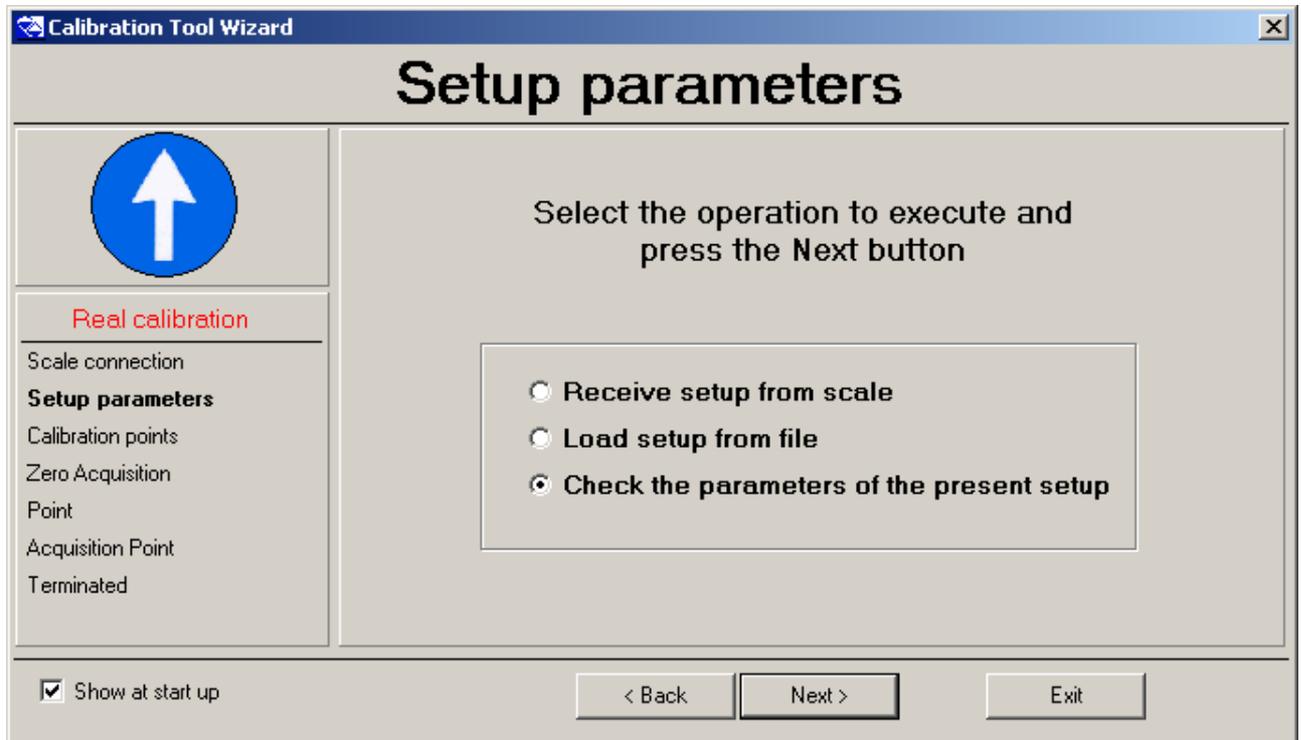


For the expert ones, it is possible to exit the Wizard through the “Exit” key and not view the Wizard at each programme start-up by unselecting “Show at start-up”.

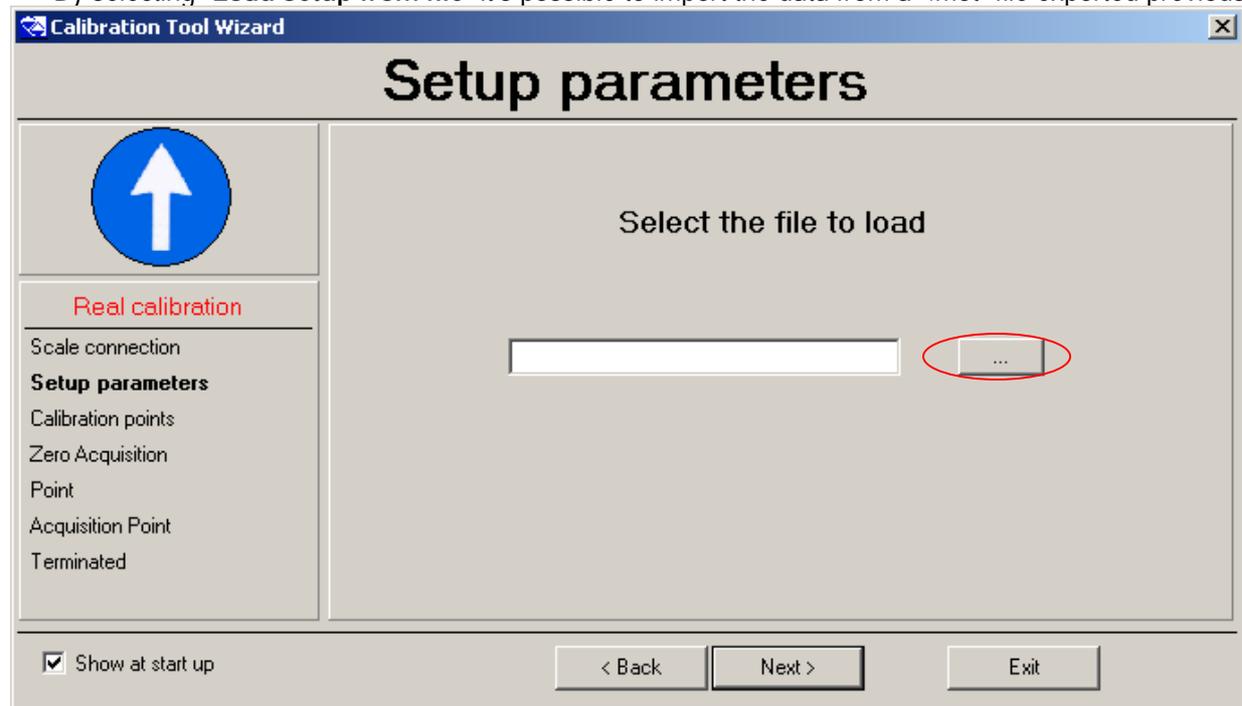
8.2.2.1 CALIBRATION WITH SAMPLE WEIGHTS (“REAL CALIBRATION”)

USE WITH THE WIZARD (only for the scale number 1)

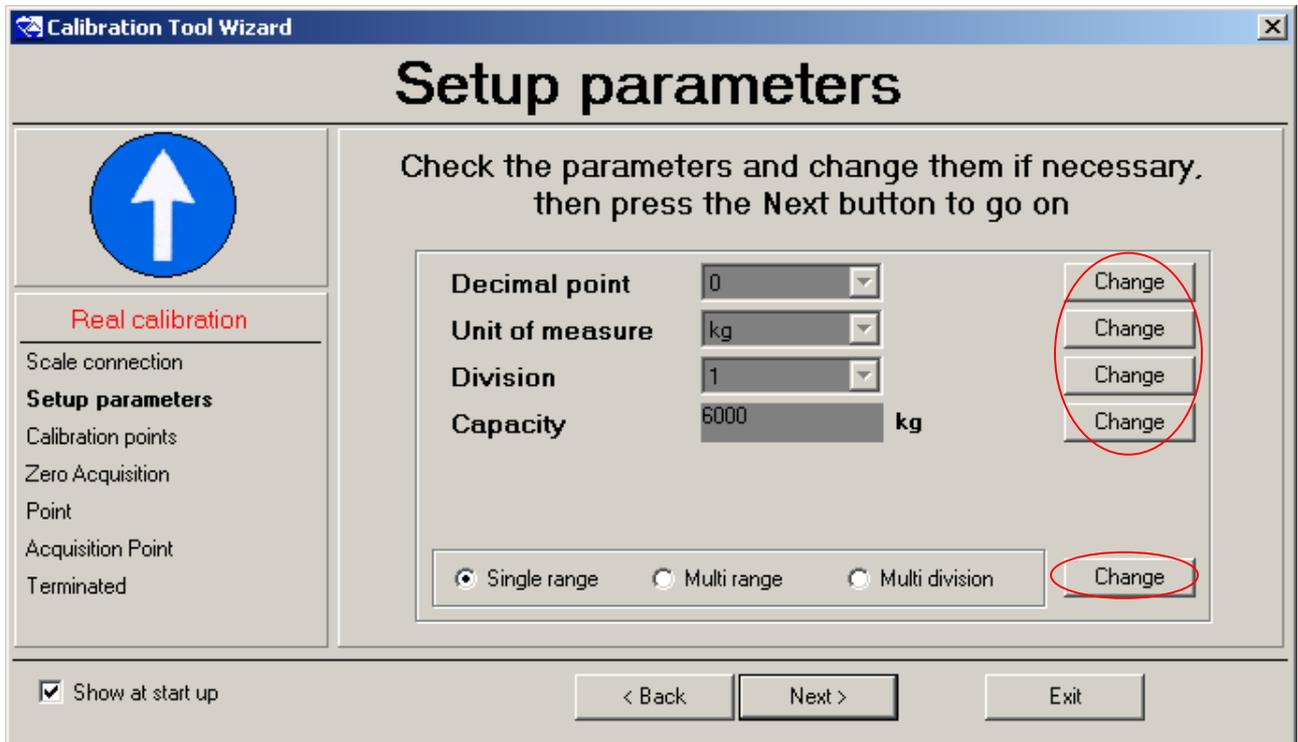
1) Select “Real Calibration” and press on “Next”; the following appears:



- By selecting “Receive setup from scale” and pressing on “Next” it is possible to receive the metrological and calibration parameters directly from the scale.
- By selecting “Load setup from file” it’s possible to import the data from a “.mot” file exported previously:



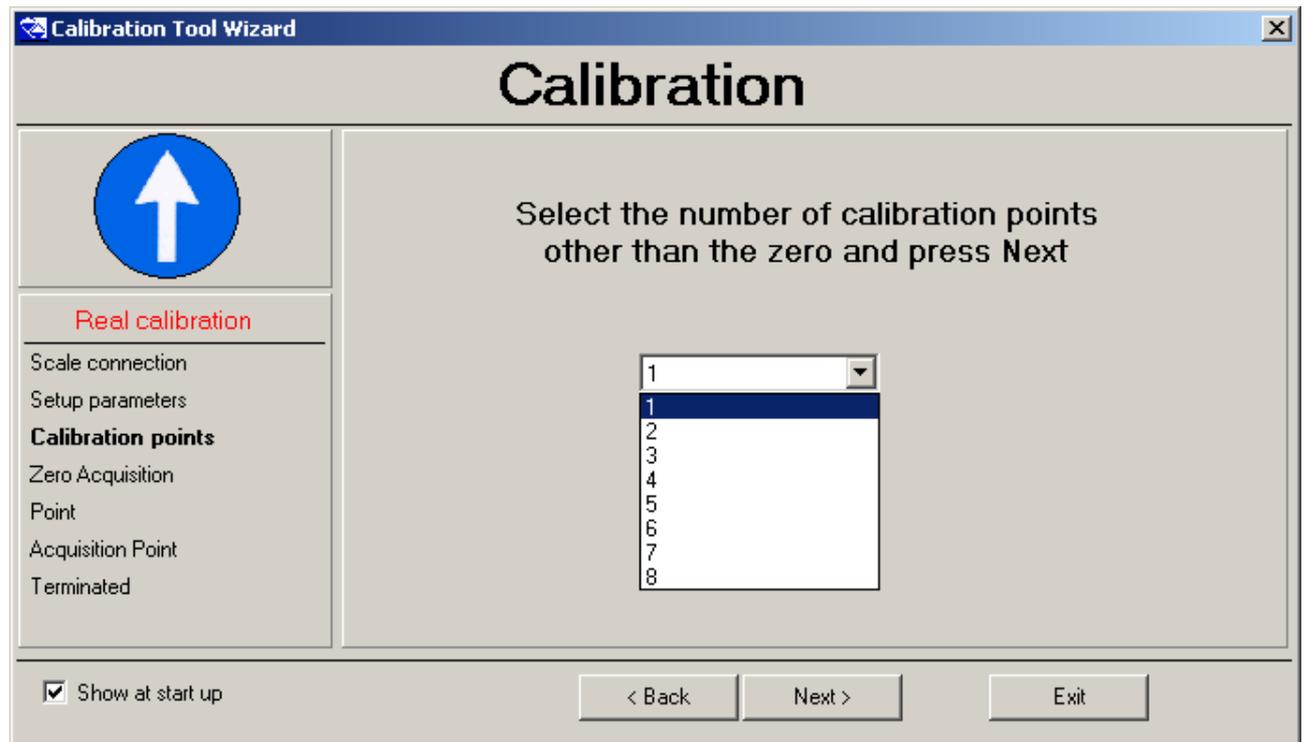
- Press on the “...” key to search the file in the desired directory and press on “Next” to continue.
- By selecting instead “Check the parameters of the present setup” and pressing on “Next” it’s possible to check and eventually modify the parameters already stored on the PC:



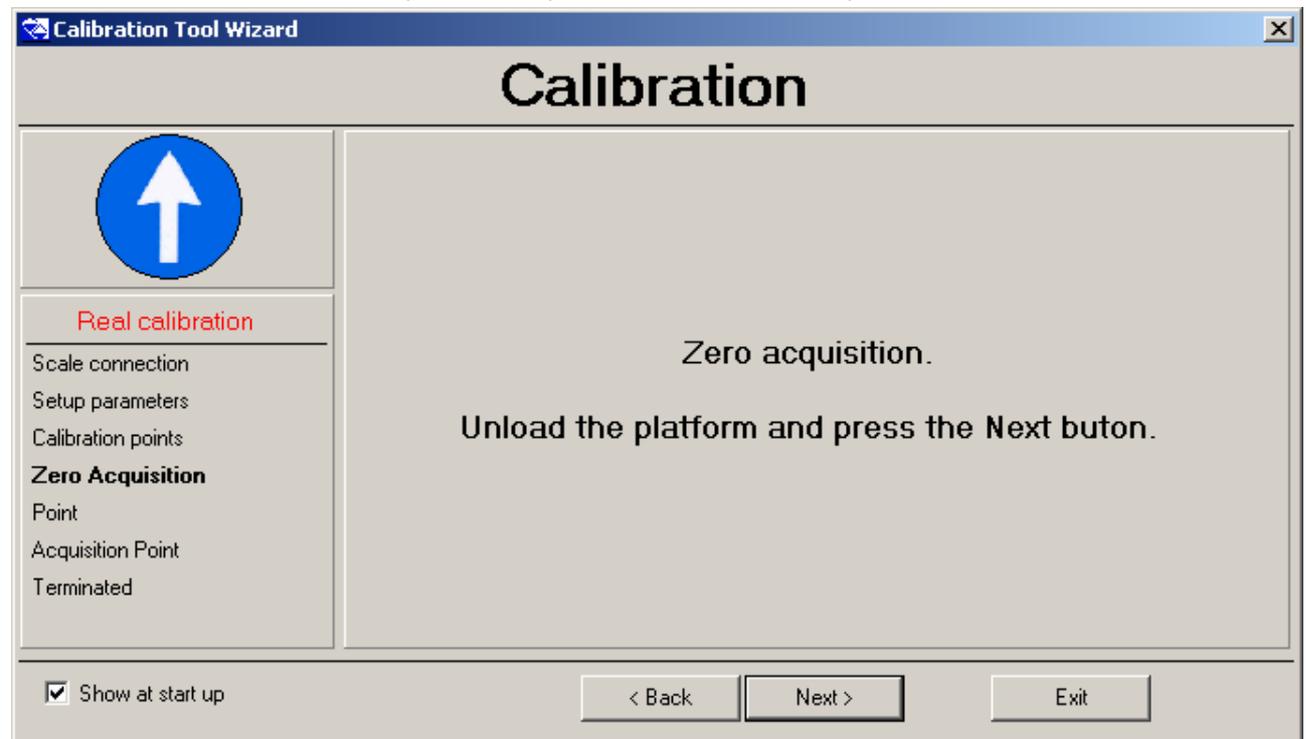
- By pressing on the “Change” key one modifies the relative parameter:

Decimal point	[Decimal point]
Unit of measure	[Unit of measure]
Division	[Minimum division]
Capacity	[Capacity]
Single range	[Single range scale]
Multi range	[Multi range scale]
Multi division	[Multi division scale]

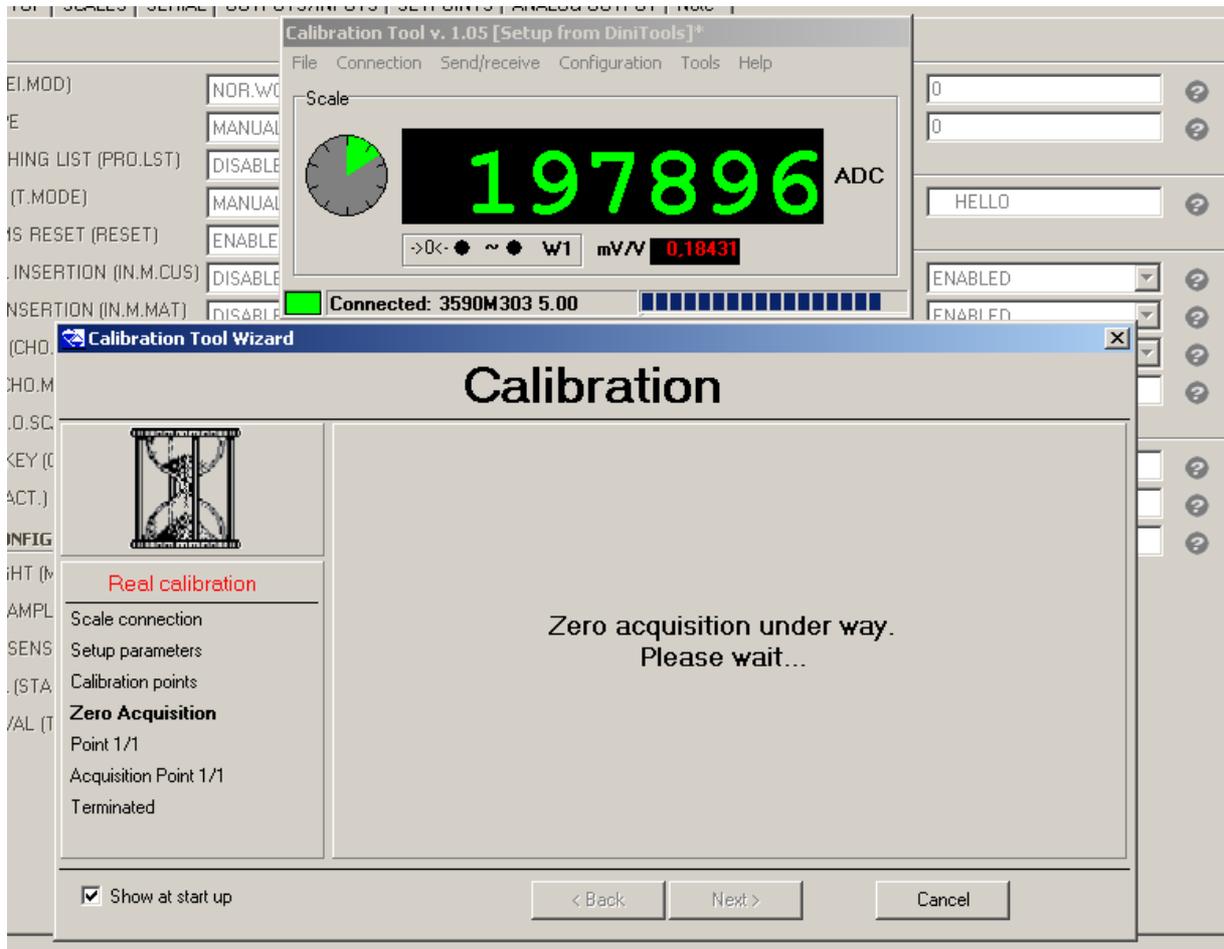
2) Press on "Next" to continue:



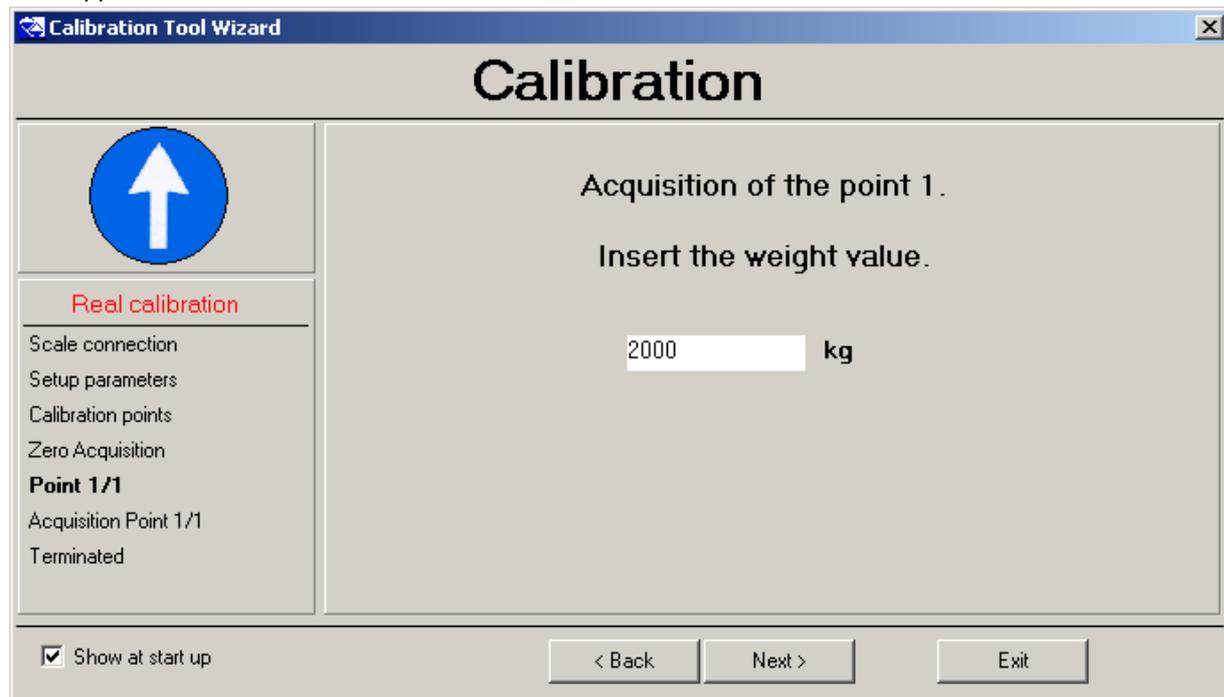
3) Set the number of calibration points (except for the scale zero) and press on "Next" to continue:



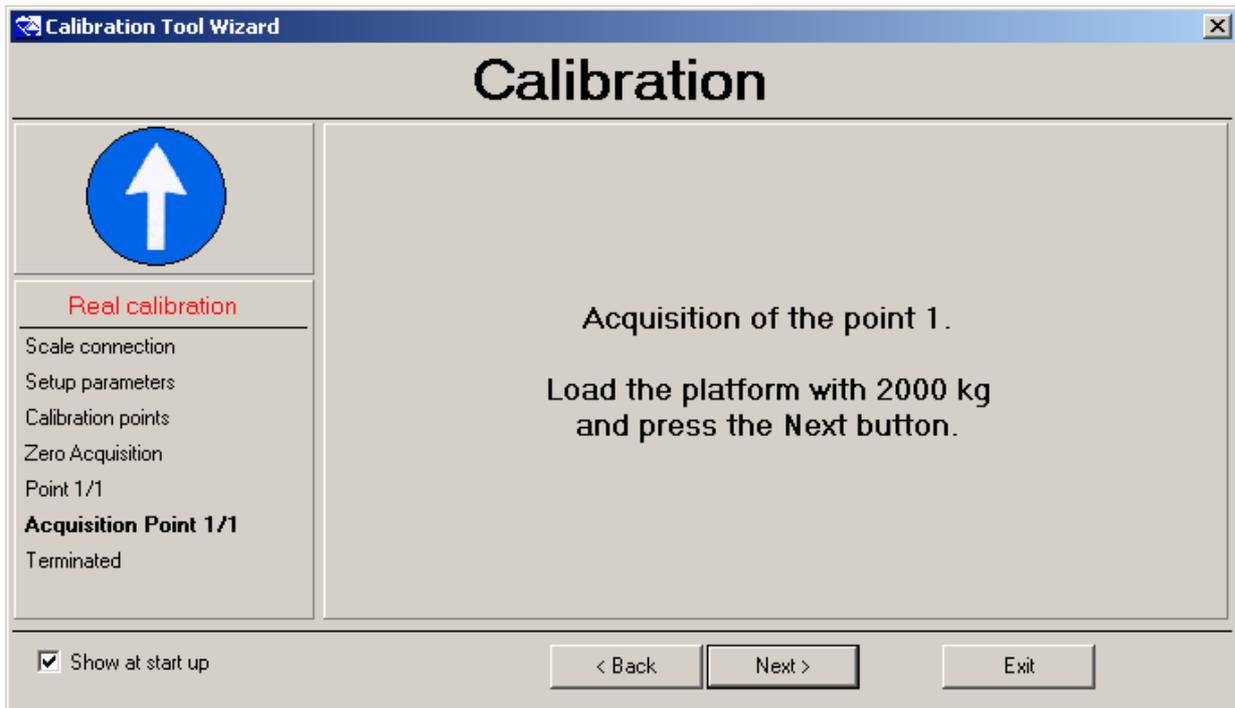
- 4) The programme is ready to acquire the scale zero; unload the scale and press on "Next"; the following will appear:



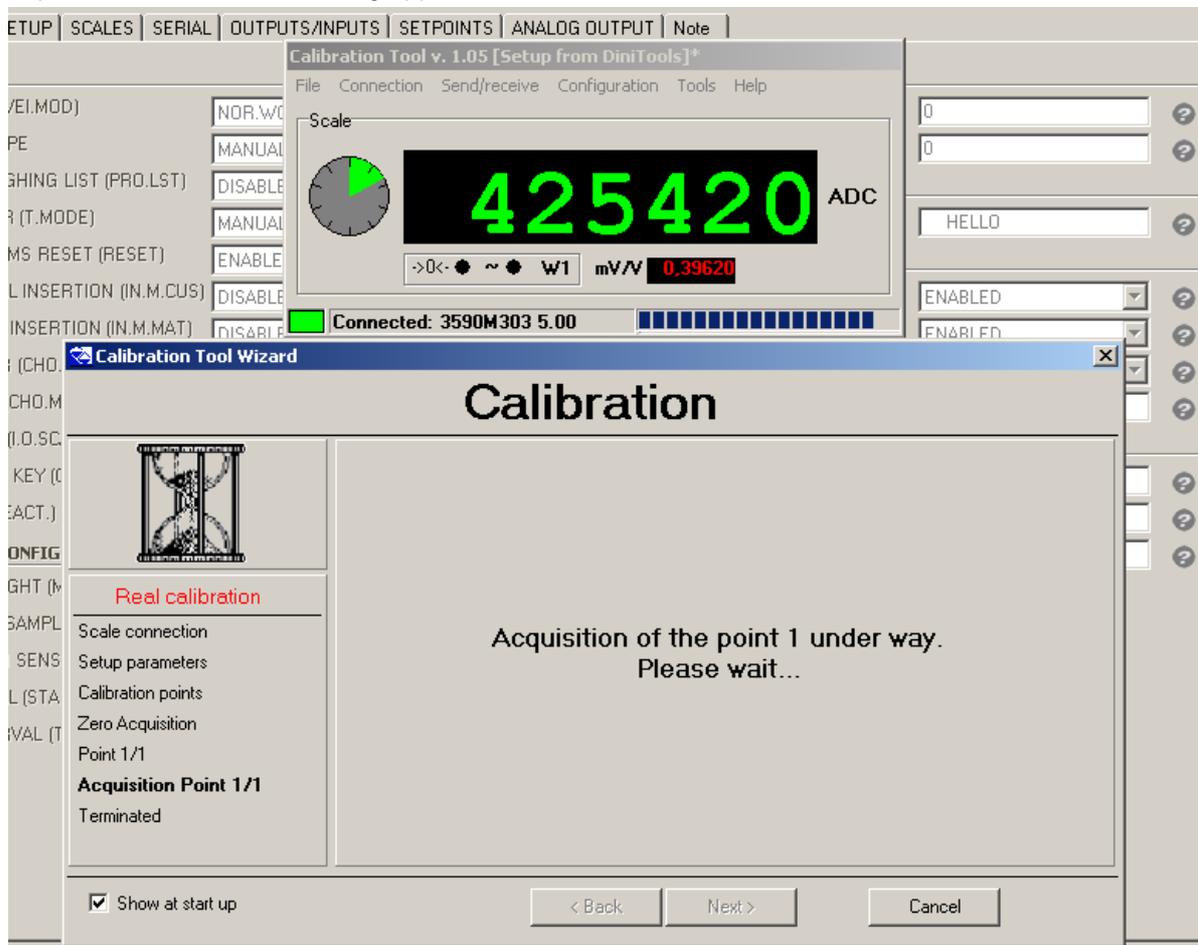
then appears:



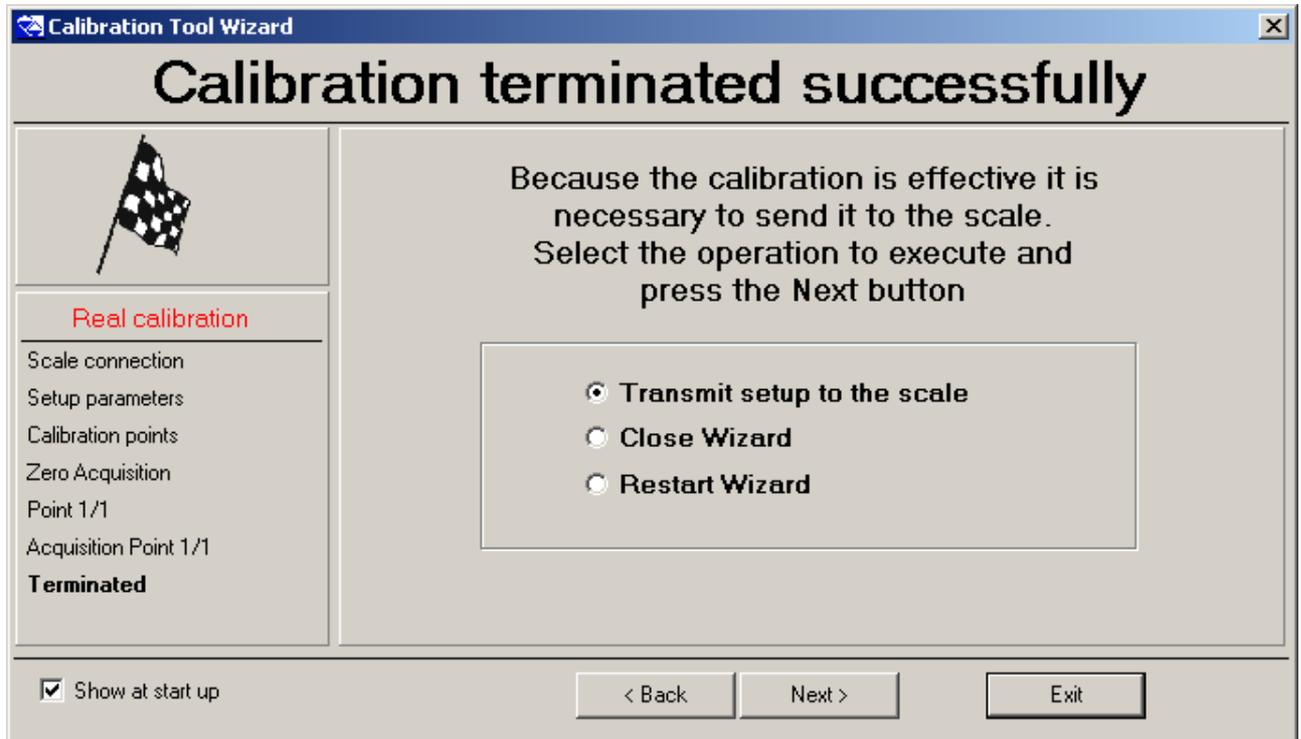
- 5) Enter the calibration weight value (in the example it's 2000 kg) and press on "Next"; the following will appear:



- 6) The programme is ready to acquire the point number 1; put on the scale the weight set previously and press on "Next"; the following appears:



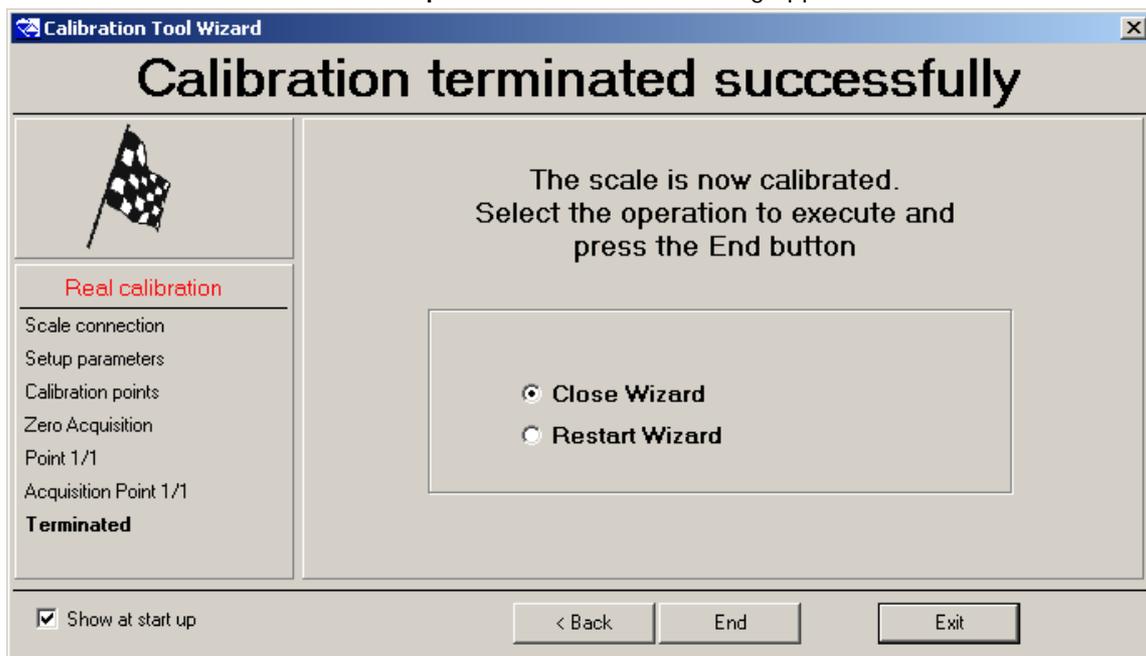
- 7) Repeat the operation for all the set calibration points; at the end of the last point, the calibration has been completed:



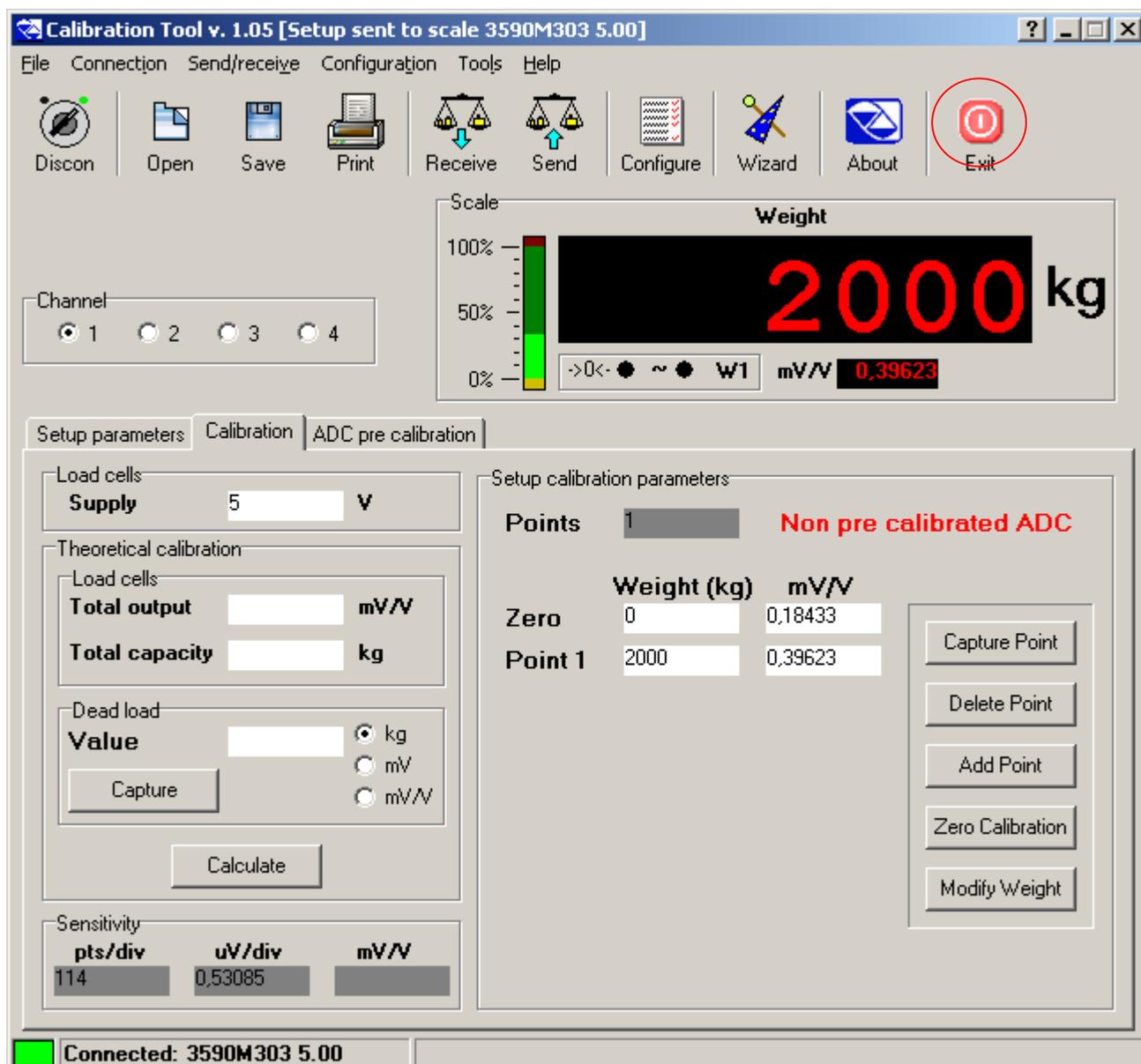
- 8) At this point it's possible to:
- Transmit **only** the calibration data to the indicator ("Transmit setup to the scale").
 - Close the Wizard ("Close Wizard"): see point 12)
 - Restart from the beginning ("Restart Wizard").

- 9) Press "Next" to continue.

- 10) If one has selected "Transmit setup to the scale", the following appears:



- 11) Select whether to close the Wizard ("Close Wizard") or restart from the beginning ("Restart Wizard") and press on "End".
- 12) By closing the Wizard the complete calibration programme appears (see the "USE WITHOUT WIZARD" section):



- 13) Press on the "Exit" key in the upper right to close the programme and return to "Setup management".
- 14) By pressing now the "Save" key in the "Setup management", one stores on PC the calibration just made. By transmitting the setup ("Send" key) the calibration will be transmitted together with the other scale parameters.

USE WITHOUT WIZARD



Connect / Disconnect the programme



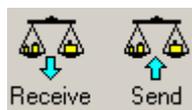
Opens an existing configuration from a ".mot" file.



Saves the configuration in a ".mot" file.



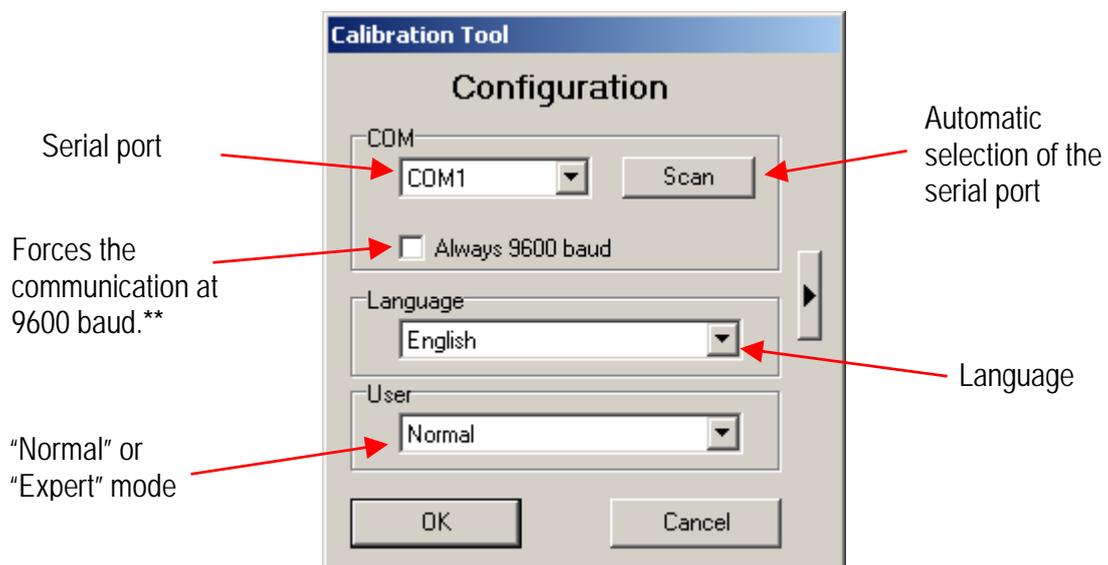
Allows to print the configuration.



Receives / Transmits the calibration and the metrological data to the scale.



Settings of the programme:



** To optimise the data transmission speed, the baud rate is instantaneously set at 115200 and then brought back at 9600; in case of communication problems (for example by using the simulated serial ports through USB) one can force the baud rate always at 9600.



Enable the "Wizard" guide previously described.



Allows to exit the programme.

"NORMAL" MODE

Refer to the section marked in the screen below.

The screenshot shows the 'Calibration Tool v. 1.07 [Setup from DiniTools]' software interface. The 'Calibration' tab is highlighted with a red box. The interface includes a menu bar (File, Connection, Send/receive, Configuration, Tools, Help), a toolbar with icons for Discon, Open, Save, Print, Receive, Send, Configure, Wizard, About, and Exit, and a main display area. The main display shows a scale reading of 346 kg and a sensitivity of 0.17323 mV/V. The Calibration tab contains the following sections:

- Load cells:** Supply 5 V
- Theoretical calibration:**
 - Load cells: Total output (mV/V), Total capacity (kg)
 - Dead load: Value (kg, mV, mV/V), Capture button
 - Calculate button
- Sensitivity:** pts/div (538), uV/div (2.49999), mV/V
- Setup calibration parameters:**
 - Points: 1 (Pre calibrated ADC)
 - Table:

	Weight (kg)	mV/V
Zero	0	0,00003
Point 1	4000	2,00002
 - Buttons: Capture Point, Delete Point, Add Point, Zero Calibration, Modify Weight

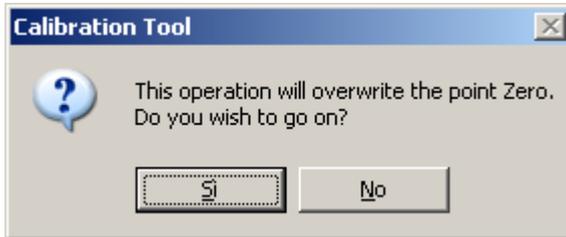
The status bar at the bottom indicates 'Connected: DGT 5.02'.

Procedure:

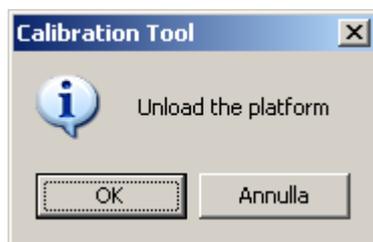
- 1) Select the scale to be calibrated in the "Channel" section: 1, 2, 3, 4.
NOTE: if the scale is with dependent channels, always select "1".

- 2) Click on the white box next to "Zero" (acquisition of the scale zero).

- 3) Click on "Capture point":



Confirm the dotted box; then the following will appear:



- 4) Unload the scale and confirm with OK; then the following screen will appear:

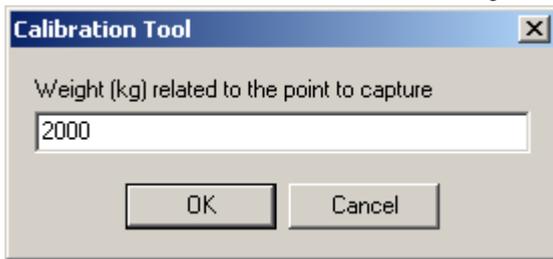


- 5) Click on the white box next to "Point 1" (first calibration point)

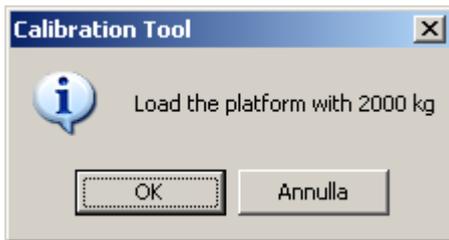
- 6) Click on "Capture point":



- 7) Confirm the dotted box; then the following will appear:



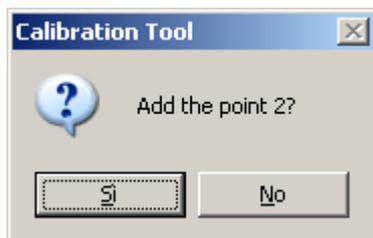
- 8) Enter the value of the weight be acquired and confirm the "OK"; the following appears:



- 9) Load onto the scale the corresponding weight and confirm the "OK"; the following appears:



- 10) Confirm the "OK".
- 11) To add another calibration point press on "Add Point":



- 12) By confirming the window one enters the second calibration point, in the same way as the first point [see points from 6) to 9)].

- To transmit only the calibration and the metrological data, click on the "Send" key above; to transmit all the setup parameters, one should exit the calibration programme and use the "Send" key of the "Setup management" of Scalestools (see section 8.2.2).

NOTES

- One can carry out up to 8 calibration points.
- Click on "Delete Point" to cancel a calibration point (it isn't possible to cancel point 1).
- Click on "Modify weight" to change the weight value of a point, without touching the relative mV/V.

"EXPERT" MODE

This mode allows a greater freedom to modify the calibration points; refer to the sections marked in the screen below.

Channel: 1 2 3 4

Scale: 100% 50% 0%

Weight: 2000 kg

>0< ~ W1 mV/V 0.39290 ADC 421874

Setup parameters: Calibration ADC pre calibration

Load cells: Supply 5 V

Theoretical calibration: Load cells: Total output mV/V, Total capacity kg

Dead load: Value kg mV mV/V

Sensitivity: pts/div 112 uV/div 0.52154 mV/V

Setup calibration parameters:

Points	Weight (kg)	mV/V	ADC value
Zero	0	0,18317	196676
Point 1	2000	0,39288	421849
Point 2	0	0,00000	0
Point 3	0	0,00000	0
Point 4	0	0,00000	0
Point 5	0	0,00000	0
Point 6	0	0,00000	0
Point 7	0	0,00000	0
Point 8	0	0,00000	0

Connected: 3590M303 5.00

Procedure:

- 1) Select the scale to be calibrated in the “**Channel**” section: 1, 2, 3, 4.
NOTE: if the scale is with dependent channels, select always “1”.
- 2) Put on the scale the weight to be acquired (to make the zero, unload the scale): in the “**mV/V**” and “**ADC**” fields one will view the corresponding value.
- 3) Point the mouse next to the screen which shows the weight:



- 4) By keeping the left key of the mouse clicked, drag it until it's next to the point to be acquired: by releasing the key, the following window will appear:

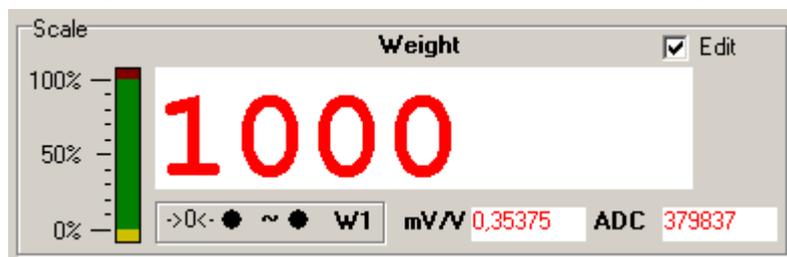


- By clicking on “**Overwrite**”, the mV/V values and the converter points are **overwritten without changing the other points**.
 - By clicking on “**Overwrite locked**”, the mV/V values and the converter points are **overwritten without proportionally changing the other points**.
 - By clicking on “**Insert**”, the mV/V values and the converter points are entered in a new point in the position previous to the selected one.
 - By clicking on “**Cancel**”, the operation is cancelled.
- 5) By clicking on the “**Weight**” white box next to the desired point, it will be possible to enter the weight value; furthermore by clicking on the “**mV/V**” or “**ADC value**” box, it is possible to modify the millivolt or converter points value.
 - 6) To enter a point, click on the right key of the mouse on the calibration point and select “**Insert point**” (it will be inserted in the previous position); to cancel a point select “**Delete point**”.



- 7) To transmit only the calibration and the metrological data, click on the “**Send**” key above; to transmit all the setup parameters, one should exit the calibration programme and use the “**Send**” key of the “**Setup management**” of the Scalestools (see section 8.2.2).

NOTE: by selecting the “Edit” box it’s possible to type from the PC keyboard any weight value and see the corresponding mV/V value (and the converter points), taking into consideration the present calibration as a reference; by unselecting the box one can return to the standard functioning.

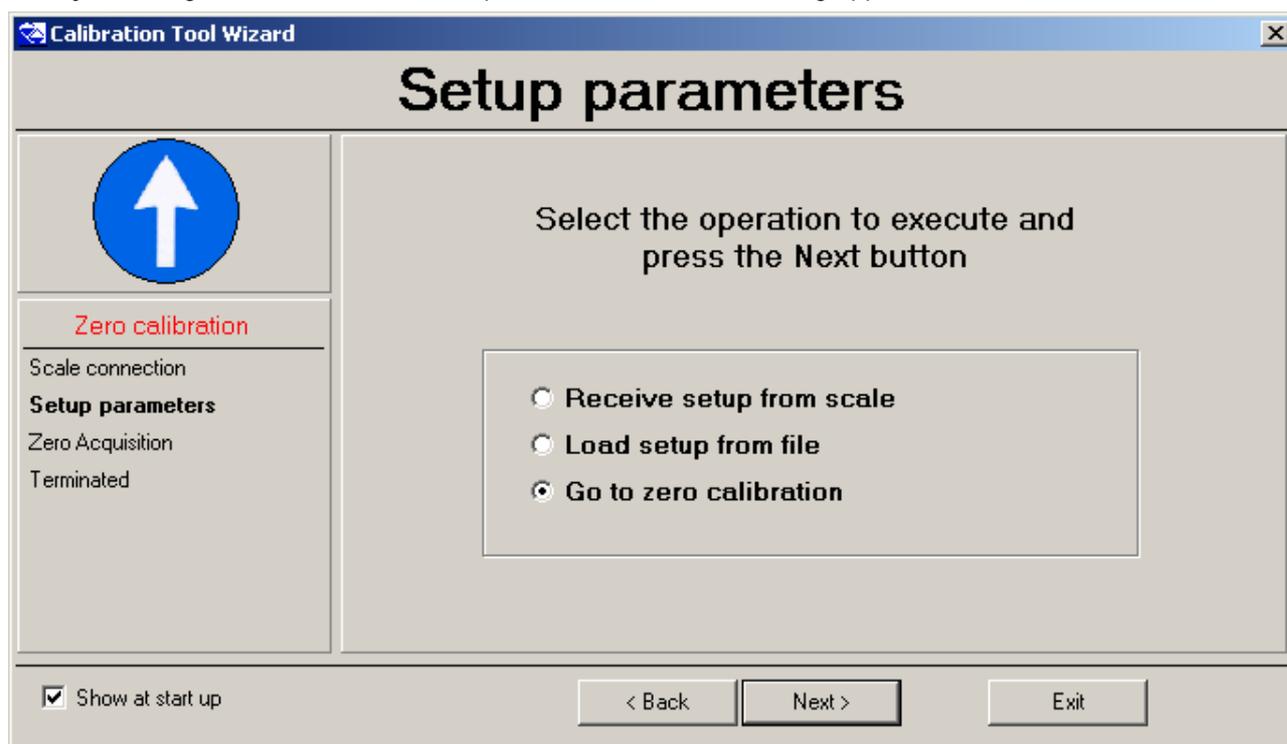


8.2.2.2 “ZERO CALIBRATION”

The zero calibration allows to carry out a new zero point without completely recalibrating the scale (the other points are proportionally altered); it’s therefore necessary that the scale is already calibrated.

USE WITH WIZARD (only for the scale number 1)

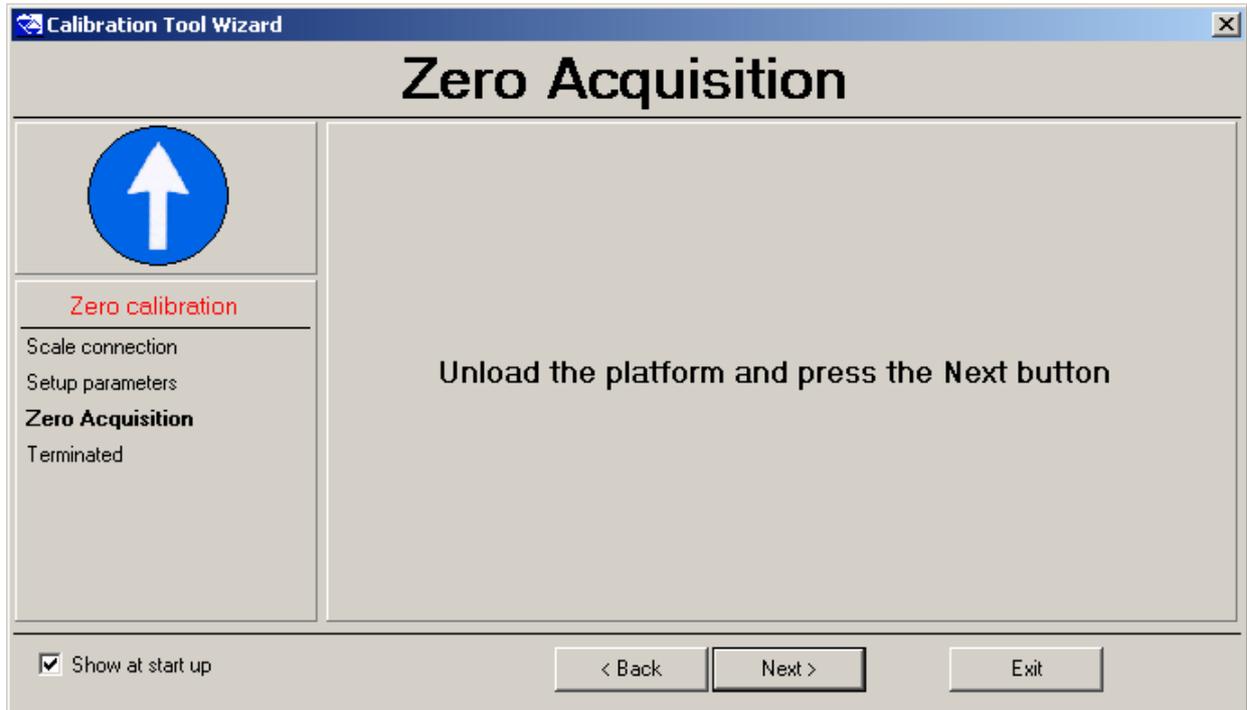
1) By selecting “Zero Calibration” and press on “Next”, the following appears:



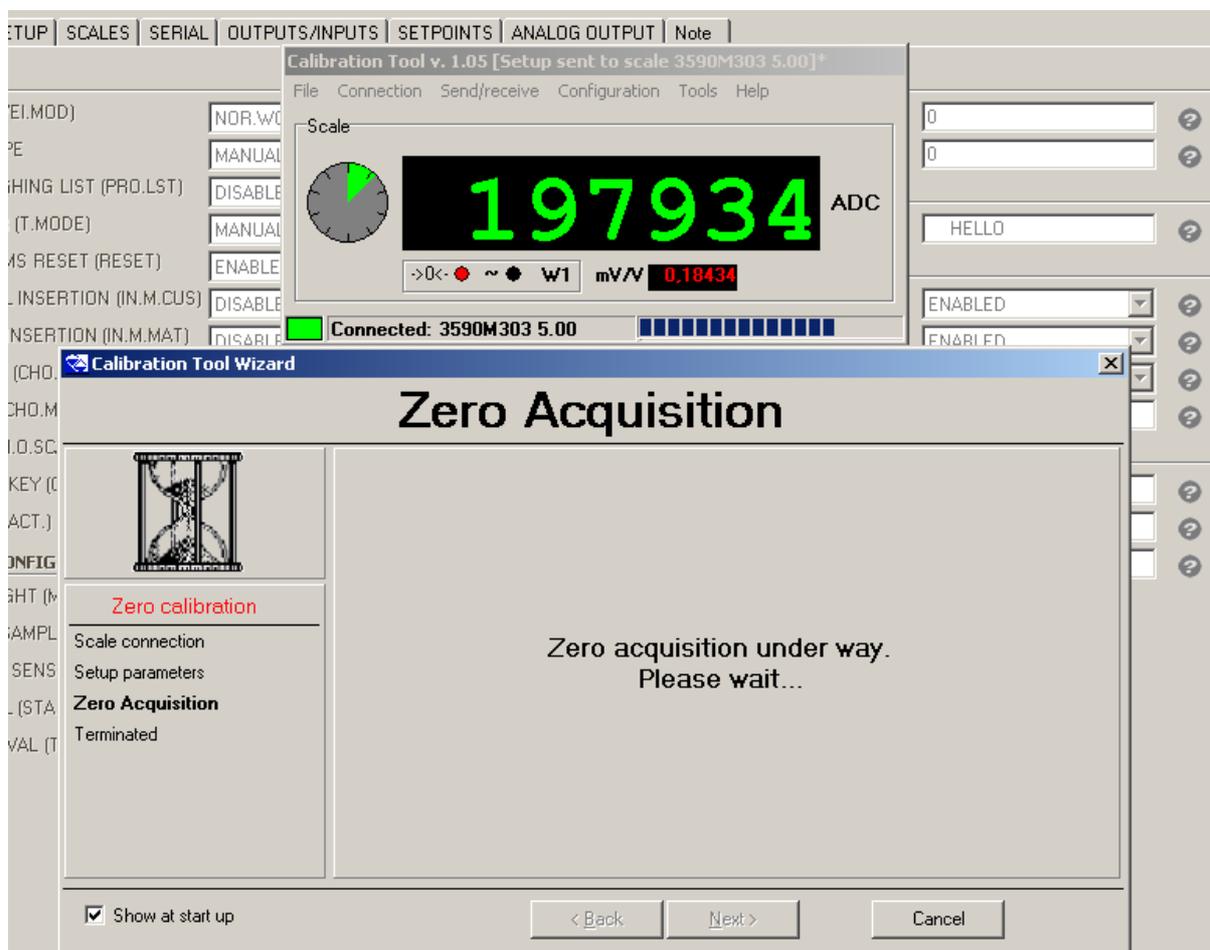
2) By selecting “Receive setup from scale” and pressing on “Next” it’s possible to receive the metrological and calibration parameters directly from the scale.

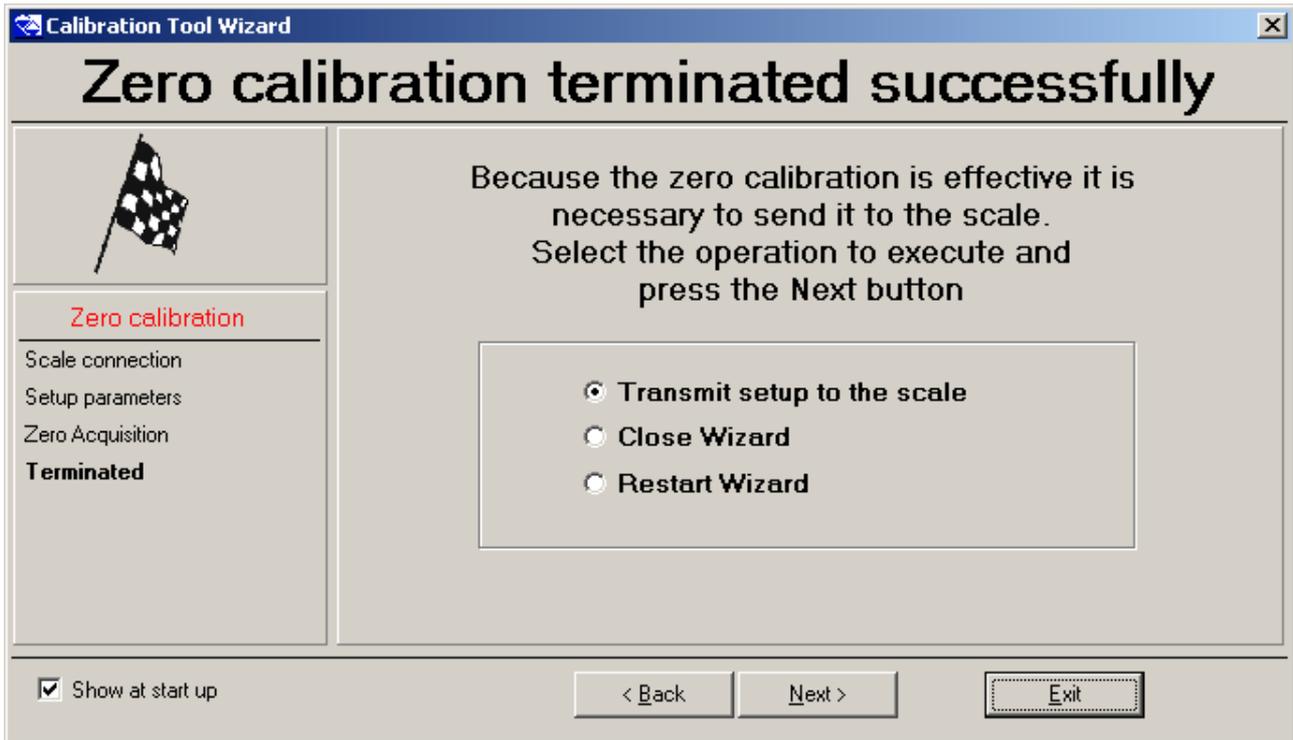
3) By selecting “Load setup from file” it’s possible to import the data from a previously exported “.mot” file (see point 3 of the section 8.2.2.1 “Calibration with sample weights”, “**USE WITH WIZARD**”).

4) By selecting "Go to zero calibration" and pressing on "Next", one proceeds with the zero calibration:



5) Unload the scale and press on "Next"; the following appears:





- 5) At this point it's possible to:
 - o Transmit **only** the calibration data to the indicator ("Transmit setup to the scale").
 - o Close the Wizard ("Close Wizard").
 - o Restart from the beginning ("Restart Wizard").
- 6) Press "Next" to continue.
- 7) If one has selected "Transmit setup to the scale":



8) See from point 16) of the section 8.2.2.1 "Calibration with sample weights", "USE WITH WIZARD".

USE WITHOUT WIZARD

"NORMAL" MODE



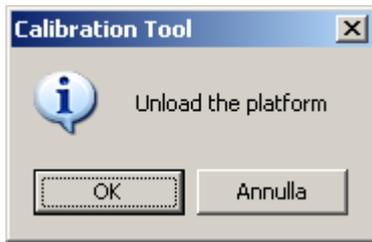
Procedure:

1) Press on the "Zero calibration" key; the following window will appear:



Confirm the window to proceed.

- 2) Unload the scale and confirm the following window:



- 3) After a few instants the new zero point is acquired:



- 4) By confirming with **OK** one returns in the programme.
- 5) To only transmit the calibration and the metrological data, click on the "**Send**" key above; to transmit all the parameters of the setup, one should exit the calibration programme and use the "**Send**" key of the "**Setup management**" of Scalestools (see section 8.2.2).

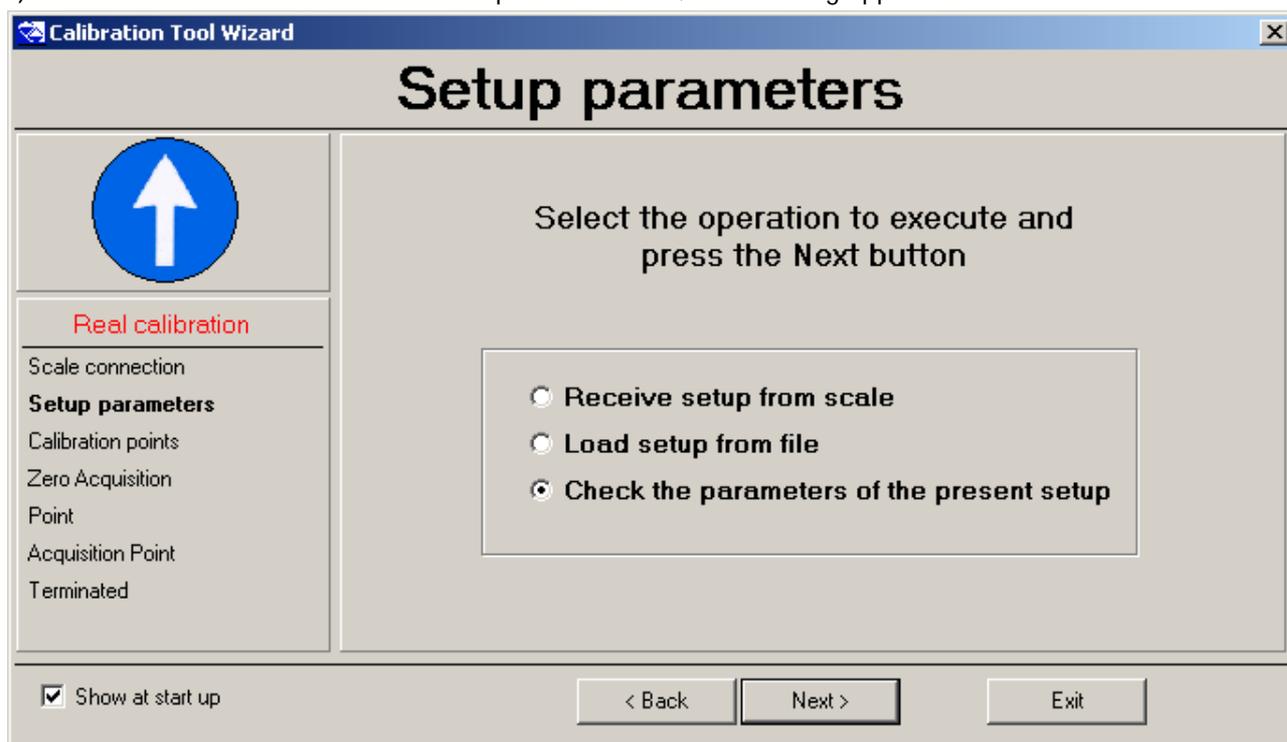
8.2.2.3 "THEORETICAL CALIBRATION"

The theoretical calibration allows to calibrate the scale without the use of sample weights and is useful when **it's impossible to put these weights on the weighing system** (for example in the silos); by entering the system data in the programme (excitation of the load cells, mV/(V value, total capacity of the load cells), the programme calculates in relation to the set capacity/division. Consequently the accuracy of the calibration depends on the correctness and accuracy of the entered data.

NOTE: Please take note that isn't possible to obtain the same accuracy of the calibration with the sample weights.

USE WITH WIZARD (only for the scale number 1)

1) Select "Theoretical Calibration" and press on "Next"; the following appears:



- 2) By selecting "Receive setup from scale" and pressing on "Next" it's possible to receive the metrological and calibration parameters directly from the scale.
- 3) By selecting "Load setup from file" it's possible to import the data from a previously exported ".mot" file (see point 3) of the section 8.2.2.1 "Calibration with the sample weights", "USE WITH WIZARD").
- 4) By selecting "Check the parameters of the present setup" and pressing on "Next" it's possible to check and eventually modify the parameters already stored on the PC (see points 5 - 6 of the section 8.2.2.1 "Calibration with the sample weights", "USE WITH WIZARD").

5) Press on "Next" to continue:

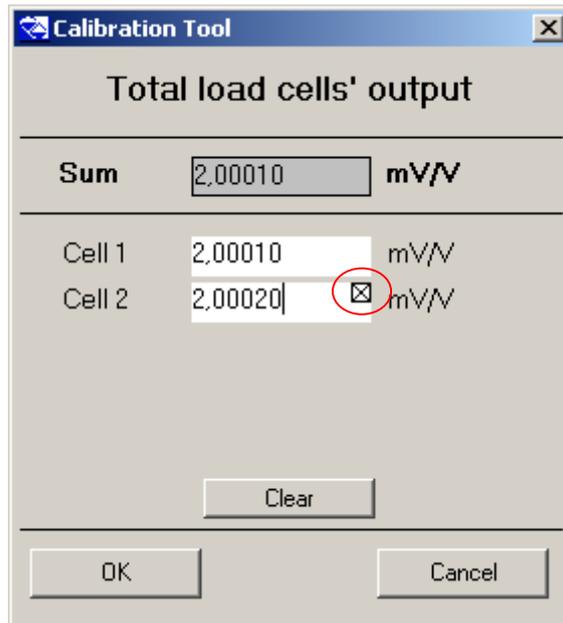
The screenshot shows a window titled "Calibration Tool Wizard" with a sub-header "Theoretical calibration". On the left, there is a blue circular icon with a white upward-pointing arrow. Below it, a sidebar lists "Theoretical calibration" (highlighted in red), "Setup parameters", "mV/V", "Cells capacity", "Dead load", and "Terminated". The main area contains the text: "Insert the load cell's output. With dependent channels insert the total load cells' output." Below this text is a text input field containing "2,0003" followed by "mV/V" and a "Calculate" button. At the bottom of the window, there is a checkbox labeled "Show at start up" which is checked, and three buttons: "< Back", "Next >", and "Exit".

6) With **Independent channels** application, enter the mV/V value of the load cell; with various load cells **equalised through the external junction box**, enter the **average** of the signals. With a **Dependent channels** application, enter the sum of the mV/V of the connected load cells.

By pressing on "Calculate" it's possible to make the sum from PC:

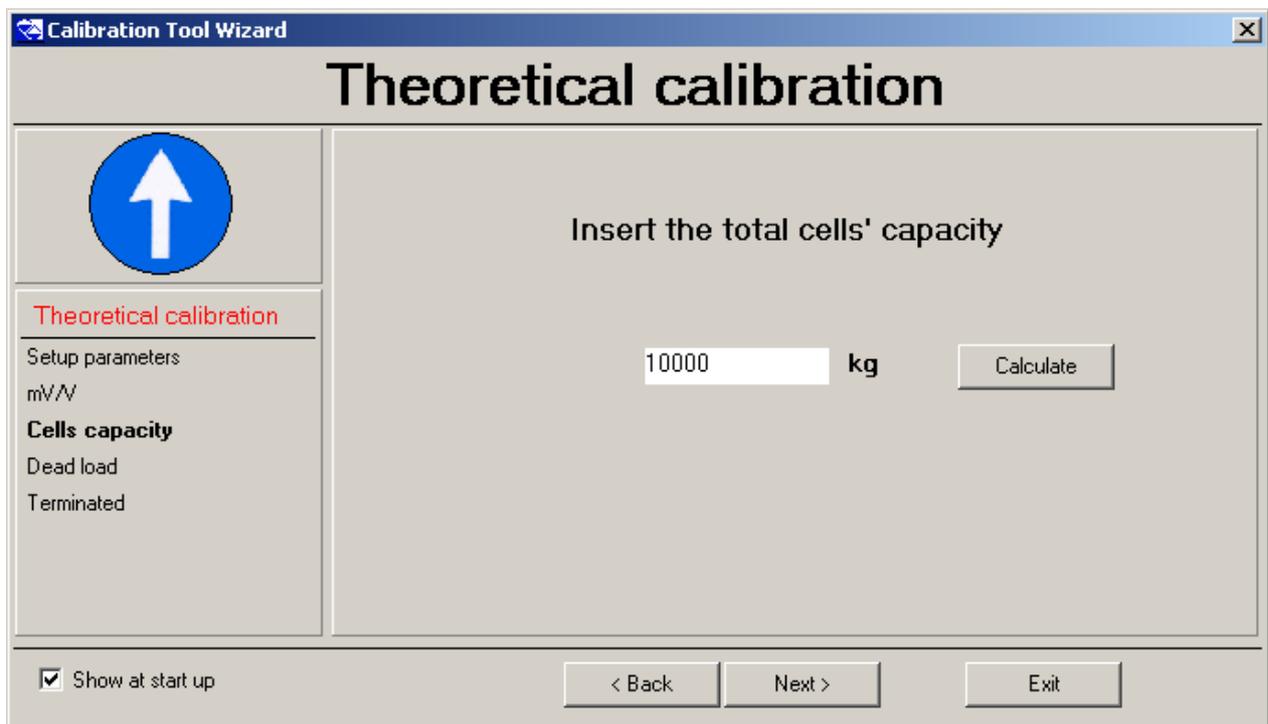
The screenshot shows a dialog box titled "Calibration Tool" with a sub-header "Total load cells' output". It contains two rows of input fields. The first row is labeled "Sum" and has a text input field containing "2,00010" followed by "mV/V". The second row is labeled "Cell 1" and has a text input field containing "2,00010" followed by "mV/V". Below these fields is a "Clear" button. At the bottom of the dialog box are "OK" and "Cancel" buttons.

Enter the mV/V value in the "Cell 1" field and press **ENTER** on the PC keyboard to enter the value of the second load cell:



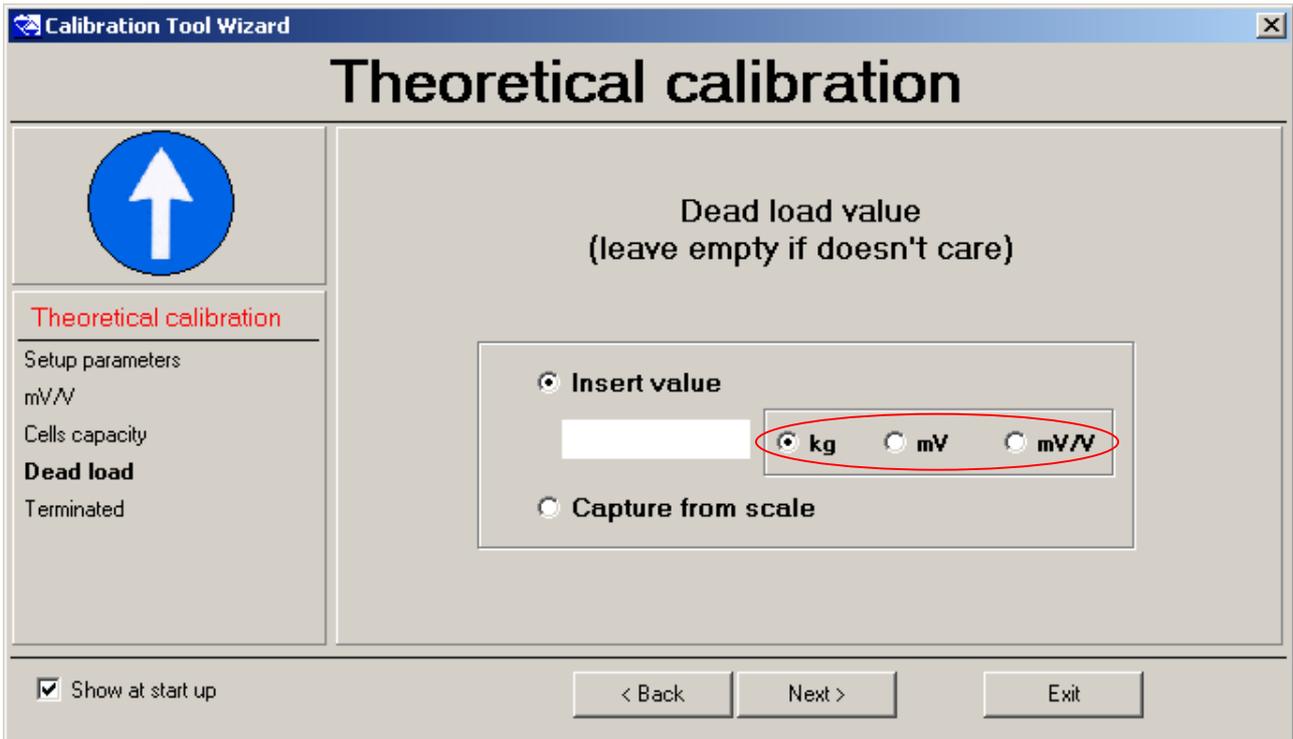
Continue in the same way for the other connected channels (with the x of the field one cancels).

By confirming with **OK**, the total value in the field will appear.



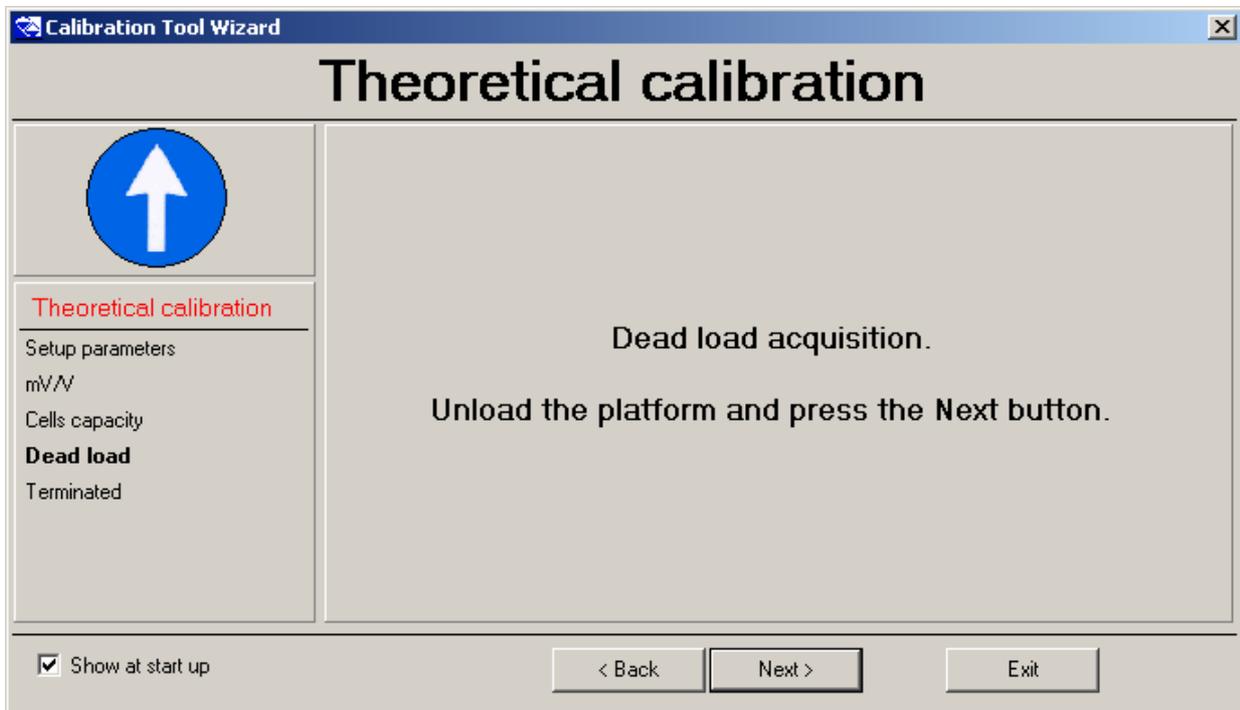
- 7) with an **Independent channels** application, enter the load cell capacity; with various load cells **equalised through the external junction box**, enter the **total capacity** (for example, if one has 4 cells of 2000 kg each one should enter "8000").

With a **Dependent channels** application, enter the sum of the capacities of the connected load cells. By pressing on "**Calculate**" it's possible to sum from PC (see the previous point).



8) Acquisition of the scale zero:

- By selecting "Insert Value" it's possible to manually enter the corresponding value, in kg, in mV or in mV/V (depending on the selection highlighted in the drawing).
- By selecting "Capture from scale" one receives the value from the scale:



SCALES SERIAL OUTPUTS/INPUTS SETPOINTS ANALOG OUTPUT Note

Calibration Tool v. 1.05 [Setup from DiniTools]*

File Connection Send/receive Configuration Tools Help

Scale

ADC

197631

mV/V 0.18406

Connected: 3590M303 5.00

Calibration Tool Wizard

Theoretical calibration



Theoretical calibration

Setup parameters
mV/V
Cells capacity
Dead load
Terminated

Dead load acquisition under way.
Please wait...

Show at start up

< Back Next > Cancel

Calibration Tool Wizard

Calibration terminated successfully



Theoretical calibration

Setup parameters
mV/V
Cells capacity
Dead load
Terminated

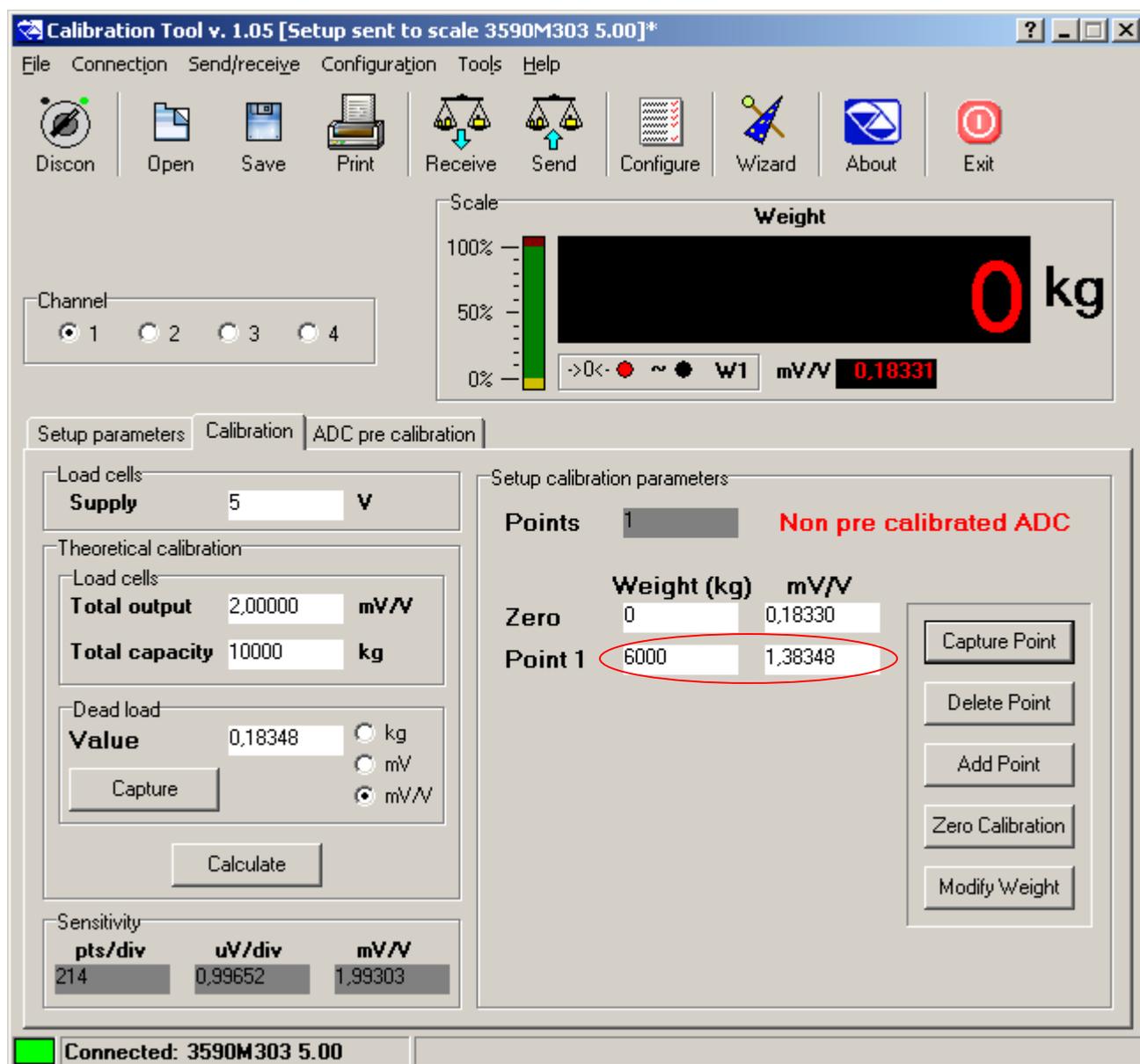
Because the calibration is effective it is necessary to send it to the scale.
Select the operation to execute and press the Next button

- Transmit setup to the scale
- Close Wizard
- Restart Wizard

Show at start up

< Back Next > Exit

- 9) See the points from 13) to 16) of section 8.2.2.1 "Calibration with sample weights" "USE WITH WIZARD".
- 10) By closing the Wizard the complete calibration programme will appear (see section "USE WITHOUT WIZARD"):

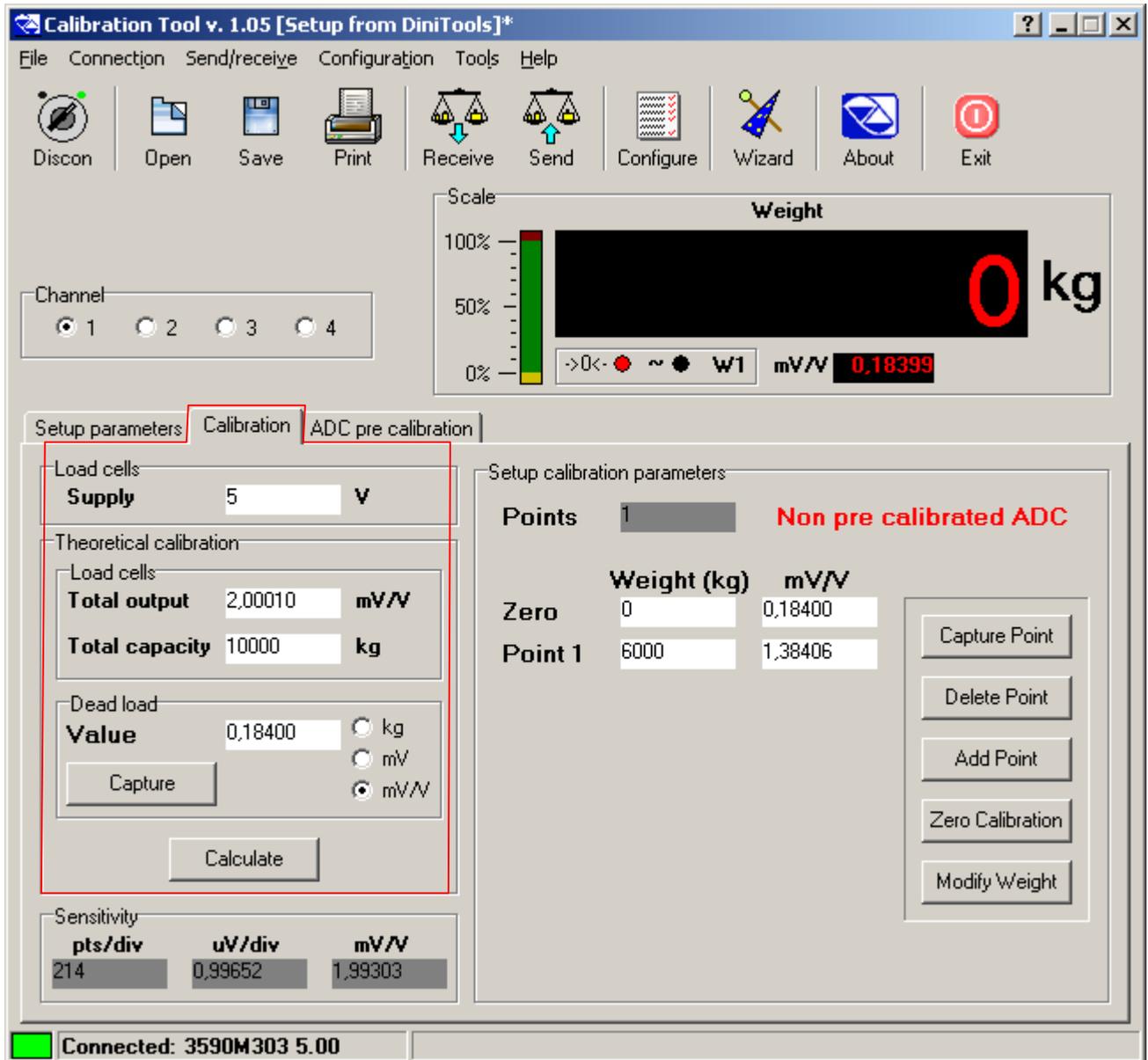


As one may note in the screenshot, the first calibration point is set equal to the scale capacity.

- 11) Press on the "Exit" key in the upper right to close the programme and return to the Setup management.
- 12) By pressing now the "Save" key in the Setup management, one also stores on PC the calibration just made. Therefore, by carrying out a transmission from the setup ("Send" key) the calibration together with all the other scale parameters will be transmitted.

USE WITHOUT WIZARD

Refer to the section marked in red in the figure.



Procedure:

- 1) Select the scale to be calibrated in the "Channel" section: 1, 2, 3, 4.
NOTE: if the scale is with dependent channels, always select "1".
- 2) "Supply" field: make sure that there is "5" (Volt excitation of the load cells).
- 3) "Total output" field: with Independent channels application, enter the mV/V value of the load cell; with various load cells equalised through the external junction box, enter the average of the signals.

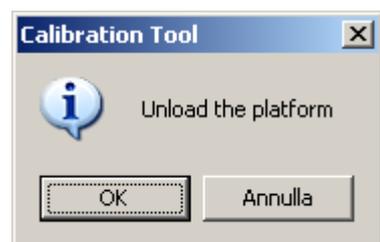
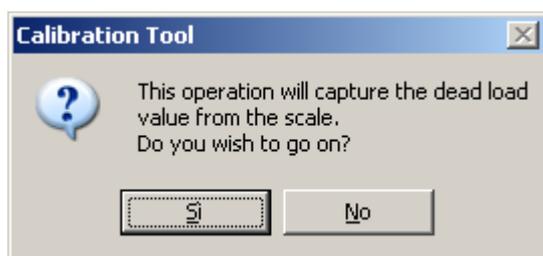
With a Dependent channels application, enter the sum of the mV/V of the connected load cells.

- 4) "Total capacity" field: with an **Independent channels** application, enter the load cell capacity; with various load cells **equalised through the external junction box**, enter **the total capacity** (for example, if one has 4 cells of 2000 kg each one should enter "8000").

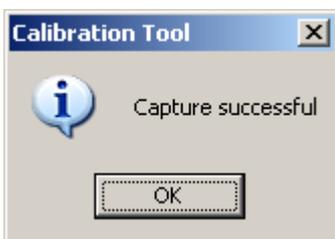
With a **Dependent channels** application, enter the sum of the capacities of the connected load cells.

- 5) Acquisition of the scale zero:
- The "Value" field allows to manually enter the corresponding value, in kg, in mV or in mV/V (depending on whether "kg", "mV", "mV/V" is selected).

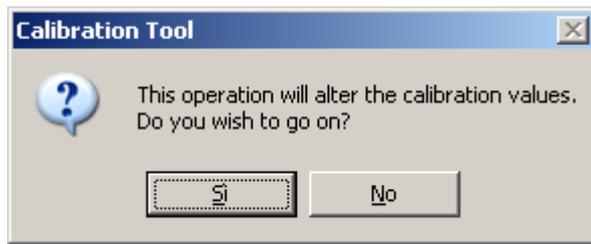
- By pressing instead on "Capture" one receives the value from the scale:



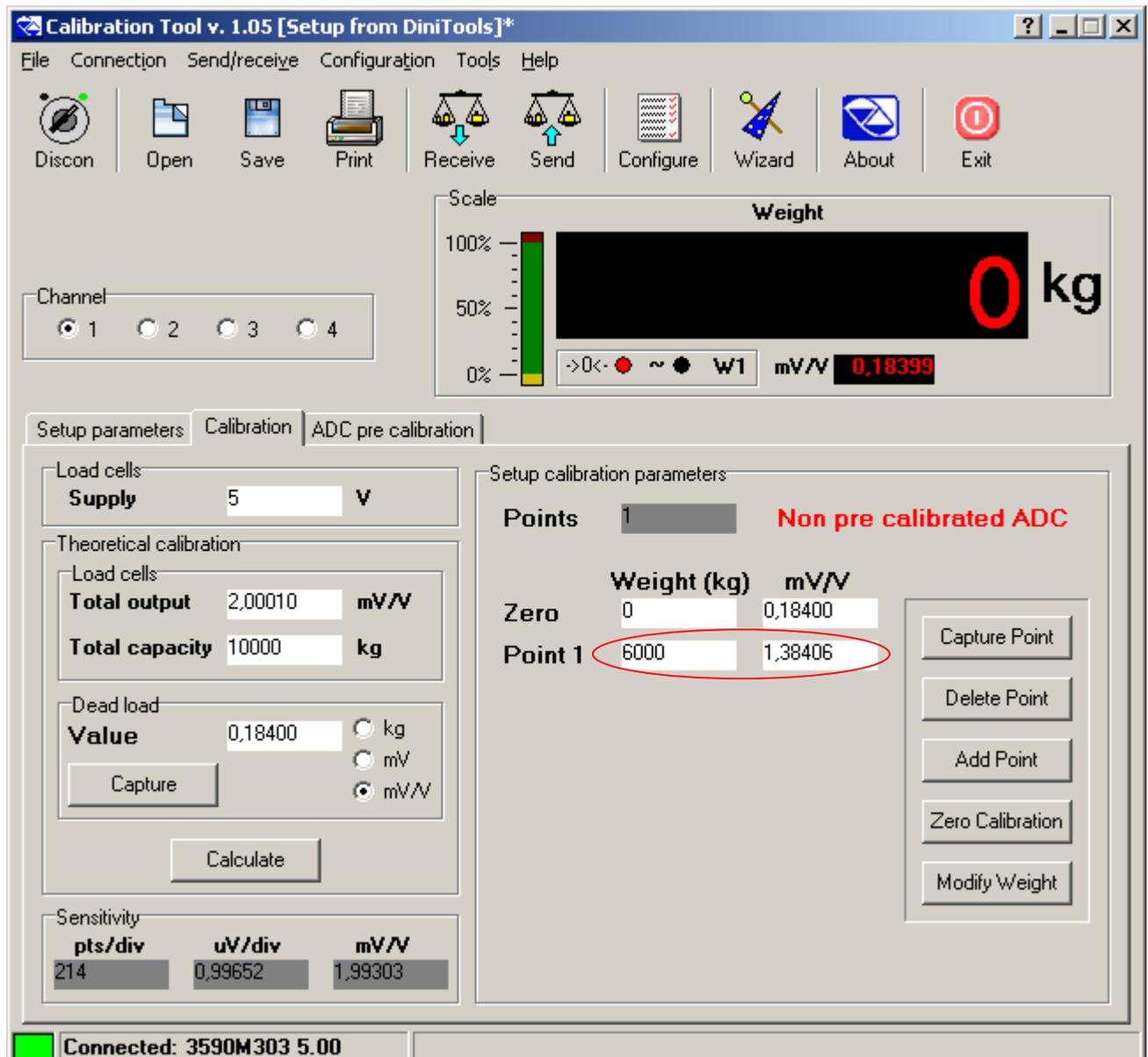
- 6) Unload the scale and confirm the window; the following will appear:



7) Press on "Calculate"; the following will appear:



By confirming the window, a calibration point equal to the scale capacity will be entered (marked in the screenshot):



8) To transmit only the calibration and metrological data, click on the "Send" key above; to transmit all the setup parameters, one should exit the calibration programme and use the "Send" key of the "Setup Management" of Scalestools (see section 8.2.2).

8.2.2.4 PRECALIBRATION OF THE INDICATOR (“ADC PRE-CALIBRATION”)

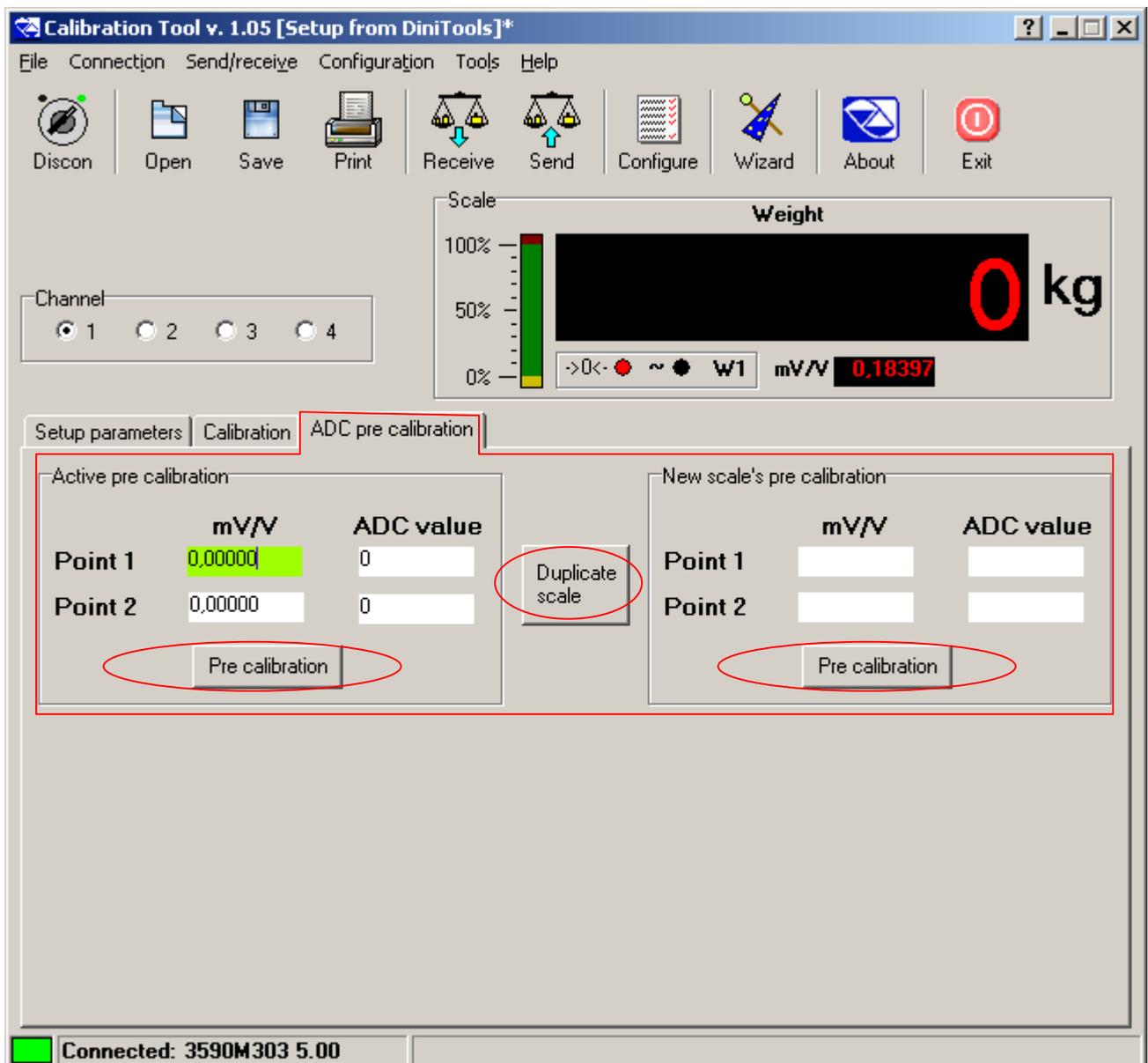
The precalibration allows to “clone” an indicator copying the calibration onto another one (with the same firmware version) without obtaining weighing errors; this is useful, for example, if one needs to substitute the board of an indicator in an existing system, with the need to maintain the same configuration and calibration.

NOTES

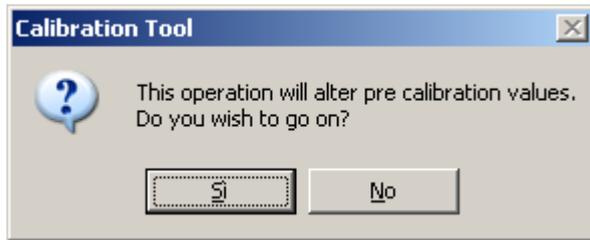
- It's advisable to carry out the precalibration **before installing the indicator “to be cloned”** (an eventual damage of the board would not allow this operation).
- It's necessary that the indicator to be “cloned” has already been calibrated.

Procedure:

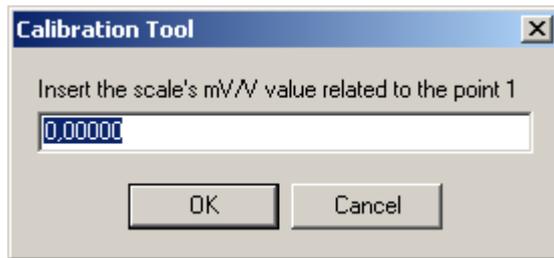
- 1) Connect a cell simulator to channel 1 of the indicator to be “cloned”.
- 2) Open the calibration programme without the Wizard mode and select the “ADC pre calibration” section (marked in the screenshot):



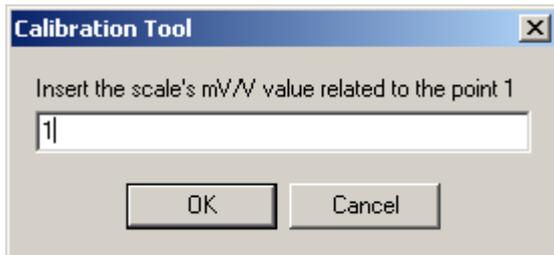
- 3) Press on the “Pre calibration” key on the left; the following appears:



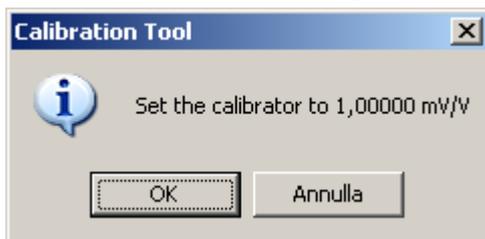
By confirming the window, the following will appear:



- 4) Enter a mV/V value for the first reference point, for example “1”:



- 5) Confirm with OK; the following will appear:

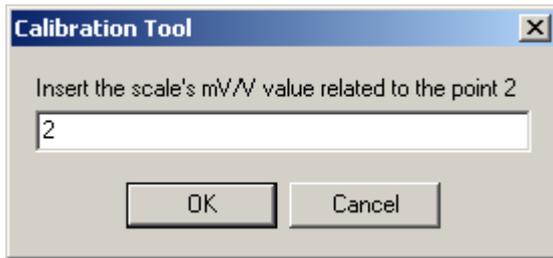


- 6) Set the cell simulator next to the mV/V entered previously and confirm with OK.

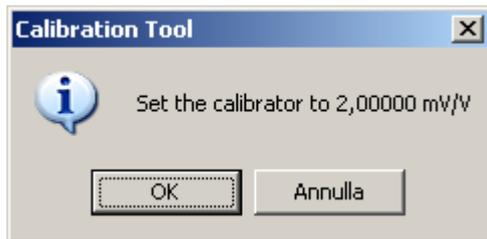
- 7) After a few instants the successful acquisition message will appear:



8) It's now possible to enter a mV/V value for the second reference point, for example "2":



9) Confirm with OK; then the following will appear:

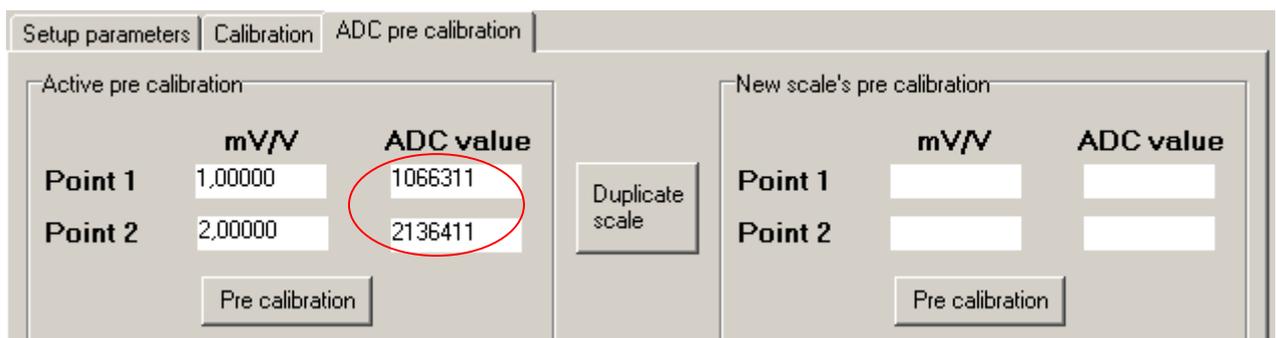


10) Set the cell simulator next to the mV/V entered previously and confirm with OK.

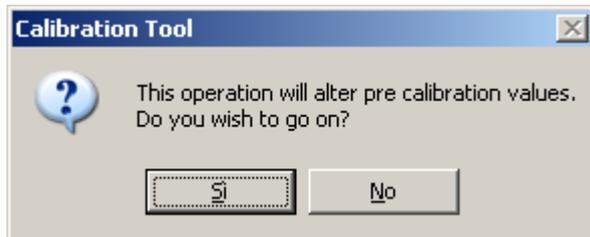
11) After a few instants the successful acquisition message will appear:



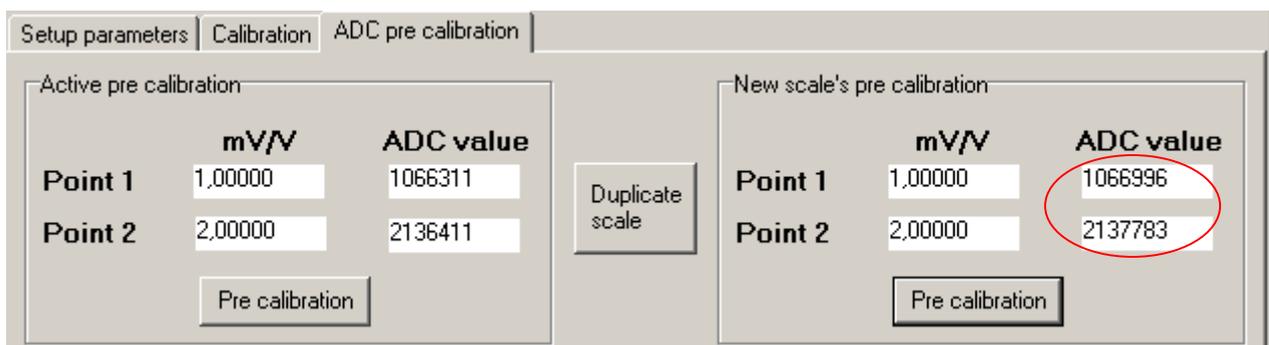
12) By confirming with "OK", the received converter points will appear:



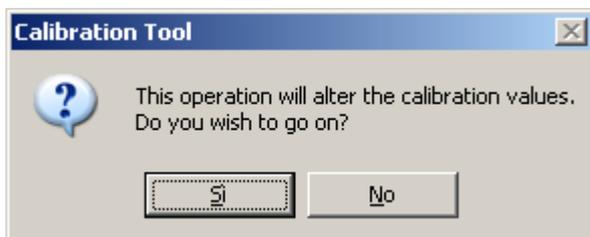
- 13) Transmit the precalibration to the indicator.
- 14) Disconnect from the PC the indicator to be "cloned" and connect the "clone".
- 15) Connect a cell simulator to channel 1 of the "clone" indicator.
- 16) Press on the "Pre calibration" key on the **right**; the following will appear:



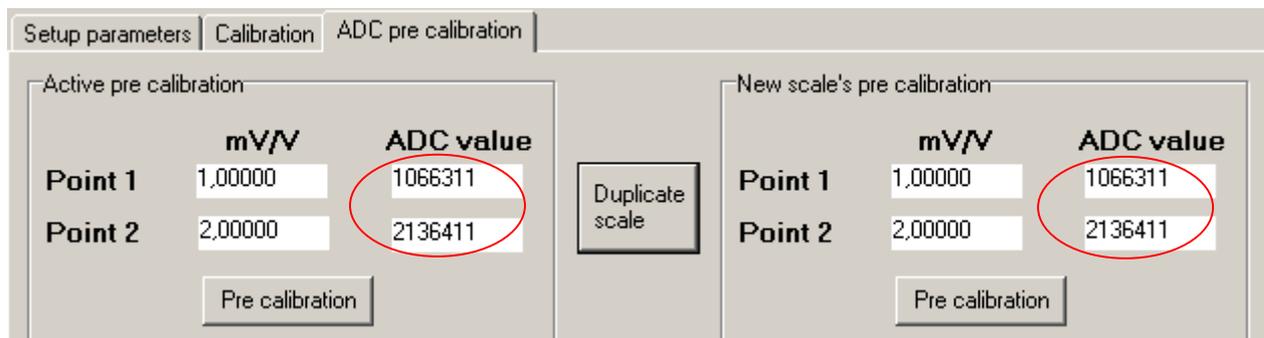
- 17) Repeat the operations from point 4) to point 11). (with exactly the same values in mV/V)
- 18) By confirming with "OK", the received converter points will appear:



- 19) As one may note, the converter points of the new indicator are slightly different in respect to the indicator to be "cloned" (this is due to the nature of the ADC converters, which are always "different"); therefore if one transmits the calibration of the indicator to be "cloned" to the new indicator, it may be possible to have an error of various divisions.
- 20) Press on the "Duplicate scale" key; the following will appear:



21) By confirming the window, the converter points of the new indicator are made the same as those of the "cloned" indicator:

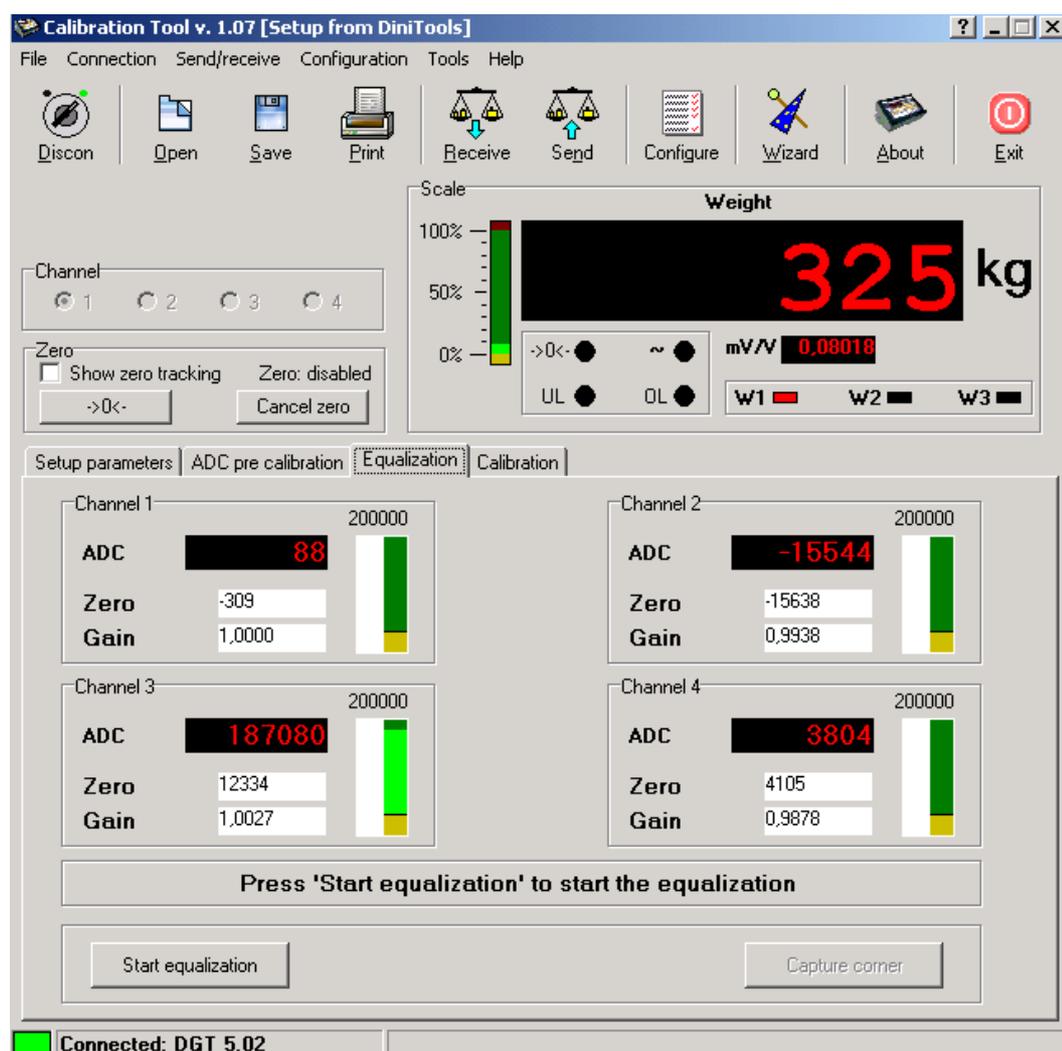


22) To transmit only the calibration and the metrological data, click on the "Send" key above; to transmit all the setup parameters, one should exit the calibration programme and use the "Send" key of the "Setup management" of Scaletools (see section 8.2.2).

23) The new indicator will in this way be the exact copy of the "cloned" indicator.

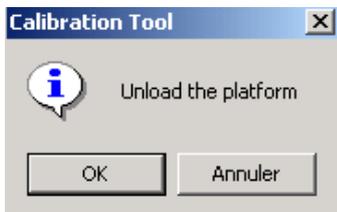
8.2.2.5 CHANNELS EQUALIZATION

Only available IPE50 DIN unit in configuration DEP. Ch.

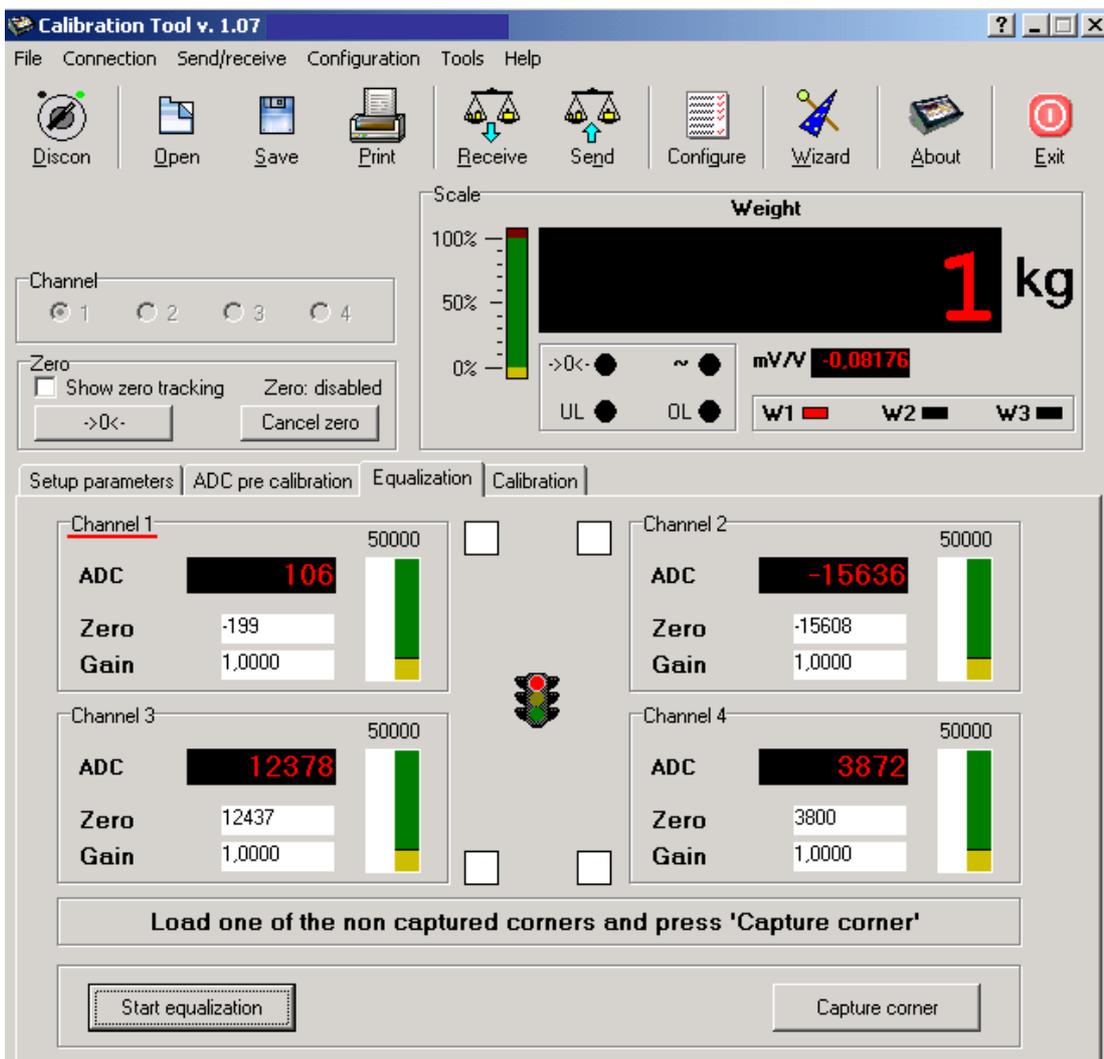


It is used to adjust the signal of each loadcell (off-center adjustments, corner adjustment of the load receptor)

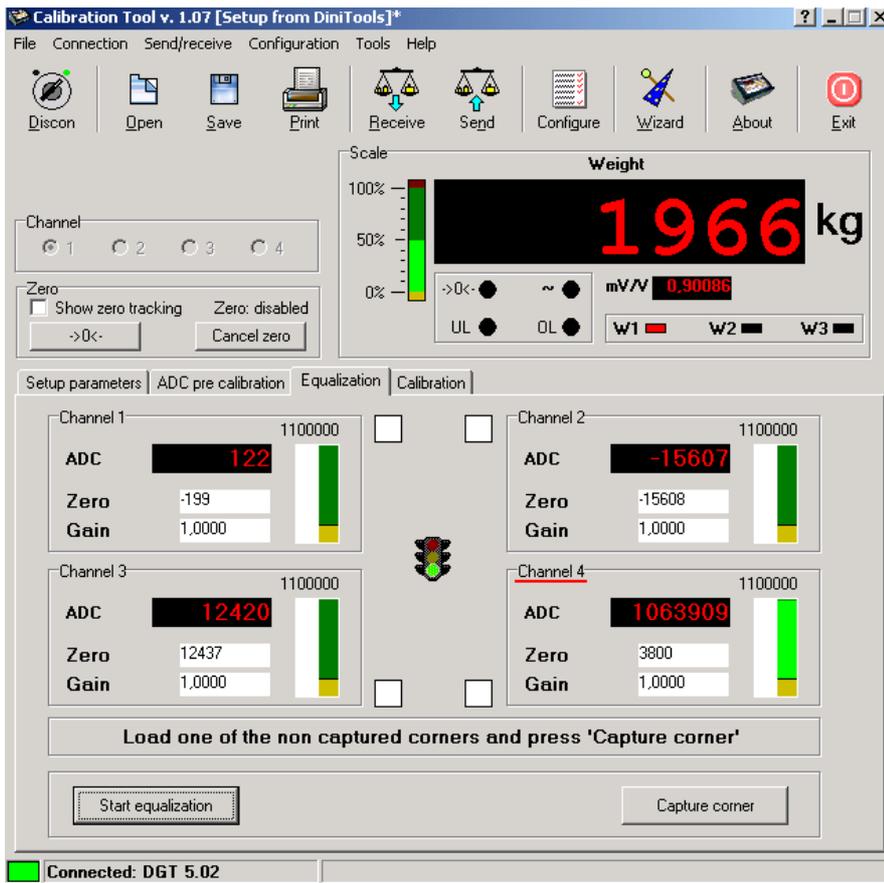
Press Start equalization, the following message appears



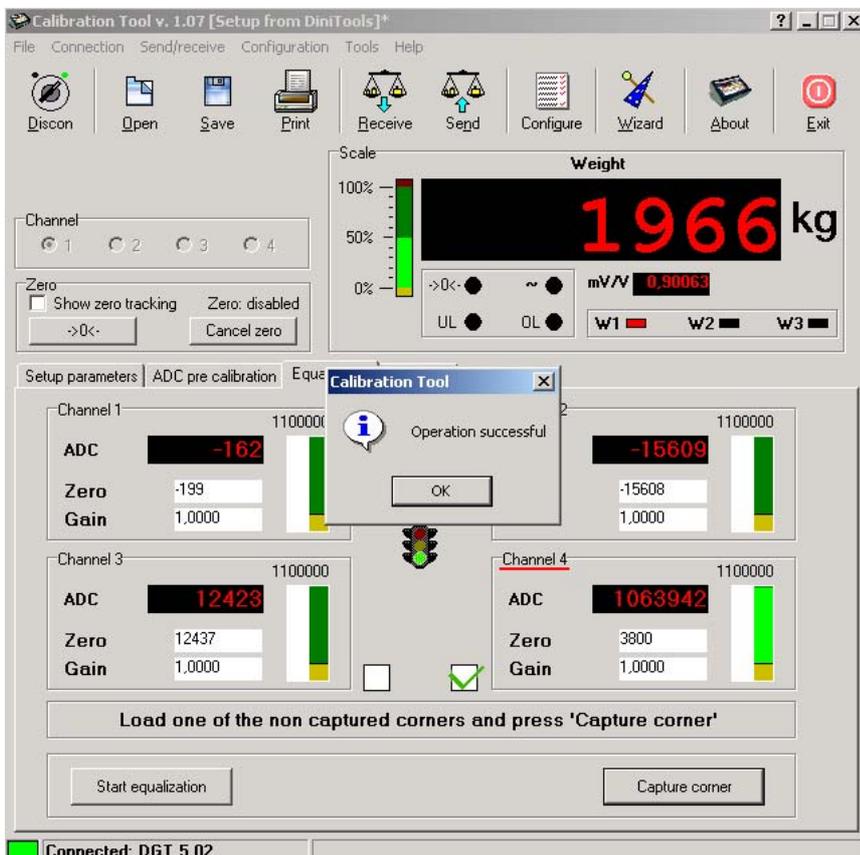
the load receptor must be at zero (without load) , after the acquisition, the window below appears.



Apply the load on one of loading point.



In this example, the loadcell connected on the channel 4 (channel 4 is underlined) has been loaded and the ADC value has increased, press Capture corner



After the acquisition, the message "Operation successful" appears with a green cross on the white square corresponding at the channel calibrated.
Do the same with these other channels.



After the acquisition, the message "Equalization terminated successfully" appears, press on OK.

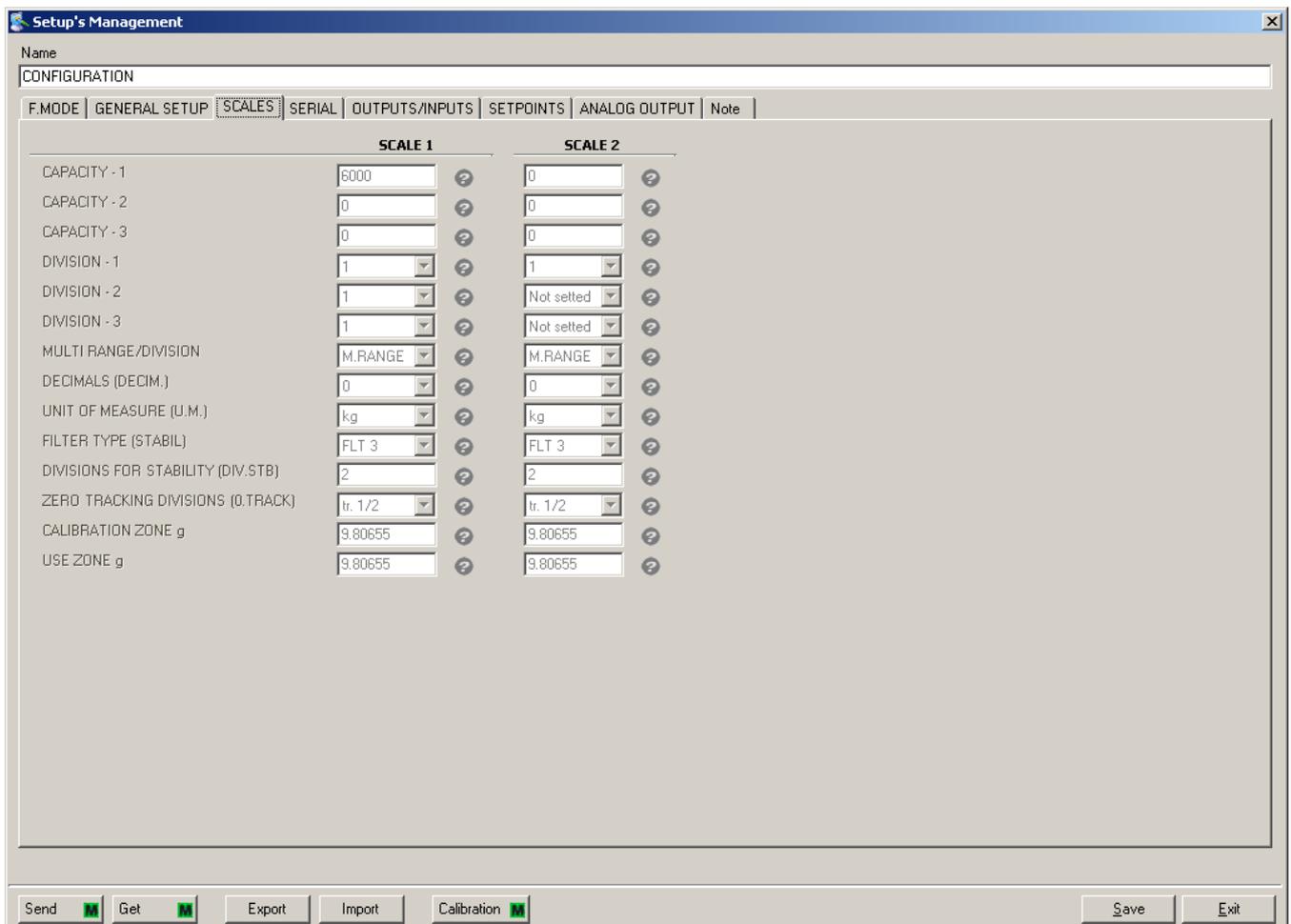
Press Send to transfer this information to the indicator..

NOTES FOR APPROVED INDICATORS

- With the pressing of the "Get" key (setup reception), a message will appear which reminds that the indicator is approved; therefore some parameters may be READ ONLY:



by confirming this message one proceeds with the reception of the setup:



As one may note, the metrologic parameters are read only, and a "M" to indicate that the setup is of an approved indicator.

- It's necessary to carry out a reception of the setup before transmitting with the "Send" key; a message will appear with "Get".
- The changes made through the calibration tool, even if transmitted, will have no effect.

EXPORTING / IMPORTING THE SET-UP THROUGH THE FILE ON PC.

- Open an existing Set-up:

Setup's Management

Name
setup example

F.MODE | GENERAL SETUP | SCALES | SERIAL | PRINTER CONFIGURATION | SETPOINTS | ANALOG OUTPUT | TARE AND ARCHIVE | OUTPUTS/INPUTS | Note

FUNCTIONING MODE

FUNCT: STD

GENERAL SETTINGS

BACK LIGHT (LAMP): LAM 1

BRIGHT (L.in): LINT 1

SCREEN SAVER (SCR.SAV): 0

MODE TOTAL

TYPE OF TOTAL (tot.Mod): NORMAL

NUMBER OF WEIGHTS (MAX.tot): 0

MODE MASTER

NUMBER OF SLAVES (nuMSL): 0

MODE IN OUT

IN OUT MODE (TYPE): GROSS TARE

MODE COUNT

UNIT OF MEASURE PMU (uM.APW): g

REFERENCE TIME STABILITY (Wait.t): 0.0

Send Get Export Import Calibration Save Exit

- By pressing on **“Export”**, it will be possible to export the set-up in a file (with “.mot” extension) in a directory on PC:
 - Select the destination
 - Enter the file name
 - Confirm the operation.
- By pressing on **“Import”**, it will be possible to import the set-up from a “.mot” file previously created through the exportation procedure:
 - Select the file
 - Confirm the operation

9 SCALETOOLS UTILITIES

9.1 WEIGH CONSOLE

It's a programme which allows to view on PC the weight displayed on the indicator and to receive the weight string using a key of the PC keyboard. This string will be received in **any open Windows application** (e.g. database management systems, Excel, Word), in correspondence with the cursor position.

To launch the Weigh Console:

- In the main menu select **TOOLS >>> WEIGH CONSOLE**: a new application will appear among the Windows applications as shown in the figure below:



Weigh Console reduced to an icon



By pressing with the right key on the programme reduced to an icon and selecting "Restore", the application will be shown in the extended mode:

At this point other commands are available:

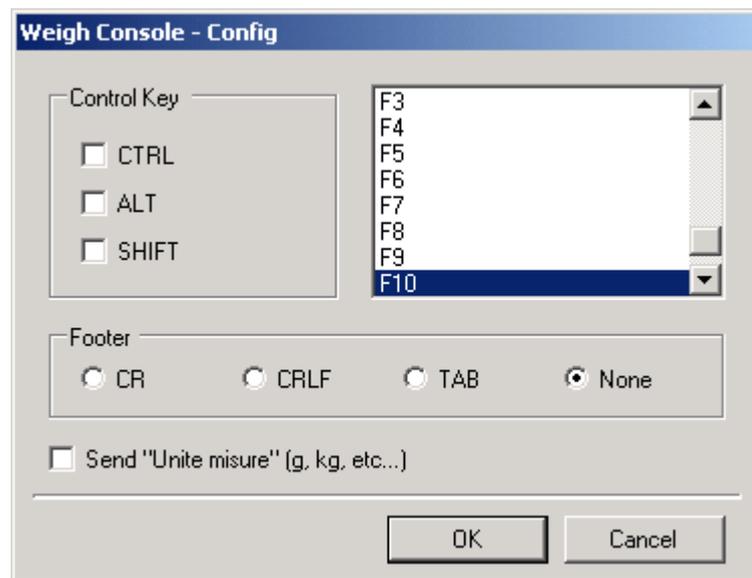
- **ZERO**, which emulates the pressing of the ZERO key on the indicator
- **TARE**, which emulates the pressing of the TARE key on the indicator.
- **MODE**; not managed.
- **ENTER/PRINT**; not managed.
- **C**, to exit.

RECEPTION OF THE WEIGHT STRING FROM THE INDICATOR

With the right key of the mouse click on the Weigh Console icon in the bottom right of the applications bar; select "Config":



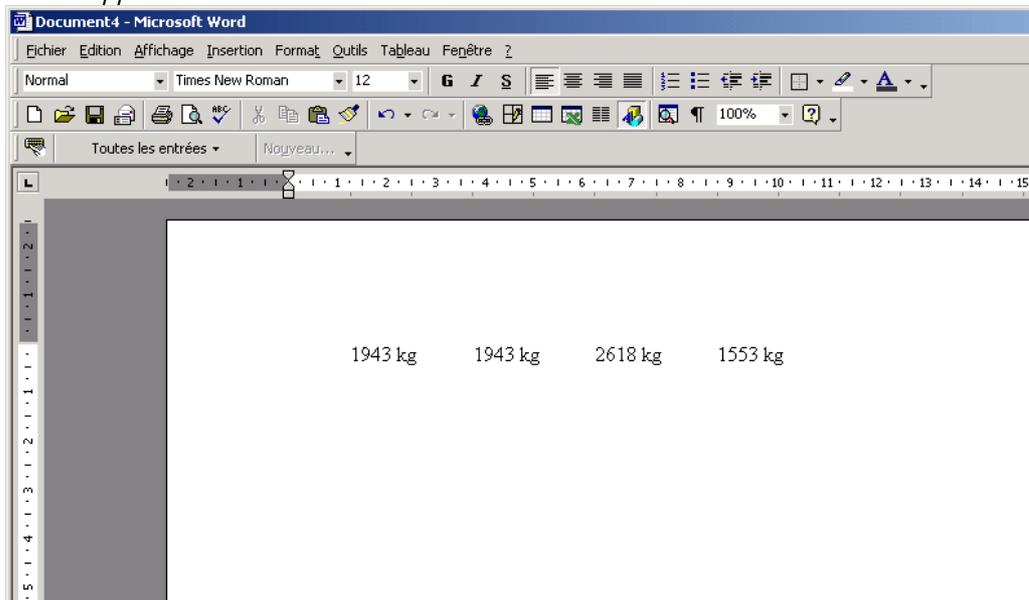
In this way one has the possibility to select with which key of the PC keyboard one receives the weight string from the indicator:



- It is possible to select any key of the keyboard, also in combination with the CTRL, ALT and SHIFT keys.
- In the "Footer" field one selects the last character of the received string:
 - o CR
 - o CRLF
 - o TAB
 - o None
- By clicking on "Send unit of measure", also the unit of measure will be received.
- Confirm with OK: by pressing the key (or the keys) previously configured, **the weight will be received in any open Windows application (e.g. notepad, Excel, Word), in correspondence with the cursor position.**
- The weight data is filtered from the indicator's standard transmission string; **it is therefore necessary to set the "standard communication protocol" in the indicator's set-up environment (see the indicator's technical manual).**

EXAMPLES

"word" application



"Excel" application

The screenshot shows the Microsoft Excel interface. The title bar reads "Microsoft Excel - Classeur1". The menu bar includes "Fichier", "Edition", "Affichage", "Insertion", "Format", "Outils", "Données", and "Fenêtre ?". The toolbar shows various icons for file operations and editing. The spreadsheet data is as follows:

	A	B	C	D	E	F	G
1	1943 kg	1943 kg	1979 kg	3088 kg	1293 kg		
2							
3							
4							
5							
6							
7							