OUTSET®
ADVANCED ON BOARD TECHNOLOGY

SCI
SCALE AND CONTROL INC.

# T10 DIGGER


# CALIBRATION GUIDE

Certified B Corporation

# SUMMARY

# INTRODUCTION

Thank you for purchasing an OUTSET product
and become part of our family.
**WELCOME!**

T1 DIGGER is a technologically advanced on-board weighing system which, by measuring the hydraulic pressure of the excavator's lifting arm and using inclinometers, displays the weight handled in real time. The display shows the partial weight just lifted, the total weight currently loaded in the truck and the number of lifts performed with the individual partials of the materials used in the load. The Weighing Start Point function allows you to select the initial weighing point at any time based on the need for the work or load to be performed.

Once the weighing system components have been installed, it is essential to carry out a new calibration of the machine by an OUTSET specialized technician or by an authorized center.

T1 DIGGER allows complete management of the load and productivity of the machine with internal databases divided by Company, User, Material and Vehicle. The STATISTICS function allows a quick and rapid control of the productivity of the machine with graphs and data of the loads carried out by day, week, month or year.

T1 DIGGER can be connected to a bluetooth thermal printer (optional) to print all the data of the load carried out directly on the machine.

It can also be connected to the T1 CLOUD web portal via cloud (optional) to increase machine productivity management and synchronize load data bi-directionally with the office. T1 CLOUD allows you to geolocate the vehicle, send and receive work orders with load details, synchronize the weighing system materials list directly from the office, produce load reports and statistics. The system allows you to perform TELEDIAGNOSIS on the operation of the weighing system directly from the office, such as setting up a MAINTENANCE schedule that is always connected to the machine with execution notifications.

For any additional information, training or problems, *contact Scale and Control Inc, via toll free phone: 888-239-0552 Extension 2 for technical support, Press Ext 1 for Sales*

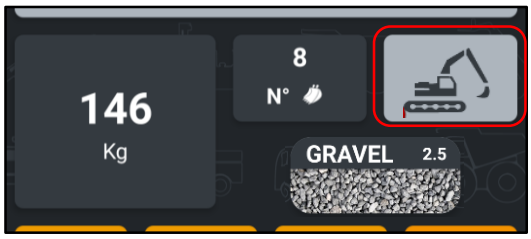
Company with certified management system comply with
UNI EN ISO 9001-UNI ISO 45001-UNI EN ISO 14001

# WEIGHING MAIN SCREEN

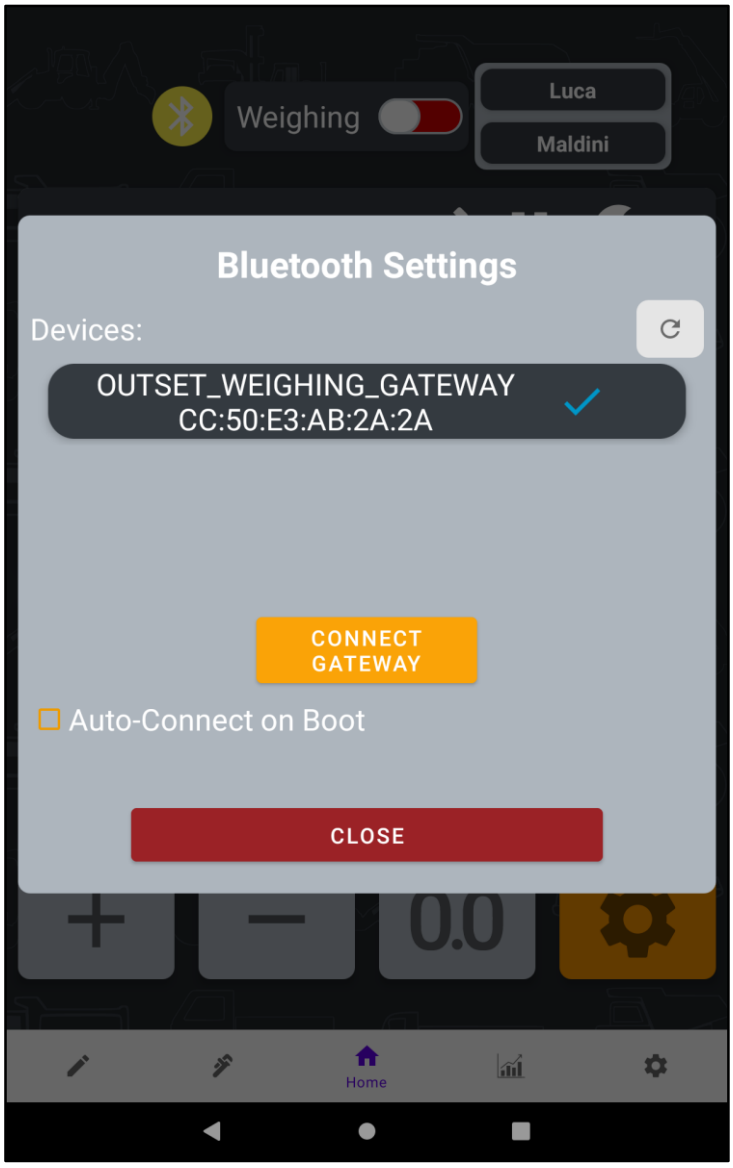
| | | |
|---|---|---|
| **1.** | **Bluetooth Signal** | *Status of the bluetooth connection. Green connected icon, yellow not connected icon, red bluetooth off icon, blue connecting icon* |
| **2.** | **Weighing Activation** | *Stand-by function to activate or deactivate the weighing mode* |
| **3.** | **Selected User** | *Indication of the selected user (in use)* |
| **4.** | **Selected Company** | *Indication of the name of the selected company (in use)* |
| **5.** | **Selection Icon** | *Function to select and set company, user and vehicle (in use)* |
| **6.** | **Zoom Icon** | *Function to enlarge the total weight value on the display* |
| **7.** | **Night Icon** | *Function to activate night mode* |
| **8.** | **Total Weight** | *Indication of the total weight loaded with the selected unit of measure* |
| **9.** | **Selected Vehicle** | *Indication of the name and license plate of the selected vehicle (in use)* |
| **10.** | **Load Target** | *Indication of the load target set for that particular vehicle* |
| **11.** | **Printer Icon** | *Function to print load data (optional)* |
| **12.** | **Delete Load Icon** | *Function to delete the current load and related data* |
| **13.** | **Save Load Icon** | *Function to save the current load and related data* |
| **14.** | **Weighing Start Point** | *Function that allow to choose the starting weighing point* |
| **15.** | **Partial Weight** | *Indication of the last lifted weight (partial weight)* |
| **16.** | **Number of lifts** | *Indication of the number of lifts. By clicking on the field it is possible to view all the individual lifts and the relative weights* |
| **17.** | **Weighing Stage Icon** | *Indication on the weighing phase. Lifting, lowering, ready to weigh, incorrect weighing, etc.* |
| **18.** | **Selected Material** | *Indication of the name of the selected material (in use)* |
| **19.** | **Manual Add Weigh Icon** | *Function to manually add the last partial weight to the total weight* |
| **20.** | **Delete Last Weigh Icon** | *Function to subtract the last bucket. By clicking 2 times it is possible to make a double subtraction (topping up function)* |
| **21.** | **Tare** | *Function to reset the tare. If it turns blue it means that the original tare (calibration tare) has been modified* |
| **22.** | **Settings Icon** | *Generic settings menu for the user (weight correction, automatic increment, disable system after each weighing)* |
| **23.** | **Configuration Menu** | *Menu where you can add, delete, edit and select companies, users, vehicles and materials* |
| **24.** | **Calibration Menu** | *Calibration menu protected by username and password* |
| **25.** | **Home** | *Weighing main screen for the user* |
| **26.** | **Statistics Menu** | *Weighing statistics menu divided by day, week, month, year for all selected elements* |
| **27.** | **Setup Menu** | *General setup menu for the user (unit of measurement, diagnostics, print receipt, gateway update, etc.)* |

# CONNECTION TO THE T1 MMT GATEWAY MODULE


Deactivate the weighing mode by dragging the cursor to the left. The icon turns red.




Press the «WEIGHING STAGE» icon to connect the correct gateway device.




Select the device from the list to connect the correct gateway. Set the «Auto-connect on Boot» option to automate the connection.

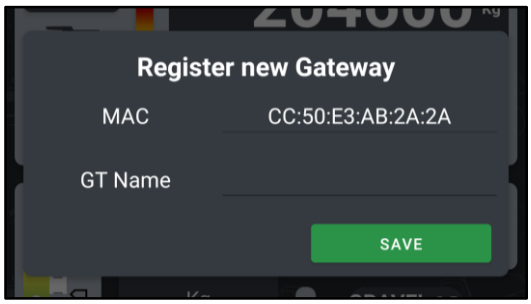
Press «CONNECT GATEWAY» to connect the device.

If the gateway module is correctly connected to the display, the bluetooth symbol will turn green.

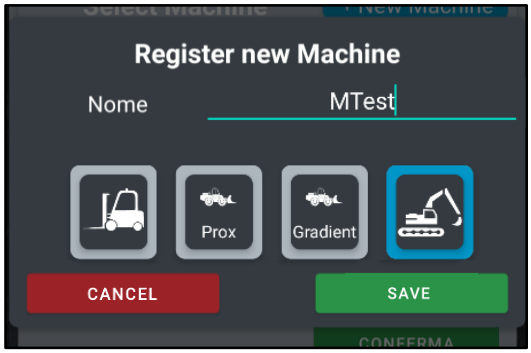
If the bluetooth of the display is off, the bluetooth symbol is red.

When there is no gateway module connected to the display, the bluetooth symbol is yellow.

If the gateway module is trying to connect to the display, the bluetooth symbol is blue.



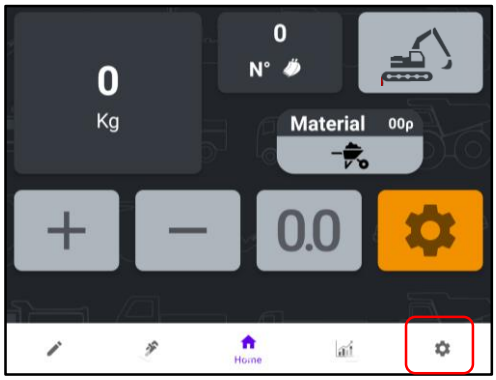

Now you can register the new gateway device. Each device has a unique MAC ADDRESS. It is possible to customize the name of the gateway.
Save to confirm.




Now you can register your machine. Select the type of application (excavator) by clicking on the icon.
It is possible to personalize the name of the machine.
Save to confirm.

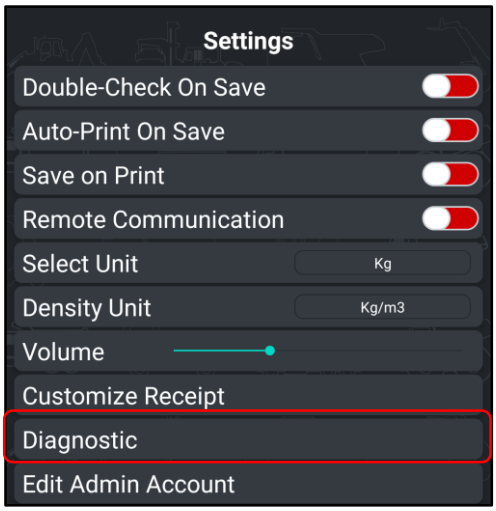

Select the newly created machine, a blue flag will appear on the left. Or you can create a new machine.
Save to confirm.

# DIAGNOSTIC




When the installation of the components has been completed, enter the DIAGNOSTIC menu to check that all installed sensors are functioning correctly.

Press the SETUP menu icon on bottom right.



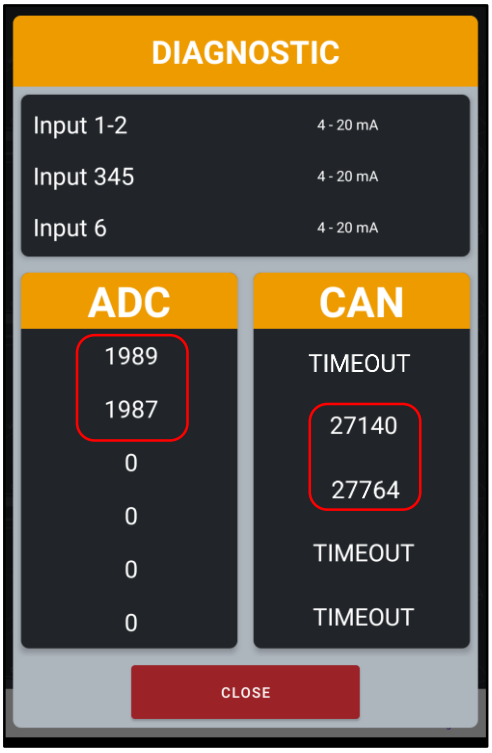

Inside the SETUP menu press the DIAGNOSTIC field to check the installed sensors.

The PRESSURE TRANSDUCERS are on the ADC column the first two values.

The INCLINOMETERS are on the CAN column the first two values.

**ADC 1** = BOTTOM PRESSURE

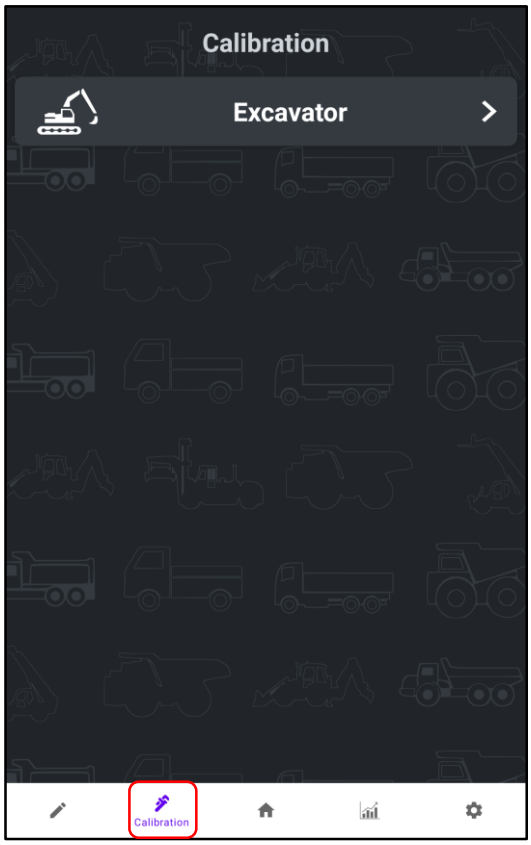
**ADC 2** = TOP PRESSURE




**CAN 2** = BOOM ANGLE

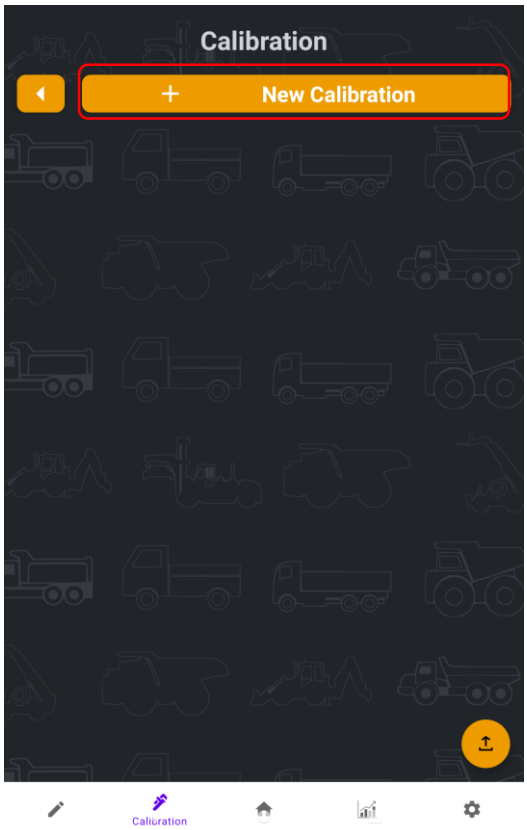
**CAN 3** = 2nd ARM ANGLE

# CALIBRATION PROCEDURE

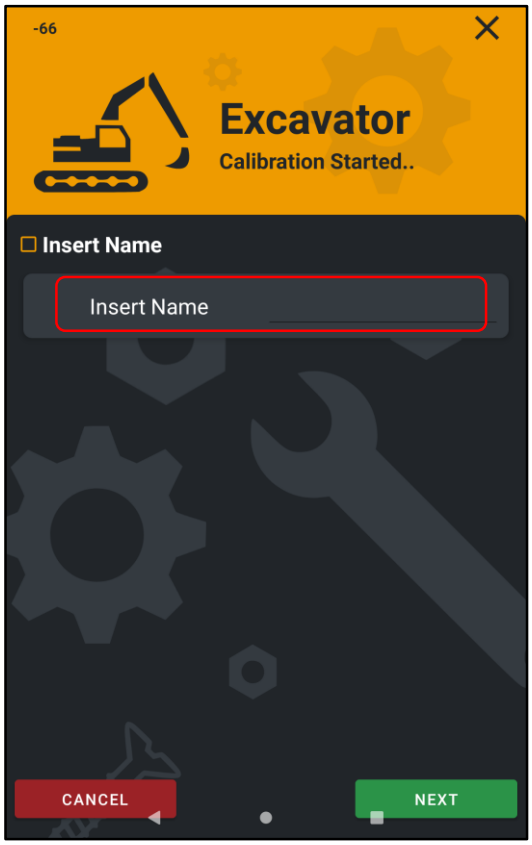



Calibration pages are preloaded at the factory based on the type of application the system will be installed into.

However, it is possible to load and/or modify the type of application using the appropriate Calibration App. The new settings need to be imported into the T1 DIGGER App via the appropriate menu.

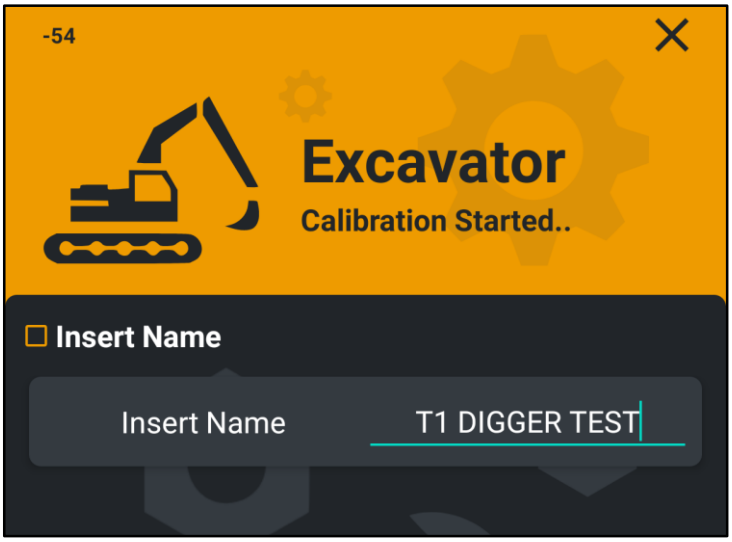


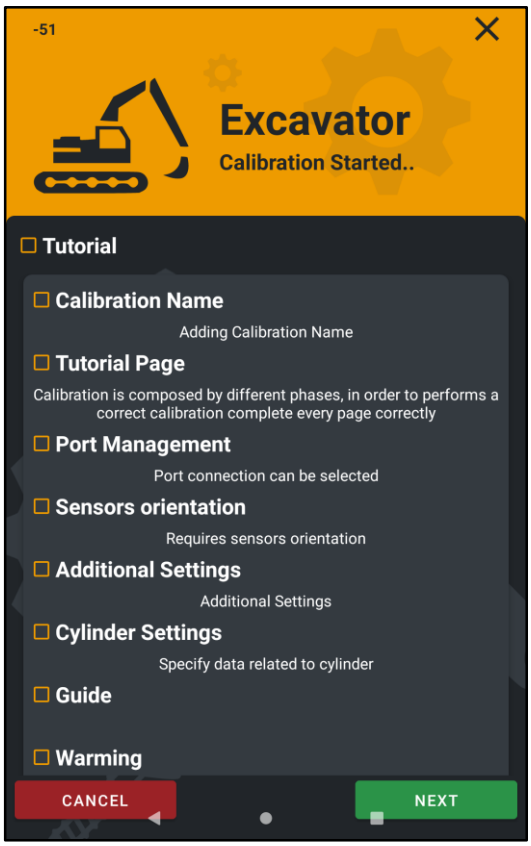

Press the NEW CALIBRATION field to start a new calibration procedure.




Click on the INSERT NAME field to enter the name of the machine.

Press the NEXT key to proceed to the next step.



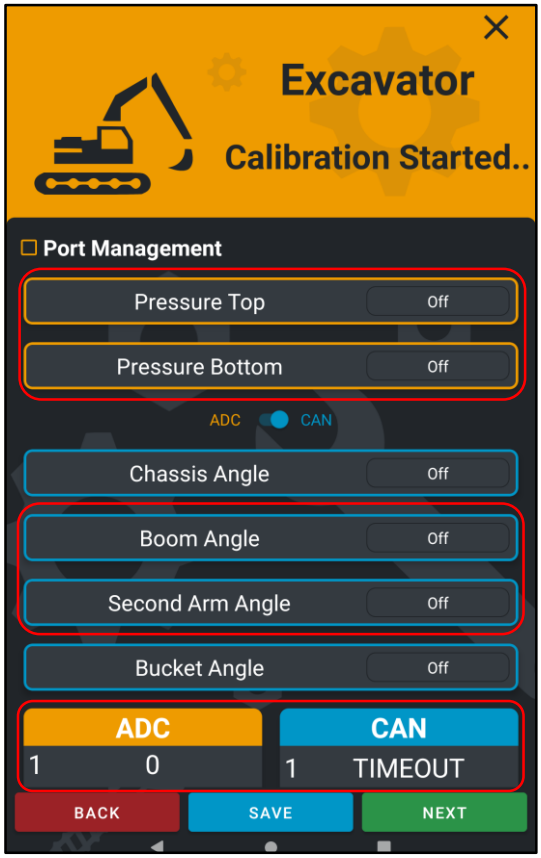




Now the display shows the calibration TUTORIAL page with all the actual steps to be performed to complete the calibration.

When the step is finished, a checkmark to the left will appear to indicate that the step is complete.

It is advisable to SAVE each step, where possible, to avoid losing the calibration data performed.

# PORT MANAGEMENT

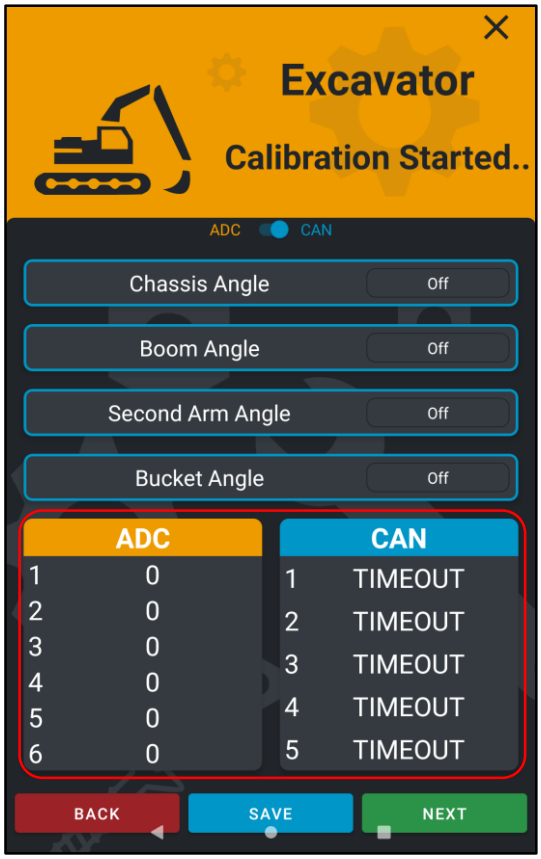



In this step it is possible to configure all the sensors installed on the machine.

These are the values of the PRESSURE TRANSDUCERS.

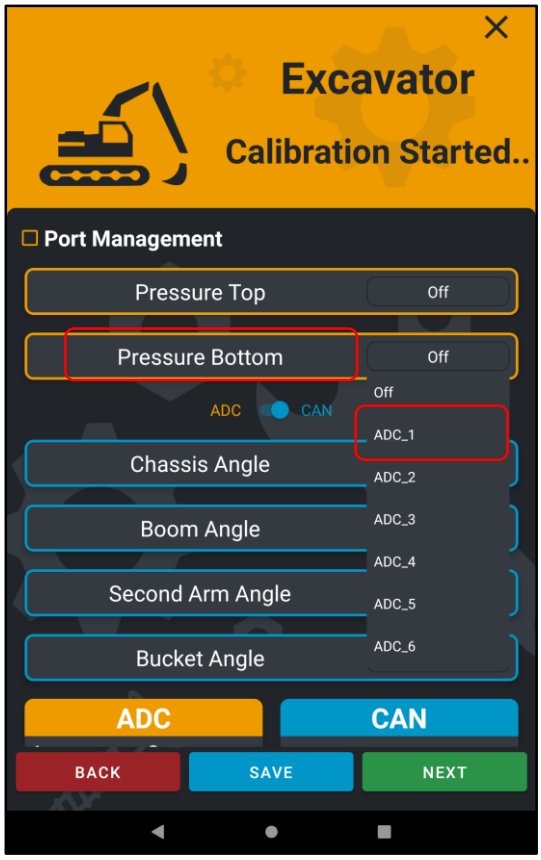
These are the values of the INCLINOMETERS.

These are the REAL TIME values of the PRESSURE TRANSDUCERS and the INCLINOMETERS.




Scroll down the page to view the ADC and CAN values of the installed sensors.

These are the REAL TIME values.

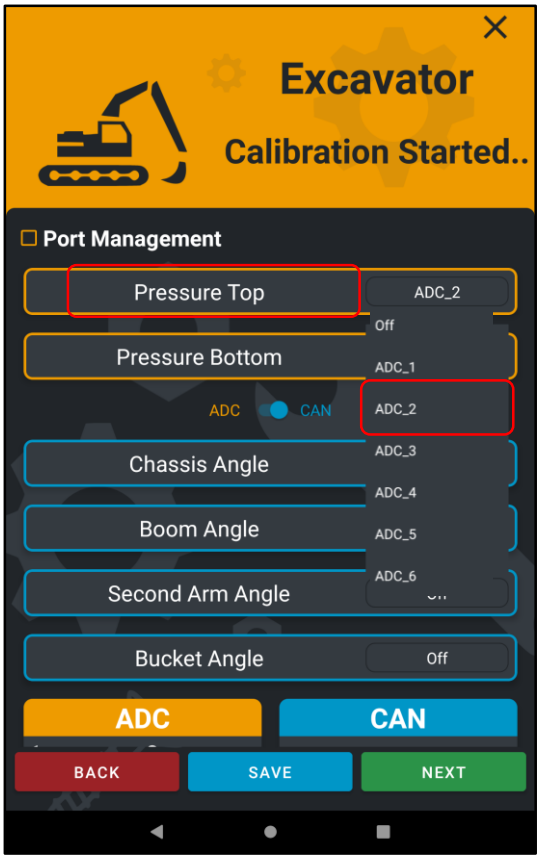



## PRESSURE BOTTOM

This field indicates the **PT1**, the pressure transducer installed on the lower chamber of the cylinder where there is greater hydraulic pressure.

It is installed on the delivery of the cylinder.

It is necessary to set **ADC_1**

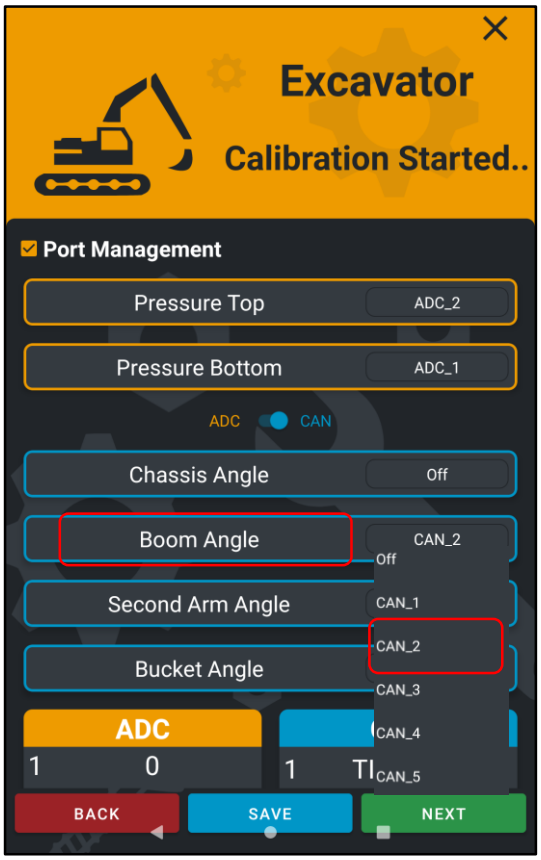



## PRESSURE TOP

This field indicates the **PT2**, the pressure transducer installed on the higher chamber of the cylinder where there is lower hydraulic pressure.

It is installed on the return of the cylinder.

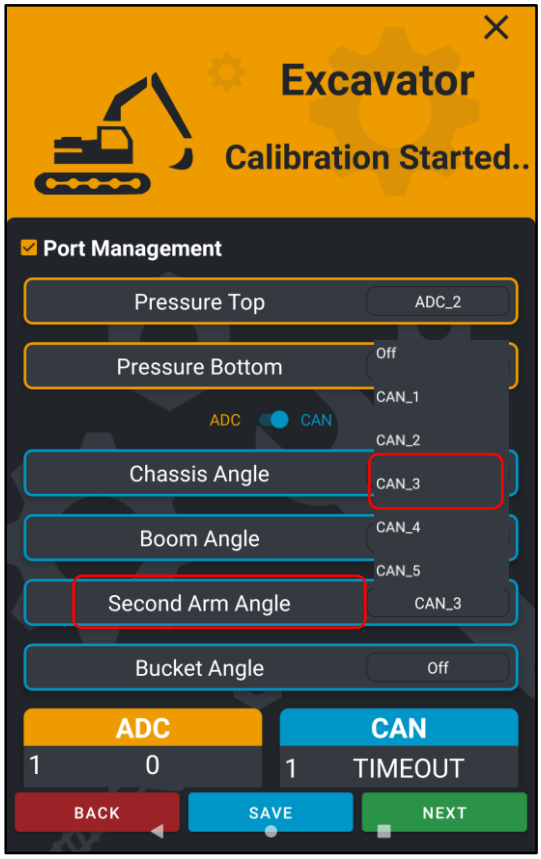
It is necessary to set **ADC_2**




## BOOM ANGLE

This field indicates the **BOOM ANGLE INCLINOMETER** installed on the BOOM (Arm 1) of the excavator.

It is necessary to set **CAN_2**



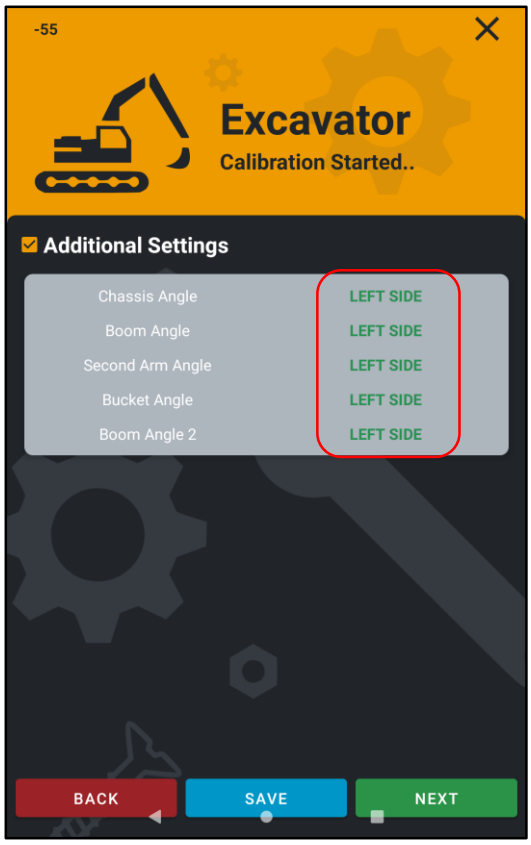

## SECOND ARM ANGLE

This field indicates the **SECOND ARM ANGLE INCLINOMETER** installed on the STICK (Arm 2) of the excavator.

It is necessary to set **CAN_3**

It is suggested to SAVE the completed steps in order not to lose the calibration data.

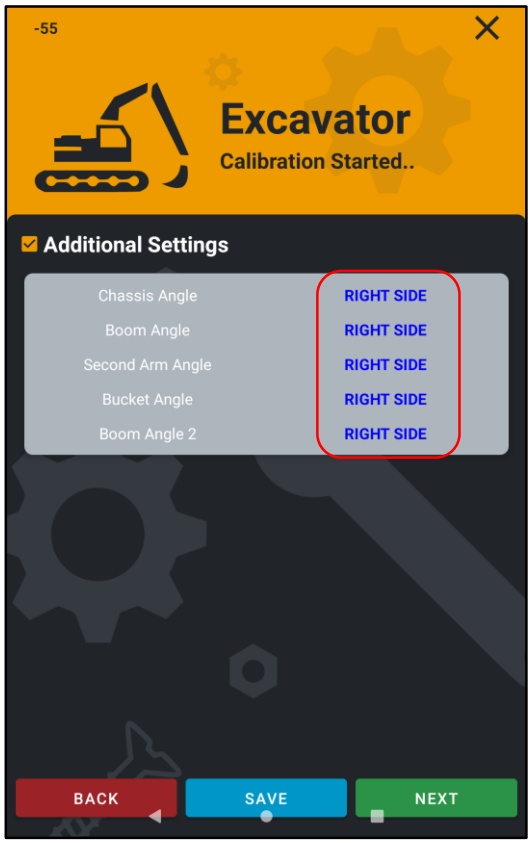
# INCLINOMETERS SIDE




In this step it is possible to select the positioning side of the inclinometers on the excavator arms.

The side (right or left) for positioning the sensors is identified from the cab by looking at the front excavator arms.

Leave LEFT SIDE if the sensors are placed on the left side of the arms.

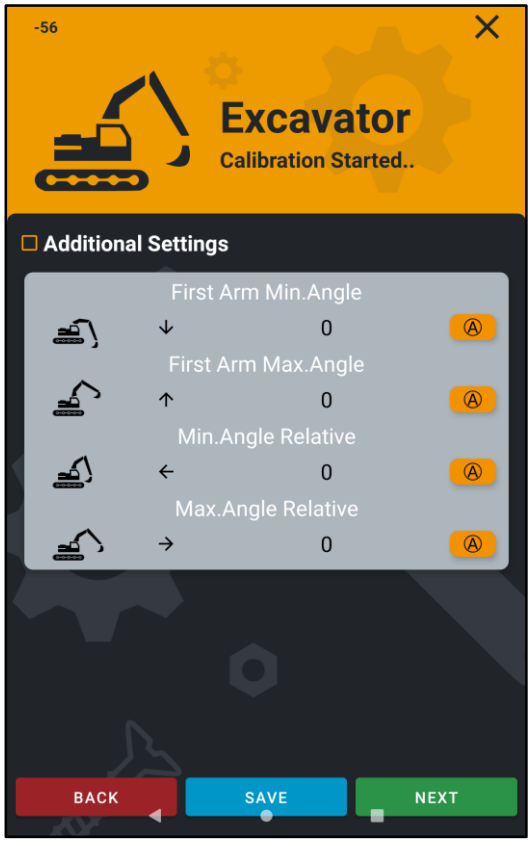



The side (right or left) for positioning the sensors is identified from the cab by looking at the front excavator arms.

Click on the side indication to switch the selection from left to right.

<u>It is suggested to SAVE the completed steps in order not to lose the calibration data.</u>

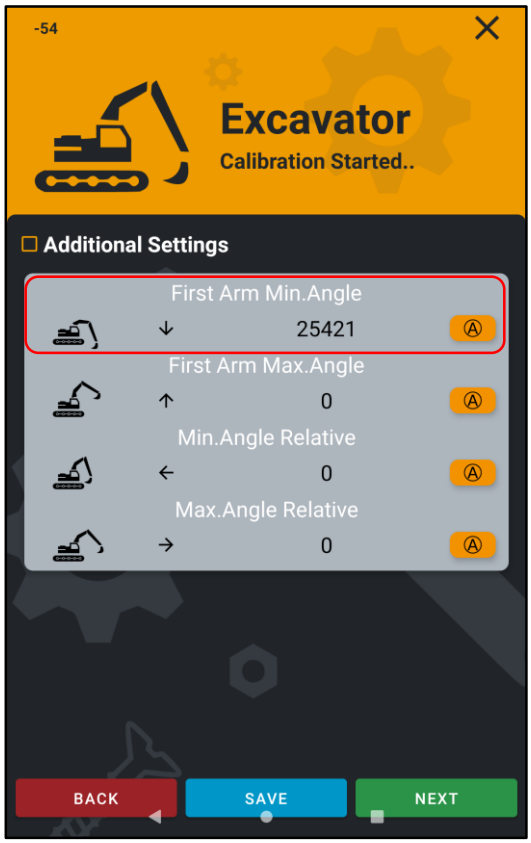
# INCLINOMETERS SETUP




In this step it is possible to set the minimum angles and maximum angles of the excavator's arms.

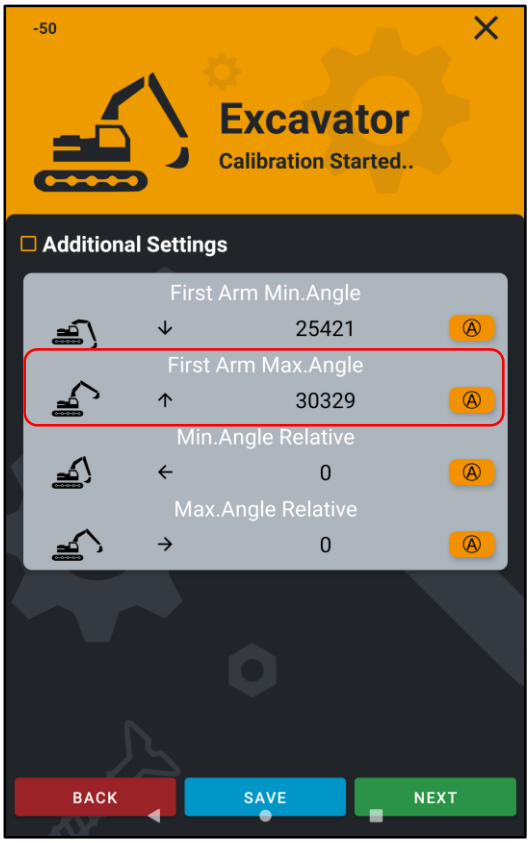
Within this range it will be possible to select the WEIGHING START POINT.

**Usually a hole is dug in the ground to have greater range of motion of the arms, or the excavator is positioned on a hill.**



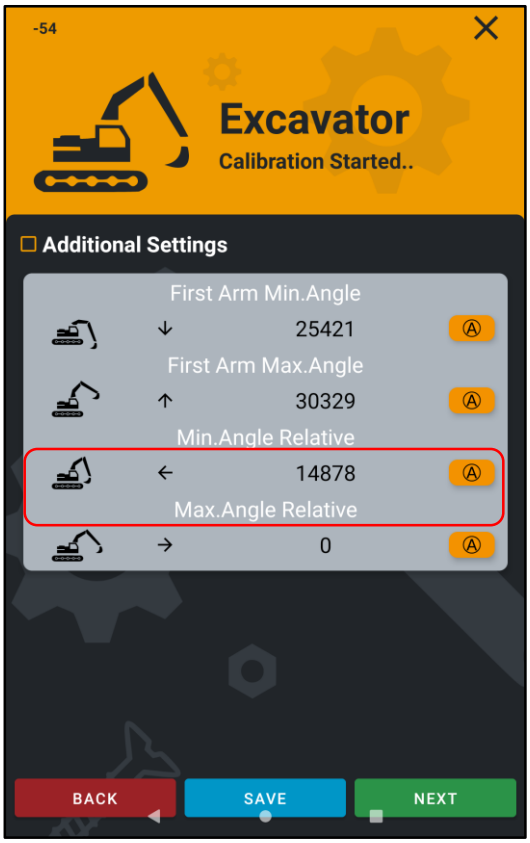

Lower the BOOM (Arm 1) to the **lowest point** bearing in mind that once this MINIMUM point has been selected, the excavator BOOM will have to descend 1 meter lower than this saved point **to activate the weighing**.

Once the BOOM (Arm 1) is positioned in the MINIMUM point, press the icon Ⓐ to save the acquired value.



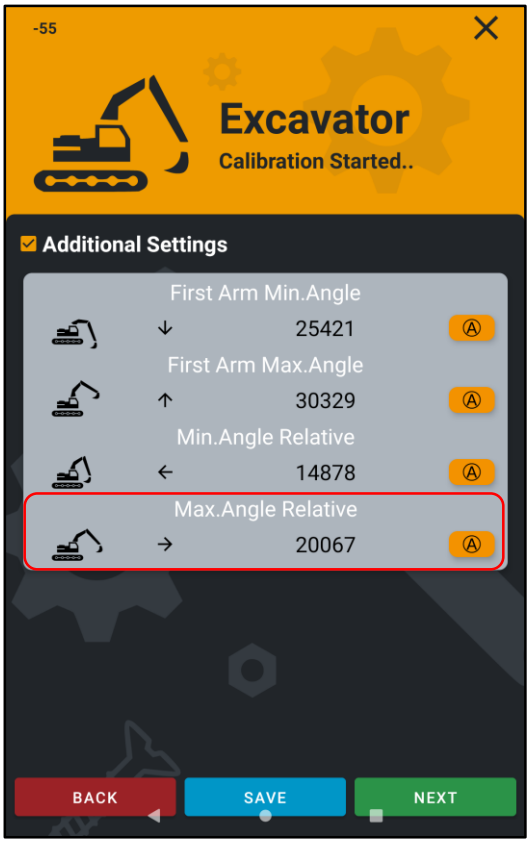

Raise the BOOM (Arm 1) to its **highest point** bearing in mind that the hydraulic lift cylinder is not in a completely vertical position.

Once the BOOM (Arm 1) is positioned in the MAXIMUM point, press the icon Ⓐ to save the acquired value.



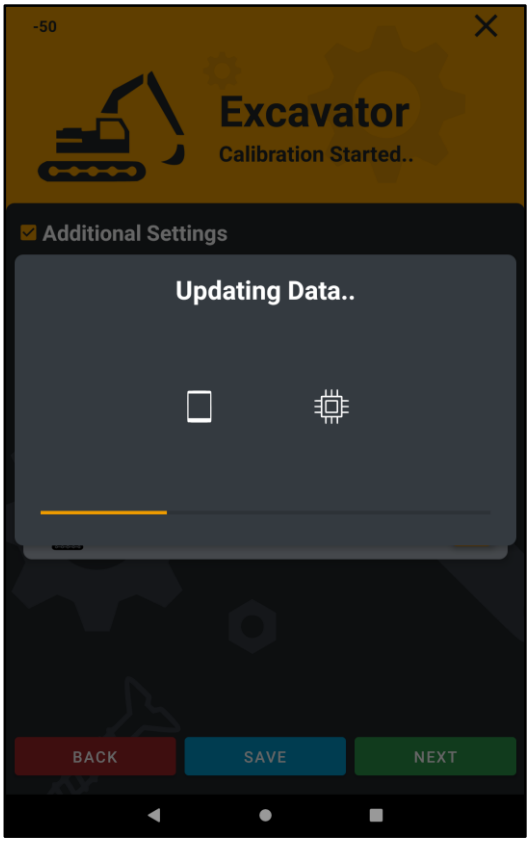

Close the STICK (Arm 2) at the **closest point** to the cabin.

Once the STICK (Arm 2) is positioned in the CLOSEST point, press the icon Ⓐ to save the acquired value.




Open the STICK (Arm 2) at the **farthest point** from the cabin.

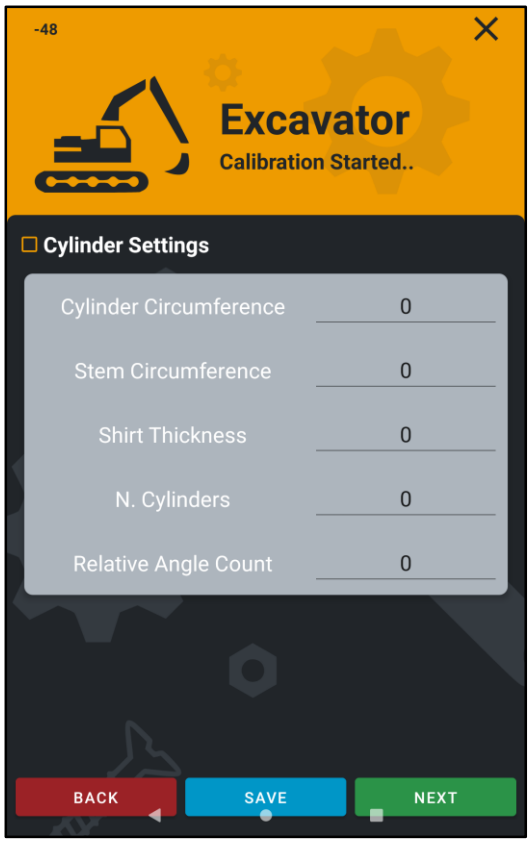
Once the STICK (Arm 2) is positioned in the FARTHEST point, press the icon Ⓐ to save the acquired value.




<u>It is suggested to SAVE the completed steps in order not to lose the calibration data.</u>

**Saving is complete when the orange bar goes to the end, if it stops earlier, please redo the save step.**

# CYLINDER SETTINGS




In this step you can configure the cylinder and the stem circumference of the boom's lifting cylinder, as well as the cylinder mesh, quantity and number of points for the angle range.

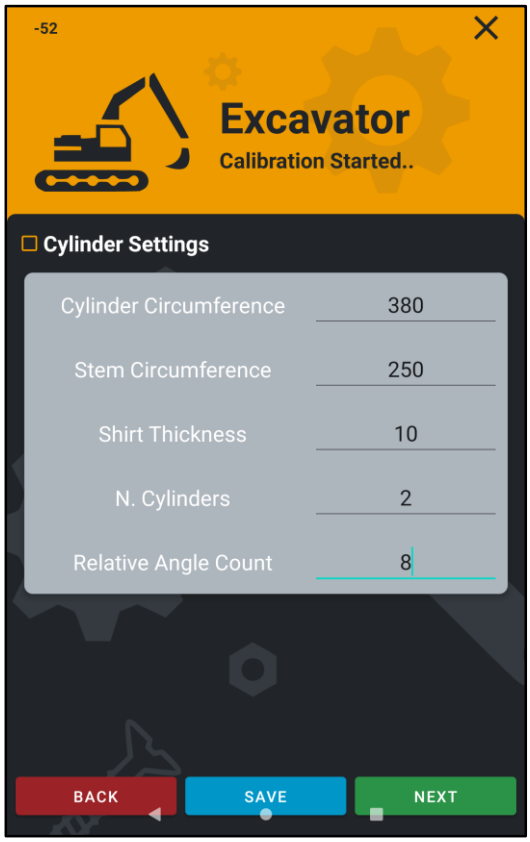
Circumference of the **CYLINDE**R in millimeters
(ex: 38cm / 380mm)

Circumference of the **STEM** in millimeters
(ex: 25cm / 250mm)

The value of the cylinder thickness can always be set to **10**, unless there are special applications where this value change.

The number of cylinders is always **2**, unless there are special applications where this value change.

The choice for the number of points for the angle range is free. It is suggested to set at least **8 - 10 points** for greater machine performance and accuracy.




Example of setting the different values.

Circumference of the **CYLINDE**R in millimeters

Circumference of the **STEM** in millimeters

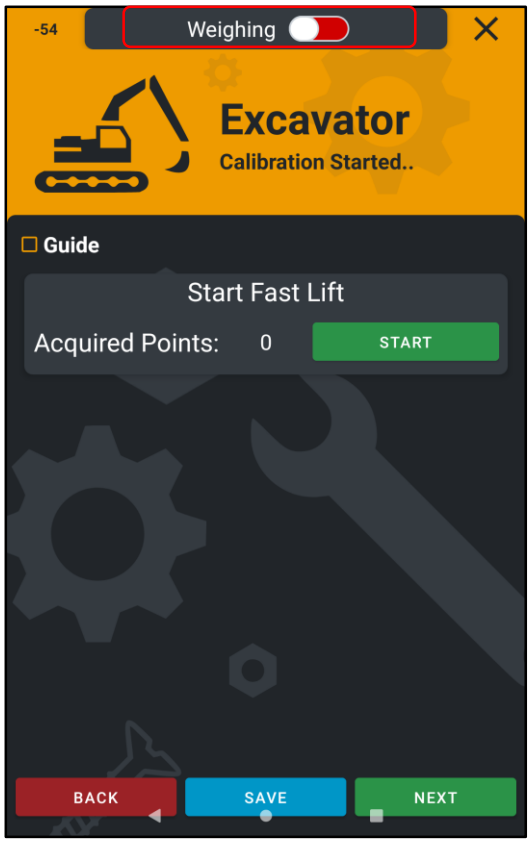
Cylinder thickness is **10**

Cylinder number is **2**

Angle range points is **8**

<u>It is suggested to SAVE the completed steps in order not to lose the calibration data.</u>

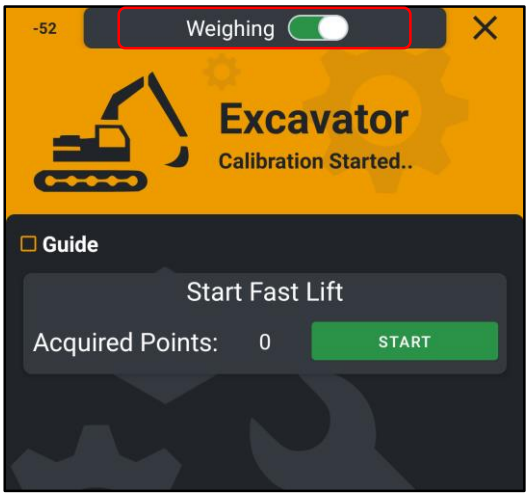
# FAST LIFTING



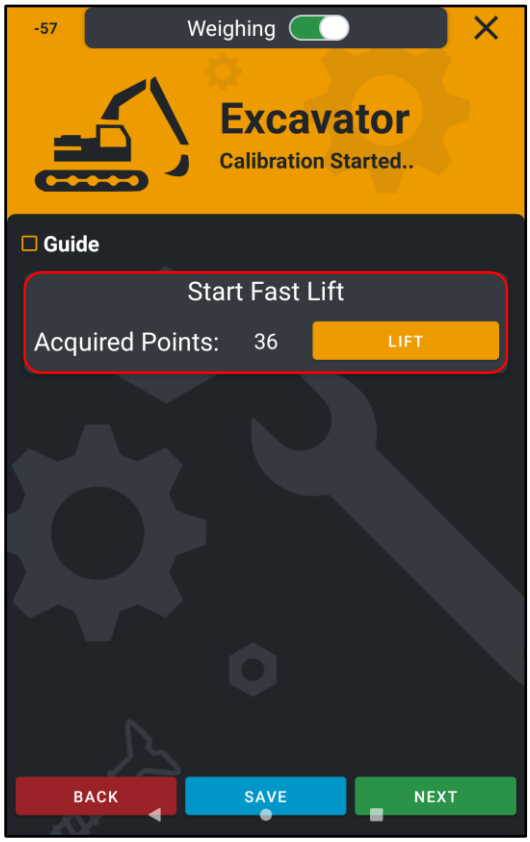

In this step it is necessary to lift the BOOM (Arm 1) at **maximum speed** so that the system acquires the total number of points available.

It is essential to UNLOCK the weighing mode by dragging the cursor to the right.

RED weighing blocked




GREEN
weighing enabled




Lower the excavator BOOM (Arm 1) below the configured MINIMUM point (*ref. pag.14*) to be able to activate the lifting.

Press the key START

The system will display the command LIFT

Lift the BOOM (Arm 1) at **maximum speed** so that the system acquires the total number of points available.

The system automatically displays the number of points. In this example there are **36 points acquired**.

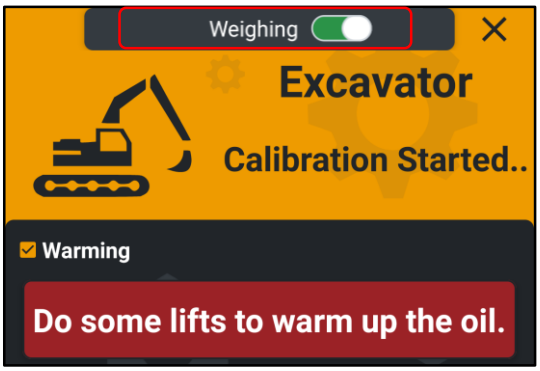
<u>It is suggested to SAVE the completed steps in order not to lose the calibration data.</u>

# WARM UP

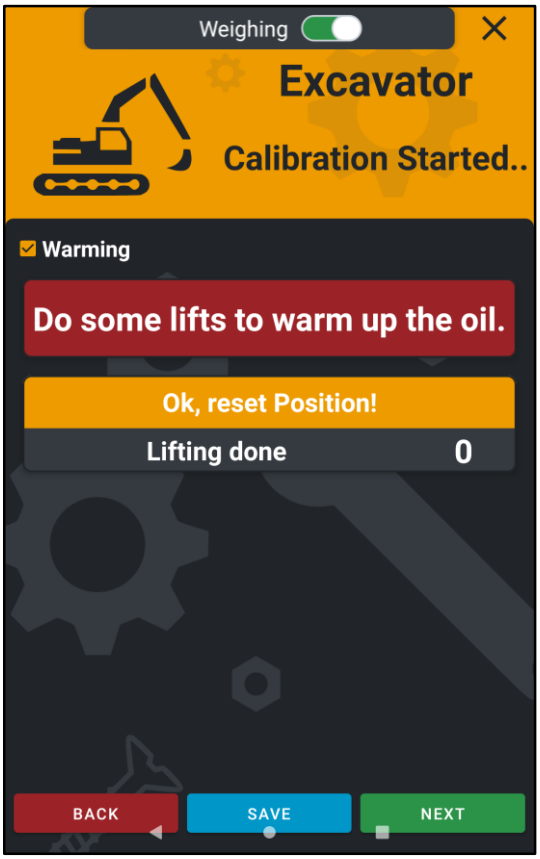

In this step, the machine oil is heated up to bring it to the standard working temperature.

It is essential to UNLOCK the weighing mode by dragging the cursor to the right.

RED weighing blocked




GREEN weighing enabled

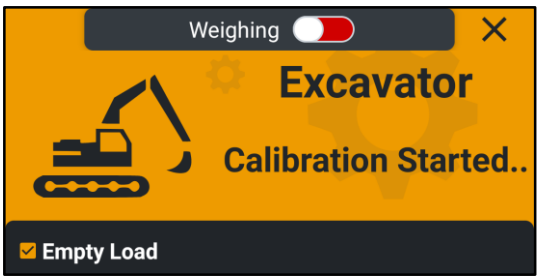



Carry out 10 lifts, preferably with the bucket loaded, until the oil reaches the standard working temperature.

This allows you to perform a better calibration by exploiting the standard working temperature, avoiding calibrating the machine with cold or non-temperature oil.

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.

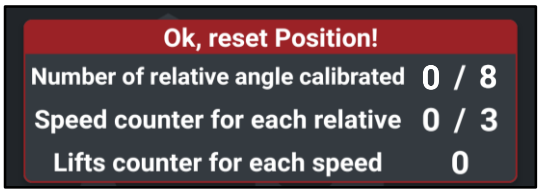
# EMPTY CALIBRATION



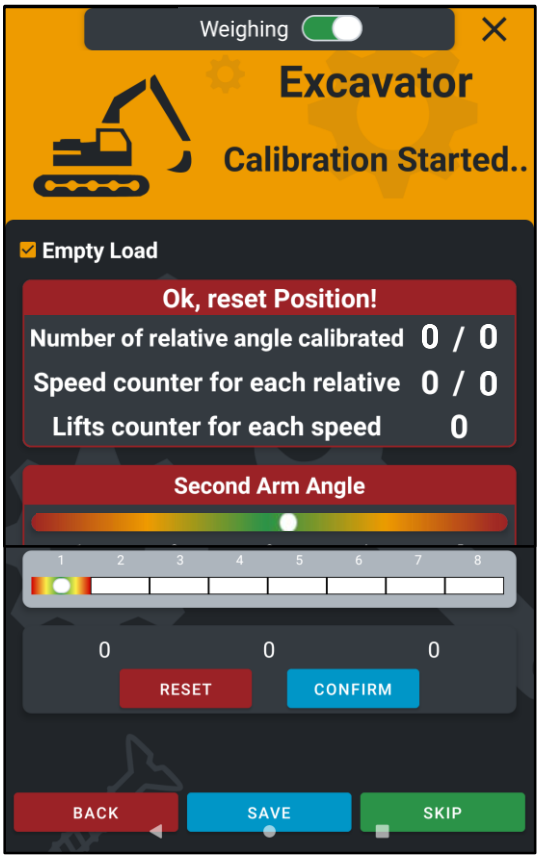

In this step, the machine is calibrated with EMPTY bucket.

It is essential to UNLOCK the weighing mode by dragging the cursor to the right.

RED weighing blocked / GREEN weighing enabled


**BOOM position indication**
**ANGLE RANGE POINTS (8 POINTS)**
**3 DIFFERENT ENGINE RPM (LOW MED / HIGH MED / MAX)**
**NUMBER OF LIFTS WITH THE SAME ENGINE RPM**




Rules for a correct EMPTY calibration:

1) **EMPTY Bucket - horizontal position with respect to the ground**

**BUCKET Calibration Position must to be maintained also in the WEIGHING PHASE to ensure system accuracy**

2) **Hydraulic Lifting Joystick fully open - end of stroke**

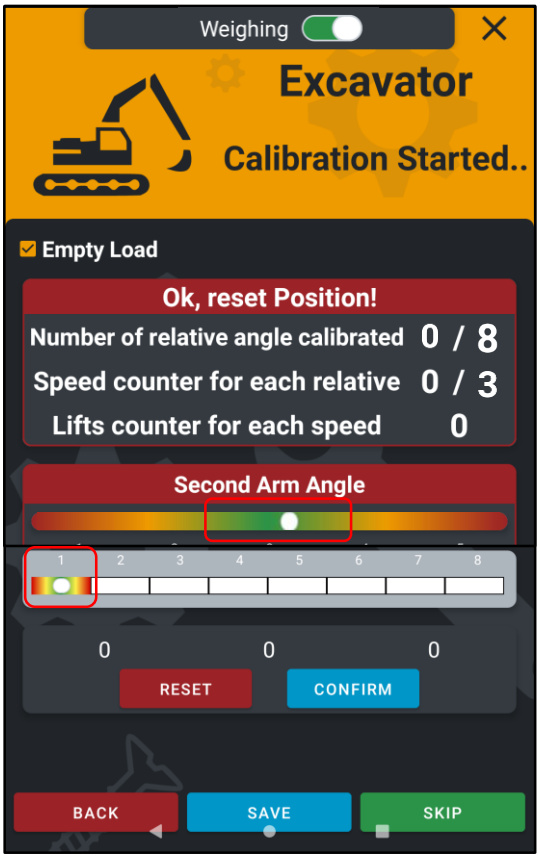
3) **Constant lifting speed without accelerations**

4) **Perform 3 lifts at low MED engine rpm**

5) **Perform 3 lifts at high MED engine rpm**

6) **Perform 3 lifts at MAX engine rpm**

*we do not calibrate the system at MIN engine rpm as it is not used at this speed during the loading/weighing phase. Run at low MED, then high MED and then MAX engine rpm*



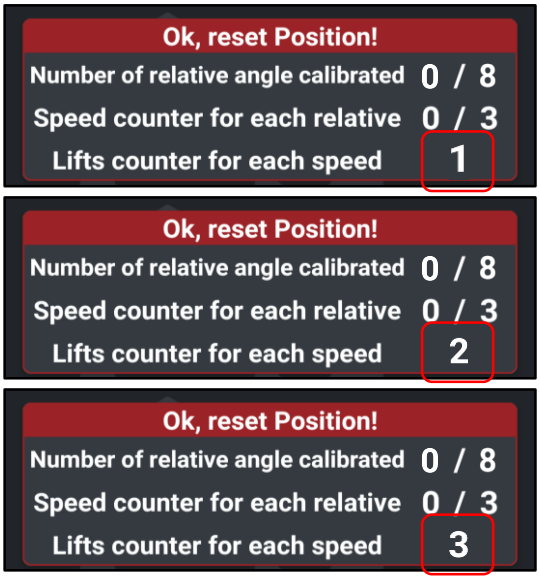

**POINT 01 (LOW MED rpm)**

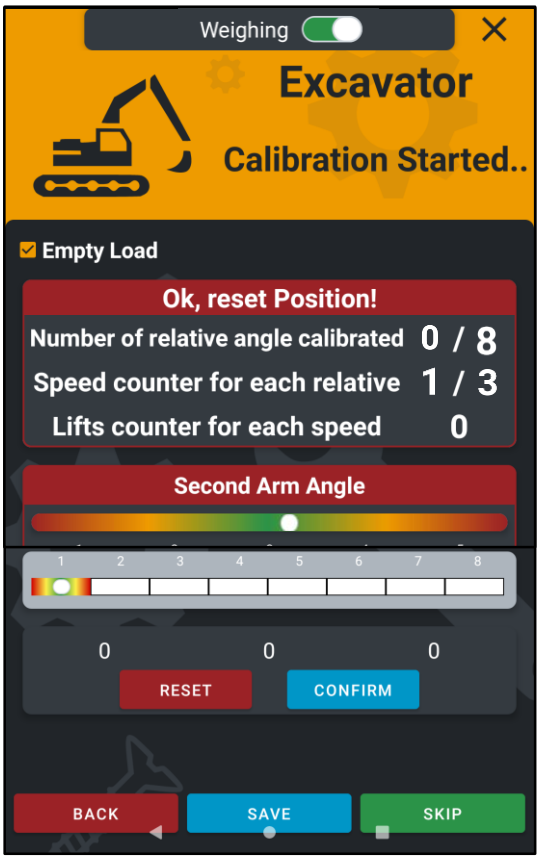
Move the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

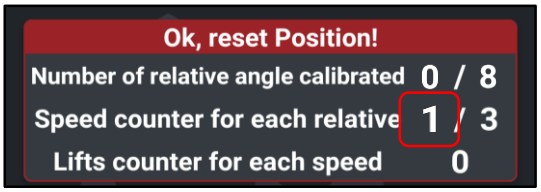
Perform 3 lifts at **LOW MED** engine rpm

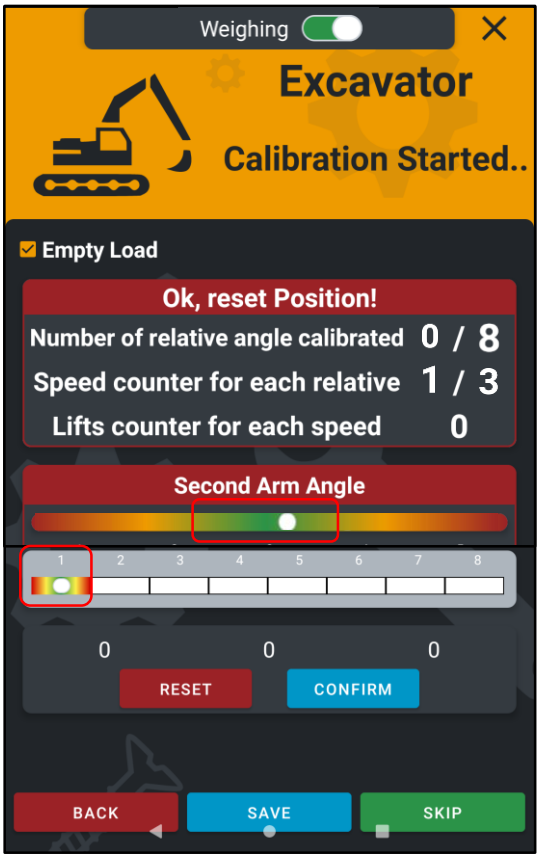



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





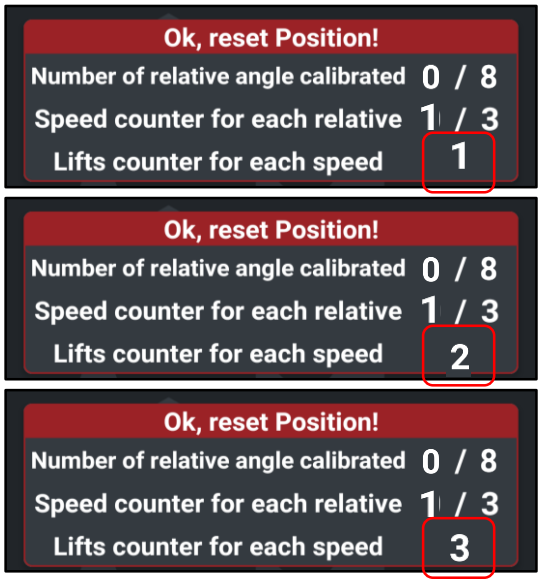

**POINT 01 (HIGH MED rpm)**

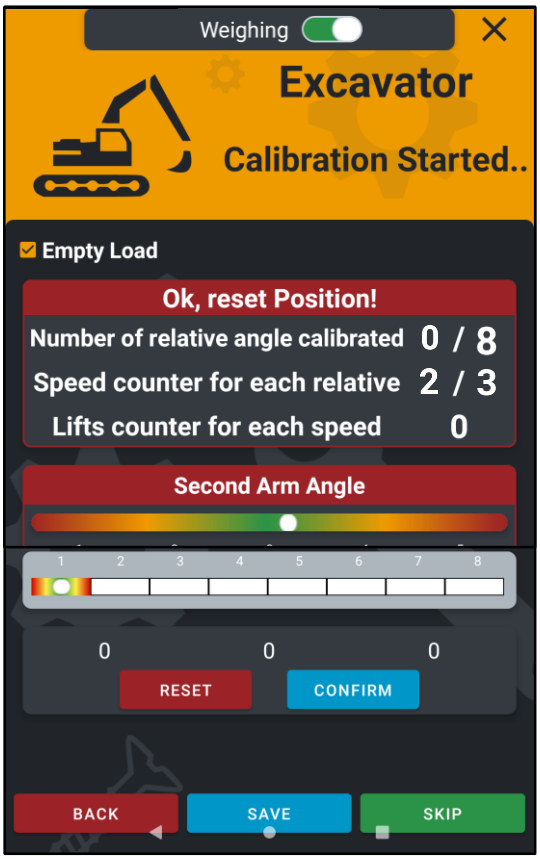
Keep the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

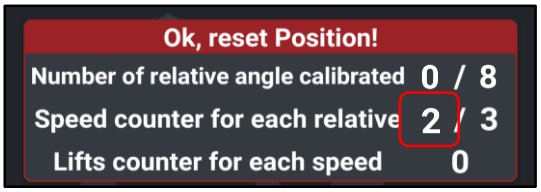
Perform 3 lifts at **HIGH MED** engine rpm

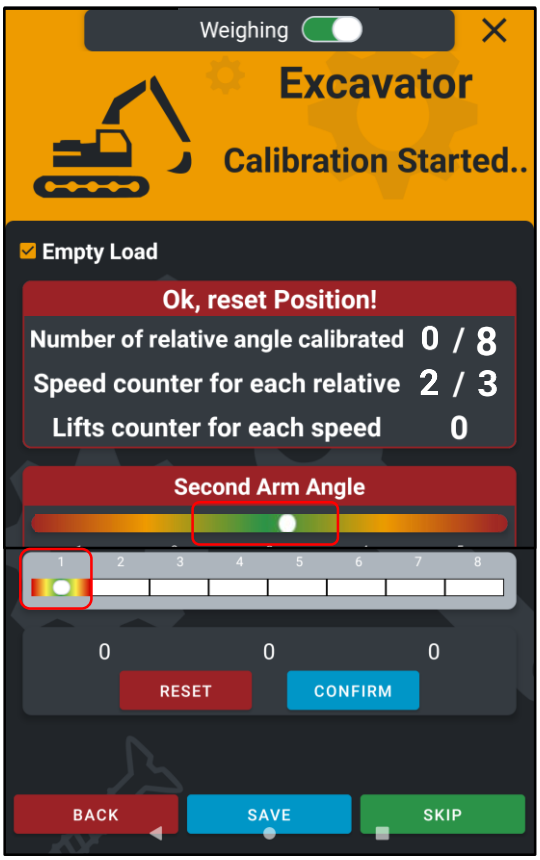



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





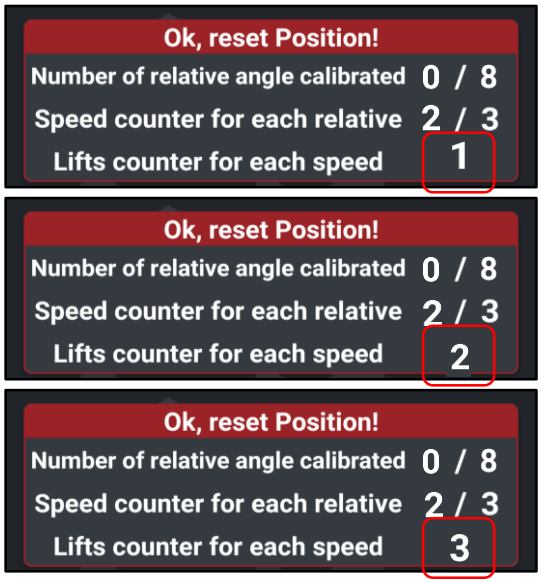

**POINT 01 (MAX rpm)**

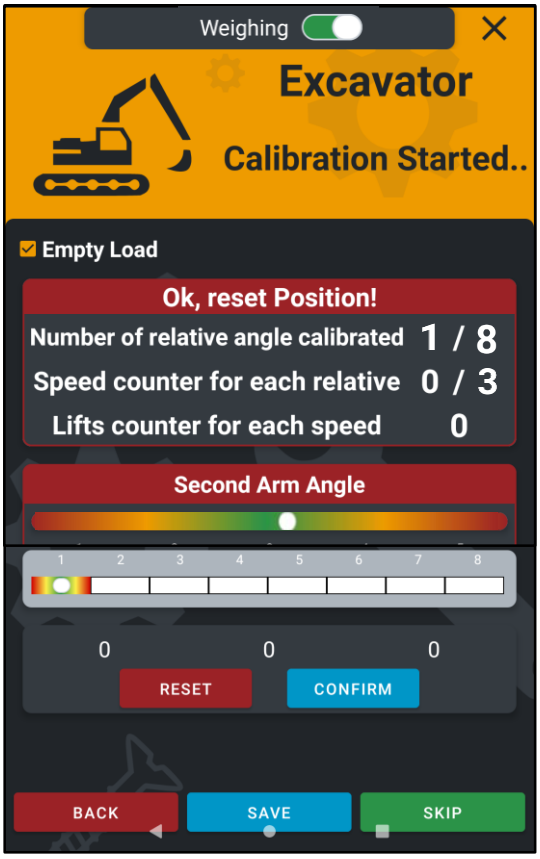
Keep the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

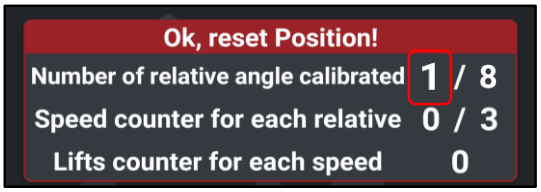
Perform 3 lifts at **MAX** engine rpm



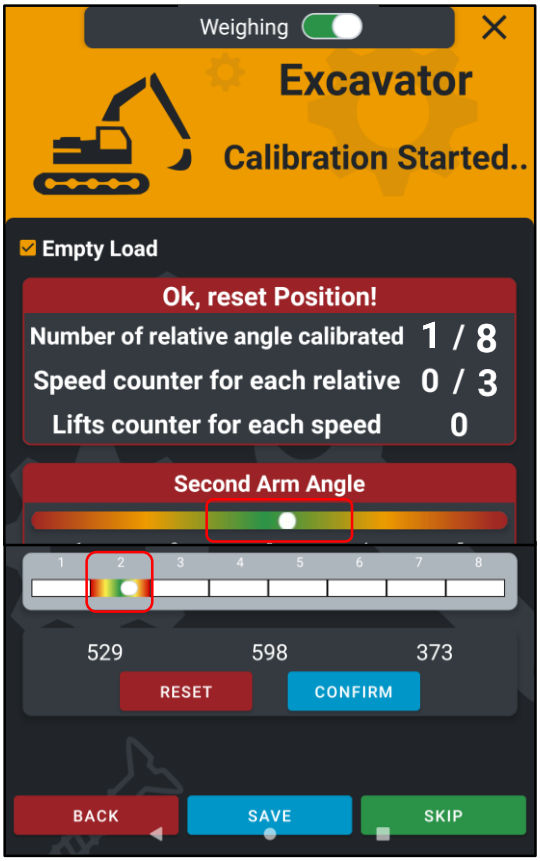

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 01 step.




**Now it is possible to move to POINT 02 and carry out the same procedure as for Point 01**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.



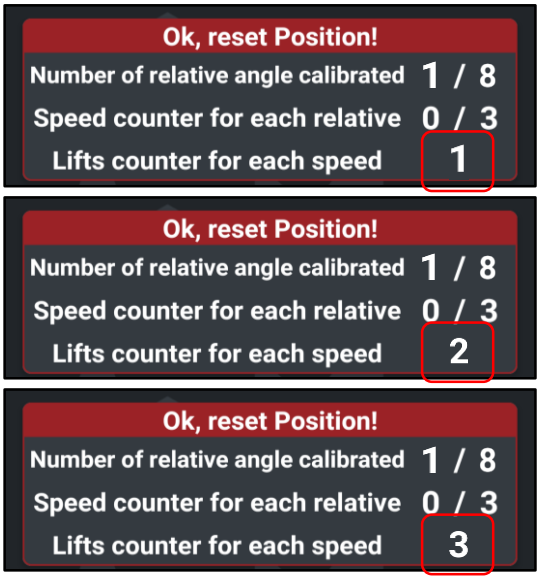

**POINT 02 (LOW MED rpm)**

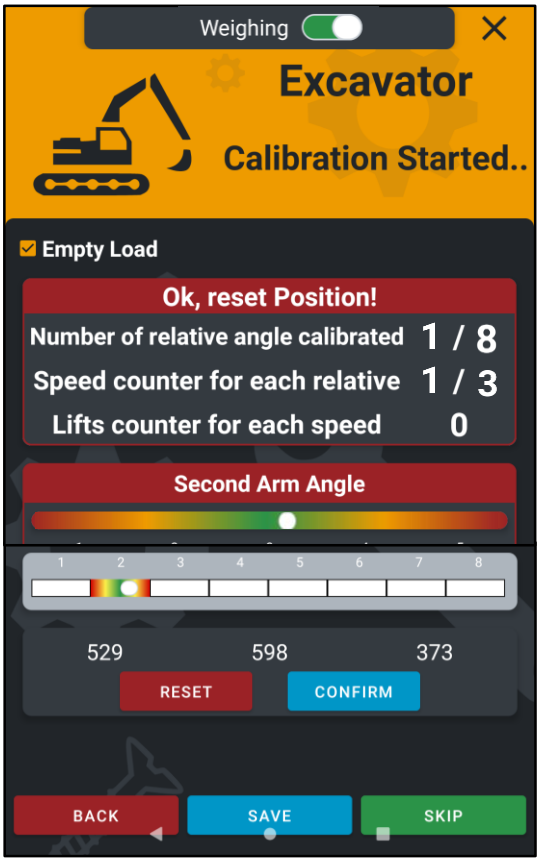
Move the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

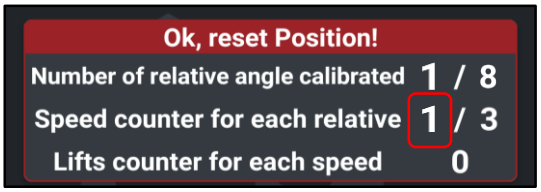
Perform 3 lifts at **LOW MED** engine rpm

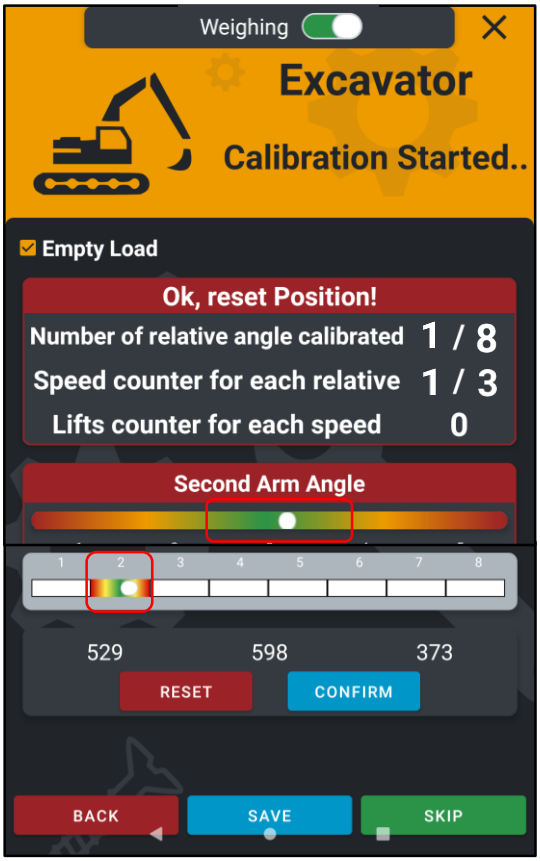



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





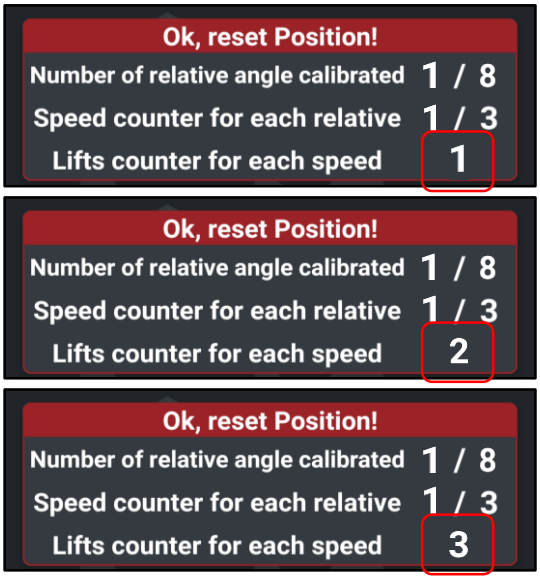

**POINT 02 (HIGH MED rpm)**

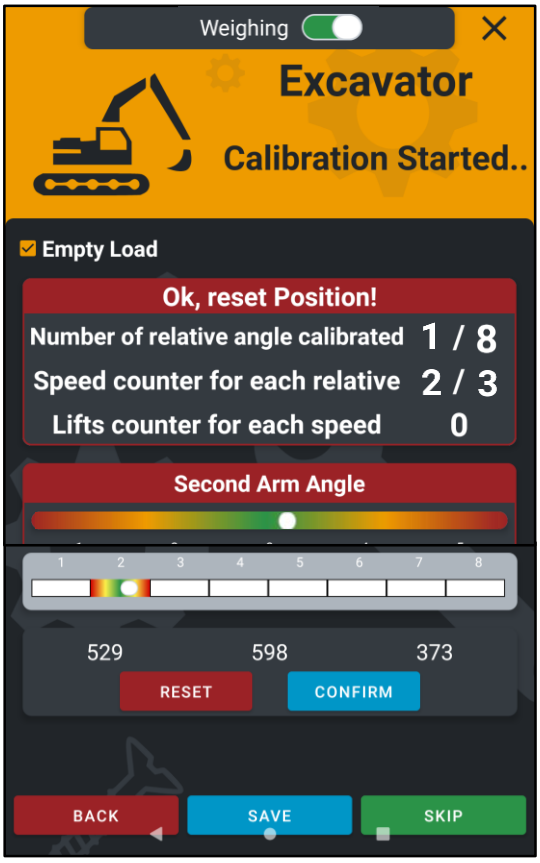
Keep the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

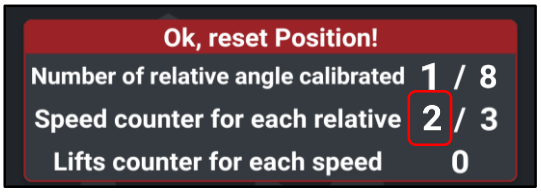
Perform 3 lifts at **HIGH MED** engine rpm

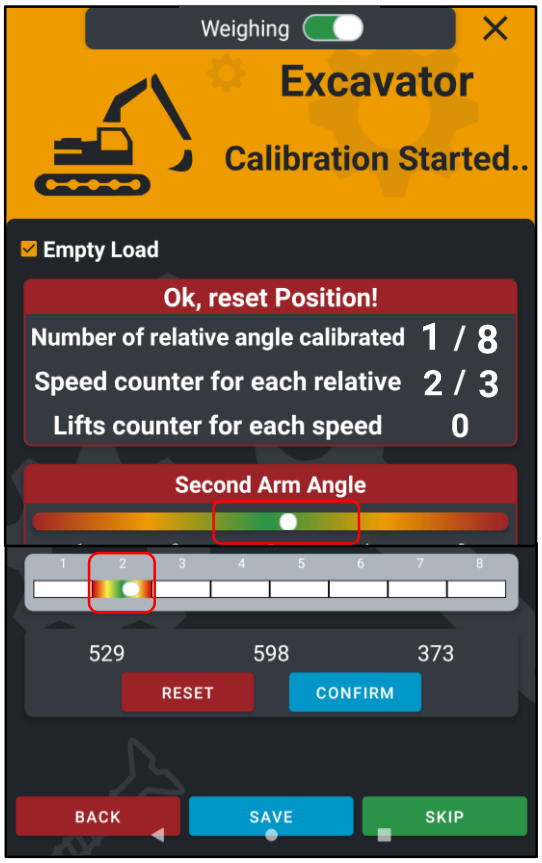



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





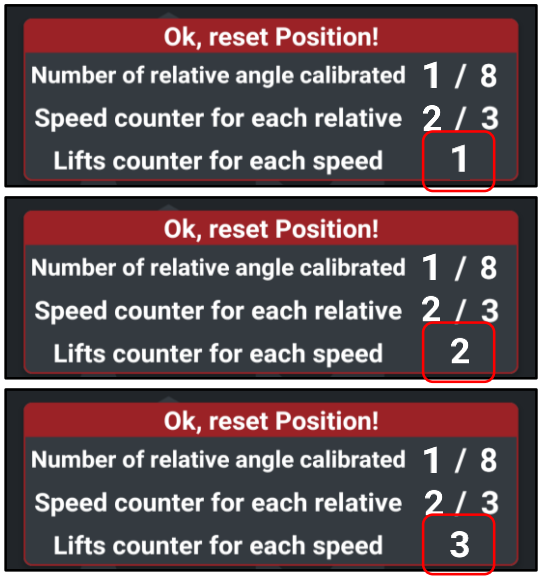

**POINT 02 (MAX rpm)**

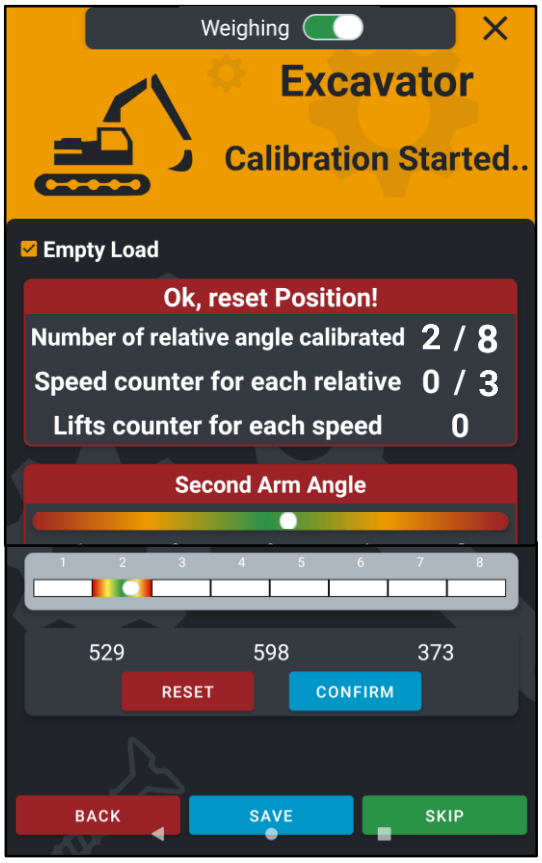
Keep the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

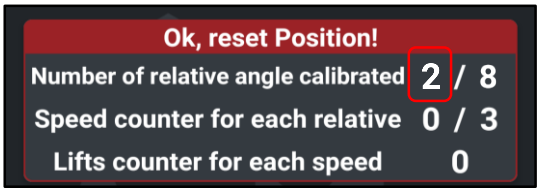
Perform 3 lifts at **MAX** engine rpm



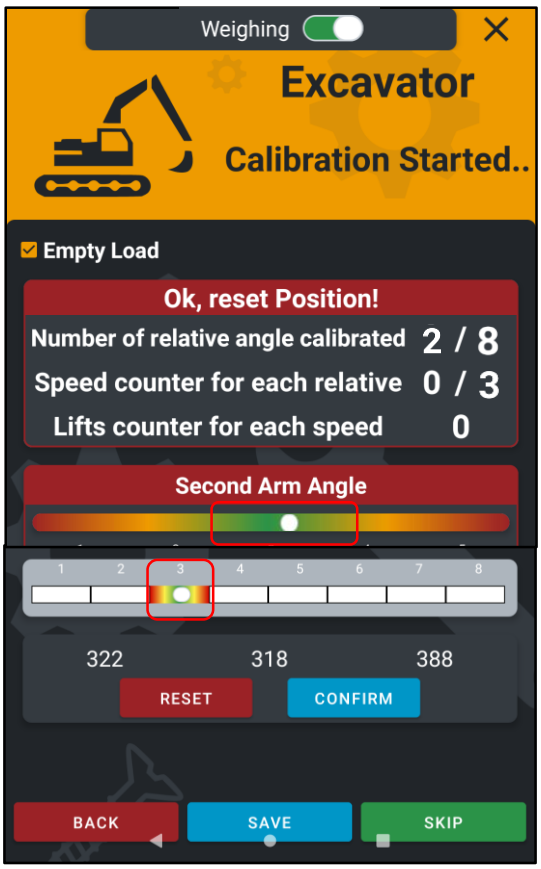

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 02 step.




**Now it is possible to move to POINT 03 and carry out the same procedure as for Point 02**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.



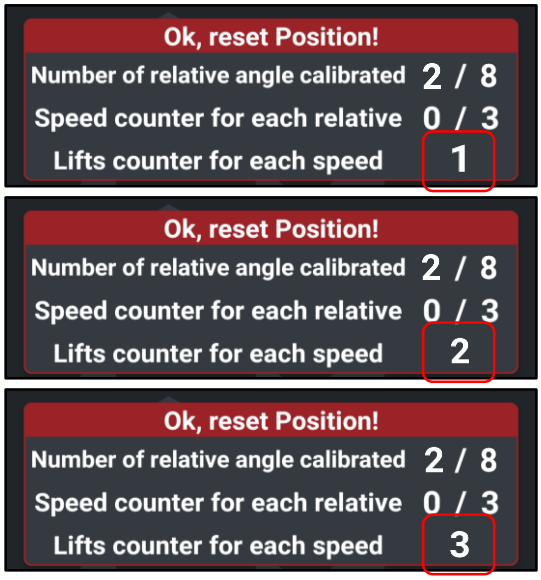

**POINT 03 (LOW MED rpm)**

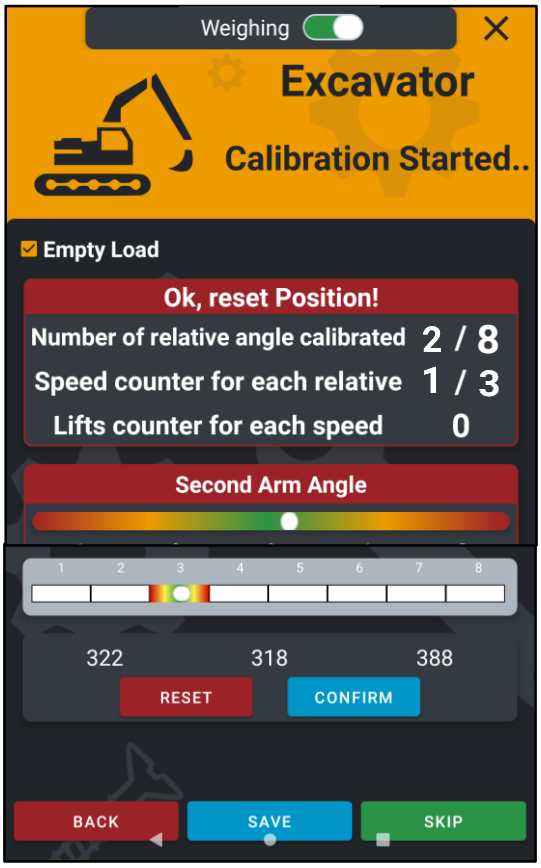
Move the STICK (Arm 2) to point 3 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

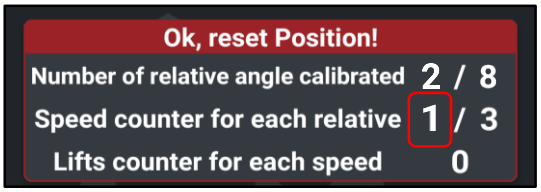
Perform 3 lifts at **LOW MED** engine rpm

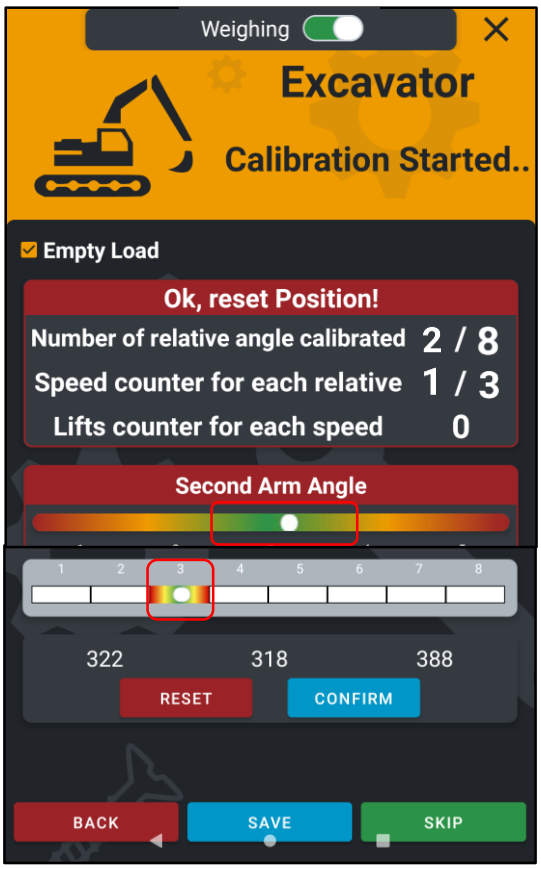



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





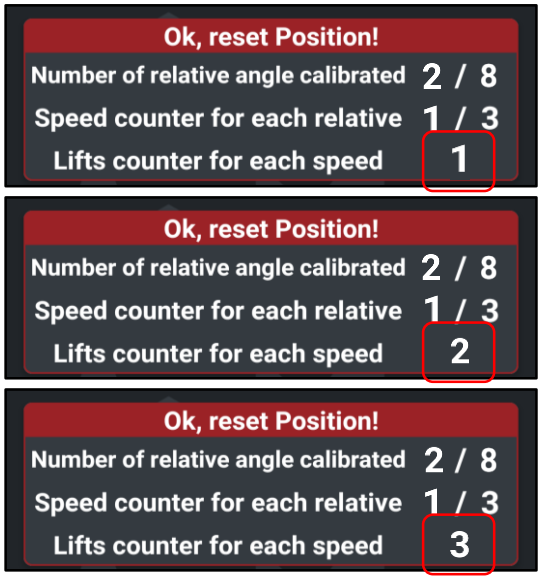

## POINT 03 (HIGH MED rpm)

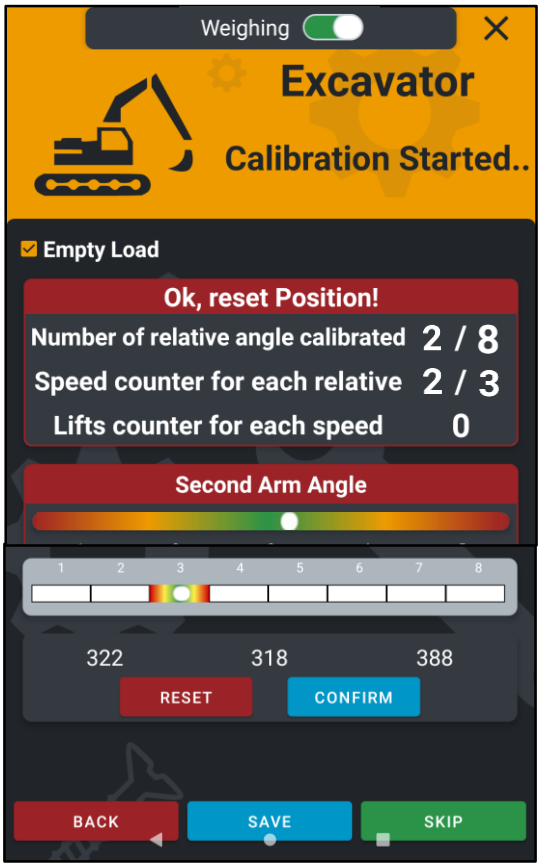
Keep the STICK (Arm 2) to point 3 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

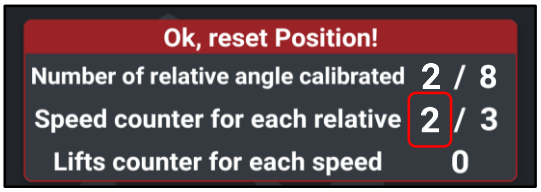
Perform 3 lifts at **HIGH MED** engine rpm

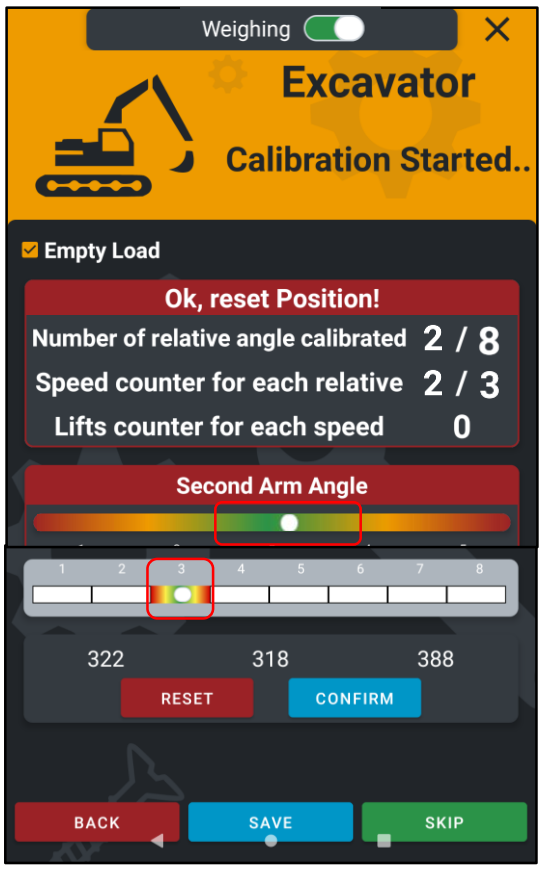



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





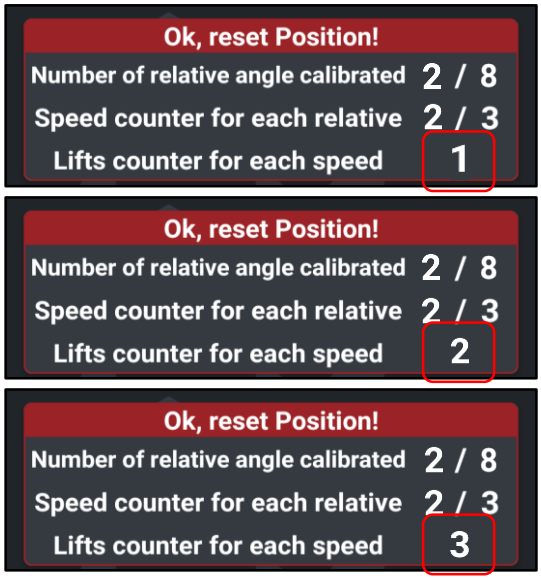

## POINT 03 (MAX rpm)

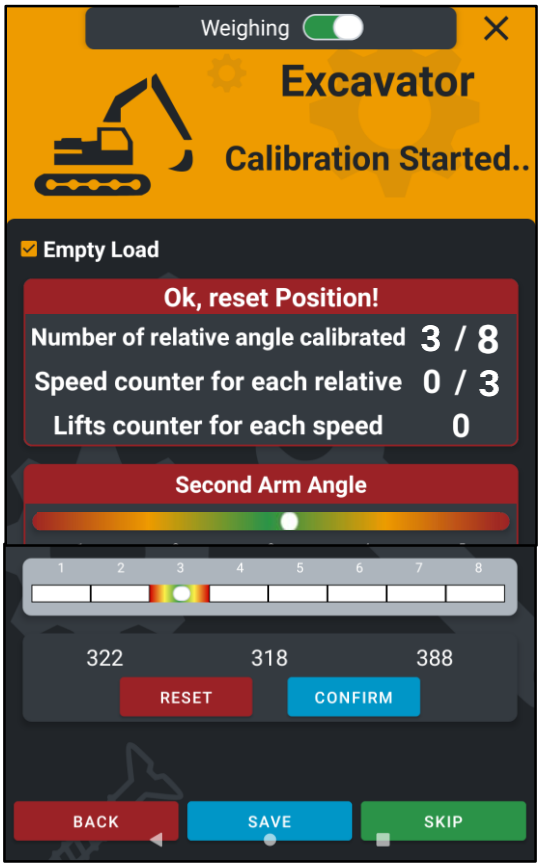
Keep the STICK (Arm 2) to point 3 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

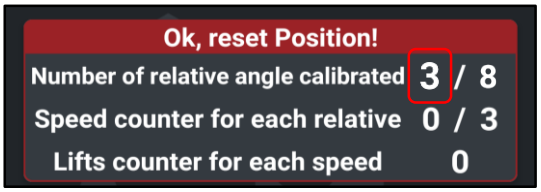
Perform 3 lifts at **MAX** engine rpm



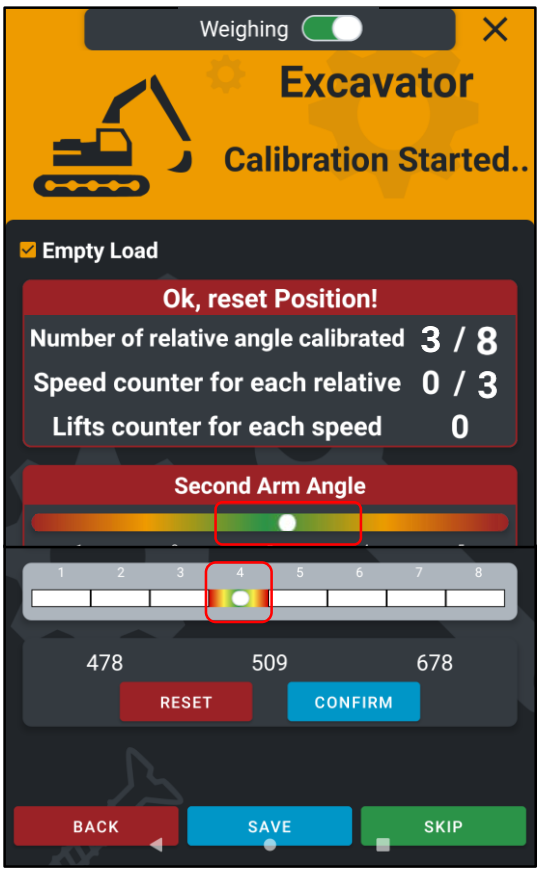

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 03 step.




**Now it is possible to move to POINT 04 and carry out the same procedure as for Point 03**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.



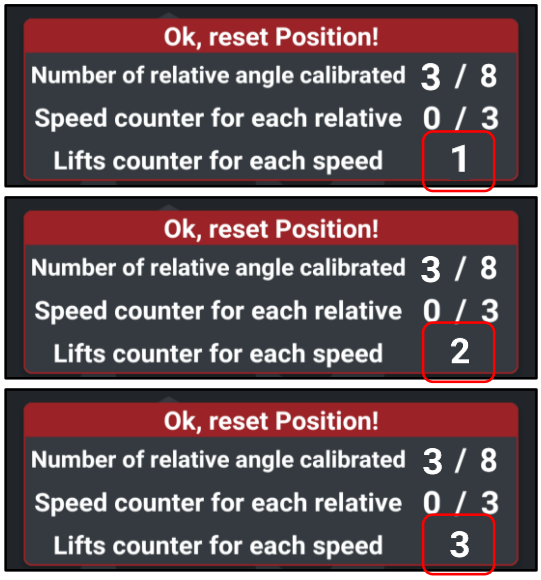

**POINT 04 (LOW MED rpm)**

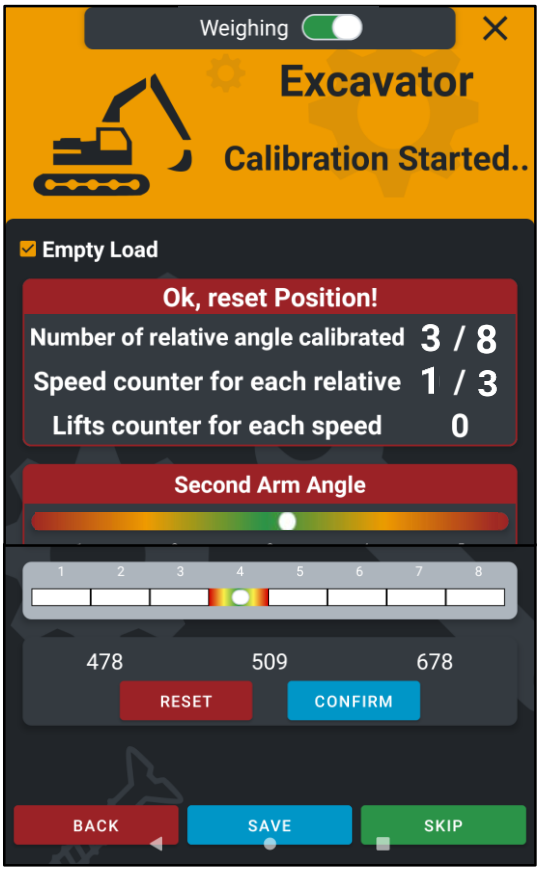
Move the STICK (Arm 2) to point 4 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

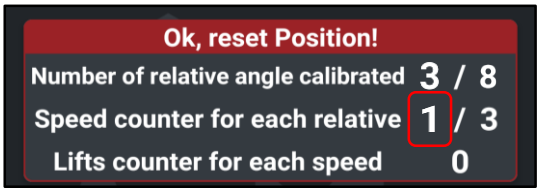
Perform 3 lifts at **LOW MED** engine rpm

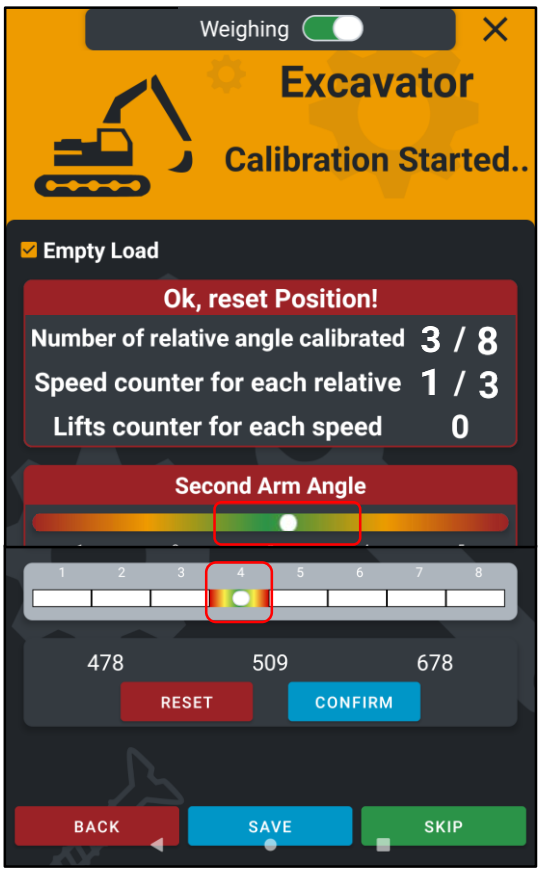



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





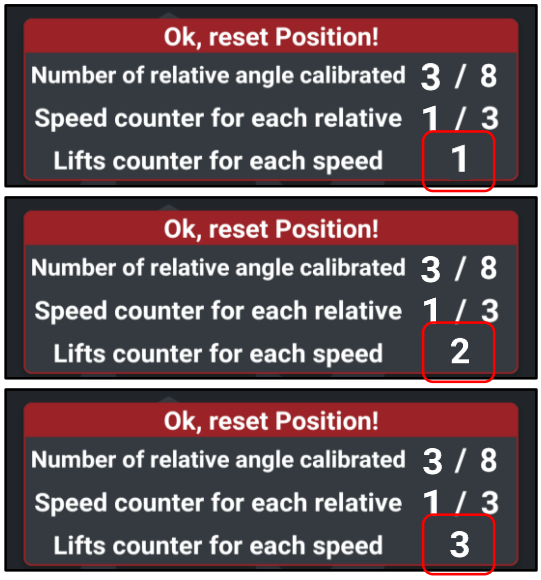

**POINT 04 (HIGH MED rpm)**

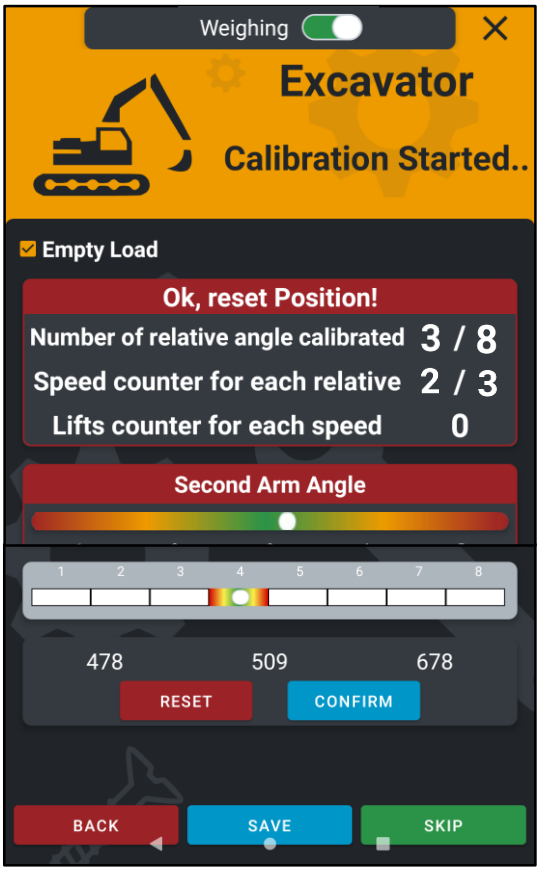
Keep the STICK (Arm 2) to point 4 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

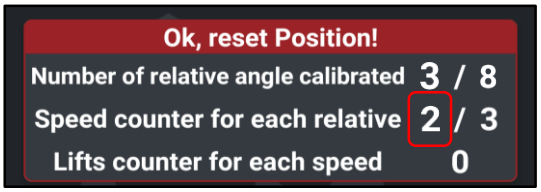
Perform 3 lifts at **HIGH MED** engine rpm

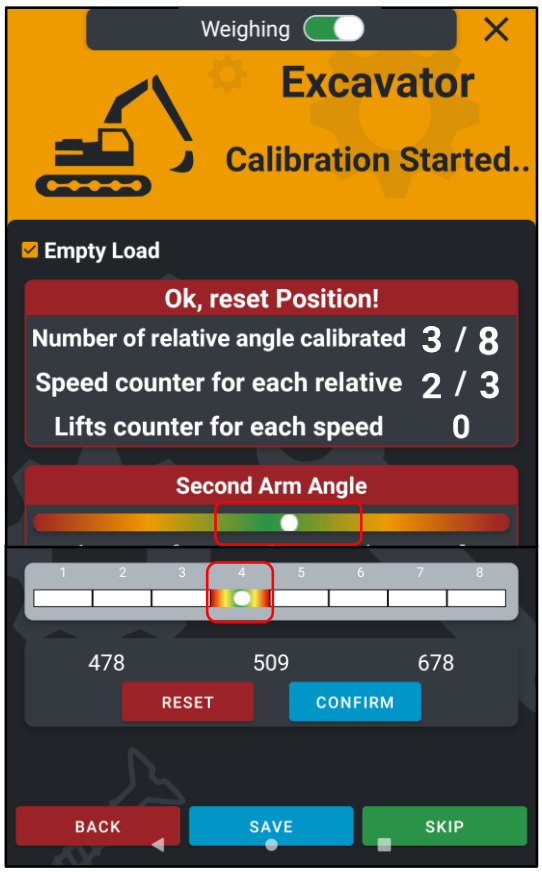



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





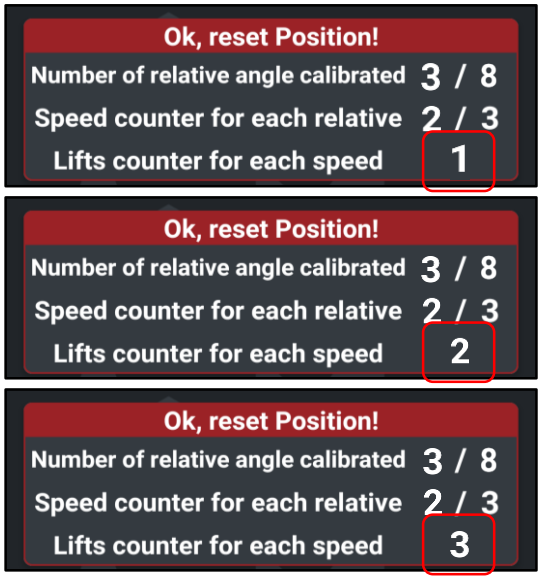

## POINT 04 (MAX rpm)

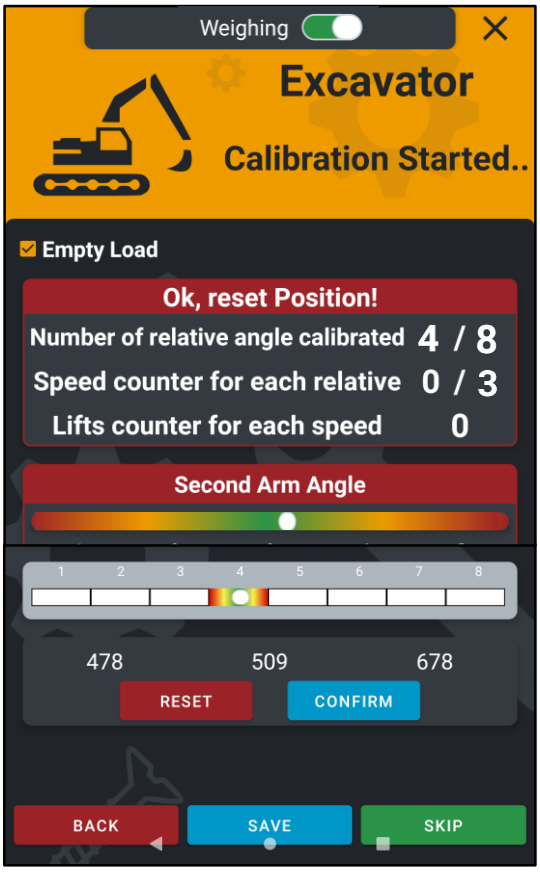
Keep the STICK (Arm 2) to point 4 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

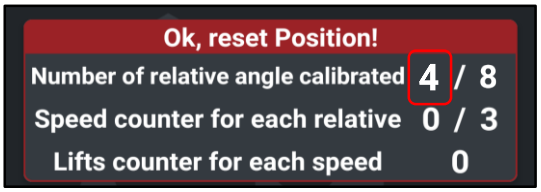
Perform 3 lifts at **MAX** engine rpm



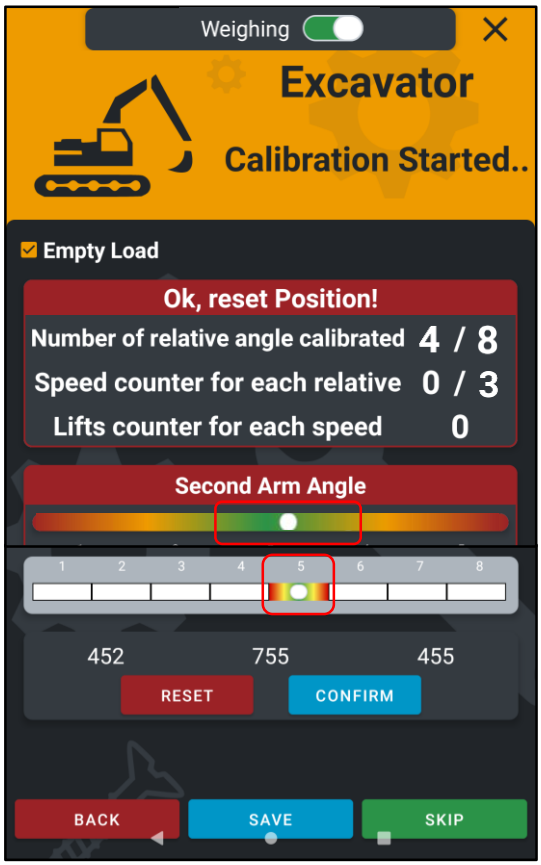

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 04 step.




**Now it is possible to move to POINT 05 and carry out the same procedure as for Point 04**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 05**

Move the STICK (Arm 2) to point 5 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

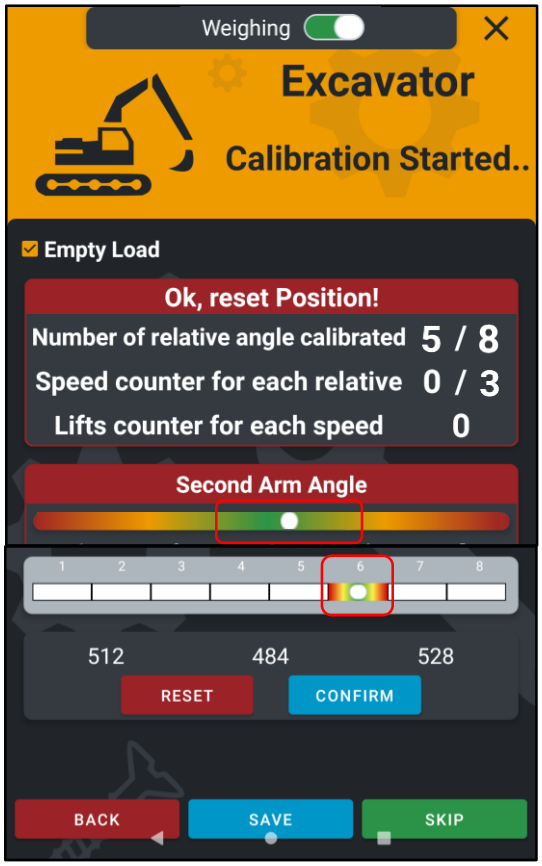
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 06**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 06**

Move the STICK (Arm 2) to point 6 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

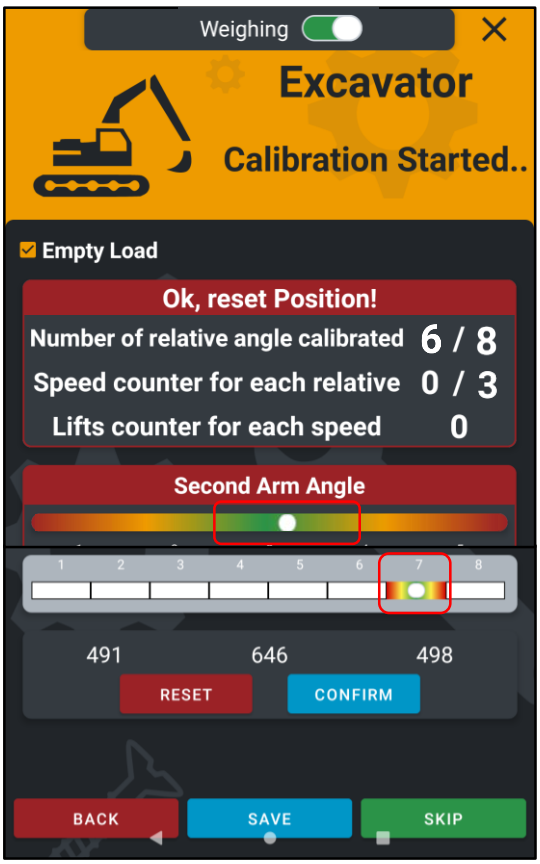
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 07**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 07**

Move the STICK (Arm 2) to point 7 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

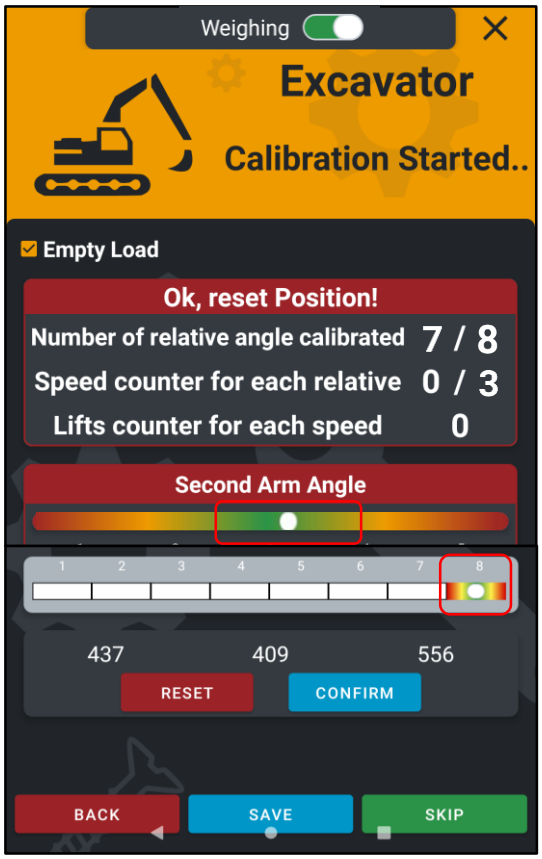
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 08**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 08**

Move the STICK (Arm 2) to point 8 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

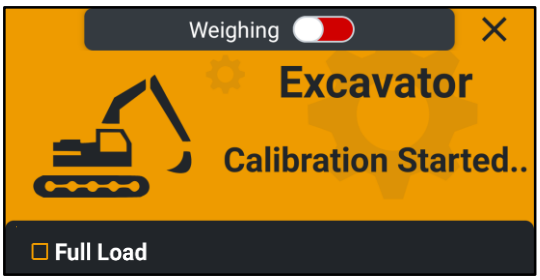
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

It is suggested to SAVE the completed steps in order not to lose the calibration data.

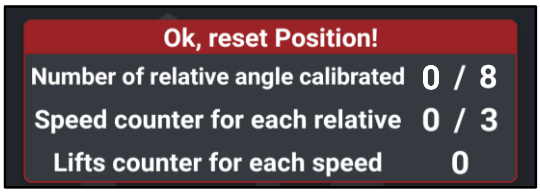
# FULL LOADED CALIBRATION



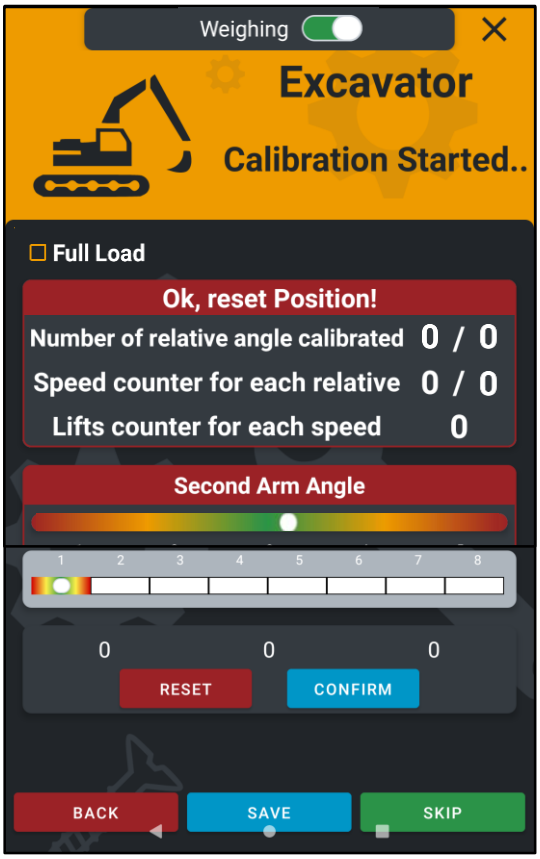

In this step, the machine is calibrated with FULL LOADED bucket.

It is essential to UNLOCK the weighing mode by dragging the cursor to the right.

RED weighing blocked / GREEN weighing enabled


**BOOM position indication**
**ANGLE RANGE POINTS (8 POINTS)**
**3 DIFFERENT ENGINE RPM (LOW MED / HIGH MED / MAX)**
**NUMBER OF LIFTS WITH THE SAME ENGINE RPM**




Rules for a correct FULL LOADED calibration:

1) **FULL LOADED Bucket - horizontal position with respect to the ground**

**BUCKET Calibration Position must to be maintained also in the WEIGHING PHASE to ensure system accuracy**

2) **Hydraulic Lifting Joystick fully open - end of stroke**

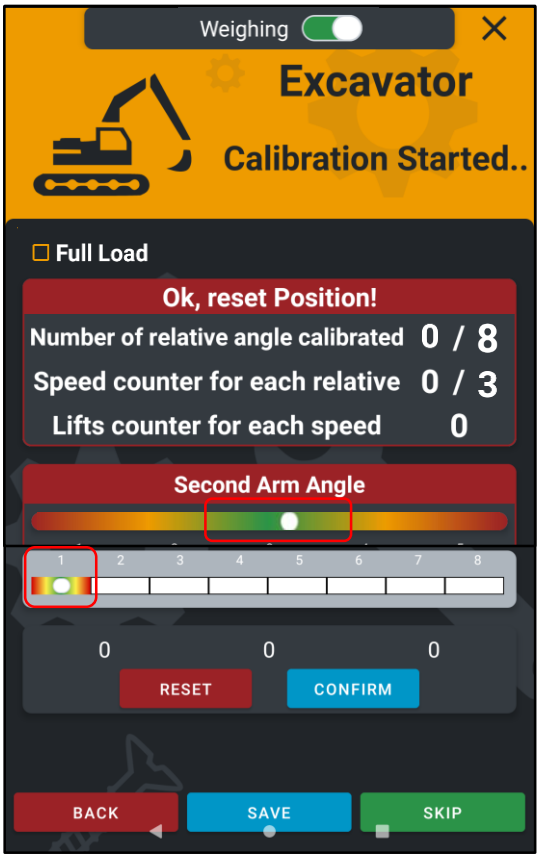
3) **Constant lifting speed without accelerations**

4) **Perform 3 lifts at low MED engine rpm**

5) **Perform 3 lifts at high MED engine rpm**

6) **Perform 3 lifts at MAX engine rpm**

*we do not calibrate the system at MIN engine rpm as it is not used at this speed during the loading/weighing phase. Run at low MED, then high MED and then MAX engine rpm*



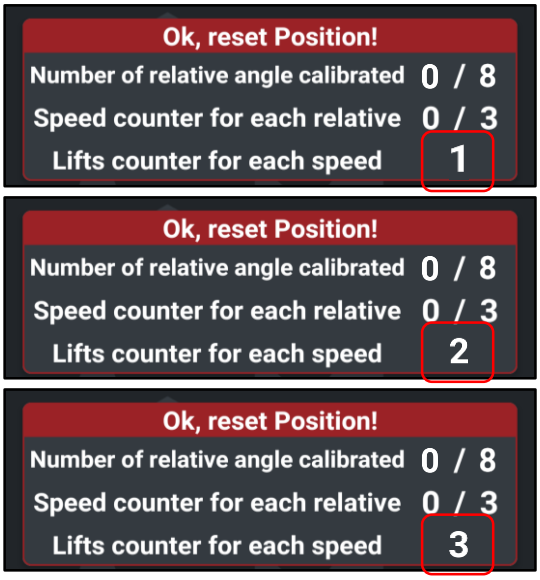

**POINT 01 (LOW MED rpm)**

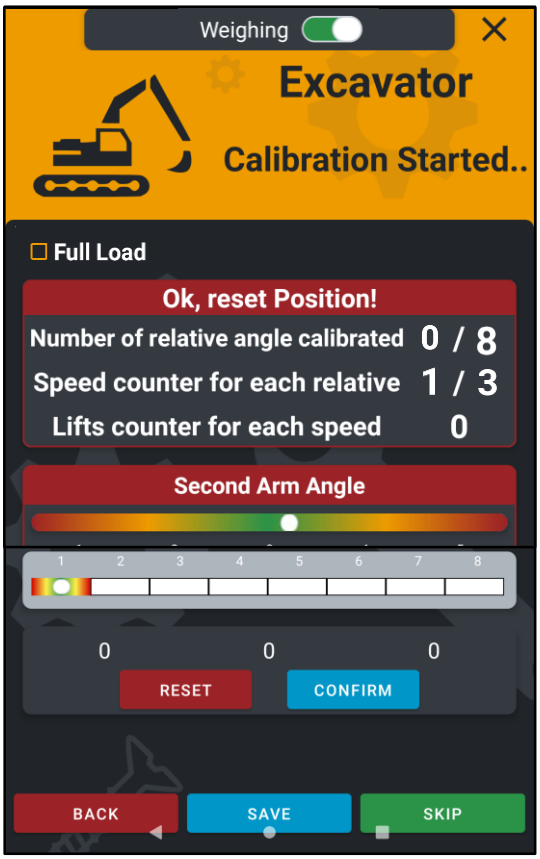
Move the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

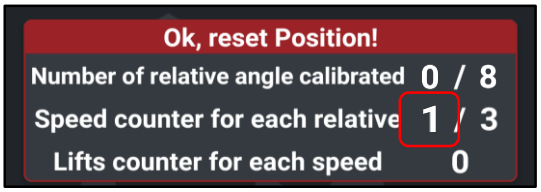
Perform 3 lifts at **LOW MED** engine rpm

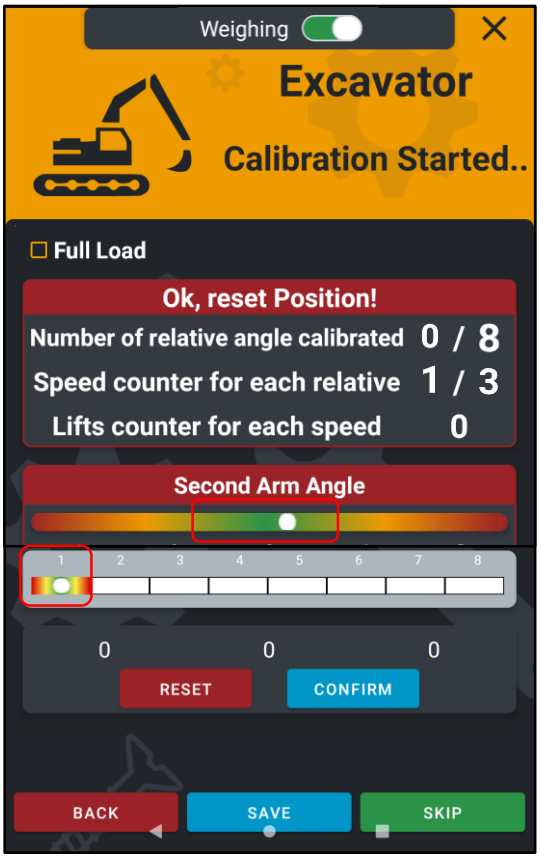



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





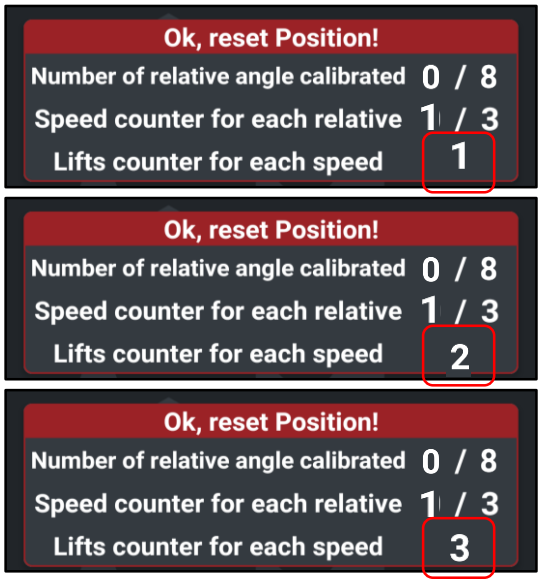

**POINT 01 (HIGH MED rpm)**

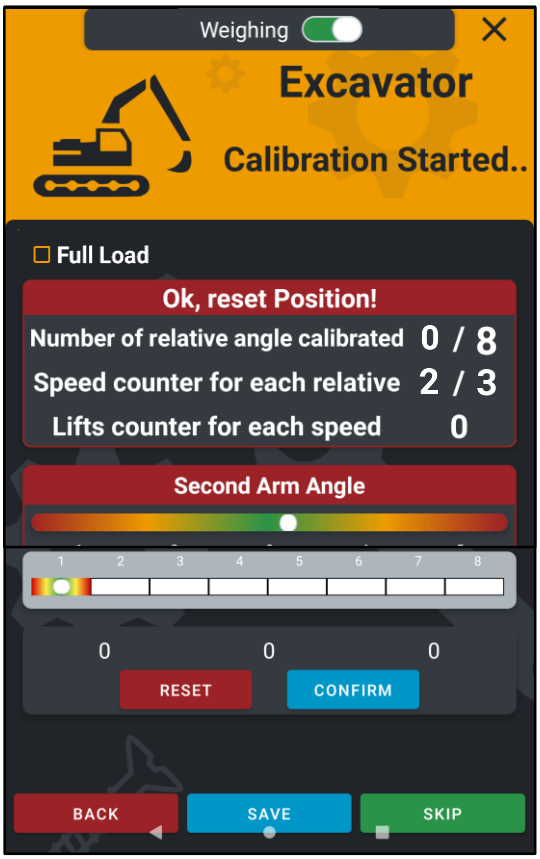
Keep the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

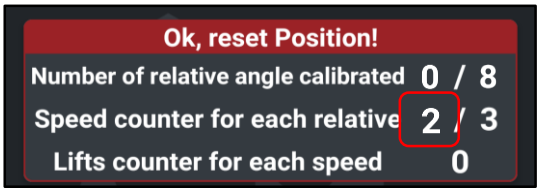
Perform 3 lifts at **HIGH MED** engine rpm

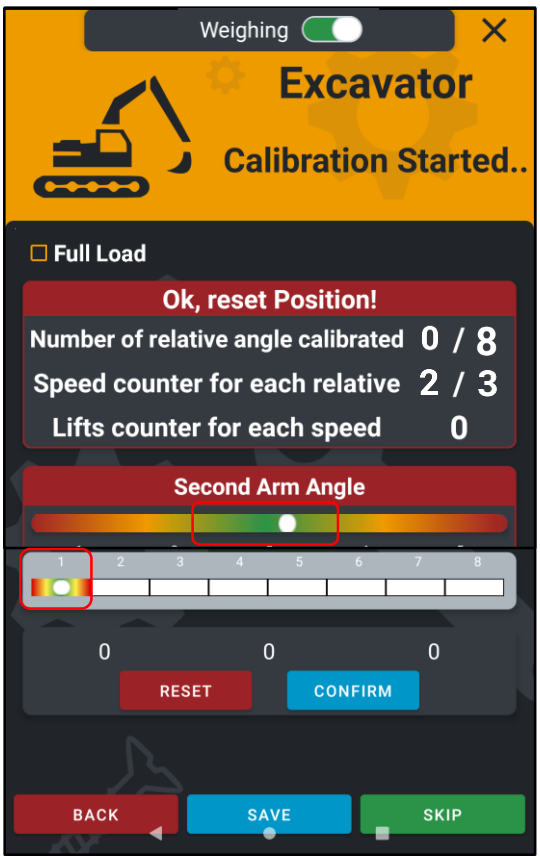



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





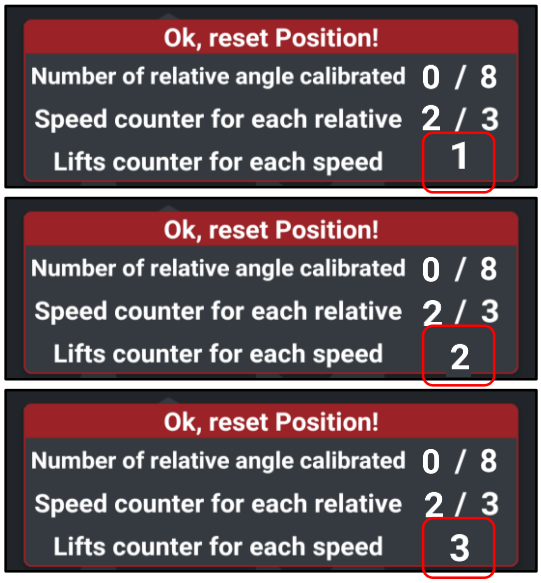

**POINT 01 (MAX rpm)**

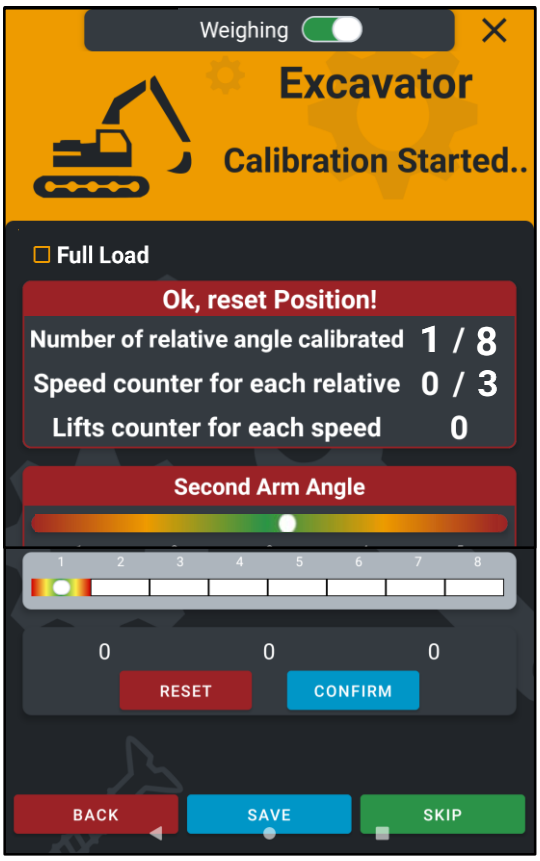
Keep the STICK (Arm 2) to point 1 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

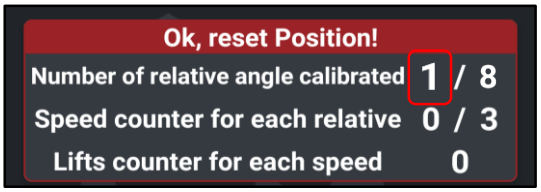
Perform 3 lifts at **MAX** engine rpm



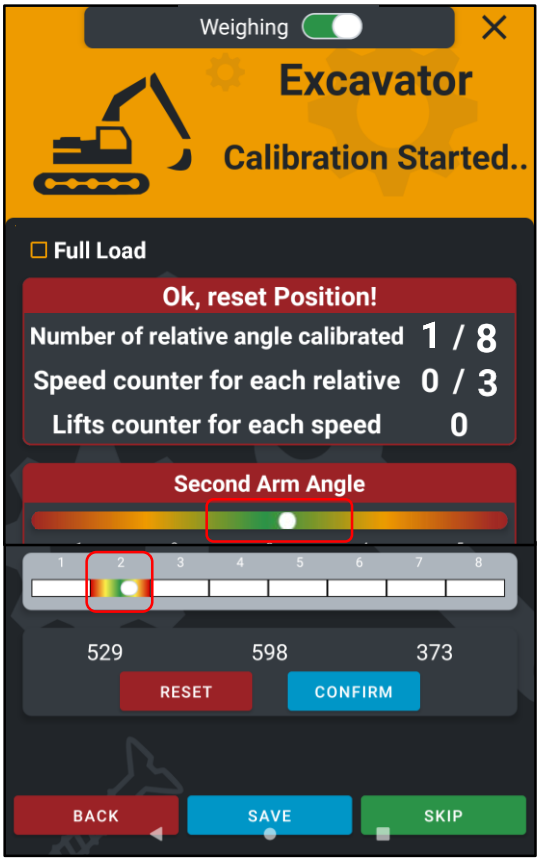

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 01 step.




**Now it is possible to move to POINT 02 and carry out the same procedure as for Point 01**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.



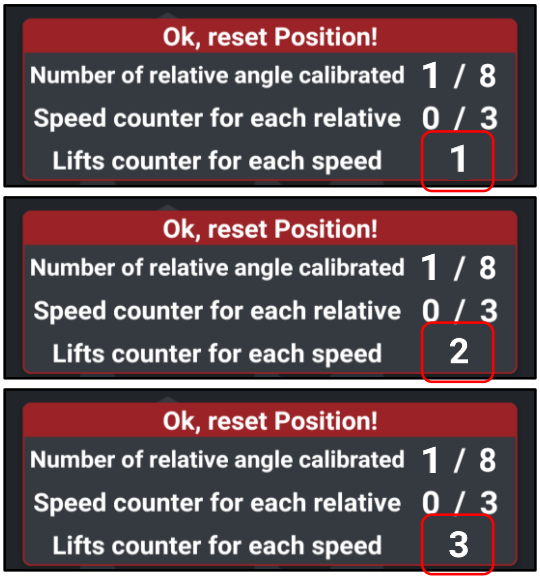

**POINT 02 (LOW MED rpm)**

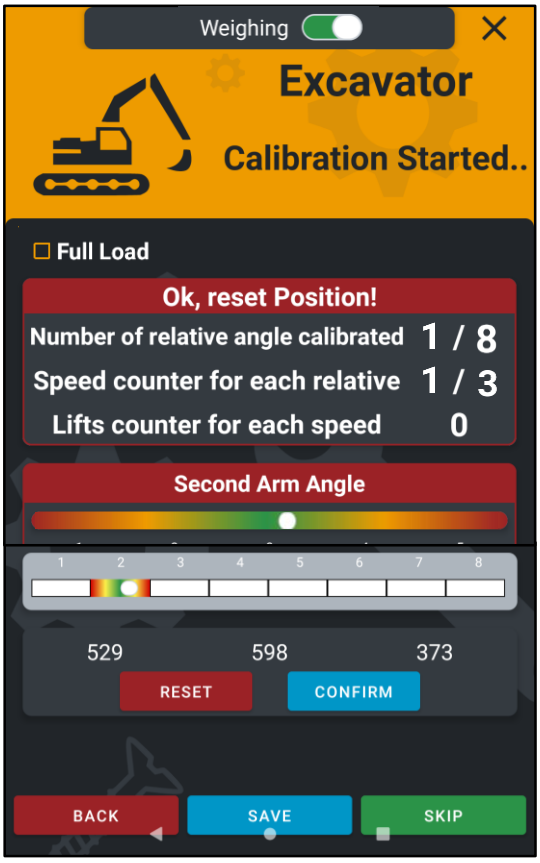
Move the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

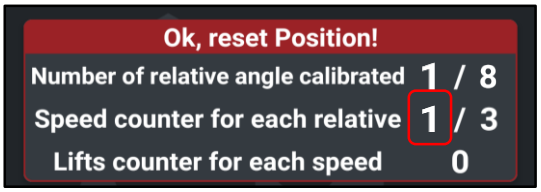
Perform 3 lifts at **LOW MED** engine rpm

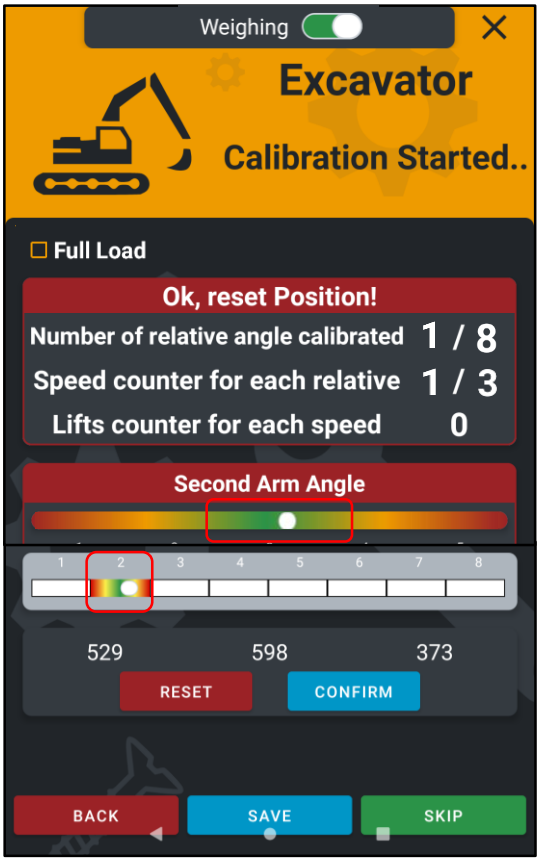



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **LOW MED** engine rpm have been **CONFIRMED**, the system will pass directly to the second speed to be performed.





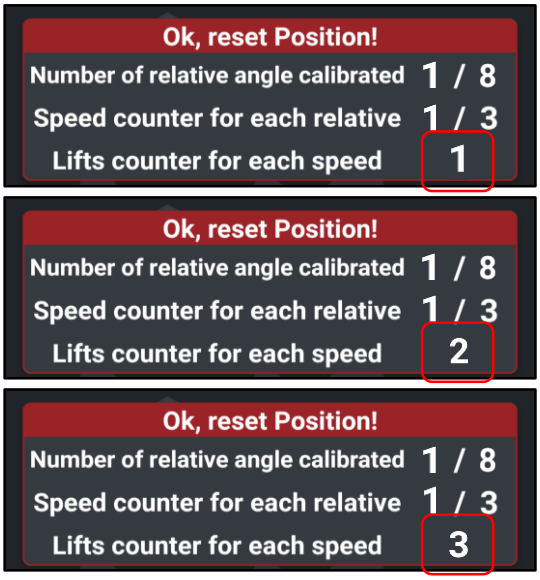

**POINT 02 (HIGH MED rpm)**

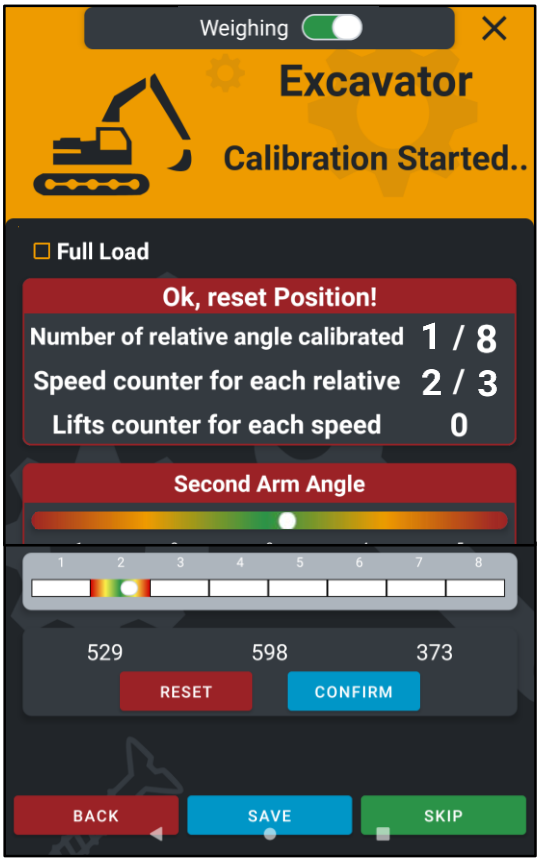
Keep the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

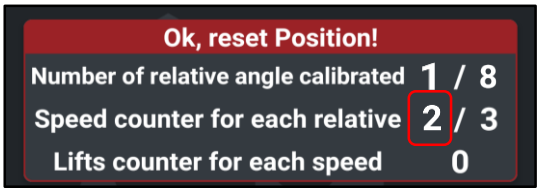
Perform 3 lifts at **HIGH MED** engine rpm

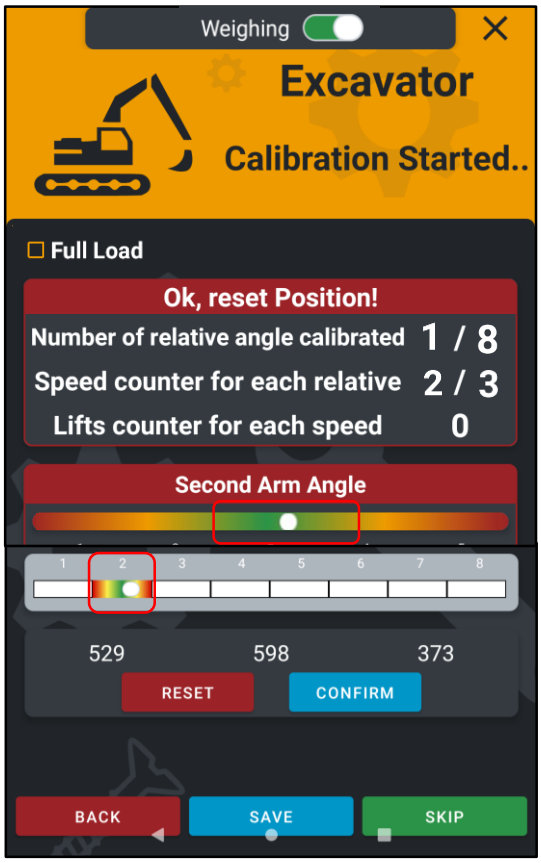



Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **HIGH MED** engine rpm have been **CONFIRMED**, the system will pass directly to the third speed to be performed.





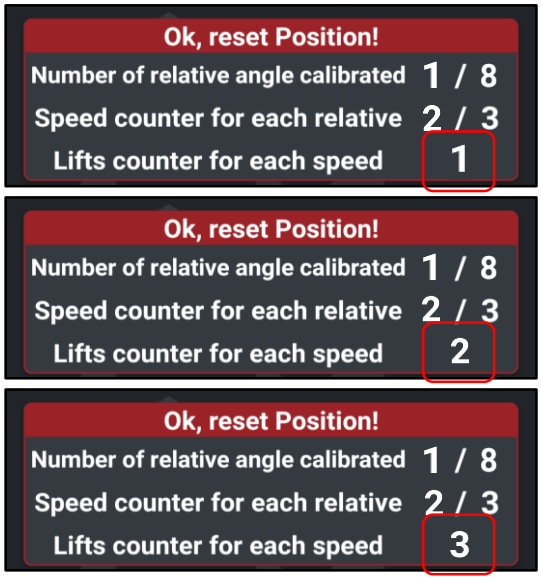

## POINT 02 (MAX rpm)

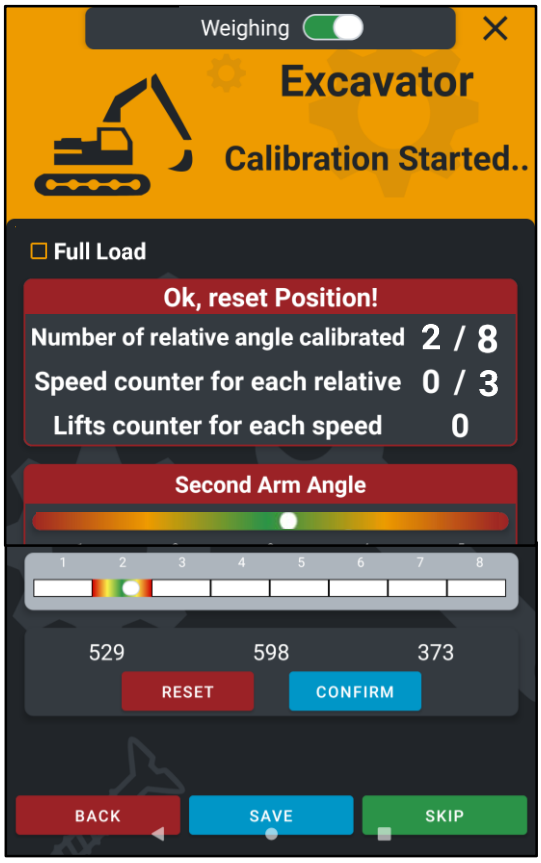
Keep the STICK (Arm 2) to point 2 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

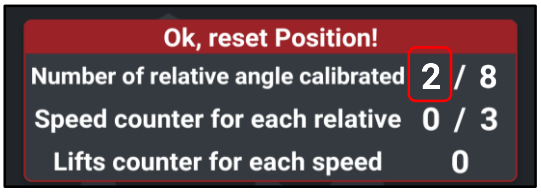
Perform 3 lifts at **MAX** engine rpm



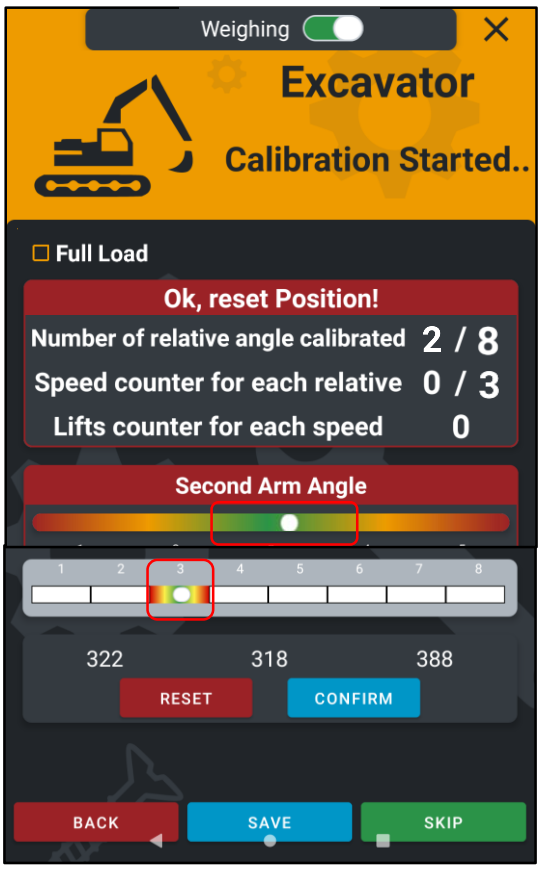

Once the 3 lifts have been performed at the same speed, press the key CONFIRM

Once the 3 lifts at **MAX** engine rpm have been **CONFIRMED**, the system will save the POINT 02 step.




**Now it is possible to move to POINT 03 and carry out the same procedure as for Point 02**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 03**

Move the STICK (Arm 2) to point 3 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

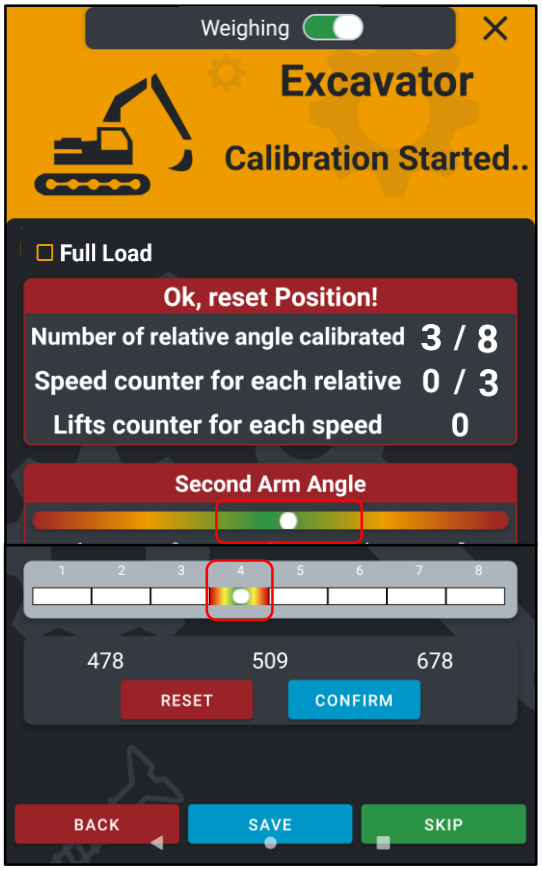
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 04**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 04**

Move the STICK (Arm 2) to point 4 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

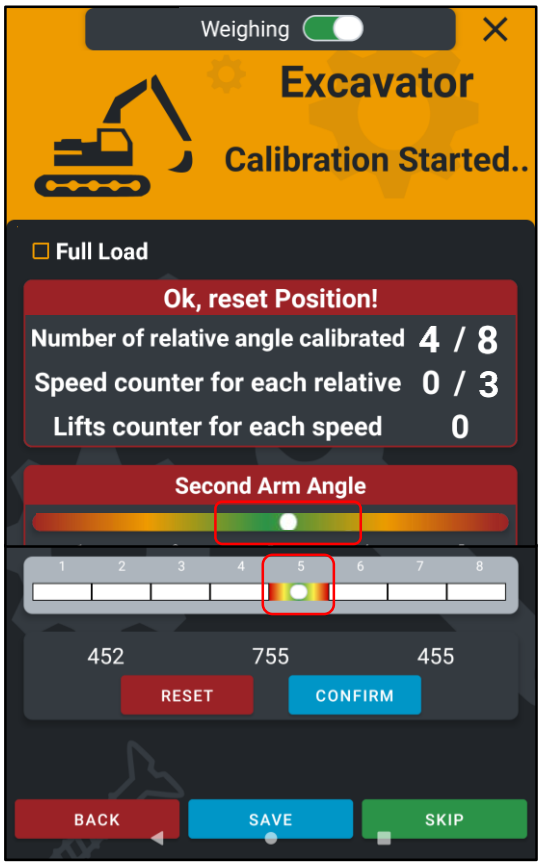
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 05**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 05**

Move the STICK (Arm 2) to point 5 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

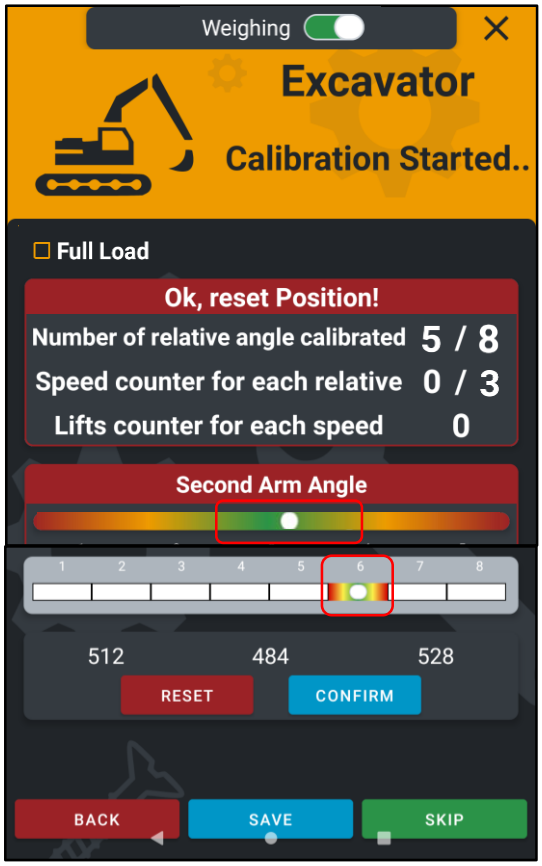
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 06**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




**POINT 06**

Move the STICK (Arm 2) to point 6 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

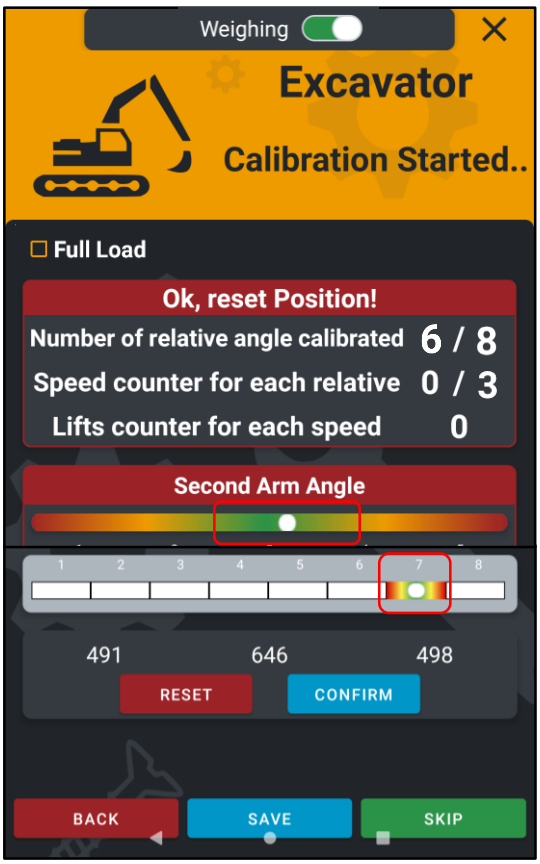
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 07**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




## POINT 07

Move the STICK (Arm 2) to point 7 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

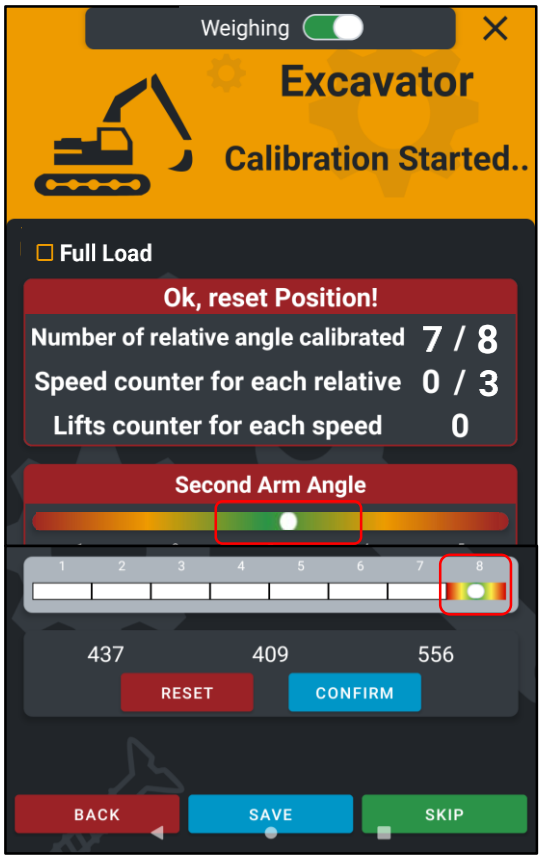
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

**Now it is possible to move to POINT 08**

It is suggested, where possible, to SAVE the completed steps in order not to lose the calibration data.




## POINT 08

Move the STICK (Arm 2) to point 8 position.

Follow the bubble level to place your arms in the correct position - **GREEN ZONE**

EMPTY Bucket - horizontal position with respect to the ground / Hydraulic Lifting Joystick fully open - end of stroke / Constant lifting speed without accelerations

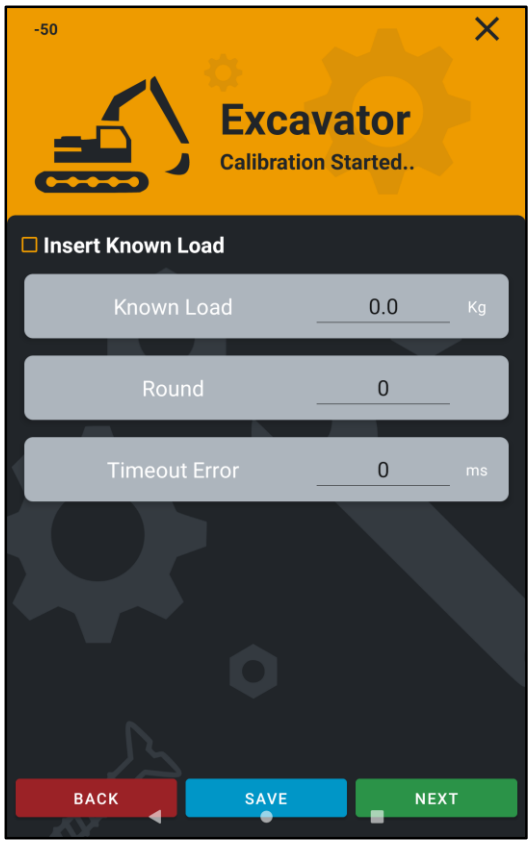
Perform 3 lifts at **LOW MED** engine rpm and press CONFIRM

Perform 3 lifts at **HIGH MED** engine rpm and press CONFIRM

Perform 3 lifts at **MAX** engine rpm and press CONFIRM

It is suggested to SAVE the completed steps in order not to lose the calibration data.

# KNOWN LOAD

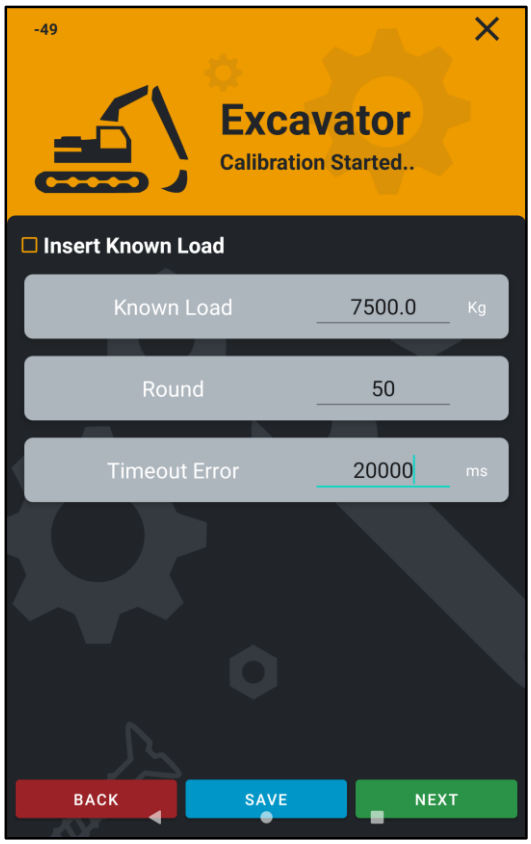



In this step it is possible to set the KNOWN WEIGHT used in the calibration phase, the weight resolution and the weighing time out.

Get the precise weight of the material used in the calibration and enter the weight in Kilograms.

Set the resolution of the weight, example 20Kg.
The weight will be displayed in 20kg steps.
*On machines with large capacities it is recommended to set the resolution to 50Kg or 100Kg.*

The Time Out Error is the duration of the weighing phase and is set by default at **20000ms**.
**Do not change this parameter.**




Example of setting the different values.

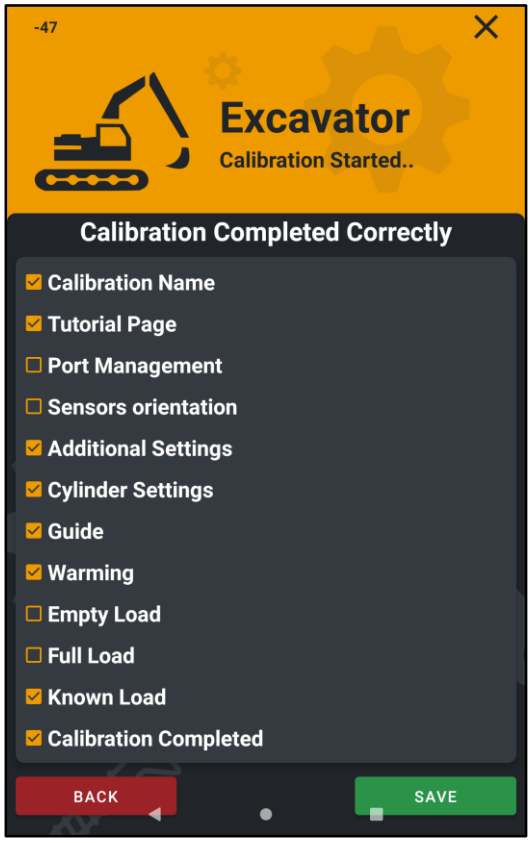
Example of Known Load of **7500Kg**

Example of Rounding at **50Kg**

Parameter to be left fixed at **20000ms**

It is suggested to SAVE the completed steps in order not to lose the calibration data.

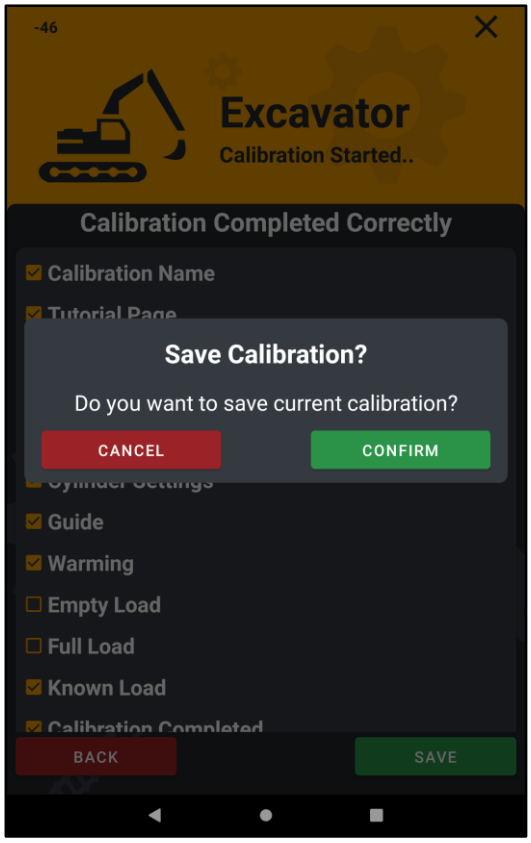
# CALIBRATION COMPLETED




When the calibration is completed the TUTORIAL summary screen will be displayed with all the steps performed.

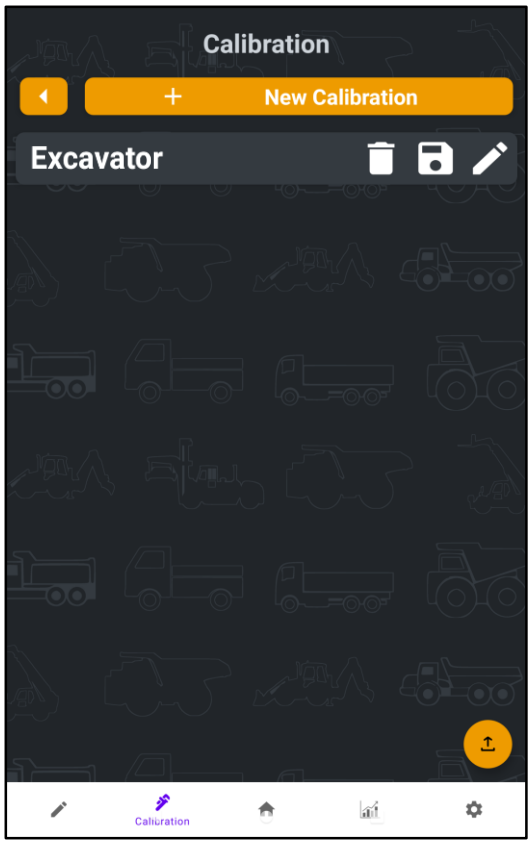
It is normal for the empty calibration and loaded calibration not to display the done flag because they require 50 lifts.
This does not affect the performance of the calibration, however saved correctly.

SAVE the calibration using the button below.




Press on CONFIRM to save the calibration, press CANCEL to go back.

# SAVING CALIBRATION FILE




Once the calibration is completed and saved, the file can be also saved on the Android touchscreen device.

**This allows in case of problems or loss of calibration to restore and reload the previously saved calibration.**

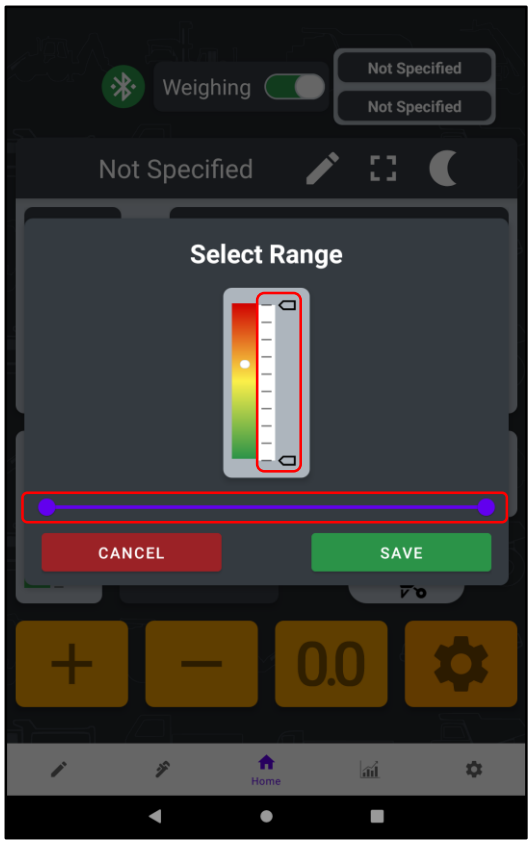
Press the **FLOPPY DISC** icon to save the calibration file into the Android display memory.

Press the **BIN** icon to delete the calibration.

Press the **PENCIL** icon to enter calibration and modify the parameters.

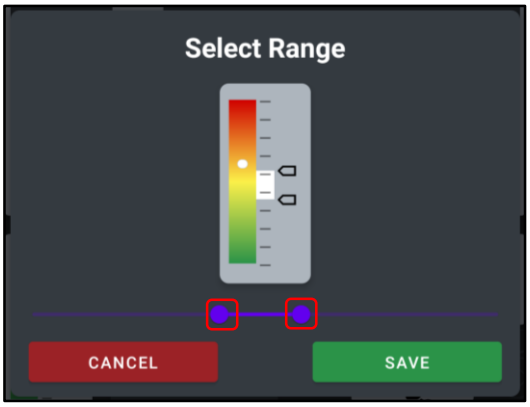
Press the **UPLOAD** icon to select the calibration file that need to be uploaded.

# WEIGHING START POINT

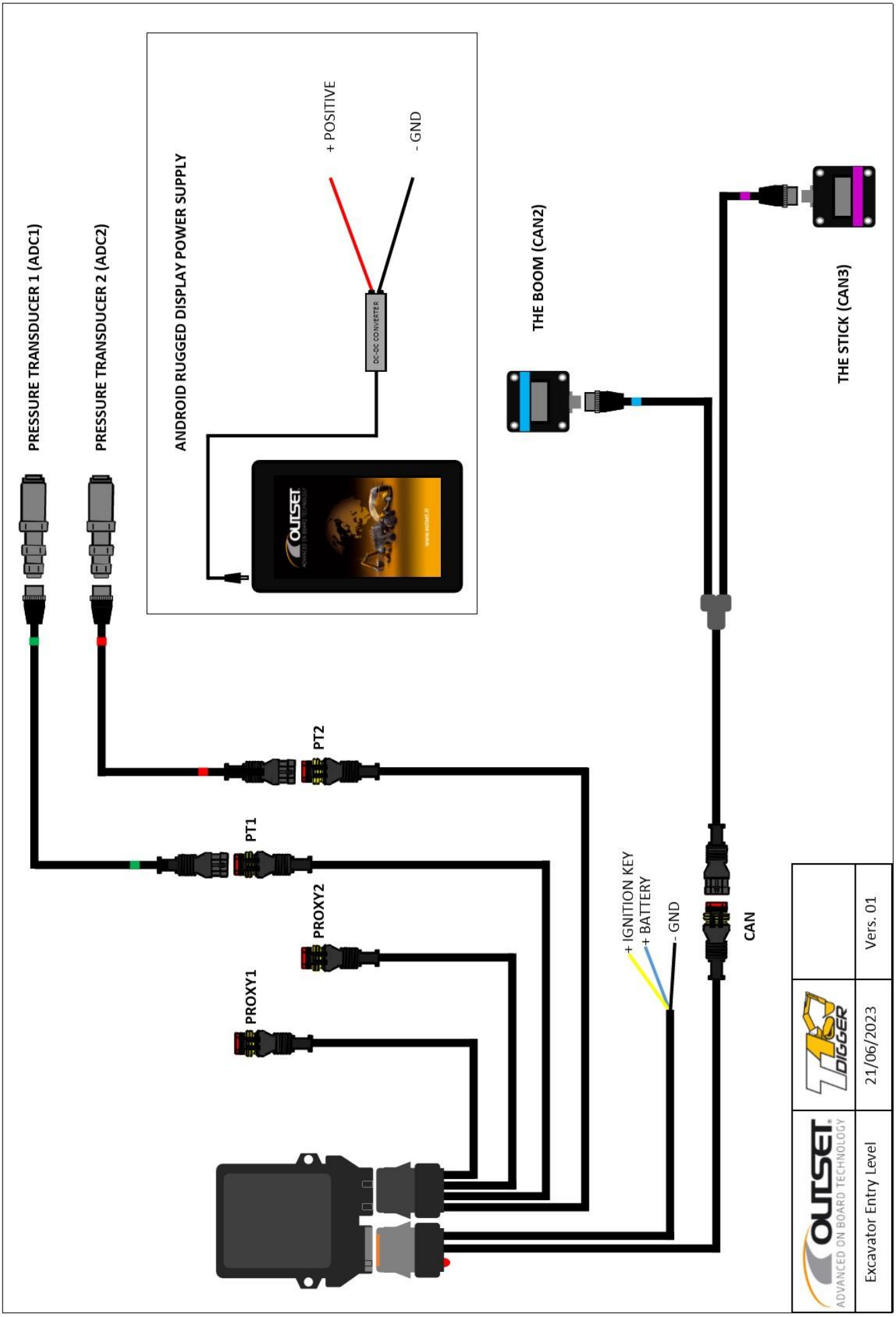



Once the calibration is completed and saved, it is necessary to set the WEIGHING START POINT which determines the starting point of the weighing phase.

**<u>It is possible to change the WSP at any time according to your load requirements.</u>**




Select the two dots at both ends of the purple cursor to determine the starting and ending point of the weighing phase. Press SAVE to confirm.


PRESSURE TRANSDUCER 1 (ADC1)
PRESSURE TRANSDUCER 2 (ADC2)
ANDROID RUGGED DISPLAY POWER SUPPLY
+ POSITIVE
- GND
DC-DC CONVERTER
THE BOOM (CAN2)
THE STICK (CAN3)
PT2
PT1
PROXY2
PROXY1
+ IGNITION KEY
+ BATTERY
- GND
CAN
OUTSET
ADVANCED ON BOARD TECHNOLOGY
T1 DIGGER
Excavator Entry Level
21/06/2023
Vers. 01

# MAINTENANCE

**Power Supply**
The unit must be powered in accordance with the indications on the equipment (12/24 volts - reverse current protection).
**System Maintenance**
Any failure of the system caused by negligence in maintenance, by **unauthorized operation and/or repair** is excluded from the guarantee; all the consequences of the resulting damage will be borne exclusively by the user of the system.
**Cable Protection**
The connection cables must be installed so as not to be pulled or crushed during machine movements.
**Vehicle Maintenance**
Whenever maintenance is carried out on the vehicle, be sure to completely disconnect the system from the vehicle itself. Welding, battery replacement, battery chargers or external starter motors could seriously damage the equipment.
**Vehicle Cleaning**
When cleaning the vehicle with a pressure washer, avoid directing the jet towards the system components and, if they get wet, dry them with a cloth.
**Period of non-use**
Disconnect the system from the battery or turn on the system disable switch.

# WARRANTY

The guarantee is **12 months** from the date of delivery of the new instruments and/or parts of them, and covers those parts which, due to construction defects or hidden defects, are found to be faulty or missing. The guarantee covers the good quality of the material, the good construction and the good functioning; damage caused by normal wear and tear and/or incorrect use, negligence in maintenance and any damage caused by incorrect operation and/or unauthorized repairs are excluded from the guarantee.
The following are excluded from the guarantee: transport costs, labour, travel and travel expenses relating to interventions by the Seller during the guarantee period.
The system to be repaired, replaced or modified must be returned to the Seller's premises and, if intervention is required at the place of use, the costs indicated above as excluded from the guarantee will be borne by the Purchaser.
The warranty is void in the case of:

- failure by the Purchaser to fulfill the contractual obligations;
- failures due to interventions or repairs by service centers not authorized by **Outset Srl SB**;
- system power supply at a voltage other than that specified in the safety standards;
- connections to other external equipment not authorized by **Outset Srl SB**.

# DISPOSAL

Product disposal will follow the regulations in force for the scrapping of the product on which it is installed.

# DECLARATION OF CONFORMITY

CE

**Manufacturer:** OUTSET Srl Società Benefit
Via Pacinotti, 9
36066 Sandrigo (Vi) Italy

*Herewith declaire that:*

**Product name:** T1MMT
**Product description:** On Board Weighing System

is in conformity with provision of directives applied: **Electromagnetic Compatibility**

Harmonized standard applied:

**EN IEC 61000-6-2:2019**
**EN IEC 61000-6-4:2019**

TEST REPORT: **RP031823**

is in conformity with provision of directives applied: **Radio Spectrum Matters**

Harmonized standard applied:

**ETSI EN 301 489-1 V2.2.3:2019**
**ETSI EN 301 489-17 V3.2.2:2019**

TEST REPORT: **RP031823**

is in conformity with provision of directives applied: **1999/519/EC**

Harmonized standard applied:

**EN IEC 62311:2020**

TEST REPORT: **RP031923**

Sandrigo, 22/05/2023

OUTSET SRL SB
Toneatti Luca

OUTSET®

ADVANCED ON BOARD TECHNOLOGY

SUSTAINABLE BUSINESS INNOVATION


**OUTSET SRL Società Benefit**

Italy - Via Pacinotti 9 - Sandrigo (VI)

tel +39 0444 751028 - info@outset.it


www.outset.it

Certified B Corporation