Installation and Calibration

I.View Excavator

English

Codice Manuale | Manual Code
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Index - Chapters

Index – Revision Notes

Rev. Index	Rev. Date	Sw Compatibility	Revision Notes
00	30/05/2012	WS 10_23	View2

1

Preview

The information on this document could be subject to change without notice.
The constructor is not responsible for possible content mistakes or misprints that could be present in this manual.
Any reproduction, translation or copy of parts of this manual is forbidden without prior written authorization by the constructor.

WARNING:

Modifications not expressly approved by COBO Division 3B6 cause the loss of authorization to operate the system.

WARNING:

Before starting operations, the user should read and understand this manual and follow the contained instructions

2

Installation

2.1 PREPARING THE INSTALLATION

The following equipment is needed for easy installation of the system.

- Electric or explosive welder
- Normal mechanical and electrical tools
- Set of adjustable spanners
- Set of screwdrivers
- Lapping machine
- Tester
- Goniometric level

Take the system out of its packaging and make sure that the individual parts have not been damaged during transport.
Using the system composition (end of this manual) and the transport document make sure that all the parts needed to install the system on your machine are available.

IMPORTANT INFORMATION ON SAFETY FOR WORKING WITH MOBILE MACHINES

Protective equipment

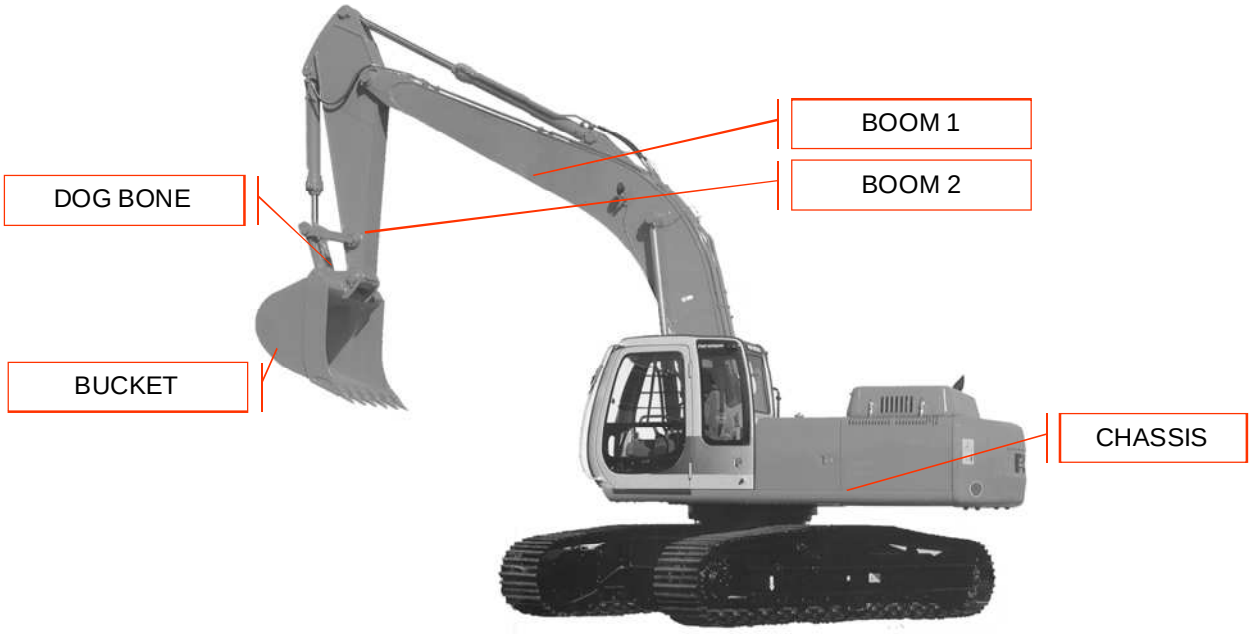
Always wear protective goggles as required by the working conditions when welding or using the lapping machine.
Do not wear baggy clothes and jewellery which could be caught in the machine.

Repairs

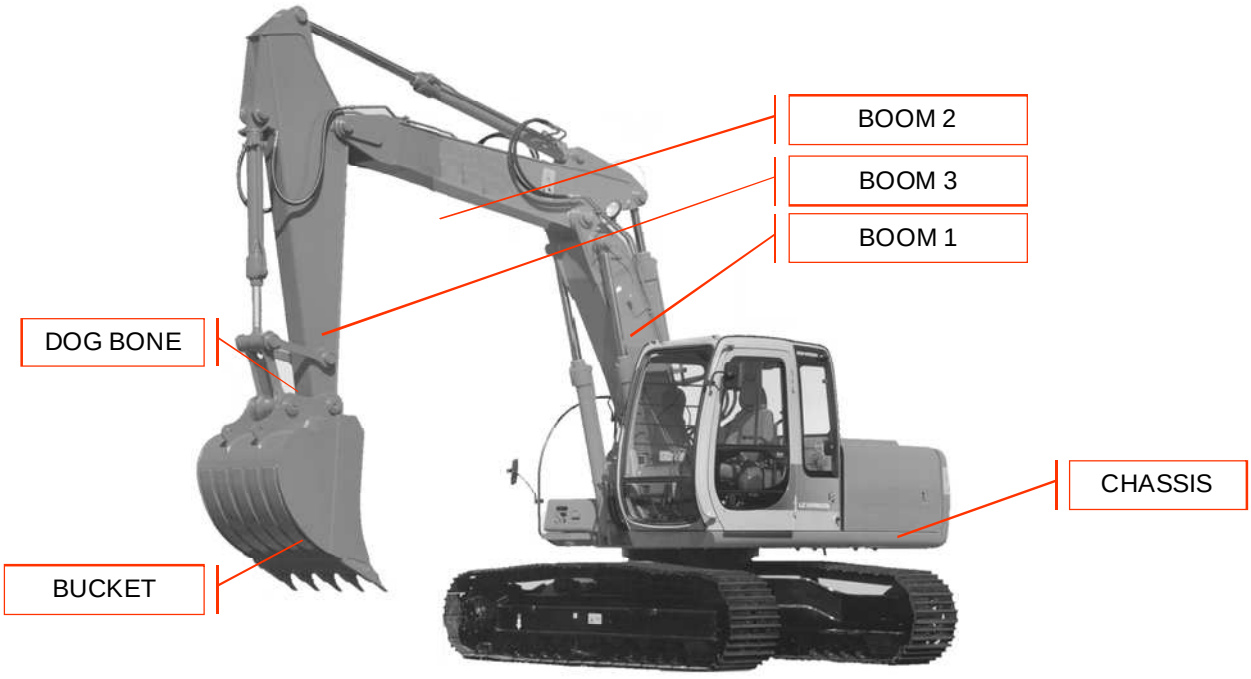
Disconnect the battery and discharge any electric charges before beginning work on the machine.
If possible move the machine inside a shed or to a surface with hard and clean ground.

2.2 EXCAVATOR NAME PARTS

2 BOOMS MACHINE

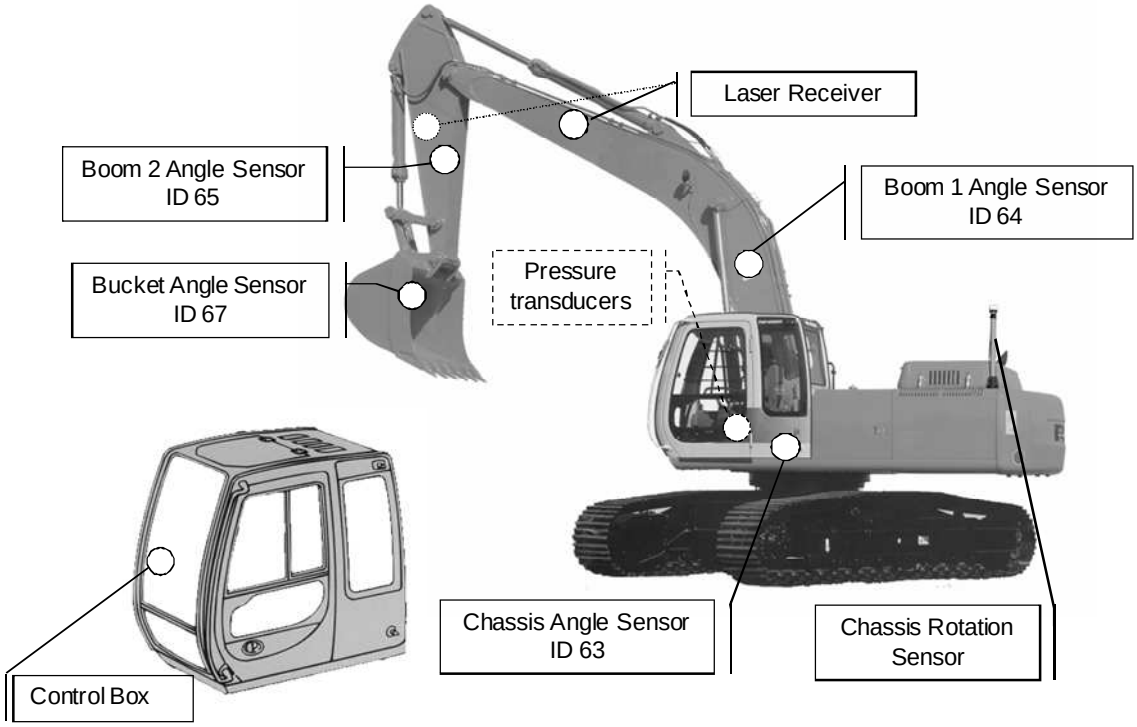


3 BOOMS MACHINE

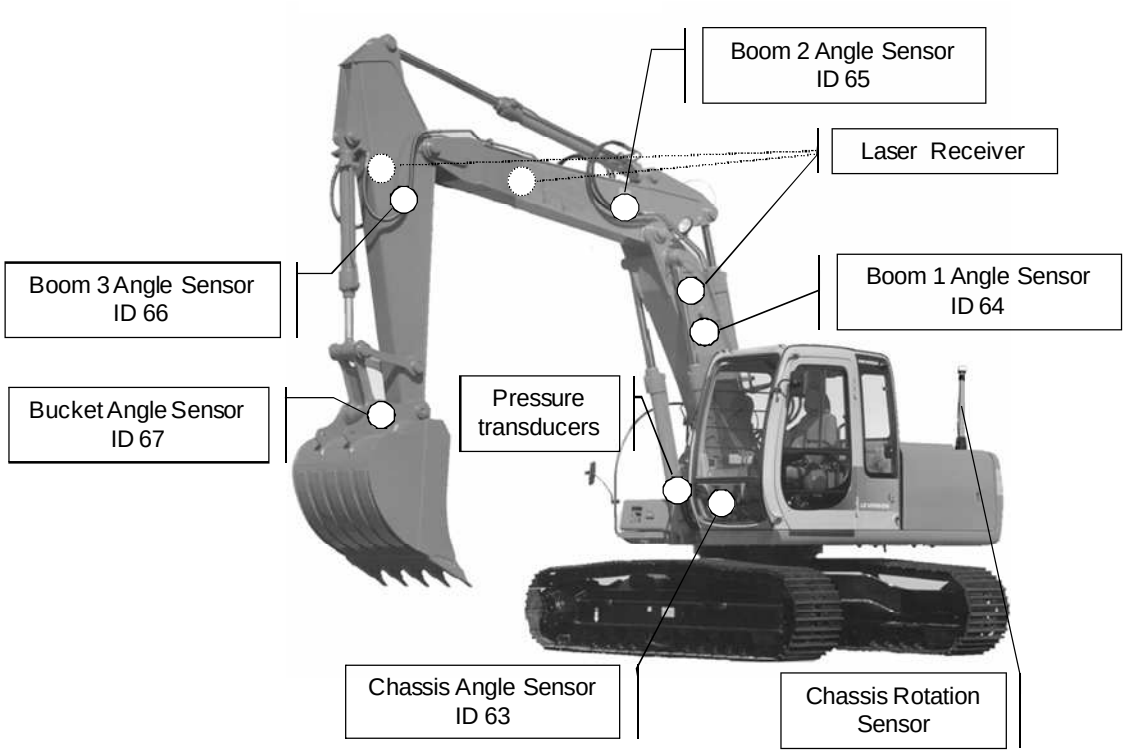


2.3 COMPONENTS POSITIONING

2 BOOMS MACHINE



3 BOOMS MACHINE



Note: we suggest to mount the dipper stick angle sensor (and eventually the laser receiver) on the top of the boom.

2.3.1 Main unit View2

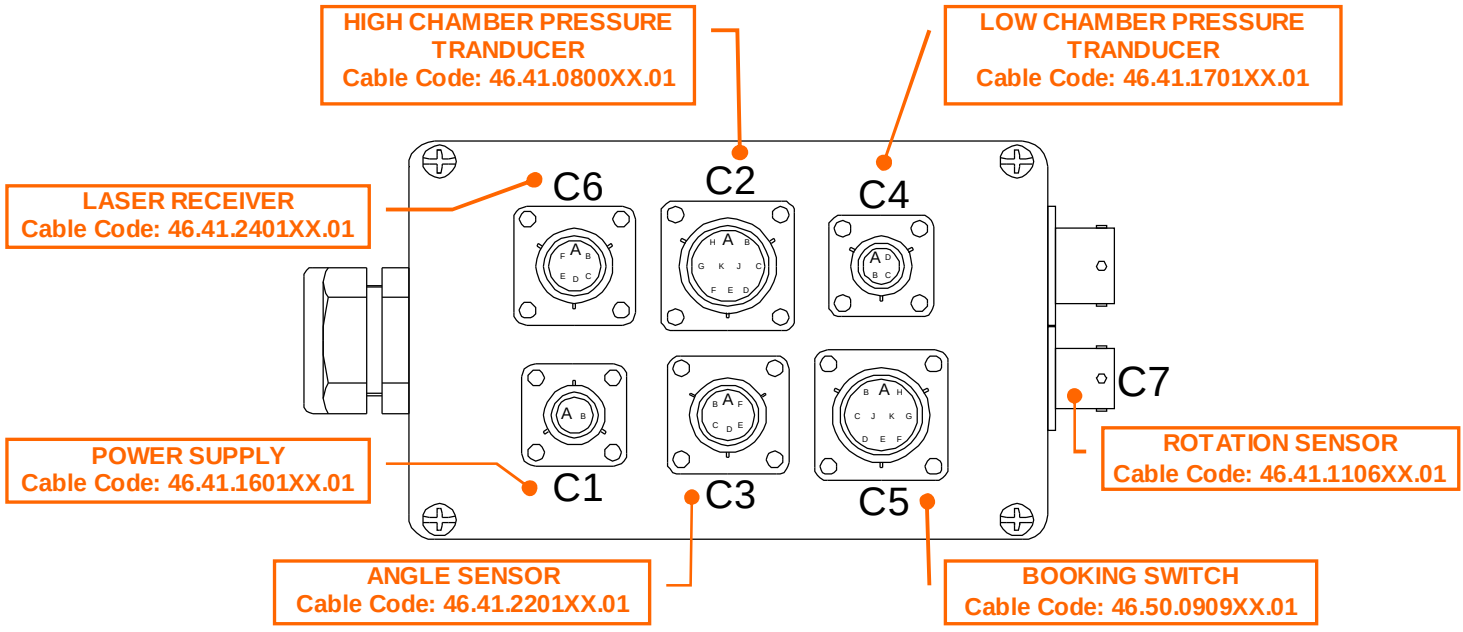
The central unit must be positioned on the right side of the cabin.

Before fastening make sure that:

- The unit does not block the opening of the front window or the movements of the lifting lever
- The unit is clearly visible to the operator and easy to use.

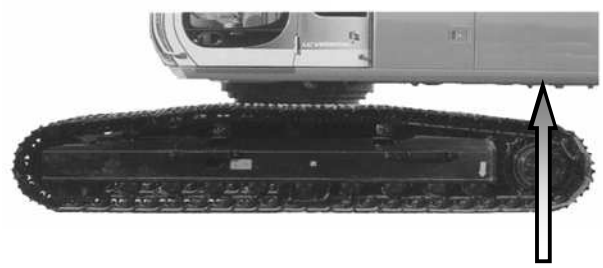
2.3.2 Junction Box

The junction box is a wiring hub that groups all the machine cables, from battery and sensors.

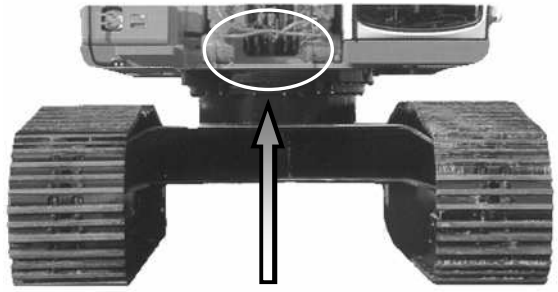


The junction box can be positioned in the battery compartment, back to the seat or below the cabin.

Keep it away from water or dirty (protect unused connectors).



BATTERY COMPARTMENT



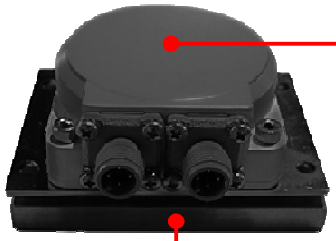
INSIDER ON THE SIDE OF THE CABIN

2.4 CHASSIS: ID63 SENSOR

The sensor has to mounted vertical and on the left or the right side of the chassis.
Verify that the place where is mounted is “parallel” to the machine.

Choose a place that doesn’t interfere with any hood opening zone and possibly has limited vibrations.

2.5 BOOMS: 2 BOOMS MACHINE

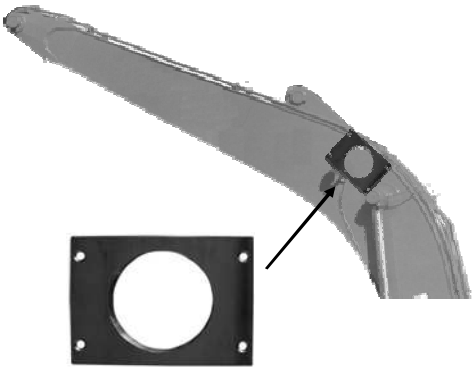


CANBus Angular Sensor:
ID64: AMU-CBP (Code: 45.10.2400A2.01)
ID65: AMU-CBP (Code: 45.10.2400A3.01)

Support Plate Kit
(Code: 46.11.0008XX.01)

2.5.1 Main Boom: ID64 Sensor

Plate fixing



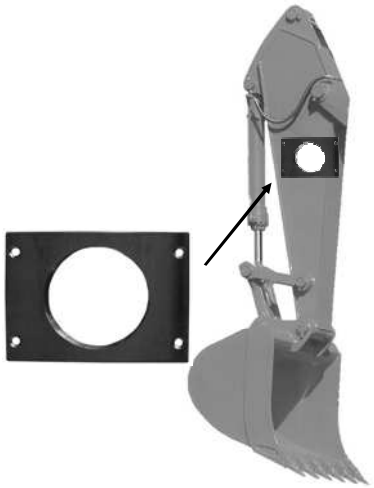
- Position the sensor support plate as in figure.
- Weld the plate

Sensor fixing

- Position the sensor to optimize the cable path and protect the connectors from bad weather or bump.
- Fasten the sensor to the plate as in figure.
- Tighten the screws using a 4 set screw wrench.

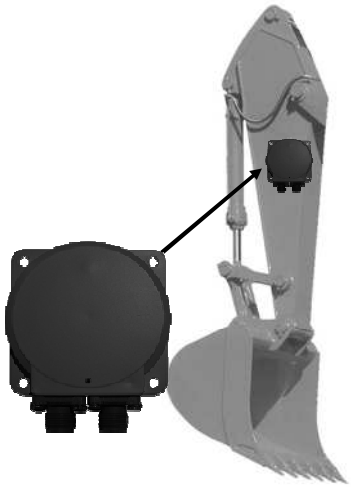
2.5.2 Dipper Stick (2nd Boom): ID65 Sensor

Plate fixing



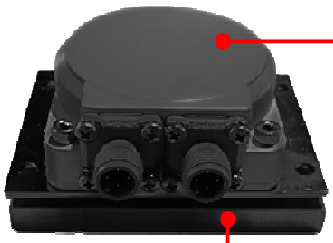
- Position the sensor support plate as in figure.
- Weld the plate.

Sensor fixing



- Position the sensor to optimize the cable path and protect the connectors from bad weather or bump.
- Fasten the sensor to the plate.
- Tighten the screws using a 4 set screw.

2.6 BOOMS: 3 BOOMS MACHINE

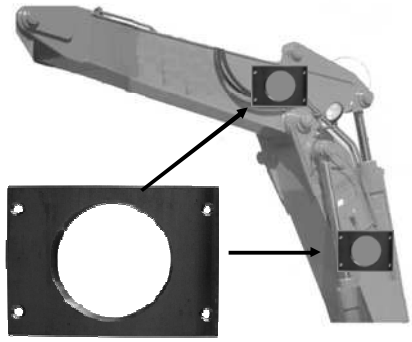


CANBus Angular Sensor:
ID64: AMU-CBP (Code: 45.10.2400A2.01)
ID65: AMU-CBP (Code: 45.10.2400A3.01)
ID66: AMU-CBP (Code: 45.10.2400A4.01)

Support Plate Kit
(Code: 46.11.0008XX.01)

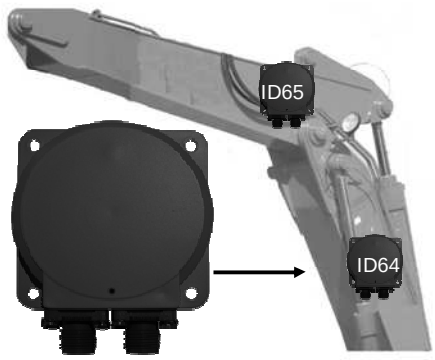
2.6.1 Main and Middle (2nd) Booms: ID64 and ID65 Sensors

Plate fixing



- Position the sensors support plates as in figure.
- Weld the plate.

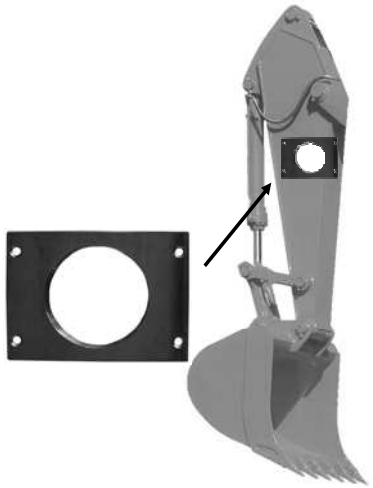
Sensor fixing



- Position the sensors to optimize the cable path and protect the connectors from bad weather or bump. (ID64 on Main Boom, ID65 on Middle-2nd Boom).
- Fasten the sensors to the plate
- Tighten the screws using a 4 set screw wrench.

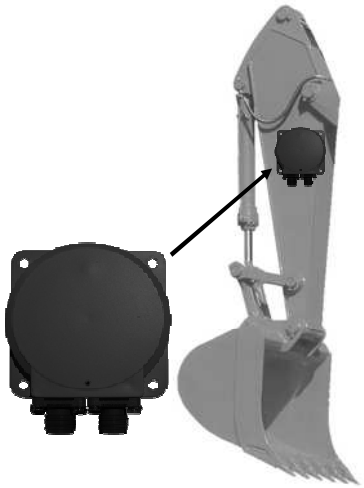
2.6.2 Dipper Stick (Boom3): ID66 sensor

Plate fixing



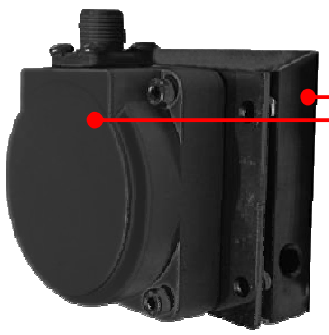
- Position the sensor support plate as in figure.
- Weld the plate.

Sensor fixing



- Position the sensor to optimize the cable path and protect the connectors from bad weather or bump.
- Fasten the sensor to the plate.
- Tighten the screws using a 4 set screw.

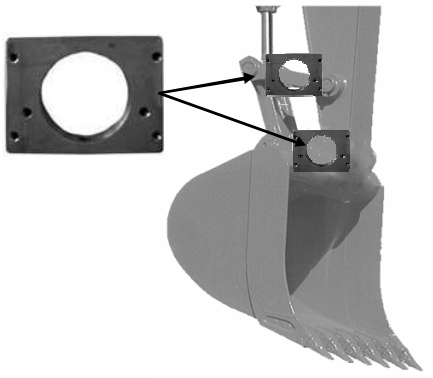
2.7 BUCKET OR DOG BONE: ID67 SENSOR



Support Plate Kit
(Code: 46.11.0012XX.01)

CANBus Angular Sensor ID67
Y: (Code: 45.10.2800A1.01)
or
XY: (Code: 45.10.0112A0.01)
or
XY-DS (Code: 45.10.0214A0.01)

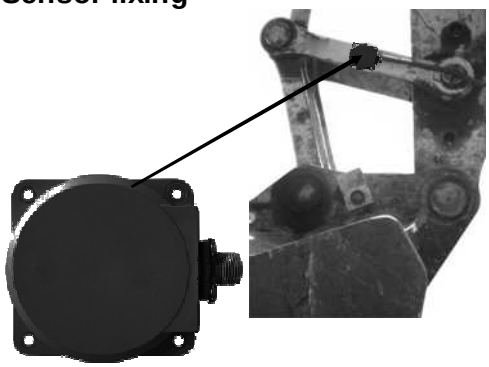
Plate fixing



- Position the sensor support plate as in figure on the bucket OR on the Dog Bone (note that can be mounted only on the left and in the indicated bone).
- Weld the plate

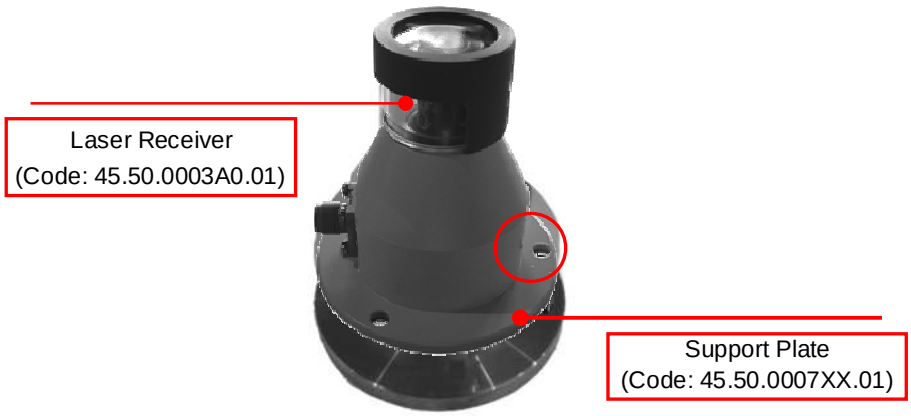
NOTE: If you have a dual axis XY bucket sensor and a tilt bucket, to read the tilt the only way it's to mount the sensor directly on the bucket (no Dog Bone and no Quick Bucket Exchange system)

Sensor fixing



- Be careful to optimize the cable slack and avoid unsafe cable bend.
- Fasten the sensor to the plate
- Tighten the screws using a 4 set screw wrench.

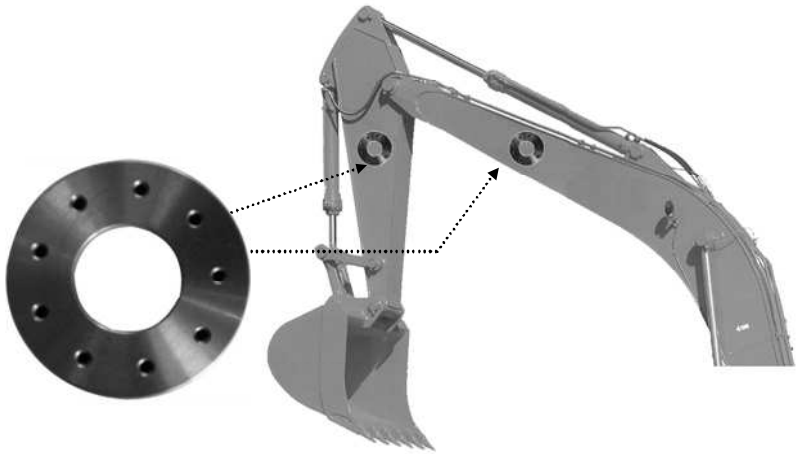
2.8 LASER SENSOR



2.8.1 2 Booms Machine

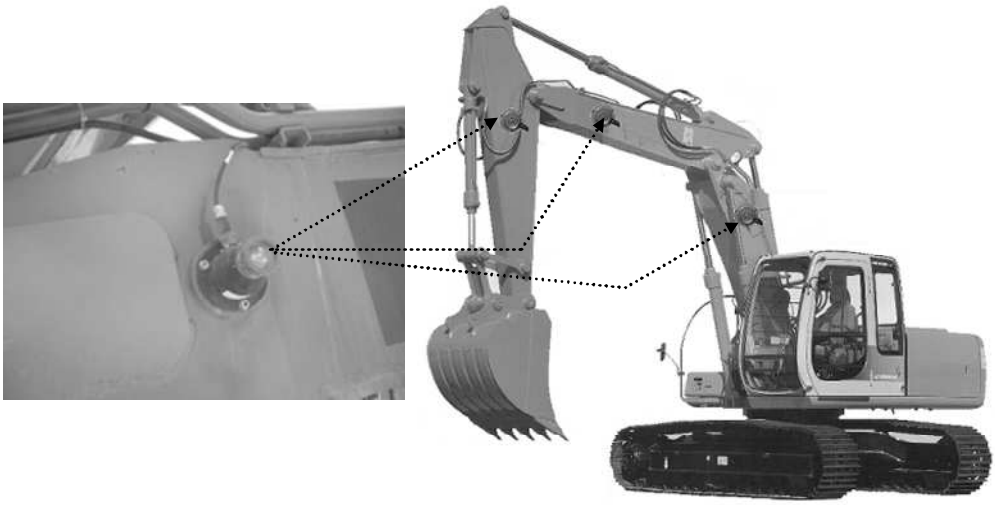
The laser sensor may be, without distinction, fitted on the main boom or on the dipper stick boom; identify its best position and install it.

Plate fixing



- Position the Laser sensor support plate as in figure.
- Weld the plate.

Sensor fixing



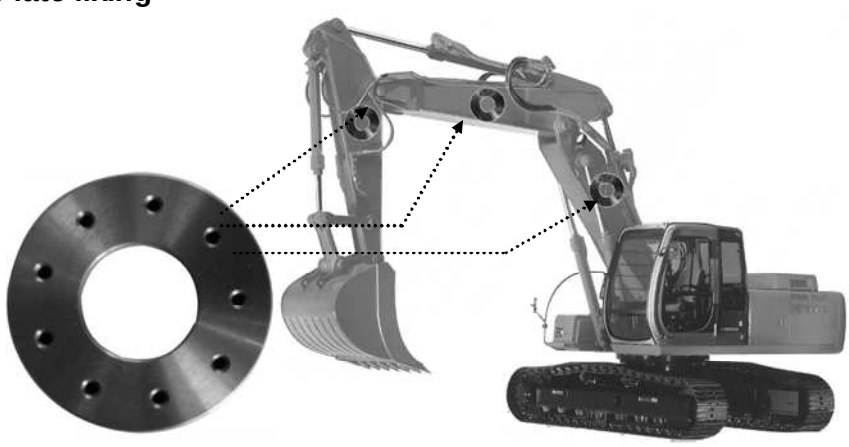
- Fasten the Laser sensor to the plate as in figure.
- Tighten the screws using a 5 set screw wrench.

WARNING : *While placing the laser sensor beware from reflected light beams from cylinders rods and other reflecting surface.*

2.8.2 3 Booms Machine

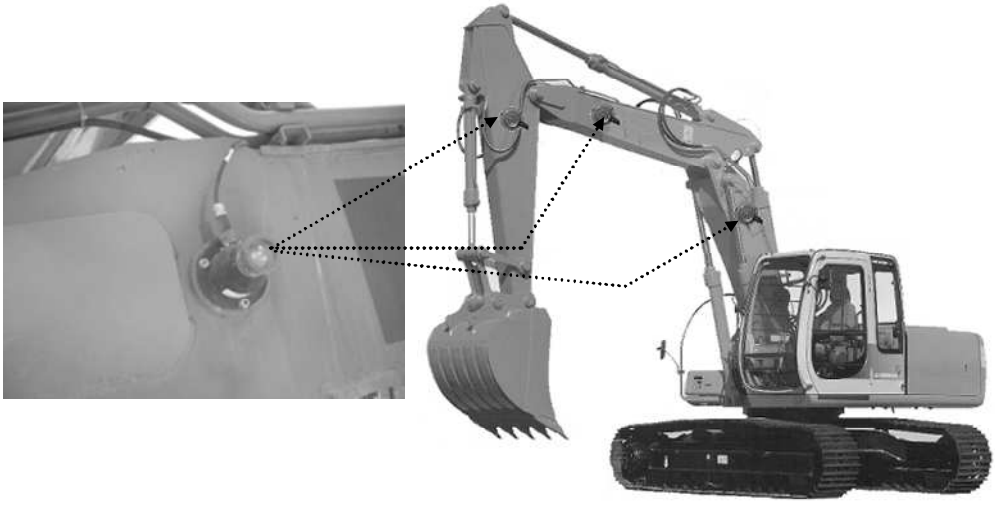
The laser sensor may be, without distinction, fitted on the main boom or on the middle boom or on the dipper stick boom; identify its best position and install it.

Plate fixing



- Position the support plate as in figure.
- Weld the plate.

Sensor Fixing

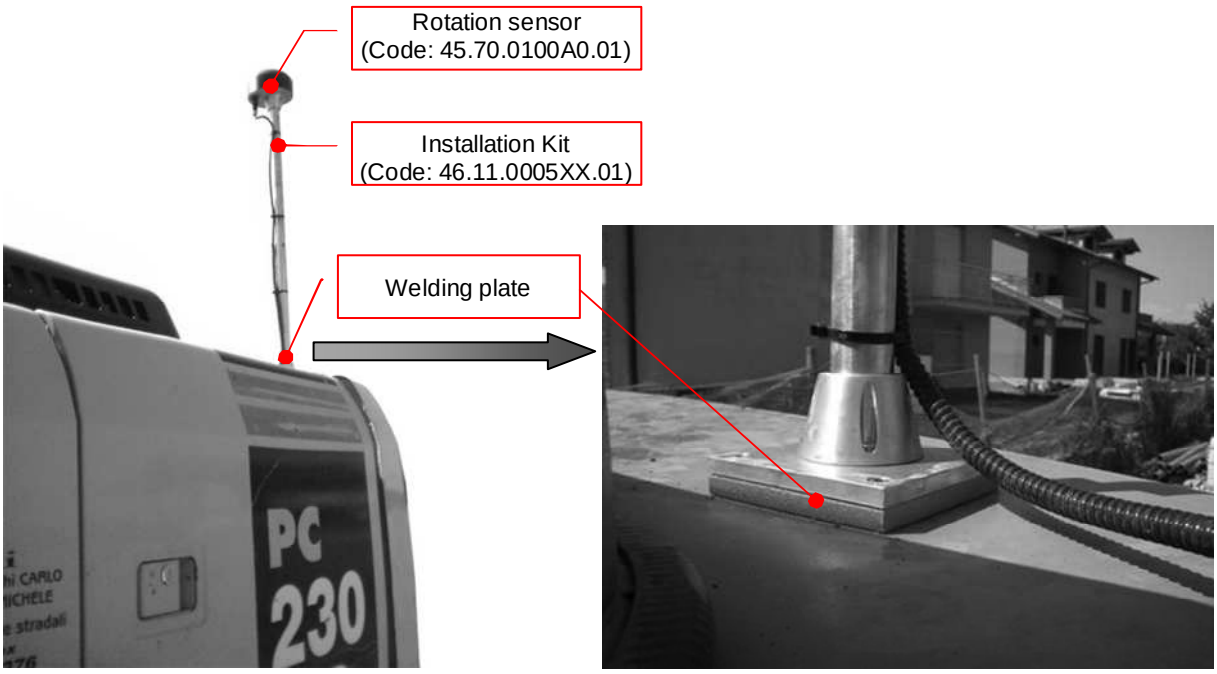


- Fasten the Laser sensor to the plate as in figure.
- Tighten the screws using a 5 set screw wrench

WARNING : *While placing the laser sensor beware from reflected light beams from cylinders rods and other reflecting surface.*

2.9 ROTATION SENSOR

The rotation sensor mast hast to be installed in the excavator back, best on the opposite side of the booms.



- Weld the plate on a horizontal surface where doesn't interfere whit machine moving parts.
- The rotation sensor has to be fixed on the must.

Take care where the connector is turned (we suggest always faced to the cabin): if you have to take off the sensor from the machine, later you have to mount it again exactly in the same direction.

2.10 PRESSURE TRANSDUCERS

The differential pressure, on which the system is based, is measured by two pressure transducers.

Installation Kit

- Two 350 bar pressure transducers
- Two accessories for hydraulic installation: Copper washer, drilled dowel dia.6, hydraulic counter connection, pawl for holding on the pipe.
- "T" connection hydraulic connections for pressure taking

Positioning the transducers

The two transducers are positioned on one of the two lifting cylinders. Either cylinder can be used to measure the pressure, but they must be positioned correctly: one on the delivery circuit and one on the return circuit.

To position the sensors use "T" connections (when these are not available the pawls can be welded directly on to the pipes) and, if useful, 90° bends, which are ideal for best fastening of the transducer.

The transducers are fastened to connections via the hydraulic counter connections with drilled dowel. Before performing this operation put some hydraulic machine oil into the transducer nozzle so that air bubbles do not form.

Positioning the transducers on excavators with trip valves on the hoisting

If there is an excavator with trip valves, the delivery circuit pressure must be measured directly on it, through a pressure tap (where it is measured with the pressure gauges).

If there is no pressure tap, either weld the pawl directly on to the valve (approval by the machine owner is obligatory) or measure the pressure on the excavator "ANTITIP" circuit.

Bleeding the air

Screw the transducers on only partially and put the hydraulic circuit under pressure, lifting the arm slightly.

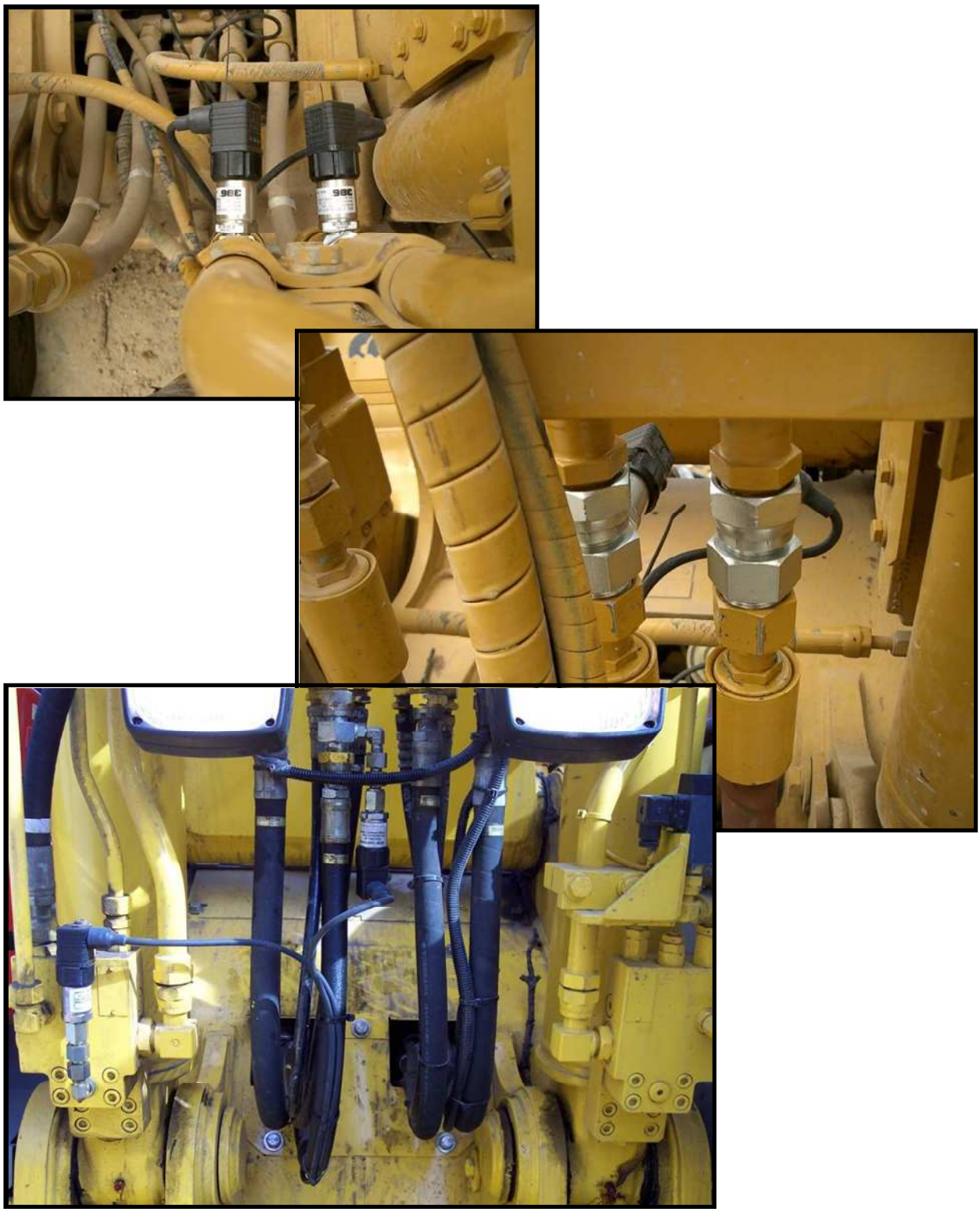
Observe the air-oil emulsion which extrudes from the transducers; when only oil extrudes tighten the transducers fully.

IMPORTANT NOTES

Make sure that there is oil in the transducer nozzle (we recommend using a syringe); a small air bubble could affect the entire installation.

Before operating on the hydraulic circuit discharge the pressure and at the end of the installation check for leaks.

Other examples of installation of pressure transducers



2.11 CABLES FIXING

Power supply cable

The power supply cable is taken to the battery and connected directly to it or after the battery main switch if present, as the unit has an ON/OFF switch. The feed can however be taken into the cabin.

Be careful to use as minus (0V) the real minus of the battery that usually compared to the chassis has to have the same potential (no different voltage). On some machine with 2 or more batteries it's very important to **don't** take as minus the negative pole of the second or third battery that it's different from the chassis voltage.

Angle Sensors cables

These cables should pass through using as far as possible the paths used by the hydraulic system. The cables should be protected with rubber sheathes when they pass behind the hoses.

Cables in the cabin

In its passages these cables must not obstruct the operator or the movements of the machine lever.

Cables slack

All the cables are of standard length; the excess of each cable should be collected in the excavator "chassis" or well fixed on booms. fastening them in place after the slack has been taken up.

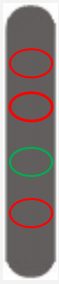
IMPORTANT NOTES

After the cables have been passed on the boom perform several tests along the entire arm stroke to check the cable functionality.

Often a badly pulled clamp or an incorrectly fastened cable affects system operation.

3

View

View2	Description
	LEDs Bar
	LEFT/RIGHT • Scroll calibration screens (previous/next page) • In values setting: scroll digits (previous/next digit)
	UP/DOWN : • Scroll menus (previous/next functions) • In setting: enable/disable and scroll settings decrease/increase values

View2	Description
	ENTER: • Confirm/Enter functions and menu pages • In value setting: enter/confirm settings
	PRINT: Short press: Option Menu Long press: Setup Menu
	Weighing Calibration: Starts the points recording of the Pressure Table during the pressure calibration
	Exit page/menu
	Laser Speed Compensation: laser reference
	Pressure Calibration: Scrolls missing points of the Pressure Table
	Laser Speed Compensation: laser selection Pressure Calibration: Shows the Pressure Table

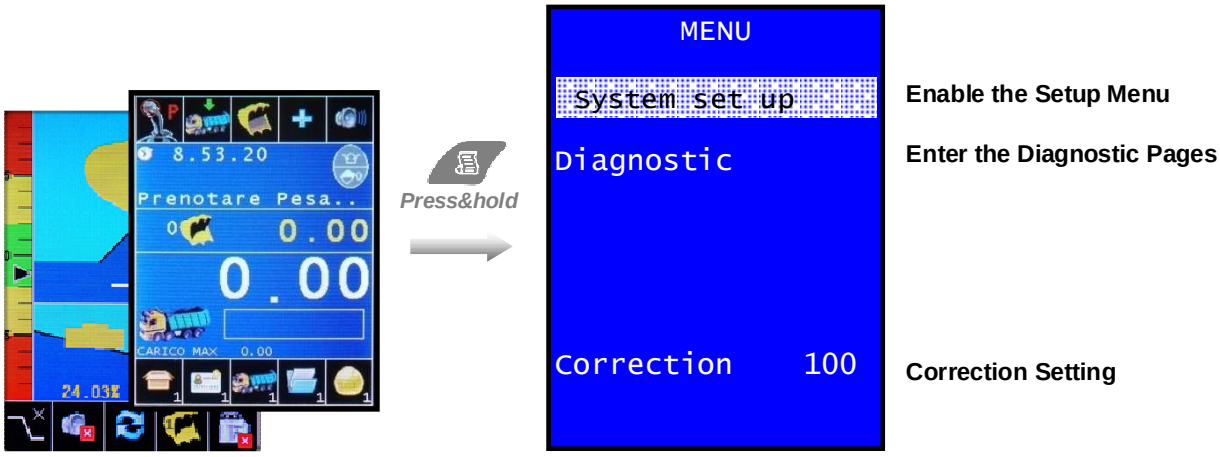
4

Setup

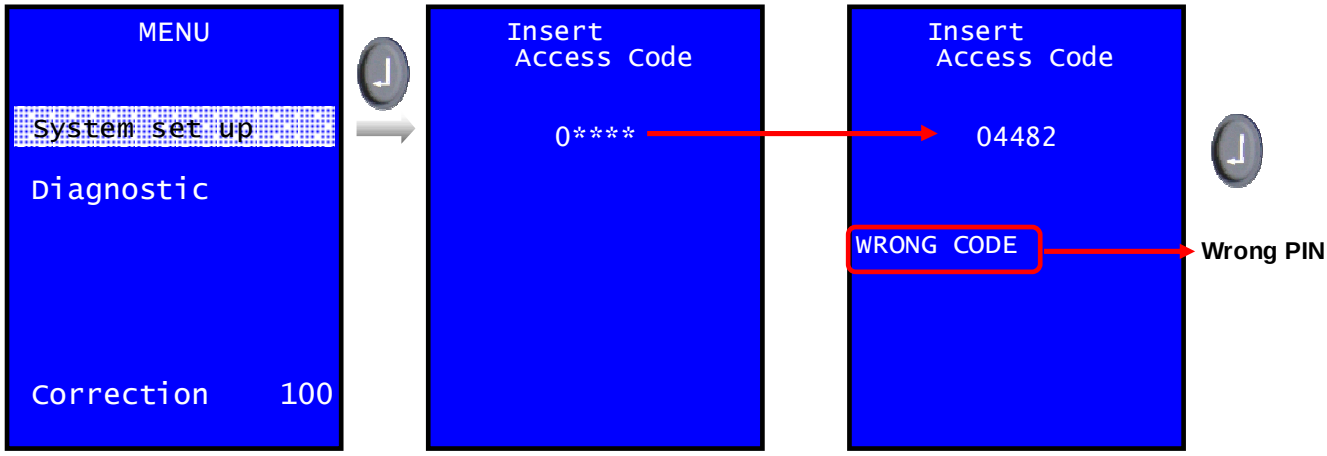
Setup functions are Configuration, Calibration and Parameters Setting of the system.
This functions are selectable from the Setup menu (under password).

4.1 SETUP MENU

- From the main operating screen (*Digging or Weighing)* keep pressed key.
  At first access *Setup&Diagnostic* menu will be displayed.

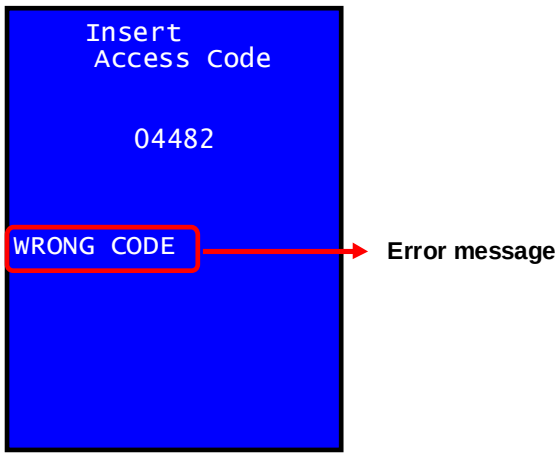


- Select the “System set up” function and confirm . The *Code* page will be displayed. The code has 5 digits shown as asterisks until changed.



- To set the pin use or to select the digit and or to edit it.
- When the 5 digits are set, press to continue.

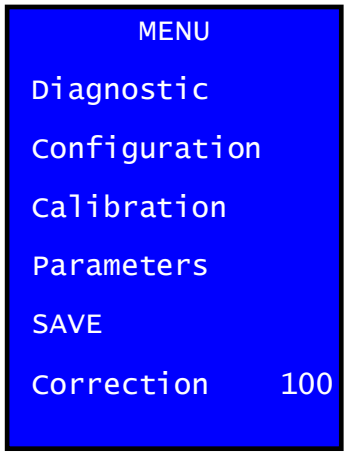
With correct pin the Setup Menu is displayed and remains enabled until the Control box will be switched off. Otherwise the error message “WRONG CODE” will be displayed.



- Repeat the PIN or press  to exit from Setup

4.1.1 Setup Menu

- From the main operating screen (*Digging or Weighing*) keep pressed  key once that the menu has yet been enabled.



Diagnostic Enter the Diagnostic function (refer to Diagnostic chapter)

Configuration Enter the Configuration Menu (refer to Configuration & Parameters chapter)

Calibration Enter the Calibration function (refer to Calibration chapter)

Parameters Enter the Parameters Setting (refer to Configuration & Parameters chapter)

SAVE Setup Saving command

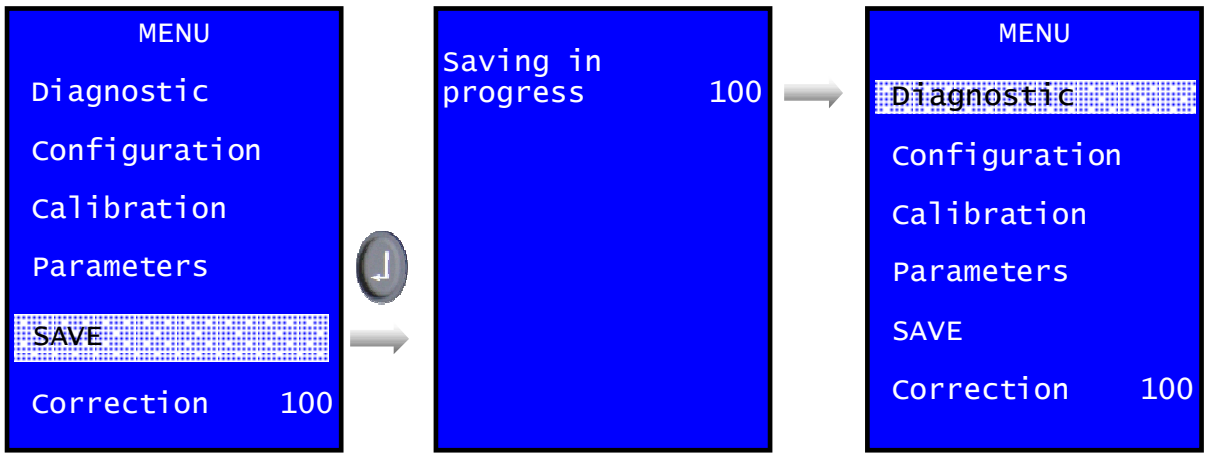
Correction Speed Compensation Setting (refer to Calibration chapter)

- Use  o  to select function/menu and press  to enter.
- Press  to exit and go back to the operating screen.

4.2 SAVE SETUP

IMPORTANT: no modify is automatically saved in System set up.

You have to launch the SAVE command before a system power off to store permanently in the system memory any changes made in System set up.



- From the Setup Menu select with ▲ or ▽ the function “SAVE” and press ↵ to start the saving process.
  When the saving is completed the screen returns to the Setup menu.

5

Diagnostic

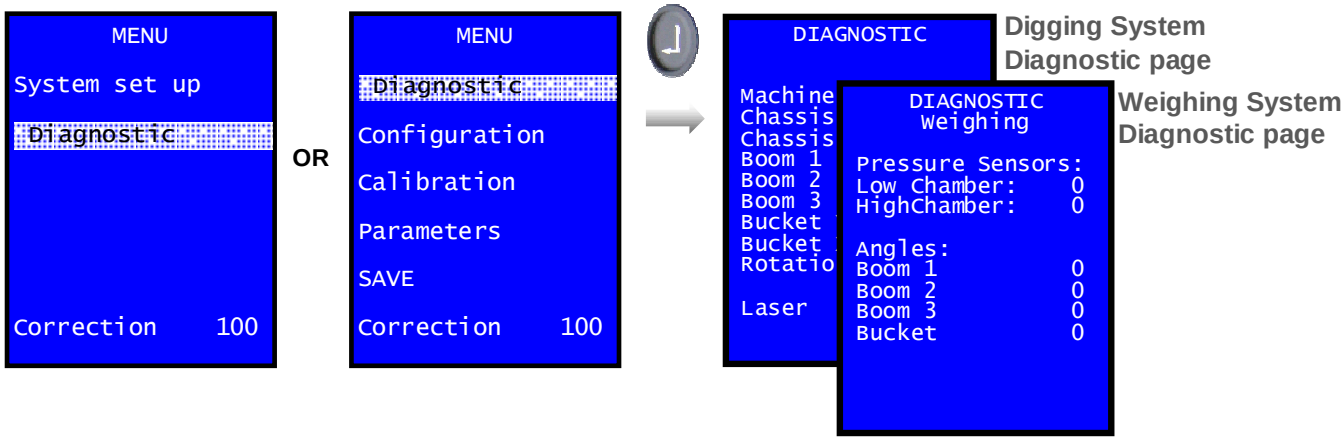
It's always possible to enter in the diagnostic page.

It's useful to enter in this page after the installation of the system to see that all the sensors are properly received.

5.1 ENTER DIAGNOSTIC

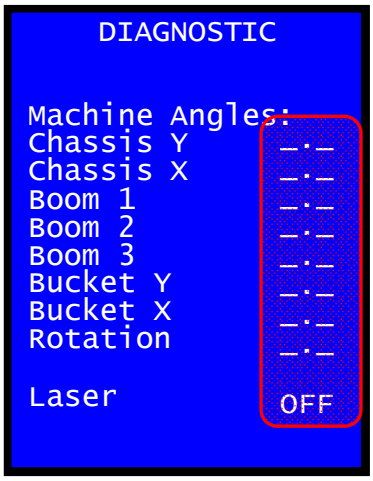
- From the main operating screen (Digging or Weighing) keep pressed  key. Setup Menu will be displayed.

- Select the Diagnostic function and confirm.



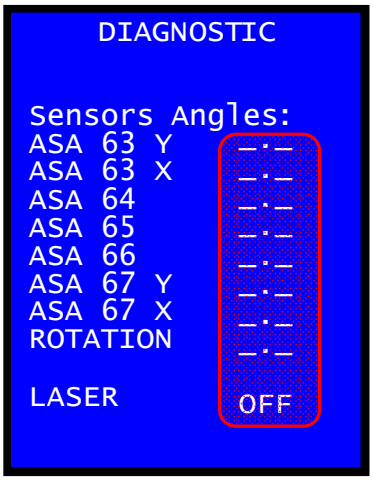
Based on the system in use, the Diagnostic page appears.

5.2 DIGGING DIAGNOSTIC PAGES



Machine Diagnostic page

Angles Value adjusted from the Unit



Sensors Diagnostic page

Angles Value transmitted from Sensors

- Press ▽ to scroll the pages.

Machine Angles (Chassis Y/X, Boom 1/2/3, Bucket Y/X, Rotation)

Real machine elements angles (calibration has to be done). Useful during service if angles are correct.

Sensors Angles (ASA 63Y/X, ASA 64, ASA 65, ASA 66, ASA 67Y/X, ROTATION)

Angles sent by the sensor (not adjusted by the control box). Useful to see the sensor installation/functionality not related to the calibration.

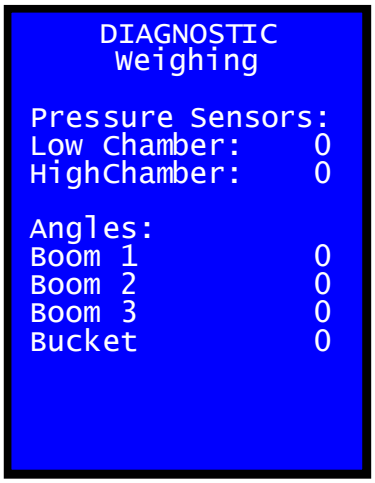
Laser

Laser receiver status.

ON: sensor is not connected or is receiving the laser beam.

OFF: sensor is connected and is not receiving the laser beam.

5.3 WEIGHING DIAGNOSTIC PAGE



Pressure Sensors (Low/High Chamber):

Pressure BAR reading of the pressure sensors.

Useful for a check after the first installation and service case.

Angles (Boom 1/2/3, Bucket):

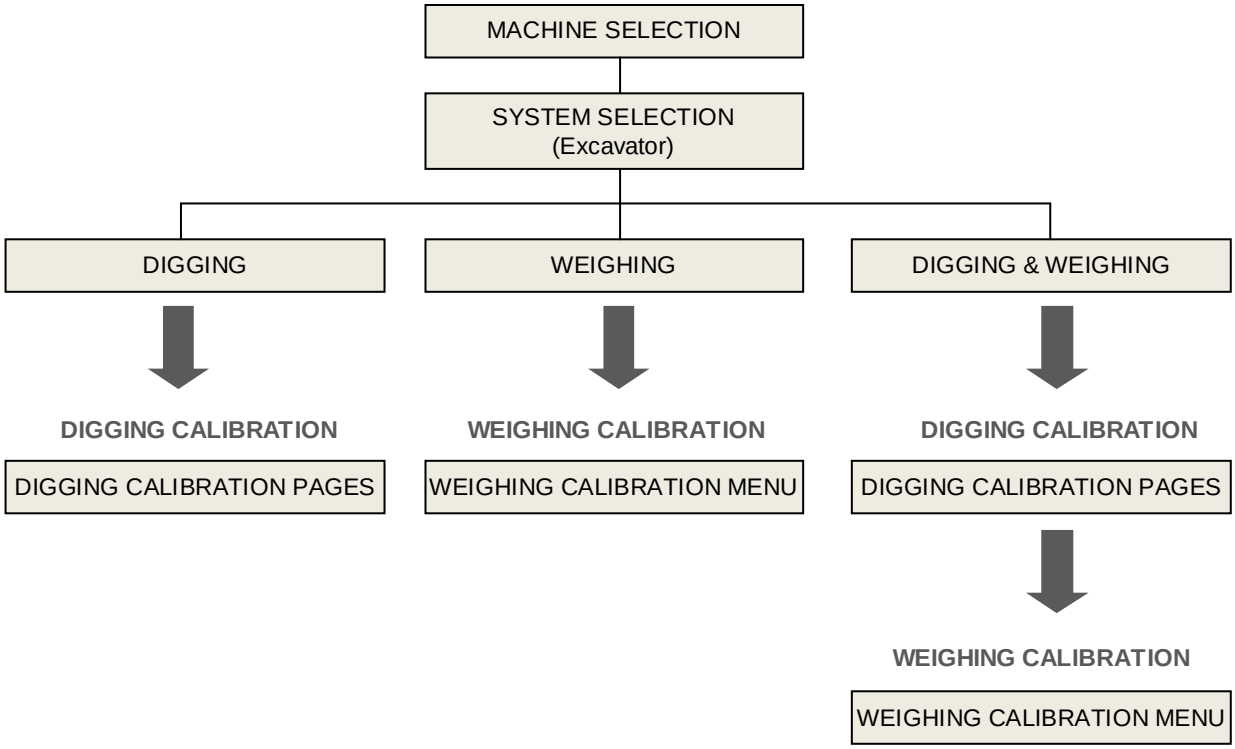
Angle sent by the sensor (not adjusted by the control box).

Useful to see the sensor installation/functionality not related to the calibration.

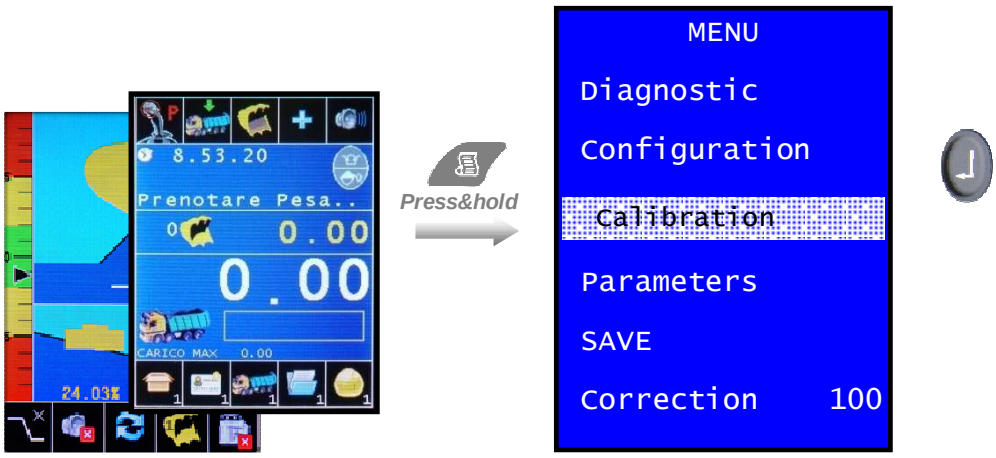
6

Calibration

6.1 CALIBRATION PAGES SUMMARY



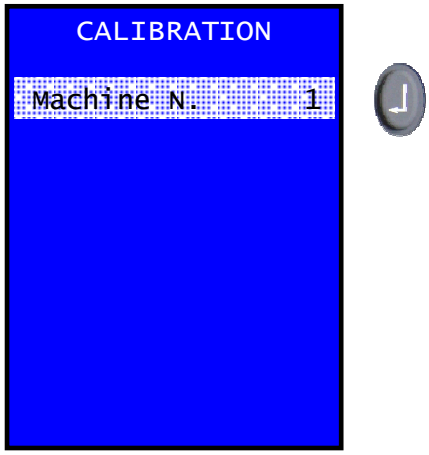
6.2 ENTER CALIBRATION



- From the main operating screen (*Digging or Weighing)* keep pressed key to enter the Setup Menu (refer to *Setup* chapter).
- Select *"Calibration"* function and confirm it to proceed to calibration. The first calibration page will be displayed (Machine N.)

6.3 MACHINE SELECTION

The View2 handles 10 different machines calibrations. The machine under calibration is the machine selected in this page



Set the machine to calibrate

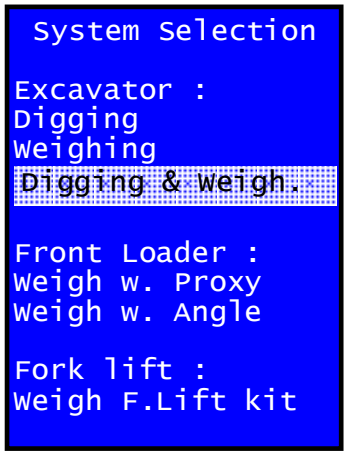
- Press key to enter the setting and use or to set the value (range 1 ÷ 10).
- Confirm with key

6.4 SYSTEM SELECTION

Select the system in use to calibrate.

Excavator System

- Digging and Digging&Weighing Systems



&

Refer to *Digging Calibration*

WARNING: if weighing and digging systems are both enabled the digging calibration has to be done BEFORE the weighing calibration!

- Weighing Systems

Refer to *Weighing Calibration*

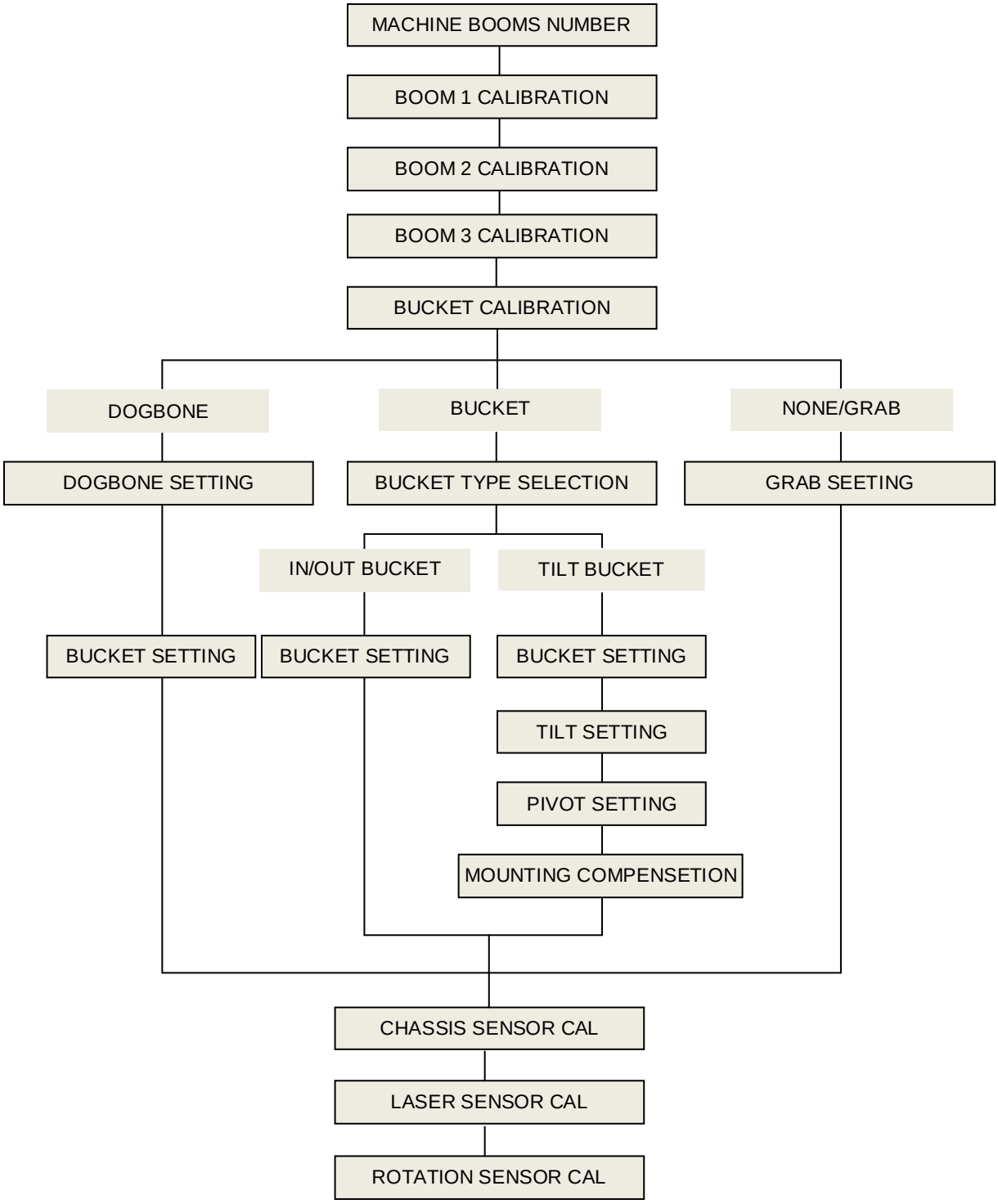
Front Loader and Fork Lift Systems

(refer to Installation&Calibration Manual for Wheel Loader

- Press  to proceed to the calibration.
- Press  to exit from calibration. The display loads the operating screens of the selected system.

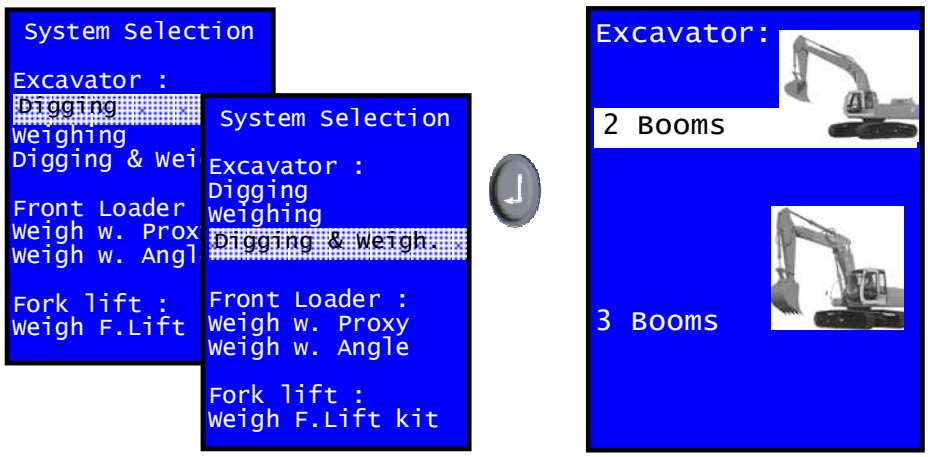
6.5 DIGGING CALIBRATION

The digging calibration has to be done for both the weighing and digging systems.



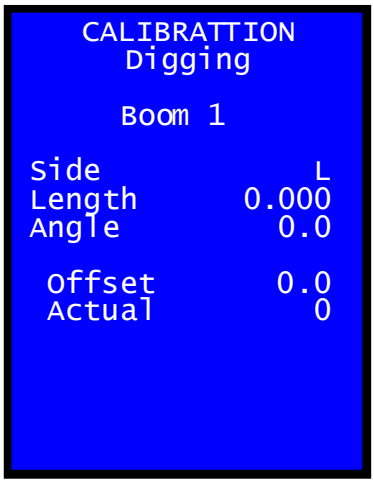
6.5.1 Machine Booms Number

Select the number of the machine booms, 2 or 3.



- Use or to set the machine and confirm with key.

6.5.2 Boom 1 Calibration



Boom 1 Calibration

- Sensor side to set
- Length value to set
- Angle value to set

- Angle value adjusted
- Angle value read from the system

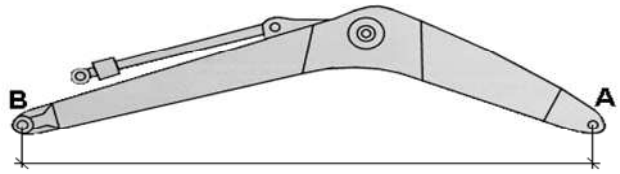
Press  key to scroll next screen.

Side: Boom side where the sensor is installed

- Right (R)
- Left (L)

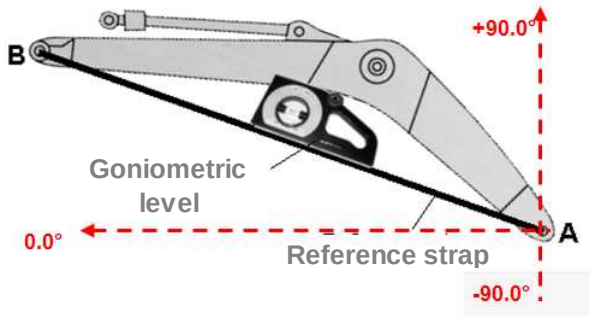
Length: Length of the boom measured straight from pivot to pivot (AB)

- Measure with accuracy the boom length and set the value.



Angle: Boom angle between axle from pivots AB and the reference system

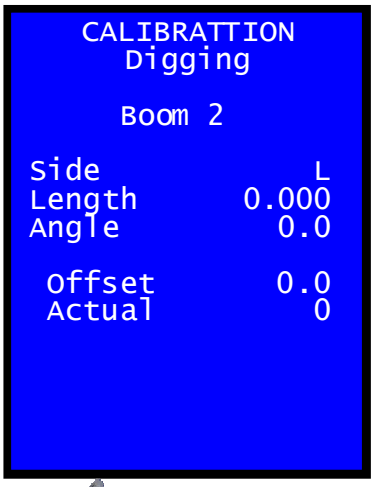
- Measure the boom angle and set the value



Offset : Angle correction value (difference from set and read value)

- Press “ENTER” to adjust.
- Use  or  to set the machine and confirm with  key.

6.5.3 Boom 2 Calibration



Boom 2 Calibration (Dipper stick or Middle Boom)

- Sensor side to set
- Length value to set
- Angle value to set
ANGLE:
- Angle value adjusted
- Angle value read from the system

Press key to scroll next screen.

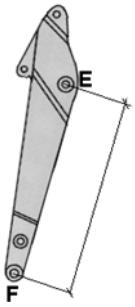
Side: Boom side where the sensor is installed

- Right (R)
- Left (L)

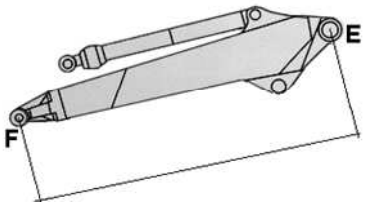
Length: Length of the boom measured straight from pivot to pivot (EF)

- Measure with accuracy the boom length and set the value.

2 Booms Machine



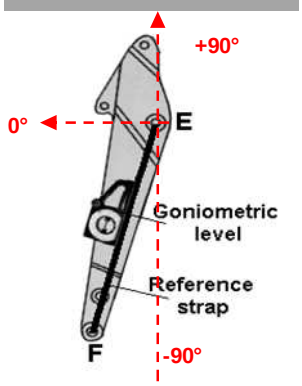
3 Booms Machine



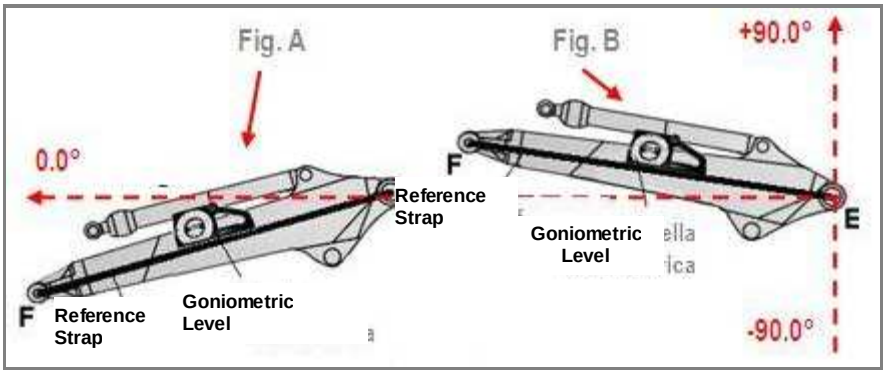
Angle: Boom angle between axle from pivots EF and the reference system

- Measure the boom angle and set the value

2 Booms Machine



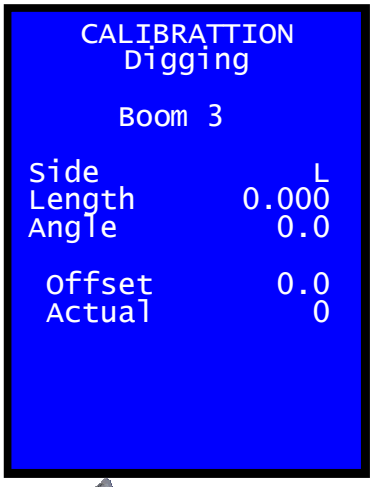
3 Booms Machine



Offset : Angle correction value (difference from set and read value). Press to adjust.

6.5.4 Boom 3 Calibration (3 booms machine)

This calibration page will be displayed only if 3 booms machine has been selected.



Boom 3 Calibration (Dipper stick)

- Sensor side to set
- Length value to set
- Angle value to set

- Angle value adjusted
- Angle value read

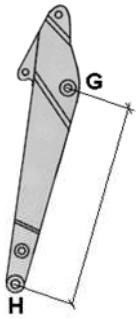
Press  key to scroll next screen.

Side: Boom side where the sensor is installed

- Right (R)
- Left (L)

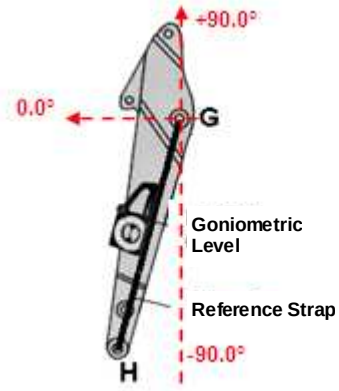
Length: Length of the boom measured straight from pivot to pivot (GH)

- Measure with accuracy the boom length and set the value.



Angle: Boom angle between axle from pivots GH and the reference system

- Measure the boom angle and set the value

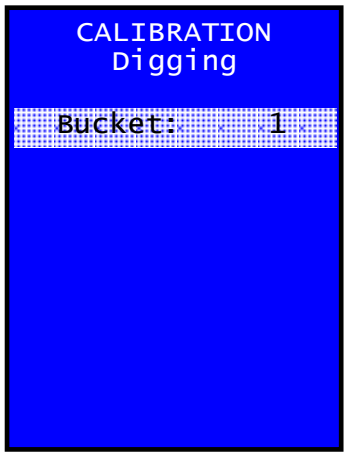


Offset : Angle correction value (difference from set and read value). Press  to adjust.

6.5.5 Bucket Calibration

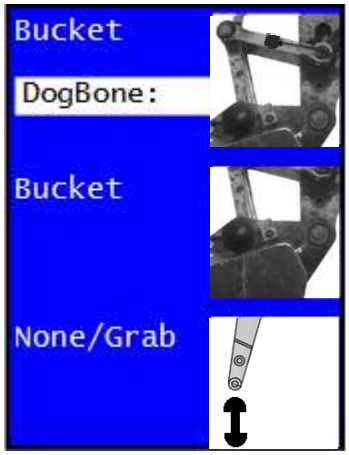
1. SET THE CALIBRATION NUMBER

System can store up to 9 different calibrations.



Select the number of the bucket that you have to calibrate with or and confirm with key.

2. SELECT THE CALIBRATION



DogBone (2.1)

Bucket (2.2)

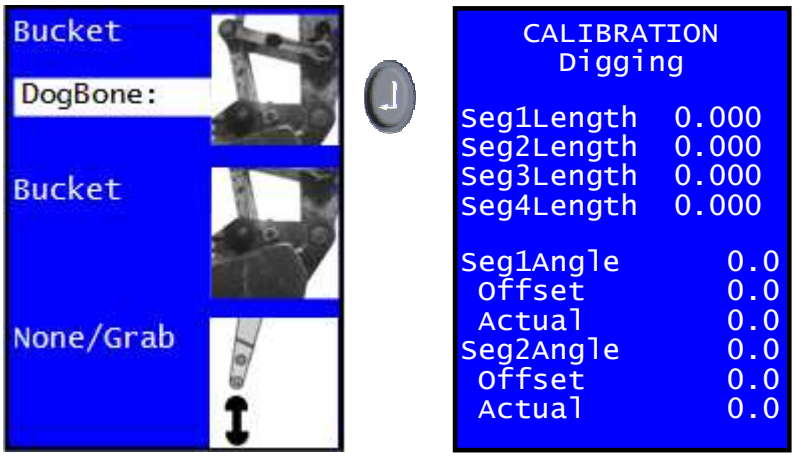
No sensor or Grab (2.3)

Use or to select the calibration to perform and confirm with key.

Note: DogBone calibration must be done before the bucket calibration.

2.1 DOGBONE

1) DogBone Setting (DogBone setting must be done before the Bucket setting)



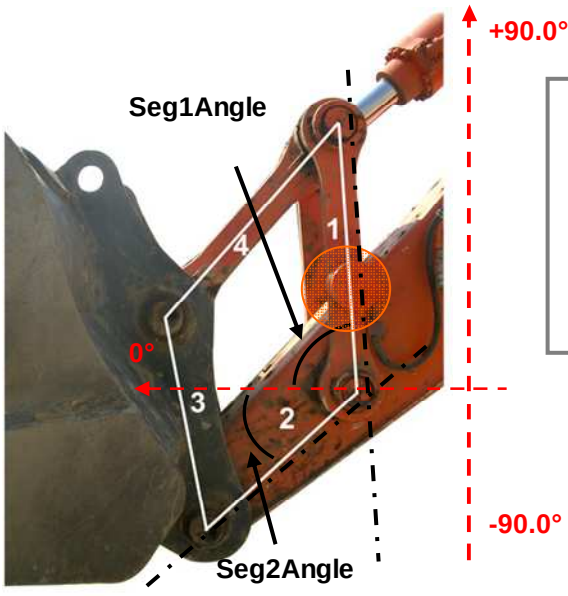
Press key to scroll next screen.

Seg1Length / Seg2 Length / Seg3 Length / Seg4 Length (1,2,3,4: refer to the picture)

- Measure the 4 segments (the bones) of the DogBone and set lengths values.

Seg1Angle / Seg2Angle (referring to the picture)

- Measure the segments1&2 angles (the bones) of the DogBone and set values.



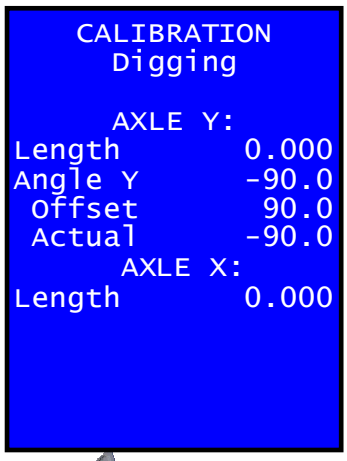
Measure the inside angle between the segment axle (from pivot to pivot) and the system horizontal axle:

- Positive angle above horizontal axle
- Negative angle (-) under horizontal axle

Offset : Angle correction value (difference from set and read value). Press to adjust.

Note: Changing the DogBone setting means that the bucket setting must be done again.

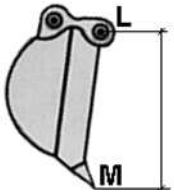
2) Bucket Setting



Press key to scroll next screen.

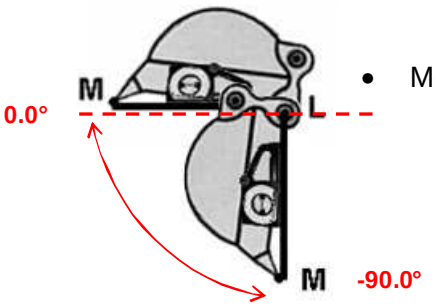
AXLE Y:

Length: Length of the bucket measured straight from pivot (L) to bucket blame (M)



- Measure with accuracy the bucket length and set the value.

Angle Y: Bucket angle (x10) between axle from pivot (L) to bucket blame (M) and the horizontal reference system.



- Measure the angle and set the value

Offset : Angle correction value (difference from set and read value). Press to adjust.

X AXLE:

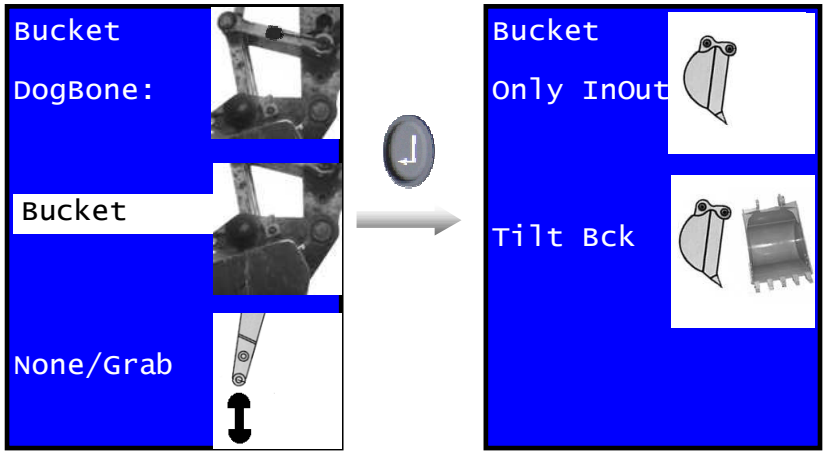
Length: Width of the bucket measured straight from corner to corner (A - B).

- Measure with accuracy the bucket length and set the value.

2.2 BUCKET

Bucket Type Selection

Select the bucket type to calibrate



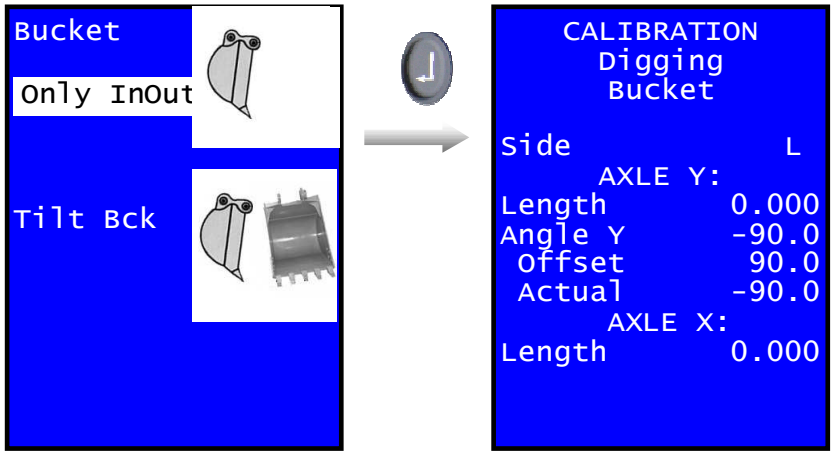
InOut Bucket Setting (2.2.1)

Tilt Bucket Setting (2.2.2)

➢ Use or to select the used bucket type and confirm with key.

2.2.1 InOut Bucket Setting

As for each boom, it's necessary to set length and angle of the bucket.



InOut Bucket Page

Use key to scroll next screen.

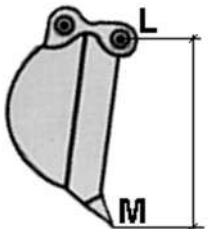
Side: Bucket side where the sensor is installed

- Right (R)
- Left (L)

Y AXLE:

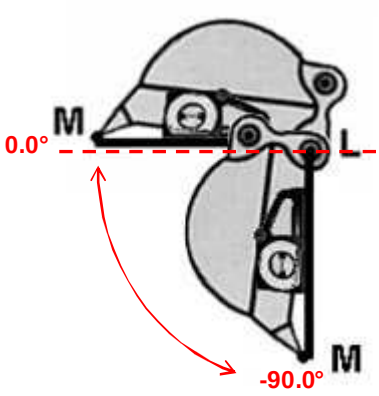
Length: Length of the bucket measured straight from pivot (L) to bucket blame (M)

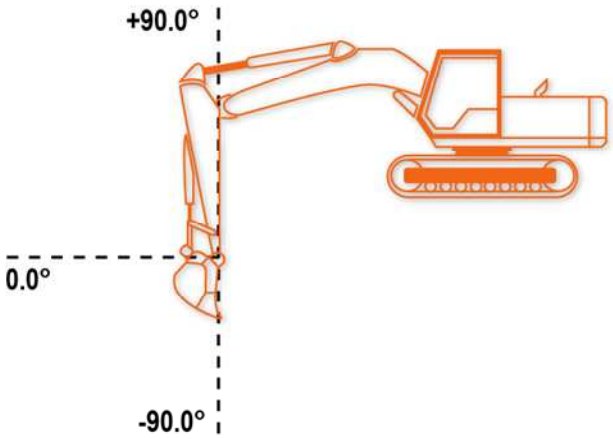
- Measure with accuracy the bucket length and set the value.



Angle Y: Bucket angle (x10) between axle from pivot (L) to bucket blame (M) and the horizontal reference system.

- Measure the angle and set the value





Offset : Angle correction value (difference from set and read value).

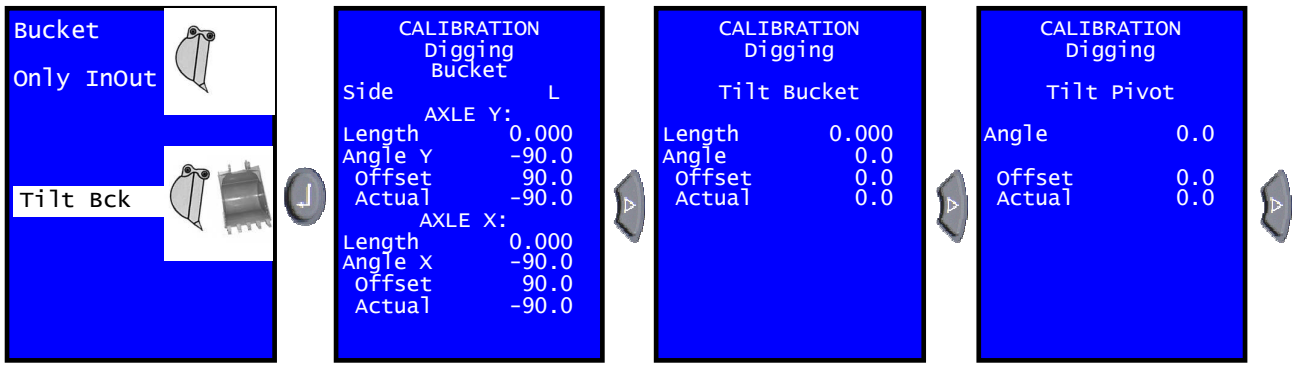
- Press  to adjust.

X AXLE:

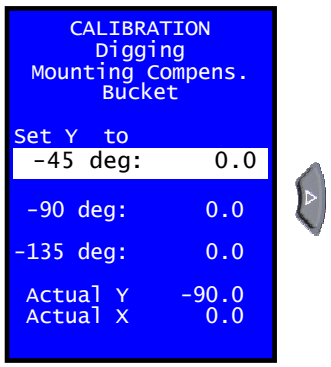
Length: Width of the bucket measured straight from corner to corner (A - B).

- Measure with accuracy the bucket length and set the value.

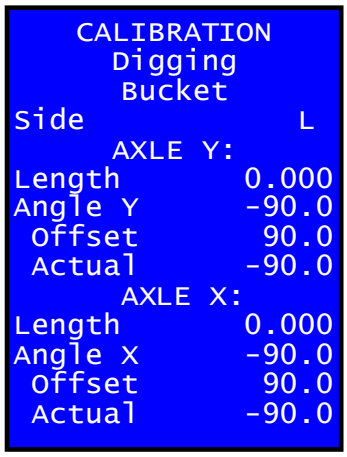
2.2.2 Tilt Bucket Setting



Bucket Setting page | Tilt Setting page | Pivot Setting page



1) Bucket Setting page



Refer to
InOut Bucket Calibration

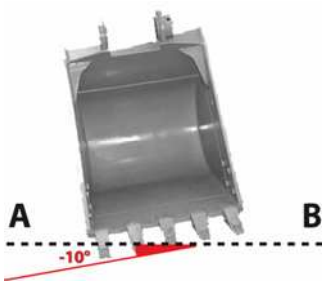
AXLE X:

Length: Bucket length (Refer to *InOut Bucket calibration*)

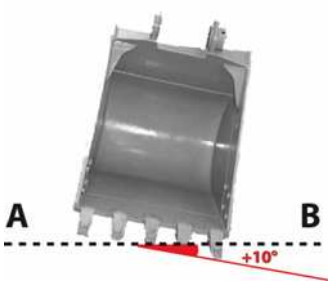
Angle X: Bucket angle (x10) between axle A-B and the horizontal reference system.

- Measure the angle and set the value

X = 0° for A = B



X < 0°(negative) for A < B

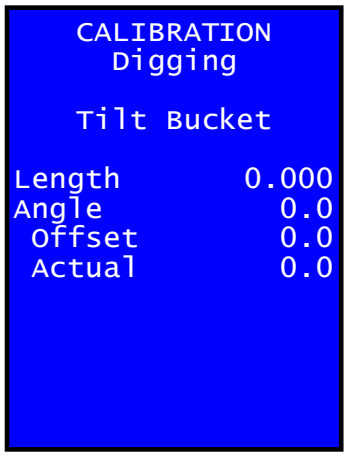


X > 0°(positive) for A > B

Offset : Angle correction value (difference from set and read value).

- Press  to adjust.

2) Tilt Setting page

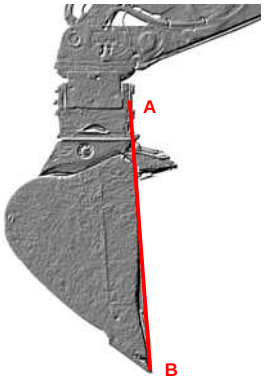


- Length value to set
- Angle value to set
- Angle value adjusted
- Angle value read from the system

Length: Length of the bucket measured straight from the pin (A) to the tip of the tooth/blade (B).

Pin A is the tilt bucket (transversal inclination) centre of rotation.

- Measure accurately the length of the bucket currently installed and set the value.



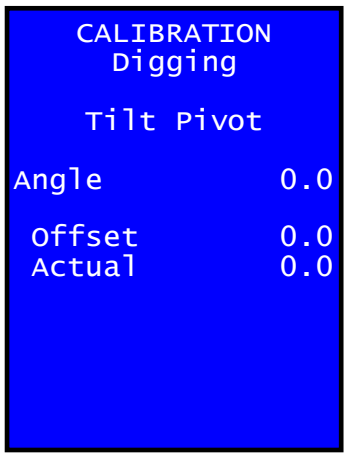
Angle: Angle of the projection A-B as described for *InOut Bucket calibration - Angle Y*

- Measure the angle and set the value

Offset : Angle correction value (difference from set and read value).

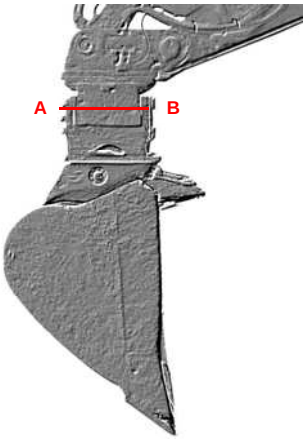
- Press  to adjust.

3) Pivot Setting page



Angle: Angle of the bucket lateral inclination pivot.

- Measure the angle and set the value



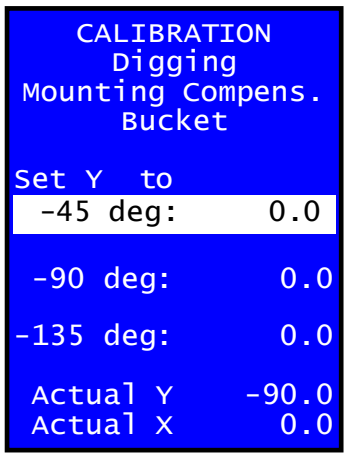
If “A” is higher than “B” then the angle is positive (same convention as booms).

Offset : Angle correction value (difference from set and read value).

- Press  to adjust.

4) Mounting Compensation page

This optional calibration is needed to correct the X angle of the bucket if the sensor isn't mounted completely parallel with the Y axis of the machine.

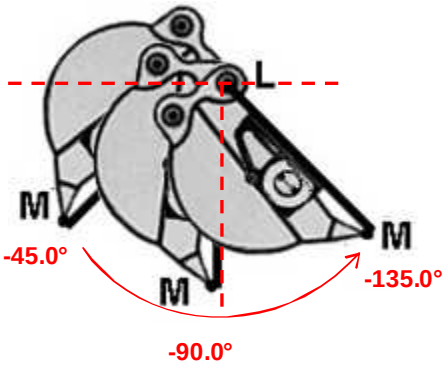


Bucket Y Axle Calibration:
-45°
-90°
-135°

Bucket Axles actual angles

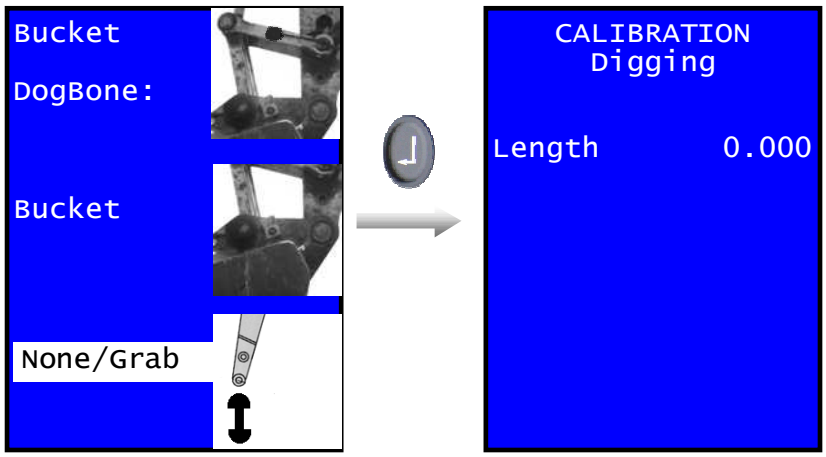
- Put the bucket perfectly horizontal (zero degree X) using laser or a reference instrument and try to have chassis horizontal too.

- Move Y Bucket (longitudinally, in-out). The X angle must be always "0" for every Y angle. If not, to compensate the installation move the Y axis to:



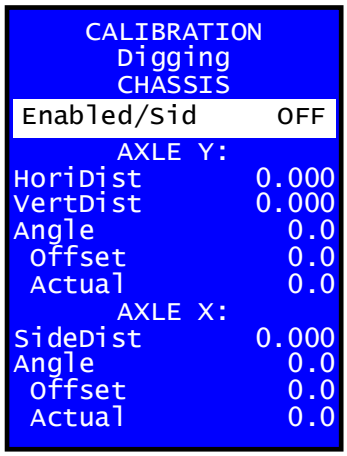
- Select the proper calibration and press  to perform the compensation.

2.3 BUCKET



- Use or to set the grab length and confirm with key.
- Use key to scroll next screen.

6.5.6 Chassis



Use  key to scroll next screen.

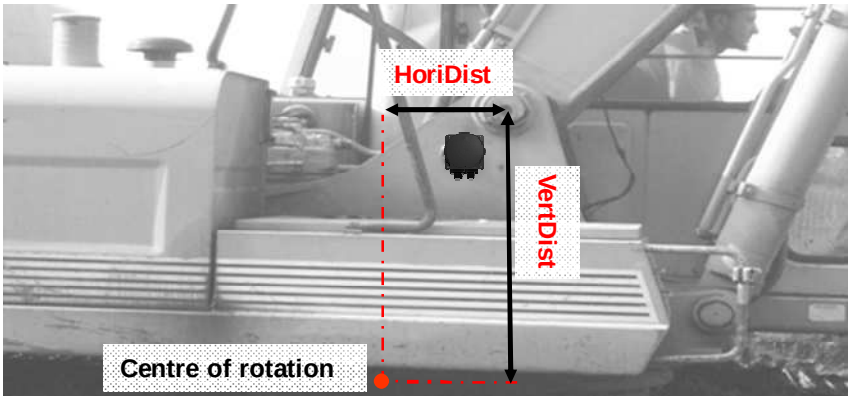
Enable/Side: Chassis side where the sensor is installed or sensor disabling

- L / R = enabled - left side / right side
- OFF = disabled sensor

AXLE Y: Set proper lengths as referred in the pictures.

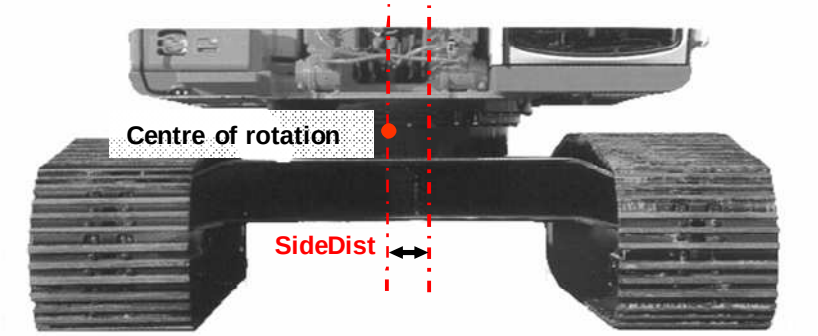
HoriDist from chassis centre of rotation to pivot.

VertDist from chassis rotation high to pivot.



AXLE X:

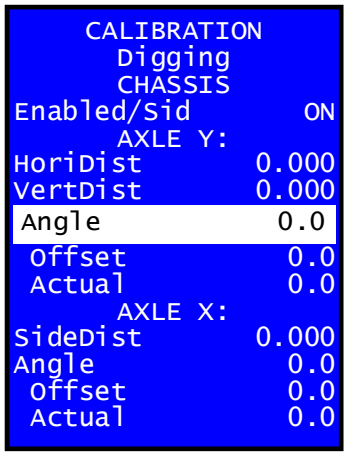
SideDist from chassis centre of rotation to the middle of the boom.



Y AXLE

Angle: Set the chassis Y angle if not flat

- Measure and set it (as for booms).



Positive angle higher in front (Y+)

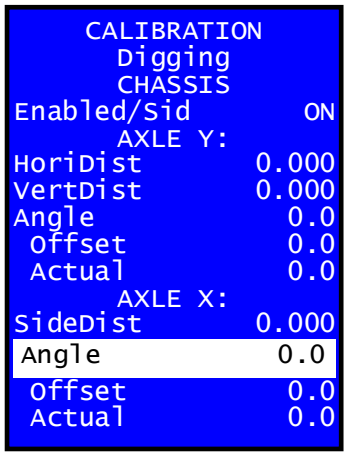
Offset : Angle correction value (difference from set and read value).

- Press “ENTER” to adjust.

X AXLE

Angle: Set the chassis X angle if not flat

- Measure and set it (as for booms).

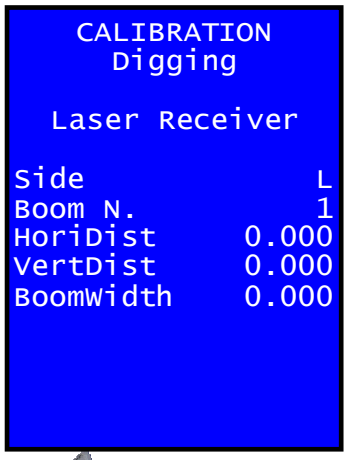


Positive angle higher on left (X+)

Offset : Angle correction value (difference from set and read value).

- Press  to adjust.

6.5.7 Laser



Use  key to scroll next screen.

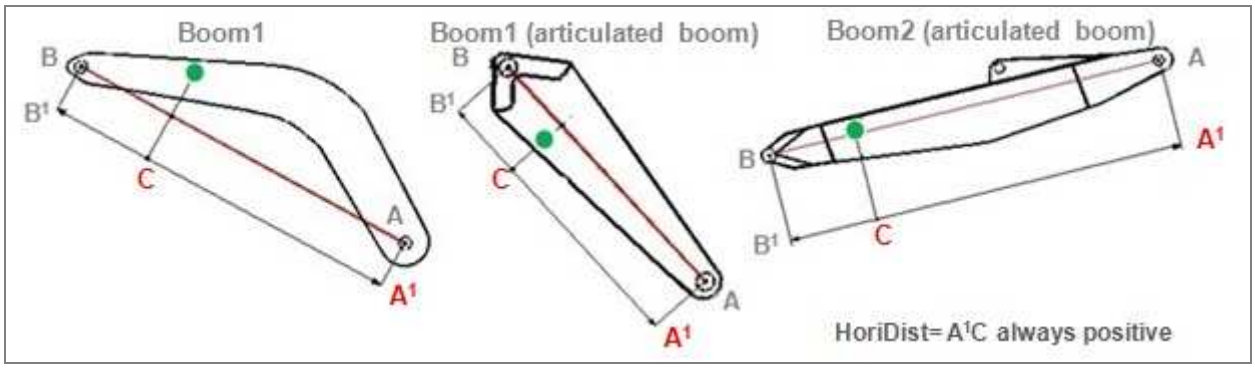
Side: Boom side where the sensor is installed

- Right (R)
- Left (L)

Boom N. : Boom number where the sensor is installed (1÷3)

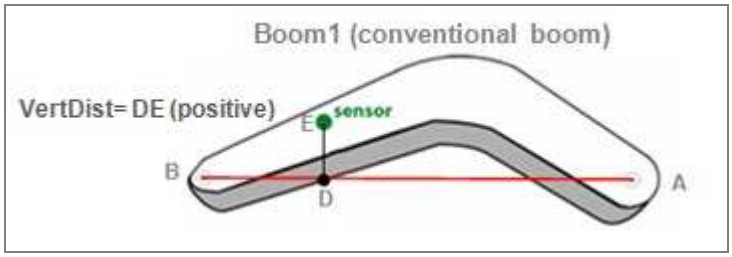
HoriDist: This value indicates the laser receiver horizontal distance A^1C where "C" point is obtained at the intersection on the projected line A-B by the perpendicular through the centre of the Laser Catcher.

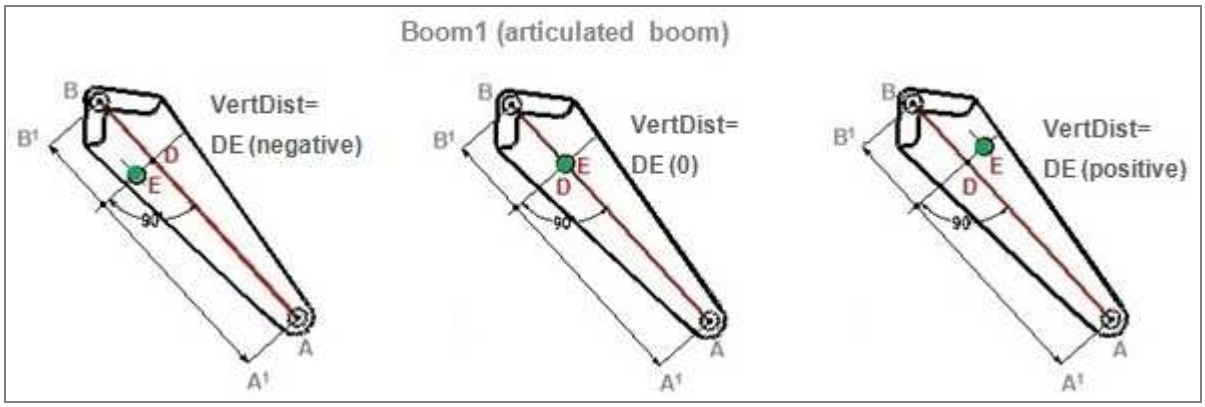
- Measure with accuracy the distance and set the value

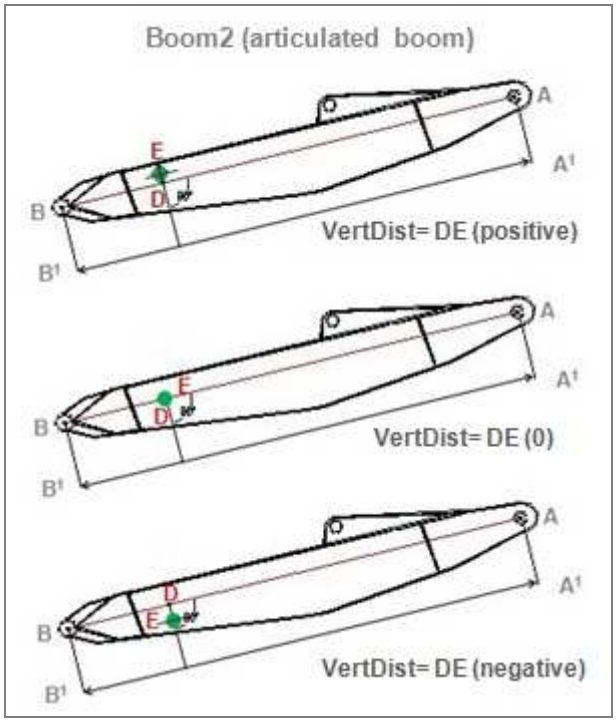


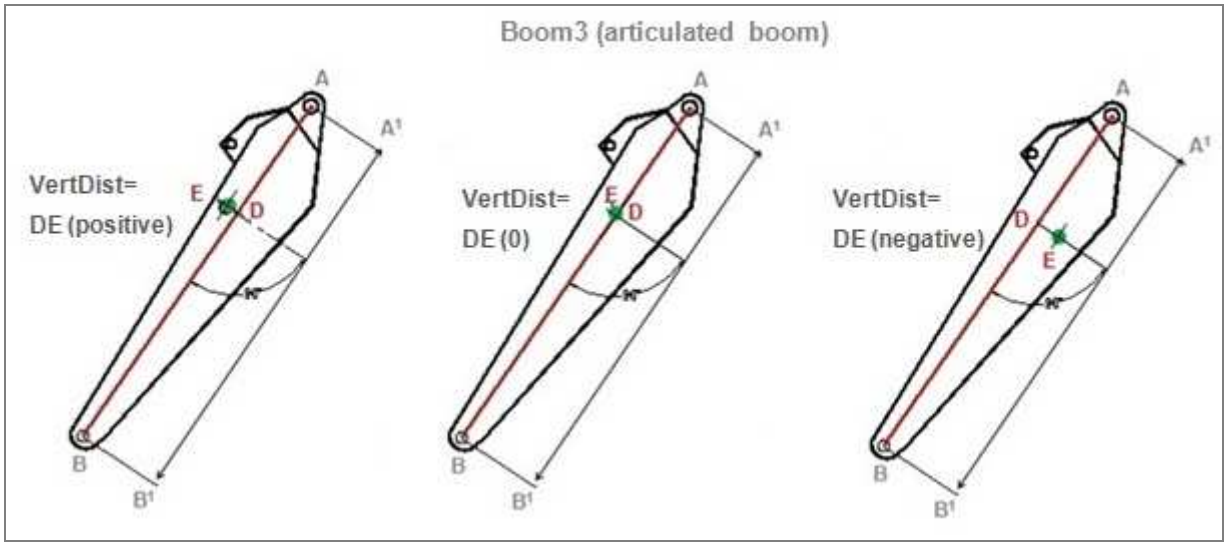
VertDist: This value corresponds to the distance between E and D (centre of Laser Catcher to point D on projection AB)

- Measure with accuracy the distance and set the value



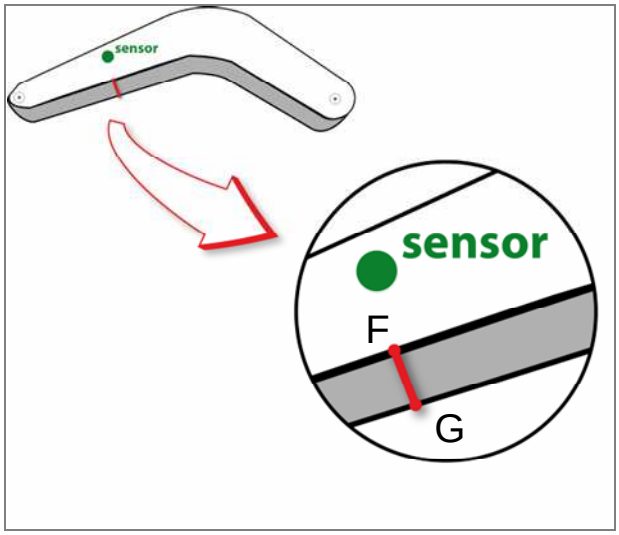

Boom1 (articulated boom)
VertDist=
DE (negative)
VertDist=
DE (0)
VertDist=
DE (positive)
B
B1
A
A1
D
E
90°


Boom2 (articulated boom)
VertDist= DE (positive)
VertDist= DE (0)
VertDist= DE (negative)
A
A1
B
B1
D
E
90°


Boom3 (articulated boom)
VertDist=
DE (positive)
VertDist=
DE (0)
VertDist=
DE (negative)
A
A1
B
B1
D
E
90°

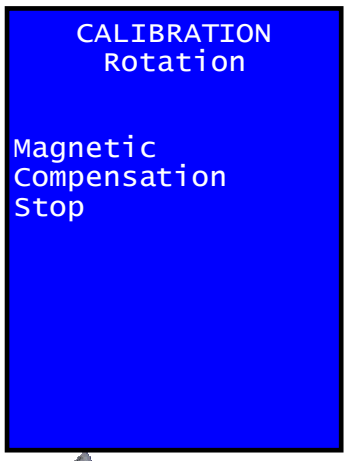
BoomWidth: This value corresponds to the distance between F and G

- Measure the boom under the point where the laser catcher is installed the distance and set the value



6.5.8 Rotation Sensor (optional)

This calibration is enabled only if the rotation sensor is connected to the system.



Use  key to scroll next screen.

Perform the 2 steps, Magnetic and Calibration, following the manual on-screen instructions.

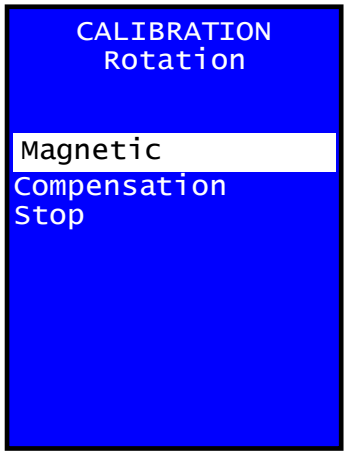
Use  or  to select the calibration and confirm with  key.

When applied on the mast, never change the rotation sensor installation direction (side where there's the connector, usually faced to the cabin to have a reference) during and after the calibration.

NOTE: it's possible to check rotation aligning the turret with belts, then use REF.Y function (see user manual) and turn 90 – 180° looking in the Diagnostic page if the machine angle reflect the new alignment with belts.

Magnetic

This calibration has to be done only for the first install of the rotation sensor on the machine.



Step1

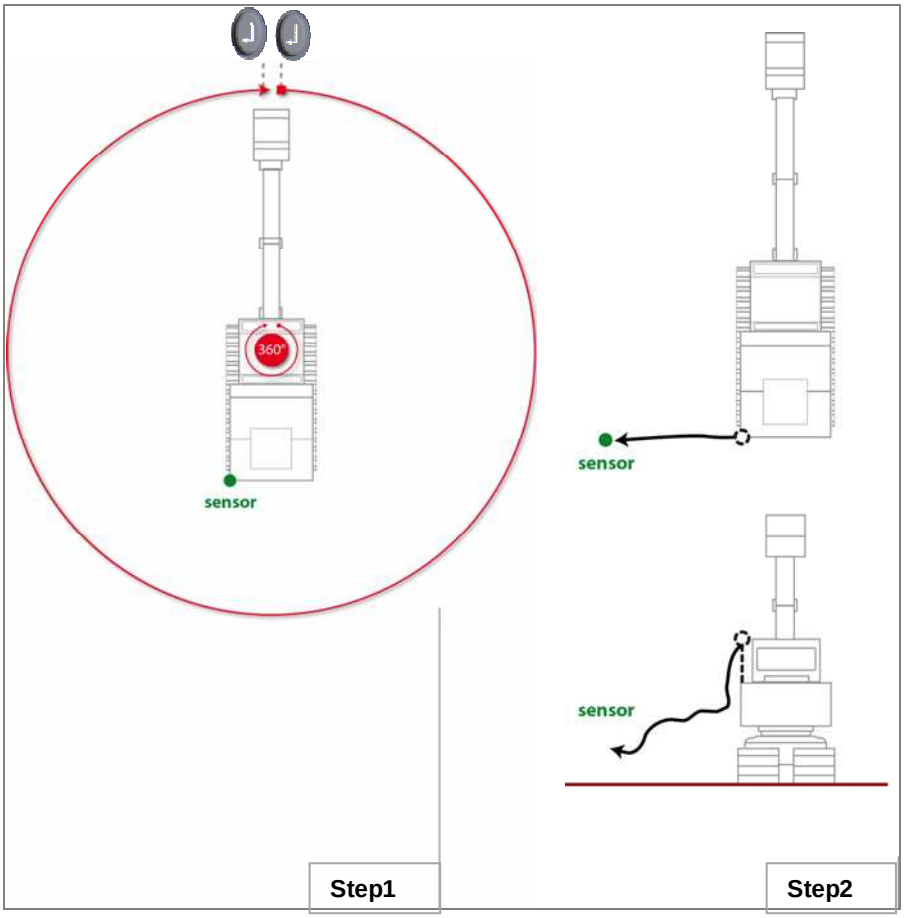
- Press and make a free 360° turn. This means to perform a complete turret turn (we suggest always clockwise) at moderate speed.
- Press when completed.

Step2

- Position now the rotation sensor away from the machine and other iron mass. Remember: sensor has to be switched on during all the calibration otherwise you have to start again from the beginning: keep the connector plugged so we suggest to take all the mast and use all the cable to go in the best iron-free zone around the machine.

  Very important:

  Sensor must be horizontal with the ground (zero degree) during this calibration point.
- Press when ready (positioned horizontal away from the machine).

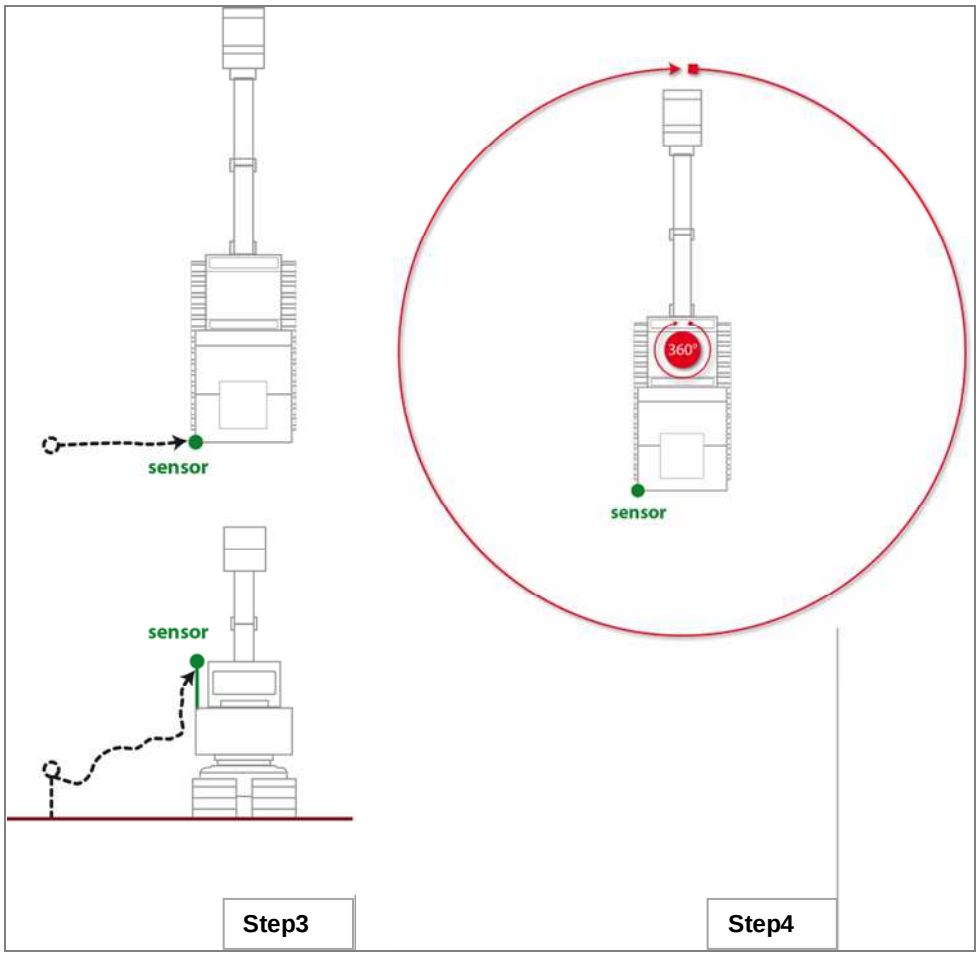


Step3

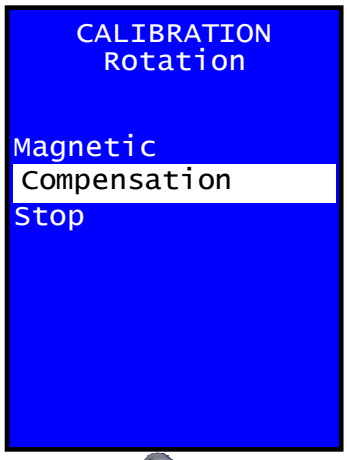
Position again on the mast of the machine in the same original direction.

Step4

- Press to confirm that the sensor is on the mast and then follow on-screen instruction
- Turn clock-wise at moderate and constant speed until calibration done message appear.
- Now press to confirm that the calibration is done.



Compensation

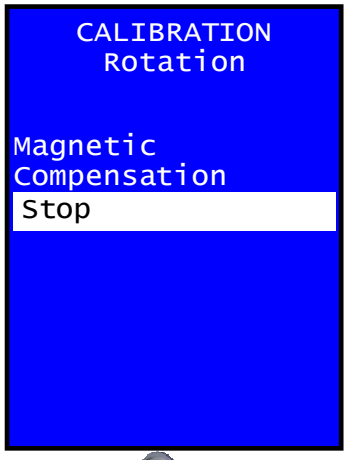


- Press whit the chassis stopped (no movements) to start the calibration.
- Follow the on screen instructions: “Start to turn Clock Wise”.

  It’s mandatory to continuously turn at moderate and very constant speed. This it’s very important to have a good final result.

  The display will show you the actual speed in a 1 to 5 range. Recommended speed it’s 3. Anyway it’s more important to be constant: if you are going to 2 it’s better to continue to keep this speed instead trying to always adjust it to 3.
- When calibration it’s done you’ll have the “Calibration OK“ message on the screen and you can confirm it with

Stop



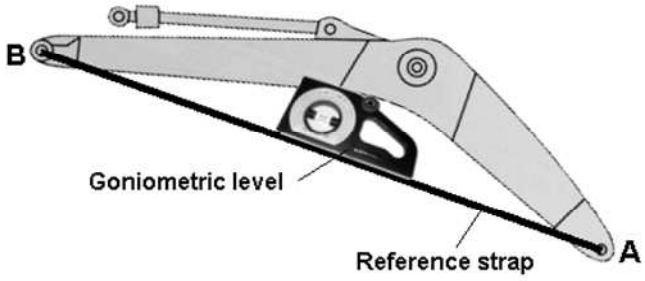
- Press to abort a calibration in progress.

6.5.9 Measuring Methods

Method 1

Using an inclinometer

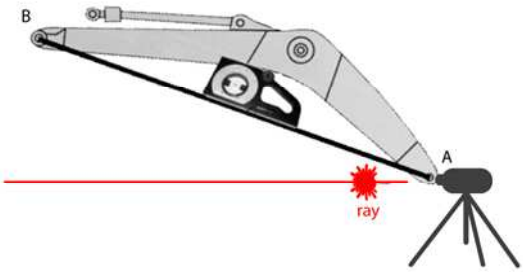
- Place a straight edge from centre of point A to centre of point B, and by means of an inclinometer read the actual angle.



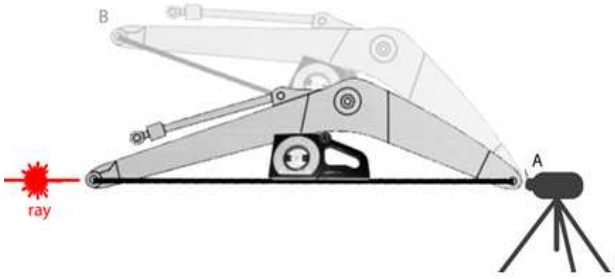
Method2

Using a laser transmitter

If a tripod with laser transmitter, visible beam and manual head positioning is available, the previous procedure could be executed by the alignment of the points A and B to the horizontal plane of the transmitter; first by pointing the beam on point A (moving up and down the laser).



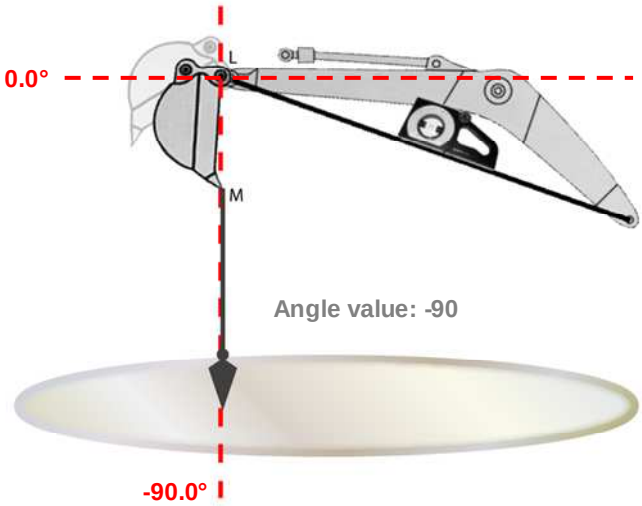
Then move the boom until the point B is again spotted by the beam. In this case the angle value to be entered is 0.0 (0 degrees).



If it is not possible to reach the horizontal position, rotate the laser 90 degrees in order to generate a vertical plane and align the boom A and B point (i.e. stick or bucket) to vertical plane again by fixing A point first and then B. In this case the angle value to be entered is –90.0 degrees.

Method3

The vertical alignment could be also obtained by using the plumb bolt method.



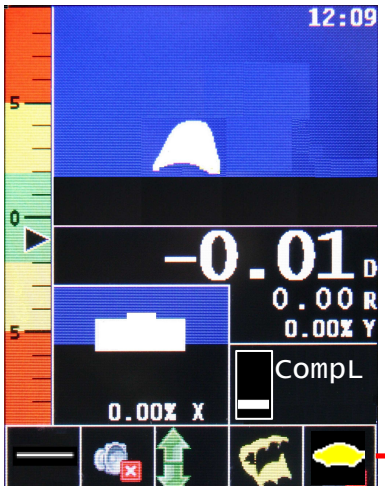
The same procedure could be used for other booms.

- When the boom is horizontal the angle is zero 0.0 (0°)
- When the boom is raised the angle will be positive
- When the boom is lowered the angle will be negative

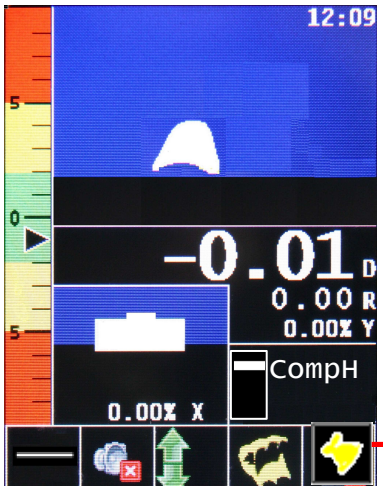
6.5.10 Laser Speed Compensation

This procedure improves the laser accuracy especially compensating the laser acquisition delays due rising speed.

Before to start the calibration, set the depth distance between the laser beam level and the reference point on the ground (example -4.00 if the reference point if 4 meters below the laser).



Low speed Laser



High speed Laser

Low Speed Laser

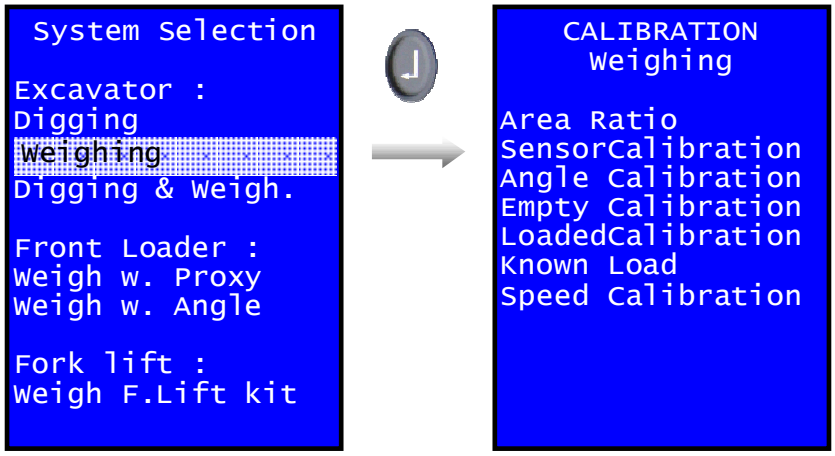
- Press F5 to select the “low speed” laser mode: the icon starts to flash. Confirm with . The icon will continue to flash and the “CompL” message will appear.
- Cross the laser beam rising the laser receiver at the minimum allowed speed (speed indicator has to be in the lower part of the bar but not completely down attached to the border – too slow and not acquired in this case).
  When the laser is acquired the “OK! “ message appears.
- Move down the laser receiver below the laser beam and the “REF.0” message will appear.
- Move the bucket to the reference point and press

High Speed Laser

- Press F5 to select the “low speed” laser mode: the icon starts to flash. Confirm with .
- The icon will continue to flash and the “CompH” message will appear.
- Cross the laser beam rising the laser receiver at the maximum allowed speed (speed indicator has to be in the higher part of the bar but not completely up attached to the border – too fast and not acquired in this case).
  When the laser is acquired appears the “OK! “ message.
- Move down the laser receiver below the laser beam and the “REF.0” message will appear.
- Move the bucket to the reference point and press .Calibration Completed!

6.6 WEIGHING CALIBRATION

6.6.1 Weighing Calibration Menu



Area Ratio

Ratio between the cylinder's chambers (where the pressure transducer are installed).

Sensor Calibration

Boom Sensors calibration

Angle Calibration

Calibration of the possible angle excursion for the weighing: set min and max angle for the pressure table.

Empty Calibration

Pressure calibration with no load in the bucket.

Loaded Calibration

Pressure calibration with a known load in the bucket.

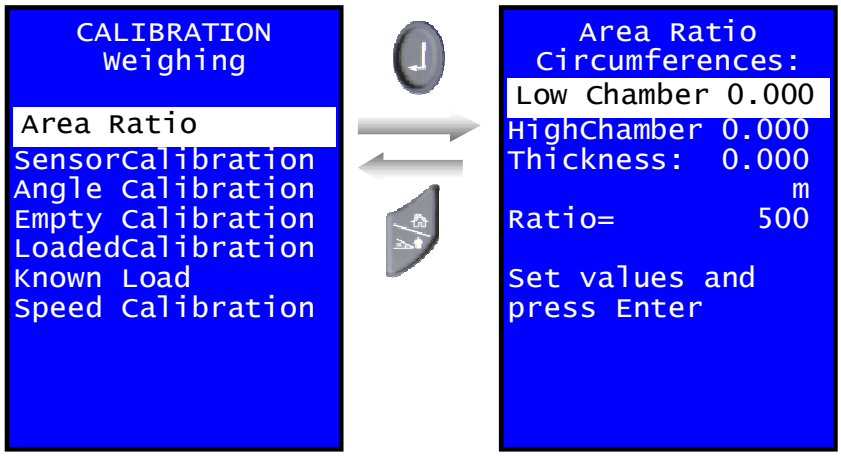
Known Load

Value of the Load (in metric tons) in the bucket during the loaded calibration.

Speed Calibration

Speed influence calibration.

6.6.2 Area Ratio



- Select the setting with or and confirm with key.
- Use , and or to set value and confirm with .

Low/High Chamber, Thickness

Circumference and thickness of the cylinder low/high chamber.

- Insert the values expressed in meters (m) or feet (f).

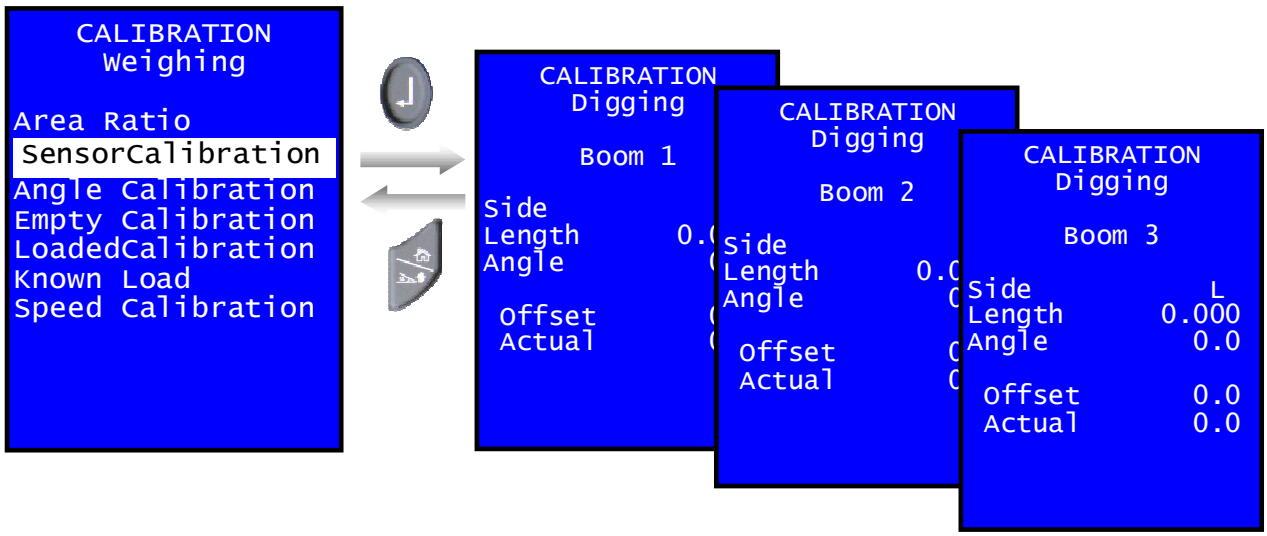
Ratio

Ratio between the cylinder's chambers (where the pressure transducer are installed).

This value hasn't a particular unit of measure. Must be between 0 and 1000. This value is used to calculate the differential pressure and has not to be changed after the calibration.

- Select the Ratio setting with or and press to calculate the Area Ratio value.

6.6.3 Sensors Calibration

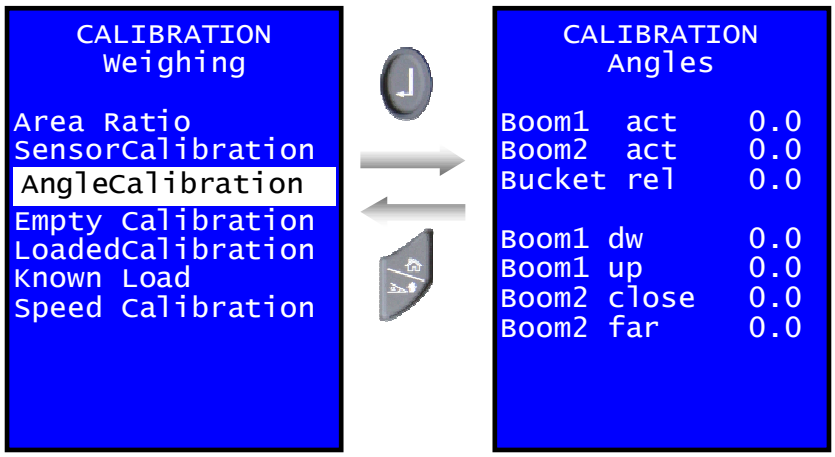


Refer to digging system calibration pages (*Boom1, Boom2, Boom3*) about how to perform this calibration.

Note: The length of the booms don't affect the weighing system calibration. However set a length in boom 3 to enable the middle boom check.

6.6.4 Calibration Angles for 2 Booms Machine

Calibration of the angle excursion for the weighing: min/max angle of the weighing table



Boom1 act, Boom2 act, Bucket rel

Actual angles reading of Boom1/2 and Bucket.

Boom1 down/up

Setting of the min/max angles of the weighing calibration for Boom1 (*Fig. B1*).

Boom2 close/far

Setting of the min/max angles of the weighing calibration for Boom2 (*Fig. B2*).

Calibration Angles Procedure

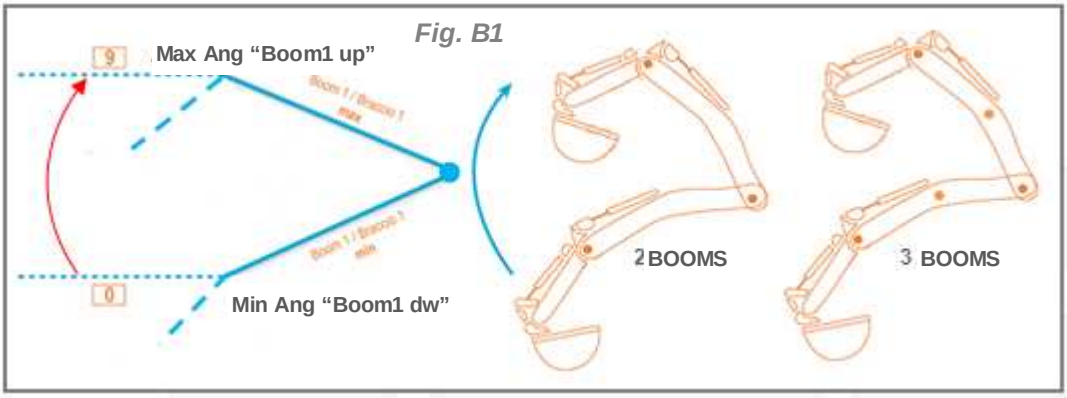
Angles setting is important because defines the possible start points of the weighing process.

The ideal condition is to have the excavator positioned on the edge of a steep drop of about 5/6 meters. The machine must thus be able to weigh both at depth (works in a quarry) and at track height (road works). To allow correct setting it must be possible to "range" booms over their whole stroke.

Once Boom1&2 (or Boom3) angles ranges set, the system will calculate ten angle positions (from 0 to 9) for each boom of the weighing tables *(Fig. B1 & Fig. B2 / Fig. B3)*.

Boom1

Fig. B1



Min Angle:

- Pull down Boom 1 very close to the end of the stroke.
- Lift the boom at about 1 meter to establish the minimum Boom1 point.
- Select **"Boom2 dw"** and press to record the point.

Max Angle:

- Lift Boom1 to end of stroke upwards to establish the maximum weighing point.
  We suggest to stay lower than the machine mechanical limit:
  - The pressure at full cylinder extension is usually at the maximum value.
  - The weighing is dynamic so I must pass this point to finish the weighing process.
- Select **"Boom2 up"** and press to record the point.

Boom 2 (conventional boom)

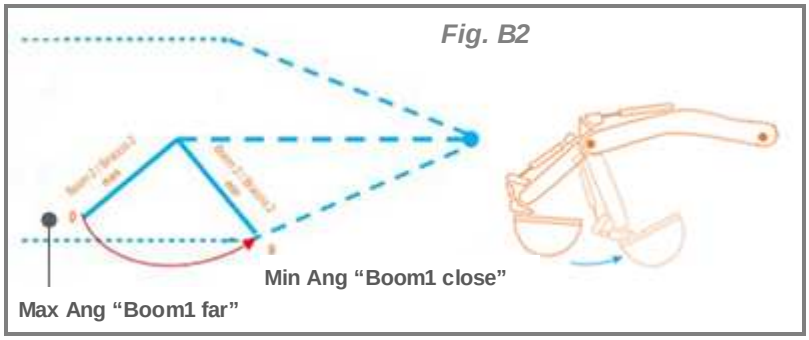


Fig. B2

Max Angle

- Set Boom 1 at around 0° position to have Boom 2 an d the Bucket visible from the cabin.
- Inside the full Boom 2 stroke determine the width of the weighing angle, trying to have a stroke of at least 45°.
- Move Boom 2 to the furthest point from the machine.
- Select **"Boom2 far"** and press to record the point.

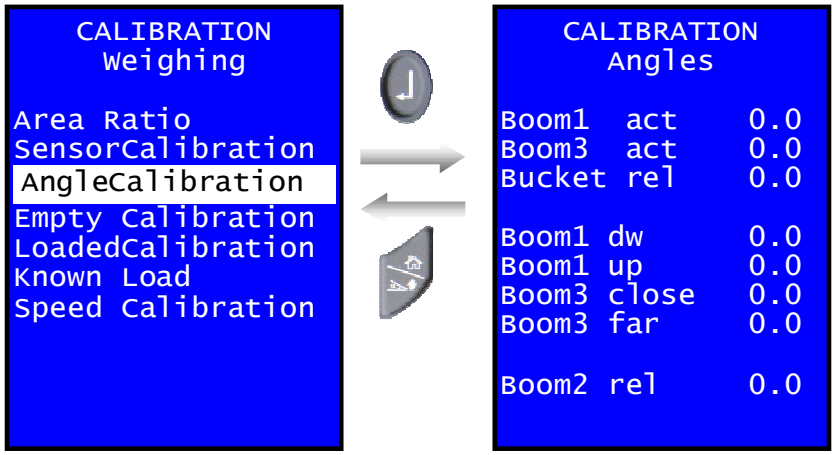
Min Angle

Consider to use as the Boom 2 out the maximum point where the operator can weight without loose material from the bucket instead the machine mechanical limit.

- Move Boom 2 to the nearest point to the machine (consider also in this case a useful point for the weighing)
- Select **"Boom2 close"** and press to record the point.

6.6.5 Calibration Angles for 3 Booms Machine


Calibration of the angle excursion for the weighing: min/max angle of the weighing table



Boom1 act, Boom3 act, Bucket rel

Actual angles reading of Boom1/3 and Bucket.

Boom1 dw/up

Setting of the min/max angles of the weighing calibration for Boom1 (*Fig. B1*).

Br.2 rel

Setting of the angle of the weighing calibration for Boom2.

Boom3 close/far

Setting of the min/max angles of the weighing calibration for Boom3 (*Fig. B3*).

Calibration Angles Procedure

Angles setting is important because defines the possible start points of the weighing process.

The ideal condition is to have the excavator positioned on the edge of a steep drop of about 5/6 meters. The machine must thus be able to weigh both at depth (works in a quarry) and at track height (road works). To allow correct setting it must be possible to "range" booms over their whole stroke.

Once Boom1&2 (or Boom3) angles ranges set, the system will calculate ten angle positions (from 0 to 9) for each boom of the weighing tables *(Fig. B1 & Fig. B2 / Fig. B3)*.

Boom2 (articulated boom)

The middle boom (Boom 2) during the weighing process must be always in a fixed position. The operator can move only Boom 1 and Boom 3.

Angle

Usually Boom 2 is fixed near to it's maximum excursion to form together with the first boom the conventional "boomerang".

- Move Boom 2 to this point
- Select **“Boom2 rel”** and press to record the point.

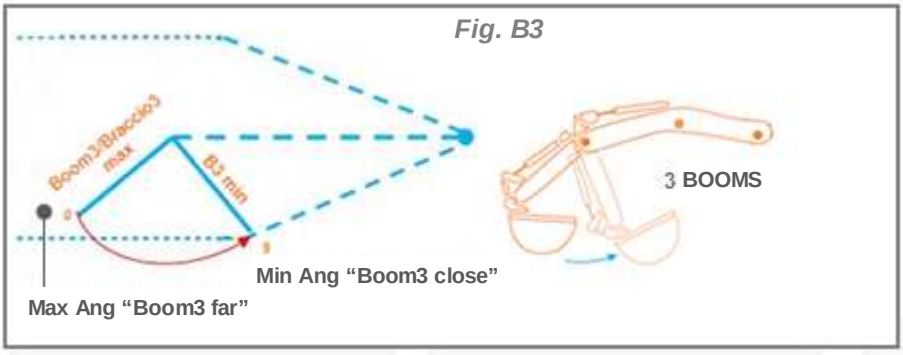
In the weighing process if this boom isn’t in this position the operator has a warning to align it.

Boom1

Refer to “Boom1” for 2 booms machine.

Boom3 (articulated boom)

Fig. B3



Max Angle

- Set Boom 1 at around 0° position (and align Boom 2) to have Boom 3 and the Bucket visible from the cabin.
- Inside the full Boom 3 stroke determine the width of the weighing angle, trying to have a stroke of at least 45°.
- Move Boom 3 to the furthest point from the machine.
- Select the **“Boom3 far”** and press to record the point.

Min Angle

Consider to use as the Boom 3 min the maximum point where the operator can weight without loose material from the bucket instead the machine mechanical limit.

- Move Boom 3 to the nearest point to the machine (consider also in this case a useful point for the weighing)
- Select the **“Boom3 close”** and press to record the point.

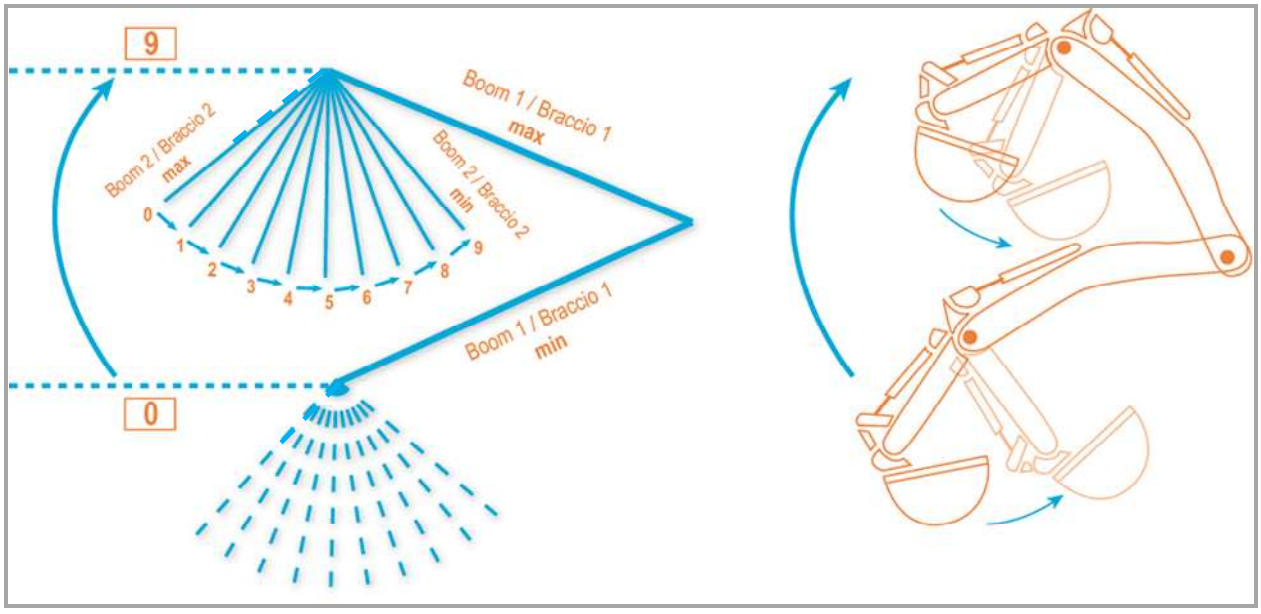
6.6.6 Pressure Calibration

Before starting the pressure calibration (with empty and loaded bucket) we suggest to perform some booms movements to bring the machine hydraulics to the working (constant) temperature. On the major part of machines is also better to disable all power saving functions (usually marked by hare/turtle or auto rpm lower) and to keep the engine rpm at constant value (usually at the maximum).

Machine must be also levelled and stable.

In a 3 booms excavator Boom2 is kept fixed and is moved Boom3
It's requested space to move down the booms and swing with the dipper stick.

Calibration position example.



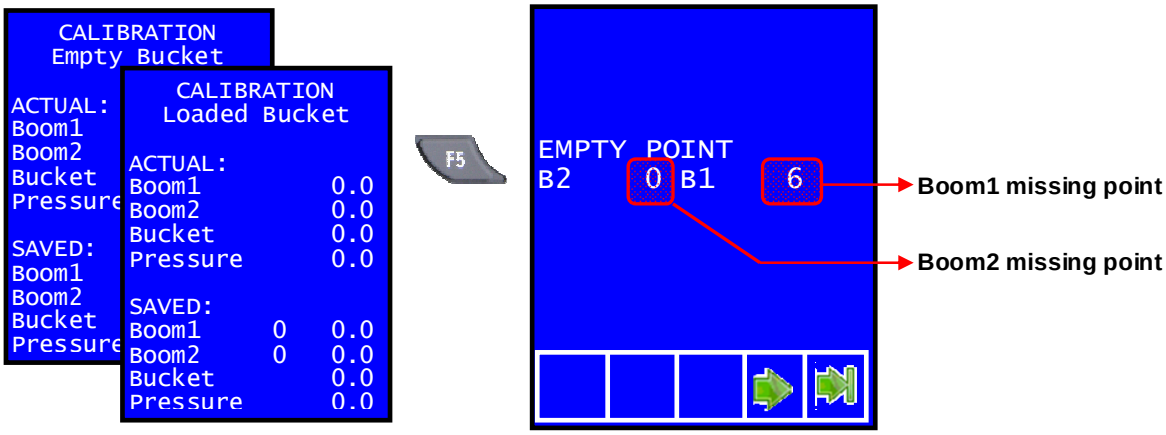
NOTE: All the calibration operations are performed with the bucket closed if possible or the blame should be kept at the same pivot height when before to start a lift.

6.6.7 Pressure Table

From the Empty/Loaded Calibration Menu press F5 key to check the pressure table.

If there's a missing point the table check will hold on that point.

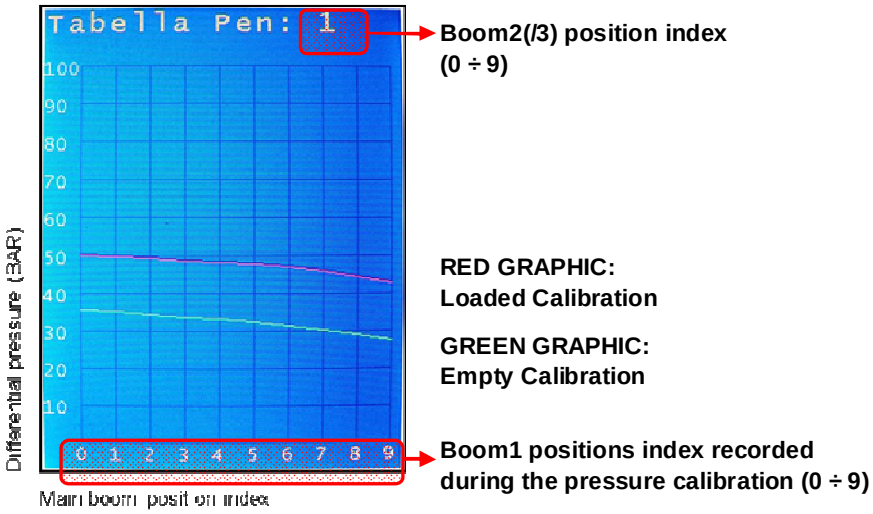
Otherwise the pressure graph will be shown.



Press F4 to scroll the next missing points.

Press F5 to display the Pressure Table.

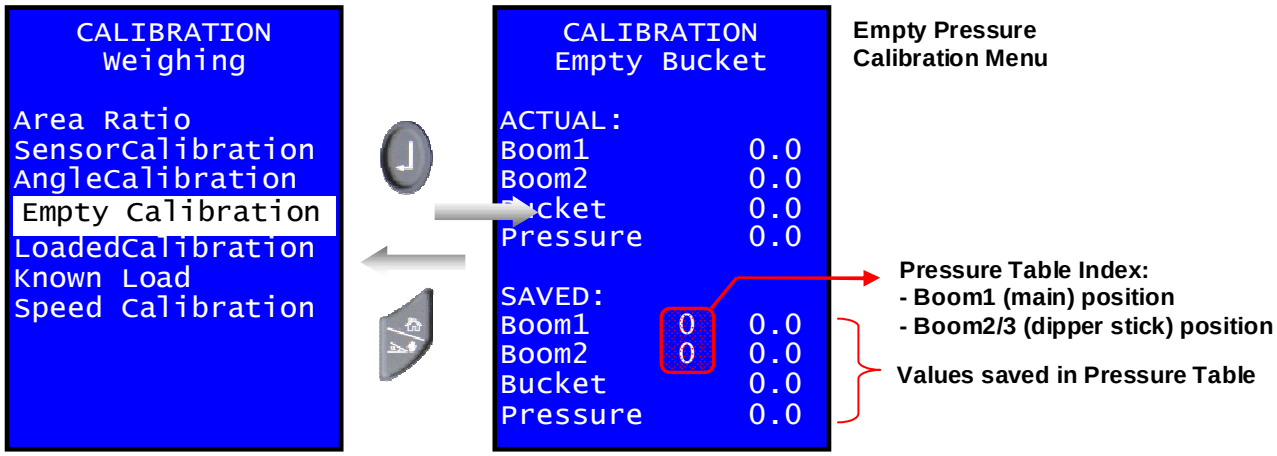
Pressure Table



Scroll the Dipper Stick (Boom2/3) positions with , . The graphics of the selected positions will be displayed.

Press to exit. The screen goes back to the Pressure Calibration Menu.

6.6.8 Empty pressure Calibration



ACTUAL: Boom1/Boom2/Bucket/Pressure

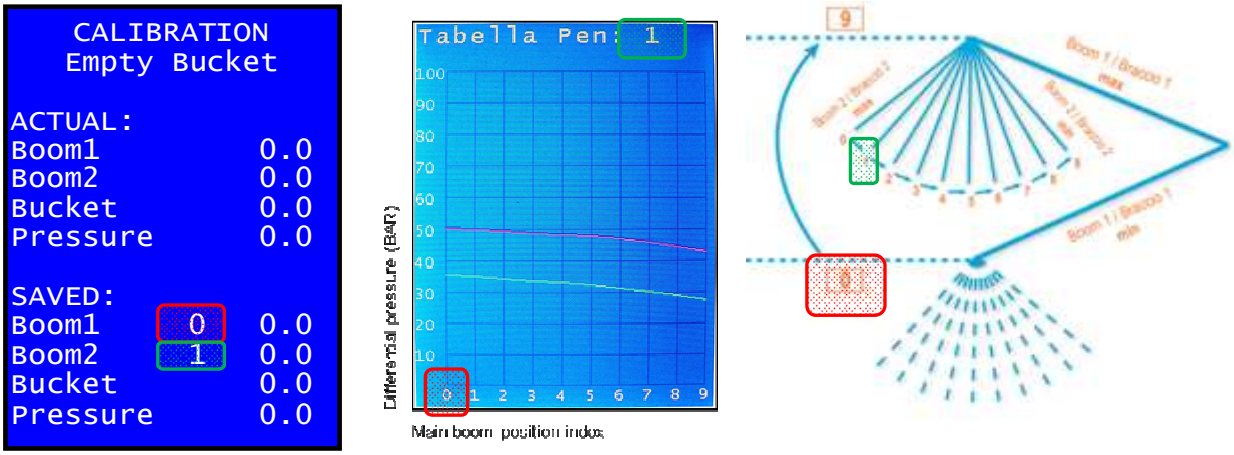
Actual angles and Pressure values read from the system.

SAVED: Boom1/Boom2/Bucket/Pressure

Actual angles and Pressure values, saved in the Pressure Table and Pressure Table Indexes.

Pressure Calibration Procedure (Tabella Pen: 0 ÷ 9)

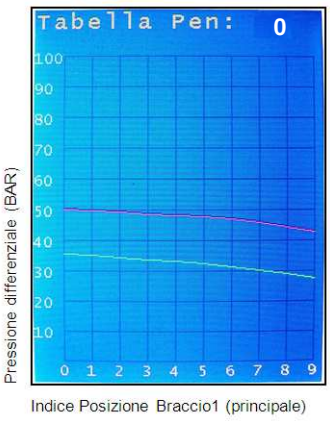
Relationship between Data:



Note: in case of a 3 booms machine the Boom3 refers to the dipper stick!

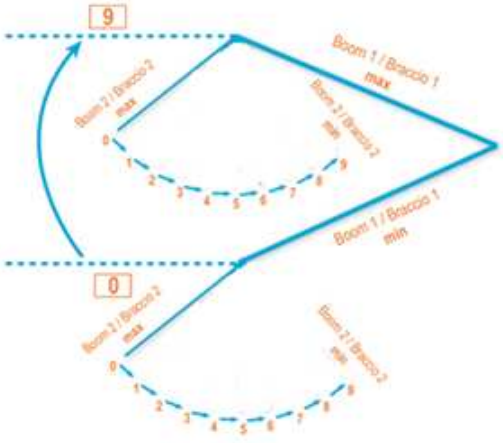
Pressure calibration is performed lifting the main boom (Boom1) or the boomerang through the angle excursion of the weighing table with a movement at slow and constant speed starting right under the min angle and finishing as soon as over the max angle.

Pressure calibration with Dipper stick (Boom 2/3) in minimum position 0 - "Tabella Pen: 0"



Boom 2 Index (0 ÷ 9)

Boom 1 Index (0 ÷ 9)




```
CALIBRATION
Empty Bucket

ACTUAL:
Boom1          0.0
Boom2          0.0
Bucket         0.0
Pressure       0.0

SAVED:
Boom1    0     0.0
Boom2    0     0.0
Bucket         0.0
Pressure       0.0
```

- Set the first table position of the main boom
  Boom1 index = 0
- Set the first table position of the dipper stick
  Boom2 index = 0

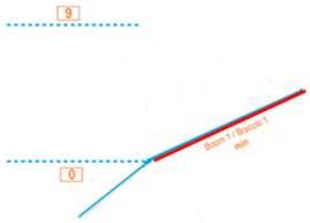
```
CALIBRATION
Empty Bucket

ACTUAL:
Boom1          X.0
Boom2          0.0
Bucket         0.0
Pressure       0.0

SAVED:
Boom1    0     X.0
Boom2    0     0.0
Bucket         0.0
Pressure       0.0
```

- Move the boomerang downwards until the value of "Boom1 act" is at least 4.0 degrees less than the value showed on "Boom1, 0":

  ACTUAL: Boom1 = SAVED: Boom1,0



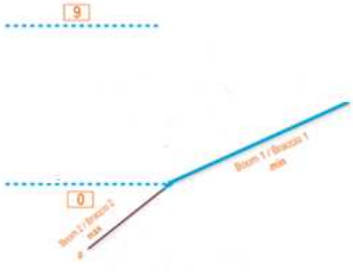

```
CALIBRATION
Empty Bucket

ACTUAL:
Boom1          0.0
Boom2          X.0
Bucket         0.0
Pressure       0.0

SAVED:
Boom1    0     0.0
Boom2    0     X.0
Bucket         0.0
Pressure       0.0
```

- Then move the Dipper stick (**Ref.2/b**) so that "Boom2 act" coincides with the value on the right of Boom2.

  ACTUAL: Boom2 = SAVED: Boom2,0

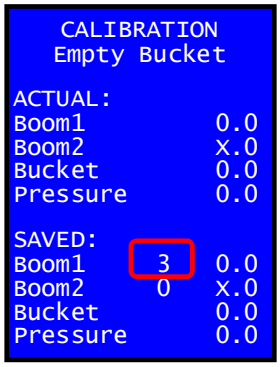


0

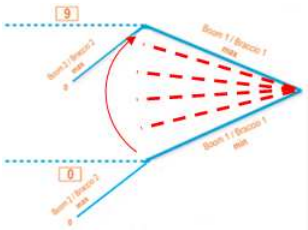
Press  and if positions are correct it's now possible to move up Boom1 at slow and constant speed to perform the first pressure acquisition rise. Verify also the bucket if the bucket angle check will be used.

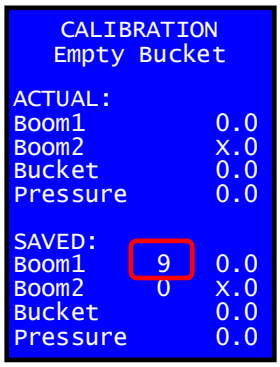
VERY IMPORTANT : During the rising don't move the dipper stick.

Every time that Boom1 crosses one of the 10 angle points the system will give a whistle. If a serious error is committed, the unit will whistle intermittently and the word AGAIN will appear on the display.

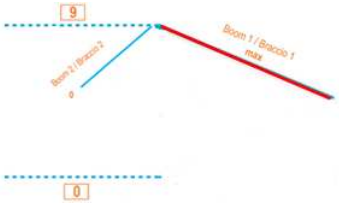


The points reached are shown in "Boom1" index.





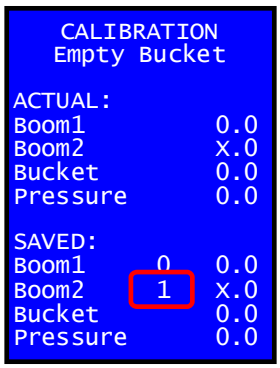
- After over taking the point 9 of the Boom1 ("Boom1 act" higher than maximum angle position 9) after the central unit has terminated tenth whistles, this calibration point it's finished.

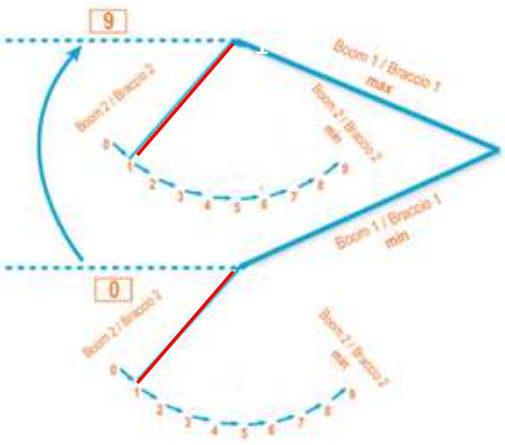


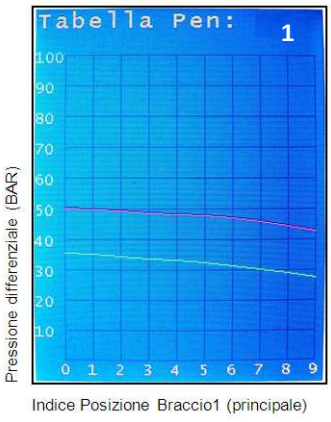
The screen will be ready again for a new values acquisition.

Pressure calibration with Dipper stick (Boom 2/3) in position 2÷9- "Tabella Pen: 2÷9"

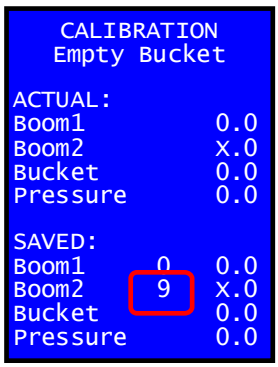
- Repeat all the procedure described above for the dipper stick successive position "**Boom2, 1"** starting now form Boom1, 0.

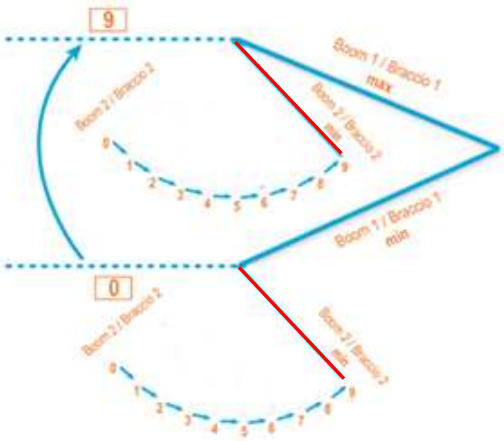


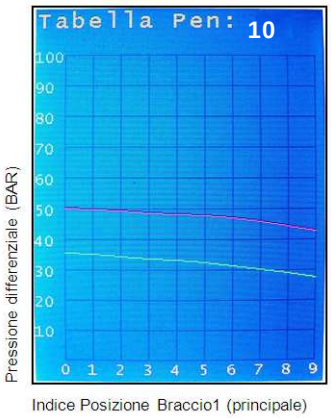




- As soon as you finish with “Boom2, 1” repeat the same procedure starting from “**Boom2, 2”** covering all the value till 9 **“Boom2, 9”** .

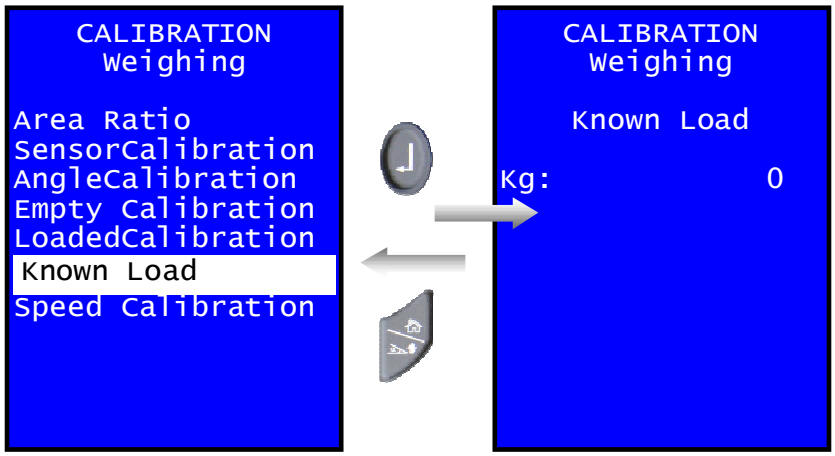






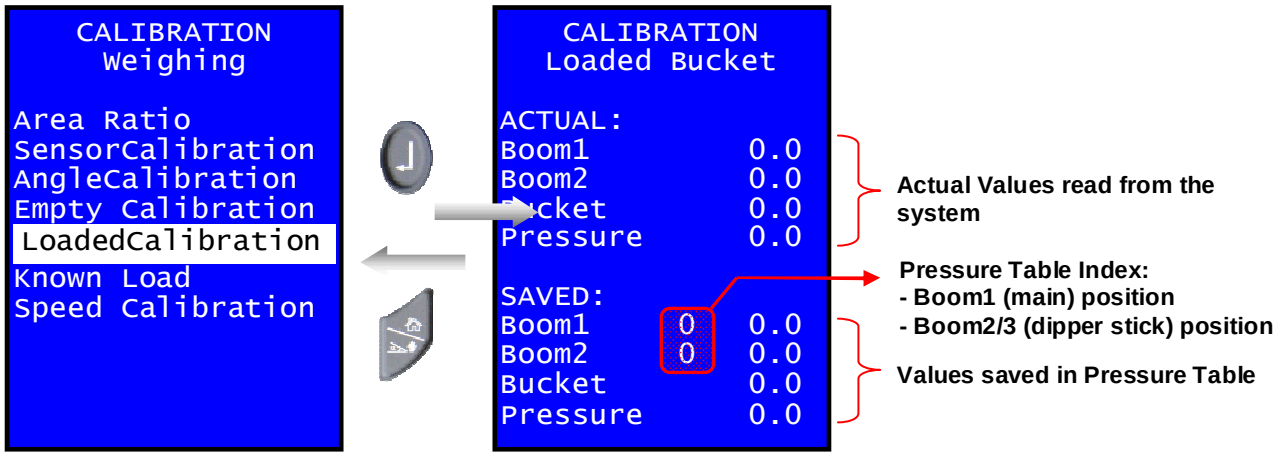
NOTE: Boom1 starts always from 0. Adjust it manually if needed.

6.6.9 Known Load



The “Known Load” value is the real weight of the material present in the bucket during the “Loaded Bucket” calibration.

6.6.10 Loaded Pressure



The loaded calibration has to be performed with the bucket full of material in order to obtain good results (at least ¾ it's recommended; we also recommend to use a material like gravel or sand that easily fill the bucket instead of a big concrete block).

Be careful to don't exceed the bucket maximum capacity (you don't have to lose important quantity of material during the calibration!).

Proceed in the same way of empty bucket calibration, performing all the steps.

At the end of the calibration it's possible to check again the pressure table filled with loaded calibration too.

When all the points are taken verify the weighing calibration from the main work screen making some lifting (weighing).

The weight on the screen should be similar to the entered Known Load if that material still in the bucket.

At this point the system is able to weigh.

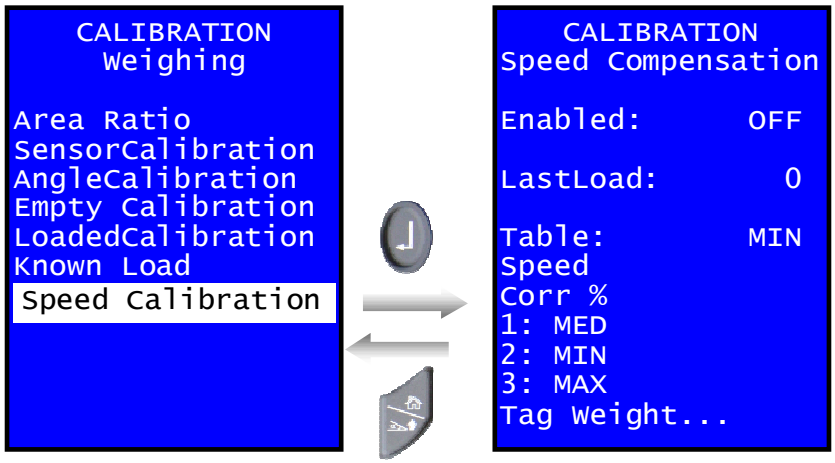
Save Calibration

Save the data permanently by means of the command "Save" on Setup menu. If you switch off the power without save, you'll lose all calibration data.

IMPORTANT: no modify is automatically saved.

6.6.11 Speed Compensation

The speed compensation corrects the weigh based on the rising speed to allow weightings at different speed, usually faster than calibration.



1 STEP

- Select the command "*1: MED*".
- Do a weighing at the same speed used in calibration (constant and moderate). At the end the *LastLoad* value will be updated. This is the reference.
- Press  .
  "*Table:*" : changes in MED
  "*Speed*" : shows the weighing time
  "*Corr %*" : set to 100: (no correction at calibration speed; this step is the reference weight).

2 STEP

- Move down the booms and select "*2: MIN*".
- Do a slower weighing.
- Press  .
  "*Table:*" : changes in MIN
  "*Speed*" : shows the weighing time
  "*Corr %*" : shows in % how much the load is changed respect the reference (MED) weigh.

3 STEP

- Move down the booms and select "*3: MAX*".
- Do a faster speed, usually at the speed used by the operator.
- Press  .
  "*Table:*" : changes in MAX
  "*Speed*" : shows the weighing time

"*Corr %*" : shows in % how much the load is changed respect the reference (MED) weigh.

NOTE:

It's often useful to load many times at different speed before to acquire the MAX value to make confidence with the machine at full speed and stabilize the hydraulic.

Corr. %:

This % correction value is directly applied to the measured load.

In the speed compensation is limited from 70% to 130%

If a limit is reached, usually something in the calibration is not good like reference speed different from calibration or too slow.

6.7 CALIBRATION VERIFY

As system test continue to weigh the same load, taking care to always use the same speed and position of the machine.
The ideal situation is to weigh the machine (or a truck) on a certified “weighing bridge” with and without the material to knows the real net weight and enter this value in the control box.
We expect that the on screen value is always the same with little variation, if not (eg 500 kg of difference between a bucket and the other) it is good to check the calibration, as well continuing the optimization of the system is assumed there is a fundamental error in the calibration of the system or application.

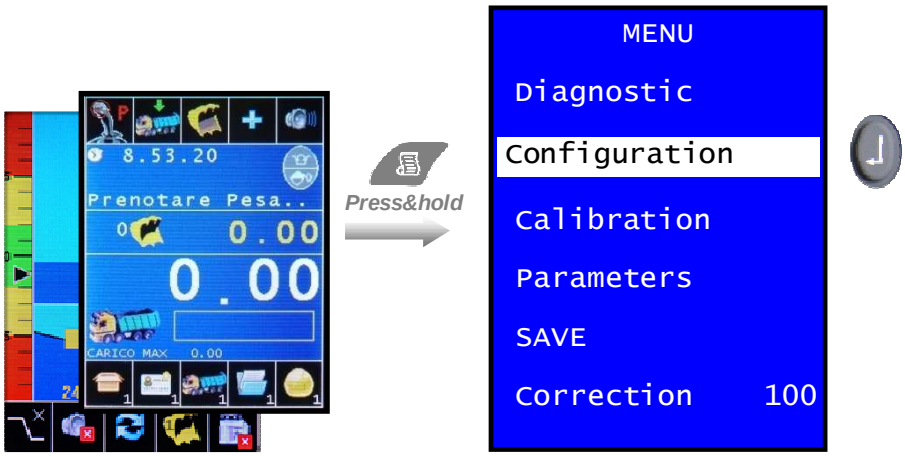
6.8 ACCURANCY VALIDATION

System is designed to take count of the material loaded on a truck, so system accuracy is referred to the truck load calculated by the control box compared with the real net weight of the truck.
Installation/Calibration check and accuracy validation:
Try to load several trucks and compare the material net weight value calculated by the control box with the value measured by another certified system (example weighing bridge).
System accuracy must be with an error <= +/- 3% from the real net weight.
If the error is higher but constant (many trucks compared are always weighing heavier for example) it’s possible to simply adjust the Known Load to match the required system accuracy: the “Known Load” must be increased / decreased taking into account the number of buckets made for each truck (remove or add to the “Known Load” the weight error divided by the number of buckets).

7

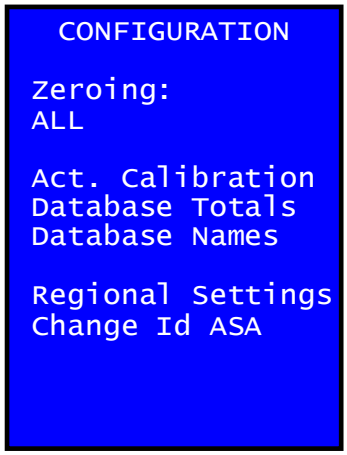
Configuration and Parameters

7.1 CONFIGURATION



- From the main operating screen (*Digging or Weighing)* keep pressed key to enter the Setup Menu (refer to *Setup* chapter).
- Select *"Configuration"* and confirm it to proceed. The configuration menu will be displayed.

7.1.1 Configuration Menu



Zeroing ALL / Act. Calibration / Database Totals / Database Names

Zeroing functions

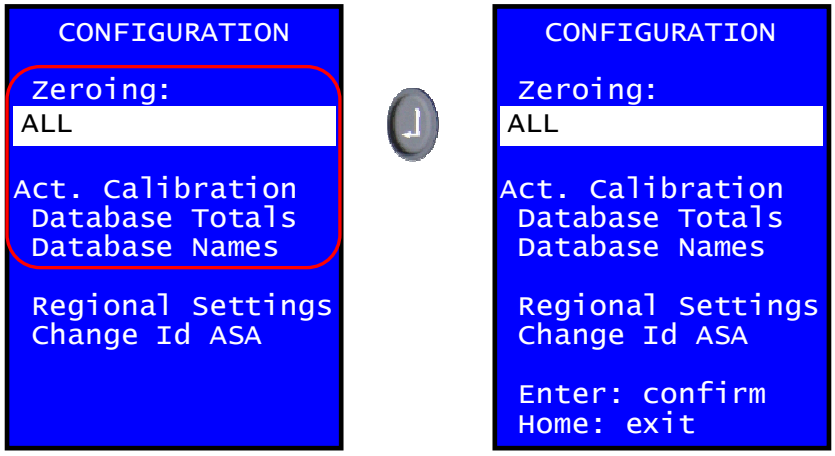
Regional Settings

Display Settings Menu

Change Id ASA

ID Sensors Menu

7.1.2 Data Zeroing



- Select the setting with ▲ or ▼ and confirm with ↵ key.
- Press again ↵ to activate the function
- Press ⌂ key to exit

Zeroing:

-ALL

Restore the system to the original setting, calibration, parameters, names and totals are zeroed.

- Act. Calibration

Delete the system calibration (both machines) and restore the system original parameters.

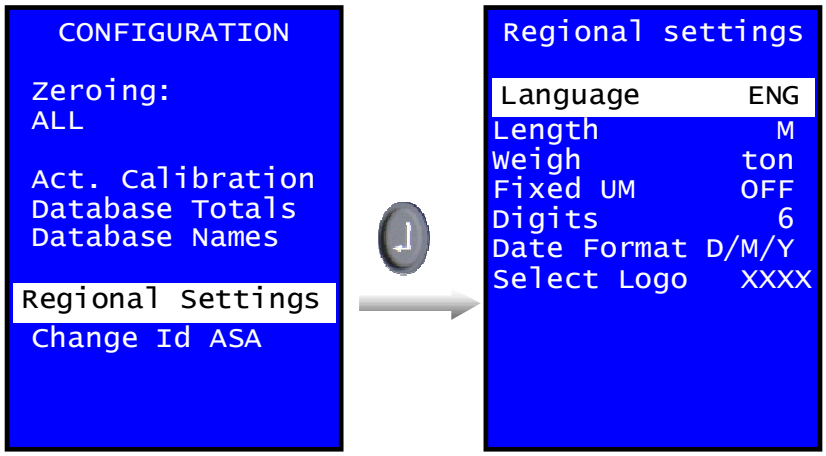
-Database Totals

Zeroing of all the loads summary.

-Database Names

Zeroing of all the names set.

7.1.3 Regional Settings



Select the setting with or and press to enter.

Use or to change the value and press to confirm.

Press key to exit.

Language System language

- ITA: Italian
- ENG: English
- SPA: Spanish
- CZE: Czechoslovakian
- FRA: French
- GER: Germany

Length Unit of measure used for lengths

- M : meters / F : feet

Weigh

Unit of measure used for mass (weigh)

- kg / ton / lbs / short / long t

Fixed UM

- **OFF:** it's useful to use all unit of measurement (weigh) with real conversion enabled
- **ON :** it keeps fixed unit of measurement, and the real time conversion is disenabled. The rounding errors are avoided

Digits Number of the digits shown on screen

- 6 : six digits
- 9 : nine digits, for heavy loads

Date Format How the date is shown

- D/M/Y : day, month, year
- M/D/Y: month, day , year

Select Logo

Set different company logos showed in the main screen.

IMPORTANT: no modify is automatically saved.

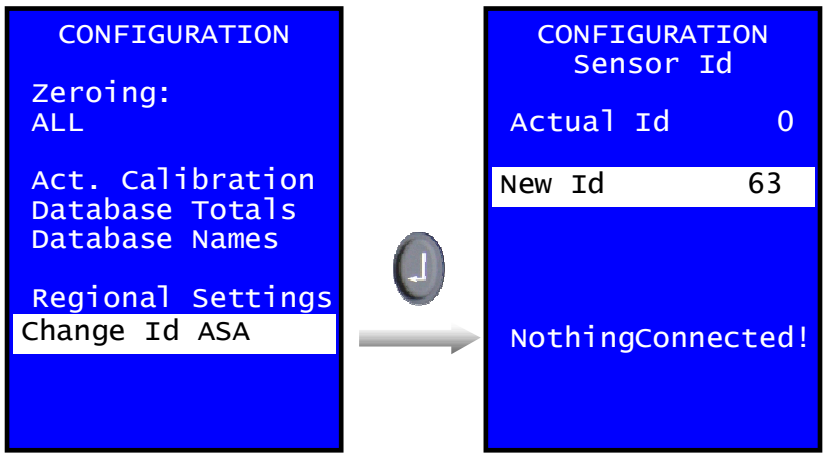
Save the data permanently by means of the command “Save” on Setup menu. If you switch off the power without save, you’ll lose all calibration data.

7.1.4 Sensors Id Setting

This procedure can be used to program the angular sensor “Id” (the identifier that distinguishes one angular sensor to another over the CAN-BUS digital line).

This means that you can transform a CAN-BUS angular sensor to another.

This could be useful to replace a bad sensor having a sensor with different Id as spare part.



Sensors Id:

- **Chassis = Id 63**
- **Boom 1 = Id 64**
- **Boom 2 = Id 65**
- **Boom 3 = Id 66**
- **Bucket = Id 67**

Line status

Actual Id

Actual sensor Id connected to the line. Zero if no or more than one sensor connected.

New Id

To perform the sensor programming only 1 sensor must be connected to the CAN-BUS line.

- Press to enter the setting
- Use or to change the actual Id and press key to confirm.
- Press key to exit

Line Status

“Nothing Connected!” : No Sensor Connected.

“MANY RECEIVED” : More than 1 sensor is actually connected.

“Ready to program” : Sensor Ready for programming.

“Programming…” : Waiting sensor answer.

“Programmed/Power Off System” : Id programmed (changes after a sensor power off/on cycle).

“Failed” : No response from sensor (not programmed)

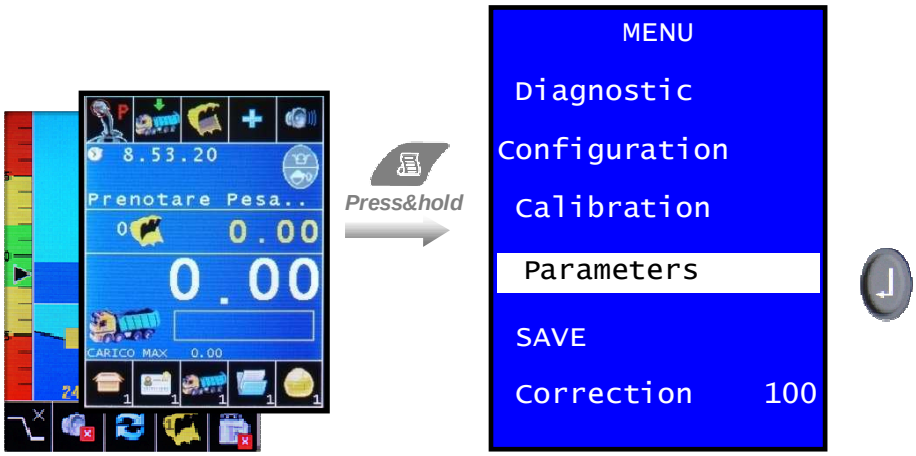
IMPORTANT: no modify is automatically saved.

Save the data permanently by means of the command “Save” on Setup menu. If you switch off the power without save, you’ll lose all calibration data.

7.2 PARAMETERS

Parameters are values that can be modified only by the system installer.

Usually are a fine tuning of the system, but tot much dangerous/complicated to be available to the end user.



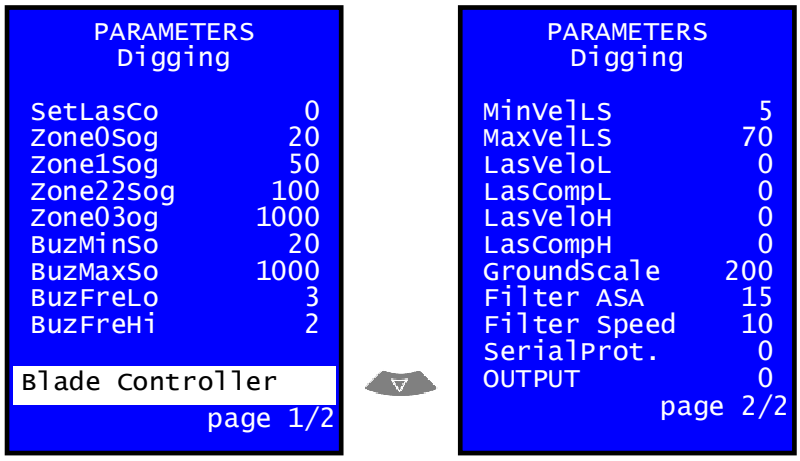
- From the main operating screen (*Digging or Weighing)* keep pressed key to enter the Setup Menu (refer to *Setup* chapter).
- Select *"Parameters"* and confirm it to proceed. The configuration menu will be displayed.

Parameters are different if accessed from digging or weighing system.

IMPORTANT: no modify is automatically saved.

Save the data permanently by means of the command "Save" on Setup menu. If you switch off the power without save, you'll lose all calibration data.

7.2.1 Digging Parameters

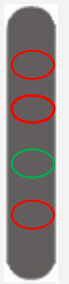


SetLasCo

- 0 = (default) It's possible to execute the laser speed compensation only when the calibration password is set
- 1 = It's always possible to execute the laser speed compensation.

Zone0Sog ÷ Zone3Sog

Deep ranges (mm) of the Led Bar

Parameters	LEDs Status	LED bar
"Zero" (0) ÷ Zone0Sog	Green LED steadily / Sound continuously	
Zone0Sog ÷ Zone1Sog	1st Red LEDs blinking / Sound blinking	
Zone1Sog ÷ Zone2Sog	1st Red LEDs steadily / No sound	
Zone2Sog ÷ Zone3Sog	2nd Red LED blinking / No sound	
> Zone3Sog	2nd Red LED steadily / No sound	

BuzMinSo ÷ BuzMaxSo Range limits of the buzzer activation

BuzzerFreLo Frequency of the buzzer blinking when the bucket is below the depth zero.

BuzzerFreHi Frequency of the buzzer blinking when the bucket is above the depth zero.

Blade Controller Grade Controller Menu

MinVelLs Minimum allowed vertical speed to accept a laser beam acquisition.

MaxVelLs Maximum allowed vertical speed to accept a laser beam acquisition.

LasVeloL/LasCompL Values taken during the laser speed compensation: speed and correction during a slow speed rise.

LasVeloH/LasCompH Values taken during the laser speed compensation: speed and correction during a high speed rise.

GroundScale Relation between the real depth and display pixel to draw/move the bucket icon.

Filter ASA Filter applied to the depth value on the display (higher value means stable reading but delayed visualization of the real value).

Filter VEL Filter applied to the laser speed calculated and used to draw the speed bar during a laser acquisition (higher value means stable reading but delayed visualization of the real value).

SerialProt. Enables the send of the message trough the serial line to communicate with an auxiliary device. This parameter is in common with the weighing system.

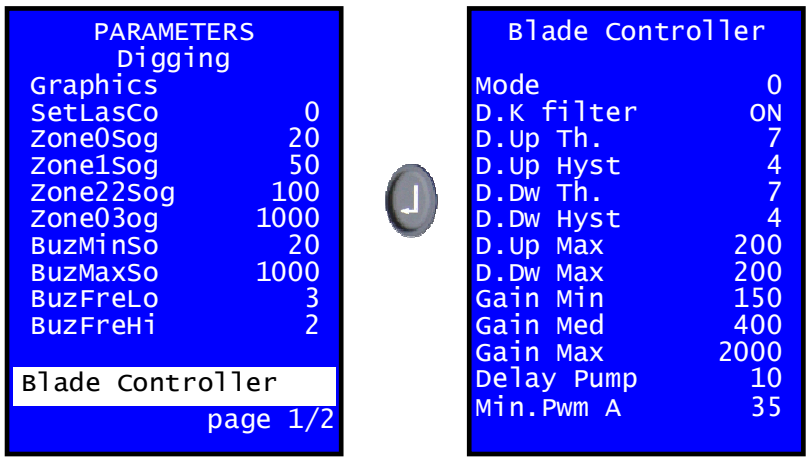
- 0: disabled
- ≥1: enabled (frequency of the message is 50 ms multiplied the set number).

OUTPUT Max Height and Max Dept functions

- 0 = functions disabled
- 1 = functions enabled
- 2 = Remote LEDs Bar enabled

Grade Controller Menu

This function needs a dedicated hardware.



Mode Grade Controller function

- 0 = Grade Controller disabled
- 1 = On/Off Grade Controller enabled
- 2 = Proportional Grade Controller enabled

7.2.2 Weighing Parameters

Rounding

Mathematical rounding of the load shown on the screen.

1.00 -> 1.00

1.01 -> 1.00

1.03 -> 1.05

1.06 -> 1.05

LenghtWeigh

Length (angle) of the weighing phase expressed in degrees.

Start Weigh Angle + Length Weigh = End Weigh Angle.

Printer

System printer: STP6 or STM295

ShowNames

Show the names of the items in use in the main display page.

SerialProt.

Enables the send of the message trough the serial line to communicate with an auxiliary device.

- 0 = disabled
- ≥1 = enabled (frequency of the message is 50 ms multiplied the set number).

This parameter is in common with the weighing system. Details in the dedicated manual.

Press.Tra.

It's possible to set the correct value of the pressure transducer used. It's used only to have a proper visualization in the diagnostic page.

B1.Range

Boom1 angle threshold used for the calibration (refer to Angles Calibration, B1). Range of pressure acquisition around a pressure table point to consider “correct” the stick position inside the pressure table.

B2.Range

Boom2 angle threshold used for the calibration (refer to Angles Calibration, B2). Range of pressure acquisition around a pressure table point to consider “correct” the stick position inside the pressure table.

B3.Range

Relative angle threshold between Boom1 and Boom2 in 3 booms machines to consider Boom1 and Boom2 aligned: weighing enabled.

BK.Range

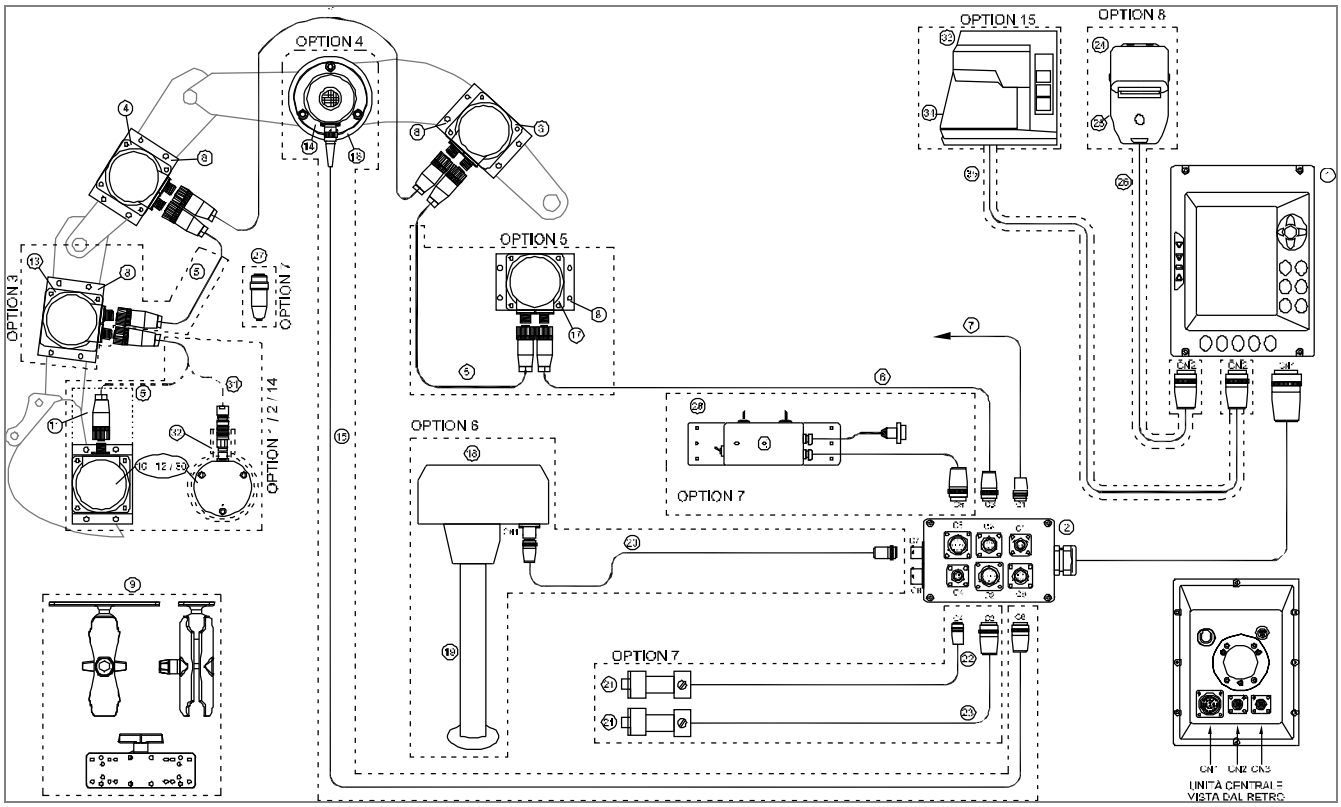
Angular range to consider the bucket in the correct position (same as calibration) and don’t have “adjust indication” on the screen.

- 0 = function disabled.

8

System Layout

8.1 VIEW-DEPTH.03B



STANDARD SYSTEM: 80.UV.TD003B.01			
REF	Q.TY	NAME	CODE
1	1	MAIN UNIT - VIEW GREY	43.31.3300A2.01
2	1	JUNCTION BOX - SD12	46.61.0304A0.01
3	1	ANGULAR SENSOR CAN-BUS AMU-CBP	45.10.2400A2.01
4	1	ANGULAR SENSOR CAN-BUS (2nd BOOM) AMU-CBP	45.10.2400A3.01
5	1	CABLE ANGULAR SENSOR L= 6mt	46.41.2301XX.01
6	1	CABLE JUNCTION BOX- ANGULAR SENSOR L= 6mt	46.41.2201XX.01
7	1	POWER SUPPLY CABLE L=5mt	46,41,1601XX.01
8	2	SENSOR SP MOUNTING KIT	46.11.0008XX.01
9	1	INSTALLATION KIT FOR DISPLAY (K RAM)	46.12.0201XX.01

OPTION 1: BUCKET Y : 80.UV.KD060A.01			
REF.	Q.TY	NAME	CODE
10	1	BUCKET ANGULAR SENSOR CAN-BUS	45.10.2800A1.01
5	1	CABLE ANGLE SENSOR L=6mt	46.41.2301XX.01
11	1	INSTALLATION KIT FOR BUCKET SENSOR	46.11.0012XX.01

OPTION 2: BUCKET XY : 80.UV.KD1100.01			
REF.	Q.TY	NAME	CODE
12	1	BUCKET ANGULAR SENSOR CAN-BUS	45.10.0212A0.01
5	1	CABLE ANGLE SENSOR L=6mt	46.41.2301XX.01
11	1	INSTALLATION KIT FOR BUCKET SENSOR	46.11.0012XX.01

OPTION 3: THIRD BOOM : 80.UV.KD080A.01			
REF.	Q.TY	NAME	CODE
13	1	ANGULAR SENSOR CAN-BUS THIRD BOOM	45.10.2400A4.01
8	1	SENSOR SP MOUNTING KIT	46.11.0008XX.01
5	1	CABLE ANGLE SENSOR L=6mt	46.41.2301XX.01

OPTION 4: LASER : 80.UV.KD1000.01			
REF.	Q.TY	NAME	CODE
14	1	LASER CATCHER	45.50.0003A0.01
15	1	CABLE THEEYE/SD12 L=12mt	46.41.2401XX.01
16	1	INSTALLATION KIT FOR LASER CATCHER	46.11.0007XX.01

OPTION 5 :CHASSIS SENSOR : 80.UV.KD0900.01			
REF.	Q.TY	NAME	CODE
17	1	CHASSIS SENSOR DUAL AXIS	45.10.0115A0.01
8	1	SENSOR SP MOUNTING KIT	46.11.0008XX.01
5	1	CABLE ANGLE SENSOR L=6mt	46.41.2301XX.01

OPTION 6 :DUAL SLOPE E SENSOR ROTATION: 80.VA.030010.01			
REF.	Q.TY	NAME	CODE
18	1	ROTATION SENSOR	45.70.0100A0.01
19	1	INSTALLATION KIT FOR ROTATION SENSOR	46.11.0005XX.01
20	1	CABLE FOR ROTATION SENSOR	46.41.1106XX.01

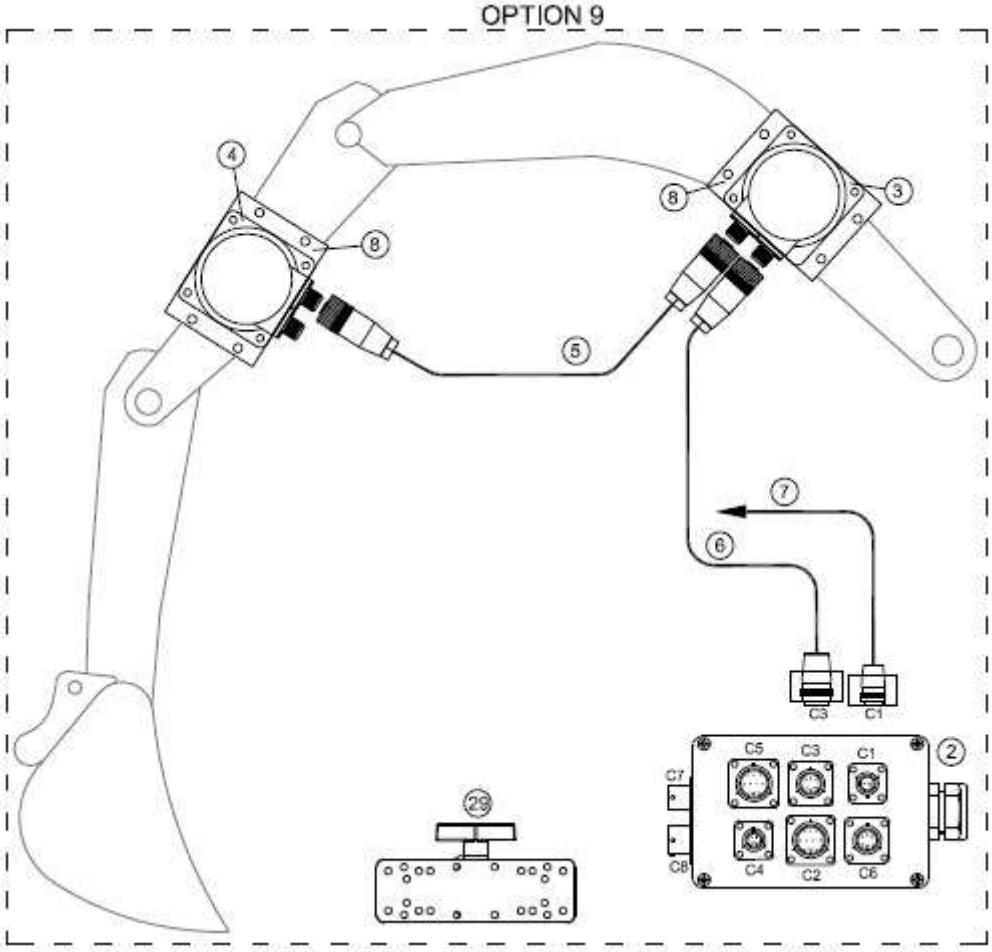
OPTION 7 : WEIGHING: 80.UV.KD0500.01			
REF.	Q.TY	NAME	CODE
21	2	PRESSURE TRANSDUCER	AV45.60.0118.01
22	1	CABLE PRESSURE TRANSDUCER LOW CHAMBER	46.41.1701XX.01
23	1	CABLE PRESSURE TRANSDUCER HIGH CHAMBER	46.41.0800XX.01
27	1	TERMINATION PLUG CAN-BUS	46.50.1601XX.01
28	1	UNIT COM REM FOR VIEW WEIGHING	46.50.0909XX.01

OPTION 8: THERMAL PRINTER : 80.UT.KT0500.01			
REF.	Q.TY	NAME	CODE
24	1	THERMAL PRINTER	46.50.1501XX.01
25	1	INSTALLATION KIT FOR PRINTER	46.12.0501XX.01
26	1	PRINTER CABLE	46.46.0003XX.01

OPTION 14: BUCKET XY-DS : 80.UV.KD0200.01			
REF.	Q.TY	NAME	CODE
30	1	ANGULAR SENSOR BUCKET CAN-BUS DEEP-SEA	45.10.0214A0.01
31	1	CABLE SENSOR L=6mt	46.41.2301XX.01
32	1	INSTALLATION KIT FOR BUCKET SENSOR	46.11.0012XX.01

OPTION 15: KIT TICKET PRINTER: 80.UT.KT0600.01			
REF.	Q.TY	NAME	CODE
33	1	TICKET PRINTER - STM295	46.50.3700A0.01
34	1	STM295 MOUNTING KIT	Y5 BIGSHPM7
35	1	STM295 CABLE LINK	46.40.F500XX.01

OPTION 9



OPTION 9: STANDAR SYSTEM 2nd MACHINE: 80.UV.KD070A.01			
REF.	Q.TY	NAME	CODE
2	1	JUNCTION BOX - SD12	46.61.0304A0.01
3	1	ANGULAR SENSOR CAN-BUS	45.10.2400A0.01
4	1	ANGULAR SENSOR CAN-BUS (2nd BOOM)	45.10.2400A0.01
5	1	CABLE ANGULAR SENSOR L= 6mt	46.41.2301XX.01
6	1	CABLE JUNCTION BOX- ANGULAR SENSOR L= 6mt	46.41.2201XX.01
7	1	POWER SUPPLY CABLE L=5mt	46.41.1601XX.01
8	2	SENSOR SP MOUNTING KIT	46.11.0008XX.01
29	1	RECTANGULAR KNOB	Y5 RAM-111B

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