

# 3B6 LOAD MOMENT INDICATOR (LMI) TELESCOPIC CRANES

## USER MANUAL



LTB1	Name	Code	Outrigger		Outrigger	Lib Angle	Lib Length	Boom										
			300	2.5					6.3	0								
CT1 1' BOOM ON OUTRIGGERS																		
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	Length		9.4	14.4	19.5	24.7	29.9	30.4										
2	I		0	24	48	73	93	100										
3	II		0	24	48	73	93	100										
4	III		0	24	48	73	93	100										
5	IV																	
6																		
7																		
8	Amx	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
9	Armin	32	0	4.3	2	2	0	1.05	0	0.5	0	18	0.8	0	0	0	0	0
10			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	3	62.4	32	71.9	20													
12	3.5	58.4	27.45	69.8	20.35	75.9	18											
13	4	54.1	24.4	67.4	20.75	74.5	18.45	76	14									
14	4.5	49.5	21.8	65.2	21.2	73.1	18.7	75.2	14.5									
15	5	45	19.4	62.8	19.3	71.7	17.3	74.6	14.3									
16	6	33.4	15.5	58	14.75	68.6	13.45	72.9	12.35									
17	7	19.1	11.5	53	11.7	65.2	10.9	71.2	10.1	77.2	10	78.2	9					
18	8			47.7	9.4	61.7	9.05	69.2	8.5	73.2	8.05	74.5	7.9					
19	9			41.8	7.85	57.8	7.7	67.9	7.25	71.2	6.9	72.5	6.8					
20	10			35	6.4	53.7	6.45	64.4	6.25	69	6	70.4	5.9					
21	11			24.7	5.4	49.4	5.4	61.8	5.4	66.8	5.25	68.2	5.15					
22	12			11	4.65	43	4.7	59	4.75	64.4	4.6	65.8	4.55					
23	13					40.4	4.05	55.8	4.1	62	4.1	63.4	4.05					
24	14					35.8	3.55	52.6	3.6	59.4	3.6	61	3.6					
25	15					30.6	3.05	48.9	3.1	57	3.1	59.5	3.1					
26	16					23.7	2.75	45	2.75	54.2	2.8	55.6	2.8					
27	17					12.9	2.35			40.8	2.4	51.4	2.4					
28	18							36.2	2.15	48.6	2.2	50.1	2.2					
29	19							31.4	1.95	45.8	1.95	47.2	1.95					
30	20							26.4	1.7	42.8	1.7	44.2	1.7					
31	21							22.6	1.5	40	1.5	43.3	1.5					
32	22									38	1.35	37.8	1.35					
33	23							12.4	1.35			31.2	1.2					
34	24											26	1.05					
35	25											19.2	0.9					
36	26											11	0.8					
37	27												0.5					
38	28																	
39	29																	
40																		

01/08/05 Up-Grade  
REV 4



Complies to the MACHINES DIRECTIVE Standards: EN60204-1, EN954, EN12077-2  
EMC according to the " Heavy Industrial Environment" category: EN50081-2, EN50082-2



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The LMI aim is to control that the machine doesn't exceed working condition limits, making the Operator aware and acting through alarms and shut-down of dangerous movements.

## LOAD MONITORING INDICATOR (LMI) FUNCTIONAL DESCRIPTION

### Working condition measurements



**PRESSURE TRANSDUCERS**  
(Lifted load)



**LENGTH AND ANGLE SENSOR**  
(Boom Geometric data)

**AUTOMATIC SELECTIONS**  
from micro-switches:

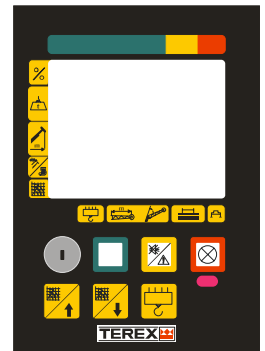
- Turret rotation
- Anti two block

### Load Tables storage, comparing and processing

LTB1	Name	Code	Radius	Counter	Bo Angle	Bo Length	Zone
1	LTB1 - BOOM ON OUTROGERS	300	2.0	4.3	28.0	30.4	0
2	Length	9.4	14.4	19.5	24.7	29.9	35.4
3	0	0	24	48	73	93	100
4	0	0	24	48	73	93	100
5	Amix	79	32	79	19	79	14
6	0	0	0	0	1.05	2	0.5
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	3.5	58.4	27.45	69.8	20.35	75.9	19
12	4	56.1	24.4	67.4	20.75	74.5	18.45
13	4.5	49.5	21.8	65.2	21.2	73.1	18.7
14	5	45	19.4	62.8	19.3	71.7	17.5
15	6	33.4	15.5	58	14.75	66.6	13.45
16	7	19.1	11.5	53	11.7	62.2	10.9
17	8	0	0	49	8.7	59	8.05
18	9	0	0	41.8	7.65	57.8	7.7
19	10	0	0	35	6.4	53.7	6.45
20	11	0	0	24.7	5.4	49.4	5.4
21	12	0	0	11	4.65	43	4.7
22	13	0	0	0	0	40.4	4.05
23	14	0	0	0	0	35.6	3.55
24	15	0	0	0	0	30.8	3.05
25	16	0	0	0	0	23.7	2.35
26	17	0	0	0	0	12.9	2.05
27	18	0	0	0	0	0	0
28	19	0	0	0	0	36.2	2.15
29	20	0	0	0	0	31.4	1.95
30	21	0	0	0	0	26.4	1.7
31	22	0	0	0	0	22.8	1.5
32	23	0	0	0	0	12.4	1.35
33	24	0	0	0	0	0	0
34	25	0	0	0	0	0	0
35	26	0	0	0	0	0	0
36	27	0	0	0	0	0	0
37	28	0	0	0	0	0	0
38	29	0	0	0	0	0	0
39	30	0	0	0	0	0	0
40	31	0	0	0	0	0	0

### Data display and setting

#### CONTROL PANEL



#### READINGS :

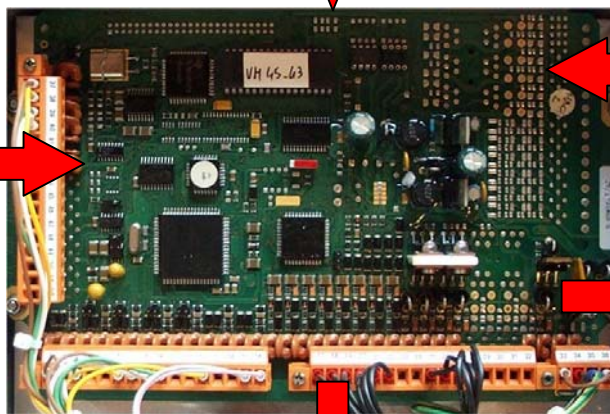
- % Tilting
- Lifted load
- Maximum load
- Working radius (outreach)
- Boom length
- Boom angle
- Operating mode
- Attachment used
- Diagnostic

#### ALARMS:

Green/Amber/Red lights

#### MANUAL SELECTIONS:

- Main Boom
- Jib
- Counter Weight
- Part of Lines
- Tyres

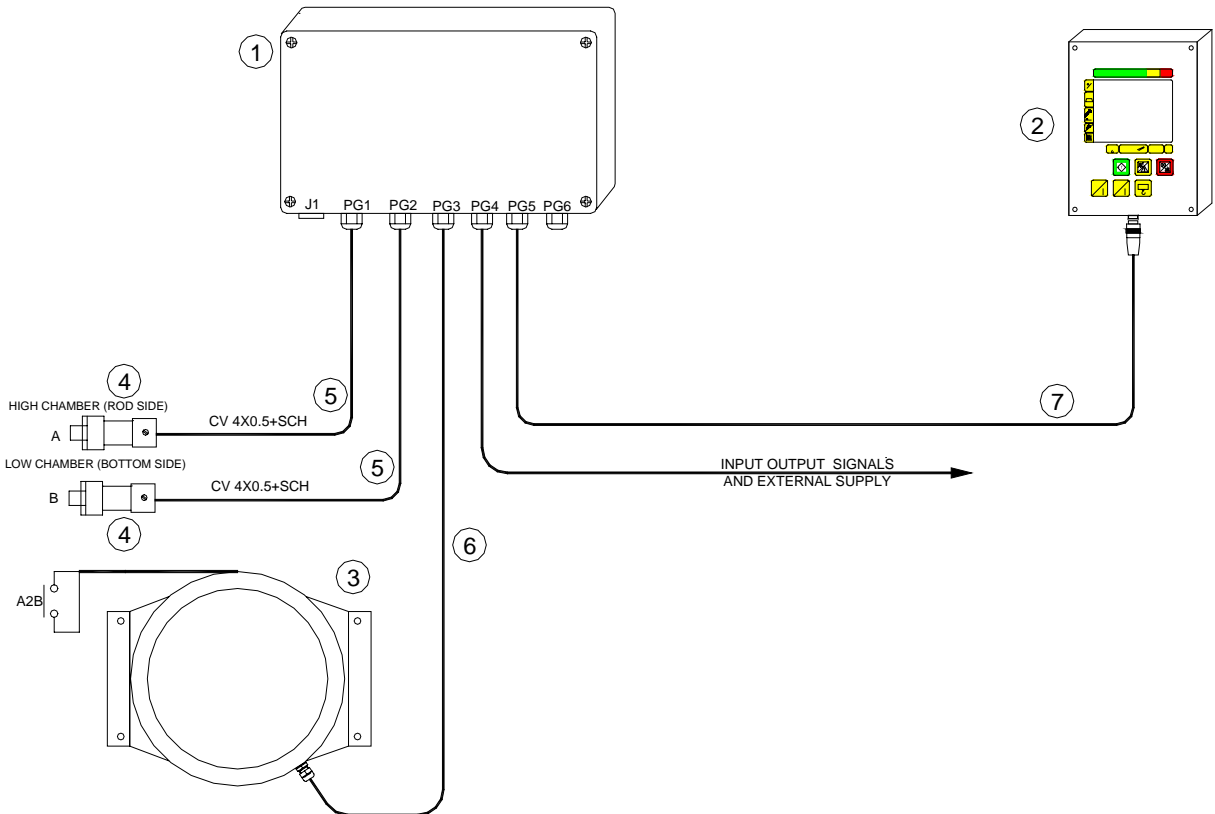


#### Automatic functions

External alarm and automatic shut-down

It's a system including sensors able to detect lifted load, boom position, a main unit and a control panel situated inside at the cabin.

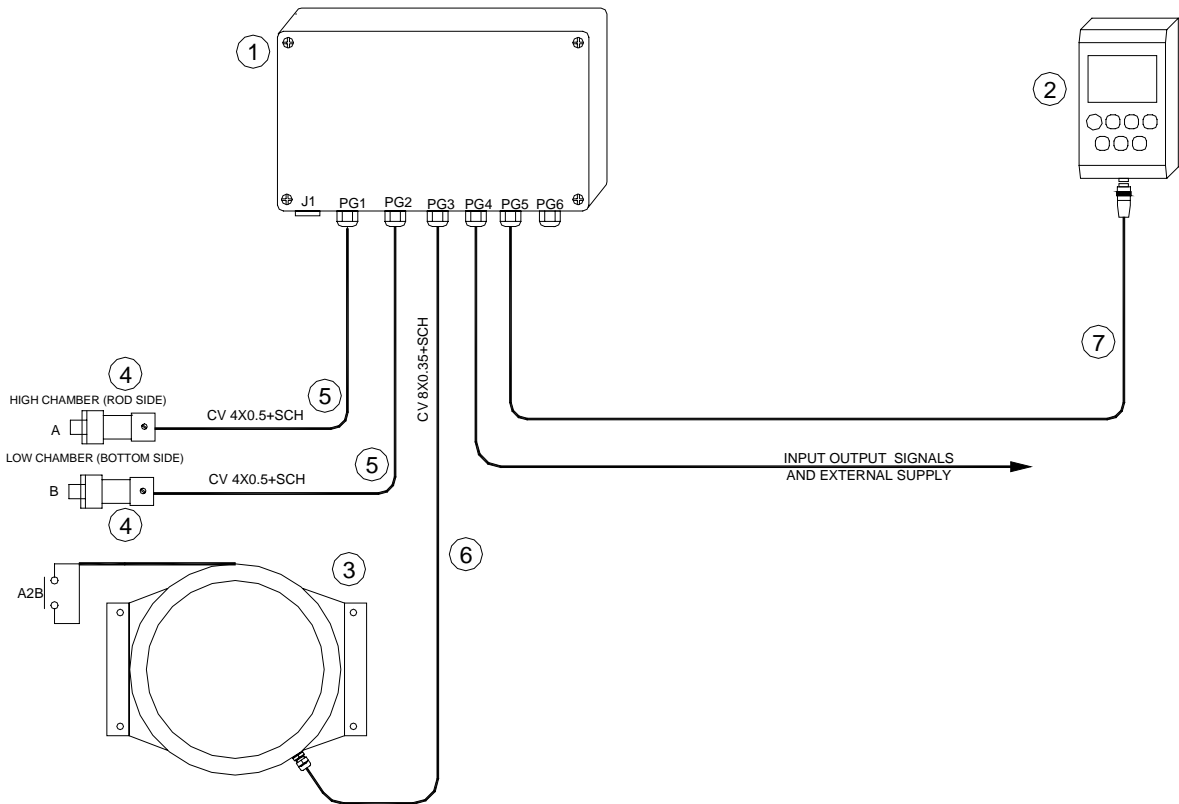
## SYSTEM LAY-OUT MEGAMAC.106 AND CONNECTIONS



Ref.	Description	Code
1	Main unit	U2MIC-X/XX
2	Control panel	CMC1-XXX/XX
3	Cable reel	AC MCP214A/3P
4	Pressure transducer	Y11 4745-350
5	Cable	CV 4x0.5+SCH
6	Cable	CV 8x0.35+SCH
7	Cable	CV ATG12/XX

It's a system including sensors able to detect lifted load, boom position, a main unit and a control panel situated inside at the cabin.

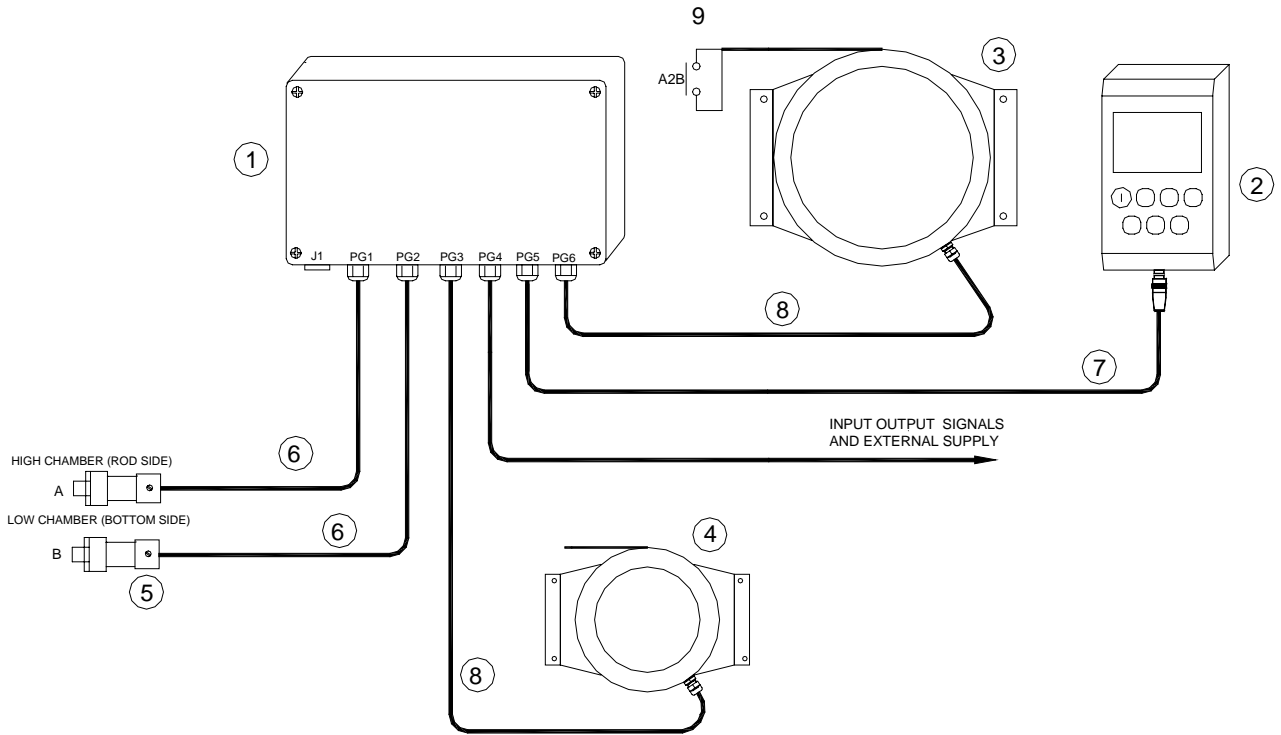
## SYSTEM LAY-OUT MEGAMAC.HC118 AND CONNECTIONS



Ref.	Description	Code
1	Main unit	U2MIC-X/XX
2	Control panel	CMC100-XX/XX
3	Cable reel	AC MCP214A/3P
4	Pressure transducer	Y11 4745-350
5	Cable	CV 4x0.5+SCH
6	Cable	CV 8x0.35+SCH
7	Cable	CV ATG12/XX

It's a system including sensors able to detect lifted load, boom position, a main unit and a control panel situated inside at the cabin.

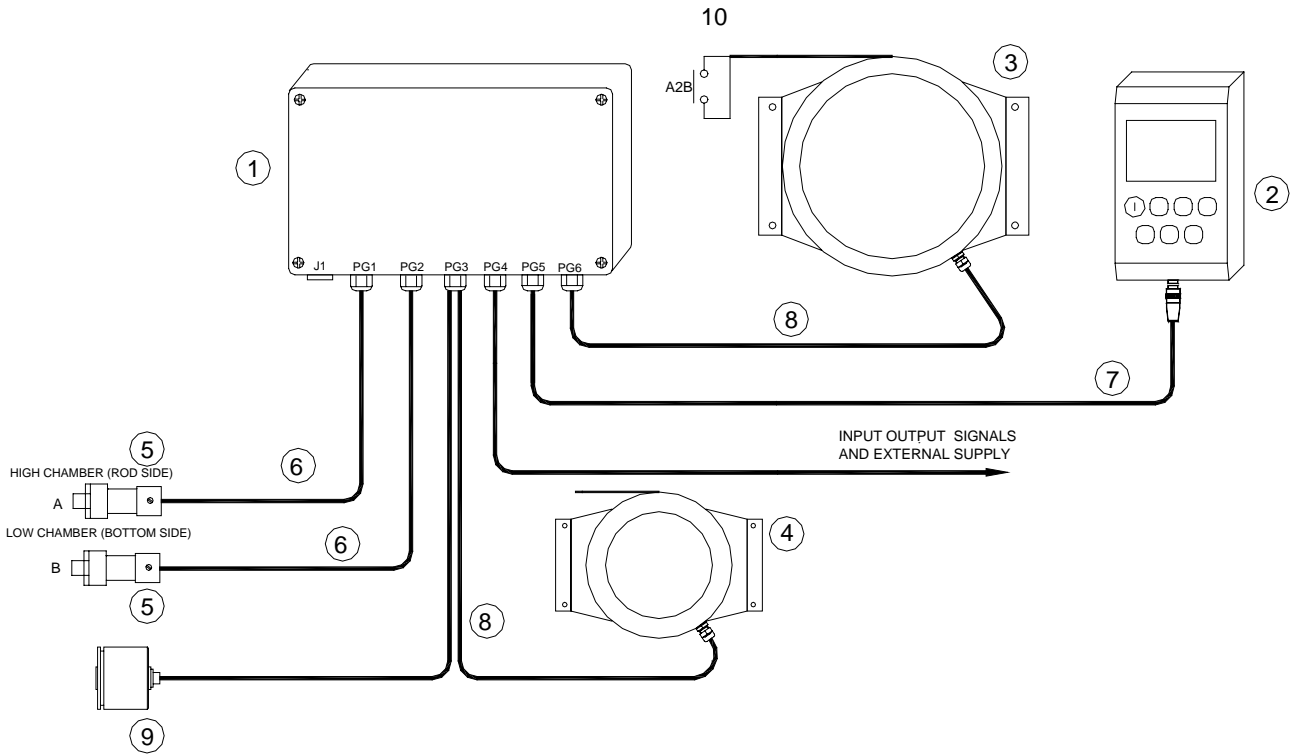
## SYSTEM LAY-OUT MEGAMAC.HC212 AND CONNECTIONS



Ref.	Description	Code
1	Main unit	U2MIC-X/XX
2	Control panel	CMC100-XX/XX
3	Cable reel	ACT11AS100/XX
4	Cable reel	AC MCP214A/3P
5	Pressure transducer	Y11 4745-350
6	Cable	CV 4x0.5+SCH
7	Cable	CV ATG12/XX
8	Cable	CV 8x0.35+SCH
9	A-2-B Switch	A2B N2

It's a system including sensors able to detect lifted load, boom position, a main unit and a control panel situated inside at the cabin.

## SYSTEM LAY-OUT MEGAMAC.HC220 AND CONNECTIONS



Ref.	Description	Code
1	Main unit	U2MIC-X/XX
2	Control panel	CMC100-XX/XX
3	Cable reel	AC MCP214A/3P
4	Cable reel	ACT10AE100/XX
5	Pressure transducer	Y11 4745-350
6	Cable	CV 4x0.5+SCH
7	Cable	CV ATG12/XX
8	Cable	CV 8x0.35+SCH
9	Encoder CANBUS	Y11 BMMH42S1N
10	A-2-B Switch	A2B N2

*The sensors are positioned on the boom and cylinders in order to detect data when working, while the main unit and the control panel are located inside the cabin.*

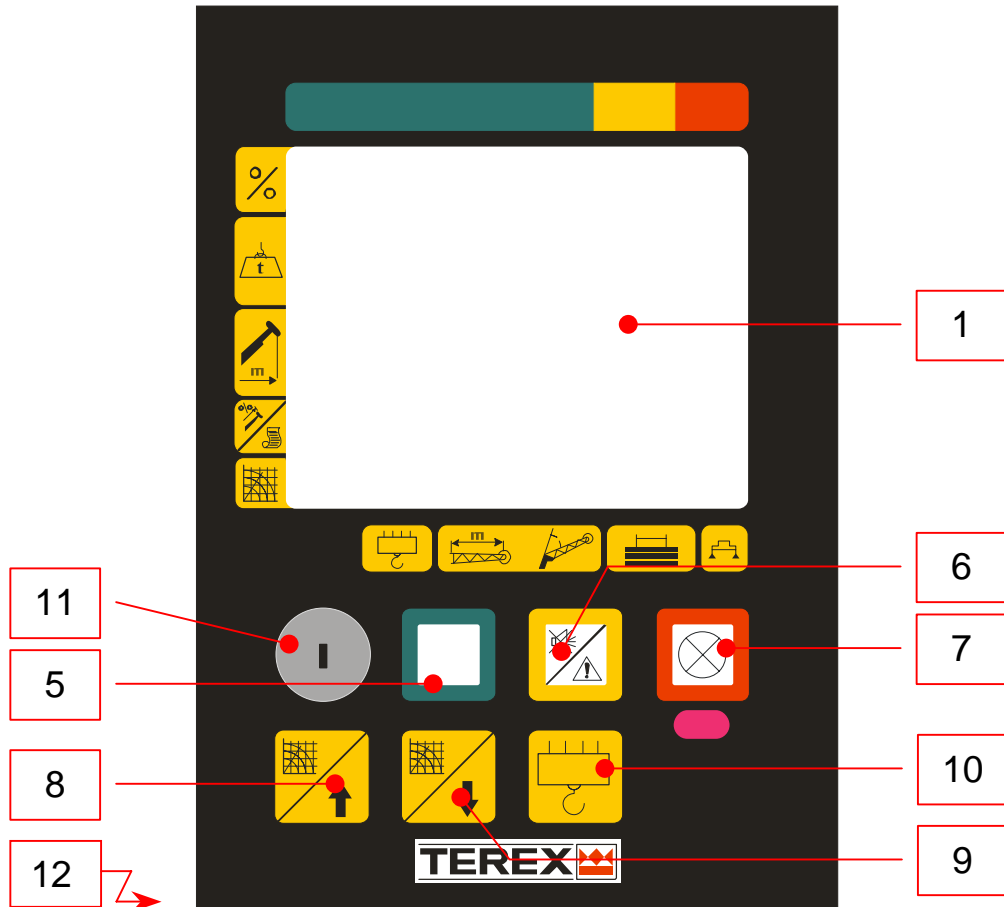
## COMPONENTS LOCATION ON THE MACHINE





It gives to the operator all information in order to work in safe conditions and allows proper setting .

## CONTROL PANEL DESCRIPTION

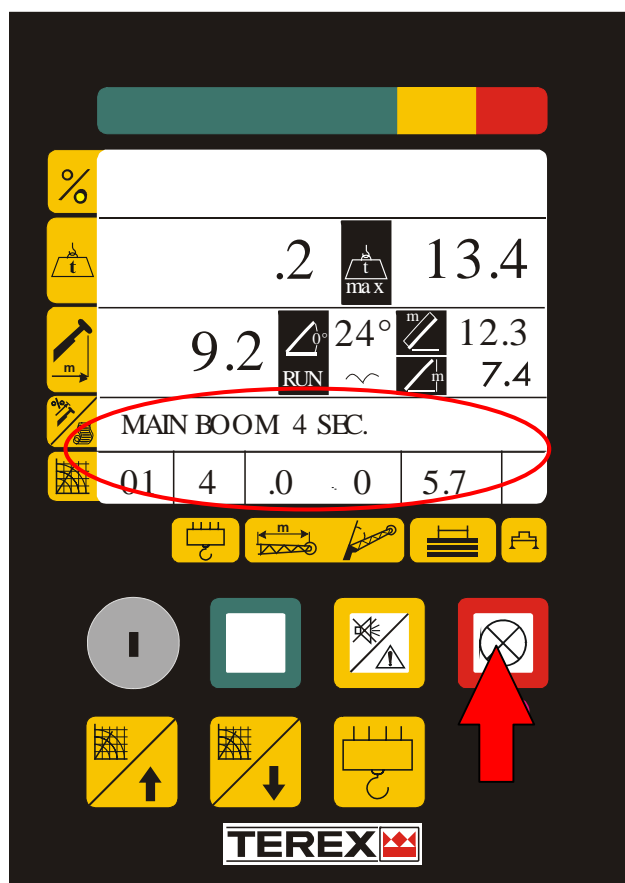


- 1 Working data display;
- 5 GREEN Button/lamp : if pressed, it allows the operator to scroll the pages  
lit = safety
- 6 AMBER Button/lamp :The lamp lit indicates that the load has reached the pre-alarm condition. Pressing the button, the buzzer will stop.
- 7 RED Button/lamp :The lamp lit indicates that the load has reached the maximum load allowed and the shut off has been performed;  
The flashing light indicates that the machine is in shut down procedures and the by pass key is activated.  
The button can also used to confirm a selection.
- 8 Operating mode selection key: press to increase operating mode value;
- 9 Operating mode selection key: press to decrease operating mode value;
- 10 Rope number ( tackle ) selection key: press as many times as necessary to obtain the required value in order to achieve a correct load reading;
- 11 Key to exclude the manoeuvre block  
**Note : The function of the unstable key with return spring consists on disable the automatic alarm function of the safety system.**  
**Only the authorised staff can use the key to by-pass the safety system. In case of improper use, the safety equipment and the crane manufacturer are relieved of any responsibility.**
- 12 Buzzer ( positioned on the rear panel ) :  
Intermittent beeping = prealarm condition;  
Continuous beeping = alarm condition ( shut off movements).

The system gets activated and automatically proceeds to its self test mode giving information to the Operator.

## SWITCHING THE MACHINE ON

Starting the system the display shows the last operating mode setted prior to the system switching off.



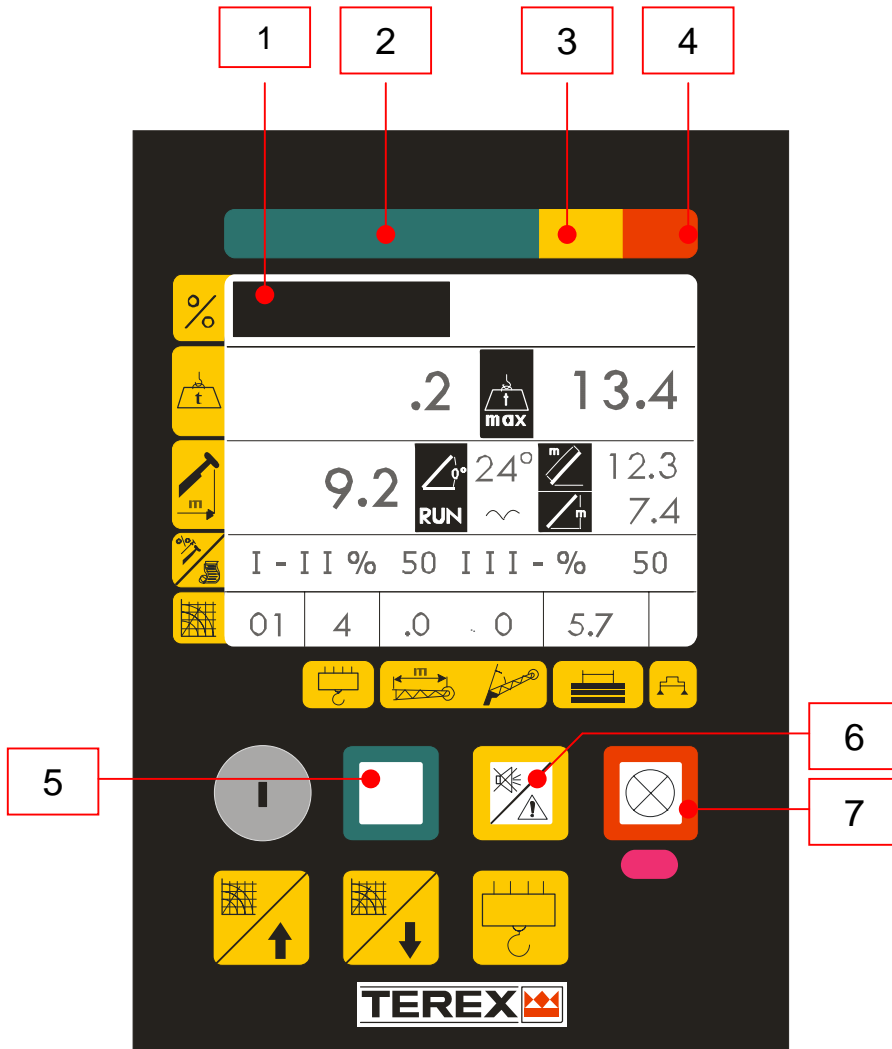
During this phase, the system performs the self test and automatically puts itself in shut off condition. If the machine operating mode is correct, please **confirm by pressing the red button**.

If the operator needs to change the operating mode, please refer to the instruction reported on page 16 "HOW TO SELECT THE OPERATING MODE"

Yes! It has been designed and its main scope is to check the machine working conditions, comparing them to the limits given by the load Tables previously memorised.

## PANEL MONITORING

- Lifting Conditions % and alarms

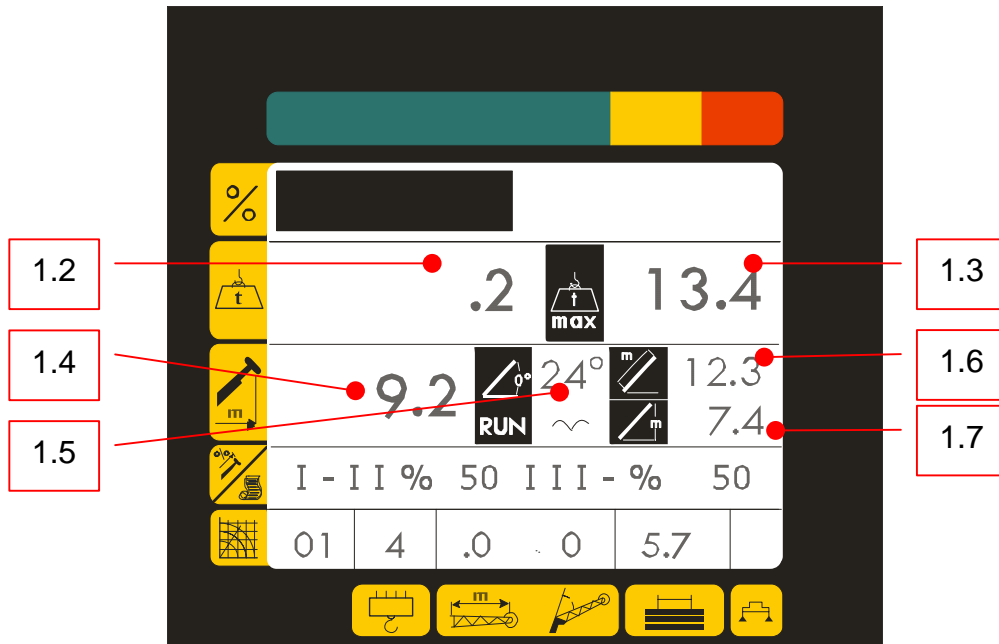


- 1) LCD bar showing the percentage of the load lifted at this moment.
- 2) Green reference : Safe Zone.
- 3) Amber reference : Alarm Zone.  
(Lifted load higher than 90% of maximum admitted load).
- 4) Red reference : Shut-off Zone  
(Lifted load higher than 100% of maximum admitted load).
- 5) Green light on : Safe Working
- 6) Amber light on : Alarm (Buzzer activated = intermittent)
- 7) Red light on : Dangerous movements shut off  
(Buzzer activated = continuous)

Yes! It shows on the display all data related to the lifted load and the boom position

## PANEL MONITORING

-Main Working Data Reading on the display



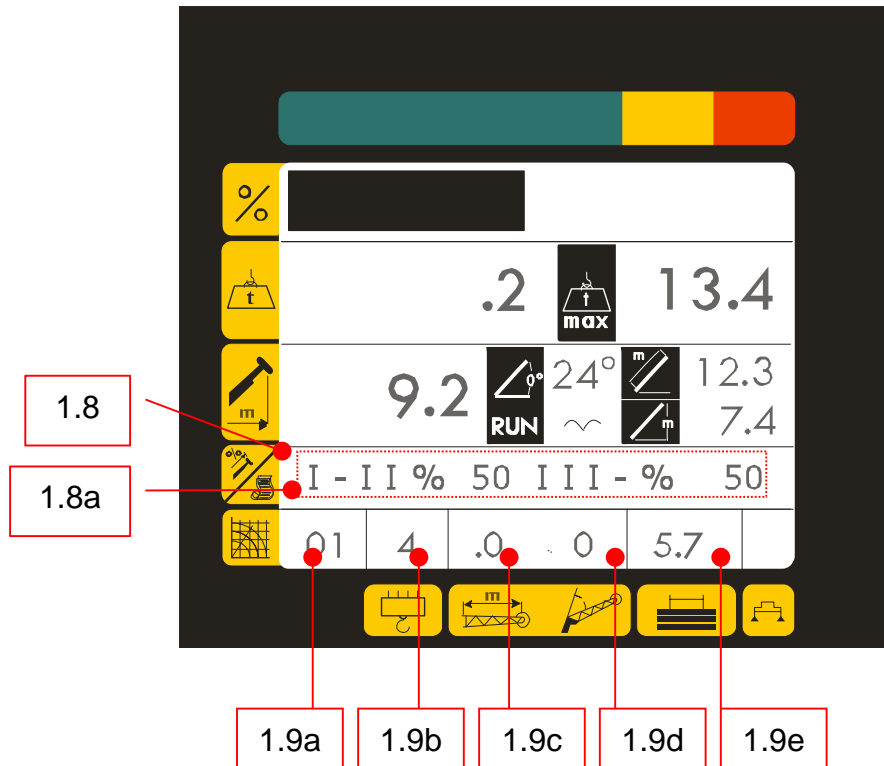
- 1.2) LIFTED LOAD  
Reading in “Tonnes” or “Lbs”, with a decimal point
- 1.3) MAXIMUM ADMITTED LOAD (According to the selected load table)  
Reading in “Tonnes” or “Lbs”, with a decimal point
- 1.4) WORKING RADIUS  
Reading in “Metres” or “Feet”, with a decimal point
- 1.5) MAIN BOOM ANGLE  
Reading in “Degrees”
- 1.6) BOOM LENGTH  
Reading in “Meters” or “Feet”, with a decimal point.
- 1.7) HEIGHT FROM GROUND  
Reading in “Meters” or “Feet”, with a decimal point.

**Note: Imperial and U.S. readings are optional and selectable by parameter.**

Yes! It shows on the display all data related to the lifted load and the boom position

## PANEL MONITORING

-Main Working Data Reading on the display



### 1.8) WRITTEN TEXT

The following information are displayed : the % of boom length or boom sections, the stowed jib, alarms and warning messages, operating mode during selection procedures. This written message appears after the operating mode has been selected. (Please refer to “SWITCHING THE MACHINE ON section on ” Pag.10 and “SELECTING THE OPERATING MODE ”section on Pag.16)

### 1.8a) BOOM SINGLE ELEMENT EXTENSION PERCENTAGE

(0% = element completely closed; 100% = element completely extended).

1.9a) OPERATING MODE SELECTED CODE: Corresponds to the load charts table which must be selected related to the crane configuration.

1.9b) PART OF LINES manually selectable.

1.9c) JIB LENGTH : Corresponds to the jib’s extension related to the table chart selected

1.9d) JIB OFFSET : Corresponds to the jib’s offset referred to the table chart selected

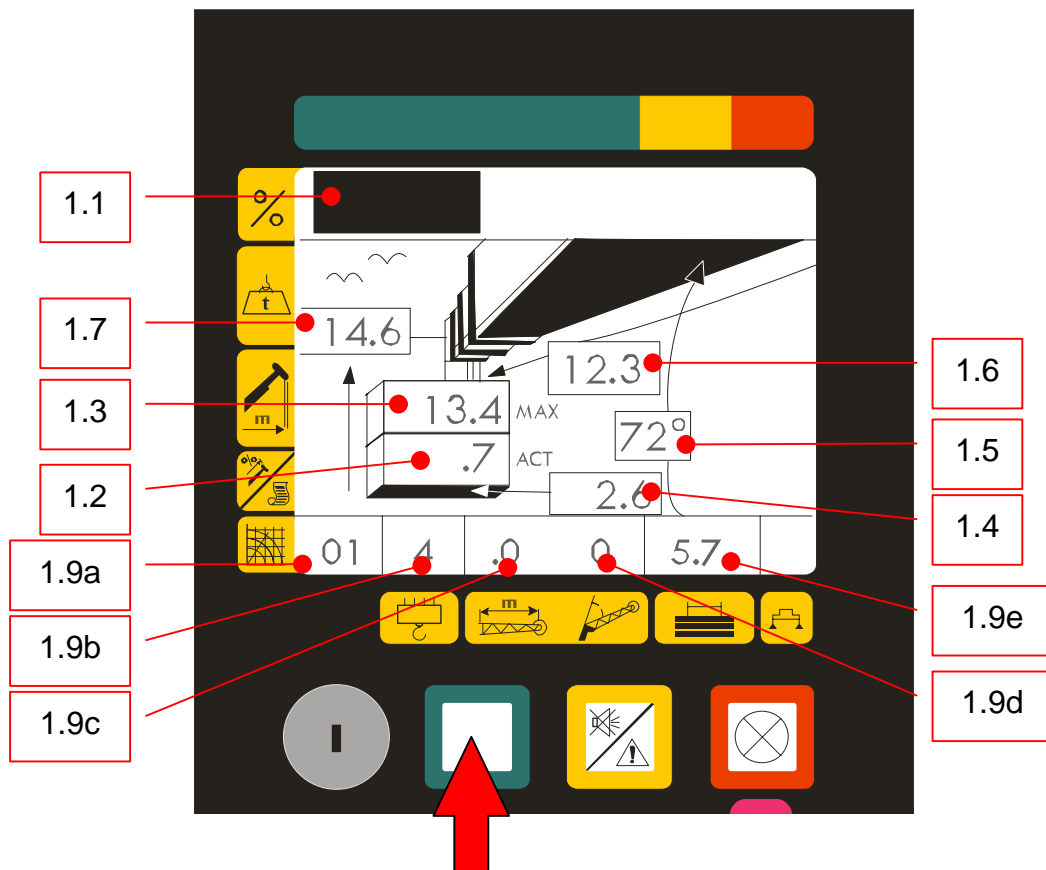
1.9e) COUNTERWEIGHT VALUE : Indicates the counterweight value referred to the table chart selected

Yes! It shows on the display all data related to the lifted load and the boom position through graphic.

## PANEL MONITORING

### - Main working data reading through graphics

By pressing the green button, it's possible to visualize the working data through graphics.



- 1.1) LCD bar showing the percentage of the load lifted at this moment.
- 1.2) LIFTED LOAD Reading in "Tonnes" or "Lbs", with a decimal point
- 1.3) MAXIMUM ADMITTED LOAD Reading in "Tonnes" or "Lbs", with a decimal point  
According to the selected load table
- 1.4) WORKING RADIUS Reading in "Metres" or "Feet", with a decimal point
- 1.5) MAIN BOOM ANGLE Reading in "Degrees"
- 1.6) BOOM LENGTH. Reading in "Metres" or "Feet", with a decimal point
- 1.7) HEIGHT FROM GROUND Reading in "Metres" or "Feet", with a decimal point
- 1.9a) OPERATING MODE SELECTED CODE :  
Corresponds to the load charts table which must be selected related to the crane configuration.
- 1.9b) PART OF LINES manually selectable.
- 1.9c) JIB LENGTH : Corresponds to the jib's extension related to the table chart selected
- 1.9d) JIB ANGLE : Corresponds to the jib's angle referred to the table chart selected
- 1.9e) COUNTERWEIGHT VALUE : Indicates the counterweight value referred to the table chart selected

Can the control panel give further useful information regarding the machine?

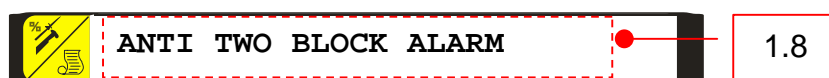
Yes, through the graphic display, showing complementary reading related to the machine.

## PANEL SCREENS

### -Complementary reading related to the machine functioning

The further information displayed on the panel (zone 1.8) are the following :

1)



This message appears when the Anti two block alarm is activated.

2)



This message appears when the lifted load has overtaken the maximum load allowed referring to the load charts table.

3)

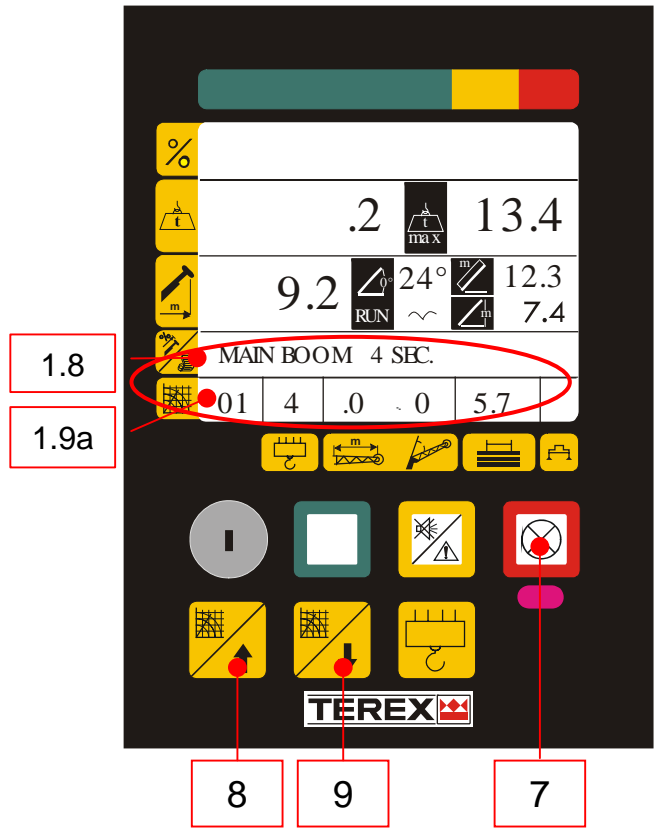


This message appears when the load lifted overtakes the maximum load allowed on the single rope.

Simply pushing two buttons on the control panel.

## SELECTING THE OPERATING MODE

- Operating mode set



To change the crane operating mode, please refer to the following instructions:

- Press the button 8 or 9, on the display appears the description (zone1.8) and the code (zone1-9a) of the operating mode used.
- Press once again the button 8 (to increase) or 9 (to decrease) until the display will show the description (Zone 1.8) and the code (Zone 1.9a) of the correct operating mode.

Please refer to the load charts table supplied by the manufacturer for the Operating Mode list.

- Press the red button (7) to confirm the selection

**NOTE :It's not possible to change an Operating Mode when a load is applied.**



Simply pushing two buttons on the control panel.

## ROPE NUMBER (TACKLE) SETTING UP

### LINES OF ROPE SETTING UP

It's necessary to set the line of ropes value every time that the winch rope's number changes.

#### WARNING :

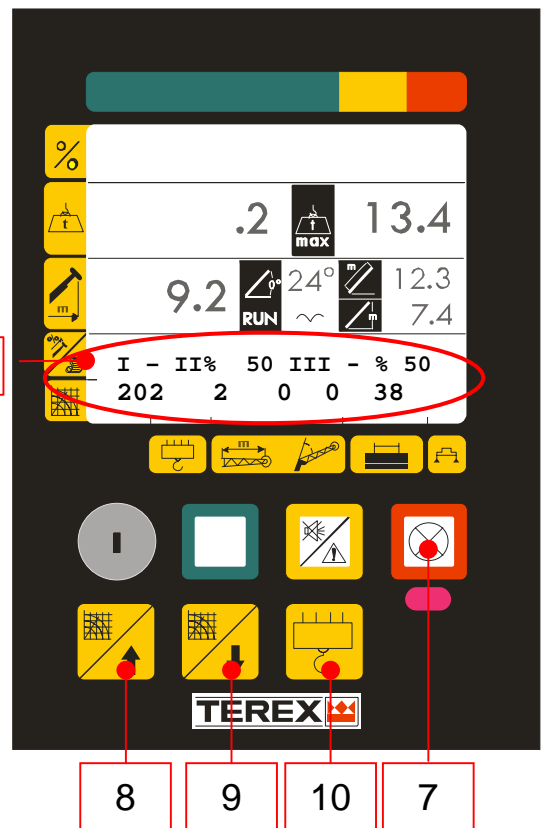
**A miscalculation of the lines of rope, could lead to danger situation**

1.8

To modify the line of rope, please proceed as follows:

- Press the button 10 until on the display (zone 1.8) the description of load table in use is shown.
- Press button 8 to increase or 9 to decrease the number of rope lines.
- **Press red button (7) to confirm** proper setting.

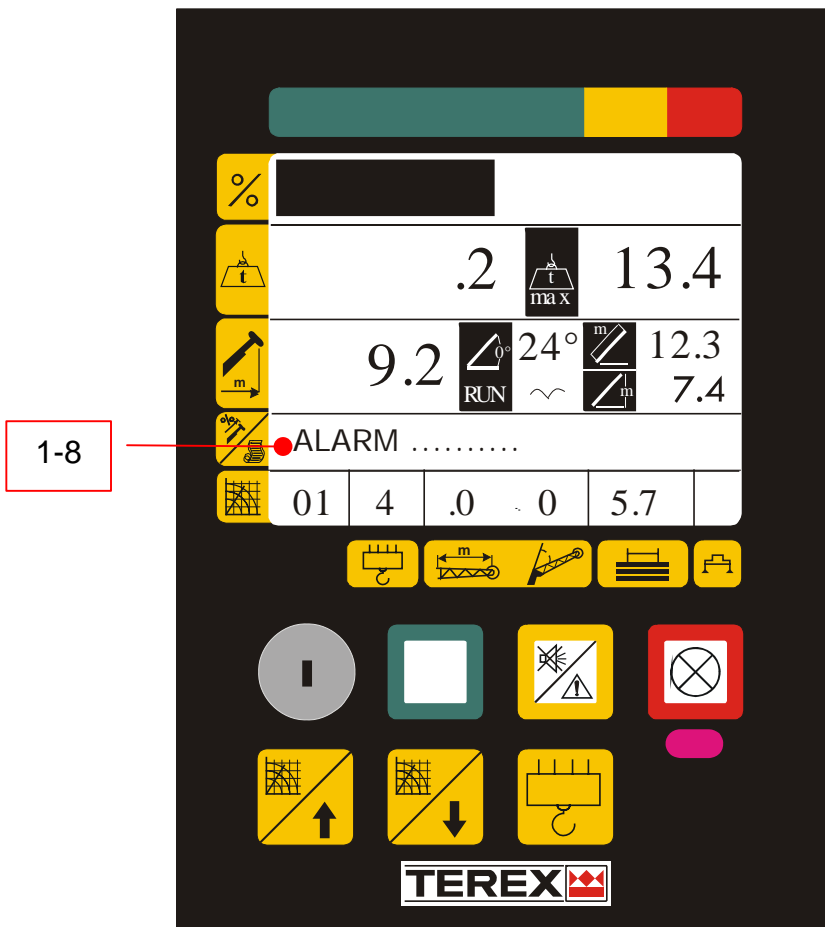
**NOTE :** If the load on the rope is higher than the single rope maximum admitted load, the system puts itself in alarm condition and a message will appear.



Of course. To be considered a reliable system, it must be able to perform self-check in order to detect internal or components faults.

## AUTO-DIAGNOSTIC

The LMI is equipped of an auto diagnostic system which is able to detect faulty pressure transducers, or boom angle/length sensors, broken cables or internal electronic faults. When an alarm occurs, the LMI puts itself in a safe condition stopping the dangerous movements and at the same time the display shows an alarm message ( zone 1.8). According to alarm code and message, it will be possible to identify the fault.



The codes are reported in the following list, that also includes some hints to solve the problem and get back to normal working conditions.

*Through codes automatically shown on the display.  
Here follows the list including some hints to solve them.*

## ALARM CODES AND ACTIONS TO TAKE

Alarm code	Description	What to do
56	Memory data not reliable	<ul style="list-style-type: none"> <li>• Switch the system off and on.</li> </ul> If the alarm persists, please, contact Technical Assistance to: <ul style="list-style-type: none"> <li>• Verify that E2prom chip is fitted properly in its socket.</li> <li>• Re-enter data and save them again</li> <li>• Replace the E2PROM chip and recalibrate the machine</li> </ul>
15	Angle sensor reading lower than the minimum value	<ul style="list-style-type: none"> <li>• Verify that the wiring and the connectors are not in short circuit.</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the angle sensor integrity.</li> </ul>
25	Angle sensor reading higher than the maximum value	<ul style="list-style-type: none"> <li>• Verify that the cable or the connector wiring is not open</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the angle sensor integrity.</li> </ul>
12	Pressure reading of the main cylinder (bottom side) lower than the minimum.	<ul style="list-style-type: none"> <li>• Verify that the cable or the connectors wiring are not in short circuit</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the pressure transducer integrity</li> </ul>
22	Pressure reading of the main cylinder (bottom side) higher than the maximum.	<ul style="list-style-type: none"> <li>• Verify that the cable or the connector wiring are not open</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the pressure transducer integrity</li> </ul>
13	Pressure reading of the main cylinder (rod side) lower than the minimum.	<ul style="list-style-type: none"> <li>• Verify that the wiring and the connectors are not in short circuit</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the pressure transducer integrity</li> </ul>
23	Pressure reading pressure of the main cylinder (rod side) higher than the maximum.	<ul style="list-style-type: none"> <li>• Verify that the cable or the connector wiring are not open</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the pressure transducer integrity</li> </ul>
11	Boom length sensor total reading lower than the minimum value	<ul style="list-style-type: none"> <li>• Verify that the wiring and the connectors are not in short circuit</li> </ul> If the alarm persists, please, contact Technical Assistance: <ul style="list-style-type: none"> <li>Verify the length transducer integrity</li> </ul>

*Through codes automatically shown on the display.  
Here follows the list including some hints to solve them.*

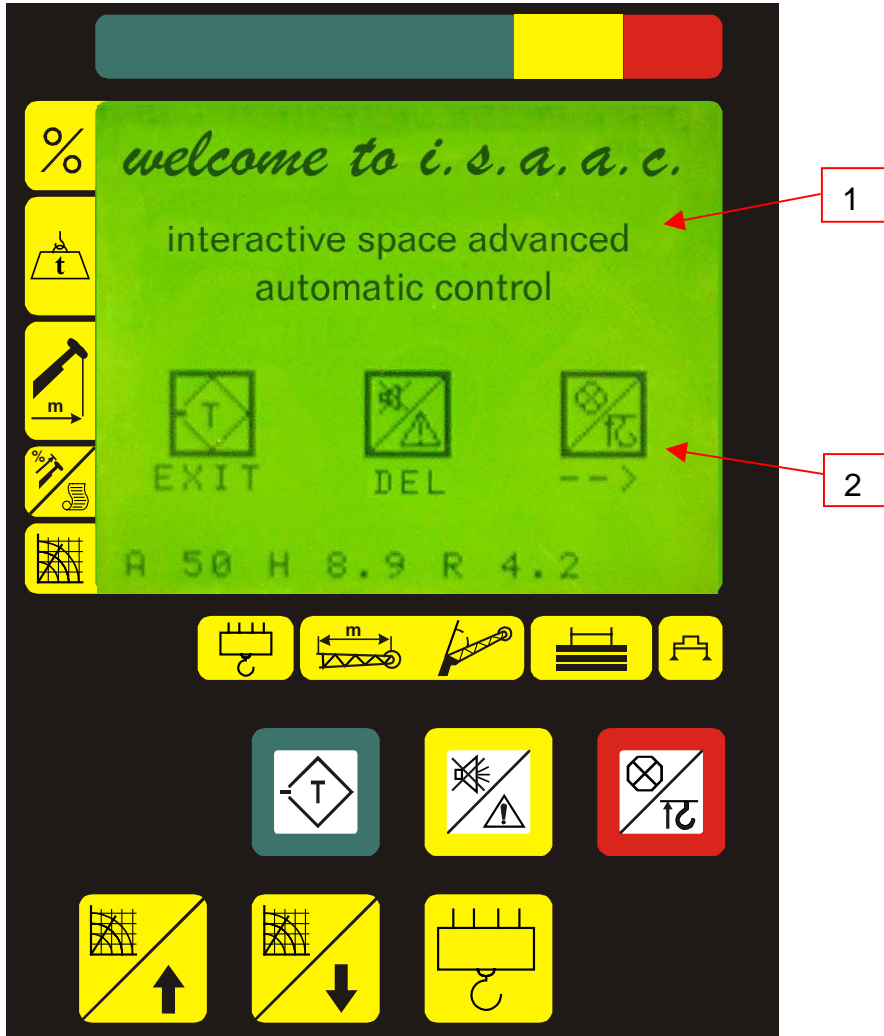
Alarm code	Description	What to do
21	Boom length sensor total reading higher than the maximum value	<ul style="list-style-type: none"> <li>• Verify that the cable or the connector wiring is not open</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the length transducer integrity</li> </ul>
E01 RADIUS MIN	The boom's angle has overtaken the maximum value	<ul style="list-style-type: none"> <li>• Lower the boom</li> </ul>
E02 RADIUS MAX	This message appears when the boom is positioned in a way that, referring to the load charts, there isn't any load charts table applicable	<ul style="list-style-type: none"> <li>•Lift or close the crane boom until a load chart table can be applied.</li> </ul>
18	Table charts not available.. The operating condition selection is missing	<ul style="list-style-type: none"> <li>•Please, select the operating mode in use and confirm it.</li> </ul>
20	Group Alarm.Configuration errore	<ul style="list-style-type: none"> <li>•Please, select the operating mode in use and confirm it.</li> </ul>
6	Boom length sensor 1 reading lower than the minimum value	<ul style="list-style-type: none"> <li>• Verify that the wiring and the connectors are not in short circuit</li> </ul> If the alarm persists, please, contact Technical Assistance: Verify the length transducer integrity
7	Boom length sensor 1 reading higher than the maximum value	<ul style="list-style-type: none"> <li>• Verify that the cable or the connector wiring is not open</li> </ul> If the alarm persists, please, contact Technical Assistance : <ul style="list-style-type: none"> <li>• Verify the length transducer integrity</li> </ul>

**NOTE: The code of the alarms can change in case of particular functions or client needs**

## Working Area Limiting Link: (option)

### i.s.a.a.c. (interactive space advanced automatic control)

MEGAMAC HC is equipped with Working area limitation software. To access “isaac” menu, press and release the green pushbutton button until the following page is shown.



Welcome to ISAAC. The 3B6 working area limiting system.

Isaac is a graphic interface, which helps the operator set restricted working area limits for the machine. Working area limits are set by means of a self learning procedure using text and graphic symbols.

In the upper part of the display, graphic information (1) will be indicated, in the lower part of the display, 3 icons represent the actual function of the 3 input buttons (2).

The pushbuttons are multi-function, depending on the page of the interactive menu.



to confirm and store the actual turret position.



erase previous stored values. This button also restores full machine operations.



access to next page within isaac



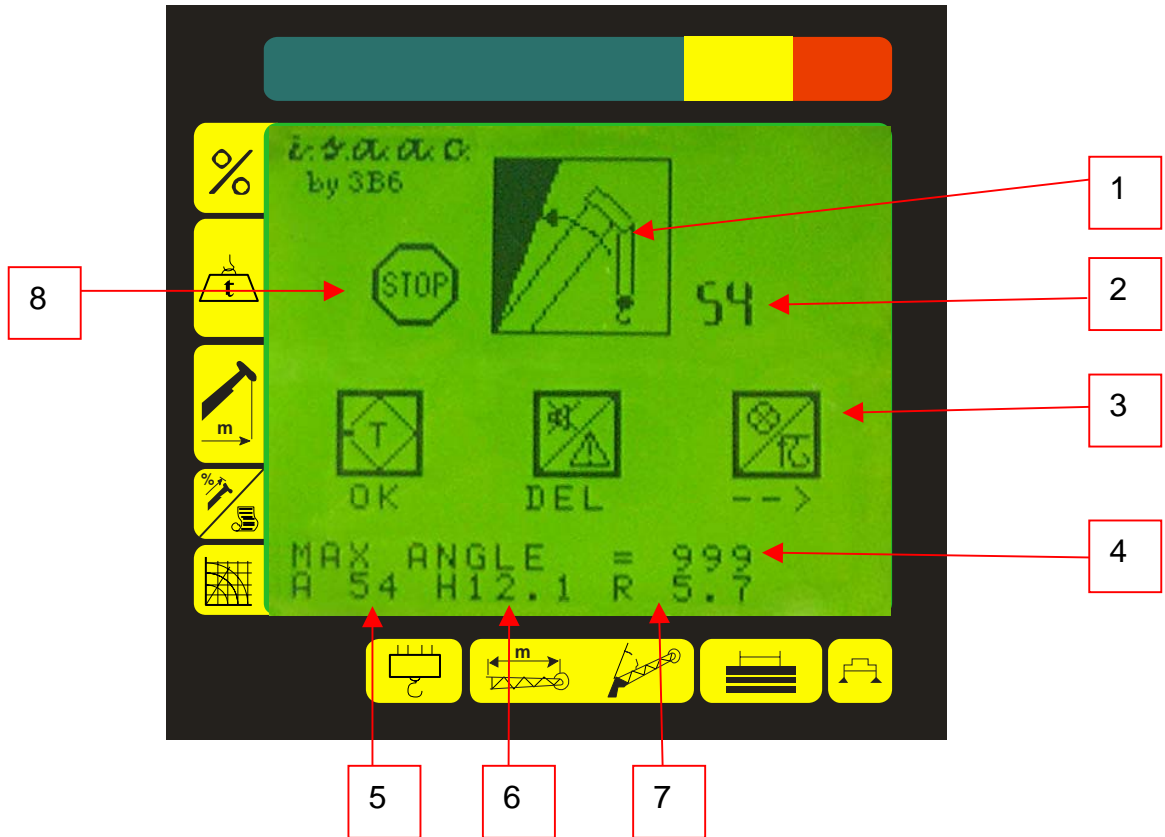
return to main system menu

## Working Area Limiting Link: (option)

*i.s.a.a.c.* (interactive space advanced automatic control)



MAX Angle Setting:

Press and release the red pushbutton  to access the following menu:



- 1) Graphic zone: the black area indicates the restricted working area (non-working area for the boom). Blinking arrow indicates the limited movement
- 2) Actual Boom angle (degrees)
- 3) Push button function
- 4) Text line: indicates the actual stored allowed angle. (999 means no limitation)
- 5) Actual Boom angle (degrees)
- 6) Boom height (meters, 1 decimal) (feet/tenths)
- 7) Radius (meters, 1 decimal) (feet/tenths)
- 8) Warning: it is activated when the boom reaches the maximum allowed angle. When the maximum angle is reached, the movement is automatically stopped and the red light is illuminated at the same time with the “STOP” symbol

### How to store max angle:

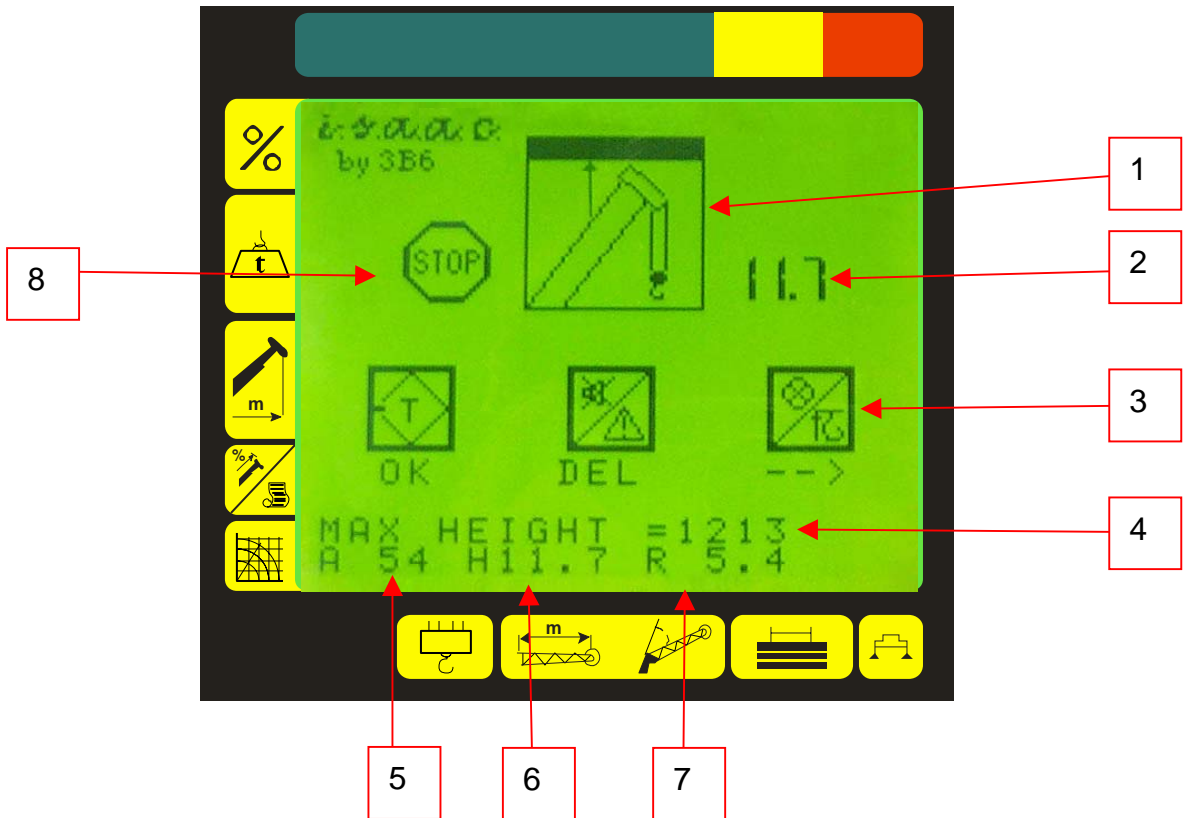
- Raise (or lower) the boom to the required maximum position.
- Press and release the green button .
- In the text line [4] you will see the blocking angle value in tenth of degrees
- To cancel the stored value, press and release the yellow pushbutton , the value in the line [4] will be set default to 999 (no angle limit).

## Working Area Limiting Link: (option)

*i.s.a.a.c. (interactive space advanced automatic control)*



MAX Height setting:

Press and release the red pushbutton  to access the following menu:



- 1) Graphic zone: the black area indicates the restricted working area (non-working area for the boom). Blinking arrow indicates the limited movement
- 2) Actual Boom height (meters, 1 decimal) (feet/tenths)
- 3) Push button function
- 4) Text line: indicates the actual stored allowed angle. (999 means no limitation)
- 5) Actual Boom height (degrees)
- 6) Height of the head of the boom (meters, 1 decimal) (feet/tenths)
- 7) Radius (meters, 1 decimal) (feet/tenths)
- 8) Warning: it is activated when the boom reaches the maximum allowed height. When the maximum height is reached, the movement is automatically stopped and the red light is illuminated at the same time with the "STOP" symbol


### How to store max height:

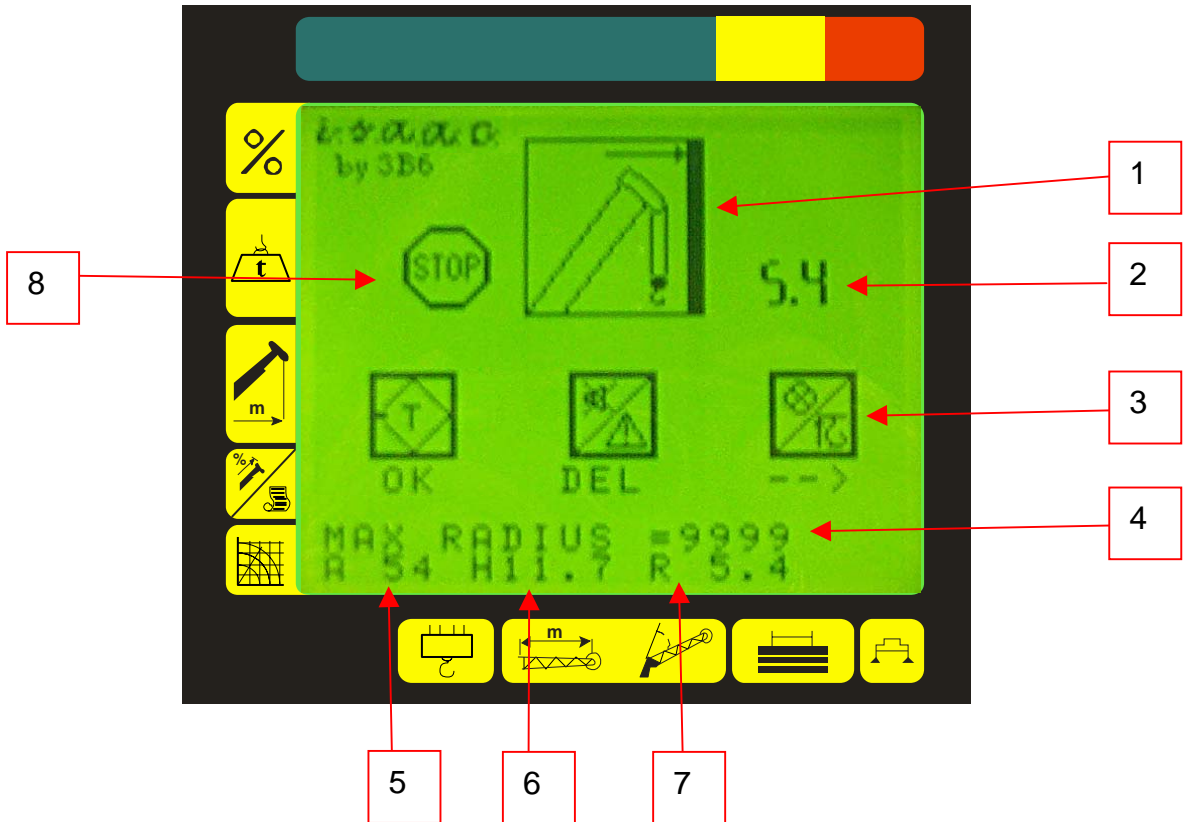
- Raise (or lower) the boom to the required maximum position.
- Press and release the green pushbutton .
- In the text line [4] you will see the blocking height value in meters plus one decimal.
- To cancel the stored value, press and release the yellow pushbutton  the value in the line [4] will be set to 9999 (no height limit).

## Working Area Limiting Link: (option)

*i.s.a.a.c. (interactive space advanced automatic control)*



MAX Radius setting:

Press and release the red pushbutton  to access the following menu:



- 1) Graphic zone: the black area indicates the restricted working area (non-working area for the boom). Blinking arrow indicates the limited movement
- 2) Actual radius (meters, 1 decimal.) (feet/tenths)
- 3) Push button function
- 4) Text line: it indicates the actual stored allowed radius. (999 means no limitation)
- 5) Actual radius (meters, 1 decimal) (feet/tenths)
- 6) Boom height (meters, 1 decimal) (feet/tenths)
- 7) Radius (meters, 1 decimal) (feet/tenths)
- 8) Warning: it is activated when the boom reaches the maximum allowed radius. When the maximum radius is reached, the movement is automatically stopped and the red light is illuminated at the same time with the "STOP" symbol

### How to store max angle:

- Raise or lower the boom to the required maximum position.
- Press and release the green pushbutton .
- In the text line [4] you will see the blocking radius value in meters and one decimal.
- To cancel the stored value, press and release the yellow pushbutton , the value in the line [4] will be set to 9999 (no radius limit).



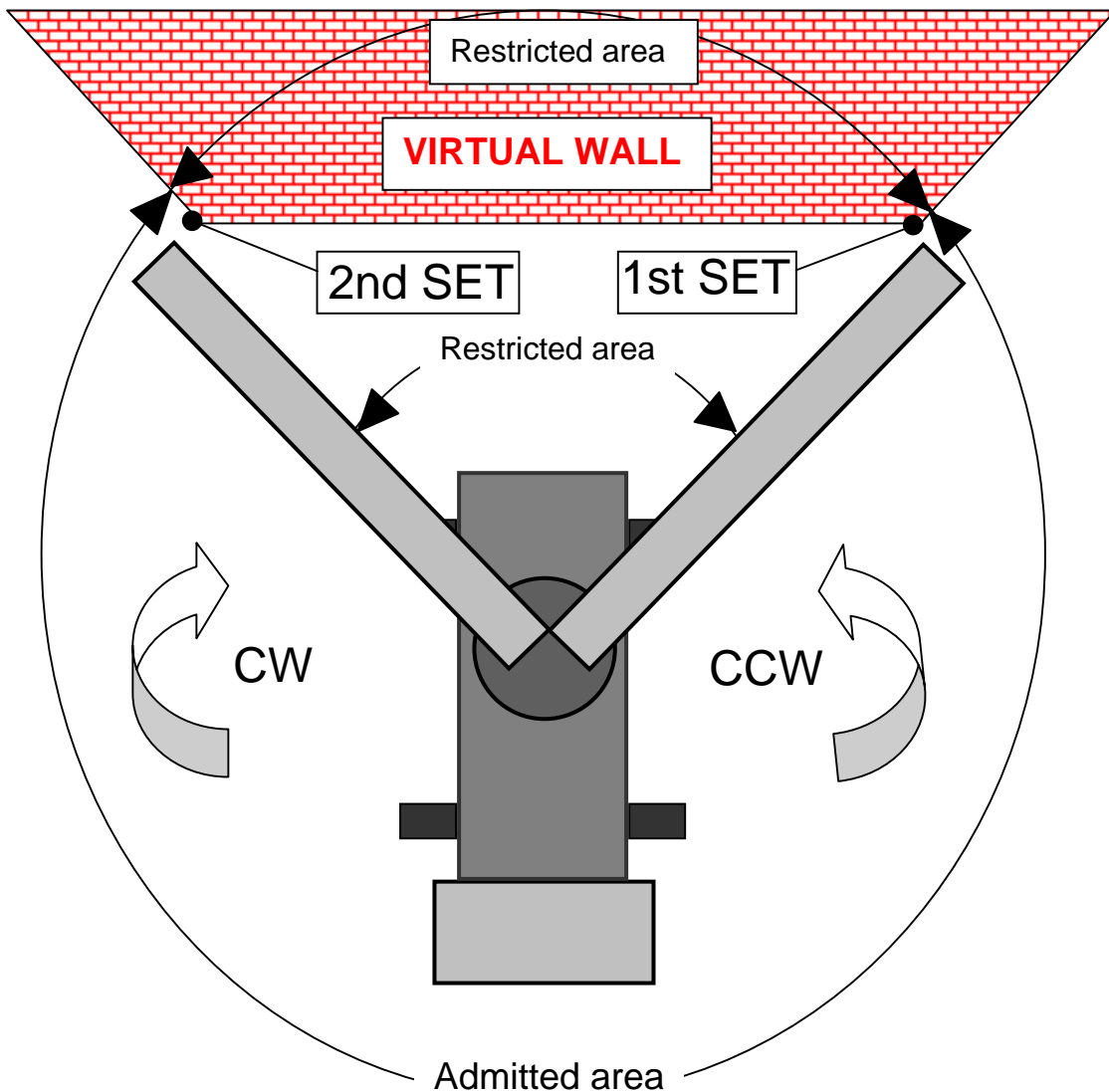
## Working Area Limiting Link: (option)

*i.s.a.a.c. (interactive space advanced automatic control)*

WALL limit setting.

MEGAMAC HC calculates working area limitation using “virtual wall” concept. It stops the movement according to a “virtual wall” delimited by 2 preset points

In order to enable “virtual wall” limitation, 2 input points are required by the self learning procedure: MEGAMAC will automatically limit lowering, lifting telescoping and rotating movements according to “virtual wall” operation.



### To set working area limits:

- 1) Select point number 1
- 2) Rotate the turret clockwise
- 3) Select point number 2

We have defined a “restricted” area, which will not allow the boom to move while the turret brake stops the movement.

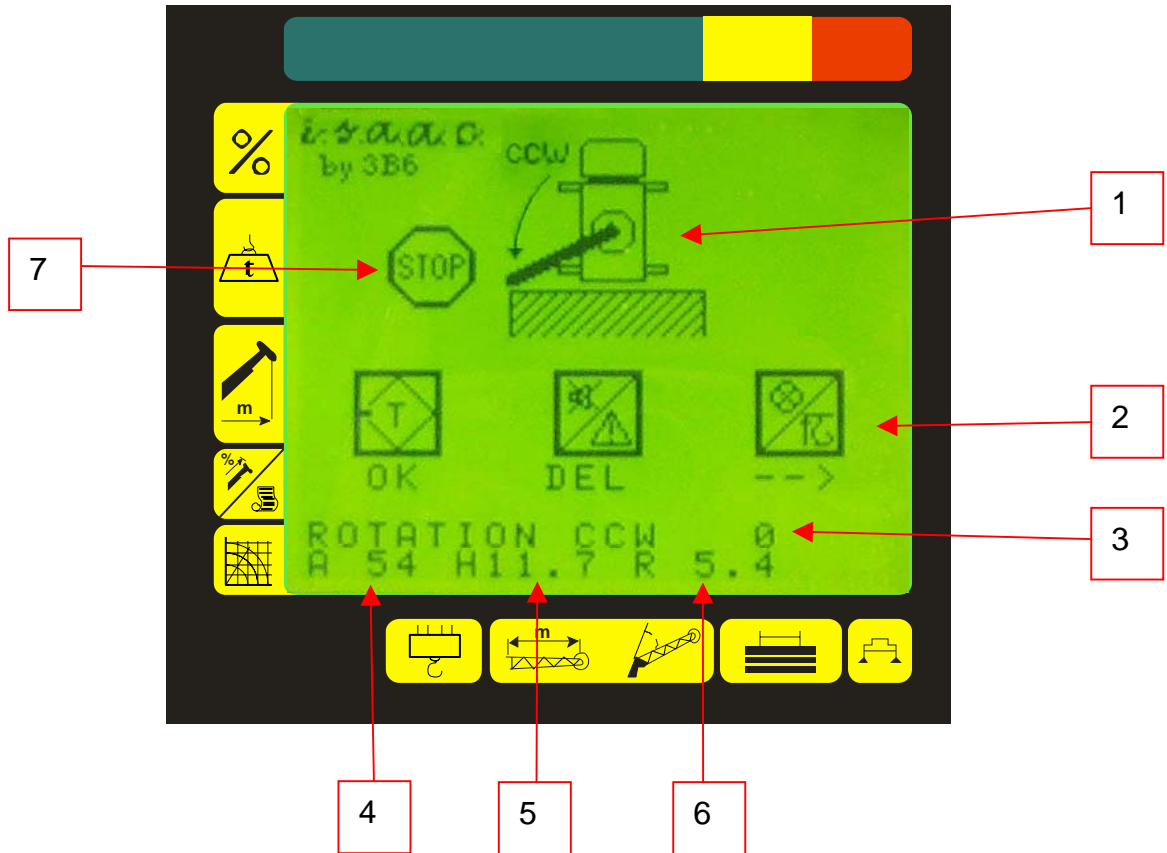
External area to the wall is allowed.

## Working Area Limiting Link: (option)

*i.s.a.a.c.* (interactive space advanced automatic control)



### SET POINT 1 (ONE)

Press and release the red pushbutton  to access to the following menu:  
This menu sets the max CCW point (point one) of the WALL.



- 1) Graphic zone: the black area indicates the restricted working area (non-working area for the boom). Blinking arrow indicates the limited movement
- 2) Push button functions
- 3) Text line: indicates the first angle of the area, normally "0".
- 4) Actual angle (degrees)
- 5) Boom height (meters, 1 decimal) (feet/tenths)
- 6) Radius (meters, 1 decimal) (feet/tenths)
- 7) **Warning: it is activated when the boom reaches the maximum allowed radius. When the maximum radius is reached, the movement is automatically stopped and the red light is illuminated at the same time with the "STOP" symbol**

### How to store point 1 (one):

- Rotate the turret in the counterclockwise direction and position the hook to the 1st point (radius set).
- Press and release the green pushbutton .
- In the text line (3) you will see 0, as departure point. This value is expressed in degrees.
- To cancel the stored value, press and release the yellow pushbutton .

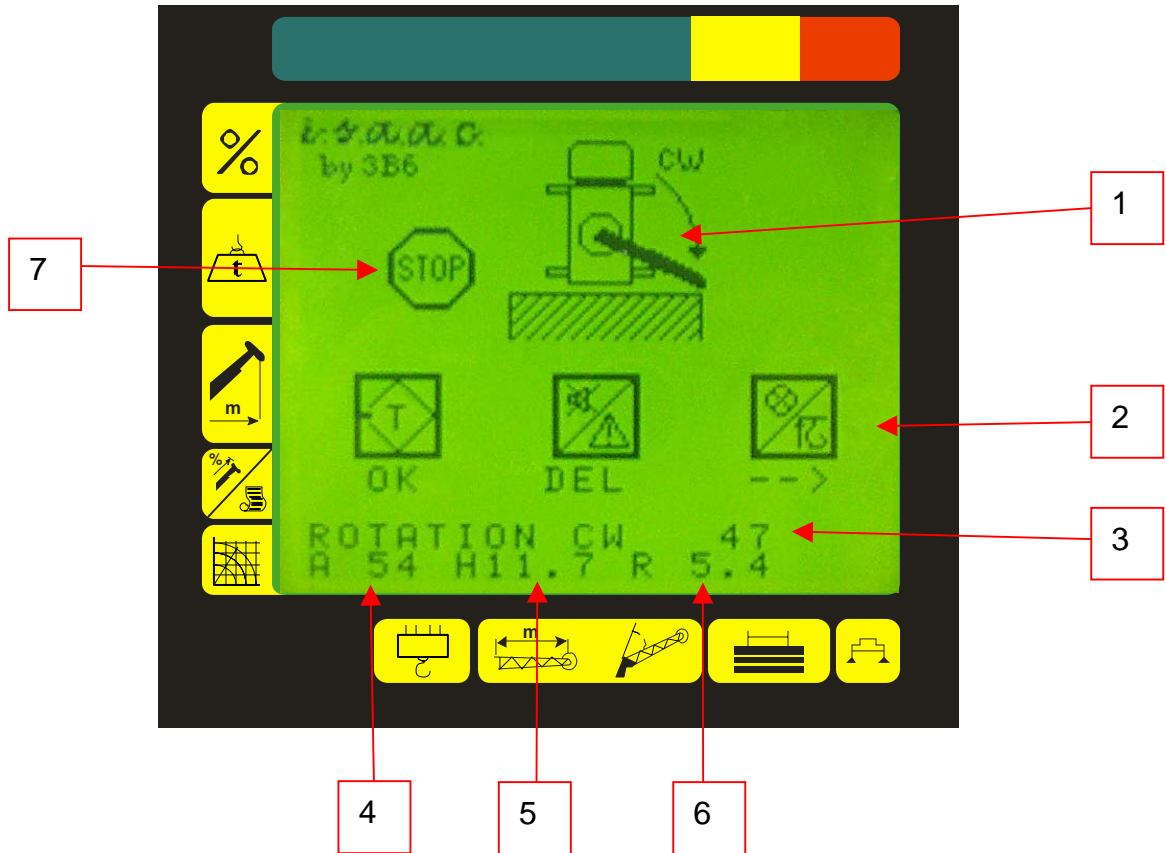
## Working Area Limiting Link: (option)

*i.s.a.a.c. (interactive space advanced automatic control)*




### SET POINT 2 (TWO)

Press and release the green pushbutton  to access to the following menu:

This menu sets the max CW point (point two) of the WALL.



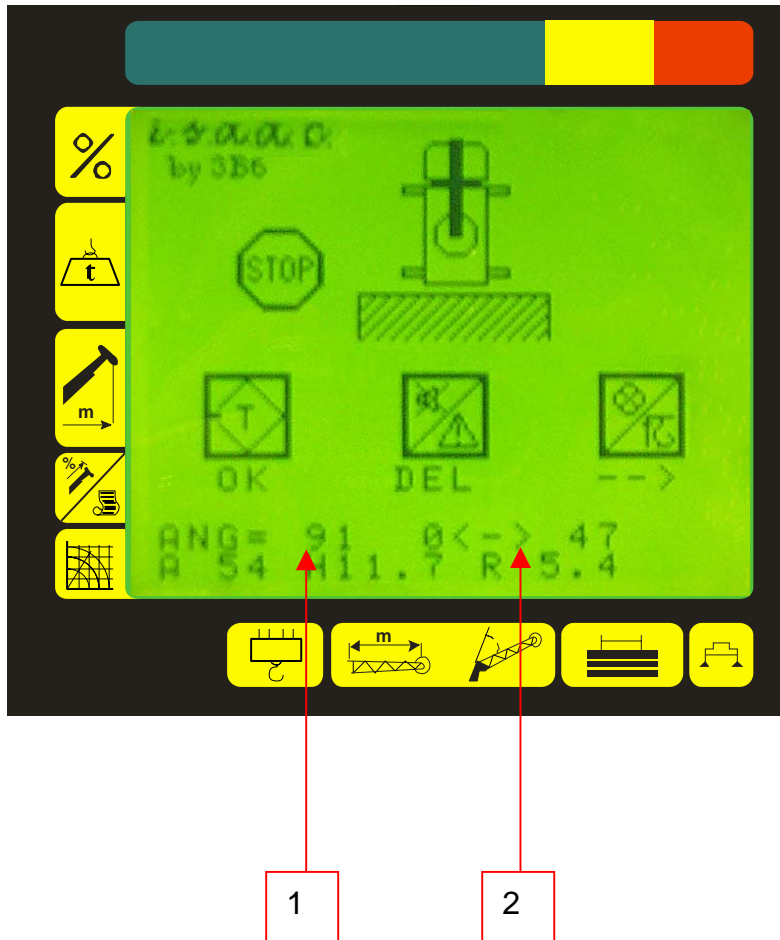
### How to store point 2 (two):

- Rotate the turret in the max CW position allowed, position the hook to the second point (radius set).
- Press and release the green button .
- In the text line (3) you will see a certain value, in degrees that is the maximum rotation angle allowed, as final point. This value is expressed in degrees .
- To cancel the stored value, press and release the yellow pushbutton .

As soon as point 2 is confirmed, the page changes in:

## Working Area Limiting Link: (option)

*i.s.a.a.c.* (interactive space advanced automatic control)



- 1) Rotation angle (degrees)
- 2) Operative angle limits, exceeding these values, the WALL is active. To continue to rotate in the same direction a reduction of the radius is required, as a virtual wall is installed in the operative area.

*All the recommendations and rules from the Manufacturer to work wisely and consciously in any time and situation*

## WARNINGS

- The LMI is an electronic device with the aim to help the operator in the current use of the machine, warning him by means of visual and acoustic signals while approaching dangerous conditions.
- However this device can't replace the operator good experience in the safe use of the machine.
- The responsibility of the operations in safe conditions of the machine is the operator concern as well as the accomplishment of all prescribed safety rules
- The Operator must be able to detect if the data given by the LMI are correct and correspond to actual working conditions.
- He must be able to utilise the data given by the LMI in order to operate in safe conditions in any time.
- The LMI is an electronic device including several sensing components, therefore it can be subject to failures or defects.
- The operator must recognise these events and he must take action ( to proceed to repair if possible or to call Assistance).
- Before starting the operations with the machine, the user must fully read this manual and follow the instructions at any time.

*All the recommendations and rules from the Manufacturer to work wisely and consciously in any time and situation.*

- The LMI is supplied with a key for shut-down function by-passing.
- In normal working operations, this key must be positioned not to by-pass shut-down..
- It's forbidden to use the key to lift loads exceeding the loads values allowed by the Manufacturer.
- The key can be used only when an emergency/malfunctioning occurs or a situation justifying its use.
- Only Authorised Personnel is allowed to the use of the key; they are also responsible for it.
- The LMI has a powerful FAIL-SAFE auto diagnosis program suitable to verify its good operations and the one of its transducers.  
In case a trouble has been detected, the LMI puts itself in a safe state by stopping the manoeuvres (please see the AUTODIAGNOSTIC chapter).
- In spite of this, the Operator, before starting the operation with the machine, must take care that the LMI is working correctly.  
To do this, he must verify the validity of the displayed values by doing some tests.  
He must verify that there are not messages or alarm indications; he must verify the correct operation of the manoeuvre stopping functions.
- The operator is responsible for the correct setting of the machine load table and therefore for the right LMI set.  
When switching-on the machine the last selected Table is kept valid, to allow Operator check.
- About this, please follow the instructions given in the OPERATING MODE SELECTION chapter. An incorrect setting of the tables, can cause an incorrect LMI operation and therefore can provoke a dangerous situation for the machine.
- Operating conditions usually change when:  
Further attachment are fitted or removed ( jib counterweight) and relevant Table selecting mode is set on the control panel.  
Outriggers Extension / Withdrawn, Turret Front/360° rotation , On Wheels/Outriggers, operating Modes are set in automatic way by micro-switches.

**Generally, it's compulsory to follow the Manufacturer instructions and procedures at any time.**

***Have a good day !***