LOADWISE MODEL 503 RATEDCAPACITY INDICATOR SYSTEM CALIBRATION MANUAL

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM



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LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

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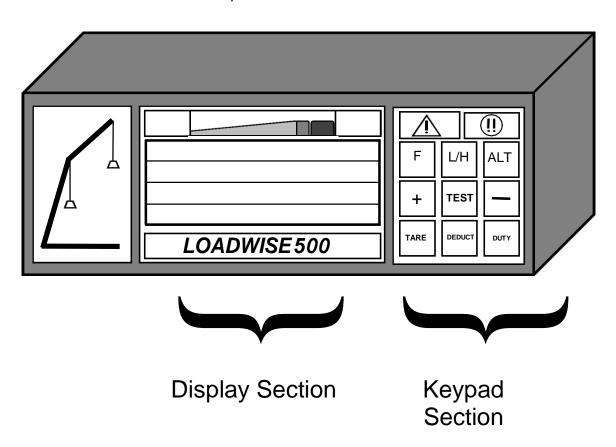
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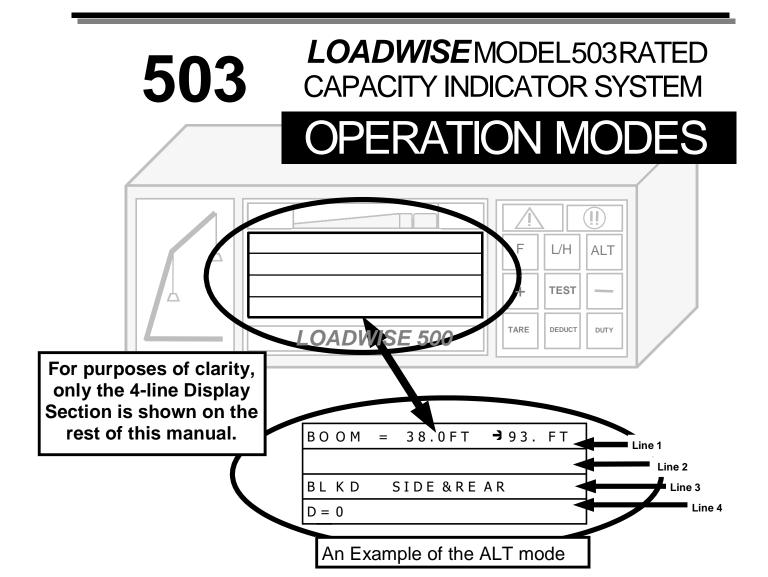
LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

DISPLAY OPERATION

DISPLAY CONSOLE

The Display Console is split into two sections. The center section is a four (4) line "alphanumeric" screen that displays information to the operator, and the right section is a keypad used to enter information into the system and to change the display to the various modes, and is also used in the calibration process.





In normal operation, there are six display modes available:

ALT mode shows a description of the duty selected. The ALT mode is first

displayed on initial power-up.

NORMAL mode shows the crane's various functions. This is the main operating mode.

L/H mode changes the second line of the display from RADIUS and BOOM

ANGLE to BOOM LENGTH and TIP HEIGHT.

TARE mode when pushed, will deduct the existing load displayed from itself and any

future load, and can be canceled by a second push.

TEST mode initiates a test routine that takes approximately 10 seconds.

DIAGNOSTICS mode shows the condition(s) of the various sensors.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

TO ENTER CALMODE

TO ENTER THE CALIBRATION MODE

The calibration mode is protected by a sequence code which is only available to trained, authorized personnel, at the discretion of the owner.

To enter the calibration mode, press:

TEST - TEST - ALT

The display will show the crane make and model, the increments used in the system and the load chart ("feet - pounds" or "meters - kilos"), the serial number of the system, and the system's date.

While this data is displayed, (approximately 10 seconds,) the entry code must be pushed. If the incorrect entry code is selected, the display will return to its standard, normal mode.

Once the calibration mode has been entered, the display will be at calibration mode 00, which is the starting point for the calibration process.

WARNING

THE CALIBRATION MODE ENABLES THE BASIC FUNCTION OF THE INDICATOR TO BE CHANGED. UNAUTHORIZED INTERFERENCE WITH THE CALIBRATION OF THE SYSTEM CAN BE VERY DANGEROUS TO THE SAFETY OF THE CRANE.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODES

The calibration mode contains fifteen (15) sections. Not all sections are used on all types of cranes.

MODE	FUNCTION
01	TO ENABLE SENSOR ZEROS TO BE SET
02	TO ENABLE SENSOR SPANS TO BE SET
03	(RESERVED FOR A MODEL OTHER THAN 503)
04	(RESERVED FOR A MODEL OTHER THAN 503)
05	CALIBRATION OF THE ROPE DIRECTON SENSOR
06	TO CORRECT FOR DEFLECTION OF THE BOOM AND JIB COMBINATIONS DUE TO THEIR OWN WEIGHT, AND THE HOOK LOAD
07	(RESERVED FOR A MODEL OTHER THAN 503)
08	(RESERVED FOR A MODEL OTHER THAN 503)
09	(RESERVED FOR A MODEL OTHER THAN 503)
10	"LAST-LOADS-RECALL" FUNCTION
11	TO PRE-SET THE ALARMS AND WARNING LIMITS
12	TO PRE-SET THE VARIOUS LOAD LIMITS
13	TO ENTER THE CRANE GEOMETRY (SEE DWG # 94336A on Page 19)
14	(RESERVED FOR A MODEL OTHER THAN 503)
15	MEMORY MOVEMENT SYSTEM

503 LOADWISE MODEL 503 RATED CAPACITY INDICATOR SYSTEM SEQUENCE OF CALIBRATION

- 1) Go to Mode 15 and carry out "I A" to ensure that the system is cleared back to the factory standard.
- 2) Check the geometry dimensions in Mode 13, ensuring that all data is present and correct.
- 3) Complete Mode 01 and 02 for setting the zero and the span of boom angle.
- 4) Complete Mode 01 for each hook, with each hook hanging.
- 5) Complete Mode 02 for each hook with test load.
- 6) Complete Mode 05 for rope movement sensing for each sensor.
- 7) Boom deflection (in Mode 06) is then carried out at this time and at any other time it is found to be necessary.
- 8) After all the above is completed and double-checked, go to Mode 15 and backup the calibration by copying "A" memory to "B" memory. TAKE GREAT CARE TO NOT DO AN "I A" COPY AS THIS WILL WIPE OUT THE CALIBRATION.

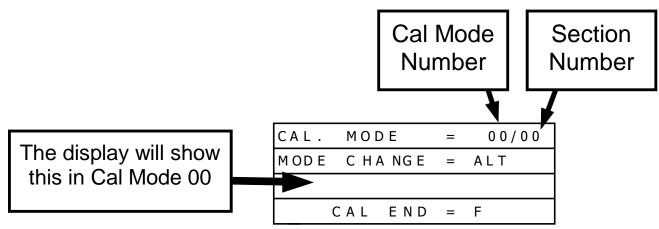
LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE00

Cal Mode 00 is the "index" or starting point, used to access the various Cal Modes.

To exit the calibration mode (while in Cal Mode 00) and return to the normal, operating mode, press "F".

NOTE: while in the calibration mode, the alarms / cut-outs are suppressed with the exception of (1) "OUT-OF-LEVEL" and (2) "OVERHOIST" (or "Anti Two Block"). Also while in Cal Mode these two messages will not be available on the display.



Notes:

2)

503

) In viode ou, the section number

TI S PAP IN SE MODEL 503 RATED THIS WILL CAUSE the Cal Mode MODEL SOSTEM Flashing, press I or I are the Cal Mode MODEL SOSTEM

CAL MODEO0

- 3) If there is not an available mode for the number selected, the system will return automatically to Cal Mode 00, Section 00.
- 4) While the Cal Mode number is flashing, the "CAL. END=F" message is not available.

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE01

Cal Mode 01 is used to "zero" the various sensors:

The display will show this when first in Cal Mode 01

CAL. MODE = 01/00 214.3 = A3 = 0010.50 SECTION CHANGE = ALT FUNCTION CHANGE = F

Within Cal Mode 01, there are eight (8) sections:

		5 ()						
Mode/Section No.	Sensor No.	Sensor Description						
01/00	A3	Superstructure Angle Sensor (only	Superstructure Angle Sensor (only on special applications)					
01/01	A2	Luffing Jib Angle Sensor (when fitted)						
01/02	L2	(Not Applicable to 503 System)						
01/03	W3	3rd Load Sensor						
01/04	L1	Length Sensor ("Zero")	Note:					
01/05	A1	Boom Angle Sensor	The Angle "zero" should be done					
01/06	W2	2nd Load Sensor	with a small positive boom angle (for example, +2.0°).					
01/07	W1	1st Load Sensor						

To change Sections, press "ALT" - this will cause the Section number to flash. While it is flashing, press "+" or "-" until the correct Section number is displayed. To stop the number flashing, press "ALT".

The second display line as shown above has two sets of numbers: the left-hand set are for reference only; and the right-hand set are changed to effect the calibration.

To modify the Section, press "F". This will cause the '100's' to flash; while flashing, this number can be changed up or down (as required) by pressing "+" or "-". Once the correct number has been selected, press "F" again to change the flashing digit to the '10's'; a third press of "F" will change the flashing digit to the '1's' and an additional press of "F" will change the flashing digit to the '0.1's', etc. While any of these right-hand numbers has a flashing digit, it can be changed up or down (as required) by pressing "+" or "-".

A final press of the "F" button will stop the flashing and give three choices:

- "ALT" will allow a change to a different Section number.
- "L/H" will store the calibration just performed. (If "+" or "-" have *not* been used, the memory will not be updated (since no change has been made), even if the command to store ("L/H") is used.) If "L/H" is pressed, the display will change after a delay of approximately three seconds.
- "TARE" will return to Mode 00/00 without saving the calibration just performed.

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE02

Cal Mode 02 is used to "span" the various sensors:

The display will show this when first in Cal Mode 02

CAL			МΟ	D	E				=		0	2 ,	/ (0 0	
2 1	4		3 =	A	3				= (0 0	1 (Ο.	5 ()	
SEC	Т	I	O N		С	Н	Α	N	G١	E	=	:	Α	LΤ	
F U N	١C	Т	ΙO	N		С	Н	Α	N	G E		=		F	

Within Cal Mode 02, there are eight (8) sections:

Mode/Section No.	Sensor No.	Sensor Description
02/00	A3	Superstructure Angle Sensor (only on special applications)
02/01	A2	Luffing Jib Angle Sensor (when fitted)
02/02	L2	(Not Applicable to 503 System)
02/03	W3	3rd Load Sensor
02/04	L1	Length Sensor (Enter the "STROKE" in METERS)
02/05	A1	Boom Angle Sensor
02/06	W2	2nd Load Sensor
02/07	W1	1st Load Sensor

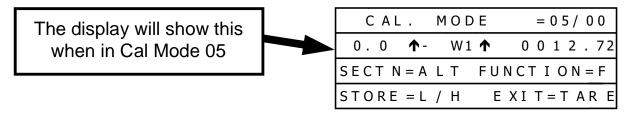
Note:

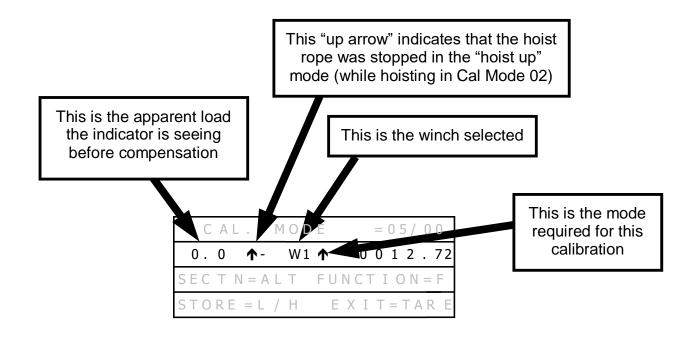
- Calibration will not be successful if the number on the left-hand side of the second display line is either 000.0 or 409.2. If this occurs, the sensor being calibrated is out of range and must be corrected before proceeding further with the calibration process.
- If "L/H" is pressed, there will be a delay of approximately three seconds before the display changes. However, once "F" has been pressed the analog signal in this calibration mode will have been updated. If "L/H" is pressed, the data is permanently stored, but if the power is removed and then re-applied (without pressing "L/H") the old values will be restored.

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CAL MODE05

Cal Mode 05 is used to calibrate the rope moment





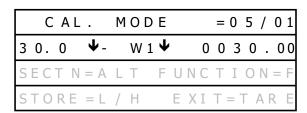
LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE05

To calibrate in this mode, "F" is pressed in these conditions:

	С	ΑL		М	0	D	Е				=	0	5	/	0	0
3	0.	0	^ -		W	1	↑			0	0	3	0		0	0
S	ЕC	TN	= A	L	Т		F	U	N	С	Τ	Ι	0	N	=	F
S	ТО	RΕ	= L	/	Н			Е	Χ	Ι	Т	=	Т	A F	2	Е

While hoisting



While lowering

CAL.	MOD	E		=	0	5	/	0 2
3 0. 0 Ψ-	W 1	Ψ	0	0	3	0		00
SECTN=A	LT	FUN	С	Т	Ι	0	N	= F
STORE = L	/ H	ЕХ	Ι	Т	=	T A	A F	RE

While stopped after lowering

The "arrow" symbols must match when "F" is pressed.

The direction mode required can be obtained by changing the mode selection. This is done by pressing "ALT" to get the mode number flashing and then "+" or "-" to change the mode number and then "ALT" again to finish changing.

To correct the hook load displayed on the left to the target displayed on the right, press "F". You may press "F" as often as necessary. When the relevant sections have been corrected this calibration mode may be finished by pressing "L/H" to store the data.

This procedure is applicable to Winch 2 (W2) in mode 05/03 - mode 05/04 - and mode 05/05, and to Winch 3 in mode 05/06 - mode 05/07 - and mode 05/08.

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE06

Cal Mode 06 is used to calibrate the boom deflection

The display will show this when in Cal Mode 06

CAL. I	MODE	= 06/00
1 2 7. 6	+ O N	LY
SECTIO	N CHANG	GE=ALT
F UNC T IOI	N CHAN	GE = F

Before accessing this mode, ensure the appropriate boom and / or jib is rigged, and the corresponding duty is selected prior to entering the Cal Mode.

Cal Model 06/00 is used to correct the radius due to deflecting of the main boom due to its own weight.

Mode 06/01 is used to correct the radius due to deflection of the main boom due to the weight of the hook.

Mode 06/02 is used only after sections "00" and "01" have been finalized and is for giving a small +/- correction to the boom angle associated only with the particular configuration rigged/selected before entering the calibration mode.

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE06

Cal Mode 06 is used to calibrate the boom deflection

The display will show this when in Cal Mode 06

CAL. M	IODE = 06/00
1 2 7. 6	+ ONLY
SECTION	CHANGE = ALT
FUNCTION	C HA NGE = F

Procedure for Mode 06:

- With an EMPTY hook, (NO load,) position the boom at approximately 60° (within the maximum radius).
- Measure the radius with a tape and record this information.
- Press F this will cause the "+ ONLY" to flash.
- While it is flashing, press "+" or "-" to adjust the displayed radius until it is correct. At the extremes of adjustment "+ ONLY" or "- ONLY" will be displayed and in between the "+" or the "-" is displayed.
- Press "F" to finish the adjustment.
- After correcting model 06/00, press "ALT" to initiate a change of section, and then "+" to get to mode 06/01, and press "ALT" to cancel the change facility.
- A suitable maximum load should be hoisted and the new radius measured.
- Press "F" again to start the "+ ONLY" flashing, then use "+" or "-" to correct the displayed radius.
- When the adjustment is finished, press "F" and then "L/H" and wait approximately three seconds while the memory is updated and checked.

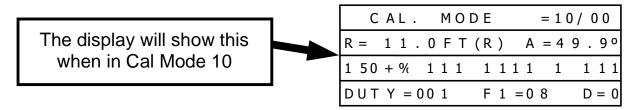
NOTE:

 It may not be possible to correct both loaded and unloaded radii at the same time. However, it is essential that the unloaded boom (mode 06/00) be done first.

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CAL MODE 10

Cal Mode 10 is the LAST LOADS RECALL option

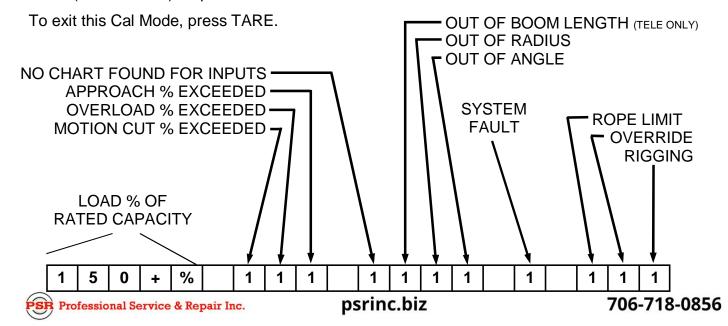


When equipped with the LAST LOADS RECALL option, the 503 System stores the last 100 load movements (above 50% of rated capacity) and displays them, when recalled, on line 3 as show in the example above. It only stores loads above 50% of rated capacity, and only in increments of 10%, up to 150%. Various "flags" are also stored; these "flags" offer data on the state of the 502 System and its various sensor inputs at the time of each individual store.

On initial entry into Cal Mode 10, the display will be on Section 00, which is a test mode that displays the values shown above.

By pressing "+" and "-", the Section number is changed, starting at 01 and ending at 99.

The third line contains 20 characters as detailed below. On those values that are either a "1" or a "0", the "1" means the alarm (or the switch) in question is turned ON; the "0" means the alarm (or the switch) in question is turned OFF.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE 11

Cal Mode 11 is used to adjust the Alarm Settings

The display will show this when in Cal Mode 11

C AL . MODE = 11/00

APPROACH % = 95.0

SECTION CHANGE = ALT

FUNCTION CHANGE = F

Within Cal Mode 11, there are eight (8) sections:

		, ,	
Mode/Section No.	Description	Factory Default Values	Notes
11/00	APPROACH %	95.0 %	
11/01	OVERLOAD %	105.0 %	
11/02	MOTION-CUT %	110.0%	
11/03	HIGH ANGLE A°	80.0°	
11/04	LOW ANGLE A°	0.0°	
11/05	BOOM SWITCH	0.0	Not Applicable to 503 System
11/06	SHEAVE %	100	For setting in the multiple loads per line when this is not a simple multiplication.
11/07	SCALE FACTOR	0.5	Set to 1.0 for cranes above 650 Tons.

To change Sections, press "ALT" - this will cause the Section number to flash. While it is flashing, press "+" or "-" until the correct Section number is displayed. To stop the number flashing, press "ALT".

To modify the Section, press "F". This will cause the '100's' to flash; while flashing, this number can be changed up or down (as required) by pressing "+" or "-". Once the correct number has been selected, press "F" again to change the flashing digit to the '10's'; a third press of "F" will change the flashing digit to the '1's' and an additional press of "F" will change the flashing digit to the '0.1's', etc. While any of these right-hand numbers has a flashing digit, it can be changed up or down (as required) by pressing "+" or "-". (This mode will only change the function size in 0.5 steps.)

A final press of the "F" button will stop the flashing and give three choices:

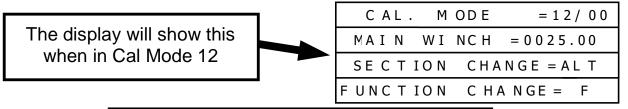
- "ALT" will allow a change to a different Section number.
- "L/H" will store the calibration just performed. (If "+" or "-" have *not* been used, the memory will not be updated (since no change has been made), even if the command to store ("L/H") is used.) If "L/H" is pressed, the display will change after a delay of approximately three seconds.
- "TARE" will return to Mode 00/00 without saving the calibration just performed.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE 12

Cal Mode 12 is used to adjust the Load Limit Settings



Within Cal Mode 12, there are four (4) sections:						
Mode/Section No.	Description					
12/00	MAIN WINCH (Max Line Pull)					
12/01	AUX WINCH (Max Line Pull)					
12/02	RIGGING LOAD (Max available load with suppressed alarms)					
12/03	INHIBIT LOAD (load above which duty deduct & parts-of-line cannot be changed)					

To change Sections, press "ALT" - this will cause the Section number to flash. While it is flashing, press "+" or "-" until the correct Section number is displayed. To stop the number flashing, press "ALT".

To modify the Section, press "F". This will cause the '100's' to flash; while flashing, this number can be changed up or down (as required) by pressing "+" or "-". Once the correct number has been selected, press "F" again to change the flashing digit to the '10's'; a third press of "F" will change the flashing digit to the '1's' and an additional press of "F" will change the flashing digit to the '0.1's', etc. While any of these right-hand numbers has a flashing digit, it can be changed up or down (as required) by pressing "+" or "-". (This mode will allow values up to 655.35.)

A final press of the "F" button will stop the flashing and give three choices:

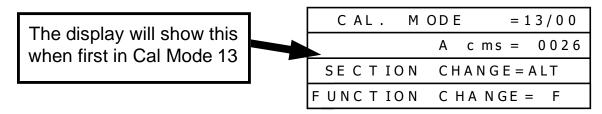
- "ALT" will allow a change to a different Section number.
- "L/H" will store the calibration just performed. (If "+" or "-" have not been used, the memory will not be updated (since no change has been made), even if the command to store ("L/H") is used.) If "L/H" is pressed, the display will change after a delay of approximately three seconds.
- "TARE" will return to Mode 00/00 without saving the calibration just performed.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE 13

Cal Mode 13 is used to enter the crane's geometry



In Cal Mode 13, there are twelve (12) sections. See Drawing on Page 19.							
Mode/Section No.	Dim No.	Dim (CM)	Description				
13/00	Α		(Not Applicable to 503 System)				
13/01	В		(Not Applicable to 503 System)				
13/02	С		(Not Applicable to 503 System)				
13/03	D		(Not Applicable to 503 System)				
13/04	Е		Head Sheave Pivot Pin to C/L of Boom				
13/05	F		Boom Pivot Pin to Center of Slew				
13/06	S		Head Sheave Radius				
13/07	G		Rope Anchor Point to Head Sheave (Vertical) - See Page 19				
13/08	Н		Rope Anchor Point to Head Sheave (Horizontal) - See Page 19				
13/09	Х		(Not Applicable to 503 System)				
13/10	Υ		Vertical Distance of Boom Pivot Pin to Ground				
13/11	Q		Questions - See Page 20				

To change Sections, press "ALT" - this will cause the Section number to flash. While it is flashing, press "+" or "-" until the correct Section number is displayed. To stop the number flashing, press "ALT".

To modify the Section, press "F". This will cause the character directly after the "=" to flash. Either a blank (for a "positive" value) or a "-" (for a "negative" value) can be selected by pressing "+" or "-". Press "F" again and the next character will be flashing, allowing it to be adjusted by using the "+" or "-". Further presses of the "F" button will allow selection of the appropriate character; each can be adjusted by using the "+" or "-".

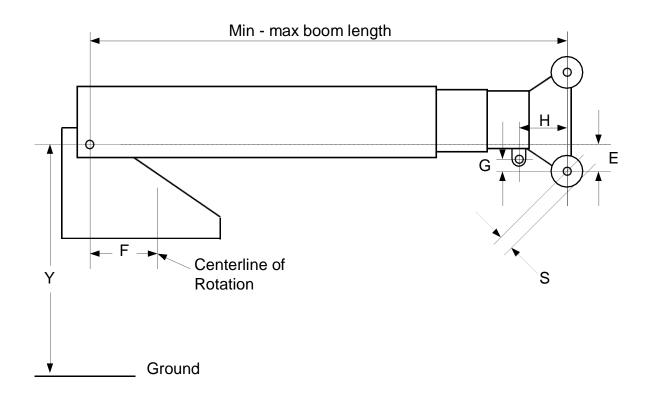
Adjustment range in this mode is from 0000 to 9999.

A final press of the "F" button will stop the flashing.



LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

503 CALIBRATION MODE 13 GEOMETRY DATA



Ref: Dwg # 94336A

DIMENSIONS	FT / IN	MMS	DESCRIPTION
Е			BOOM HEAD SHEAVE OFFSET FROM BOOM PIVOT PIN
F			HORIZ DISTANCE-CENTER OF ROTATION TO BOOM PIVOT PIN
G			VERTICAL DISTANCE-ROPE ANCHOR POINT TO HEAD SHEAVE POINT
Н			HORIZONTAL DISTANCE-ROPE ANCHOR POINT TO HEAD SHEAVE POINT
S			DISTANCE FROM HEAD SHEAVE PIN TO BOTTOM OF GROOVE
MIN			FULLY RETRACTED BOOM LENGTH
MAX			FULLY EXTENDED BOOM LENGTH
"Y"			VERTICAL DISTANCE FROM BOOM PIVOT TO GROUND

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE 13

Cal Mode 13/11 selects a range of questions to which the crane operator must respond before the system will operate in the normal operating mode. Three options are available:

- ●No questions enter the value 121.2
- Questions # 1 through # 10 enter the value 111.1
- Questions # 5 through # 10 enter the value 212.1

(1	YOUHA	VEAVALI	D
\mathcal{T}	CRANE	LICENSE	■
	PRESS ALT	TO CONF	IRM
	DUTY=001	F1=06	D=0
(2	CRANE MA	ANUAL RE	AD
_	AND UN	DERSTO	DD
L	PRESS ALT	TO CONF	IRM
	DUTY=001	F1=06	D=0
(~	\		
(3	SLIMAN	IUAL REA	D
(3	<i>/</i>	IUAL REA DERSTOO	
(3	<i>/</i>	DERSTOO	D
(3	AND UN	DERSTOO	D
3	AND UN PRESS ALT	DERSTOO	D
4	AND UN PRESS ALT DUTY=001 SLI SYST	DERSTOO T TO CONF F1=06 EM IS ON	D FIRM D=0
	AND UN PRESS ALT DUTY=001 SLI SYST	DERSTOO T TO CONF F1=06	D FIRM D=0
	AND UN PRESS ALT DUTY=001 SLI SYST A DRI PRESS ALT	DERSTOO T TO CONF F1=06 EM IS ON VER AID	D FIRM D=0
	AND UN PRESS ALT DUTY=001 SLI SYST A DRI	DERSTOO T TO CONF F1=06 EM IS ON VER AID	D FIRM D=0
	AND UN PRESS ALT DUTY=001 SLI SYST A DRI PRESS ALT	DERSTOO T TO CONF F1=06 TEM IS ON VER AID T TO CONF F1=06	D EIRM D=0 LY EIRM D=0

AT ALL TIMES
PRESS ALT TO CONFIRM

F1=06

D=0

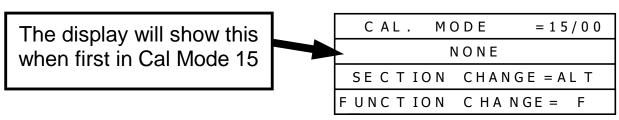
(6 CRANE ON
	LEVEL GROUND
	PRESS ALT TO CONFIRM
	DUTY=001 F1=06 D=0
	7) SLI IS SET WITH
`	CORRECT DUTYCODE
	PRESS ALT TO CONFIRM
	DUTY=001 F1=06 D=0
	8 SLI IS SET WITH
	CORRECT REEVING
	PRESS ALT TO CONFIRM
	DUTY=001 F1=06 D=0
	9 SLI IS SET WITH
	CORRECT DEDUCTION
	PRESS ALT TO CONFIRM
	DUTY=001 F1=06 D=0
(10 CRAWLERS ARE
	CORRECTLY POSITIONED
	PRESS ALT TO CONFIRM
	DUTY=001 F1=06 D=0

DUTY=001

LOADWISE MODEL503RATED CAPACITY INDICATOR SYSTEM

CAL MODE 15

Cal Mode 15 is used to move stored calibration information



Cal Mode 15 is used to move stored calibration data between memory sections. The Loadwise 500 System contains two memory sections: MEMORY A and MEMORY B.

When Power is applied to the system, data in MEMORY A is copied to the active memory which is used for all calibrations, etc. During the calibration process, the data being entered is being placed in the active memory and if the "L/H" button is pressed, this data is copied to MEMORY A. MEMORY B is a backup area that is used to store a copy of MEMORY A for possible future use.

Cal Mode 15 also has a third function: an INITIALIZE sequence allows the calibration to be reset to the factory-default settings, which clears all entered data in MEMORY A. This process must be performed as the first step of the calibration process, and typically is not performed again.

There are three sections in Cal Mode 15:

Mode/Section No.	Description
15/01	Initializes MEMORY A (to factory default values)
15/02	Copies MEMORY A to MEMORY B
15/03	Swaps MEMORY B and MEMORY A

To change Sections, press "ALT" - this will cause the Section number to flash. While it is flashing, press "+" or "-" until the correct Section number is displayed. To stop the number flashing, press "ALT".

To initiate the movements, first press "F", followed by "L/H". To abort at any time, press "TARE" or return to 15/00, where "NONE" is displayed, and then press "F" or "L/H" or "TARE".