

**OPERATORS MANUAL &  
FITTING INSTRUCTIONS  
FOR THE  
LH 500 TRACTOR MONITOR**

LH No. 020-499-UK Version 1.00

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*We have endeavoured to deliver a fault free product. To ensure optimal use of the equipment we ask that great attention be paid when reading the manual. We are more than happy to help should any queries arise, both when the product is used for the first time and at any later date. Regarding responsibility for use of the product we refer to our sales and delivery terms especially paragraph 7, which follows:*

7 Product usage.

7.1 Any use of the product is at the sole risk of the buyer. The buyer is therefore not entitled to any form for compensation caused by, for example, any of the following:

- Disturbance to/from any electronic services or products that do not confirm to the standards for CE marking,
- Missing or poor signal coverage or a succession hereof from external transmitters/receivers, used by the buyer,
- Functional faults, which apply to or from a PC-program or PC-equipment, not delivered by the seller,
- Faults that may arise from the buyers negligence to react to warnings and fault messages from the product, or which can be traced to negligence and/or absent constant control of the work carried out in comparison to the planned job.

7.2 When implementing any new equipment the buyer must take great care and pay attention. Any doubts as to correct operation/use should result in contacting the sellers service department.

This manual may not be altered, copied or manipulated in any way. Unoriginal manuals can lead to operational faults damaging machines or crops as a consequence thereof. LH Technologies Denmark ApS can therefore not be held responsible for damages incurred, which can be traced to the use of unoriginal or manipulated manuals. Original manuals can be requisitioned at any time from your dealer.

With regards

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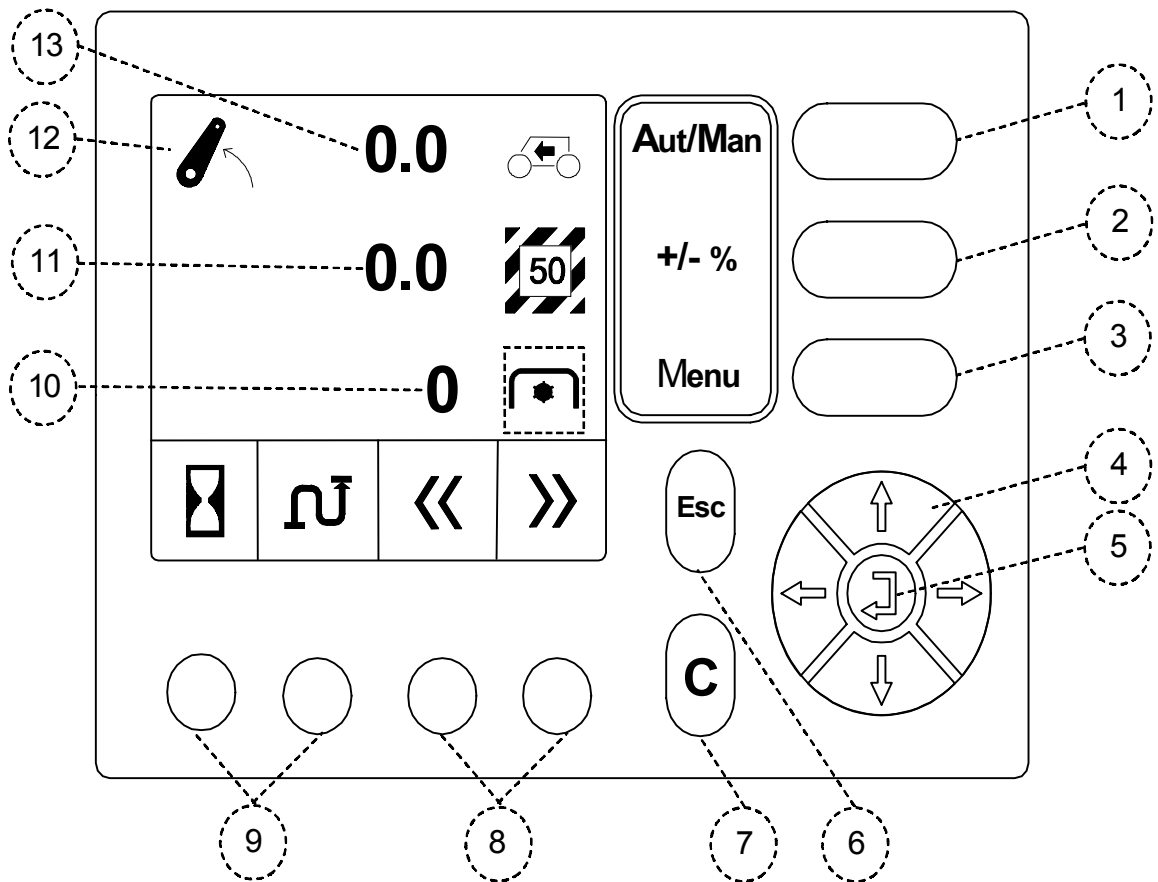
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# Contents

OVERVIEW .....	5
OPERATING THE LH 500 .....	6
AUTO/MAN KEY (POS. 1) .....	6
SECTION FUNCTION (POS. 2) .....	6
MENU KEY (POS. 3) .....	6
ARROW KEYS (POS. 4) .....	6
ENTER KEY (POS. 5) .....	7
ESCAPE KEY (POS. 6) .....	7
CLEAR KEY (POS. 7) .....	7
THE USER SELECTABLE FUNCTION (POS. 8) .....	7
START/STOP OF TIME AND DISTANCE COUNTERS (POS. 9) .....	7
THE SELECTABLE OPERATION FUNCTIONS (POS. 10) .....	8
AREA/SECTION (POS. 11) .....	8
IMPLEMENT SENSOR STATUS (POS. 12) .....	8
FORWARD SPEED (POS. 13) .....	8
THE USER SELECTABLE FUNCTIONS .....	9
DATA/DELETE (TASK) .....	10
THE COUNTERS IN A TASK .....	10
START/CONTINUING A TASK .....	11
RESETTING A TASK .....	11
ENCODE .....	12
HA LEFT .....	12
WORKING WIDTH .....	12
IMPLEMENT SENSOR .....	12
FORWARD SPEED SENSOR .....	12
AUTOMATIC FORWARD SPEED CALIBRATION .....	13
PTO SENSOR .....	13
WARNINGS .....	13
PTO WARNING .....	13
FORWARD SPEED WARNING .....	13
HA LEFT WARNING .....	13
SYSTEM .....	14
CONTRAST/LIGHT .....	14
TEST INPUT .....	14
LANGUAGE .....	14
FITTING THE LH 500 TRACTOR MONITOR .....	15
SYSTEM DIAGRAM .....	15
FITTING .....	16

**OVERVIEW**



Pos.	Description	Pos.	Description
1	Auto/Man key	8	Function selection keys
2	Width section key	9	Manual start/stop of time & distance
3	Menu key	10	The user selectable function
4	Arrow keys	11	Area/ section function
5	Return key	12	Implement sensor status
6	Escape key	13	Forward speed
7	Clear key		

## OPERATING THE LH 500

### AUTO/MAN KEY (POS. 1)

Key	Description
Aut/Man	<p>Pressing this key changes between automatic and manual time and distance registration.</p> <p>The time &amp; distance counters are started/stopped automatically by the implement sensor when automatic registration is selected.</p> <p>The time and distance counters can be started and stopped with program keys 1 and 2 (pos. 9) when manual registration is selected (see page 7).</p> <p>A symbol is shown directly above the program keys 1 and 2 (pos. 9) indicating that manual registration has been selected.</p> <p>Pressing these keys starts/stops the time and distance counters.</p>

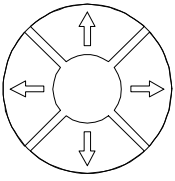
### SECTION FUNCTION (POS. 2)

Key	Description
+/- %	<p>Pressing this key reduces the effective working width in steps of 25% - 1/4 of the encoded working width. The encoded working width is not altered.</p> <p>Use this function for, i.e. short work.</p>

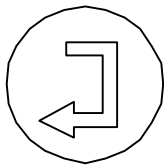
### MENU KEY (POS. 3)

Key	Description
Menu	<p>The computer alternates between the operating screen and the main menu each time this key is pressed.</p> <p>The key has a toggle function so if the operating screen is shown and the key is pressed the main menu will be displayed instead and visa versa.</p> <p>If the key is pressed whilst, e.g. encoding, the operating screen will be displayed.</p>

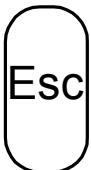
### ARROW KEYS (POS. 4)

Key	Description
	<p>The arrow keys are used to select and alter an encodement.</p> <p>When encoding a value the arrow keys are used to select and adjust the digit that needs changing.</p> <p>Each digit can be set from 0 to 9 with the ARROW UP/DOWN keys.</p> <p>The ARROW RIGHT/LEFT keys are used to select the digit to be altered.</p>

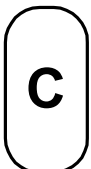
**ENTER KEY (POS. 5)**

Key	Description
	The enter key is used to <b>accept</b> encodements and to <b>return</b> to the previous screen.


**ESCAPE KEY (POS. 6)**

Key	Description
	Use this key to return to the <b>previous</b> menu <b>without</b> saving the value.


**CLEAR KEY (POS. 7)**

Key	Description
	The clear key is used to <b>reset</b> encodements/counters and to <b>clear</b> warnings.

**THE USER SELECTABLE FUNCTION (POS. 8)**

Key	Description
 Keys 3 - 4	These 2 keys are used to <b>page through</b> the selectable functions available in the operation screen in the LH 500 Tractor monitor.

**START/STOP OF TIME AND DISTANCE COUNTERS (POS. 9)**

Key	Description
 Keys 1 - 2	These 2 keys are used to <b>manually start/stop</b> the time and distance counters (see page 6).

## THE SELECTABLE OPERATION FUNCTIONS (POS. 10)

This operation function is user selectable. The selected function is changed by paging through the available functions with program keys 1 and 2 (pos. 8).

A description of the available functions can be seen on page 9.

## AREA/SECTION (POS. 11)

The worked area since the last reset (see page 10), shown as ha.

The area counter is shown with 2 decimal until 99.99 ha.

Hereafter the area covered is shown with 1 decimal until 999.9 ha.

The area is displayed without decimal thereafter.

If the section function is used a value (75, 50 or 25) will be shown in the area symbol. This value shows how much of the encoded working width is used in percent.

## IMPLEMENT SENSOR STATUS (POS. 12)

When the displayed lift arm is **raised** the implement sensor is **active** and area, time and distance are **not measured**.

When the displayed lift arm is **lowered** the implement sensor is **not active** and area, time and distance are **measured**.



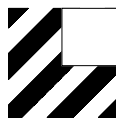


The time and distance counters are only started and stopped by the implement sensor if automatic registration has been selected (see page 6).

## FORWARD SPEED (POS. 13)

The current forward speed shown in kph.



## THE USER SELECTABLE FUNCTIONS

Symbol	Description
	<p><b>PTO speed:</b> The speed of the PTO axle shown as RPM (presupposes that a RPM sensor is fitted to the PTO shaft).</p>
	<p><b>Distance:</b> The driven distance since the last reset (see page 10). The measured distance is displayed in metres until 9999 m. The distance is displayed as km thereafter (-99.99, -999.9, -9999). "Km" is shown in the symbol instead of "m" when the distance displayed changes to km. The distance counter is started and stopped according the Auto/Man function (see page 6).</p>
	<p><b>Ha Left:</b> Area remaining. If the size of the field has been encoded before start the area remaining can be seen (The field size must be encoded before start, see page 12).</p>
	<p><b>Stop watch:</b> Used to measure the time for a particular job. Time measurement is started and stopped according the Auto/Man function (see page 6).</p>
	<p><b>Ha/hour:</b> Working efficiency. How large an area is being worked per hour with the current working width and the present forward speed.</p>

## DATA/DELETE (TASK)

It is possible to have up to ten different trip counter sets (tasks) that can be started and stopped when, e.g. changing fields.

The task menu is selected from the main menu (press the MENU key).

Press hereafter the ARROW UP and ARROW DOWN keys to mark “**Data/delete**”. Press the ENTER key.

When starting a new task all the counters are zeroed. If another task is selected and then the original task is selected again the counters will continue with the same values from when the task was stopped.

The tasks can be reset one by one.

### THE COUNTERS IN A TASK

<b>Trip counter 1/10</b>	
<b>New counter</b>	
<b>Clear counter</b>	
<b>Area (Ha)</b>	<b>0.00</b>
<b>Distance (m)</b>	<b>0</b>
<b>Time</b>	<b>0:00:00</b>

The screen to the left is displayed when the “**Data/delete**” menu is selected.

A description of each individual counter follows:

#### **Area (Ha):**

The measured area since the start of the task or since the last reset. The area measured is the effective area, so only the area that has been worked is counted.

#### **Distance (m):**

Distance in metres (effective distance) since the start of the task or since the last reset. How the distance counter is started and stopped is dependant on the Auto/Man function (see page 6).

#### **Time:**

The total time used since the start of the task or since the last reset. How the time counter is started and stopped is dependant on the Auto/Man function (see page 6).

## START/CONTINUING A TASK

When selecting the "Data/delete" menu, the previously opened task is opened.

Trip counter	
<b>Counter no.</b>	<b>1</b>
Counter no.	2
Counter no.	3
Counter no.	4
Counter no.	5
Counter no.	6
↓	↓
↓	↓

To start or continue a task highlight "New counter" and press the ENTER key.

Task 1 – 10 can now be selected by using the ARROW UP and ARROW DOWN keys to mark the required task number and then press the ENTER key.

To return to the main operating screen press the MENU key.

## RESETTING A TASK

If the counters in a task are to be reset, select the task as described above and highlight "Delete counter", press thereafter the ENTER key.

## ENCODE

### HA LEFT

Encode the size of the field here before start.

### WORKING WIDTH

Encode the working width in centimetres.

Make sure that overlapping is accounted for. If the working width is unknown, drive 5 runs and measure the distance between the first and the last run.

Divide the measured distance by 5.

### IMPLEMENT SENSOR

The signal from the implement sensor tells the monitor whether area should be measured or not.

The time and distance counters are started and stopped with the area counter if automatic start/stop has been selected as described on page 6.

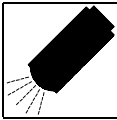
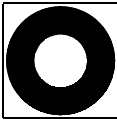
If **ISO 3-punkt** is selected the implement signal is taken from the lift arms.

If **PTO** is selected the area counter is started when the PTO axle is turning and stopped when the PTO axle is not turning.

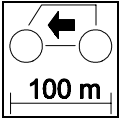
### FORWARD SPEED SENSOR

Selection of the forward speed sensor plus the speed calibration figure can be encoded here.

It is also possible to automatically calibrate the forward speed sensor.

Key	Description
	Pressing this key (program key 1) selects Radar as the speed sensor (via the 7-pin DIN-ISO socket). <i>If the number of pulses per 100 m is known it can be encoded directly.</i>
	Pressing this key (program key 2) selects a wheel sensor fitted on the tractor as the speed sensor (via the 7-pin DIN-ISO socket). <i>If the number of pulses per 100 m is known it can be encoded directly.</i>

## AUTOMATIC FORWARD SPEED CALIBRATION

Step/Key	Description
1	Measure a 100-metre stretch and drive to the start mark.
2	Select the speed sensor as described above.
3	 Press this key and drive the measured 100-metre stretch. Stop exactly at the stop mark. <i>The computer counts pulses received whilst driving.</i>
4	Press the ENTER key and forward speed calibration is finished.

## PTO SENSOR

Encode the number of pulses per revolution for the sensor fitted to the PTO axle.  
 If the signal from the DIN-ISO socket is used the standard number of pulses = 40.

## WARNINGS

The following warnings can be encoded her.

The warnings are given visually (on the screen) and as an audible warning:

### PTO WARNING

Warning ON/OFF plus the minimum and maximum RPM at which the warning is required.

### FORWARD SPEED WARNING

Warning ON/OFF plus the minimum and maximum speed at which the warning is required.

### HA LEFT WARNING

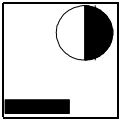
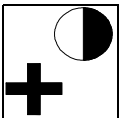

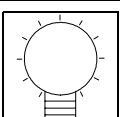
Warning ON/OFF plus the area left at which the warning is required.

## SYSTEM

The system menu is selected from the main menu (press the MENU key).

Use the ARROW UP and ARROW DOWN keys to highlight “**System**” and press the ENTER key.

## CONTRAST/LIGHT

Key	Description
	Pressing this program key will make the screen <b>lighter</b> .
	Pressing this program key will make the screen <b>darker</b> .
	Pressing this program key will activate the <b>auto-light</b> function. The backlight is switched off until a key is pressed, the backlight will be switched on automatically.
	The display's backlight is turned on and off with this program key.

## TEST INPUT

Use test input if, e.g. a sensor fault is suspected.

Directly under each input description, to the right, is a counter that registers the number of time the input has been activated (the counter is reset automatically each time “**Test input**” is exited or by pressing the C key). On the left-hand side the actual status of the input is shown (**Hi/Lo**).

All of the different inputs can be seen by pressing the ARROW UP and ARROW DOWN keys to page through the 3 screens.

The different input descriptions relate to the following:

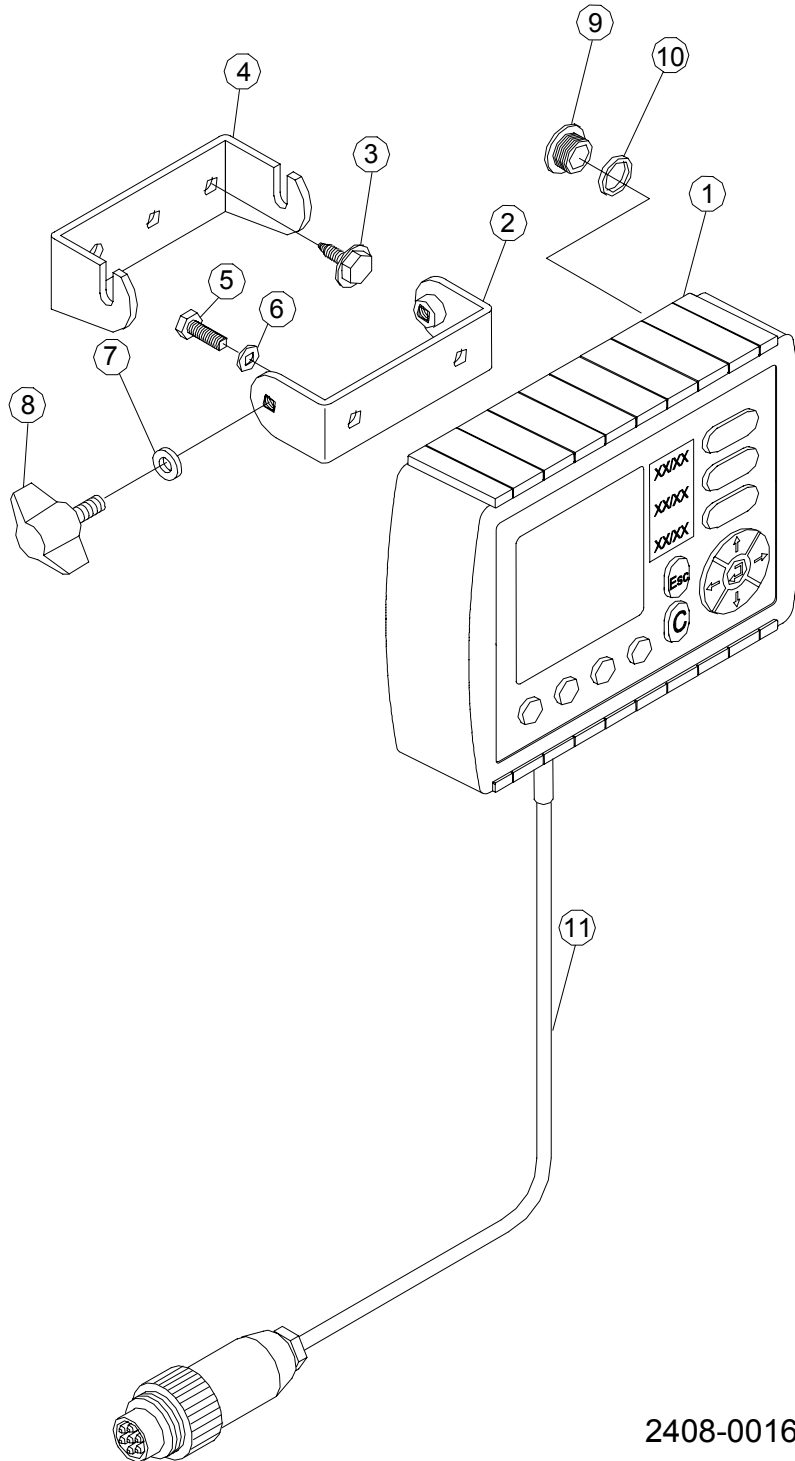
Input	Description
Wheel	Speed signal from the speed sensor fitted on the tractor.
Radar	Speed signal from the radar fitted on the tractor.
Lift	Implement signal (area on/off) from the implement sensor fitted on the tractor (via the 7-pin DIN/ISO plug in the tractor).
PTO	RPM signal from the RPM sensor fitted to the PTO axle.
Input 1 – 8	N/A

## LANGUAGE

The operating language of the LH 500 Tractor monitor is selected here.

# FITTING THE LH 500 TRACTOR MONITOR

## SYSTEM DIAGRAM



2408-0016

## FITTING

1. Drill 2 x 5 mm holes with a distance of 55 mm in the machines right-hand side.
2. Fasten the bracket (pos. 2) with the supplied self-tapping screws.
3. Connect the DIN-ISO plug (pos. 11) to the DIN-ISO socket in the tractor.

The connections in the DIN-ISO socket fitted in the tractor are as follows:

Pin no.	Description
1	Radar
2	Forward speed (wheel tractor)
3	PTO
4	Implement signal (lift up/ lift down)
5	Lift arm position
6	+12V
7	0V