

**OPERATORS MANUAL
FOR
LH 965 COMBINE COMPUTER**

LH No. 020-965-UK Version 2.00

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PREFACE

Congratulations on your new LH 965 Combine Harvester Computer.

When developing this computer we made a point of producing an advanced, easy operateable and durable product.

The construction of the programme and the display pictures enable an easy operation almost without using the manual. Therefore the manual is made in the form of a reference book with an index at the beginning showing the main chapters.

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 Agro 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 LH Agro (UK) Ltd.

ABOUT THE USE

Basically the LH 965 menu system is built up as a book which you can flip through. The functions of the computer are divided into a main menu and the following 4 sets of functions:

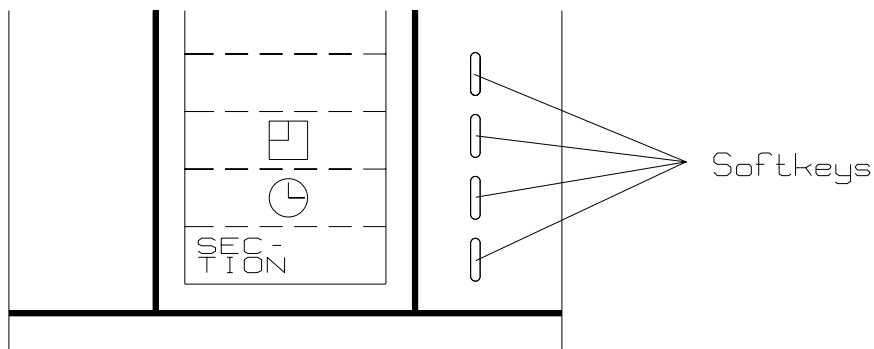
OPERATION
ENCODE
DATA/DELETE
TEST

Each of the above function sets have several sub functions. Each function set with sub functions will be described one by one on the following pages.

ABOUT THE OPERATION

FUNCTION KEYS (SOFTKEYS)

Operation of the LH 965 is very simple with the 4 function keys (softkeys) to the right of the display - the four keys are each marked with a white vertical dash. The present function of these keys is displayed to the left of the key. When a key is pressed the 4 function keys can change into a new function (see ill.).



RETURN KEY



This key is used if you want to return to a previous menu/function. One "page" (picture) is changed each time the key is pressed. The key is also used to accept a RPM warning if it does not require a stop.

RPM CONTROLS



When you press this key the speed in RPM of the following 6 shafts is shown, irrespective of which function is selected:

1. **CYLINDER**
2. **STRAW WALKER**
3. **CHOPPER**
4. **FAN**
5. **GRAIN ELEVATOR**
6. **RETURN ELEVATOR**

A warning can be encoded for each of the above shafts. This is done in the **ENCODE MENU** (described on page 12).

ZOOM-PICTURES



The primary function of the computer is to show grain loss. In normal operation it is therefore possible to make the bars bigger with the zoom key. Press the zoom-key and the function keys will disappear.

You return to the previous picture by pressing the return key.

CONTRAST



By pressing this key the contrast of the display (bright/dark) can be adjusted. This ensures optimum contrast in all conditions.

NOTE: In extreme cold or heat the screen may become blank or black. It may be possible to compensate for this with the "**CONTRAST KEY**", but the display will return to normal when the temperature is between -10 degrees C and + 60 degrees C.

At the top of the picture a counter is shown. Normal contrast is 45 - 50.

Contrast + = darker display

Contrast - = brighter display

Press the "**DELETE KEY**" to get back to normal value.

KEY

This key has no function with the LH 965.

DELETE KEY

The delete key is used together with the numeric keys when encoding. It deletes the chosen value.

BACKGROUND LIGHT

Is used to switch the background light on and off. This can, however, also be done in the "**CONTRAST FUNCTION**".

The background light is always off, when the computer is switched on.

NUMERIC KEYS

0 - 9

Used only for encodings.

Besides the previously mentioned RPM warnings there are also warnings for the following:

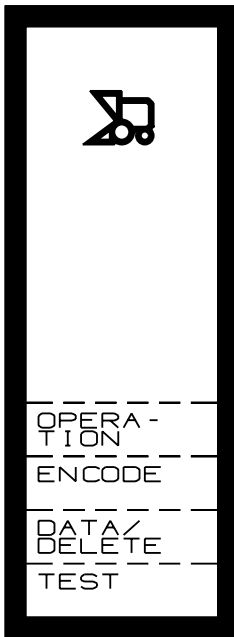
| Picture | Description |
|---------|--|
| | Full grain tank. |
| | Too much grain loss, when the grain warning is ON. |

Besides the following will be shown:

| Picture | Description |
|---------|---------------------------|
| | Area counter stopped. |
| | Reduced cutter bar width. |

MAIN MENU

You reach the main menu by pressing the **RETURN** key until the following reading is shown:

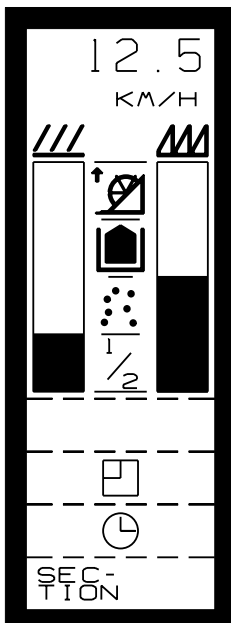


In this menu you can choose:



- OPERATION** normal use of the computer.
- ENCODE** new encodings or change of the encoded values.
- DATA/DELETE** to read or delete/clear data.
- TEST** to test the system/sensors.

Select the required function by pressing the function key to the right of the required function.

OPERATION



When this function has been selected, an optional information is displayed at the top. However, the first time the function is selected, speed will **always** be shown. The function to show is selected with the 4 function keys.

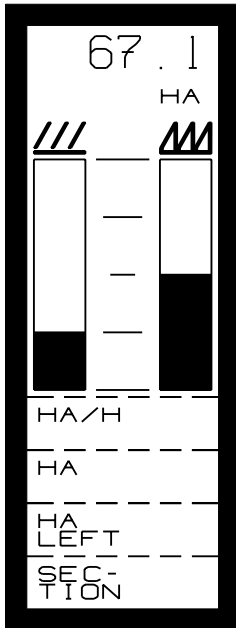
Next two bars show the loss for straw walkers () and sieves (). This reading is the most important and it therefore uses a relatively large amount of space. The “**ZOOM**” key can further enlarge the bars.


Between the two bars, Ha area override status, full grain tank, too much loss and reduced cutter bar width (section) are shown.

Below the grain loss reading the present function of the 4 function keys is shown.

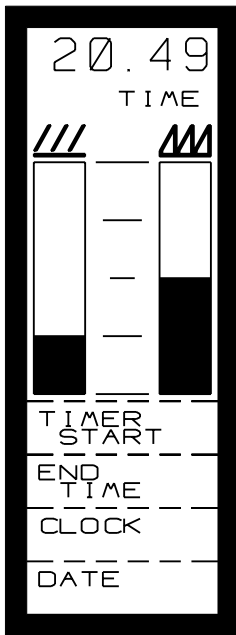
The options of the function keys are as follows:

1: AREA FUNCTIONS



- HA/T:** Efficiency: The size of the area worked per hour with the present speed.
- HA:** Area counter. The size of the area worked since the counter was cleared. The counter can be cleared in the **DATA/DELETE** function where there also is a total counter for area.
- HA LEFT:** If before start the size of the field has been encoded (in ENCODE) the remaining area can be read here at any time.
- SECTIONS:** Each time this key is pressed the harvest width is reduced with 1/4, irrespectively of the encoded working width. The reduction will affect the area counting and the grain loss calculation. Each time the cutter bar is raised and  is shown on the display the harvest width will automatically be changed into full width.

2: TIME FUNCTIONS



TIMER: This function is used to measure the time consumption for a certain piece of work. The timer can be manually started and stopped when the function is selected. The counter can be cleared in **DATA/DELETE** where there also is a total counter for time consumption.

NOTE: Not controlled by the override sensor.

END TIME: This function shows the time when the job will be finished. The time is calculated on the basis of the present efficiency and the remaining area. Works only if **HA LEFT** is encoded.

CLOCK: Time in hours:minutes:seconds. Time is set in **"ENCODE"**.

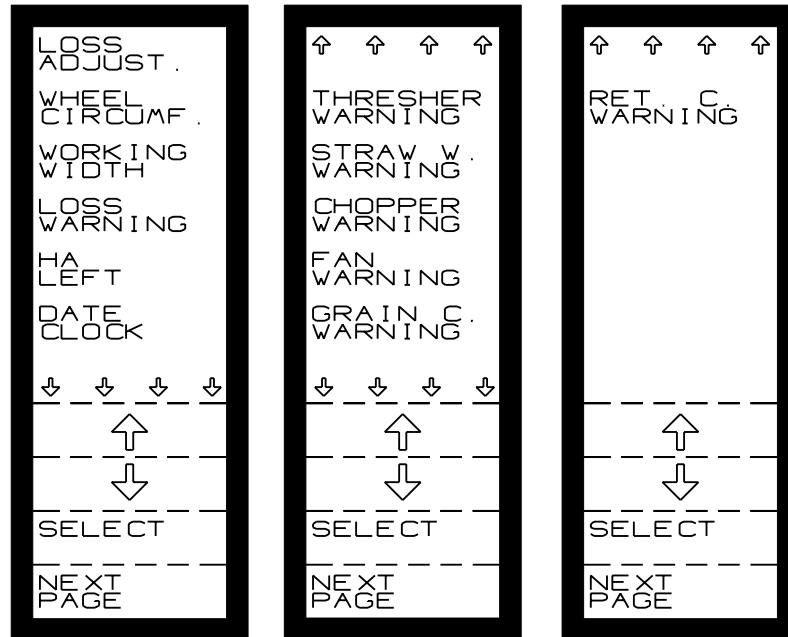
DATE: Date appears as day:month:year. Date is set in **"ENCODE"**.

ENCODE

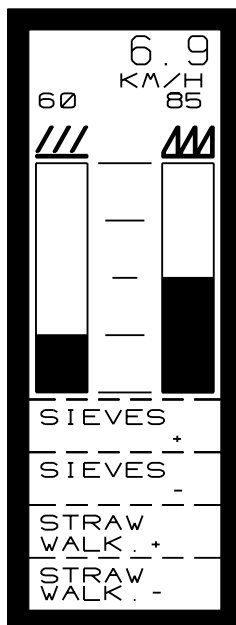
When having selected this function set the following encode options appear. The encode procedure of the individual values will be described later.

When you want to make an encodement, the cursor (the dark bar) is set on the required function by using the arrow keys and then press **SELECT**.

Press the **NEXT PAGE** key to reach the next "page" (reading).



LOSS ADJUST



This function is used to adjust the grain loss to a correct level (50% of max. deflection). The adjustment is made while driving. First a normal adjustment of the combiner is made. When the maximum speed with an acceptable grain loss has been reached the reading is set at this speed by using the function keys.

Above each of the bars there is a counter so that you can write down the basic setting for each cereal. This will ease the setting when changing from one cereal into another. However, the setting should be checked in connection with any cereal change.

WHEEL CIRCUMFERENCE

Here the wheel circumference of the combine harvester wheel at which the speed transmitter is mounted is to be encoded. If several magnets are mounted on the wheel; the wheel circumference must be divided by the number of magnets before encodement.

HOW TO MEASURE THE WHEEL CIRCUMFERENCE:

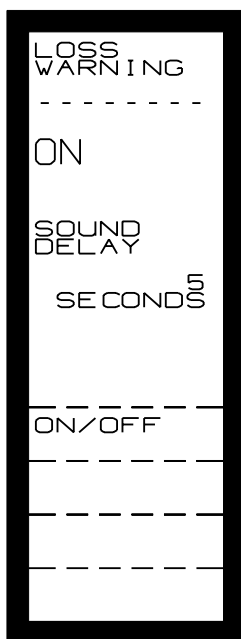
1. Make a mark on the ground and on the tyre.
2. Make 10 revolutions with the wheel.
3. Mark out on the field again.
4. Measure the distance between the two marks and divide the result by 10. The result is the effective wheel circumference. (Wheel circumference must be encoded in cm. i.e. 2,53 is encoded as 253).
5. The measured effective wheel circumference is to be divided by the number of magnets.

NOTE: When counting the wheel revolutions make sure this is done for the wheel on which the magnets are mounted.

WORKING WIDTH

Here the effective working width of the cutter bar in centimetres is to be encoded (width minus over-laps).

LOSS WARNING



Here you can choose to have a warning for an unacceptably large grain loss. If the warning is ON it will be activated at 75% reading. The warning is given in the form of a flashing reading and an acoustic alarm. It is possible to encode a delay of 0 - 10 seconds for the acoustic alarm so that a brief exceed of the warning limit will cause no warning.

HA REST

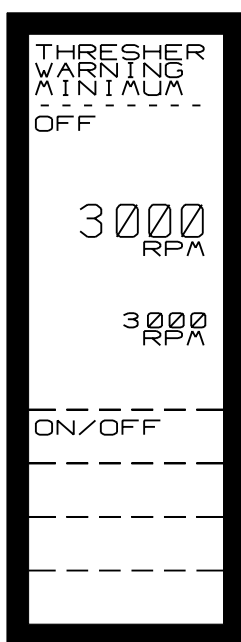
Here the size of the field is to be encoded before start. From this encodement the endtime will also be calculated.

DATE-TIME

Here the following is set/encoded:

HOURS-MINUTES-SECONDS-YEAR-MONTH-DAY.

THRESHER WARNING



Here you choose if the thresher warning is **ON** or **OFF**. If you want to control the revolutions, the accepted minimum **RPM** for the shaft must be encoded. The present **RPM** appears on the display as a help in connection with the encode.

The warning is given with an acoustic alarm and a warning picture on the display showing which shaft is causing the warning and the RPMs of the shaft.

The warning picture stays on until the revolutions are over the warning limit. If the warning is not so serious that it requires a stop, the warning can be stopped by pressing the **RETURN** key, **but please note: the shaft is no longer controlled if the warning has been stopped with the RETURN key and there will be no further warnings before the revolutions have been over the warning limit again** or the computer has been switched off.

STRAW WALKER WARNING

The encodement of warning for straw walker works like **THRESHER WARNING**. See above.

CHOPPER WARNING

Encodement of warning for straw chopper works like **THRESHER WARNING**. See above.

FANS WARNING

Encodement of warning for fan works like **THRESHER WARNING**. See above.

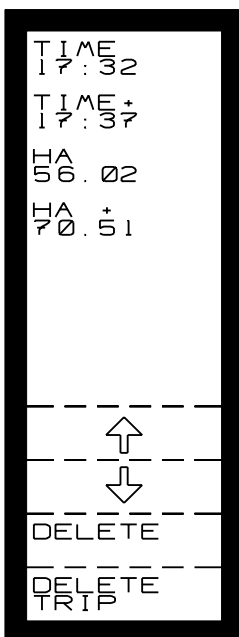
GRAIN ELEVATOR WARNING

Encodement of warning for grain elevator works like as **THRESHER WARNING**.
See above.

RETURN ELEVATOR WARNING

Encodement of warning for return elevator works like **THRESHER WARNING**.
See above.

DATA/DELETE



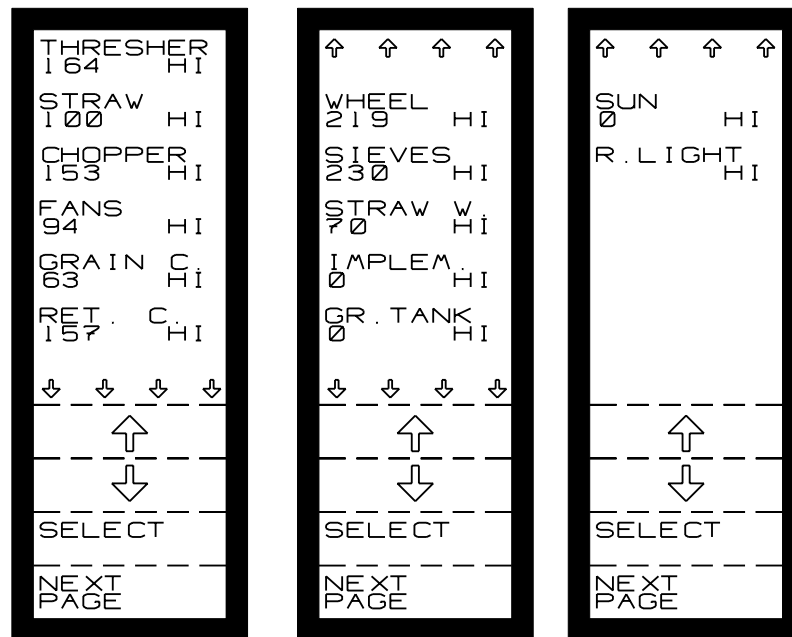
When this function set has been selected the below reading will appear. It contains both trip and a total counter. The total counters are only in this function and are marked with a +.

Clearing the trip counters is done by pressing the **DELETE TRIP** key. Both trip counters are cleared at the same time. The **DELETE TRIP** key can be used no matter where the cursor is.

Clearing the total counters is done by pressing the **DELETE** key. The total counters are cleared one by one by placing the cursor on the wanted counter and pressing **DELETE**.

TEST

When this function set has been selected the following pictures will appear.



You can change between the display pictures with the function key **NEXT PAGE**.

The **TEST**-function is used to test the mounted sensors. For each sensor a counter shows how many times the sensor has been activated. This counter is to the left on the display under each sensor.

All counters are cleared simultaneously by the **DELETE** key.

The counters can count up to 255 pulses. After this they will restart from 0.

To the right you can see if the sensor is active (LO) or not (HI).

NOTES
