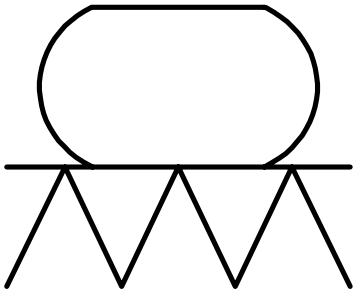
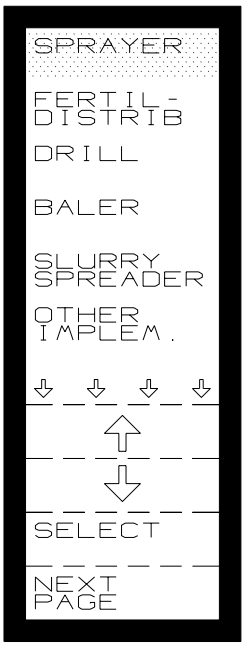
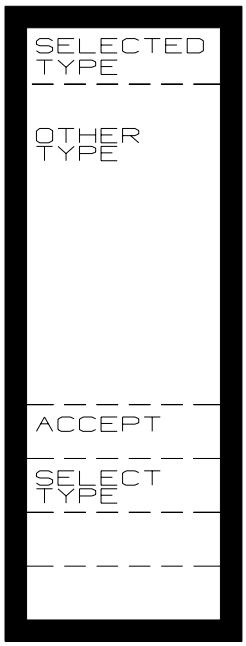
Sprayer



SPRAYER

Select sprayer from the basic menu:

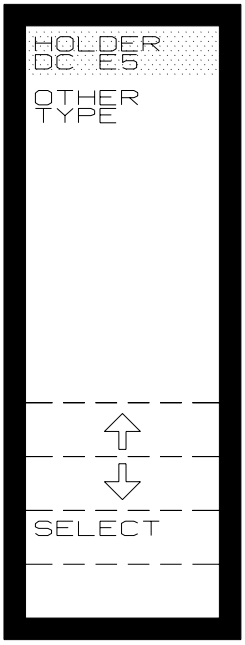




Move the cursor to “Sprayer” and press the “Select” function key; it is now possible to choose between the 2 sprayer programs.

1. HOLDER DC E5 (special program for Holder sprayers with dose control manifold with motorised valves).
2. OTHER TYPE (used for all other sprayer types)

If the correct sprayer type is shown in “Selected type” menu, press “Accept”

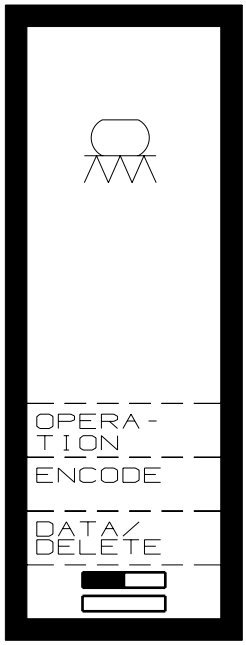


Select another sprayer type by pressing “SELECT TYPE” then move the cursor to the required type and press the “SELECT” key.

The 2 programs look the same, but the Holder program contains certain settings that can only be used with the Holder sprayer. It is therefore **important** that “Other Type” is selected for any other sprayers.

As the 2 programs look the same, the following describes the “Other Type” sprayer.

SPRAYER (OTHER TYPE)



It is now possible to select between the following functions:

OPERATION

ENCODE

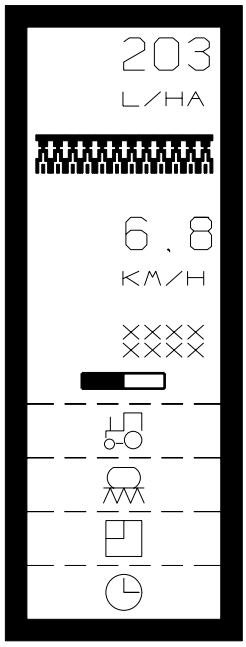
DATA/DELETE

TASK OPERATION

TASK OPERATION is described in General Functions (section 2) together with the functions that are available in all of the programs (area, time & tractor functions) all of the other functions will be described one by one.

SPRAYER OPERATION

Once the 2 status screens, that show all the encodements, have been accepted, the following is displayed:



APPLICATION RATE:

The primary function under sprayer is application.

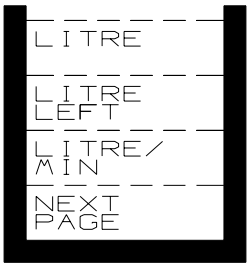
The application rate is shown in litres per hectare based on the flow through the flow meter and the area meter (speed and working width). So driving forward or speed simulation and flow through the flow meter is necessary to get a reading.

NB: The correct flow figure, forward speed calibration and the correct working width are important to gain the correct application rate.

FORWARD SPEED:

The forward speed is displayed with 1 decimal. Forward speed is calculated from the signal from the speed sensor selected in encode (wheel tractor, wheel sprayer or radar)

SPRAYER FUNCTIONS:



LITRE: The amount of chemical consumed in litres.

LITRE LEFT: Litres left in the tank (the amount filled must be encoded before starting).

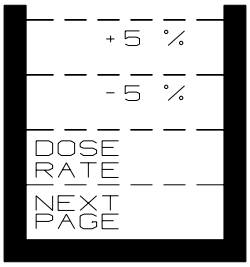
LITRE/MIN: Litres per minute.

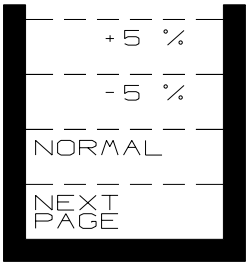
LITRE: Consumed litres since starting. This function works as a trip counter. The amount can be deleted in **DATA/DELETE** where a total counter can also be found.

LITRE LEFT: The amount of chemical left in the tank. Presupposes that the amount filled in is encoded before starting. If the optional filling flowmeter is used, then this is automatic. Litre left is also used for checking and calibrating the flowmeter (see page 3.**Fejl! Ukendt argument for parameter.**).

LITRE/MIN: Litres per minute through the flowmeter. Should not be confused with the pump capacity.

Pressing the **"NEXT PAGE"** key displays the next functions.





+XX% Step dosage, increase.

-XX% Step dosage, decrease.

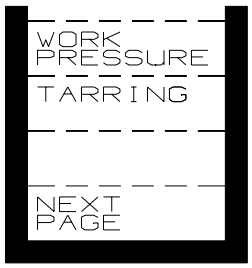
DOSE RATE/NORMAL
Encoding the required application rate or return to normal after using the step key.

+XX%: Percentile increase of the encoded application rate. The size of the steps is altered in encode.

-XX%: Percentile decrease of the encoded application rate. The size of the steps is altered in encode.

DOSE RATE/ NORMAL: This key has 2 functions – DOSE RATE or NORMAL.

The primary function of the key is DOSE RATE; the required application rate can be encoded by pressing this key.
If the application has been increased/decreased using the step function, then "NORMAL" appears and the key will return the application rate to normal.
Pressing "NORMAL" once will return the application rate to normal regardless of how much the application rate has been increased/decreased.



WORK PRESS: The working pressure of the sprayer in BAR with 1 decimal (optional pressure sensor must be fitted).

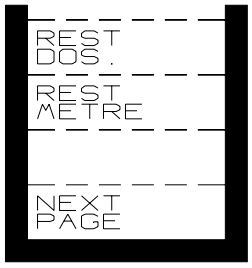
TARRING: Zero setting the pressure sensor.

WORK PRESS: Pressing this key displays the sprayers pressure in BAR with 1 decimal.
The pressure sensor's maximum pressure must be set in "**ENCODE**".

TARRING: Pressing this key defines the zero point for the pressure sensor.

NOTE: This key must only be used when the sprayer has absolutely no pressure. The displayed pressure will be incorrect if this key is pressed at any other time.

Pressing the **"NEXT PAGE"** key displays the next functions.



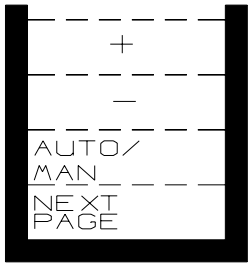
REST DOS: Rest dosage using the amount in the sprayer.

REST METRE: Remaining distance with the amount in the sprayer.

REST DOSAGE: Displays the application rate needed to finish the field with the chemical remaining in the tank. Calculated from the amount left in the tank and the remaining area.

REST METRE: Displays the distance that can be travelled using the chemical remaining in the tank with the present application rate.

Pressing the **"NEXT PAGE"** key displays the next set of functions.



AUTO/ MAN: Automatic or manual application.

+: Increase the application rate (only displayed if **"MAN"** is selected).

-: Decrease the application rate (only displayed if **"MAN"** is selected).

AUTO/ MAN: Pressing this key selects automatic or manual application. If manual operation is selected, **"MAN"** flashes in the lower part of the screen and **+** and **–** appear as function keys.

+: Increased application. The application rate is increased as long as this key is pressed. The speed at which the application rate increases depends on the speed of the regulating system's operating speed (only displayed if **"MAN"** is selected).

-: Decreased application. The application rate is reduced as long as this key is pressed. The speed at which the application rate decreases depends on the speed of the regulating system's operating speed (only displayed if **"MAN"** is selected).

Pressing the **"NEXT PAGE"** key displays the first set of functions.

EXTRA TRACTOR FUNCTIONS IN THE SPRAYER PROGRAM

METRE IN TRACK: Distance driven in the present tramline.

METRE = Distance driven.

METRE START/ METRE STOP = Manual start and stop of the distance counter.

METRE IN TRACK

Distance driven in the current tramline. This function is used to, after refilling, find the precise position in the tramline at which the sprayer ran empty. This function works in conjunction with "REDUCE TRACK M", which appears when the sprayer is switched off. This function works in the following way:

Each time the sprayer is switched on again when starting a new tramline the "METRE IN TRACK" counter starts from 0.

The computer remembers how far in the tramline has been driven, if the sprayer is shut somewhere in the middle of the track. The function "REDUCE TRACK M" is now displayed.

NOTE: Once the sprayer has been shut in the tramline, do not open the sprayer again before the sprayer is full and the computer is ready as follows:

Fill the sprayer again and drive to the start of the last tramline that was partially sprayed.

Press "REDUCE TRACK M" and drive down the tramline. An alarm will sound and "SPRAYER SOON TO BE OPENED" will be displayed 5 metres before the sprayer should be opened. When the tractor reaches the position at which the sprayer should be opened again, the computer will give another audible warning and "START SPRAYING NOW" will appear on the display. The alarm will continue until the sprayer is opened.

METRE

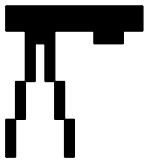
The distance driven in metres. Measured from the selected speed sensor and can be started/stopped manually or with the override sensor. Select how in encode under "METRE SWITCH".

Or

METRE START/METRE STOP

Manual start or stop of the metre counter. These function keys appear instead of "METRE" when manual control of the metre counter is selected.

BOOM SECTION ON/OFF

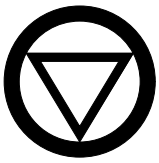


The picture to the left shows a sprayer with 2 sections, where one is open and one is closed. The total number of boom sections is set under encode.

I

When the area override sensor is activated (not counting area) **"I"** is displayed and all boom sections will disappear.

FILLING FUNCTION



Pressing the Hold key selects the filling function. The amount to be filled in the sprayer can be seen.

FILL VOLUME: The amount to be filled in to the sprayer, calculated from **LITRE LEFT**, **HA LEFT**, **TANK VOLUME** and the required application rate.

FILLED VOLUME: The amount metered by the flowmeter.

LITRE LEFT: Calculated **LITRE LEFT** in the sprayer.

NOTE: If the calculated LITRE LEFT is not the same as the actual amount left in the sprayer, then the sprayer flowmeter should be calibrated.

CALC. VOLUME: Fill volume is calculated when this key is pressed.

START FILLING: Pressing this key starts filling and the amount is metered through the filling flowmeter.

FLOW FIGURE: This value is the calibration figure for the filling flowmeter. (Filling flowmeter)

CALIBRATING THE FILLING FLOWMETER:

It is necessary to calibrate the filling flowmeter before it can be used accurately. Using the program in the LH 5000 for calibration makes this process easy. The accuracy of this calibration depends on the amount that is used for calibration. The following example uses 1000 lt.

1. Press the **"FLOW FIGURE"** key in the under-menu.
2. Check that a flow figure has been encoded; if not then encode e.g. 5000 as a start figure.
3. Press the return key to go back to the previous screen.
4. Encode an amount in **"FILL VOLUME"** that is approx. twice as much as you expect to fill into the tank.
5. Select **"START FILLING"** in the under-menu.
6. Fill the sprayer with an exact known amount, through the filling flowmeter (1000 Lt. In this example).
   Fill the sprayer under normal working conditions (same pressure, time, etc).
7. Select **"FLOW FIGURE"** again, move the cursor to **"TANK LIT"** and encode the exact known amount that was filled in to the sprayer (1000 Lt. In this example)
8. Press the flashing **"CALC. FLOW"** and the flow figure is automatically calculated.

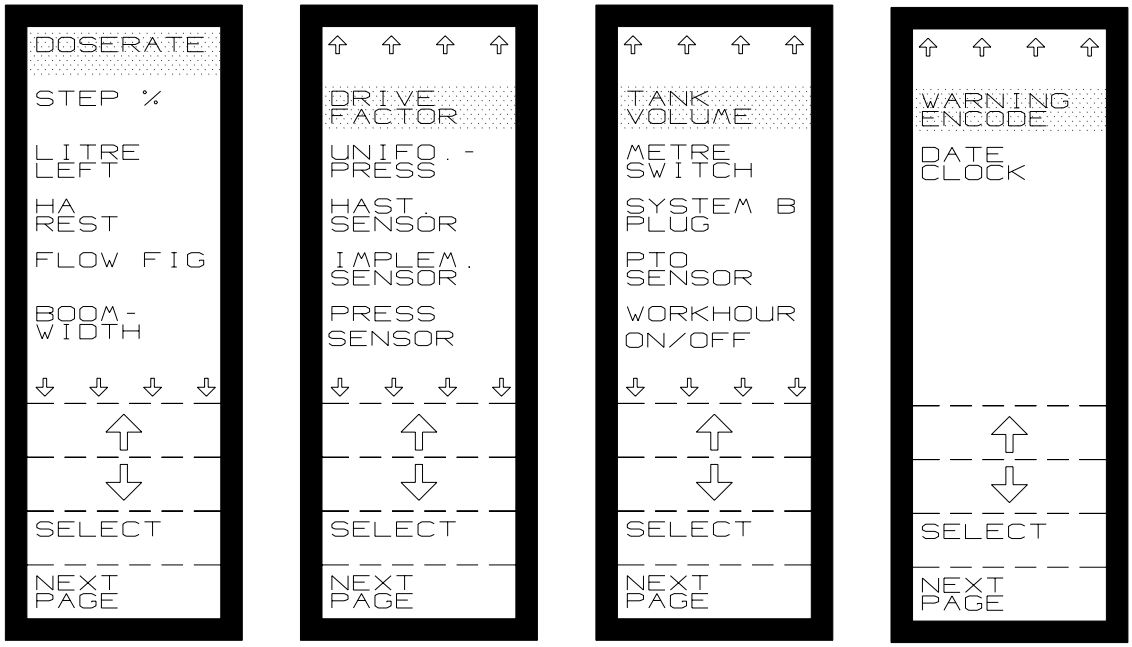
FILL MODE: You can select whether a valve stops filling or whether a horn is blown when the correct amount has been filled into the sprayer.

Pressing the **RETURN** key brings the sprayer menu back.

SPRAYER ENCODE

This menu allows the operator to encode the various settings that are necessary for spraying. Each implement has it's own set of encodements. Encodements such as speed sensor (and its calibration) have their own values under each implement.

Always check these encodements in the status screen each time you change implements.



DOSERATE

Encode the required application rate here if automatic rate control equipment is fitted to the sprayer, or if you want an alarm to sound with incorrect application rates. The application rate is encoded in whole litres per hectare. The maximum application rate that can be encoded is 9999 l/ha.

NOTE: The required application rate can also be encoded in the "SPRAYER OPERATION" screen.

STEP%

Encode the size of the steps for the "STEP" function. This % value is the same for both + and -. The maximum step size is 99%.

LITRE LEFT

To see how much is left in the tank, the amount filled must be encoded here.

If there is some liquid left in the tank before filling, then this amount must be added to the amount filled thus:

Amount left in tank + filled amount = Litre left.

NOTE: LITRE LEFT is calculated automatically if a filling flowmeter is fitted.

HA LEFT

Encode the size of the field to be sprayed here. END TIME, REST DOS., REST METRE and FILL VOLUME are calculated from this encodement.

FLOW FIGURE

This figure is the calibration figure for the flowmeter. For normal flowmeters (20-200 l/min) encode a value of 2000. See the recommend flow figure for other flowmeters.

CALIBRATION:

Use a “start value” of 2000 as the flow figure.

Method 1: (automatic).

1. Fill the sprayer with min. 600 litre (the more the better).
2. Encode the filled amount in **“LITRE LEFT”**.
3. Spray a minimum of 500 litre (spray with all boom sections open in the normal pressure range).
4. Read the amount left in the tank using the sight gauge on the sprayer.
5. Encode the above amount left in the tank in **“TANK LIT”**.
6. Press the flashing **“CALC: FLOW”** key.
7. The new flow figure has now been calculated.

NOTE: Greater accuracy can be achieved by weighing the sprayer before and after spraying or by conducting a jug test and comparing the flow in L/MIN.

Pressing the flashing **“CALC. FLOW”** key will always calculated a new flow figure.

Method 2: (Manual):

1. Fill in min. 600 litres (the more the better).
2. Zero the **LITRE** counter in **DATA/DELETE**.
3. Spray 500 litres.
4. Read the consumed amount on the indicator on the tank.
5. Read the **LITRE** counter in **DATA/DELETE**.
6. Insert the values in the following formula:

$$\textbf{NEW FLOW FIGURE} = \frac{\text{Old flow figure x Amount sprayed}}{\text{Read litre counter (LH 5000)}}$$

Encode this new value as the new flow figure.

NOTE: Check this calibration at regular intervals if the sprayer is fitted with a standard LH AGRO paddlewheel flowmeter.

This check is always easy with the LH 5000, as the amount sprayed should be the same as what the LH 5000 displays.

Changing the paddlewheel in the flowmeter is recommend every other year.

BOOM WIDTH

The working width for the sprayer. If the sprayer is fitted with control valves for each individual boom section (boom compensation), then encode each boom section by itself (starting from the left). Encode otherwise the whole boom as 1 section (all other sections as 0).

Operation:

Move the cursor to the section to be encoded/changed and encode the section width with the numeric keypad.

DRIVE FACTOR:

The speed at which the regulating valve adjusts to the correct position. Min. 1, Max. 500. Normal = 100.

REGULATION DELAY

Encode the number of seconds that regulation is delayed by after the main valve is opened. It is possible to encode from 0 to 9 seconds.

UNIFO. PRESS:

Select **"ON"** if the sprayer is fitted with uniform pressure valves, **"OFF"** if not.

NOTE: Remember to adjust the uniform pressure valves.

SPEED SENSOR (KM/H)

There are 3 different speed sensors to choose from in the LH 5000 v. 4 (if fitted).

WHEEL TRACTOR:

Speed sensor fitted on the tractor. The sensor can be built into the tractor's gearbox or rear axle as standard factory fitted or be retrofit on a wheel or drive shaft.

NOTE: Wheelslip will give inaccurate speed-readings.

WHEEL SPRAYER:

Speed sensor fitted to trailed sprayers. This type of sensor will, as a rule, give a very accurate speed-reading.

RADAR:

Signal from a radar, fitted on the tractor. This type of sensor gives a very accurate speed reading on hard surfaces, but a high crop and reflecting surfaces (water) gives an inaccurate reading. This type of sensor is not recommended for spraying.

Please refer to chapter 2 for speed sensor calibration

IMPLEMENT SENSOR

This sensor starts and stops area measurement. This should be connected to the main valve on sprayers. Select **"SPRAYER"** under encode.

If a PTO RPM sensor has been fitted then this can be used, select **"PTO"**.

PRESSURE SENSOR

Encode the maximum working pressure for the fitted pressure sensor. This maximum Pressure is normally printed on the pressure sensor. Zero setting the pressure sensor (tarring) can be done under both “OPERATION” and “ENCODE”.

TANK VOLUME

Encode the sprayer’s tank volume when using the optional filling equipment.

METRE SWITCH

Select whether the metre counter is to be started and stopped manually **“MANUAL”** or via the implement sensor **“IMPLEM. SENSOR”**.

SYSTEM B PLUG

There are 2 system plugs on the back of the LH 5000.

The System **A** plug is compatible with *older* LH 5000 versions.

The System **B** plug is for **new** connections.

ACTIVE 0 VOLT:	Boom sections are opened with 0V.
ACTIVE 12 VOLT:	Boom sections are opened with 12V.
ON/OFF:	**ON:** The System **B** plug is used.
	OFF: The System **B** plug is **not** used.

PTO SENSOR

Encode the number of pulses the PTO sensor sends per revolution (encode 1 if the LH PTO sensor kit is used).

WORK HOUR ON/OFF

Select whether the timer function is started/stopped manually via the function key in the operation menu or by the selected implement sensor.

WARNINGS

The following warning can be set in this menu:

PTO:	Warning **ON/OFF** and **MAX/MIN**-limits for revolutions.
KM/H:	Warning **ON/OFF** and **MAX/MIN**-limits for speed.
SLIP:	Warning **ON/OFF** and **MAX/MIN**-limits for wheel slip in %.
MIS DOSE:	Warning **ON/OFF** and **MAX-**deviation in **+/-%.**
LITRE LEFT:	Warning **ON/OFF** and amount of litres (min.) at which warning is wanted.
WORK. PRESS.:	Warning **ON/OFF** and **MAX/MIN**-limits for the working pressure of the sprayer.
NB:	It is recommended to turn all warnings, which are not wanted "**OFF**".

DATE - CLOCK:

Set the date and time in this menu:

HOURS - MINUTES - YEAR - MONTH - DAY.