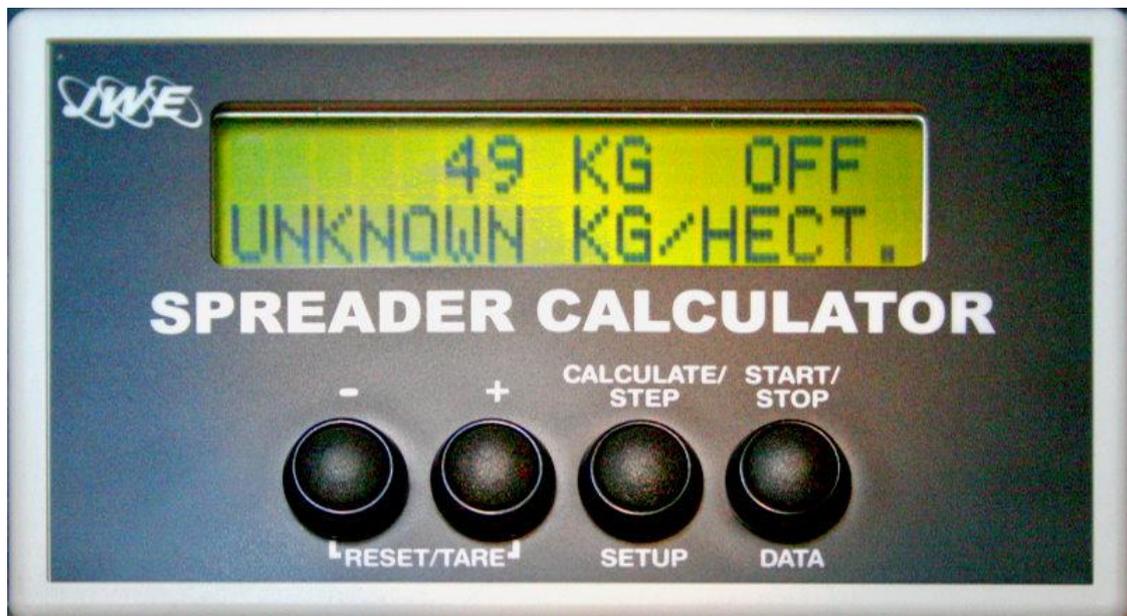


SPREADER CALCULATOR V1.0

OPERATION MANUAL

Covering Versions 1.0

Revision 1



System Overview

The calculator measures the speed of the vehicle, using a sensor on the speedometer cable, and weighs the remaining product in the bin.

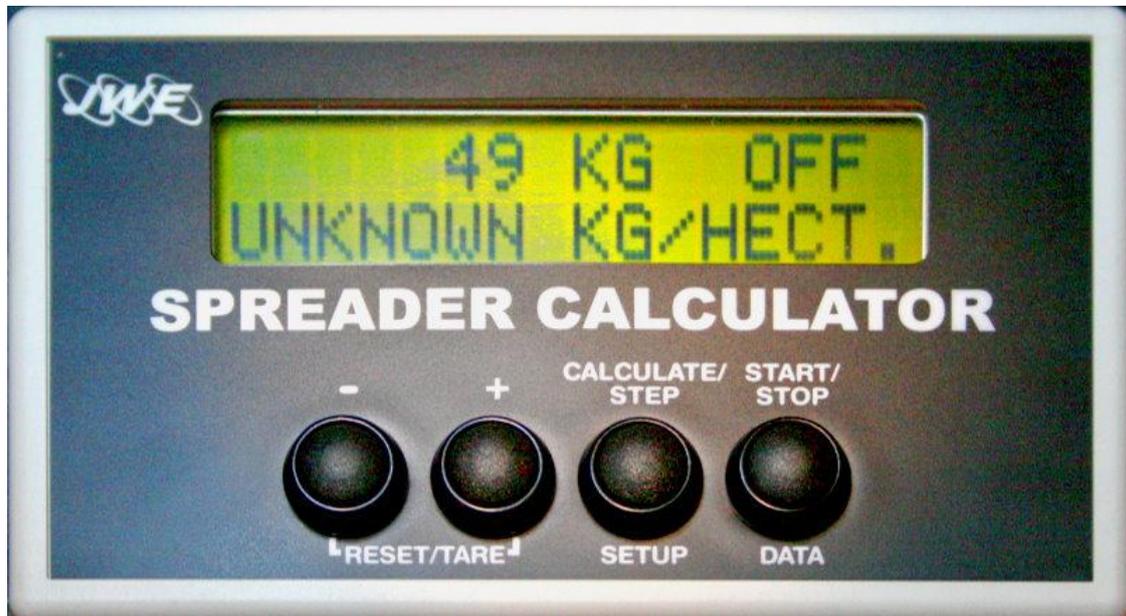
These values, along with the bout width, are then used to calculate the SPREAD RATE.

The system also records the following information to make record keeping easier.

- **Job Hectares**
- **Job Tonnes**
- **Job Distance**
- **Total Hectares**
- **Total Tonnes**
- **Total Distance**

The Control Panel

A small hand-held control box located in the vehicle cab.



Switch Functions

All the front panel buttons serve more than one purpose. This will be explained later. Their **MAIN** purpose is shown **above** the button and their **alternate** purpose shown **below** the button.

<u>Main Function</u>		<u>Additional Function.</u>
1) - (value change)	-	Reset / Tare (Long Press of both + and -)
2) + (value change)	-	Reset / Tare (Long Press of both + and -)
3) Calculate / Step	-	Setup Menu (Long Press)
4) Start / Stop	-	Data Menu (Long Press)

The **CALCULATE** button is used to calculate the spread rate.

The **START / STOP** button is used to start and stop the spreader calculator.

Power On Messages

When power is switched on the following message will be displayed.

**JOHN WHITEHEAD
ELECTRICAL LTD**

This will then be followed by the following message showing the program version.

**SPREAD CALCULATE
VERSION 1.0**

If more than one tractor is used with this calculator then the currently selected tractor number will be displayed.

**TRACTOR SELECTED
IS TRACTOR 1**

The main control screen will now be displayed.

**2266 KG OFF
SET KG/HECT.**

The system is now ready for **normal use**.

Basic Operation.

The value shown on the TOP LEFT is the current bin weight remaining in the bin.
The ON / OFF status is shown on the TOP RIGHT.

While the vehicle is spreading the ESTIMATED remaining weight may be shown, depending on circumstances.

2266 KG OFF 125 KG/HECT.

The value shown on the bottom line, if any, is the spread rate in Kilograms Per Hectare.

There are three different messages which can appear on the bottom line.

- **SET START** - The start weight needs to be set.
- **UNKNOWN** - The rate has not been calculated yet.
- **xxxx KG/HECT.** - The calculated KG/HECT. rate value.

Use the **START / STOP** button to start and stop the spread calculator.

Use the **CALCULATE** button to calculate the spread rate, or set the start weight.

Use the **+ and – (TARE)** buttons to tare the weight.

When you **START** or **STOP** spreading you will need to do one of the following.

1. Press the **START/STOP** button.
2. Use the **REMOTE START/STOP** button.

This will ensure that the distance driven while NOT spreading is not calculated.

Typical Operation.

This assumes that your SPREADER CALCULATOR has been calibrated and tested by the installer, and the system is ready for normal operation.

1. Set the **BOUT WIDTH** of the machine by **PRESSING** and **HOLDING** the **SETUP** button **until a beep is heard (1 second)**. The Bout Width is now displayed. Change the Bout Width by using the **+** or **-** buttons.

To exit the menu and return to the normal display page **PRESS and HOLD** one of the **MENU** buttons once again **until a beep is heard (one second)**.

2. If the BIN is EMPTY then
 - a. **PRESS** and **HOLD** the **+** and **-** buttons to **TARE** the weight.
 - b. The message "**TARE WEIGHT? NO YES**" will then be displayed.
 - c. Please note – The words **NO** and **YES** appear above the **-** and **+** switches. Selecting **-** will answer **NO** and selecting **+** will answer **YES**.
 - d. Press the **+** button to respond **YES**.
3. Add fertiliser to the BIN ready to spread.
 - a. Note – You must add at least 100KG to the BIN.
4. **STOP MOVING** on level ground for at least 3 seconds.
5. Press and release the **CALCULATE** button to set the **START WEIGHT**.
6. The message "**START WEIGHT IS NOW SET**" should be displayed.
7. Press any button to REMOVE this message.
8. Drive to where you wish to begin spreading.
 - a. Press the **START/STOP** button to Start measuring.
 - b. or use the **REMOTE START/STOP** button, if fitted, to Start measuring.
9. Start spreading.
10. Spread until you have spread at least 20KG.
11. **STOP MOVING** on level ground for at least 3 seconds.
 - a. If you spread 100KG or more since the last time you stopped, then the spread rate will now be automatically calculated.
 - b. If you spread less than 100kg then you will need to press the **CALCULATE** button to force a calculation to be performed.
12. The actual spread rate should now be displayed.

Setup / Data menus

There are **TWO menus** available that give access to various **groups of settings and information**.

- **SETUP** - **Calibration and Installation setting.**
- **DATA** - **Distance & area spread data.**

Each Menu is Selected by **PRESSING and HOLDING** the appropriate button **until a beep is heard (one second)**.

To exit the menu and return to the normal display page **PRESS and HOLD** one of the **MENU buttons** once again **until a beep is heard (one second)**.

The normal display page will then be restored.

2266 KG OFF 125 KG/HECT.

Each menu has a varying number of pages to select from. These are listed below.

To select the Next menu press the STEP button.

To change the item displayed on the current page use the + and - buttons.

MENU PAGE LAYOUT

The following is a chart of the menu choices available and their purpose.

These will be explained individually later.

DATA MENU

Job Hectares	-	Job area spread in hectares.
Job Tonnes	-	Job tonnes spread in tonnes.
Job Distance	-	Job distance travelled in Km.
Total Hectares	-	Total area spread in hectares.
Total Tonnes	-	Total tonnes spread in tonnes.
Total Distance	-	Total distance travelled in Km.

SETUP MENU

Bout Width	-	The current bout width setting.
Select Tractor	-	The number of the tractor in use.
Enter Password	-	Password to get access to system settings.
Speed Input Select	-	Local or Remote speed input selection.
Pulses Per Metre	-	The distance calibration setting for this tractor.
Auto Calibrate	-	Automatic distance calibration feature.
Scale Gain	-	Weighing system Gain setting.
Scale Weight	-	Conveyor motor speed in rpm.
Gain Selection	-	Displays Weighing system Gain Selection.
Vehicle Speed	-	Displays vehicle speed for testing.
Remote Input	-	Enables / Disables Remote start / stop input.
Edit Tractors	-	Sets the number of tractors required.
Tractor x P.P.M.	-	Speed calibration settings for each tractor.
Tractor x Input Select	-	Speed input local / remote selection for each tractor.

Data Menu

These values recorded are intended to give information per bin load or paddock. This shows you the **HECTARES, TONNES & DISTANCE** since the counter was **RESET**. If a **JOB** value is currently shown on screen then you can **RESET** the **JOB** values. If a **TOTAL** value is currently shown on screen then you can **RESET BOTH** the **JOB** values and the **TOTAL** values at once. These values are **RESET** to zero when the other data values are reset by **PRESSING AND HOLDING** both the **+** and **-** buttons for one second.

Job Hectares.

This shows you the **HECTARES SPREAD** since the **JOB** or **TOTAL** counters were **RESET**.

JOB HECTARES 12.345 H
--

Job Tonnes.

This shows you the **TONNES SPREAD** since the **JOB** or **TOTAL** counters were **RESET**.

JOB TONNES 12.345 T

Job Distance.

This shows you the **DISTANCE SPREAD** since the **JOB** or **TOTAL** counters were **RESET**.

JOB DISTANCE 12.345 KM

Total Hectares.

This shows you the **HECTARES SPREAD** since the **TOTAL** counters were **RESET**.

TOTAL HECTARES 12.345 H
--

Total Tonnes.

This shows you the **TONNES SPREAD** since the **TOTAL** counters were **RESET**.

TOTAL TONNES 12.345 T
--

Total Distance.

This shows you the **DISTANCE SPREAD** since the **TOTAL** counters were **RESET**.

TOTAL DISTANCE
12.345 KM

Setup Menu

Bout Width.

This value is the **BOUT WIDTH** and should be set to match the actual bout width you are spreading. To change this value Press the **+** or **-** buttons.

BOUT WIDTH
9.3 METRES

Select Tractor.

NOTE – if only one tractor has been set in the **EDIT TRACTORS** setting then this will **NOT** be displayed. This value is the **NUMBER of the TRACTOR** that is being used and should be set to match the actual tractor you are using.

To change this value Press the **+** or **-** buttons.

SELECT TRACTOR
[1]

Password.

All the remaining settings on the **SETUP MENU** can **NOT be changed** without the correct **password** being entered to **UNLOCK** the security.

ENTER PASSWORD
[]

Speed Input Select.

This value allows you to select **WHICH** speed input is used, **LOCAL** or **REMOTE**.

NOTE – **this setting is for the tractor that is currently selected.**

To change this value Press the **+** or **-** buttons.

SPEED INPUT
SELECT = REMOTE

Pulses Per Metre.

This value is the number of ground speed pulses per metre from the speed sensor.

NOTE – this setting is for the tractor that is currently selected.

To change this value Press the + or - buttons.

**PULSES PER METRE
2.26**

Auto Calibrate.

This option is used to **CALIBRATE** the **VEHICLE SPEED** input.

Press + for YES, or – for NO.

SEE details on AUTO CALIBRATE at the end of the SETUP MENU.

**AUTO CALIBRATE
NO YES**

Scale Gain.

This value is the calibration value for the WEIGH system.

If you **KNOW** the setting that should be used here then you can set it.

If you do **NOT KNOW** what value should be used then use the **SCALE WEIGHT** setting instead.

To change this value Press the + or - buttons.

**SCALE GAIN
0.3739**

Scale Weight.

This value is the calibration value for the **ACTUAL WEIGHT** that is in the bin.

To set this you **MUST** have performed a **TARE** on the empty bin and then **ADDED** a **KNOWN WEIGHT** into the bin.

This value can then be adjusted to **MATCH** the **KNOWN WEIGHT** that was added.

To change this value Press the + or - buttons.

**SCALE WEIGHT
1598 KG**

Gain Selection.

This value can **NOT** be adjusted.

This value is provided to display the status of an internal factory switch setting.

**GAIN SELECTION
LOW GAIN**

Vehicle Speed.

This value can **NOT** be adjusted.

This value is provided to allow you to **CHECK** the vehicle speed calibration.

**VEHICLE SPEED
0.0 KMH**

Remote Input.

This value is control mode of the REMOTE INPUT.

This input can be used to START and STOP the spreader calculator.

To change this value Press the + or - buttons.

**REMOTE INPUT
= OFF**

There are FOUR options available.

- OFF - The external switch is DISABLED.
- TOGGLE - Each external switch press changes between START and STOP.
- NORMAL - The external switch is CLOSED to START.
- INVERTED - The external switch is OPEN to START.

Edit Tractors.

This value is the number of different tractors that the spreader calculator is used on.

You can have up to 5 different tractors and this allows you to have DIFFERENT speed calibrations for each tractor.

To change this value Press the + or - buttons.

**EDIT TRACTORS
1**

Tractor 1 P.P.M.

This value is the pulses per metre calibration setting for TRACTOR 1.

To change this value Press the + or - buttons.

**TRACTOR 1 P.P.M.
2.26**

Tractor 1 Input.

This value is the speed input selection for TRACTOR 1.

This setting determines which speed input is used, LOCAL or REMOTE.

To change this value Press the + or - buttons.

**TRACTOR 1 INPUT
LOCAL**

Tractor 2 P.P.M.

This value is the pulses per metre calibration setting for TRACTOR 2.
To change this value Press the + or - buttons.

**TRACTOR 2 P.P.M.
2.26**

Tractor 2 Input.

This value is the speed input selection for TRACTOR 2.
This setting determines which speed input is used, LOCAL or REMOTE.
To change this value Press the + or - buttons.

**TRACTOR 2 INPUT
LOCAL**

Tractor 3 P.P.M.

This value is the pulses per metre calibration setting for TRACTOR 3.
To change this value Press the + or - buttons.

**TRACTOR 3 P.P.M.
2.26**

Tractor 3 Input.

This value is the speed input selection for TRACTOR 3.
This setting determines which speed input is used, LOCAL or REMOTE.
To change this value Press the + or - buttons.

**TRACTOR 3 INPUT
LOCAL**

Tractor 4 P.P.M.

This value is the pulses per metre calibration setting for TRACTOR 4.
To change this value Press the + or - buttons.

**TRACTOR 4 P.P.M.
2.26**

Tractor 4 Input.

This value is the speed input selection for TRACTOR 4.
This setting determines which speed input is used, LOCAL or REMOTE.
To change this value Press the + or - buttons.

**TRACTOR 4 INPUT
LOCAL**

Tractor 5 P.P.M.

This value is the pulses per metre calibration setting for TRACTOR 5.
To change this value Press the + or - buttons.

**TRACTOR 5 P.P.M.
2.26**

Tractor 5 Input.

This value is the speed input selection for TRACTOR 5.
This setting determines which speed input is used, LOCAL or REMOTE.
To change this value Press the + or - buttons.

**TRACTOR 5 INPUT
LOCAL**

Auto Calibrate.

This option is used to **CALIBRATE** the **VEHICLE SPEED** input.
Press **+** for YES, or **-** for NO.

AUTO CALIBRATE
NO YES

Press **YES** if you want to proceed.

Set the **TARGET DISTANCE** by **PRESSING** the **+** or **-** button. The longer the target distance, the more accurate the calibration. Position the tractor at the start of the measured distance and **PRESS** the **SETUP** button.

TARGET DISTANCE
1000 METRES

Drive to the end of the measured distance and **STOP**. **PRESS** the **SETUP** button.

DRIVE 1000 M
AND THEN STOP

If the pulse rate was out of specification, the following is displayed and the calibration would need to be repeated.

INVALID RESULT!
0 PULSES

If the calibration was successful, **PRESS** the **+** or **-** buttons to use or cancel the test.

USE THIS VALUE
NO YES 8.000

Technical Notes

FOR AUTHORISED AND QUALIFIED PERSONNEL ONLY!

Password.

Without responding with the correct password, the settings can not be accessed.
To unlock the Controller for adjustments, use the following password sequence while the
“**ENTER PASSWORD**” message is displayed.

+ - - + + +

System Calibration.

- Calibrate the **VEHICLE** speed for each of the vehicles being used.
- Set the **SPEED INPUT** selection to the correct state for each vehicle being used.
- Calibrate the **WEIGH** system.
- Set the **REMOTE START/STOP** mode to the required setting.
- Set the **BOUT WIDTH**. This will have to be measured.

Spreader Calculator Wiring Connections.

DESIGNATION	
2 CORE	
12 TO 24V +	BROWN
12 TO 24V -	BLUE

3 PIN PLUG (SPEED SENSOR)		
	PIN	WIRE
SENSOR +	1	1
SENSOR -	2	2
SENSOR SIGNAL	3	3

4 PIN PLUG (LOAD CELL)		
	PIN	WIRE
EXCITATION +	1	WHITE
SIGNAL +	2	GREEN
SIGNAL -	3	YELLOW
EXCITATION -	4	BROWN

LOAD CELL JUNCTION BOX	
LOAD CELLS	LEAD
RED	WHITE
GREEN	GREEN
WHITE	YELLOW
BLACK/ SCREEN	BROWN/ SCREEN

Junction Box Mounting.

The load cell junction box is mounted in a convenient place on the machine. Using the four pre-tapped 6mm mounting holes in the back of the enclosure.

Once all of the wiring has been terminated, both glands need to be sealed with silicone on the inside of the junction box.

When fitting the lid, lift the seal off of the lid and run a bead of silicone around the edge of the lid. Re-fit the seal, run another bead of silicon around the seal, then fit the lid into place.

Spray the outside of the junction box with “**CRC Soft Seal**”.

Speed Sensor Termination.

When fitting off the sensor within the inline connector, fit all wiring into the same side of the chocolate block connector.

Screw up the glands on each end of the inline connector. Spray “**CRC Soft Seal**” into each end of the inline connector and then screw together.

Silicon seal the cable entry on the outside of the inline connector and spray the outside of the connector with “**CRC Soft Seal**”.

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