

i4M Hydraulic Variable Rate Spreader Controller Quick Start Guide





**LEAVE THE HOPPER EMPTY UNTIL
MACHINE IS CORRECTLY SETUP AND
READY FOR FERTILISER CALIBRATION**



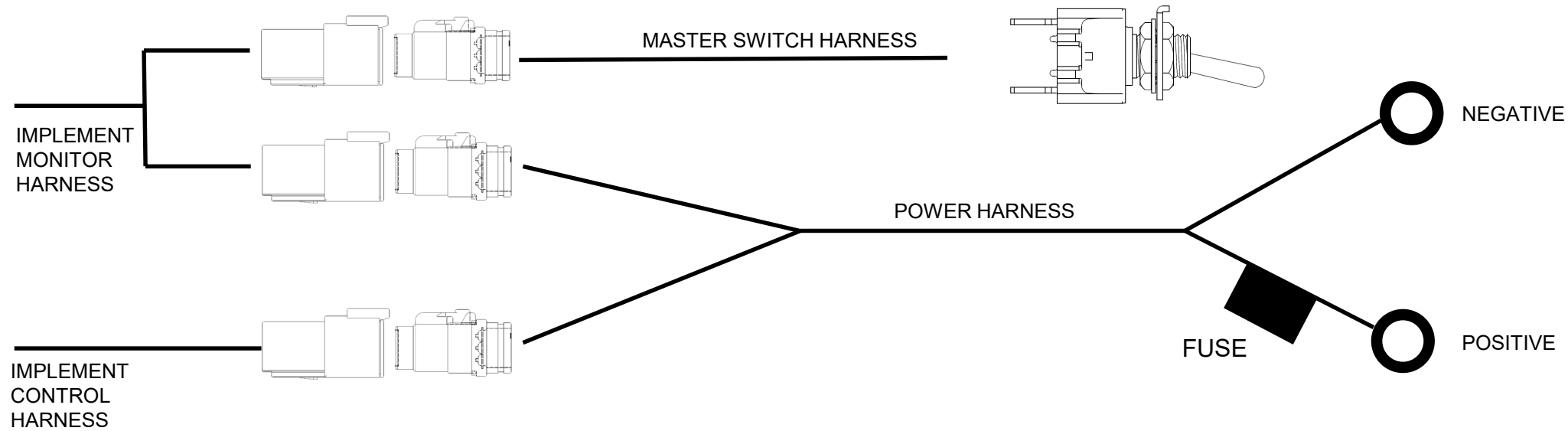
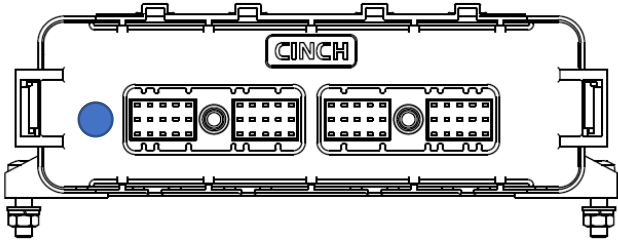
CONNECTING POWER AND MASTER SWITCH

Power is connected to both the implement control and monitoring harnesses as shown. The terminals on the power cable should be connected to the tractor battery to ensure clean power is provided to the controller.

The master switch is connected to the implement monitoring harness. The switch should be run into the tractor cabin and mounted where it can be easily accessed by the machine operator.

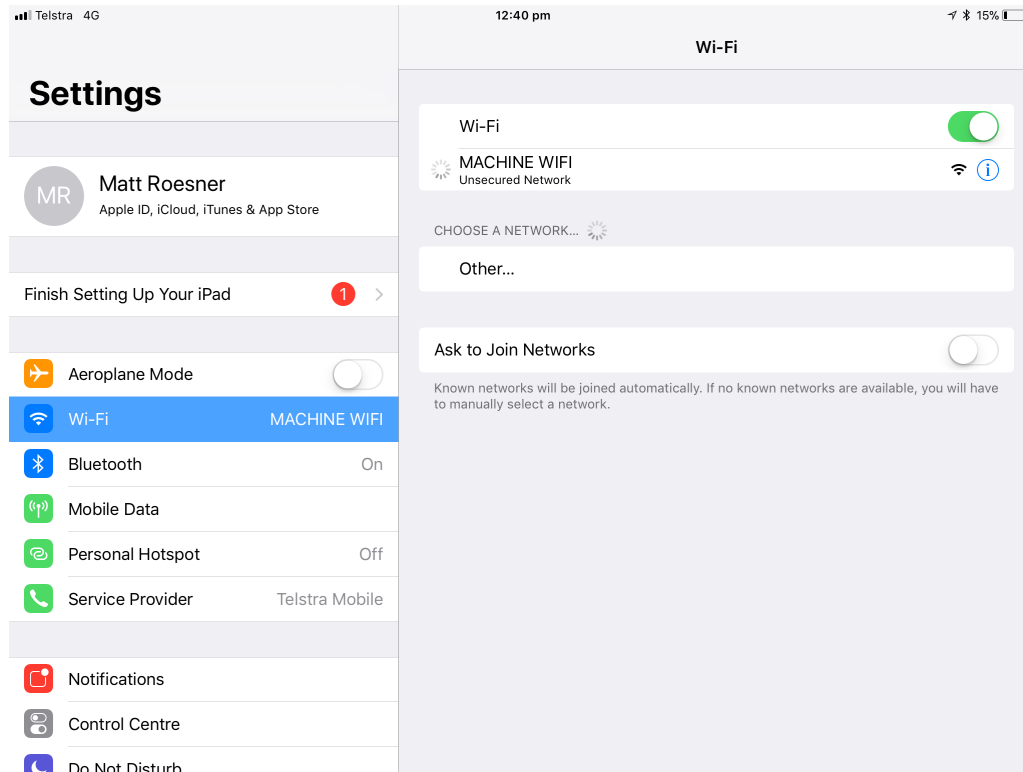
When Controller is powered the LED indicator light on the underside of the enclosure shines Blue

**NOTE : THE CONTROLLER
REQUIRES 30 to 60 SECONDS
TO BOOT UP**



i4M SPREADER APP INITIAL SETUP

Before starting the spreader setup, the i4M Spreader app must be downloaded from the Apple App Store.



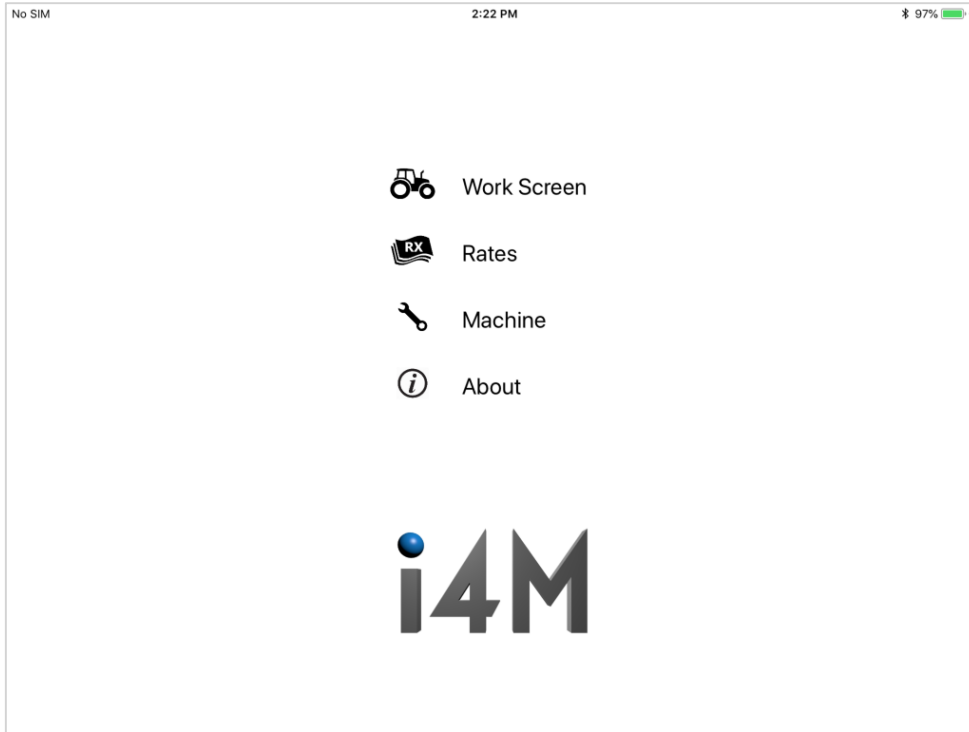
1. Prior to starting the i4M App, join the MACHINE WIFI network on the iPad settings page. No password is required.



2. Open the i4M Spreader app from the iPad home screen

i4M SPREADER APP INITIAL SETUP

3. i4m Spreader app menu screen is displayed when App first opens



MENU NAVIGATION

WORK – displays track, prescription map if loaded and data from the controller. The user views this screen when operating the spreader.

RATES– login to the i4M server and download prescription maps from the MAPS screen. Set a fixed rate from this screen

MACHINE – access machine and product setup, calibration and diagnostic data from the MACHINE button.

ABOUT – Version information and support contacts.

4. Tap **MACHINE** to configure the spreader.

SPREADER SETUP

1. Tap **SETTINGS** -> **MACHINE** to configure the spreader.


PRODUCT


SETTINGS


CHECKS


LICENSE

SOFTWARE

5000

48.7

Urea

24

2. Enter the following parameters on the MACHINE SETTINGS PAGE

Diameter of belt roller in metres : 0.181
Width of Door opening in metres : 0.730
Belt Pulses : 280* (see the following page)
Distance Cal – mm/wheel pulse.
Door Actuator – Tap this button to enable/disable the door actuator

For a PWM valve use the following initial valve settings :
Valve Jump Start : 80
Valve Speed : 30
Valve Dampening : 60
Green Zone : 20

3. Tap **HOPPER**

HOME

HOPPER

HECTARES

MACHINE

DEVICE

Machine Settings

0.231

Diameter of the belt drive roller in metres

0.730

Width of the door opening in metres

280

Belt sensor, pulses for one revolution of the drive roller

605.0

Distance cal, adjust so this matches your tractor speed: 0 km/h

CHANGE

Door actuator is installed

Hydraulic Drive

80

Valve jump start 1 to 100

30

Valve speed 1 to 100

60

Valve damping 1 to 100

20

Green zone 1 to 100

Valve Jump Start - Increase this to make the belt start up quicker
Valve Speed - How fast the valve reacts to rate/speed changes
Valve Damping - Increase this to dampen the valve when it's close the target rate
Green Zone - The area close to the target where the valve stops adjusting



REFERENCE VALUES

Tyre Size	Wheel Speed
	Sensor Value
400/60 x 15.5	458
900 x 16	448
500/60 x 22.5	613
550/60 x 22.5	388
18.4 x 28	471
23.1 x 26	490
750/65R26	513
650/65 x 30.5	518
600/55 x 26.5	424
750/60 x 30.5	518

****NOTE****
Settings may need to be finetuned in order to receive achieve optimal operating conditions

BELT SENSOR

1. Tap **SETTINGS** -> **MACHINE** to configure the spreader.

LOADCELL CALIBRATION (if loadcell fitted)

4. Tap **ENABLE** if Loadcells are fitted.

HOME

HOPPER

HECTARES

MACHINE

DEVICE

Hopper Quick Fill

FILL

Set the hopper to the previous load amount

New Hopper Load

0

kg

Enter the hopper kilograms

Enable Loadcells

ENABLE

Read the hopper load using the loadcells

i4M

5. If the spreader is not fitted with loadcells, turn off Input channels 0 to 3.
If the spreader has a 3 point weighing system, turn on channels 0 to 2.
If the spreader has a 4 point weighing system, turn on channels 0 to 3.

TO CALIBRATE THE LOADCELLS

- Tap Empty when the machine is unloaded and on level ground
- Load the spreader with a known weight
- Enter the known weight in the box below.
- Calibration is complete.

HOME

HOPPER

HECTARES

MACHINE

DEVICE

Loadcell Quick Zero

ZERO

This will zero the readout but won't change the calibration below

Calibrate Loadcells

EMPTY

Tap this when the hopper is empty

0

kg

When there is product in the hopper, enter the kilograms

Loadcell Settings

FILTER

Weight tracking - time based variable incremental follower

✓

Input channel 0

✓

Input channel 1

✓

Input channel 2

✗

Input channel 3

Turn off unused channels

Disable Loadcells

DISABLE

This will show a manual kg countdown

6. Tap **HOME**.

****USE THE LOADCELL ZERO TO ZERO THE LOADCELL READING WHEN THE SPREADER IS EMPTY. THE ZERO PROCEDURE DOES NOT CHANGE THE CALIBRATION****

CALIBRATE DOOR ACTUATOR (if actuator fitted)

7. Tap **CHECKS -> DOOR.**


PRODUCT


SETTINGS


CHECKS


LICENSE


SOFTWARE

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48.7

Urea

24



8. To calibrate the door actuator:

Tap **CLOSE** – the door will close. When the door stops moving at the bottom of the actuator stroke, Tap **OPEN** to fully open the door.

The door actuator has an in-built controller that stores a calibration factor when the door is fully closed and returned to the fully open position.

HOME

SYSTEM

LOADCELLS

BELT

DOOR

Door Info

Item	Value	Unit	Description
Flags	?	Hex	Flags variable from main control processor
Open	?	Status	Actuator retract command
Close	?	Status	Actuator extend command
Target Height	?	mm	Desired door height or opening
Actual Height	?	mm	Actual door height or opening
Door Sensor	?	mV	Door position sensor voltage reading
Sensor Min	?	mV	Position sensor min reading
Sensor Max	?	mV	Position sensor max reading

Door Control

SET

Set door to the target height for spreading


OPEN

CLOSE

STOP

Reset Actuator

1 Check the door is not jammed or blocked
2 Tractor running
3 Tap OPEN, wait for it to stop
4 Tap CLOSE, wait for it to stop
5 Tap SET, door should move to the correct spreading height



9. Tap **HOME**

PRODUCT SETUP


PRODUCT

SETTINGS


CHECKS

LICENSE


SOFTWARE




5000




48.7



Urea



24




10. Tap **PRODUCT**


11. The i4M is pre-programmed with 10 different fertiliser types. You can also add custom materials by adding a new product name, calibration factor, spread width and door height.

Press the PREVIOUS and NEXT buttons to select different products from the product database.

The desired spread width and door height can be changed for all products. With a door actuator fitted the door will be automatically driven to the requested opening. If an actuator is not fitted to the door ensure that you manually set the door opening to the requested height using the door handle and disc.

HOME





Current Product

Urea

Name

24

Spread width m

25

Door height mm

No door control, set the door manually

811.7

Calibration factor

There are 10 products, use the arrows to choose one
Tap any box to edit
Increasing the cal factor will put out less product

Calibration Sample


NEW

Start a new sample

531.2

Amount dispensed kg

1 Start a new sample
2 Go spreading, or manually run out some product
3 Come back to this page, enter the actual kg that went out

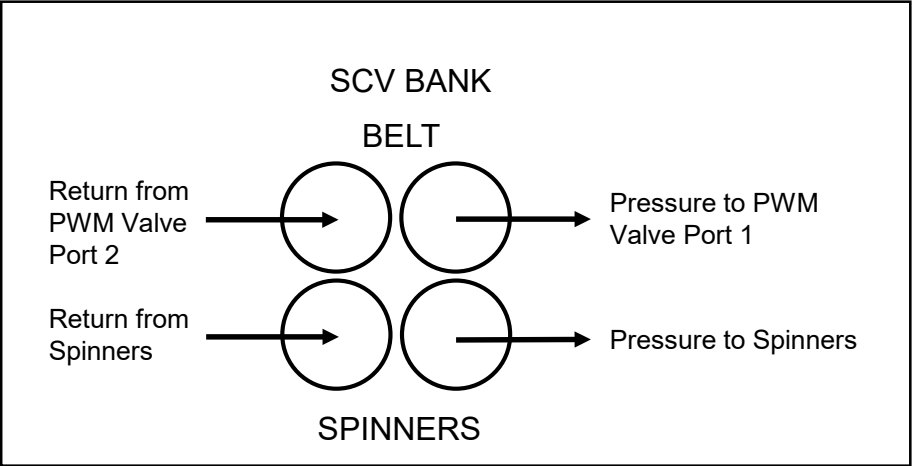


****When starting with a new product, use the product bulk density as the calibration factor as a starting point. The Calibration factor can be fine tuned over the first loads****

12. Tap **HOME**

HYDRAULIC SETUP - FEEDBELT

1. BEFORE STARTING THE VALVE TUNING PROCEDURE, ENSURE THAT FEEDBELT CIRCUIT IS CONNECTED TO THE TRACTOR REMOTES AND THAT OIL IS BEING SUPPLIED TO THE CIRCUIT. THE PRESSURE AND RETURN PORTS SHOULD CONFIGURED TO CORRESPOND WITH THE FLOW DIRECTION FROM HYDRAULIC LEVER/SWITCH IN THE TRACTOR CABIN.



2. DIAL THE FLOW TO THE BELT AND SPINNER CIRCUIT TO ZERO

3. FROM THE i4M APP MENU TAP, MACHINE -> CHECKS -> BELT

4. ENTER A MANUAL COMMAND OF 100

****Note a manual command will override any other settings that were previously stored until the 'cancel' button is tapped****

5. INCREASE THE OIL FLOW TO THE BELT CIRCUIT. THE BELT WILL START TO TURN. CONTINUE TO INCREASE THE FLOW, UNTIL THE BELT PULSES VALUE LEVELS OUT. AT THIS POINT INCREASING THE FLOW WILL NOT INCREASE THE BELT SPEED. MAKE NOTE OF THE TRACTOR FLOW SETTINGS

6. HIT THE 'CANCEL' BUTTON TO CANCEL ALL MANUAL OVERRIDE COMMANDS THAT HAVE BEEN MADE WHICH WILL ALSO REVERT AL SETTINGS BACK PREVIOUS.

**** DURING THIS PROCEDURE THE SPREADER MUST BE STATIONARY AND ALL PERSONNEL BE A SAFE DISTANCE FROM THE SPREADER FEEDBELT AND ASSOCIATED DRIVE COMPONENTS ****

HOME

SYSTEM

LOADCELLS

BELT

DOOR

Hydraulic Drive Belt

Item	Value	Unit	Description
Flags	?	Hex	Flags variable from main control processor
Spreading	?	Status	Spreading ON/OFF
Spinner Speed	?	RPM	Spinner speed 1 pulse per revolution
Spread Width	?	m	Product spread width in use
Wheel Cal	?	m	Distance per pulse from the wheel sensor
Pulse per ha	?	Float	Number of wheel sensor pulses per hectare
Door Height	?	mm	Desired product door height
Door Width	?	m	Product door width
Roller Dia	?	m	Belt roller diameter
Product Cal	?	Float	Product calibration factor
kg per rev	?	Float	kg dispensed for one revolution of the roller
Pulse per rev	?	Integer	Number of sensor pulses for one revolution of the roller
Pulse per kg	?	Float	Number of sensor pulses for one kg dispensed
Target Rate	?	kg/ha	Desired spreading rate
Belt Ratio	?	Float	Ratio of wheel pulses to belt pulses
Wheel Pulses	?	Hz	Wheel sensor pulses per second
Wheel Simulator	?	Hz	Simulated ground speed, overrides wheel sensor pulses
Belt Target	?	Hz	Desired belt sensor pulses per second
Belt Pulses	?	Hz	Actual belt sensor pulses per second
Belt Valve	?	%	Belt hydraulic valve command value
Sim Speed	?	km/h	Simulated ground speed (overrides real ground speed)
Ground Speed	?	km/h	Real ground speed
Belt Target	?	RPM	Desired belt roller revs per minute
Belt Speed	?	RPM	Belt roller revs per minute
Actual Rate	?	kg/ha	Actual spreading rate

×

Spreading ON / OFF

0

Change the spreading rate kg/ha

0

Simulated ground speed 0 to 50km/h (this overrides the real ground speed)

0

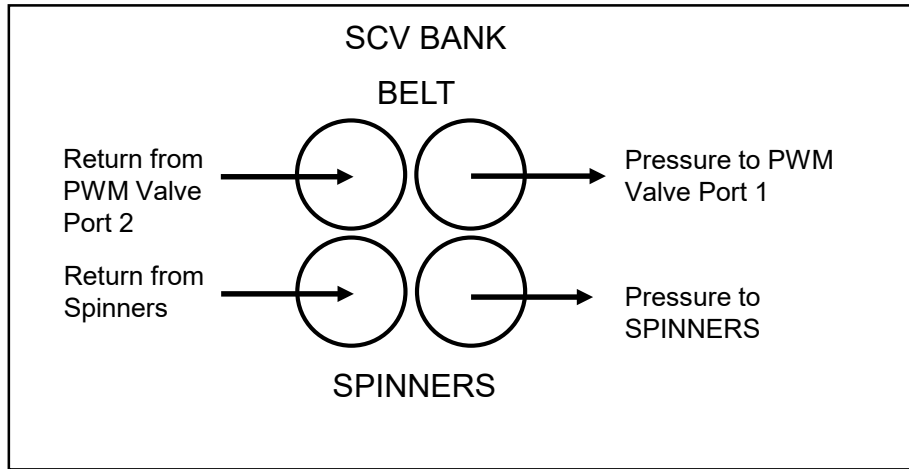
Send a manual command to the belt valve 0 to 100 (overrides everything)

CANCEL

Cancel the manual tests above

HYDRAULIC SETUP - SPINNERS

1. BEFORE STARTING THE VALVE TUNING PROCEDURE, ENSURE THAT FEEDBELT CIRCUIT IS CONNECTED TO THE TRACTOR REMOTES AND THAT OIL IS BEING SUPPLIED TO THE CIRCUIT. THE PRESSURE AND RETURN PORTS SHOULD BE CONFIGURED TO CORRESPOND WITH THE FLOW DIRECTION FROM HYDRAULIC LEVER/SWITCH IN THE TRACTOR CABIN.



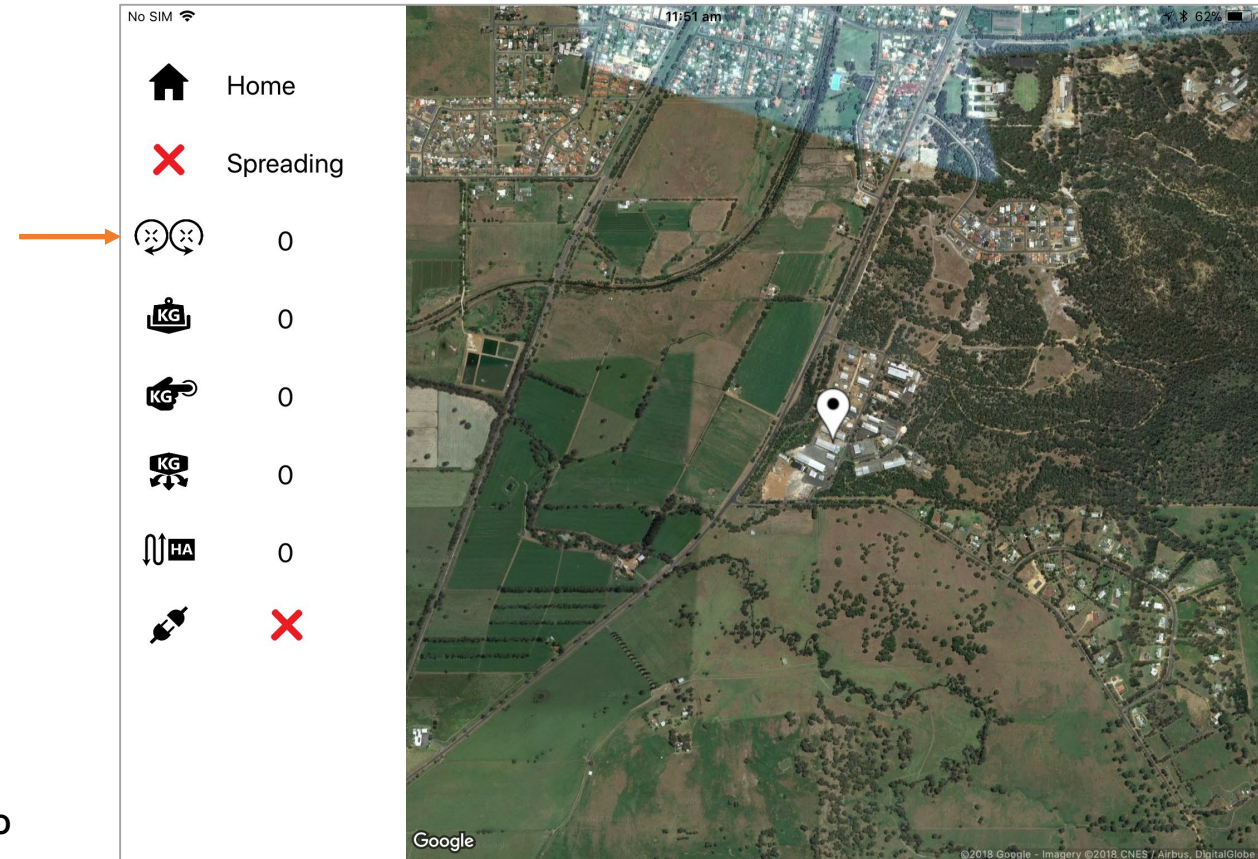
2. DIAL THE FLOW TO THE BELT AND SPINNER CIRCUIT TO ZERO

3. FROM THE i4M APP MENU TAP -> WORK

4. INCREASE THE OIL FLOW TO THE SPINNER CIRCUIT. THE SPINNERS WILL START TO TURN. CONTINUE TO INCREASE THE FLOW, UNTIL THE DESIRED SPINNER SPEED IS SHOWN ON THE WORK SCREEN. MAKE NOTE OF THE TRACTOR FLOW SETTINGS

6. TURN OFF THE SPINNERS.

**** DURING THIS PROCEDURE THE SPREADER MUST BE STATIONARY AND ALL PERSONNEL BE A SAFE DISTANCE FROM THE SPREADER SPINNERS AND ASSOCIATED DRIVE COMPONENTS ****



****NOTE****

Instantaneous oil flow/pressure straight to the spinners upon start up of the tractor can cause damage to the spinner seals and therefore shorten the life span of the seals. Oil flow must not exceed 72 l/min**

WORKSCREEN

No SIM

RETURN TO MENU

SPREADING STATUS

SPINNER SPEED (RPM)


HOPPER CONTENTS


TARGET RATE


ACTUAL RATE


HECTARE COUNTER


CONTROLLER COMMUNICATION STATUS


 Home


 Spreading



 0

 0

 0

 0

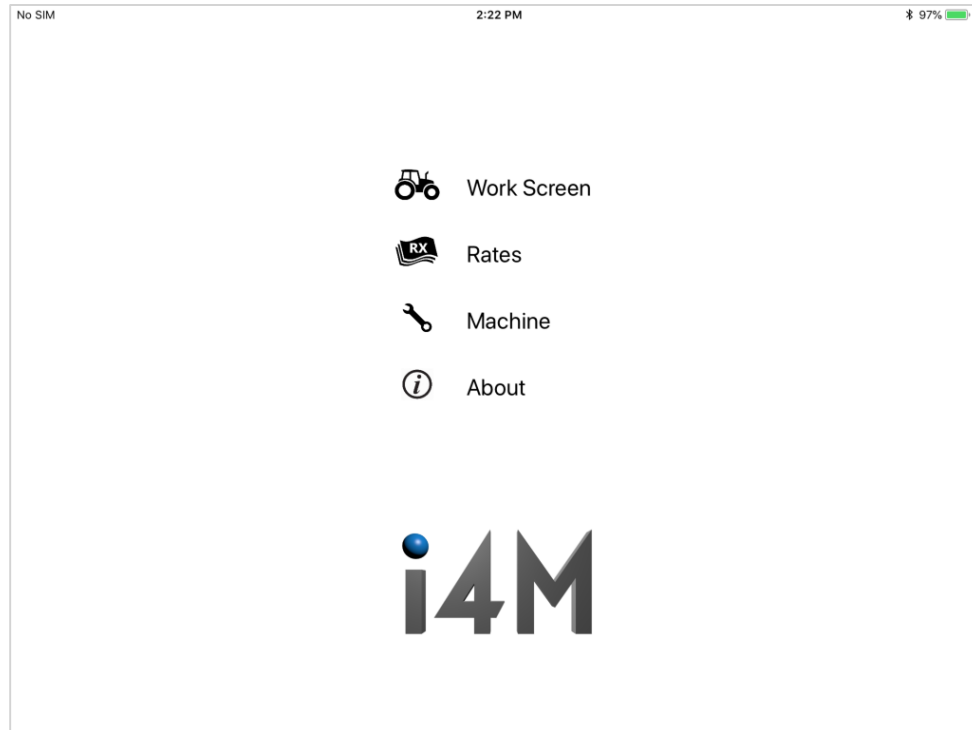
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RUNNING THE CONTROLLER

WHEN FIRST USING THE SYSTEM, IT IS RECOMMENDED THAT YOU DO A TRIAL RUN WITH NO LOAD IN THE HOPPER TO LEARN HOW THE CONTROLLER OPERATES.



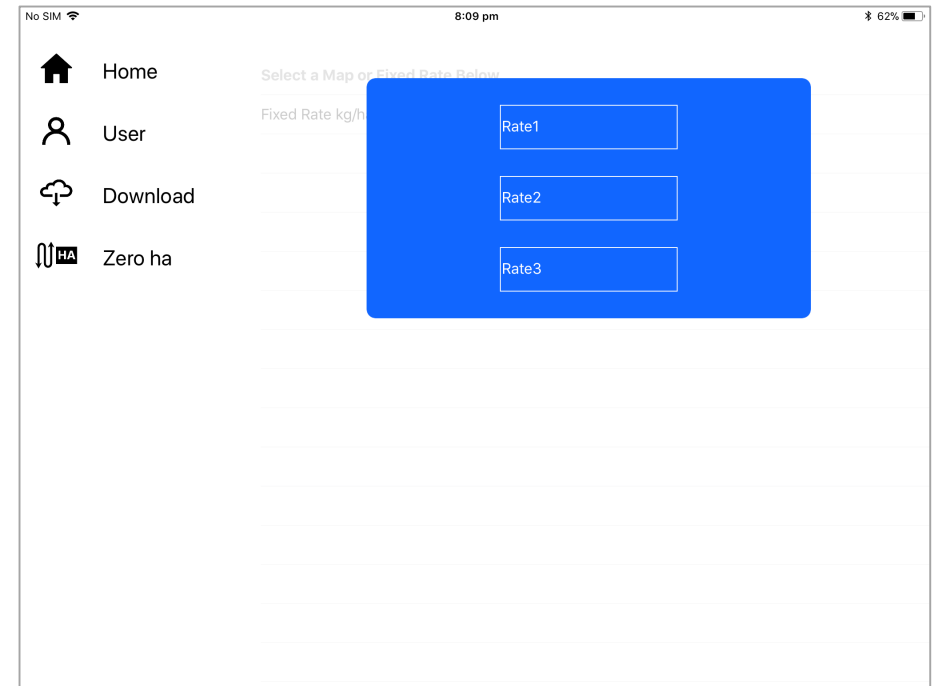
1. Tap **RATES**.

2. Tap **Fixed Rate**, and enter 3 pre-defined rates in the box. Tap **HOME -> WORK**

3. On the WORK screen tap the target rate to scroll through the pre-defined fixed rates

4. Turn on the hydraulic flow to the spinner and belt circuit. The spinner RPM will be displayed on the WORK screen.

5. Start the tractor and spreader moving, the feedbelt will start turning and the hectares, hopper contents and instantaneous rate will be shown.



NORMAL OPERATION

- Reset Hectares and Fill Hopper (no Loadcells)

To Reset the Hectare counter, from the main app menu, tap **MACHINE -> SETTINGS -> HECTARES**.
Tap **ZERO**

HOMEHOPPERHECTARESMACHINEDEVICE

Hectare Counter

ZERO

Zero the hectare counter

Calibrate

48.7

Enter your actual hectares, this will fine tune the Distance Cal

i4M

Quick Fill: Tap this to enter the previous load amount
New Hopper Load: Tap this to enter a new amount

HOMEHOPPERHECTARESMACHINEDEVICE

Hopper Quick Fill

2

FILL

Set the hopper to the previous load amount

New Hopper Load

1

0

kg

Enter the hopper kilograms

Enable Loadcells

ENABLE

Read the hopper load using the loadcells

i4M

NORMAL OPERATION

- Fine tune the wheel sensor factor

To fine tune the wheel sensor factor you will need to use the tractor GPS to check the i4M Hectare counter.

From the app menu, Tap **MACHINE -> SETTINGS -> HECTARES**

HOME

HOPPER

HECTARES

MACHINE

DEVICE

Hectare Counter


ZERO

Zero the hectare counter

Calibrate

48.7

Enter your actual hectares, this will fine tune the Distance Cal



Enter the hectares measured from the tractor GPS

PERFORMING A CALIBRATION CHECK

Bulk density can be used as the initial calibration factor for a new product, however it is recommended that the following calibration check procedure should be carried out to fine tune the calibration factor over the first few loads.

Record the initial Hopper contents from the work screen. Tap **HOME**



From the app menu screen, tap **MACHINE->PRODUCT**

HOME

←

→

Current Product

Urea

Name

24

Spread width m

25

Door height mm

No door control, set the door manually

811.7

Calibration factor

There are 10 products, use the arrows to choose one
Tap any box to edit
Increasing the cal factor will put out less product

Calibration Sample

NEW

Start a new sample

531.2

Amount dispensed kg

1 Start a new sample
2 Go spreading, or manually run out some product
3 Come back to this page, enter the actual kg that went out

i4M

Tap **NEW**. Return to the work screen and start work. After spreading a quantity of fertiliser, turn the spreader off and record the final hopper contents. Initial Weight less Final Weight)

Tap **HOME -> MACHINE -> PRODUCT** and enter the amount dispensed during the test. The new calibration factor will be shown.

If the spreader is not fitted with loadcells, it is recommended that you spread a known quantity of fertiliser and enter the weight in the amount dispensed box. DO NOT USE THE HOPPER CONTENTS DISPLAYED ON THE WORK SCREEN

NOW FILL THE HOPPER AND COMMENCE
OPERATION IN A SAFE MATTER

