Marshall Multispread
Greenstar Dry Rate Controller
Installation Instructions

Background

This document outlines the installation and calibration of the Greenstar Dry Rate Controller fitted to the Marshall Multispread to provide on-the-go adjustment of the fertiliser application rate.

Prerequisites

- Marshall Multispread fitted with Dray Rate Controller module, sensor kit and hydraulic feedbelt drive.
- Greenstar Generation 2 or 3 display (2600, 2630) or Generation 4 Command Center.
- Tractor harness (display to ISOPLUG at tractor drawbar)
- Master foot switch kit
- Dry Rate Controller manual

Disclaimer

The Marshall Multispread is to be used in the Agricultural and Horticultural industries to apply granulated and non-granulated fertilisers. It is very important that you follow the Calibration procedures and Operating instructions contained within the Marshall Multispread manual before use. Calibration and operation of the Marshall Multispread must be in accordance with these instructions. Use of the Marshall Multispread is subject to the following disclaimer;

So far as is legally permissible Roesner Pty Ltd, or its distributors, shall not be liable, whatever the cause, for any increased costs, loss of profits, business, contracts, income, or anticipated savings or for any special, indirect or inconsequential damage;

The capabilities and functions of the Marshall Multispread are limited as set out in the specifications within the standard operators manual;

Without prejudice to the above it is hereby acknowledged that the Marshall Multispread is not designed nor intended to achieve application rates and spread widths outside the parameters outlined in the standard operator's manual.

INSTALLATION PROCEDURE

The installation procedure consists of two components: Hardware setup and Software configuration.

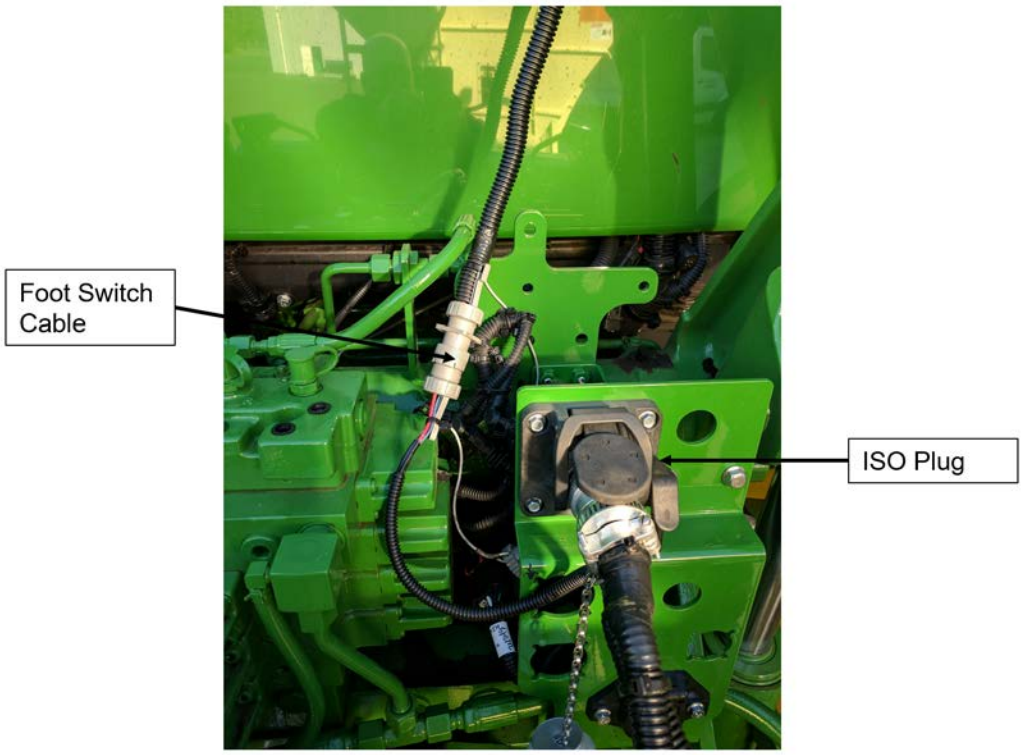
Hardware Setup

If the spreader was supplied from the factory with the Dry Rate controller pre-installed, the hardware setup consists of connecting the master foot switch harness to the Greenstar display and connecting the ISO plug from the spreader to the tractor. If the Dry Rate controller was supplied as part of a retro fit kit, refer to the Dry Rate Controller retro-fit manual for information on the hydraulic drive, sensor kit and cabling installation.

Connecting the ISO Plug and Foot Switch

The Dry Rate controller is connected to the ISO plug at the rear of the tractor as shown below. Both power and the CAN network run through the ISO plug.

The Foot switch connects to the drawbar harness prior to the ISO plug. Run the Foot Switch harness into the tractor cabin and ensure the cable is adequately cable tied to the tractor to ensure that the harness is secure.



Connecting the Hydraulic Remotes

Connect the hydraulic hoses for the belt drive circuit into the rear of the tractor as shown below. The hoses are marked pressure and return. The belt drive circuit requires 25 L/min of oil flow. The spinner circuit should be connected to the remotes that have priority oil flow as the spinner circuit requires 72 L/min.

Software Configuration

The Dry Rate controller is configured by Roesners Technical Support team prior to shipping. The configuration includes the setup of two products, Lime and Urea, and the input of parameters specific to the Multispread. When the Dry Rate controller is connected to the Greenstar display for the first time, the parameters populated in the factory should be displayed. The procedure below runs through the parameters to ensure they set correctly before starting work.

The factory configuration doesn't include the PWM limit or CFR calibration. These calibration procedures need to be carried out when first using the spreader or a new product.

PART A : IMPLEMENT SETUP

1. Power up the Greenstar display.
2. When the display starts, select the GRC button on the main menu.

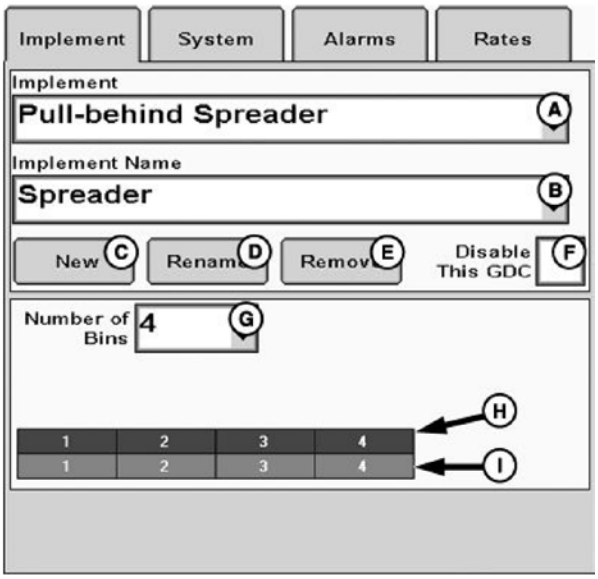
3. Select the Implement setup button

4. The Implement tab is shown. It should be populated with the following values

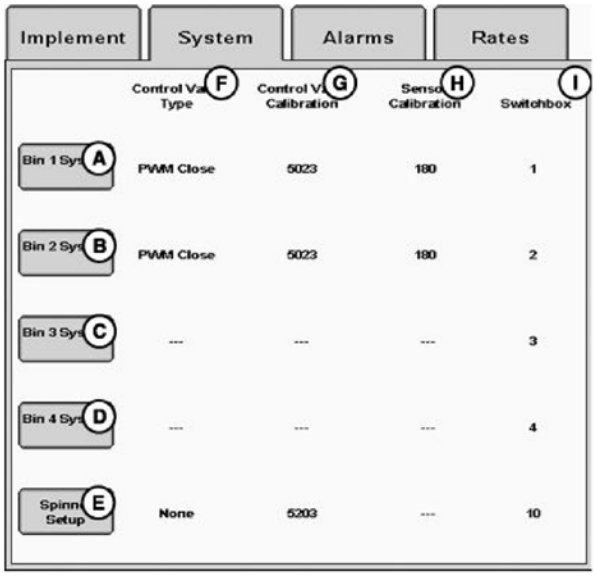
A : Implement : Pull-behind spreader

B : Implement Name : Multispread

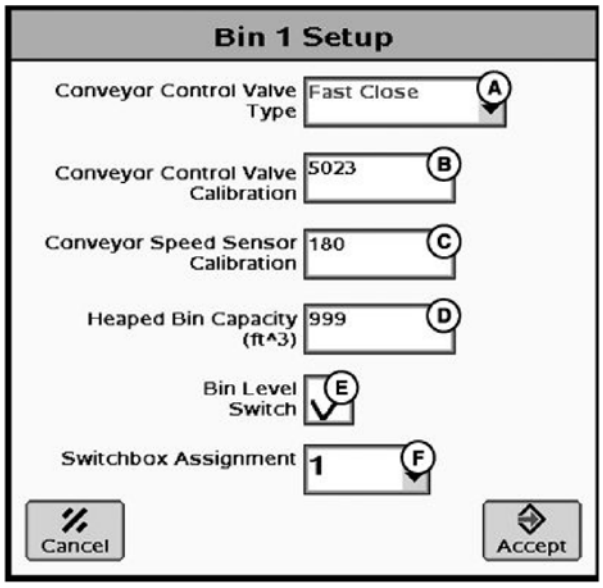
G : Number of Bins : 1



5. Select the System tab, **tap Bin 1 System (A).**



6. On the Bin 1 Setup page enter the following values :



A : Conveyor Control Valve Type : PWM

B : Conveyor Control Valve Calibration : 5023

C : Conveyor Speed Sensor Calibration : 280 or 560*

D : Heaped Bin Capacity : (see Table Below)

E : Bin Level Switch : OFF

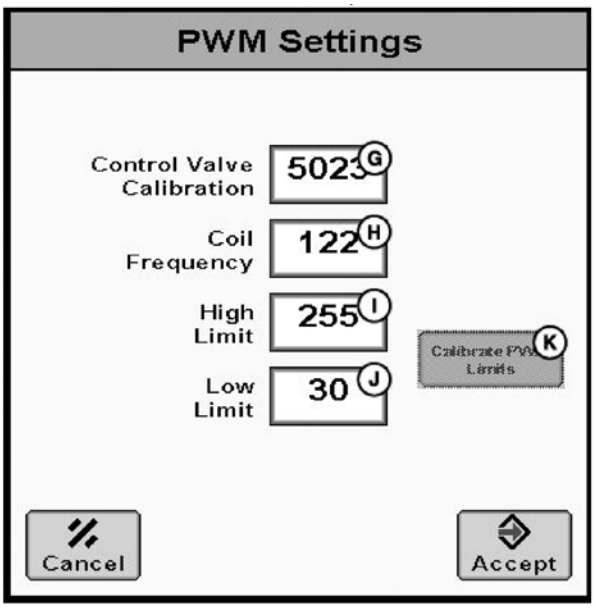
F : Switchbox Assignment : 1

Press **ACCEPT**

Note : Refer to Roesner Technical Support for speed sensor calibration number.

Model Number	Volume (m^3)	Model Number	Volume (m^3)
825T	2.06	880TM	7.35
840T	3.20	980T	7.35
845T	3.70	980TM	7.35
845T-L	3.66	810T	9.04
945T	3.66	810TM	9.04
945T-L	3.66	910T	9.04
850T	4.10	910TM	9.04
850TM	4.10	812T	10.57
950TM	4.10	912T	10.57
860T-L	4.90	814T	12.09
960T-L	4.90	914T	12.09
880T	7.35	9160	13.85

7. Enter the PWM values



G : Control Valve Calibration : 5023

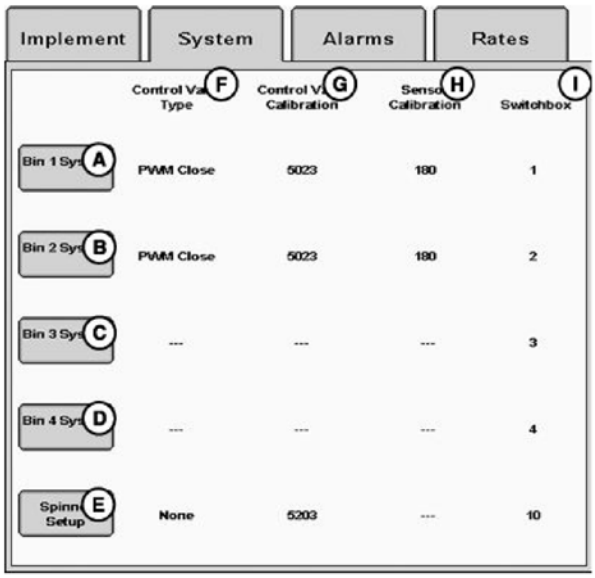
H : Coil Frequency : 122

I : High Limit : 255

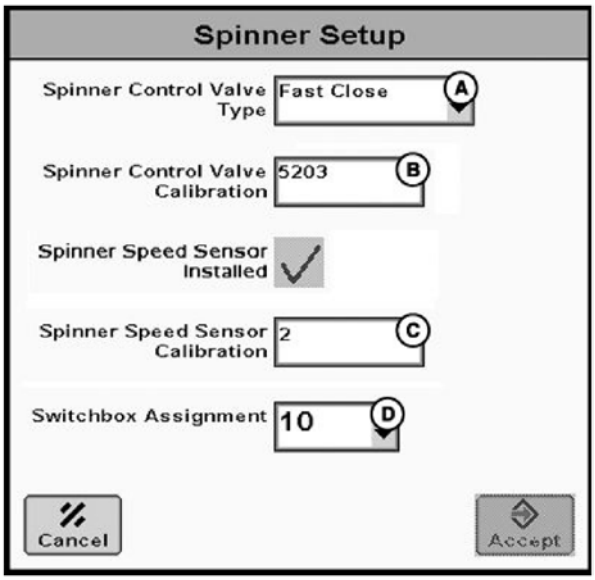
J : Low Limit : 30

Press **ACCEPT**

8. Tap **Spinner Setup E,** from the system tab.



9. Enter the following values



A : Spinner Control Valve Type : None

B : Spinner Control Valve Calibration : N/A

Spinner Speed Sensor Installed : Yes

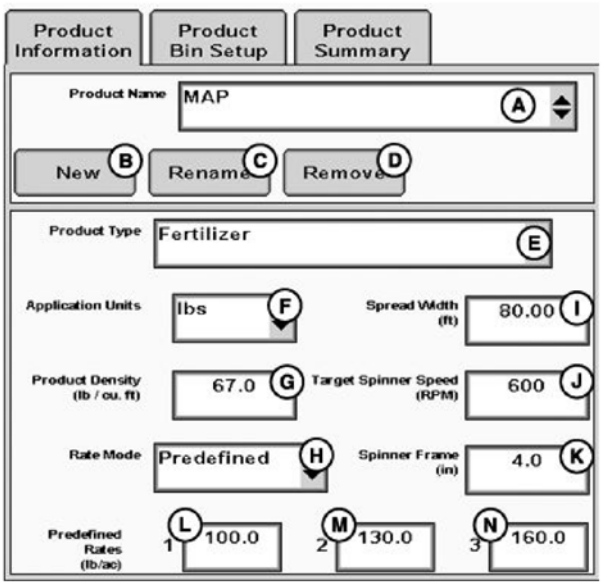
C : Spinner Speed Sensor Calibration : 1

Press **ACCEPT**

PART B : PRODUCT SETUP

1. Tap the Product Setup button from the right hand menu.

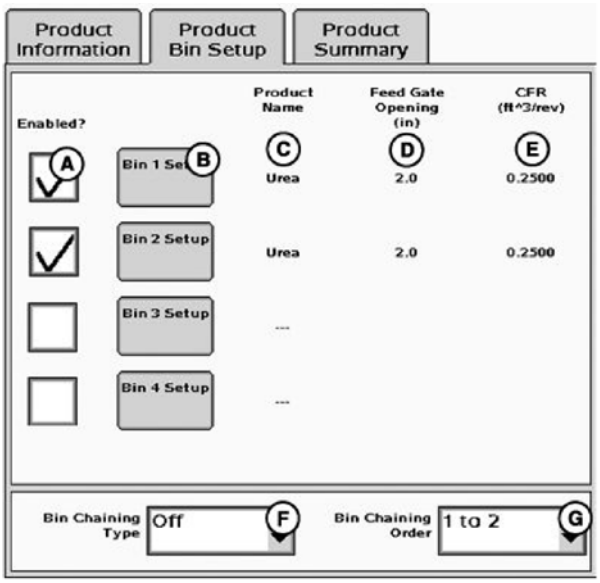
2. Follow the procedure below to create a new product



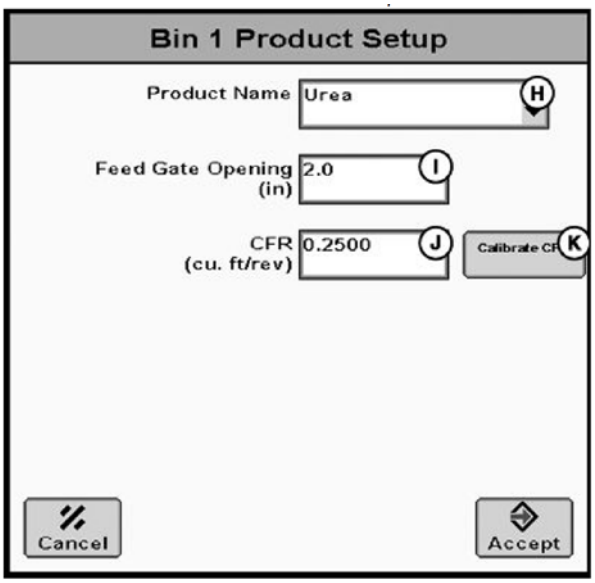
2.1 Tap B **NEW**
2.2 Enter the product name **(A),** eg LIME
2.3 Choose Fertilizer as Product Type **(E)**
2.4 Choose kg as Application Units **(F)**
2.5 Enter the Product Density in kg/m^3 **(G),** eg 1000 kg/ha
2.6 Enter the Spread Width (m) **(I),** eg 12m
2.7 Enter the Target Spinner Speed (RPM) **(J),** eg 750 RPM
2.8 Enter the spinner frame (cm) **(K)**
2.9 Enter the Rate Mode **(H)**
Use Map-Based if using a Prescription Map to control application rate
Use Manual if manually enter the target application rate
Use Pre-Defined to predefine 3 application rates.

2.10 Enter the pre-defined rates in **(L), (M)** and **(N)**

3. Tap Product Bin Setup to assign the product to the Bin.



3.1 Enable Bin 1 **(A)**
3.2 Tap Bin 1 Setup **(B)**



3.3 Select the Product Name from the pull down, this is should be the product created in step 2.2 **(H)**
3.4 Enter the feed gate opening in cm **(I)**
For granular fertiliser such as Urea and Superphosphate (2.5 to 4.0cm)
For non granular fertilisers such as Lime and Gypsum (7.5 to 13.0cm)

3.5 Enter the CFR **(J)**

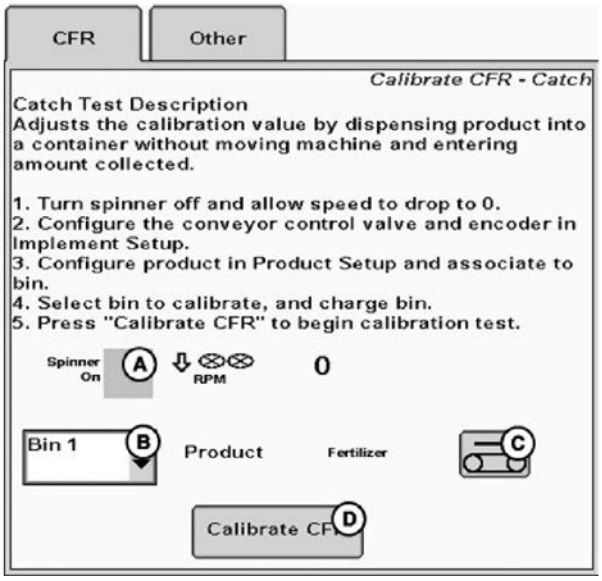
Model Number	Starting CFR
800 Series	4151
900 Series	5298
916T	6444

3.6 Tap **ACCEPT**

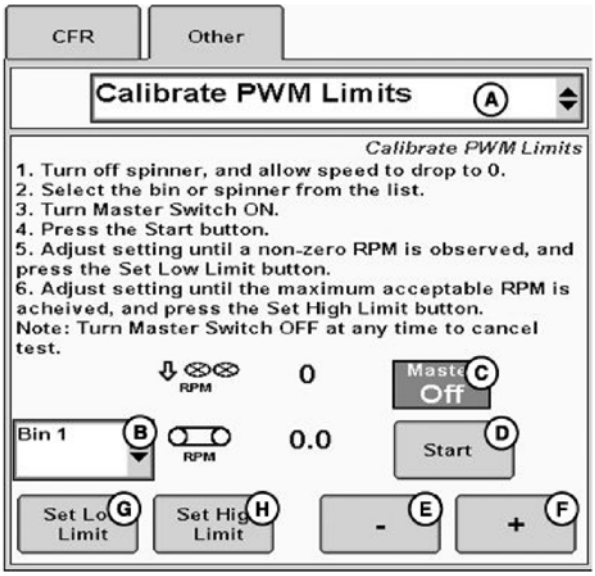
PART C : CALIBRATION

1. Tap the Calibration button from the right hand menu.

2. Select the Other Tab



3. Calibrate the PWM limits to set the lower and upper feedbelt speeds.

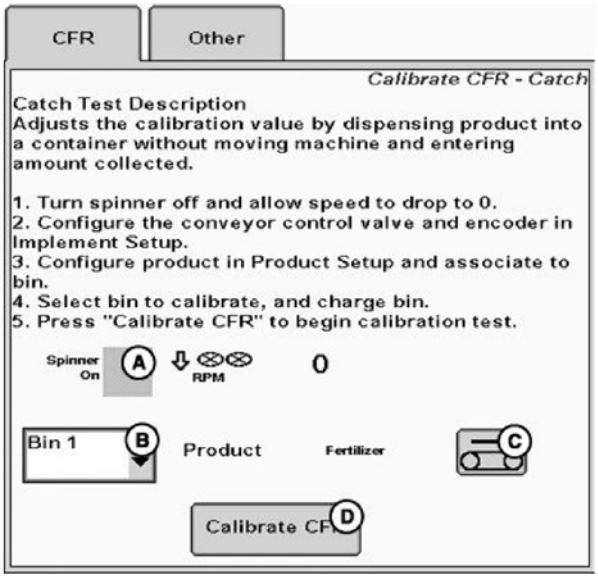


Follow the on screen instructions to set the low and high limits. Before starting the calibration procedure ensure that hydraulic feed belt drive is connected to the tractor remotes and that **25 L/Min** of oil flow is allocated to the feedbelt circuit. Oil flow should be turned on and the tractor engine running at normal operating speed.

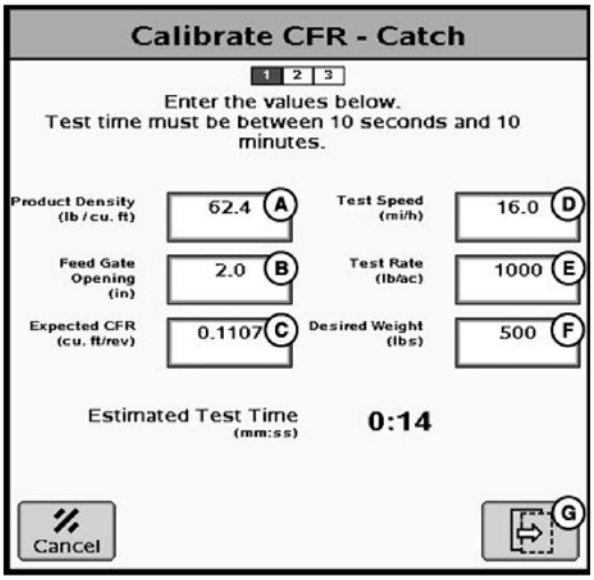
Typically low RPM limit is 1 RPM, and typically high RPM limit is 15 RPM, depending on tractor pump capacity and spreader gearbox and sprocket configuration.

4. After completing the PWM calibration, tap the CFR tab. The CFR calibration consists of dispensing and weighing a small amount of product to adjust the product calibration. If the spreader is fitted with loadcells, record the hopper contents as measured by the loadcells at the start and end of the CFR test.
   If the spreader is not fitted with loadcells, place a tarpaulin under the spinners. During the test the product will fall onto the spinners and spill onto the tarpaulin. At the end of the test sweep the product onto the tarpaulin and weigh with scales with 0.5 to 1kg accuracy.

5. Follow the on screen instructions



6. Enter the test parameters



A : Product Density (kg/m3)

B : Feed Gate Opening (cm)

C : Expected CFR (use values from table in Part B 3.5)

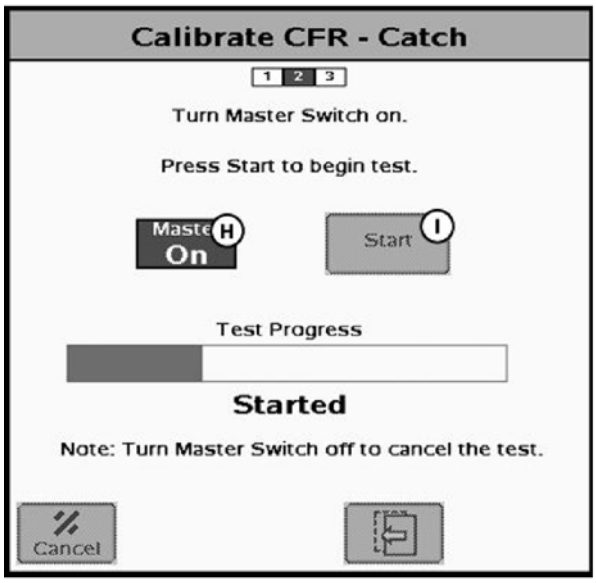
D : Test Speed (km/h), operating speed in the field

E : Target Rate (kg/ha)

F : Desired Weight (kg) (amount of product to dispense during CFR test)

For Lime and Gypsum dispense a minimum of 200 kg, for granulated fertilser 50kg.
Tap **G** to proceed.

7. Record the loadcell reading and start the CFR test by following the on screen instructions. The hydraulic flow to the feed belt circuit should be on before starting the test.



8. When the test is completed record the loadcell reading. Deduct the final reading from the initial loadcell reading or manually weigh the product dispensed. Enter the weight in **(J)** and Press **ACCEPT**

Depending on the type of product being dispensed and the accuracy of the weighing system, the CFR test may need to be carried out 2-3 times. The more CFR tests, the more accurate the CFR value.

SOFTWARE CALIBRATION COMPLETE

SPREADER OPERATION

For details on the operation of the Dry Rate Controller see Spreader Operation on page 25 of the Dry Rate Controller manual.