MARSHALL MULTISPREAD

RDS PRO-SERIES APOLLO 8000 SPREADER CONTROLLER

LOADCELL SUPPLEMENT

SOFTWARE ISSUE : PS401000

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1- OVERVIEW

The PS Apollo can display actual tank contents as measured by a series of load cells fitted to the spreader. This weight reading will be a live display on the MAIN page. Weight applied, as displayed on the INFO page, will remain as a theoretical weight calculated from the feedbelt speed and the material CAL factor.

The change in actual weight can be used to retrospectively correct the calibration factor using either a static or dynamic calibration routine.

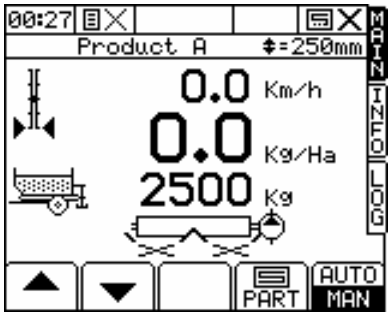
The Pro-Series receives weight information via a Loadcell Interface located on the spreader. The Loadcell Interface sends an electrical signal to the instrument via a CAN Bus which is then converted into a weight reading. The Loadcell Interface also includes a dual axis inclinometer, which is used to record the angle of the spreader relative to the ground.

It is important to carry out the calibration of the loadcells before beginning work. Failure to carry out he calibration will result incorrect weight readings. See the RDS Pro-Series Apollo 8000 Calibration Guide for more information on the Loadcell Calibration procedure.

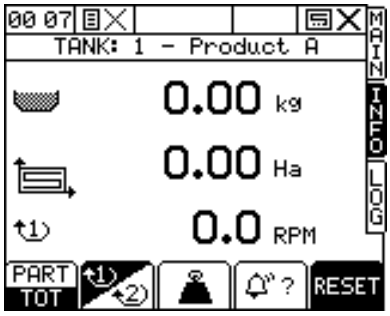
When the spreader is traveling in the paddock the instrument applies a software filter to remove fluctuations in the weight reading. The filter is inactive when the machine is stationary.

2. OPERATION

When the instrument has been configured and the loadcells calibrated as per the Loadcell Calibration procedure described in the Calibration Guide, the instrument MAIN screen will display a weight reading as below.



The INFO screen will no longer display a manual tank refill option but will show a weight icon.



Press the weight button to display the weighing options page.

The weighing option screen displays the current forward speed and current weight in the spreader.

SIM – The SIM button turns on a simulated forward speed. This is used when running a static test with the machine stationary.

TARE - With the hopper completely empty and the machine stationary on level ground, use the TARE button to set the displayed weight to zero.

DYN/STAT – The Pro-Series will use the loadcells to adjust the calibration of the system. This can be done in STATIC or DYNAMIC mode.

The static calibration can be carried in two ways. The first method involves spreader the product out over a required distance, the vehicle spreader must be stationary at the start and end of the test. The second method involves setting a simulated forward speed and then unloading the product back onto the fertiliser pile.

Using the dynamic procedure the instrument will take weight reading over a given time period whilst he machine is moving in the paddock.

Static Calibration is more accurate, however it requires operator intervention. The initial calibration of a new product or different door opening must be carried out in Static mode.

Dynamic Calibration is continuous and requires no operator input. If the spreader is working over very rough terrain, then dynamic calibration should not be used. In normal field conditions, the software filter will reduce the effects of bouncing in the paddock.

3. STATIC CALIBRATION – FIELD TEST

A quantity of product is spread across the paddock for a given distance. The spreader must be stationary at the start and end of the test.

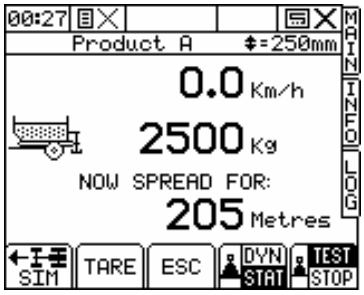
To start the Static Test, choose the STAT option on the weighing options page. Then select the TEST option.

The display will show:

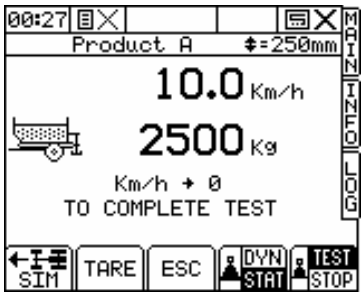
Press ENTER to start the test.

The instrument then acquires the current weight in the hopper. The following screen is displayed.

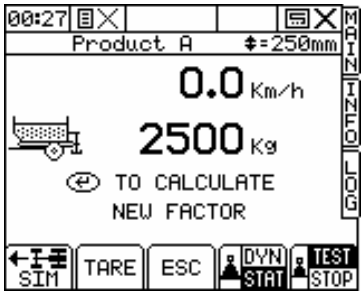
The instrument then advises the operator of the distance required to be driven for the static test to be carried out. This distance is based on the application rate, working width and the minimum weight change required. The distance counts down to zero as the spreader works. Switching in & out of work will not interrupt the routine.



When the countdown reaches zero the following screen is displayed. With the operator prompted stop the spreader.

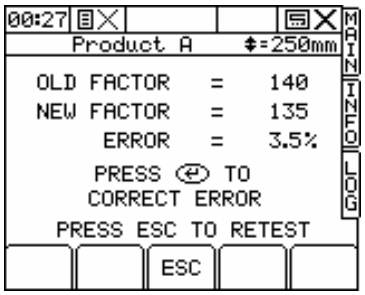


When the spreader is stationary the following screen will be displayed.



Press enter to re-calculate the CAL factor. The instrument will then acquire the current weight in the hopper, showing the screen below.

Once the weight is acquired the instrument displays the following screen.



This is the last screen of the static calibration routine. It shows the old factor, the new factor and the error between the 2. Pressing the enter key corrects this error and the system then uses the new factor, the instrument returns to the LOADCELL SETUP screen. If ESC is pressed the static weighing routine is repeated.

4. STATIC CALIBRATION – STATIONARY TEST

With the machine is a stationary position a simulated forward speed is set, product is dispensed from the hopper back onto the fertiliser pile.

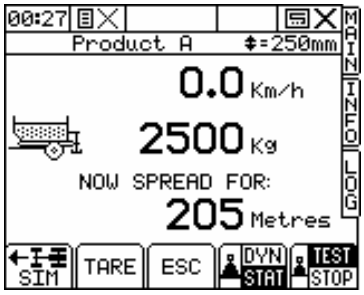
To start the Static Test, choose the STAT option on the weighing options page. Then select the TEST option.

The display will show:

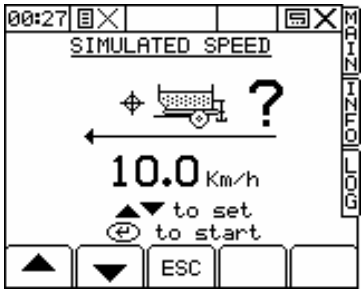
Press ENTER to start the test.

The instrument then acquires the current weight in the hopper. The following screen is displayed.

The instrument then advises the operator of the distance required to be driven for the static test to be carried out. This distance is based on the application rate, working width and the minimum weight change required. The distance counts down to zero as the spreader works. Switching in & out of work will not interrupt the routine.

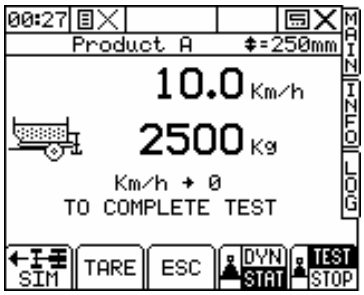


As the test will be carried out when the spreader is stationary, press SIM to turn on the simulated forward speed. The following screen is displayed.

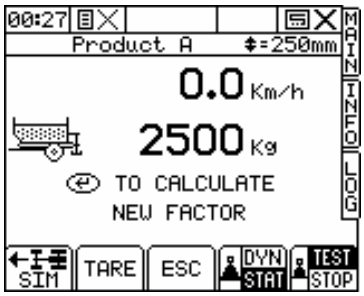


Set your paddock working speed, then press enter to return to the STATIC routine.

When the countdown reaches zero the following screen is displayed. Press SIM to turn OFF the simulated forward speed.

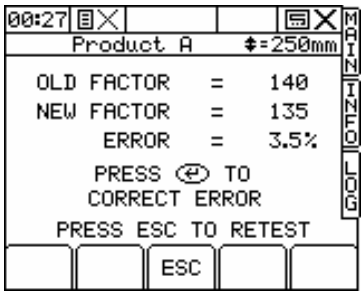


When the simulated forward speed is OFF the following screen will be displayed.



Press enter to re-calculate the CAL factor. The instrument will then acquire the current weight in the hopper, showing the screen below.

Once the weight is acquired the instrument displays the following screen.



This is the last screen of the static calibration routine. It shows the old factor, the new factor and the error between the 2. Pressing the enter key corrects this error and the system then uses the new factor, the instrument returns to the LOADCELL SETUP screen. If ESC is pressed the static weighing routine is repeated.

5. STATIC CALIBRATION NOTES

The TEST icon will flash while a test is running, and until the minimum weight is spread. See Loadcell Correction.

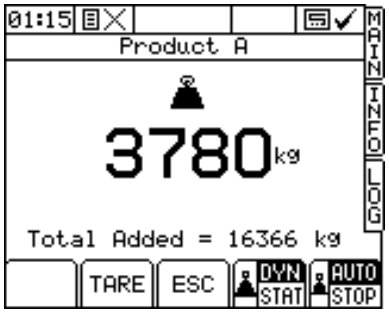
Do not allow the hopper to run completely empty. It is recommended to run the test with a full hopper load.

The static test must have spread the minimum weight as described on the Loadcell correction menu.

6. DYNAMIC CALIBRATION

When dynamic calibration is selected on the weighing option page, the instrument will automatically re-calibrate the CAL factor with operator intervention.

Choose DYN and AUTO on the weighing options page. The following screen is displayed.



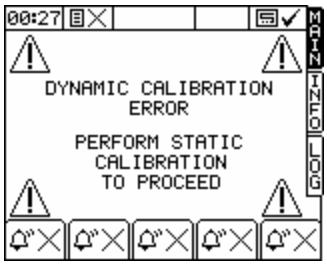
Now start work. To stop the Dynamic Calibration at anytime press STOP.

The dynamic test will be aborted when the spreader is switched off at the headlands and to avoid weighing errors when turning. It will be restarted some seconds are the spreader has been switched again.

A dynamic test will not correct the calibration factor if the test has run for too small a quantity of material, too short a time period, if excessive weight fluctuation is recorded of it the suggested correction is greater than certain difference. For more information see LOADCELL CORRECTION.

Dynamic calibration is not effected by re-loading. When the instrument is switched off, the dynamic calibration is also turned off and must be re-enabled next time the instrument is turned on.

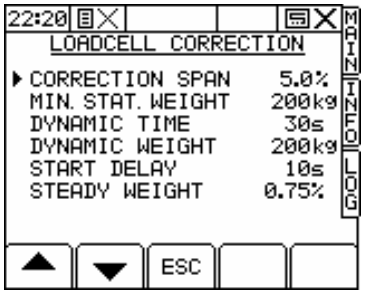
If there is an error between the newly calculated CAL factor and the old CAL factor that is greater than a set limit, the instrument will display the following alarm.



It is recommended to run a static test if the Dynamic Calibration error appears.

7. LOADCELL CORRECTION

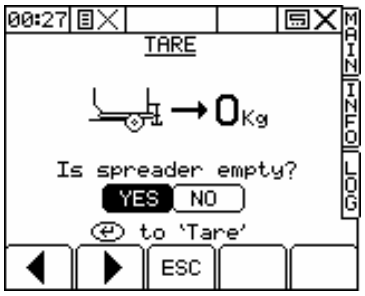
The loadcell correction page is accessed from the Technical Config screen. See the RDS Pro-Series Calibration Guide for more information.



On this screen the technician can configure the operation of the load cells for calibration purposes.
CORRECTION SPAN – dynamic calibration will not change the calibration factor if the error is greater than this percentage set.
MINIMUM STATIC WEIGHT – the distance required for the static calibration is calculated based on this minimum weight change required (both actual and theoretical).
DYNAMIC TIME – this is the period for each dynamic test. The calibration factor is updated every 30 seconds.
DYNAMIC WEIGHT – the dynamic test will not end until at least this weight has been spread (actual and theoretical) or until the time period has elapsed.
START DELAY – this is the time delay between starting a new bout and the dynamic test starting. This allows for the spreader to reach a normal, smooth operating speed.
STEADY WEIGHT – if a weight fluctuation is seen above this level, the weight reading is considered ‘unstable’ and a dynamic test will be aborted.

8. TARE HOPPER CONTENTS

To set the hopper contents back to zero press TARE on the Weighing Options page. The following screen is displayed. Ensure that the spreader is empty and on level ground before carrying out he tare procedure.



If the hopper is empty press YES, the following screen is displayed

Press enter to return to the weighing options page.