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| TECH NOTE: | 08-009 |
| TITLE: | Validation of flow meter rating |
| DATE: | 10/30/08 |
| REVISION: | 1.0 |

Overview: This document describes the method used to validate the rating stamped on the flow meter (various manufacturers) on an installed liquid spraying system.

Cirrus Controls Products affected: *SpreadSmart Rx™*, *Dual Spread™* and *Liquid Control™*

Background: all flow meters are calibrated at their factory with a value that relates signal pulses generated to the amount of fluid flowing through the meter. The calibration number is used by the spreader controller to produce calibrated flow rates. Unfortunately, there is not a standard method used to determine the pulses per gallon-ppg (or liter-ppl), so attention must be paid to be sure that the calibration number entered into the spreader is correct for the brand of flow meter.

Flow Meter Used by Cirrus Controls: MicroTrak™ FM500: to determine value to be input into *SpreadSmart Rx™*, *Dual Spread™* and *Liquid Control™*:

For Gallons: find the flow calibration number stamped on the gold plate on the flow meter
Pulses per gallon = Flow cal number / 2

For Liters: find the flow calibration number stamped on the gold plate on the flow meter
Pulses per liter = Flow cal number / 7.58

Confirm your Calibration: to validate that you are delivering the planned amount of fluid from your liquid system regardless of which flow meter is in use, use the following method:

- a) Plumb your liquid system to allow you to catch and measure an amount of fluid from a single port (2-3 gallons or 8-12 liters). Add enough fluid to do the calibration;
- b) From the menu screen, select Test mode, enter the password;

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| Menu v4.15 Rx | Test Mode |
| Automatic Mode Help Manual Mode → Test Mode No Speedo Mode Material Change Unload Mode Fill Tanks Storm/Season Tot. Diagnostics <SPINNER +/->=select <PASS>=accept | Enter Password: [*000] <SPINNER +/-> to change <BLAST>=back <PASS>=next/done |

- c) Ramp up the output on the liquid system in use until the pulses coming back are equal to the flow cal number (such as 1500). Liquid will be flowing at this point:

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| Granular - SALT Auger Spinner 0% 1660 PPM | BRINE Prewet 25% 1660 PPM | KC12 Anti-Ice 30% 1660 PPM |
| Speedo: 0 PPM NO GPS | Speedo: 0 PPM NO GPS | Speedo: 0 PPM NO GPS |
| TEST <BLAST>=done <PASS>=zero | TEST <BLAST>=done <PASS>=zero | TEST <BLAST>=done <PASS>=zero |

- d) Collect fluid for exactly one minute. The volume of fluid collected is equal to the volume flowing in one minute. Because the test mode allows you to see pulses expressed in ppm (pulses per minute), the amount of fluid you collect will tell you if your pulses per gallon (or liter) rating on the flow meter is correct for the spreader control.
- e) If the test gives you more or less fluid than you expected (off by more than 3%), adjust the pulses per gallon (liter) in the spreader setup to compensate for the variation you experience.
- f) The variation is most likely due to the fact that different flow meters are calibrated using different methods, not because of any problem with the flow meter or the spreader control.
- g) Flow meters supplied by Cirus Controls will have the correct pulses/gallon conversion shown on the actual flow meter for use during the set up step.