

AERIAL ACE FLOW CONTROL FAQ's:

I can't enter in my valve calibration when using Air Trac?

The Air Trac software works with the meter calibration settings to automatically calibrate your valve, eliminating the need to enter this number.

Where do I find my meter calibration number?

You will find this number stamped onto the meter itself. Most numbers are in the 90 range - look for the K factor stamp and enter in the two digit number

RAVEN STYLE FLOW CONTROL FAQs:

Flow control not working? Go through these steps:

1. Cycle the valve through the Flow Control Command section in the Flow Control menu. Remember the aircraft master has to be on, not just the GPS master, for the valve to cycle. Listen for the valve cycling.
2. Check the override / failsafe switch. In order to have flow control the switch must be in the normal position. The valve should open fully in the bypass (open) position.
3. The interface (read on the display) should respond with a "*S" or "*C" status message. A "*s" or "*c" message may indicate a problem with the GPS manual mark. The CPU, the DGPS receiver or the cable connecting the two could cause this condition.

Lightbar Messages:

A "**flo error**" message on the lightbar may indicate a communication problem. Check the connection between the Air Star comm port and the flow control harness.

A "**flo flo**" or "**no flo**" message indicates a problem with the spray on/off microswitch or pressure switches.

"**hi flo**" or "**low flo**" indicates (meter) calibration problems.

VALVE CAL SETTINGS

Every year we get calls about valve cal numbers. Here in summary form is the explanation.

Valve cal numbers are four digit numbers:

1st digit: is the backlash number - the least significant of the group simply use 0.

2nd digit is the valve speed. The **HIGHER** the number, the **slower the valve adjusts**. A number 9 in this location would mean the valve runs very slow, at only 10% of full speed. A 1 would mean the valve runs at 90% of full speed. This is the most important number in the valve cal setting. We need to set the valve to run at the fastest possible speed for the flow rate you are using. If the flow rate is low and the valve adjusts too fast you can get oscillation in the boom pressure. If this is your experience, you need to increase the speed digit to slow the valve down. To fine tune your system, start at the fastest speed and slow the valve down if your spray system starts to surge.

3rd digit is the braking digit. It tells the valve when to start slowing down. A 2 in this location would command the valve to start to slow down when you get within 20% of the target flow rate. This helps prevent spray system surge. This digit and the second digit (the valve speed) need to work together. If you set the valve to run at 100% speed and set the breaking digit to begin slowing within 90% of target you will get a very slow response. Normally, we use a "1" or "2" as the breaking digit.

4th digit is the accuracy digit. If we have a 3 in this location it commands the valve to stop any valve adjustment if we are within 3% of the target flow rate. If the flow rate needs to be 100 GPM the valve will not adjust if we are flowing between 97 and 103 GPM. Caution: setting this to 1 or 1% accuracy means the valve will work continuously to try to maintain the rate. This will decrease the life of the valve. Consider holding a closer tolerance while spraying low volumes, and a broader tolerance during high volume spraying.

These valve cal settings are recommended as a starting point:

High Flow Rates (5 to 10 gallons per acre): 0013

Medium Flow Rates (3 to 4 gallons per acre): 0113

Lower Flow Rates (below 3 gallons per acre): 0213

METER CAL SETTINGS

(Short Cut Calibration)

If you find you are consistently **running out of product (applying too much)** the system is counting too fast so the calibration code needs to be smaller. **Decrease** the original calibration number. Start with 5 point changes (from 720 to 715 for example) and fine tune from there.

If you find you are **not applying enough product (product left in tank)** the system is counting too slow - **increase** your code in the same fashion.

Applying too much -> decrease the code

Not applying enough -> increase the code

This is the short cut meter calibration scheme. The manufacturer does recommend you do an actual physical calibration of your tank versus using this method. Instructions below.

FLOW METER CALIBRATION

Set Flow Mode to Flow Monitor

Set the **start tank volume** to a higher volume than actual. Do write down the **actual amount** put in the hopper on a separate piece of paper. (example: 400 gallons are pumped into the hopper, this is the actual hopper volume. Enter 1000 gallons into the M3 as the Start Tank Volume.

Write down the **old Meter calibration** number. (Example, 164)

Spray the load.

Write down the **ending tank volume** from the M3 screen. (example 500 gallons left)

Recalibrate using the following formula:

$$\frac{(\text{start tank volume} - \text{end tank volume}) \times \text{old meter calibration number}}{\text{Actual Hopper Volume}}$$

$$\frac{(1000 - 500) \times 164}{400}$$

= 205, new meter calibration number

GENERAL FLOW CONTROL TIPS:

Set your pump rate slightly higher than the required flow rate. Don't set the pump at full flow and let the flow control do all the work. Your results will not be as good.

You will have to fine tune the valve cal to fit your spray system, your wind conditions, your flying techniques, and your normal flow rates.

Set your display to read GPM. You will be able to see the flow rates change as your speed varies. You will be surprised.

Keep your spray system clean. A plugged screen will cause flow control errors. The flow meter must be kept clean to function properly.

A leaky nozzle will let the suck-back system draw chemical out of the boom during a ferry or in the turns. When this happens the flow meter is trying to measure the backwards flow and you will get a "Flo Flo" error in the turns. A worn out ball valve and streaming nozzles will cause a "Flo Flo" error also.

Mount your system with the valve and the meter connecting plugs inside the aircraft and use dielectric grease when connecting the plugs. Keep the leads secured to prevent them from fluttering in the air stream.