

Raven 440/450/4400



Initial Start up (CAL mode)

- Units – US Gallons
- Radar – SP2(GPS or Radar)
- Control Valve – C-SD(Standard Valve)
 - C-FC(Fast Close Valve)
 - C-PC(PWM Valve)
- * Use the CE button to change setting and the ENTER button to accept
- * For below settings press ENTER put number in then press ENTER again
- NON-Sectional Booms – Use boom 1 enter in footage as inches eg. 40ft enter in 480
 - Zero out remaining booms ENTER 0 ENTER, on initial start up you have to do this
 - For sectional, enter the footage into each boom and zero out the rest
- Speed Cal – Enter in 585 drive the tractor forward to see if the speed matches
 - if it doesn't calculate it out eg. $\text{Actual} / X * 585 / \text{Monitor Speed} = \text{New Speed Cal}$
- Meter Cal – Enter in the Pulses/10 Lbs found on the Flowmeter Tag
- Valve Cal – Enter in 2123 for Standard, 743 for Fast and 43 for PWM Valve
- Rate 1 – Enter in amount of Actual N/Acre
- Rate 2 – Enter in second rate of Actual N/Acre
 - * Initially you need to set this up to have the monitor come out of CAL mode
- Volume Tank – Enter in actual Lbs if you want to know what is left in tank
 - Enter in 0 if you do not want the monitor to track tank volume
- To change Units, Radar, and Control Valve after initial start up hold the Self-Test button down. it will flip through the three options for about 30 seconds when it stops you can now change these setting

Raven Envizio Pro



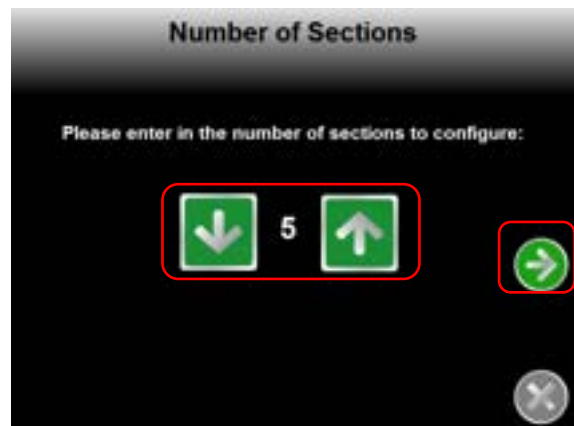
- Press Settings Tab



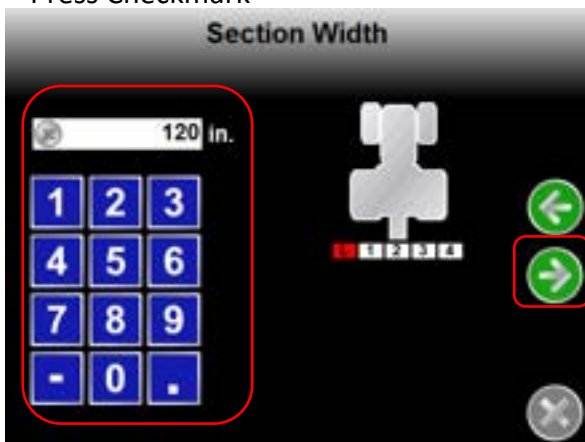
- Press Wizard Icon



- Press Section Setup Wizard
- Press Checkmark



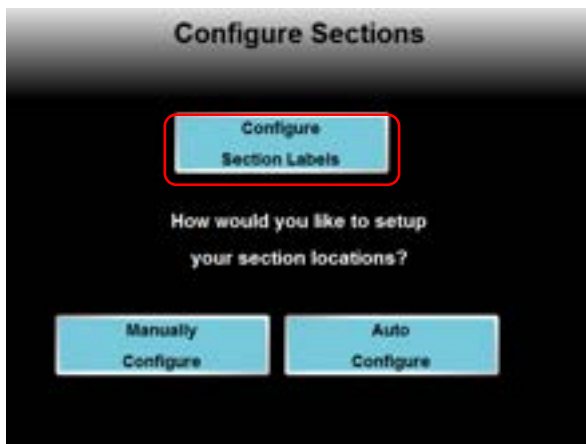
- Press Arrow Up/Down to select # of Sections
- Press Next



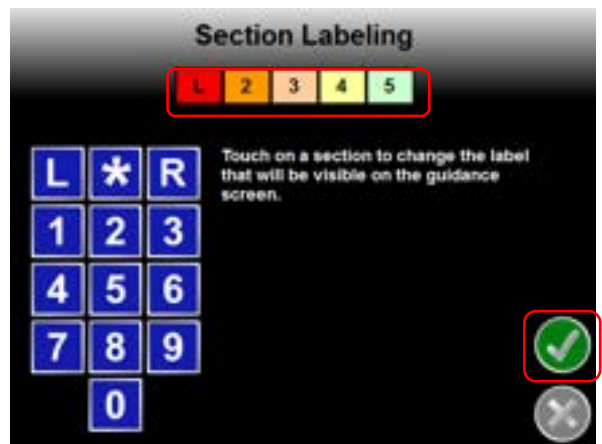
- Enter in Section widths in Inches
- Press Next in between each section



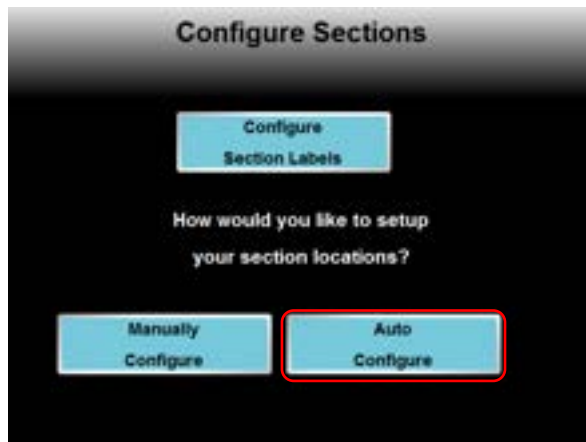
- If this Warning pops up Press the checkmark



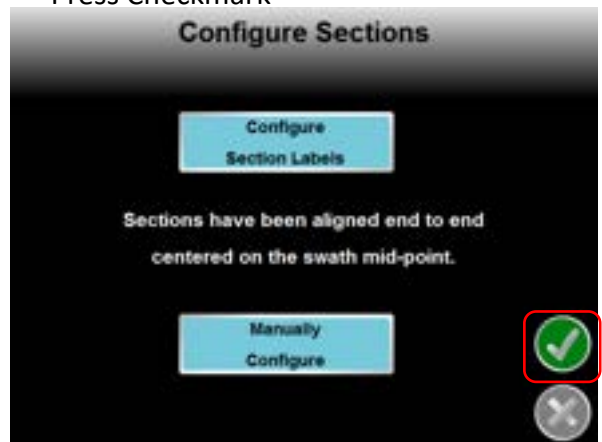
- Press Configure Section Labels



- Press how you want the Sections to read
- L1234, L2345, L123R, L234R, 12345
- Press Checkmark



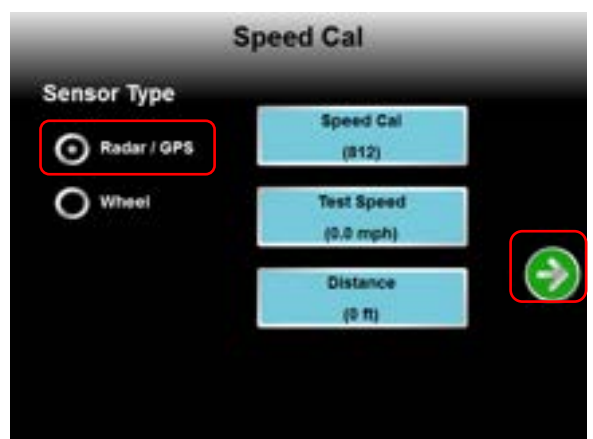
- Press Auto Configure



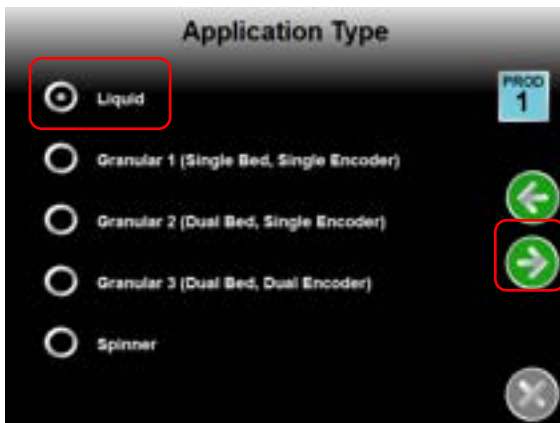
- Press Checkmark



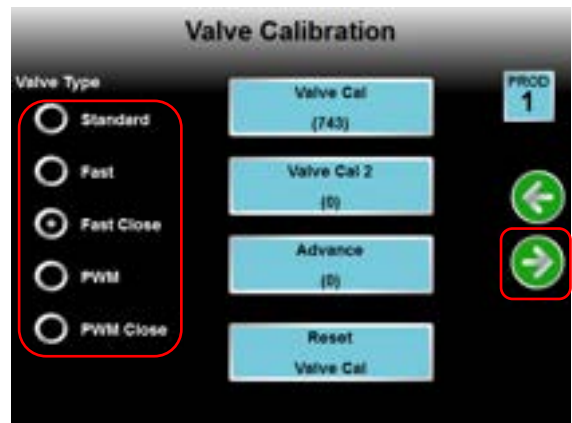
- Press Product Control Setup Wizard



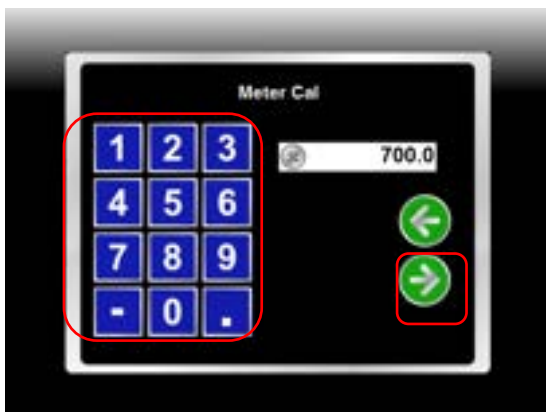
- Press Radar/GPS for Speed Source Cal
Number will auto populate
- Press Next



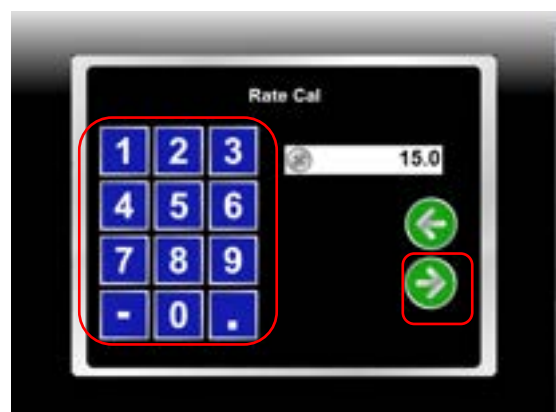
- Select Liquid
- Press Next



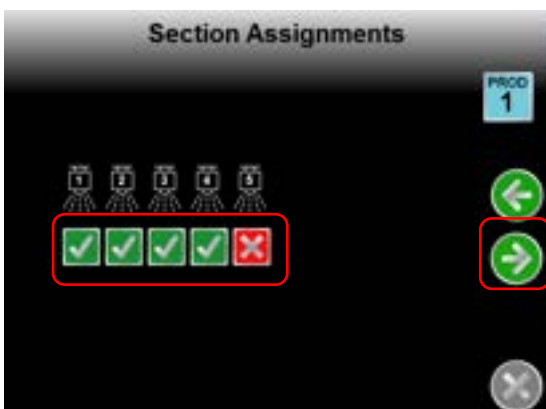
- Select Valve Type, Valve Cal will auto populate
- Standard 2123, Fast Close 743, PWM Close 43
- Press Next



- Enter in Meter Calibration number off of the flowmeter tag use Pulses/ 10 Lbs N



- Enter in Rate in Lbs/N/AC



- Press to turn on all sections, all sections should have a green checkmark
- Press Next



#	Configuration	Settings Under Tab
1	Application	- Product Control Type - Eg. Liquid, Granular
2	Speed Cal	- Speed Calibration number - Test Speed - Distance
3	Valve	- Valve Type - Valve Calibration number
4	Calibration Settings	Not needed for NH3 use
5	Volume/Area Settings	- Volume Totals - Acre Totals - Distance Totals
6	Feature Settings	- Decimal Shift - Display Smoothing - Zero Speed Shutoff
7	Alarm Settings	- Low Tank - Low Limit - Current Alarms - Off Rate %
8	Section Assignments	Used only when two products are being controlled

Viper Pro



From Viper Pro Main Screen press on Product Control button at the bottom of the screen.

CAN Controller Status			
Boom Cals		Miscellaneous	
L 5	5 180	Speed Sensor	Wheel
1 180	* 0	Speed Cal	1000
2 300	* 0	Self Test	0.00
3 120	R 5	Pump RPM	0
4 300		Speed	10.2
		Units	US
Product 1 v			
Duct Flow % 80	Flow/Shaft Alarm	Off	Smoothing On
Off Rate % 30	Vac/Bin Alarm	Off	Agitator Off
Low Tank 0.0	Decimal Shift	Off	Ratio Rate Off
Low Limit 0.0	Zero Shutoff	On	
Tank Vol 632.0	Spreader 0	Pre Set Pwr 0	
Area/Hour 0.0	Valve Cal 2123	Pw Freq 122	
Vol/Min 0.0	Valve Cal 20	Ratio Rate 0.00	
Rate Cal 15.0	Valve Adv 3	Valve Delay 0.0	
Rate +/- 2.0	Pump Cal 0	PWM 0	
Meter Cal 700.0	Min Pwr 0		
	Max Pwr 285		
Pressure 1 71	Application Liquid		
Pressure 2 61	Standard Valve		
Tally Registers		OK	

Touch the screen on any of the blue highlighted areas to change the values below

- Select Product number that is associated with NH3.
- Viper Pro only will be Product 1.
- Seedhawk Viper Pro will be Product 4.
- SeedMaster Viper Pro will be Product 3 or 4.
- Application is Liquid
- Control Valve – Standard Valve, Fast Close Valve, PWM Close Valve
 - The Calibration numbers will auto populate.
- Meter Cal – Enter in the Pulses/10 Lbs found on the Flowmeter Tag.
- Customers will have to do the rest of the settings.

Raven Legacy ISOBUS

Monitors that can be used

RVN Viper 4/Viper 4+/CR-7/CR-9
 JD2600 - for non-sectional only
 JD 2630 – sectional approved
 CNH Pro 700 – sectional approved
 Trimble 1000 ISO
 Topcon X25/X35

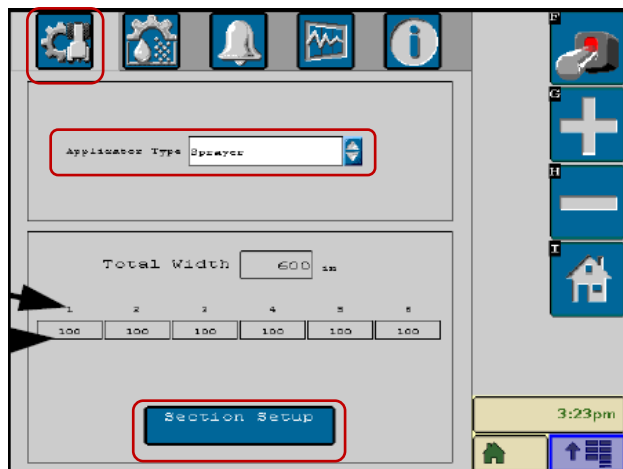
JD 2630 – sectional approved
 JD 4600/4640** – sectional approved
 **Software needs to be updated
 CNH Intelliview 4
 Trimble PRX2050
 Topcon X30 Apollo

1. Start-up the VT display. Allow the display to power up and initiate the ISOBUS system
2. Once the product control node is detected, the product control icon will be displayed in the VT.
3. Press the Icon

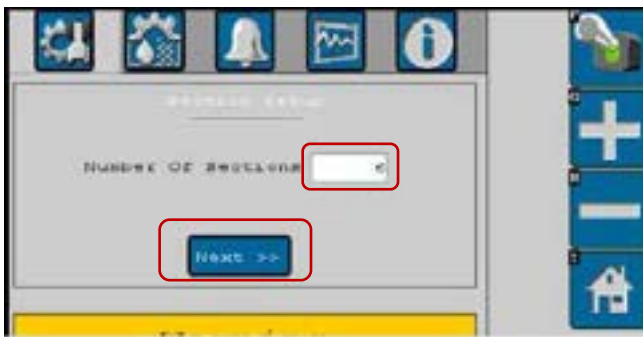


Your main screen will now appear on your Virtual Terminal Display.

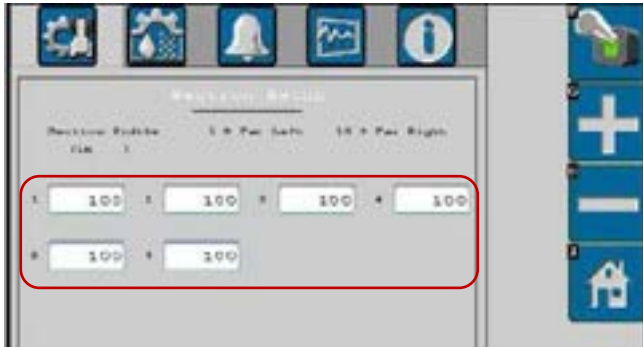
- Press the gears Icon on main screen.



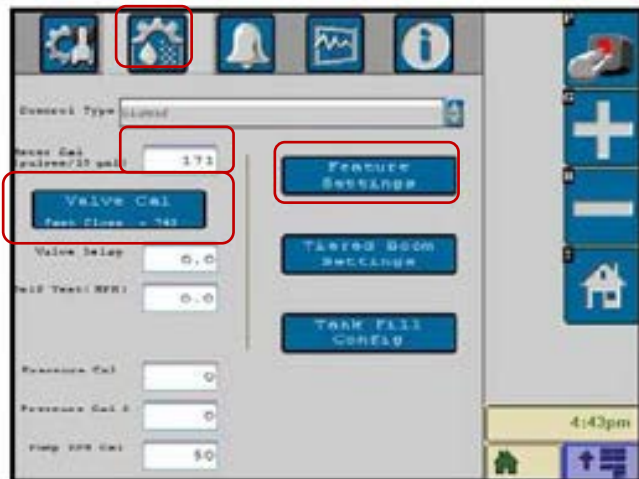
- Press the Gear with the tractor Icon
- Application Type – NH3 Applicator
- When NH3 Applicator is selected HP Boost and HP Plus comes on screen. Do not select either of these options.
- Press Section Setup



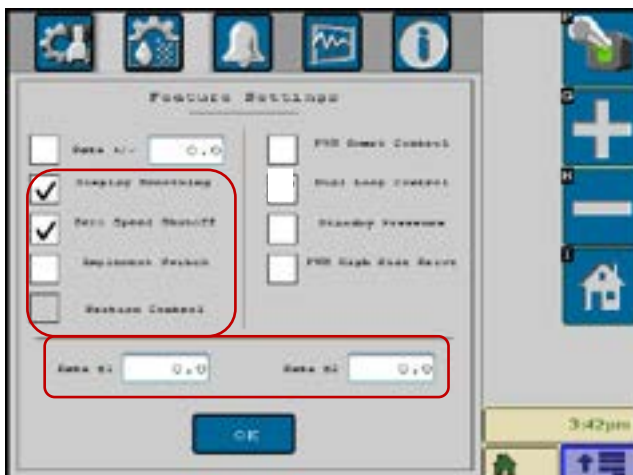
- Enter number of sections
- Press Next



- Enter in the size of each of the sections.
- Press OK at the bottom of the screen.



- Press the Gear with a Drop.
- Enter in Meter Cal off of the Flowmeter tag in Pulses/10Lbs N
- Press Valve Cal highlighted in Blue.
 - Select Valve Type - Standard, Fast Close, PWM Close
 - Valve Cal Number will auto populate
- Press OK
- Press Feature Settings that is Highlighted in Blue



- Checkmark Display Smoothing
- Checkmark Zero Speed Shutoff
- Section control will be greyed out if ISOBUS monitor is unlocked for Sectional Control
- Optional – Checkmark Implement Switch if one is hooked to the unit. PN 117-0171-298
- Optional – You can enter in two rates
- Press OK



- Press Tank Fill Config
 - Enter in Full tank capacity in Lbs
- Calculation - $\text{Total USWG} * .85 * 4.22 = \text{Total Lbs}$
 - Eg. $4000 * .85 * 4.22 = 14,348 \text{ Lbs}$
- Press OK
 - Press Alarms Icon (bell)



- Checkmark Low Tank and enter in 30% of the above Lbs Calculation
- Checkmark Off Rate and enter in 30%

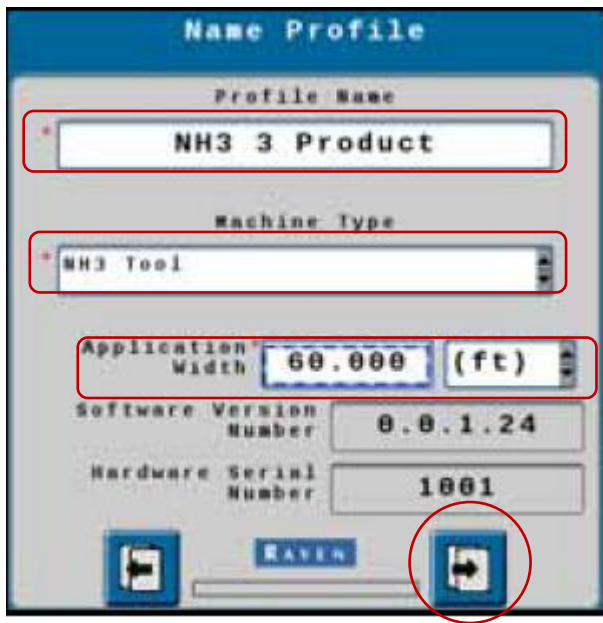
Raven RCM ISO/RC2000

Monitors that can be used

RVN Viper 4/Viper 4+/CR-7/CR-9
JD 2630 – sectional approved
CNH Pro 700 – sectional approved
Trimble 1000 ISO
Topcon X25/X35

JD 2630 – sectional approved
JD 4600/4640 – sectional approved
CNH Intelliview 4
Trimble PRX2050
Topcon X30 Apollo

Open up ISOBUS in the Virtual Terminal and select Setup Wizard



- Press Profile Name and Enter in a Profile Name
- Press Machine Type and select NH3 Tool
- Press Application Width and enter in width, and also enter in ft or inches.
- Press next red circle



- Press on Product 1
- Select product - NH3
- Press Next

Setup Section Groups

Number of Section Groups

RAVEN

- Press Section Groups – Enter 1
- Press Next

Setup Section Harnessing

Section Group	Starting Section Number	Number of Sections	Equal Section Widths
1	1	6	☒

RAVEN

- Press Starting Section Number enter in as 1
- Press Number of Sections enter in amount of sections you need.
- Press Equal Section Widths, Checkmark only if sections are equal
- Press Next

Setup Section Width

Enter the width of the sections

1	10.000	7	20.000
2	10.000	8	20.000
3	10.000	9	20.000
4	10.000		
5	10.000		
6	10.000		

RAVEN

- Press on each Section and Enter in Corresponding Section Footage

OR

- If equal Sections were Check marked above verify that the Section numbers are correct here

Section Summary

60.000 (ft)

Product 1

10	10	10	10	10	10
1	2	3	4	5	6
1	2	3	4	5	6

Product 2

20	20	20
7	8	9
7	8	9

Product 3

10	10	10	10	10	10
1	2	3	4	5	6
1	2	3	4	5	6

- Verify Section Summary
- Press Next

Setup Pressure Sensors

Pressure Sensor 1: 0-250psi (1-5V)

Pressure Sensor 2: 0-250psi (1-5V)

Pressure Sensor 3: None

Pressure Sensor 4: None

- Press Pressure Sensor 1 and select 0-250PSI if Pressure sensor is installed
- Or if no pressure sensors are installed all should say none.
- Press Next

Setup Pressure Alarms

	Min	Max	Alarm?
Pressure 1 (PSI)	25	75	☒
Pressure 2 (PSI)	25	75	☒
Pressure 3 (PSI)	0	0	☐
Pressure 4 (PSI)	0	0	☐

- Only to be setup if Pressure Sensor is Installed
- Press and Enter in Min/Max for Sensor
 - Press and Checkmark Alarm if you want alarm to show on monitor
 - Press Next

Setup Control Valve

Product 1 NH3

Control Valve Type: AccuFlow Single Valve

Valve Response Rate (1-100): 50

Control Deadband (%): 2

Control Effort (%): 3

Setup Rate Sensor

Product 1 NH3

Flowmeter Calibration: 168

Flowmeter calibration units are (Pulses/10lbs of Actual N) for NH3 applications.

Setup Tank/Bin

Product 1 NH3

Tank Capacity (lbs): 20000

Current Tank Level (%): 95

Low Tank Level (%): 15

Alarm? ☒

- Press on Control Valve Type
- Select Accuflow Dual Valve for Standard Valve
Use Default Settings
- Select Accuflow Single Valve for Fast Close Valve
Use Default Settings for Cooler
Use Below Settings for Maxflow
Valve Response Time – Enter 70
Control Deadband – Enter 20
Control Effort – Enter 3
- Select PWM for PWM Close
Valve Response Time – Enter
Control Deadband – Enter 20
Control Effort – Enter 3
- Press Next
- Press on Flowmeter Calibration and enter the number on the flowmeter in Pulses/10 Lbs N.
- Press Next
- Press on Tank Capacity and Enter in Lbs of N
- Press on Current Level and Enter in 85
- Press on Low Tank Level and Enter in 30
- Press on Alarm to Checkmark the alarm.
- Press Next

Setup Rates

Product 1 NH3

	Rate 1	Rate 2	Rate 3
Preset Rate Values (lbs N/Ac)	80	115	150
Rate Bump (lbs N/Ac)	0		
Rate Selection	Predefined or Rx		
Rate Smoothing	☒		

Navigation: Back, RAYEN, Next

- Press on Rate - 1,2,3 to set predefined rates in Lbs/acre
- Press on Rate Bump if wanting a plus or minus bump in Lbs/acre
- Press on Rate Selection
 - If RX will be used at anytime Enter what is seen in the field.
- Press on Rate Smoothing to Checkmark
 - If JD2000 Branded Enter in a number between 12-15%
- Press Next

Setup Alarms

Product 1 NH3

Off Rate Alarm (% off target rate)	20	Alarm? ☒
Section Valve Status Feedback Alarm	☐	

Navigation: Back, RAYEN, Next

- Press on Off Rate Alarm Enter in 20
- Press on Alarm to Checkmark
- Press on Section Valve Status to Checkmark
- Press Next

You will now be on the main settings page

System Settings

Control Valve Setup	Pressure Sensor Setup
Rate Sensor Setup	Auxiliary Functions Setup
Tank Fill Settings	Tiered Boom Setup
Display Setup Menu	

Navigation: Back, Home, Settings, Lock, Logout

See Chart on next page

Number in Screen Shot Above	Button	Features
1	Control Valve Setup	• Valve Response Rate • Control Deadband • Valve Delay • Valve Advance • Control Effort • PWM Setup (Coil Frequency, High Limit, Low Limit, PWM Standby) • Boost Pump Setup (Coil Frequency, High Limit, Low Limit, Valve Response Rate)
2	Rate Sensor Setup	• Flowmeter Calibration • Flowmeter Pulse/Units • Tank Fill Flowmeter Calibration • Tank Fill Flowmeter Pulse/Units • Catch Test Calibration • Applied Product Calibration
3	Tank Fill Settings	• Tank Capacity • Current Level • Low Tank Level • Low Tank Level Alarm
4	Display Setup Menu	• Actual Rate Per Area • Target Rate Per Area • Area Per Hour • Area Remaining on Current Tank Level • Traveling Speed • Pressure Sensor • Volume Remaining • Volume Per Time (Flow Rate) • Area • Volume Applied
5	Pressure Sensor Setup	• Pressure Sensor 1-6 • Calibrate Pressure Sensor • Pressure Assignment Setup
6	Auxiliary Features Setup	• RPM Calibration Pulse/Rev • RPM Low Limit • RPM Low Limit Alarm • RPM High Limit • RPM Low Limit Alarm • RPM Sensor Assignment • Enable Agitator • Agitator Duty Cycle
7	Tiered Boom Setup Button	Sprayers Only

New Valve Response Chart



Setting	Information	Standard	Fast Close	Fast	PWM	PWM Close
Valve Response Rate (1-100)	Enter value for aggressiveness of rate controller as it approaches target rate. A value too high may lead to oscillation. A value too low may take a long time to reach target rate.	50	50	50	50	50
Control Deadband (%)	Enter percentage of rate tolerance for control valve. For example, if 2% is entered, the rate controller attempts to adjust the flow rate until the actual rate is within 2% of the target rate.	3	3	3	2	2
Valve Delay (sec)	Enter the amount of time in seconds between when the first section is turned on and the rate controller begins to control flow rate.	0.0		0.0	0.0	
Valve Advance (sec)	Enter the amount of time in seconds the rate controller commands the control valve to open after all sections are turned off. This may be used in conjunction with valve delay for low rate applications to build up pressure when the master switch is turned on.	0.0		0.0		
Control Effort (%)	Enter the minimum percentage power needed for the control valve to change position.	35	3	3		

Topcon Apollo/Topcon Bridge





JD Monitor/GS1 & GS2	
Flowmeter	- 10gal Check marked - Use 10gal off the tag
Control Valve	Fast Close Valve - 743/543 coolers - 293/493 Maxflow VRC II
Under "Rates Tab"	
Actual N	- Checkmark 82%
Rate Smoothing	- 12%

On the GS1/GS2 you can use the following tests to see if there is functionality on the valves.

- Energize Test will open the on/off's and the fast valve.
- Bleed Test will open the on/off's only.

FM, FMX Trimble w/Field IQ	
Flowmeter	- Raven Check Marked - Select lbs N, off of tag enter in full number 1XX, 3XX
Control Valve – Fast Valve	- Pump Servo for Fast Valve for Cooler and Maxflow VRC II - Proportional Gain 6, Integral Gain 0 - Breakout 14 - Dead Band 3
Control Valve- PWM	- PWM for Maxflow VRC II - Integral Gain 3, Proportional Gain 0 - Breakout 14 - Dead Band 3
Snap	- Enabled

CNH Pro700/Intelliview 4 with Field IQ

	Cooler	Maxflow VRC II
Flow Meter	7X.X, 3XX.X, 8XX.X	Same
Fast Valve	Proportional Gain 6	Same
PWM	N/A	Integral Gain 3

