New Holland Guardian SP. Sprayers

SMART TECHNOLOGY FOR TODAY'S FARMERS
INNOVATIVE. ACCURATE. ADAPTABLE.

Sprayer Basics

Every spray system requires these 4 components to run.

Sprayer Basics

Every spray system requires these 4 components to run.

- Boom Width
- Speed
- Flow Reading
- Control Valve

Engine Maintenance

A helpful thing you should know

- All electrical wires are marked with lettering for what there function is all the way through the harness (fig. 1)

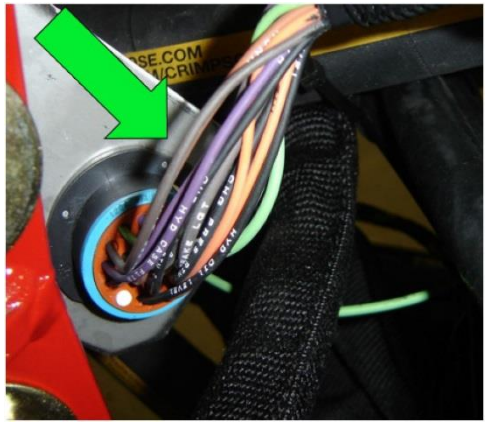


Figure 1. Electrical Connection

- Most hydraulic hoses are marked with part numbers so if you have an issue it is easier to get a replacement (fig. 2)

Figure 02. Hydraulic Hose Labels

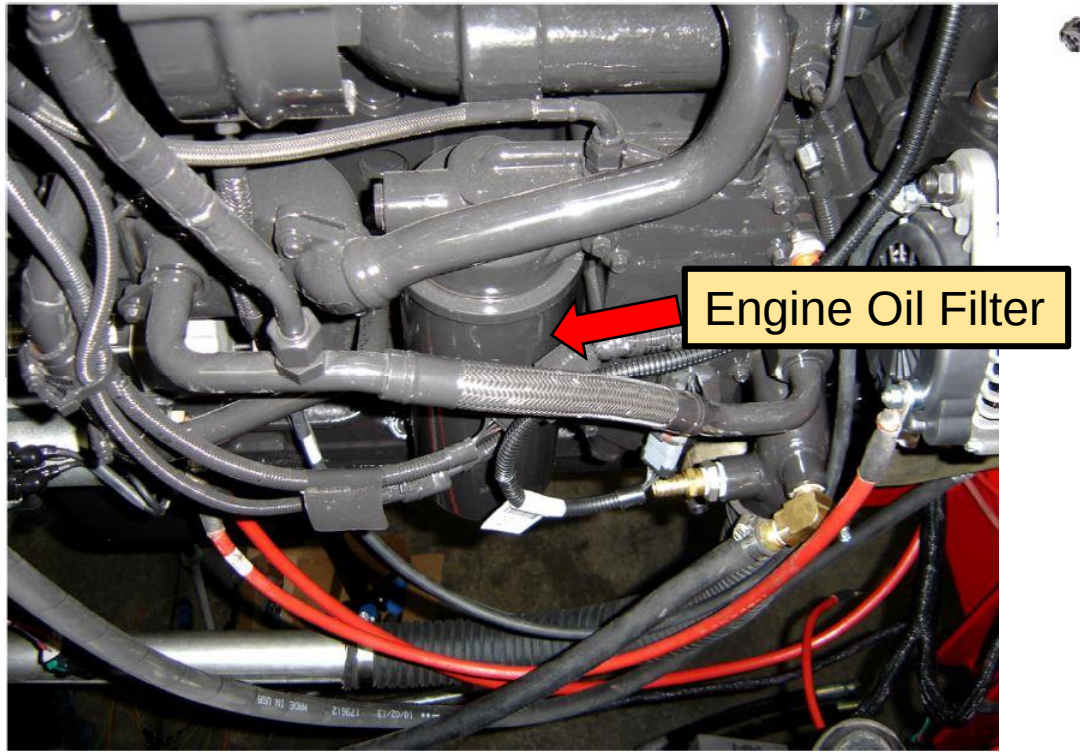
Engine Maintenance

Oil

- Oil change intervals
  - 500 hours
  - 10W-30 **(P/N 73341763)**
    - ✓ API CJ4 New Holland Ambra Master Gold
  - For Front and Rear Booms- 2017+.
- Change oil filters at the same time

Engine Maintenance

- Change oil filter every time you change your oil

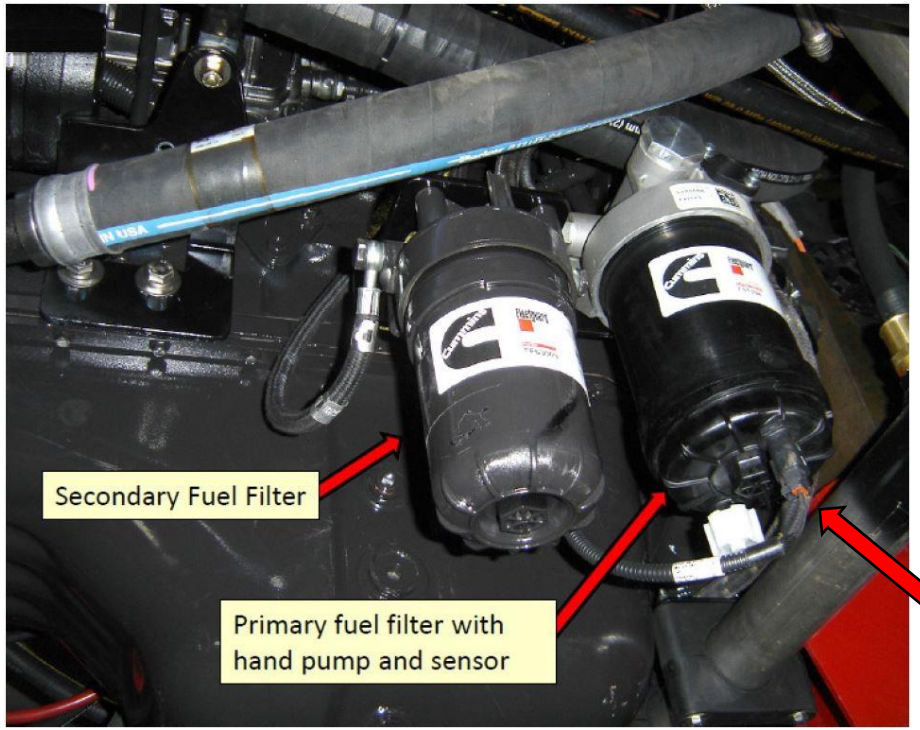


Engine Maintenance

- Fuel Filter change intervals
  - 500 hours
- Change oil and fuel filters at the same time

- SP.300R Engine Oil Filter
- **P/N MLR2122423**
- SP.345 Engine Oil Filter
- **P/N 84485647**
- SP.400 Engine Oil Filter
- **P/N 84476755**

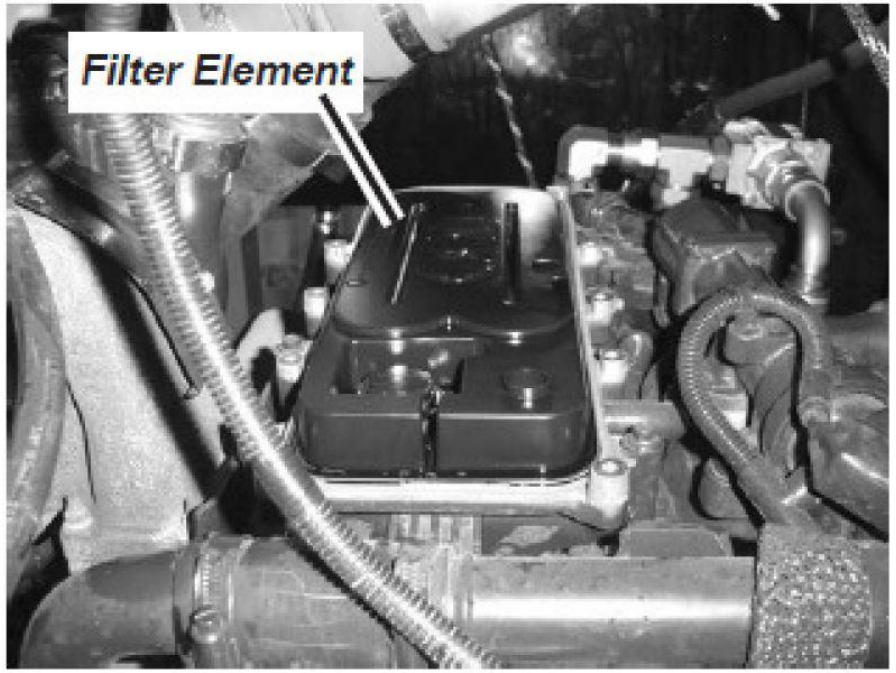
- Fuel Filters (Both)
- Primary- **P/N 21.61666**
- Secondary- **P/N 21.46061**



Engine Maintenance

Engine Breather Filter

- Located on top of valve cover
- Change every 2000 hours

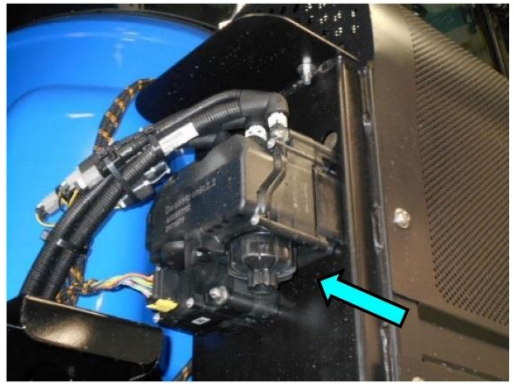


Engine Breather Filter Element

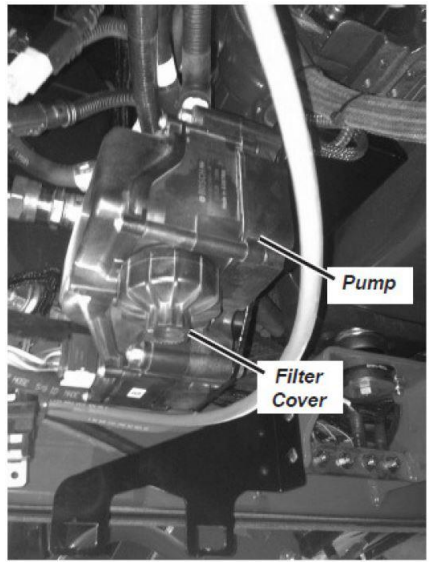
Engine Maintenance

DEF Fluid

- DEF tank is located in the engine bay (front booms) and on the center of the right hand side of the machine (rear boom)
- DEF system has a filter
- Filter should be changed every 4500 hours or as needed
- It is best practice to drain the DEF fluid before winter



Rear Boom Diesel Exhaust Fluid Pump

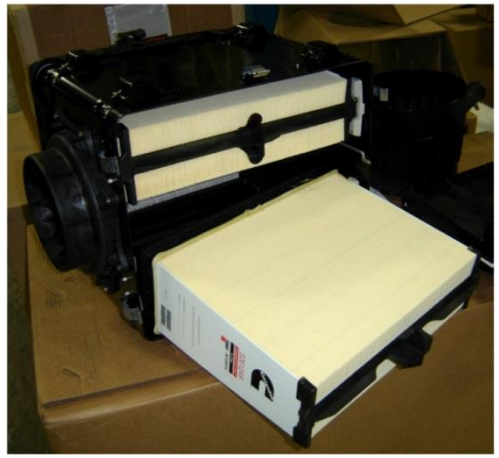


Front Boom Diesel Exhaust Fluid Pump

Engine Maintenance

Air Filter

- Dry style Air Filter located on top of the engine
- Two Stage
  - Primary filters are on the outside
  - Final filters are inside
- **<u>Do Not Clean</u>**
- Change every 250 hours or as needed
- P/N - **21.61791** Primary Filter
- P/N - **21.61792** Secondary Filter
- Front and Rear Boom



Primary Filter

Final Filters - 2

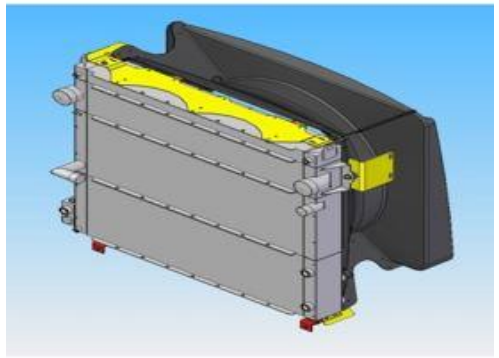
Engine Maintenance

Air Filter warning light indicator on chassis monitor

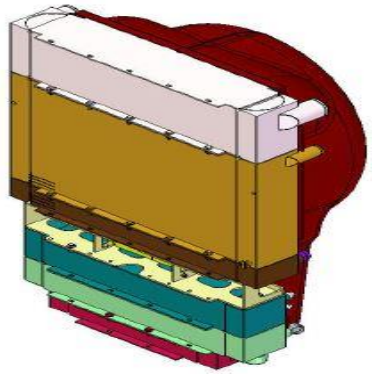
- If your Air Filter Warning system comes on in the cab
  - Replace the filters first
  - Then you must manually push a reset button on the Air Filter Condition Sensor to clear out the warning on the chassis monitor

Cooling system (Radiators)

- The Radiator system is actually 3 reservoirs
  - The main Radiator Core
  - The Expansion Tank
  - Over Flow Jug



Front Boom Radiator System

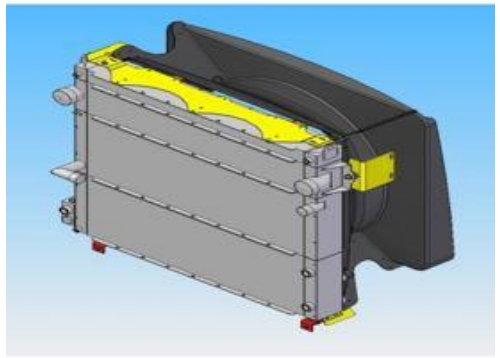


Rear Boom Radiator System

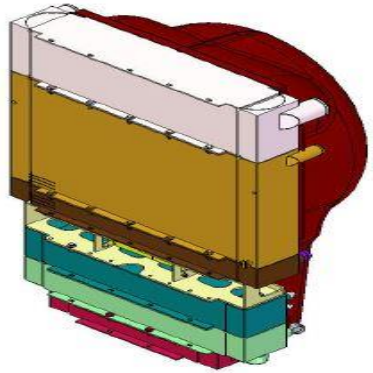
Cooling system / Coolant (Antifreeze)

Coolant

- We have changed the type of Coolant (antifreeze) that we use
- Original coolant was called HOAT (Hybrid Organic Acid Technology) Pink in colour
- What we are using now is called OAT (Organic Acid Technology) Yellow in colour
- There are numerous reasons for the change – but the best shortest reason is that CNH Industrial uses it in their entire fleet



Front Boom Radiator System



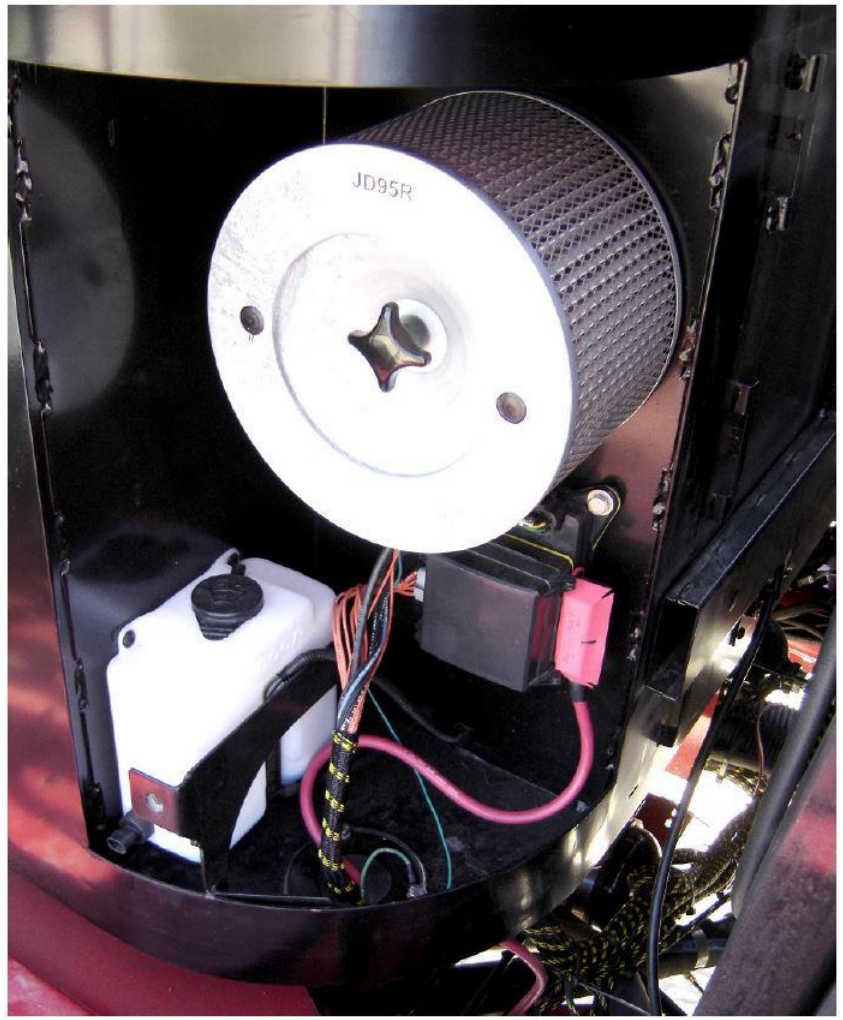
Rear Boom Radiator System

<u>Important - Do Not Mix Them</u>

Cab Filters

There are two cab filters that need to be serviced

- Filter one
- Primary Charcoal Filter located in the left rear corner of the cab
- This is accessed from the outside by removing a panel
- Because this filter is related to your personal health cleaning is not recommended – ***Just Replace It***
- This filter should be inspected regularly
- **P/N 21.00955**



Cab Filters

There are two cab filters that need to be serviced

- In Cab Filter
- Located under the right arm rest
- This is very important that you service this filter
  - It will make your HVAC function much more efficiently
  - The cab is pressurized – if this filter is dirty the pressurization system will work much harder and be a lot Noisier

Fuses and Fuse Panels

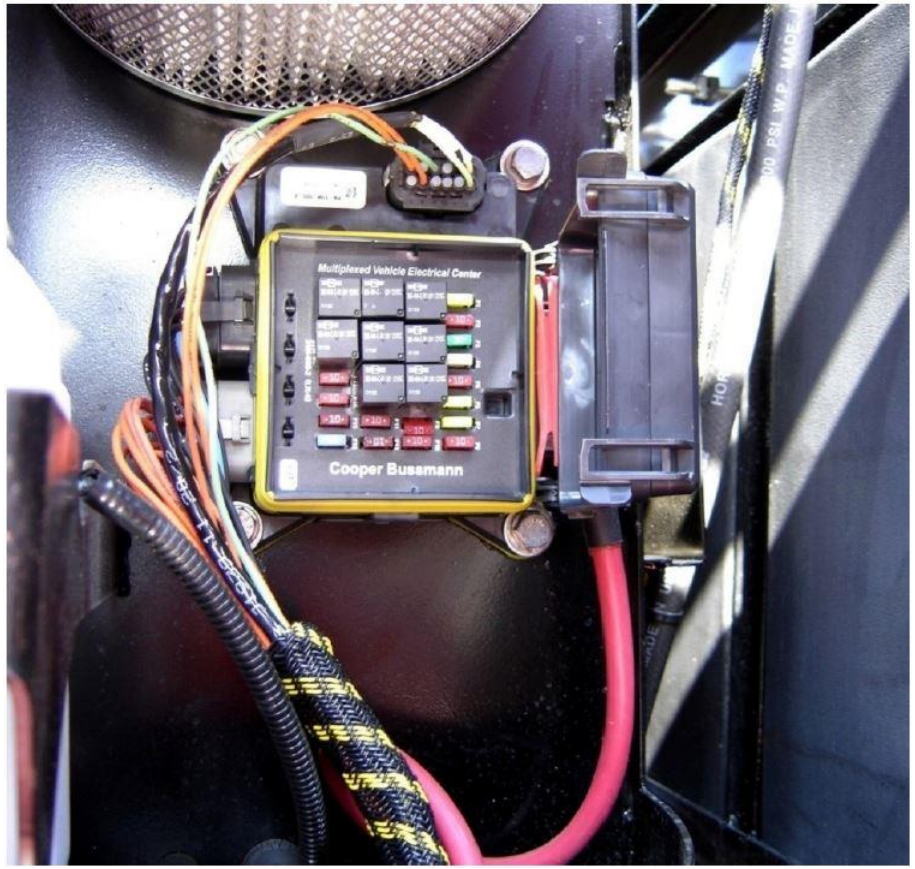
There are 4 fuse panels

Front Electrical Center

- This is an ISObus panel
- Located right under the Cab Air Cleaner

The others are located on the underbelly of the machine.

- Rear Electrical Center
- Engine Electrical Center
- Aux Electrical Center

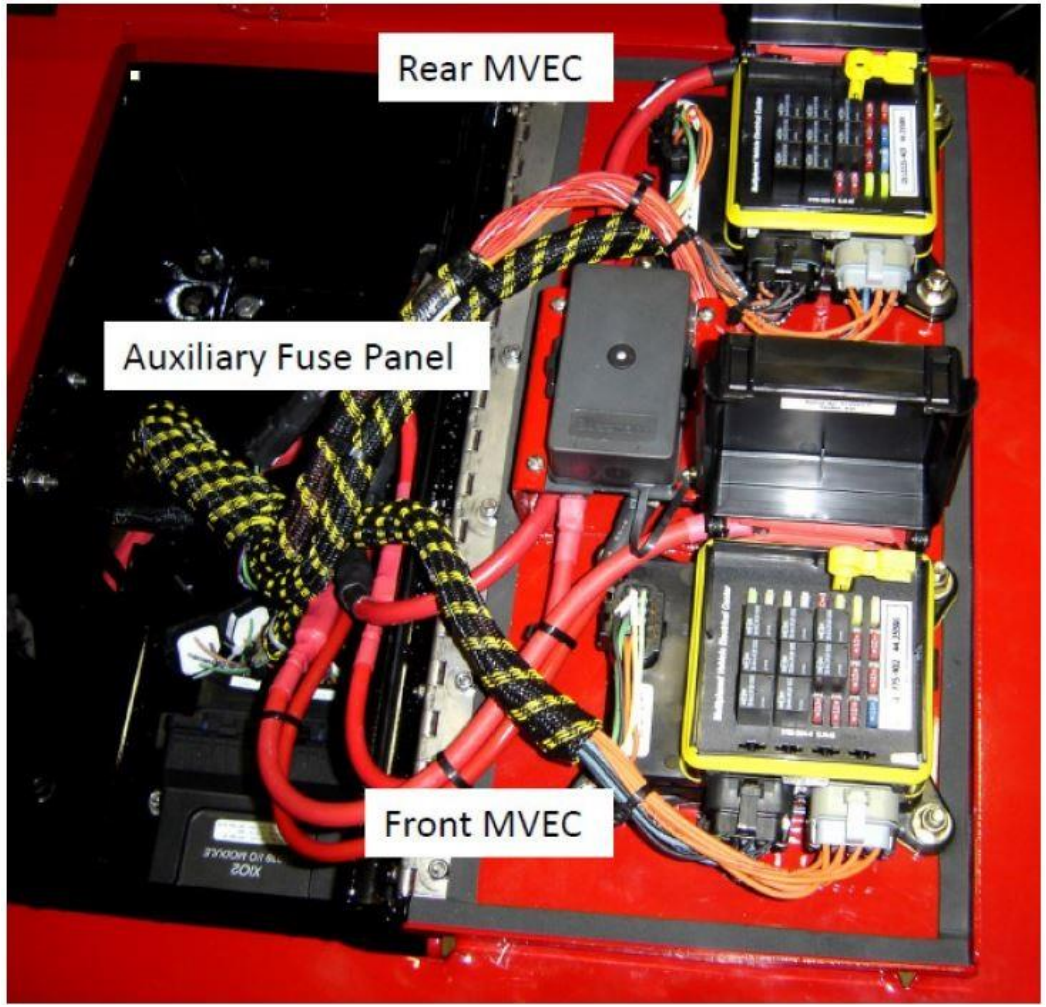


Fuses and Fuse Panels

There are 4 fuse panels

1. Electrical Center
   - ➢ Located on top of the walkway
   - ➢ There are two ISObus panels
   - ➢ One non ISObus

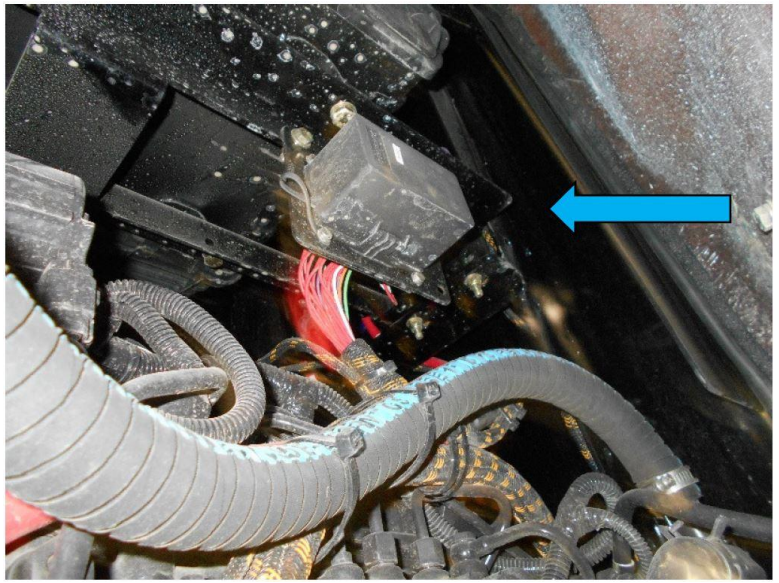
- *Note: On tier 4 models the Aux. fuse panel is located behind the platform*

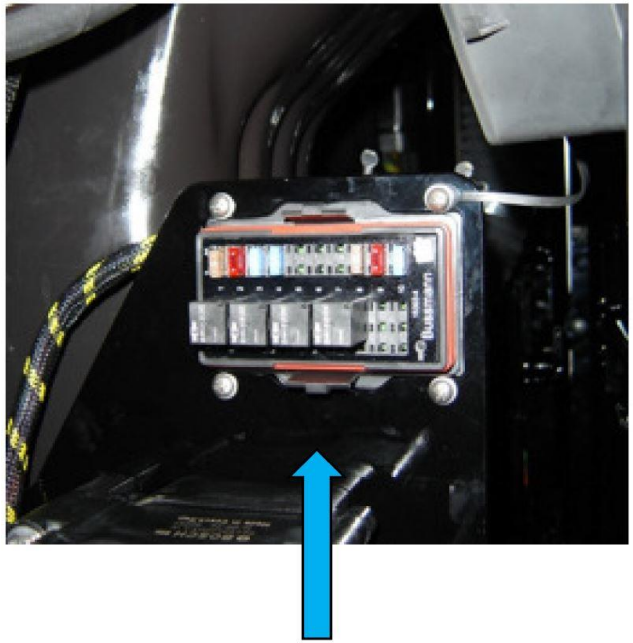


Fuses and Fuse Panels

There are either 3 or 4 fuse panels

1. Engine Fuse Panel
   - This is not ISObus
   - Located on the left side of the engine
   - Tier 4 B models only





Fuses and Fuse Panels

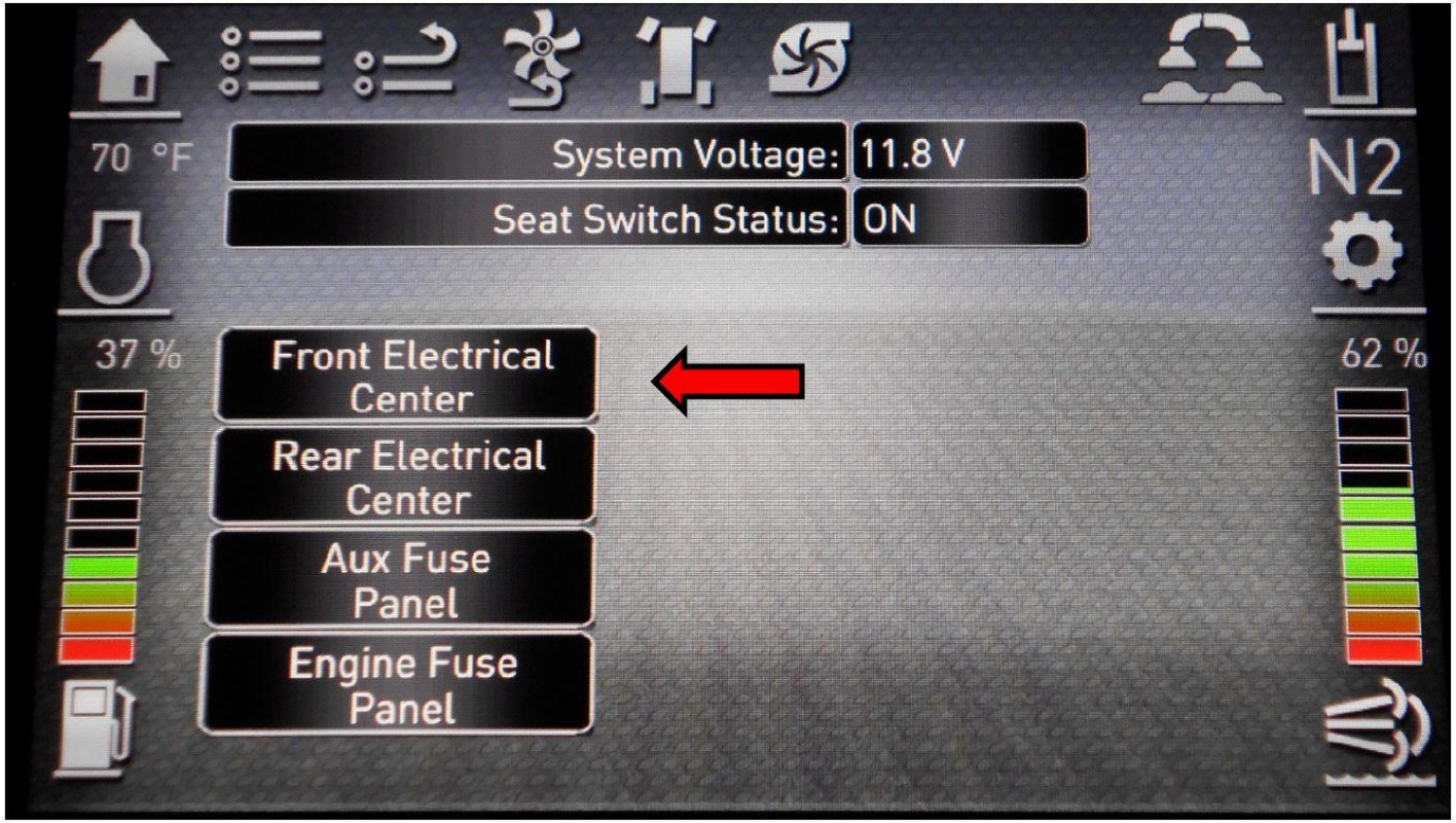
ISObus Electrical Centers

- The advantage to an ISObus fuse system is that you can determine which fuse is blown from inside the cab

Fuses and Fuse Panels

ISObus Electrical Centers

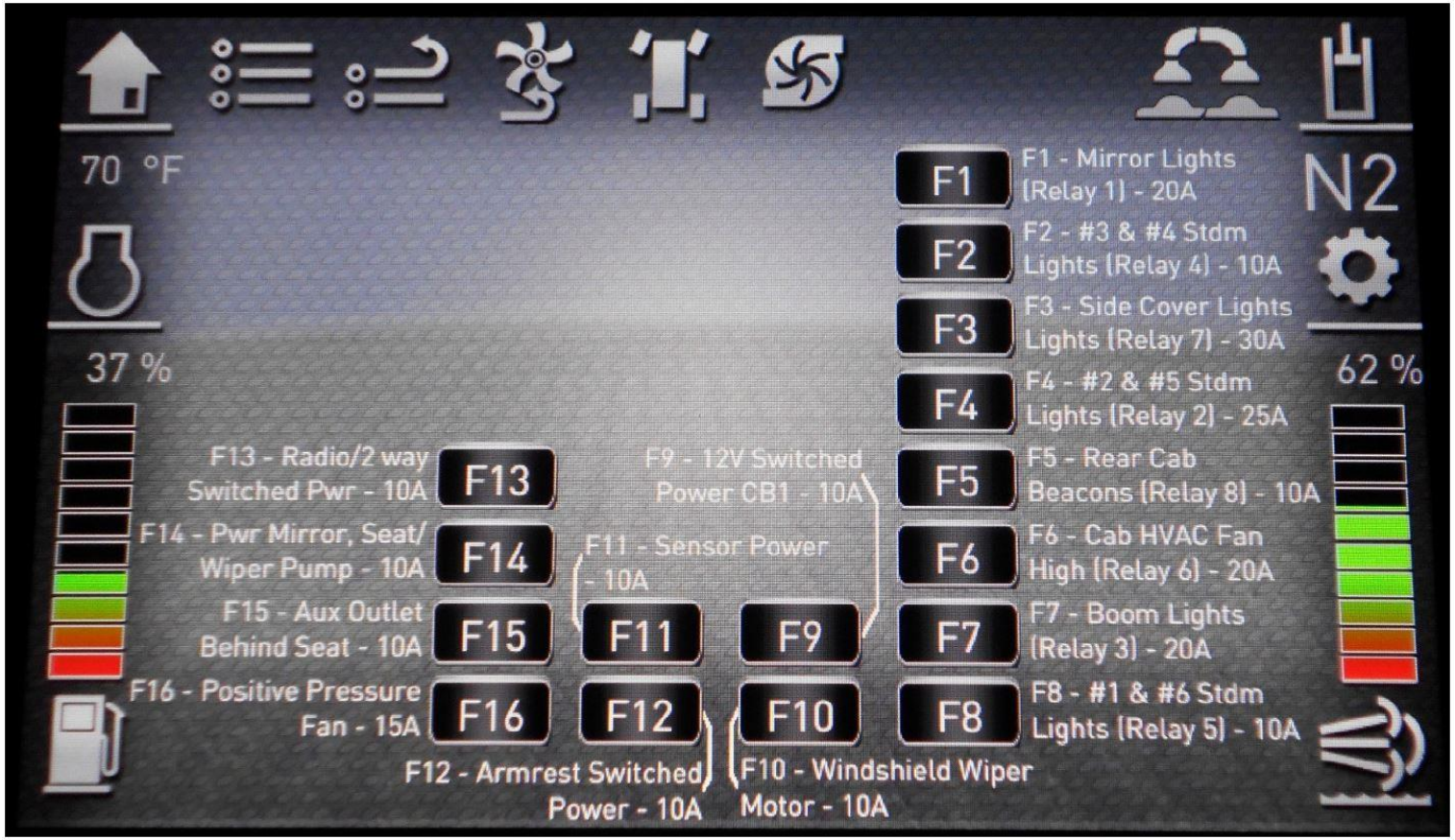
- After going to the *Electrical* on the Chassis Monitor
  - Choose the Front Electrical Center



Fuses and Fuse Panels

ISObus Electrical Centers

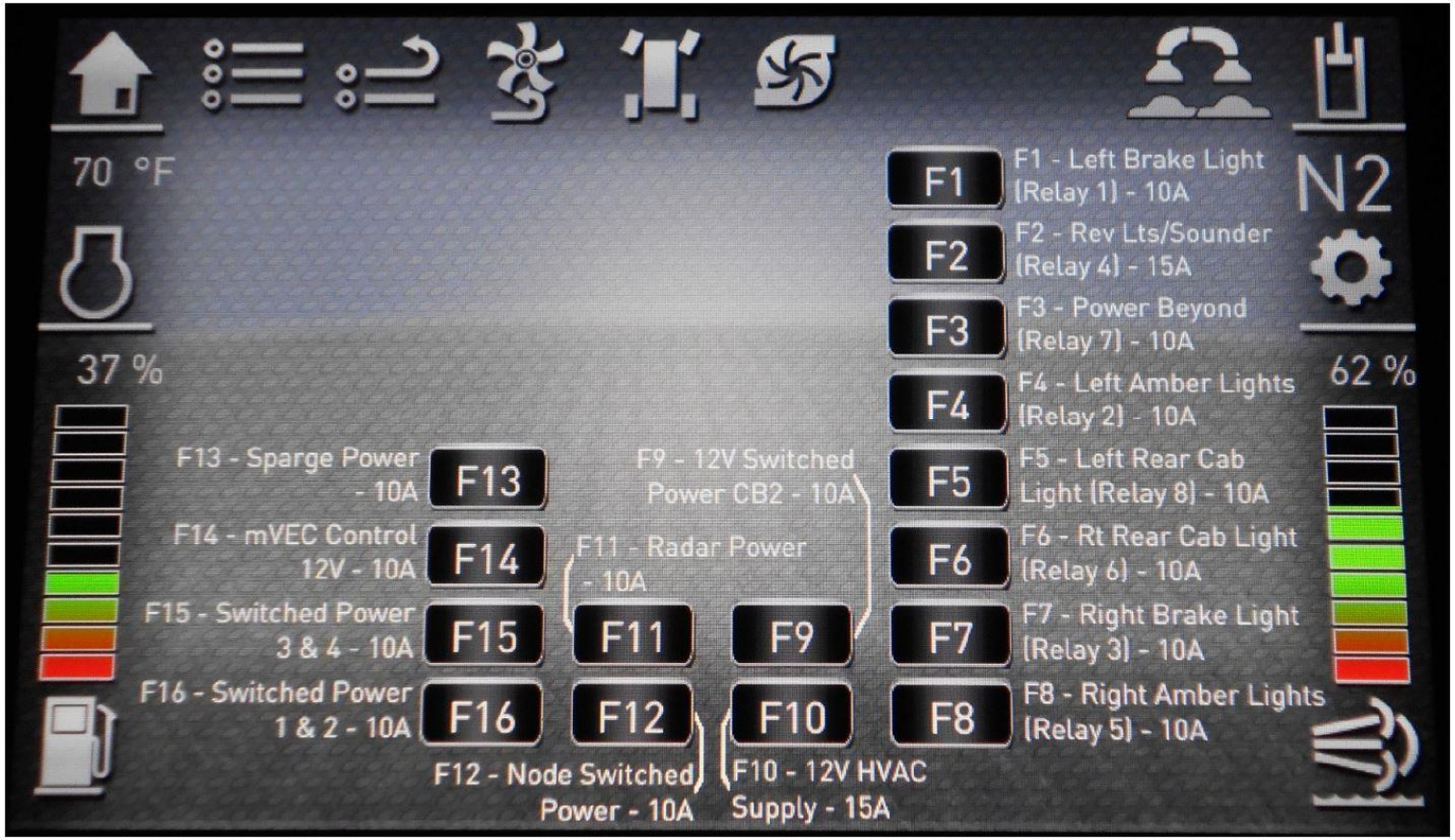
- Then this screen will appear – If a fuse identifier is **RED** then that is the one you find



Fuses and Fuse Panels

ISObus Electrical Centers

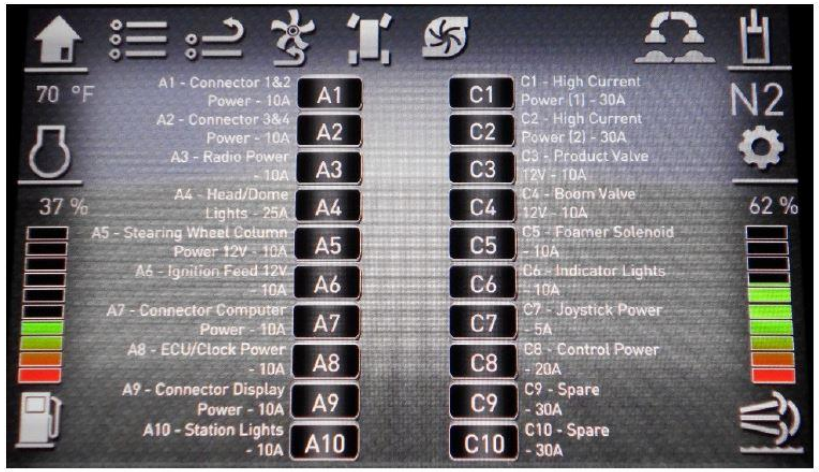
- You can repeat this procedure for the Rear Electrical Center also



Fuses and Fuse Panels

ISObus Electrical Centers

- This will not work for the Aux Fuse or Engine Fuse panels
- But you can still see what the fuses are for and what size they are

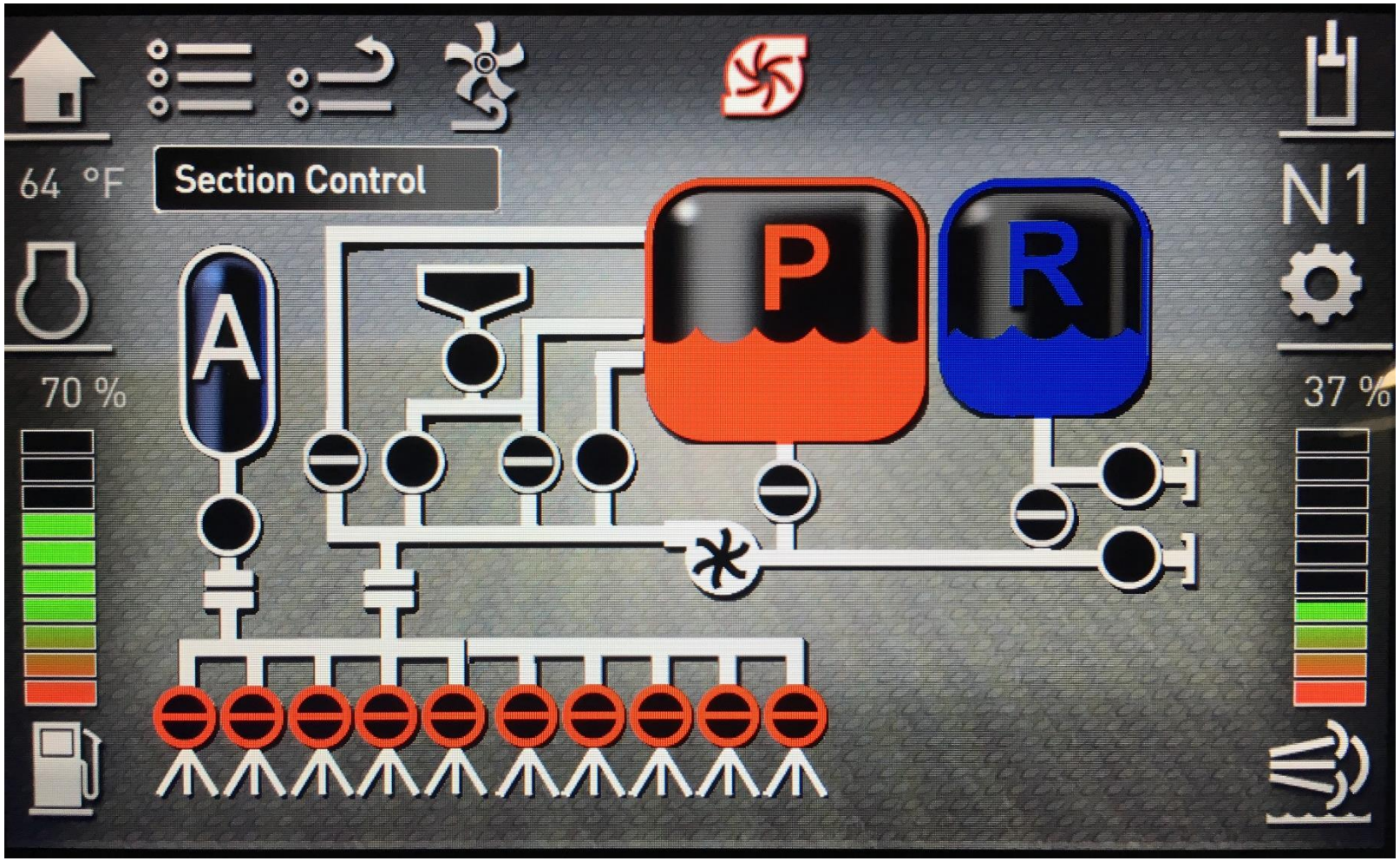


Auxiliary Panel (Not Monitored) List only

Engine Fuse/Relay Panel (Not Monitored) List only

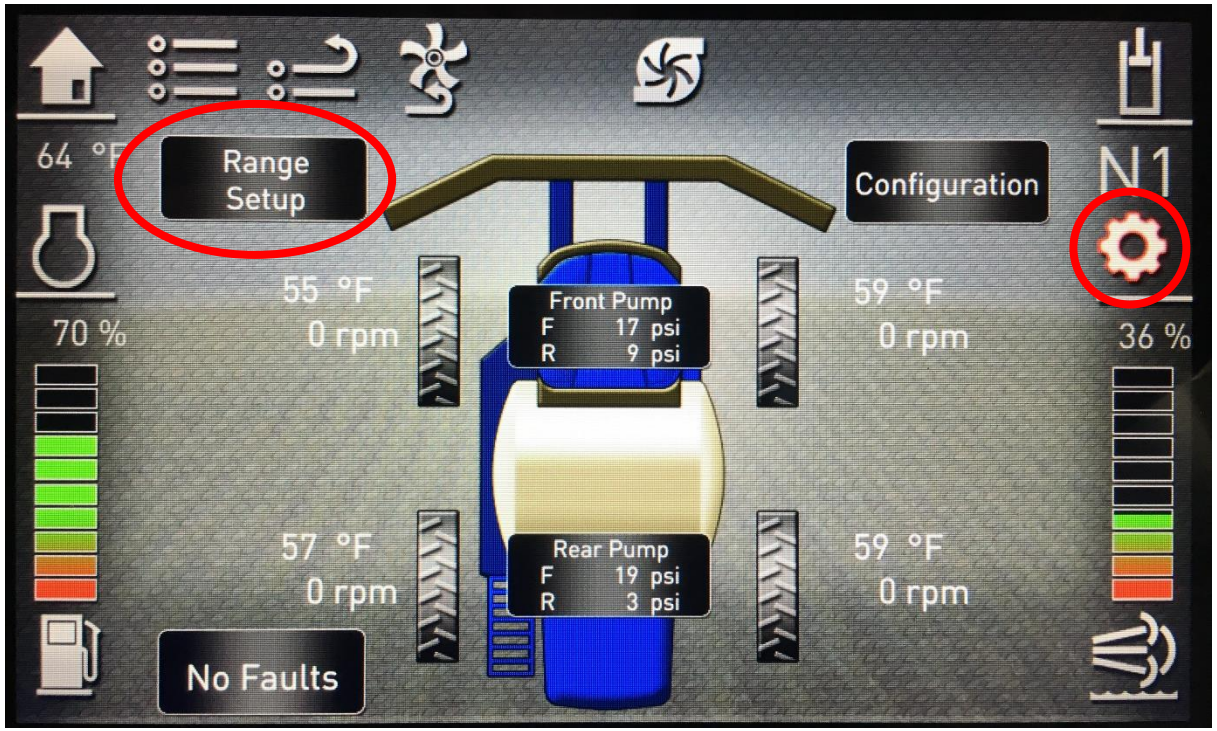
Plumbing Page

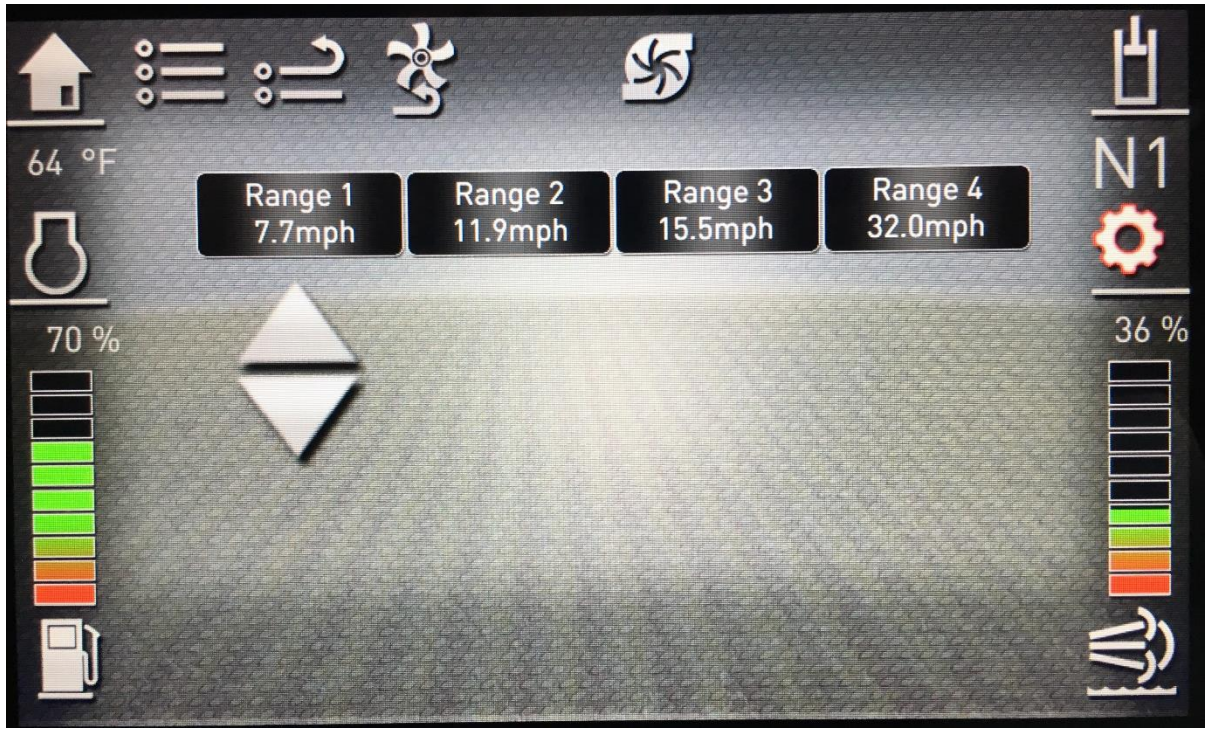
- Here you can see where the product flow is going throughout the sprayer



Transmission Range Setup

- This page allows you to select your 4 speed ranges on the sprayer.



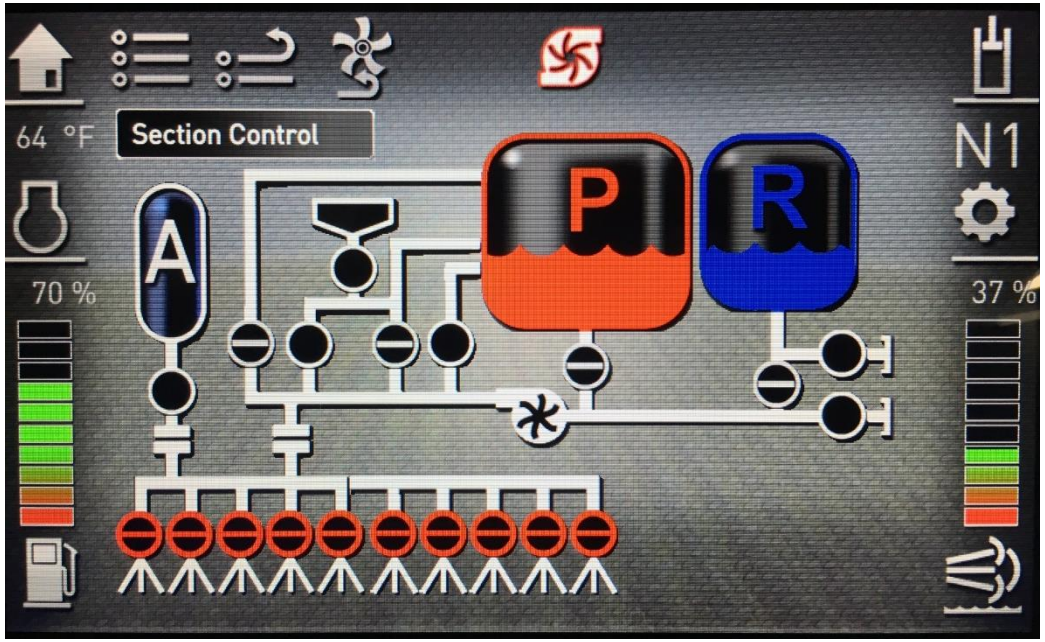


Reversing Fan Option

- Here you can disable the reversing fan, or adjust the Automatic timer, and the duration of the reversing fan.

Winterizing

- Drain the sprayer, and fill the rinse tank with sprayer winterizer or a good RV antifreeze (~30 gal).
- Open the rinse tank sump, product tank rinse, agitation valve, and the bypass valve. Turn on the pump until the rinse tank is empty.
- Once the rinse tank is empty, your product tank should be full of the antifreeze, and your rinse, agitation, and bypass valves will been flushed through.
- Next open the product tank sump and pump the antifreeze through one section at a time (including fence rows). Pump out all the product from the tank.
- Once the tank is dry, use the air boom blowout to blow the remainder of the antifreeze out of the boom. I recommend tipping your boom tips down, and blowing out one section at a time, working from the center of the boom out.
- Next open up all the valves (Tank fills and tank drain), and empty the filter casings (boom filters and Y strainer).



Guardian Sprayer

For Model Years 2013-2016 for Front Boom

Model Years 2013-Current Rear Boom

For Model Year 2017-Current go to page 70

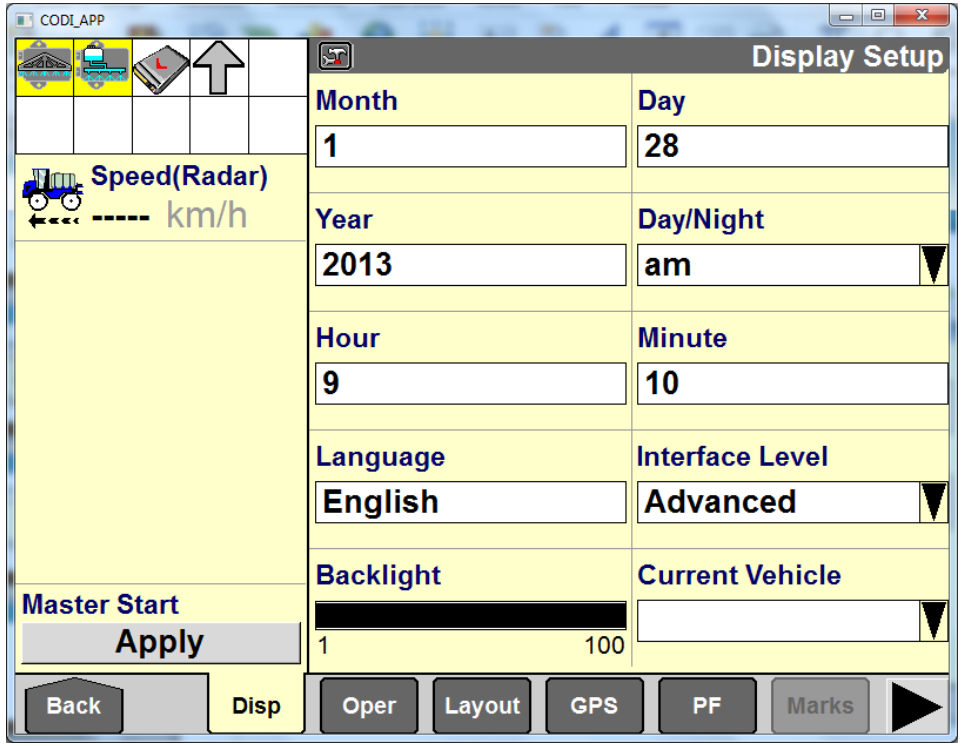
Contents

- Display Settings
- Control Valve Settings
- Product Setup
- Container Settings
- Boom Settings
- Working Screens
- Sensors & Calibrations

Suggested Display Settings for Guardian Sprayers

Display Setup

Interface Level for Guardian Sprayer operation MUST be set to Advanced



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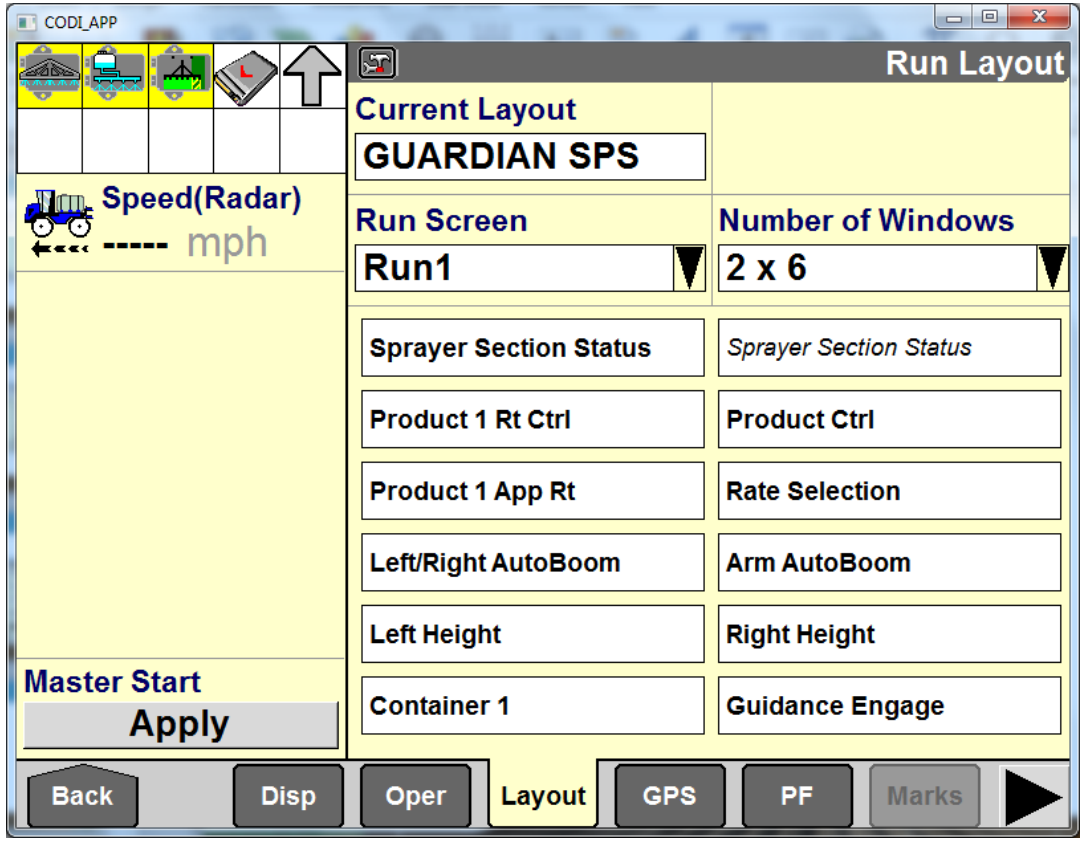
Layout Setup

Suggested Run1 Layout Screen for Guardian Sprayer



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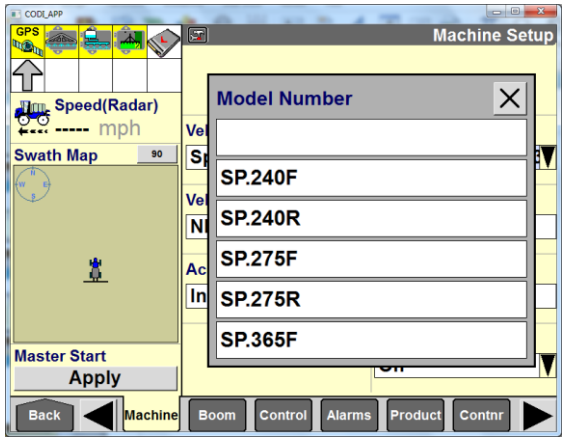
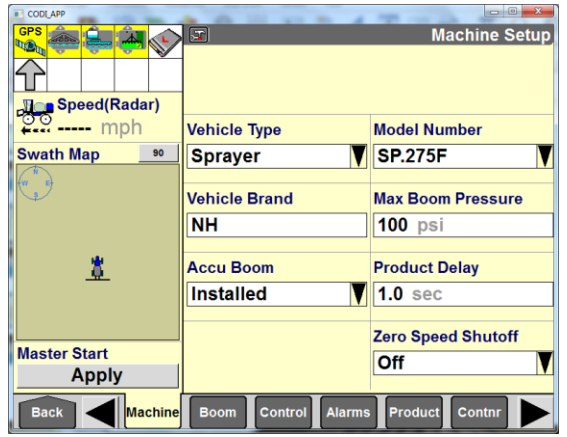
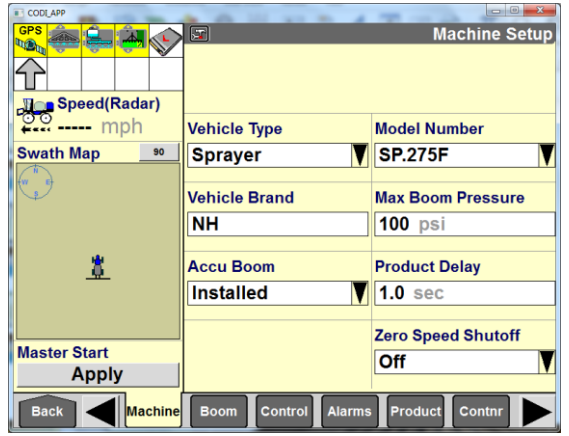
Machine Setup

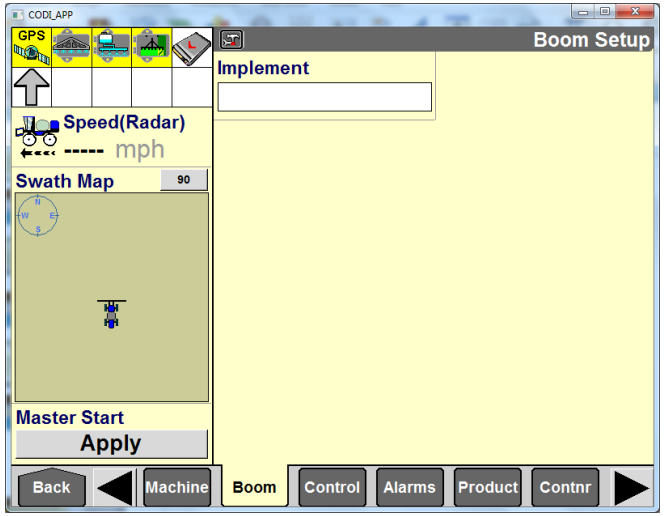
- Select Machine tab
- Chose appropriate SPS model
- Select Accuboom box
- Set Product Delay time
  - Product Delay = time from master switch activation to product at the nozzles



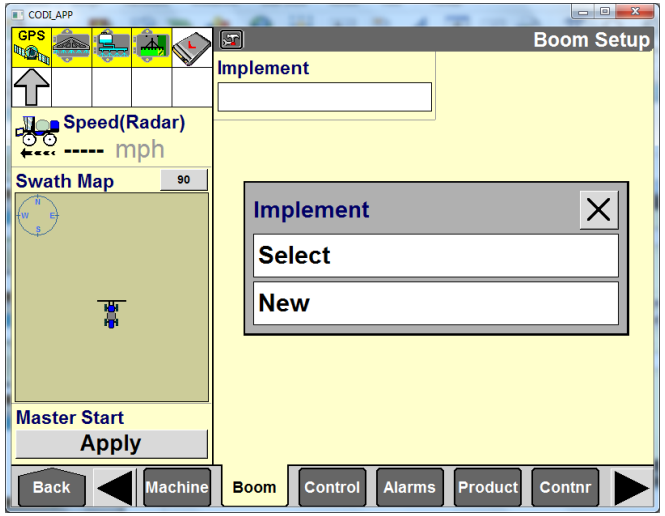


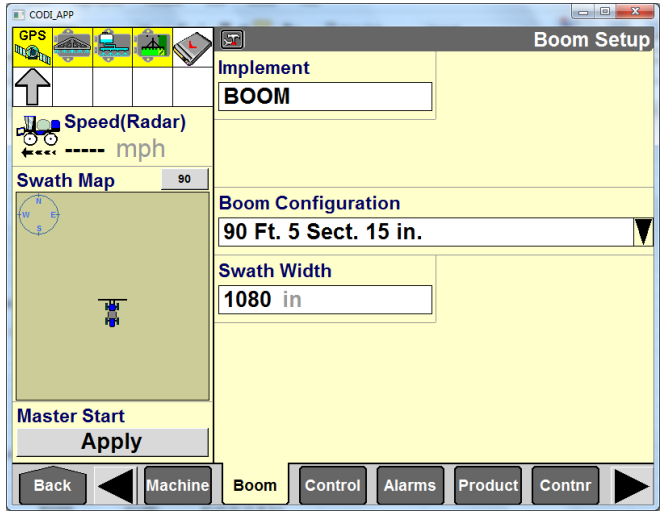


Boom Setup



- Select Boom tab
- Create new Implement
- Select Boom Configuration box





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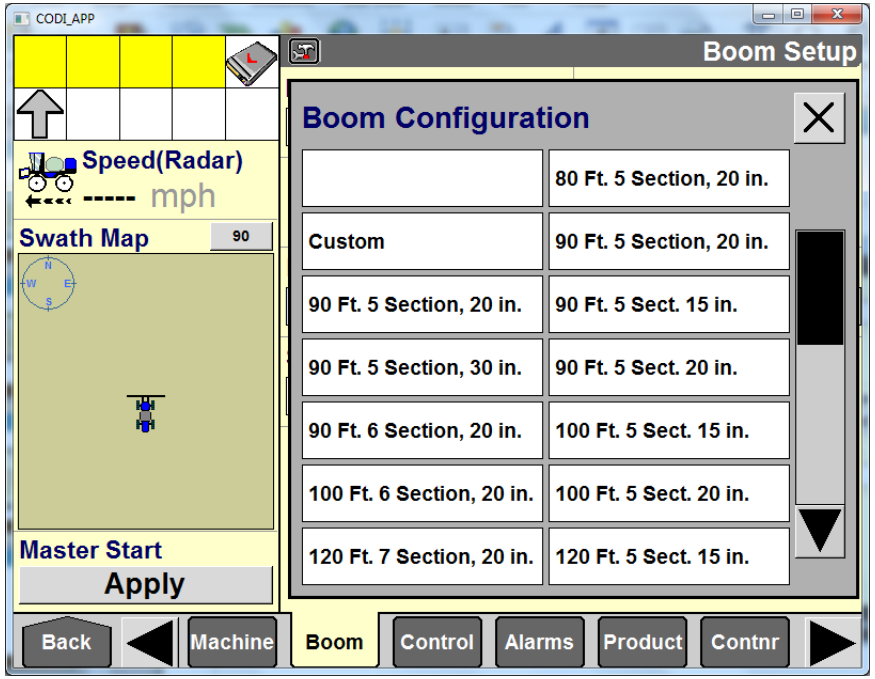
Boom Setup



- Select boom configuration that matches the boom
- If no match; select Custom to create new boom

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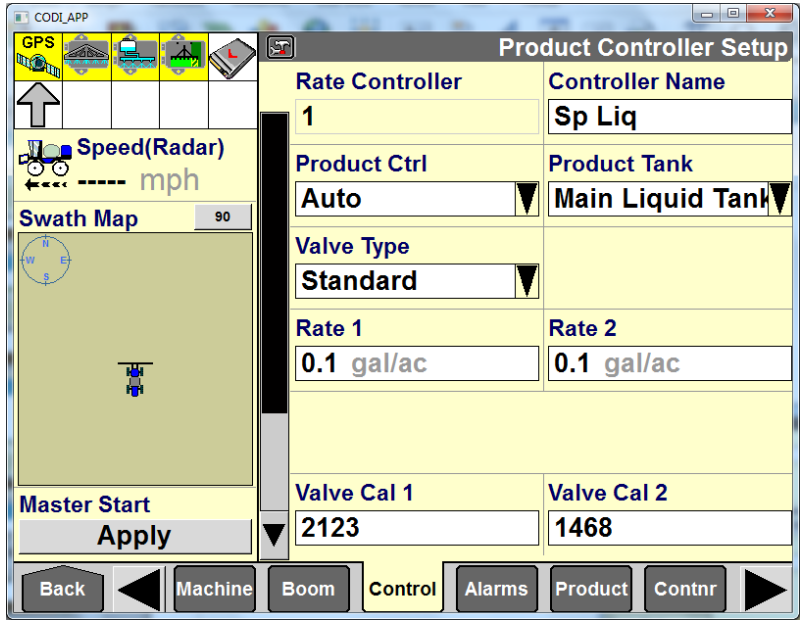
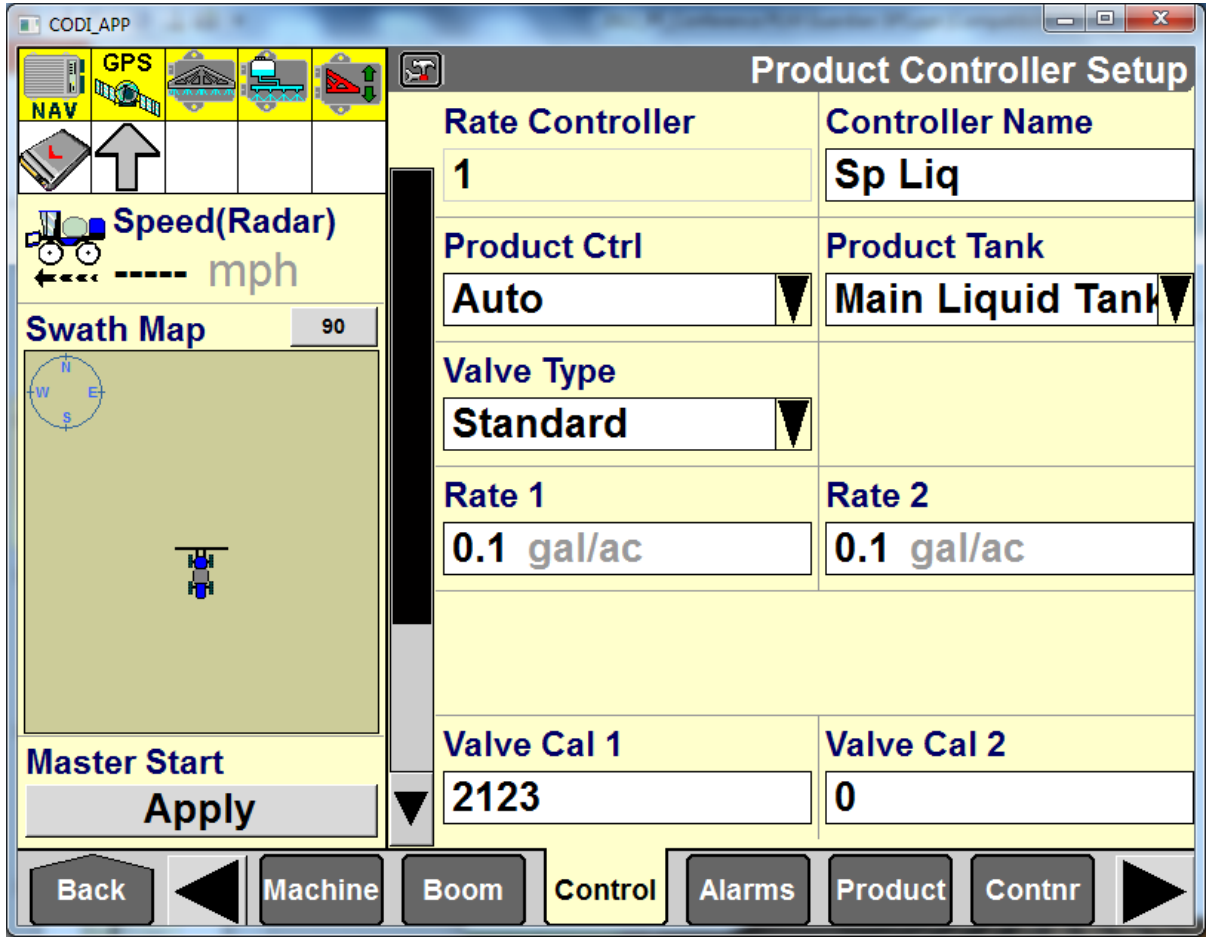
Control Valve Settings

Control Setup

- Select Control tab
- Set Rates 1 & 2
- Verify your Valve Type
  - All rear booms have a standard valve, and all front booms MY15+ will be a PWM valve.
- Set Valve Cal 2 to Zero if you have a standard valve



Valve CAL Definition

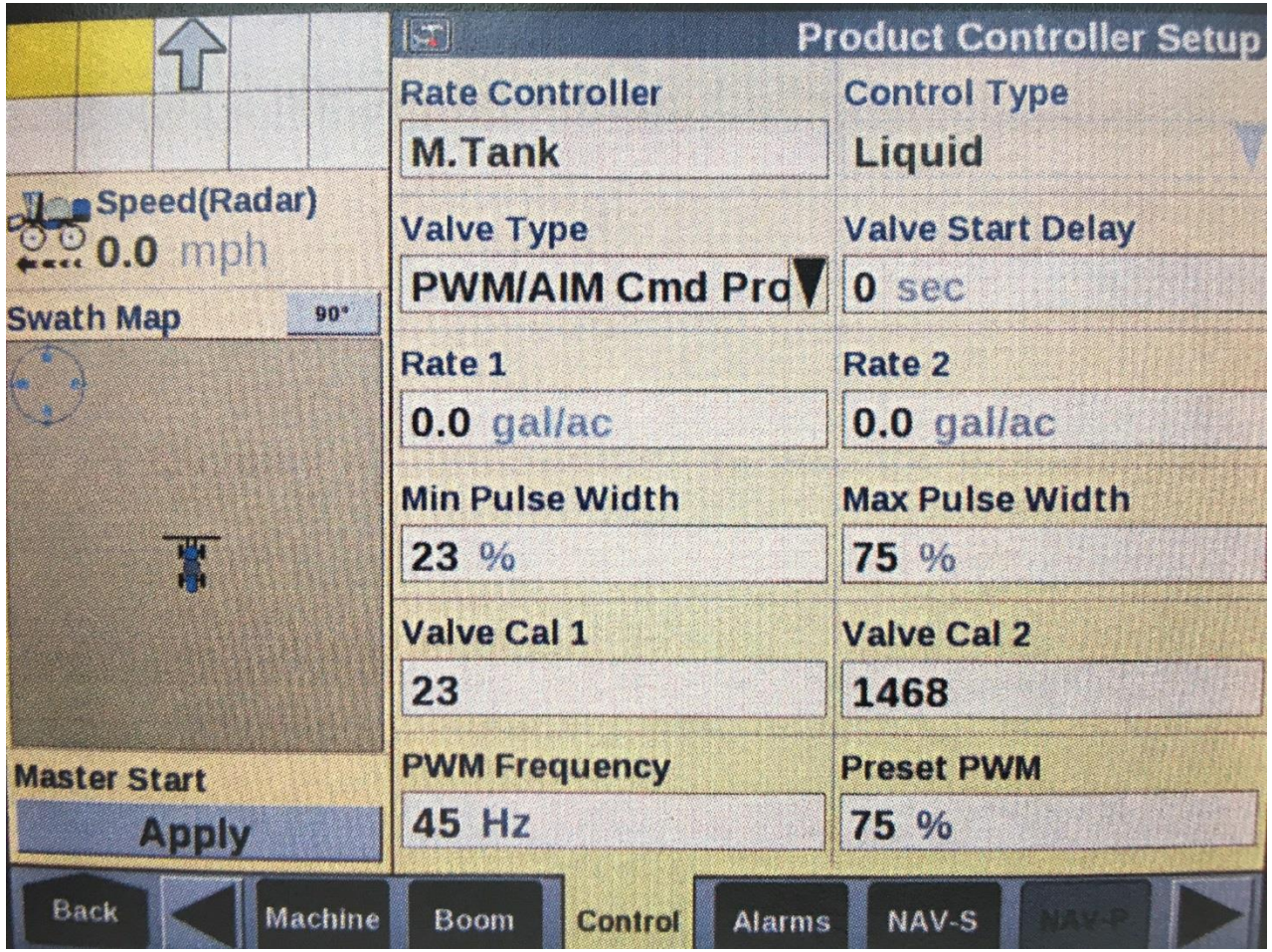


2 1 2 3

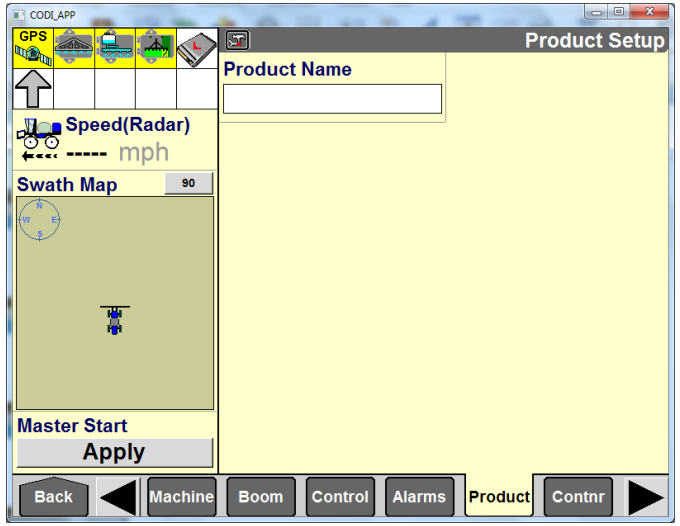
- Valve Backlash
  - How fast valve changes direction after a correction pulse is detected
  - 1 = short pulse
  - 9 = long pulse
- Valve Speed
  - Sets the Response time of valve
  - 1 = slow
  - 9 = fast
- Brake Point
  - Sets the percentage point from Target rate when valve slows down to not overshoot your target
  - 0=5%, 1=10%, 9=90%
- Dead Band
  - Percentage of allowable error
  - 1 – 9 %

Control Setup

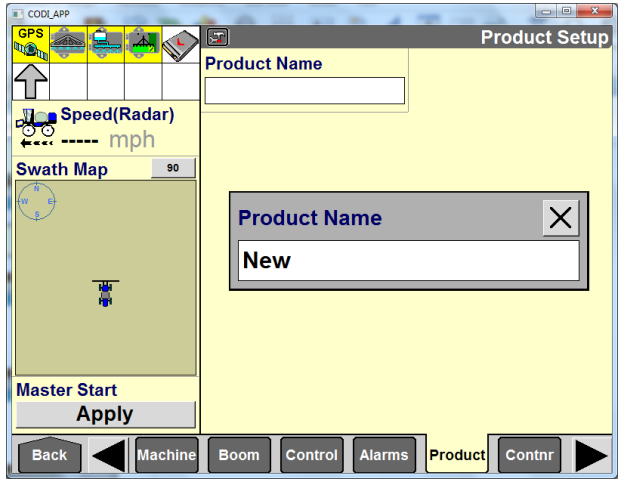
- This is what the control setup page looks like with a PWM valve. If you ever loose your calibration this is a good place to start.



Product Setup



- Select Product tab
- Select Product Name
- Create Product Name if new…..or



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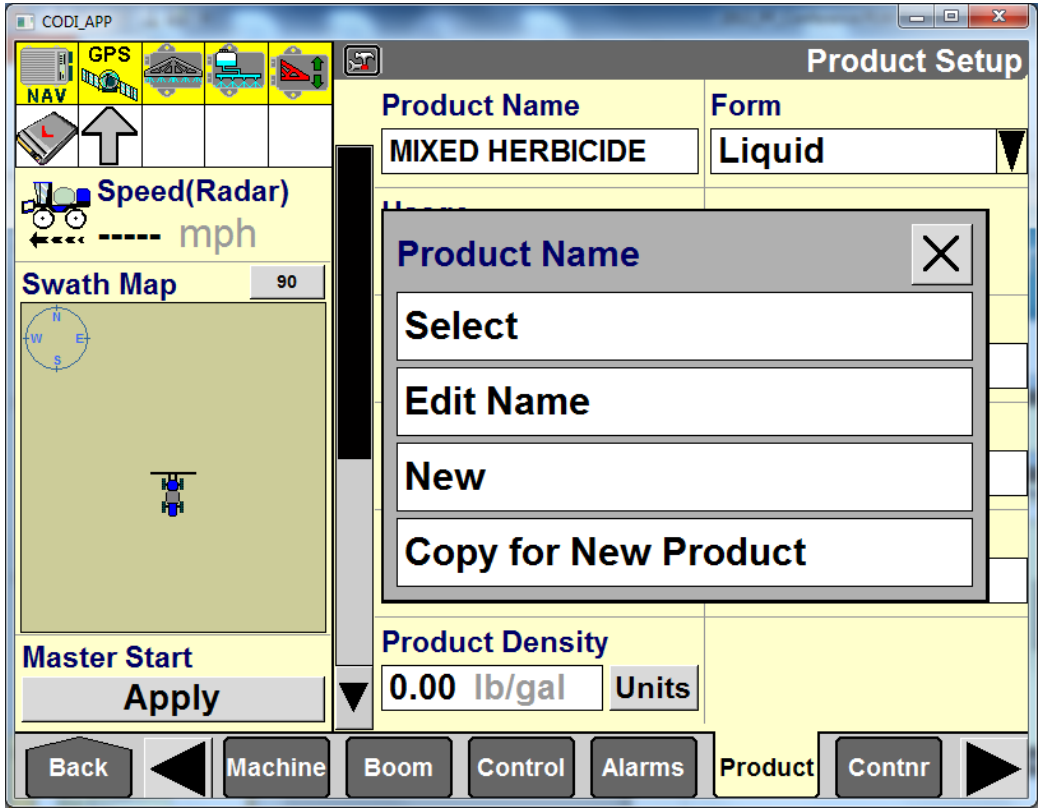
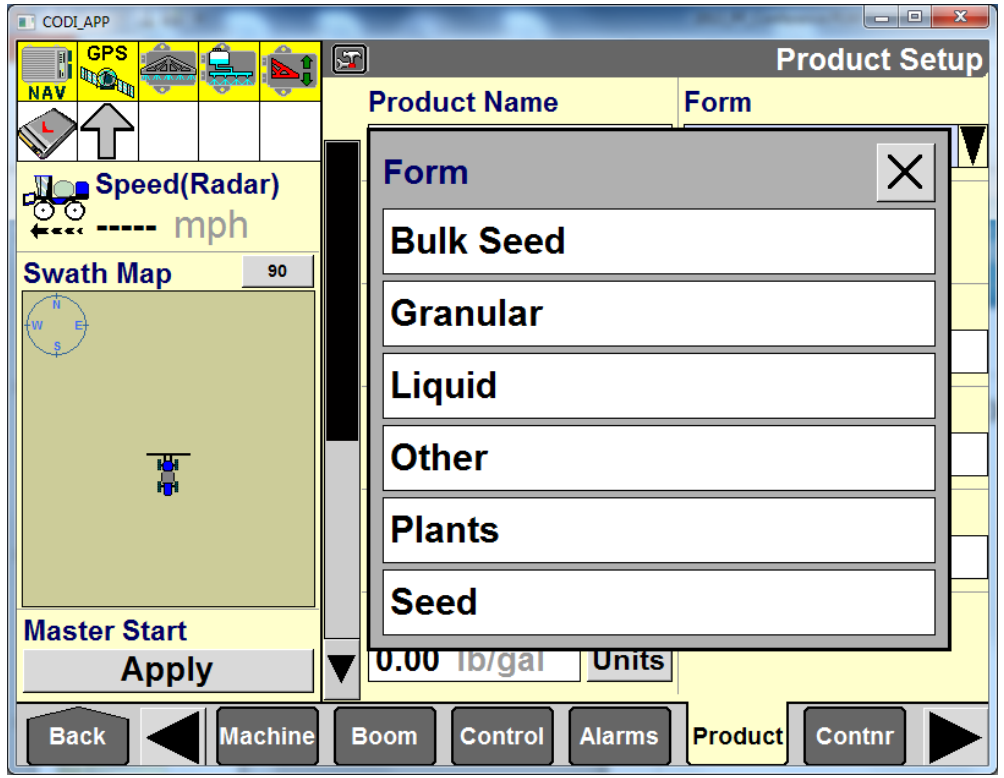
Product Setup

- Select product name from list of previous products



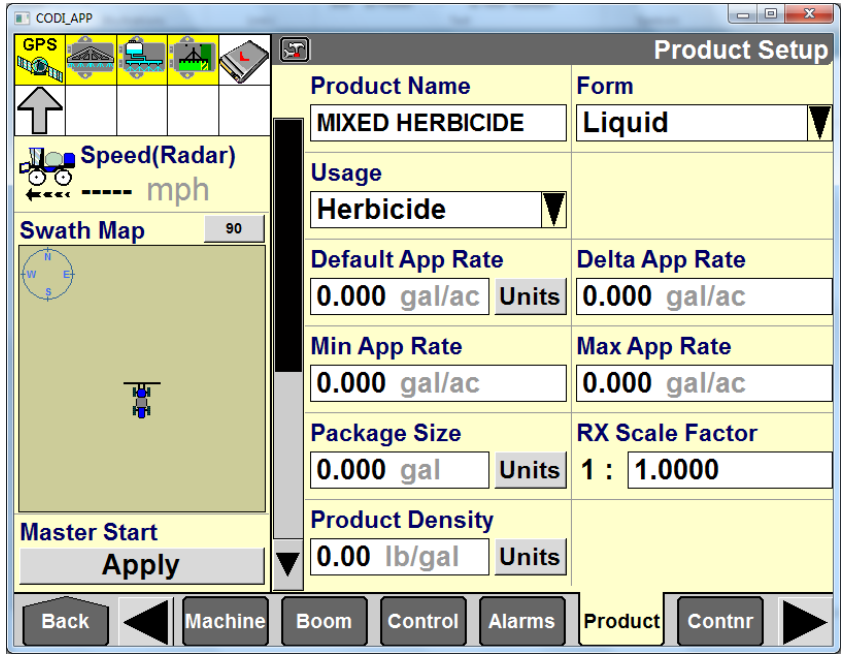
Product Setup

- Select Form
- Chose from a list the correct form of product



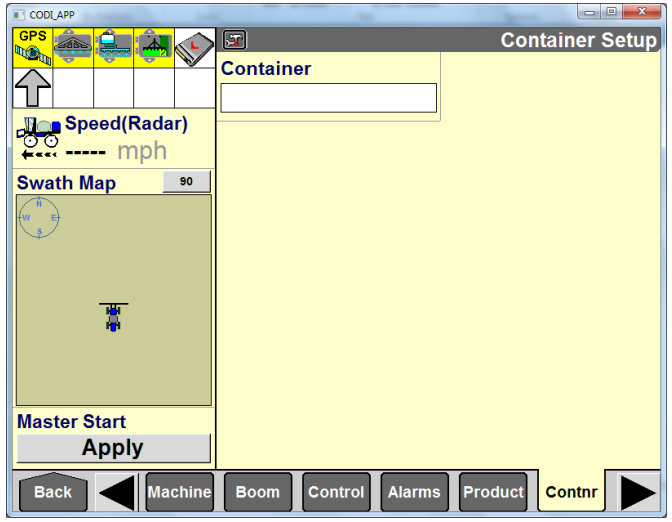
Product Setup

- Enter default application rate
  - Select desired units
- Enter Delta App Rate
  - Rate of change when using Increase / Decrease button
- Enter minimum desired application rate
- Enter maximum desired application rate

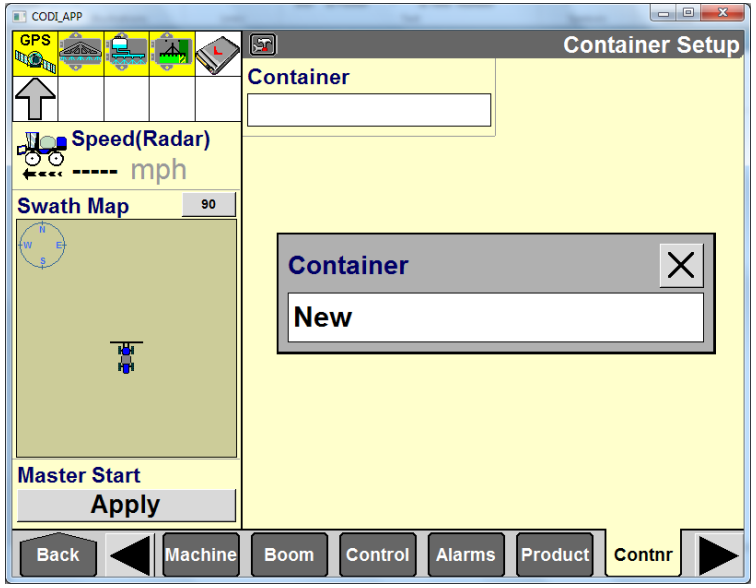


Container Settings

Container Setup



- Select Contnr tab
- Select appropriate container or enter new



SMART TECHNOLOGY FOR TODAY'S FARMERS
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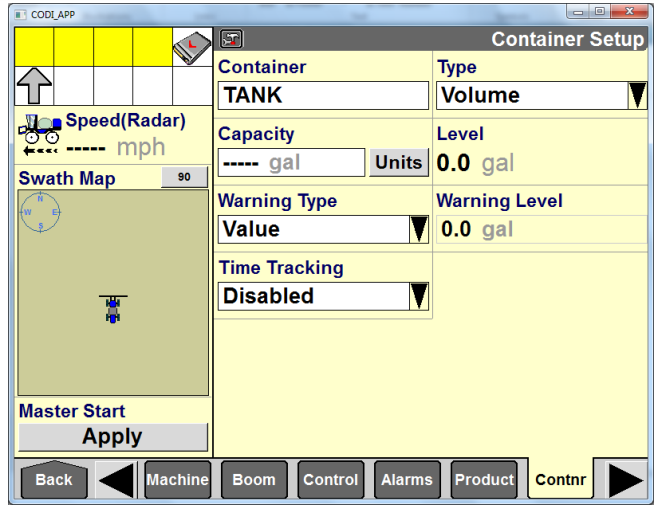
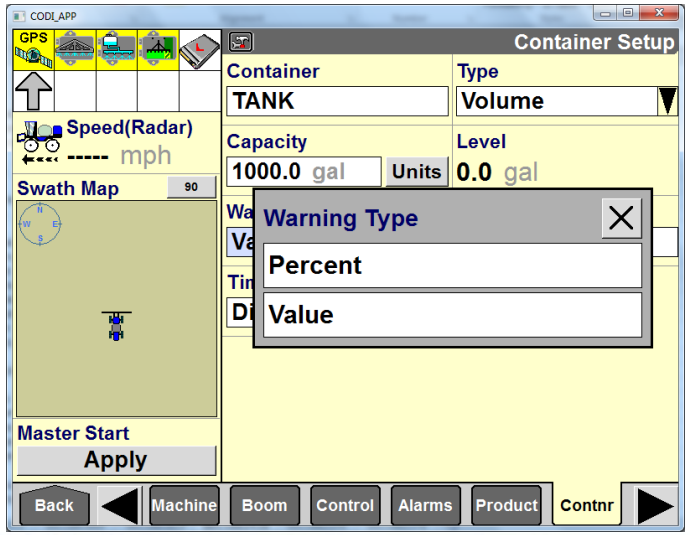
Container Setup

- Enter Capacity
- Select units
- Chose Warning Type
  - Value
  - Percent
- Enter desired Warning Level





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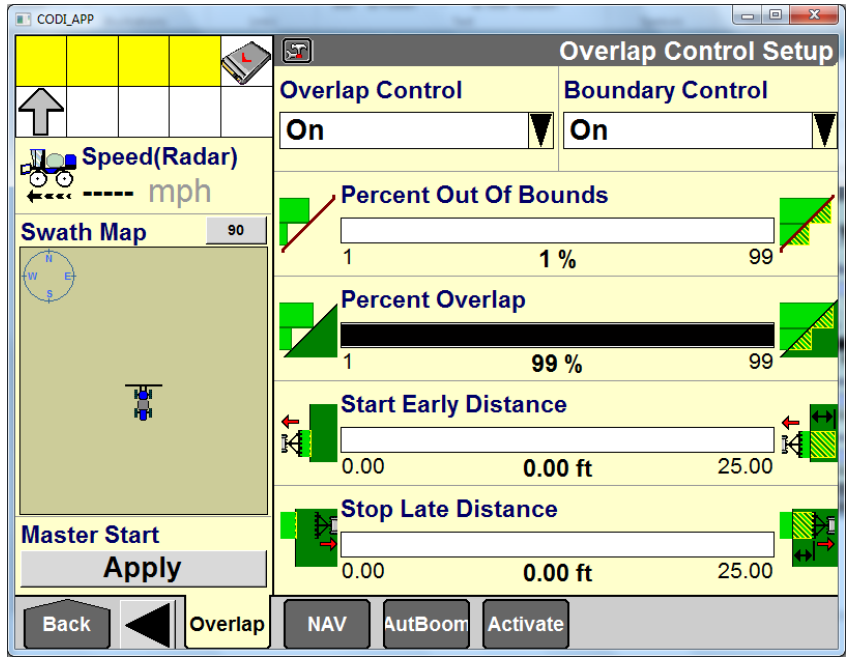
Boom Settings

Overlap Setup

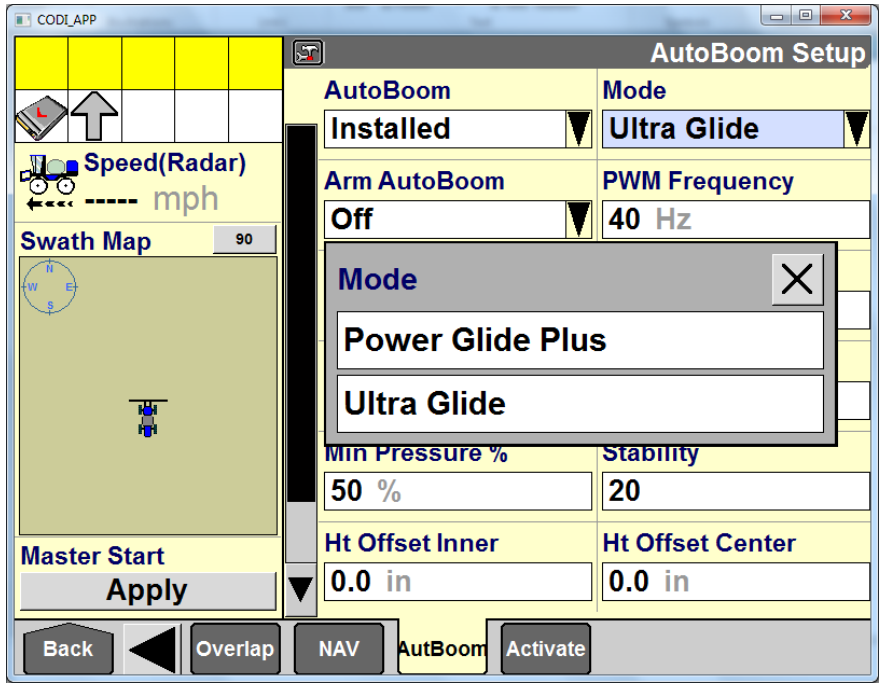
- Select Overlap tab
- Turn on Overlap Control
- Turn on Boundary Control
- Enter Overlap settings
  - Percent Out of Bounds
  - Percent Overlap
  - Start Early Distance
  - Stop Late Distance



NOTE: Product Delay value must be set properly before adjusting Start/Stop distances

Auto Boom

- Select AutoBoom tab
- Chose Installed
- Chose appropriate mode of Auto Boom



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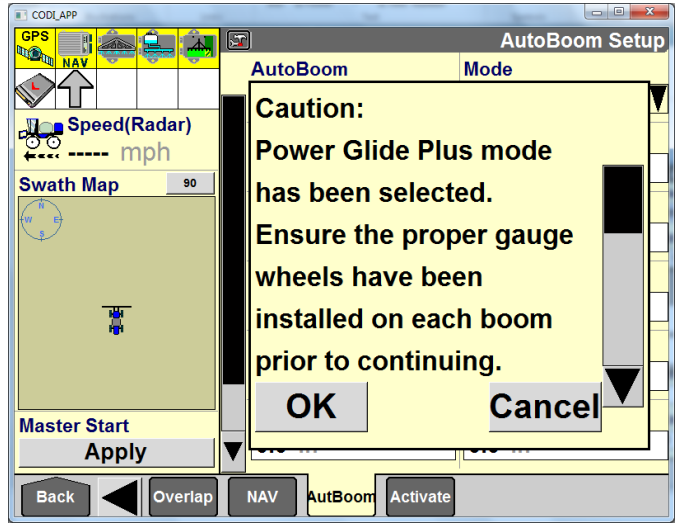
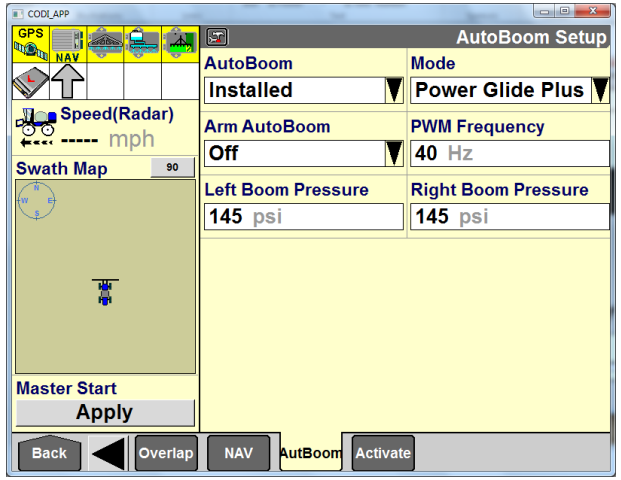
Power Glide Plus

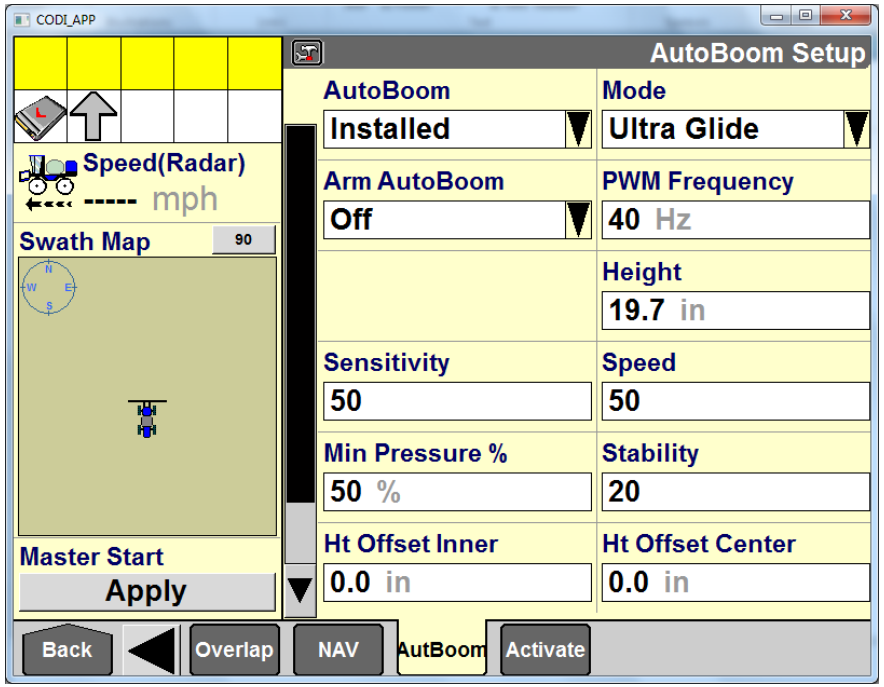
- Caution Message - OK
- PWM Frequency
  - Frequency for metering valve
  - Value is preset and should not be changed unless instructed to do so
- Set Left & Right Boom Pressure
  - Set to a very light pressure





Ultra Glide

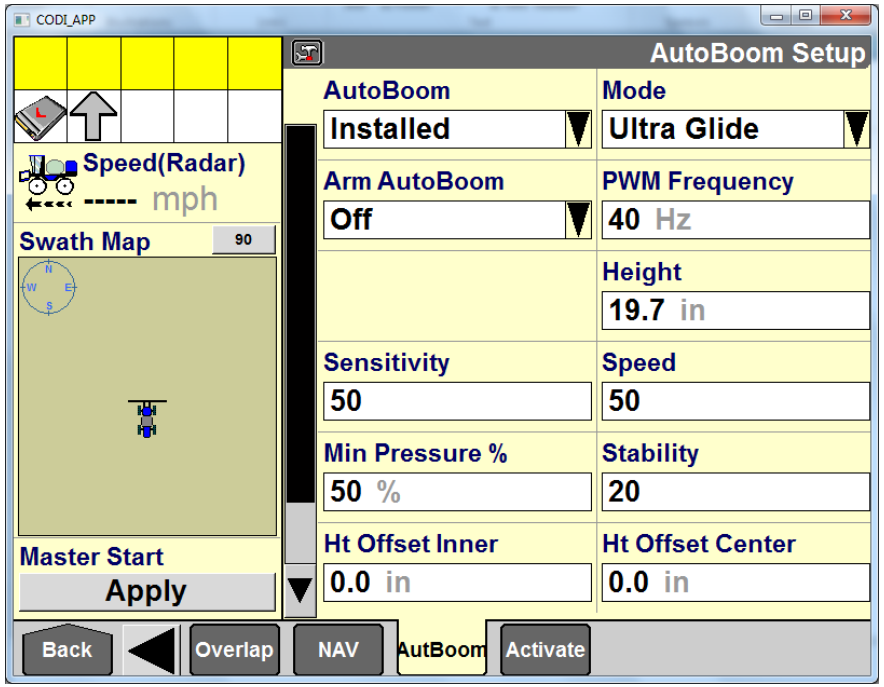
- PWM Frequency
  - Preset; do not adjust unless instructed to do so
- Sensitivity
  - Controls sensitivity of sensors to height changes
  - The lower the sensitivity, the less the boom will react.
- Speed
  - Controls how fast the boom moves away from the terrain
- Stability
  - Fine tunes control based on rigidness of the center rack
  - 20 = center rack is rigid (Guardian)
  - 8-14 = center rack floats freely
  - If this setting is too low when one of your booms lift up the other will rock down slightly due to the force of the lifting one.



Ultra Glide

- Minimum Pressure %
  - AutoBoom override
  - Prevents boom level cylinder from falling below a % of static pressure
- Ht Offset
  - Allows sensor readings to be adjusted for mounting location
  - Positive value if ABOVE spray tips
  - Negative value if BELOW spray tips

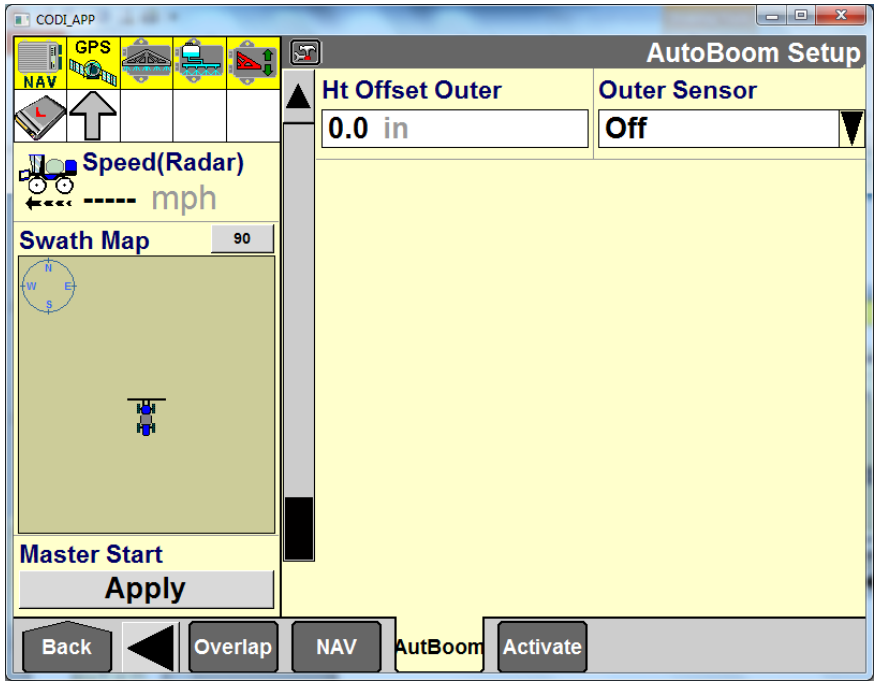
- Note- The Autoboom will only react as fast as the boom can manually be lifted up and down. If you need to make this faster we can adjust the valve.



Ultra Glide

- Outer Sensor
  - Turn off outer sensors here when operating with the outer booms folded in

Note- The Autoboom will only react as fast as the boom can manually be lifted up and down. If you need to make this faster we can adjust the valve.



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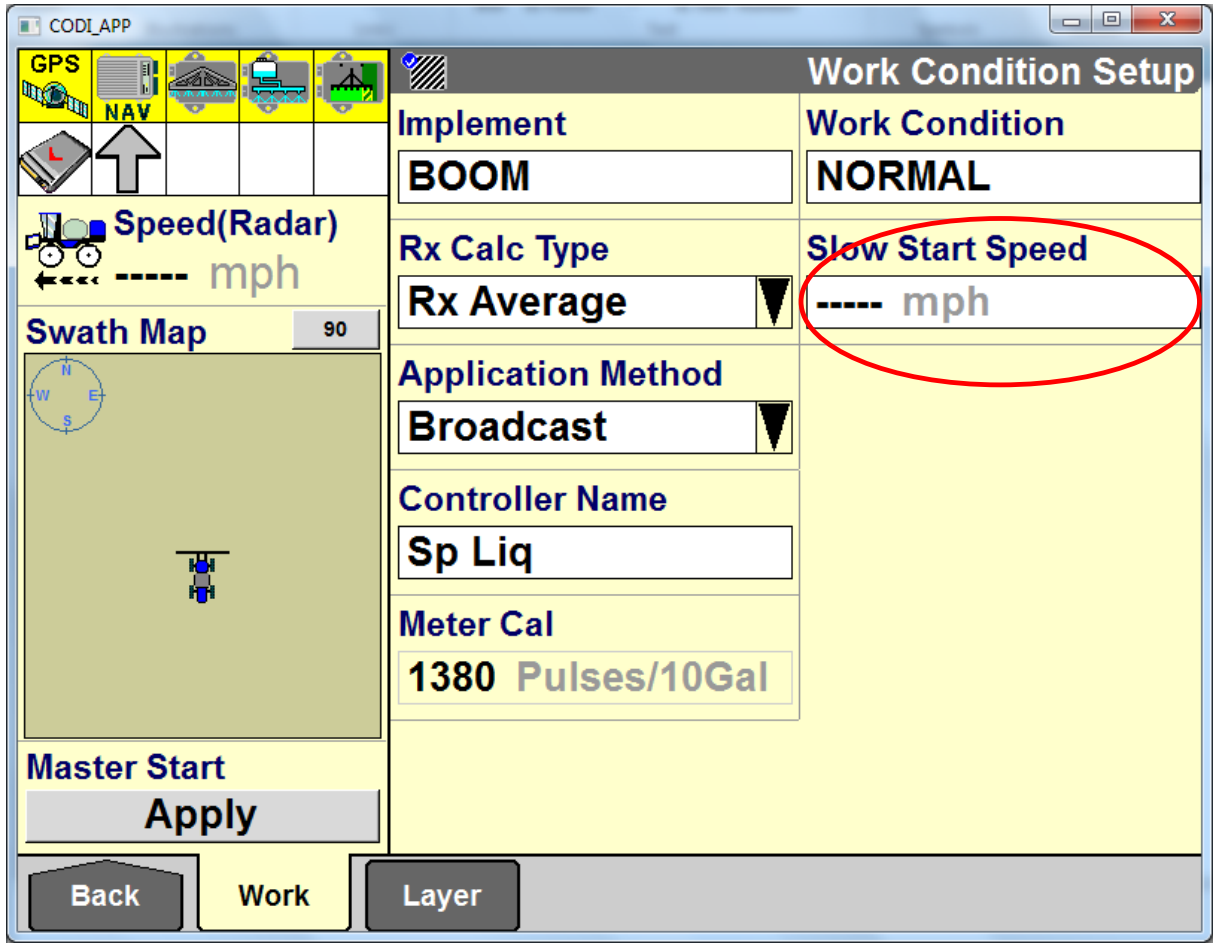
Working Screens

Work Condition Setup

- On Work Screen – Be sure to set the Slow Start Speed
  - The slow start speed is the minimum speed at which the sprayer will keep a certain spray pressure
    - E.g- if a slow start speed is set to 8mph and you travel past a coulee at 6mph, the sprayer will still spray as if it were going 8mph.
    - It is recommended to set the slow start speed to the minimum speed at which the spray tips still maintain pattern
    - Although you may over-apply, this can help you regain your rate faster in the field.



General Troubleshooting

- My sprayer Autosteer worked great in the spring burnoff but now that I fired up for in crop season, the sprayer wont even try to hold a line. What is happening?

General Troubleshooting

- My sprayer Autosteer worked great in the spring burnoff but now that I fired up for in crop season, the sprayer wont even try to hold a line. What is happening?
- In this situation the tires on the sprayer were swapped from floats to skinnies for in-crop. The floats have more resistance in turning than the in-crop tires resulting in poor steering. Your D-Gain setting can also help alter this, but a full re-calibration is recommended.

General Troubleshooting

- My sprayer holds rate and pressure at low speed, but once I speed up I lose my rate and pressure skyrockets. What is happening here?

General Troubleshooting

- My sprayer holds rate and pressure at low speed, but once I speed up I lose my rate and pressure skyrockets. What is happening here?
- In this situation, too small of tips were used. Even if you have a solenoid system on your booms you should still refer to your tip chart for a proper selection.

General Troubleshooting

- I’m spraying my field for the second time this season and I want to use the same guidance lines on the field as before. I go and select the saved field, create a new task but the coverage map is still there. What is happening?

General Troubleshooting

- I’m spraying my field for the second time this season and I want to use the same guidance lines on the field as before. I go and select the saved field, create a new task but the coverage map is still there. What is happening?
- Even though you created a new task, you also need to create a new Operator Instance in order to load a new map with the same boundaries (if one is set).
- I recommend putting this setting on the same page as your TC Grower, TC Farm, TC Field, and TC Task.

General Troubleshooting

- I cant add product to my tank and I cant spray. The container volume bar is replaced with this:

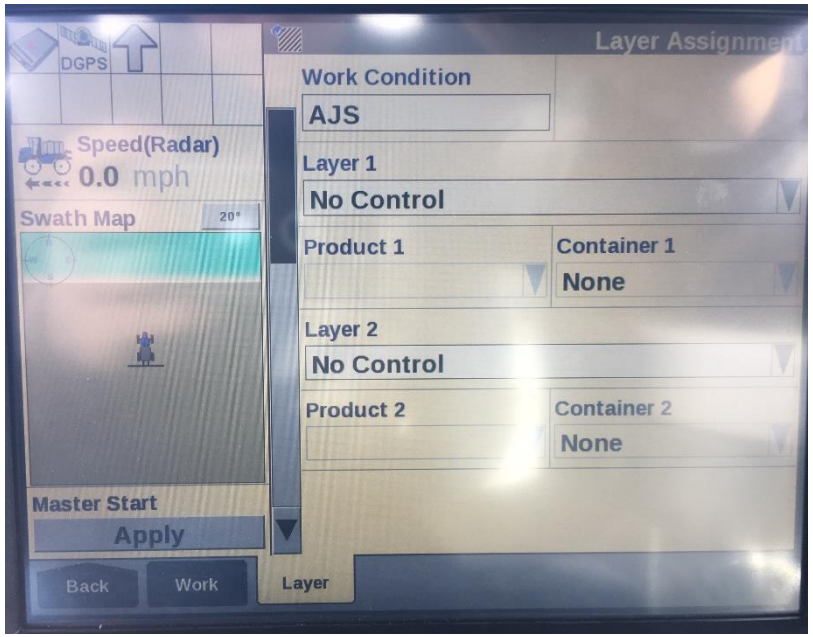
- What is happening here?

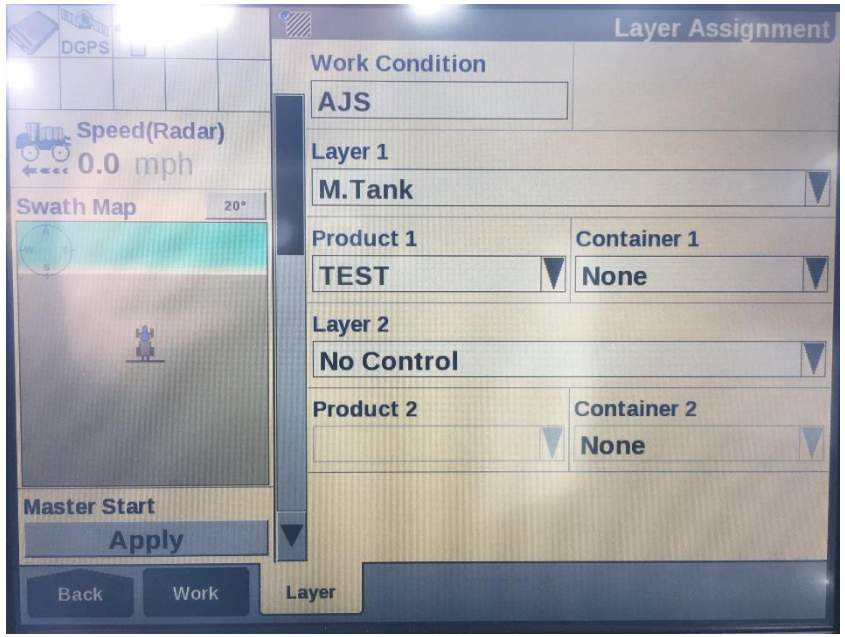
General Troubleshooting

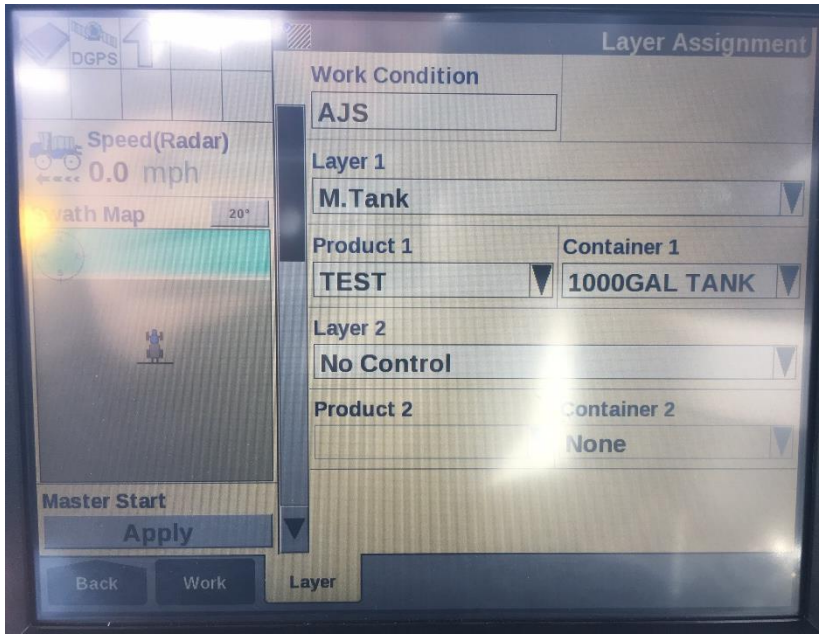
- Usually when this happens the Work condition was changed while there was still product in the tank. To fix this follow these steps:

General Troubleshooting

- Exit out of the run screens and go to “Work Condition”
- On the bottom tab on the page choose “Layer”







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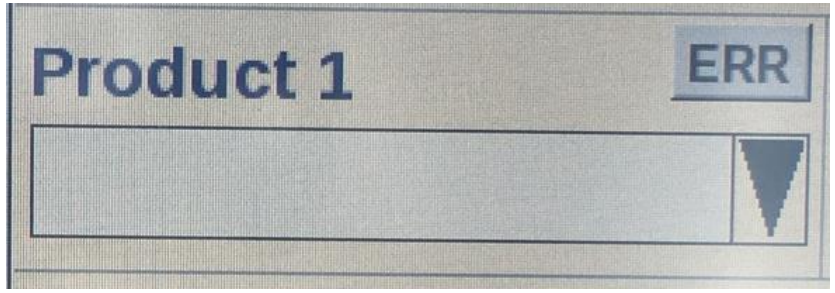
General Troubleshooting

- Sometimes when you are choosing the product in the work condition tab a ERR appears on the top right corner.
- When this happens sometimes you have to go into “Toolbox”- “Product”- and create a new product in order for it to generate in the Work condition. The same rule applies when you choose your container



General Troubleshooting

- I’m spraying a field when suddenly my rate drops to zero. There is still product coming out, but there are alarms flashing showing zero rate. What is happening?

General Troubleshooting

- I’m spraying a field when suddenly my rate drops to zero. There is still product coming out, but there are alarms flashing showing zero rate. What is happening?
- Usually when this happens something is wrong with the flow meter, whether it got jammed, corroded, loose connection, or sensor failure. One way to check the integrity of the flow meter is to set the cal number to 1, and short the signal and ground wire on the cabling going to the flow meter. If you have a reading you can verify that it is something wrong in the flowmeter. Removal of the flowmeter may be needed.
- Once removed, do not use compressed air to try and clean the flowmeter. It should move freely when you lightly blow into it.

General Troubleshooting

- I’m spraying a field and suddenly my rate is locked onto a certain point/speed. If I speed up I under apply and if I slow down I over apply. What is happening?

General Troubleshooting

- I'm spraying a field and suddenly my rate is locked onto a certain point/speed. If I speed up I under apply and if I slow down I over apply. What is happening?
- In this situation the sprayer is equipped with a standard valve and it has stuck in place or failed. On a rear boom sprayer the best way to get is unstuck is to lower the boom to the ground, unplug the connection take a battery and put 12V right to the valve. This is crude, but it seems to work well.
- On a front boom sprayer you could do the same thing, or if your sprayer is equipped with a "Educt" button it should act the same way as a direct 12V.
- NOTE: only do this if your sprayer has a standard valve. Do not attempt this with a PWM valve.

General Troubleshooting

Problem- I sprayed a field, the sprayer said I was spraying my target rate but I actually only applied half rate. What happened?

General Troubleshooting

Problem- I sprayed a field, the sprayer said I was spraying my target rate but I actually only applied half rate. What happened?

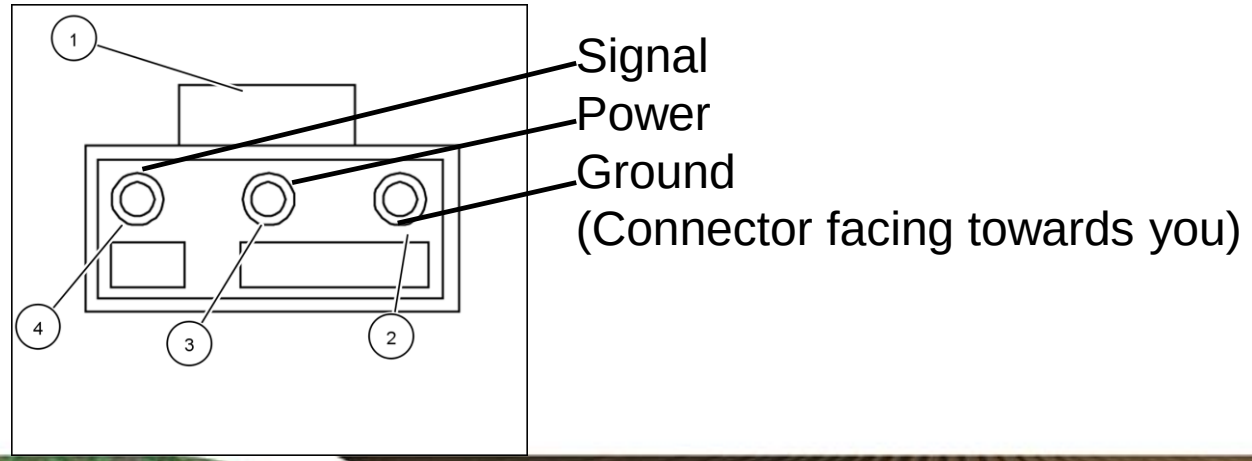
The flow meter cal number was wrong. A example of this is a flow meter set to 710 instead of 1420.

Flow Meter Test

Procedure

- 1. Enter a METER CAL number of one (1) in the console key labeled.
- 2. Go to your runscreen that has your “Total Volume”
- 3. Place boom switches power and master switch to On.
- 4. With a small jumper wire, short between **(2)** and **(4)** sockets with a “short - no short” motion. Each time a contact is made, the total volume should increment up 1 or more counts.
- 5. If total volume does not count up, remove the section of cable and repeat the test at the connector next closest to the console. Replace defective cable as required.
- 6. Perform all voltage checks.
- 7. If all cables test good, replace the flow meter.

NOTE: *After testing is complete, re-enter correct METER CAL numbers before application.*

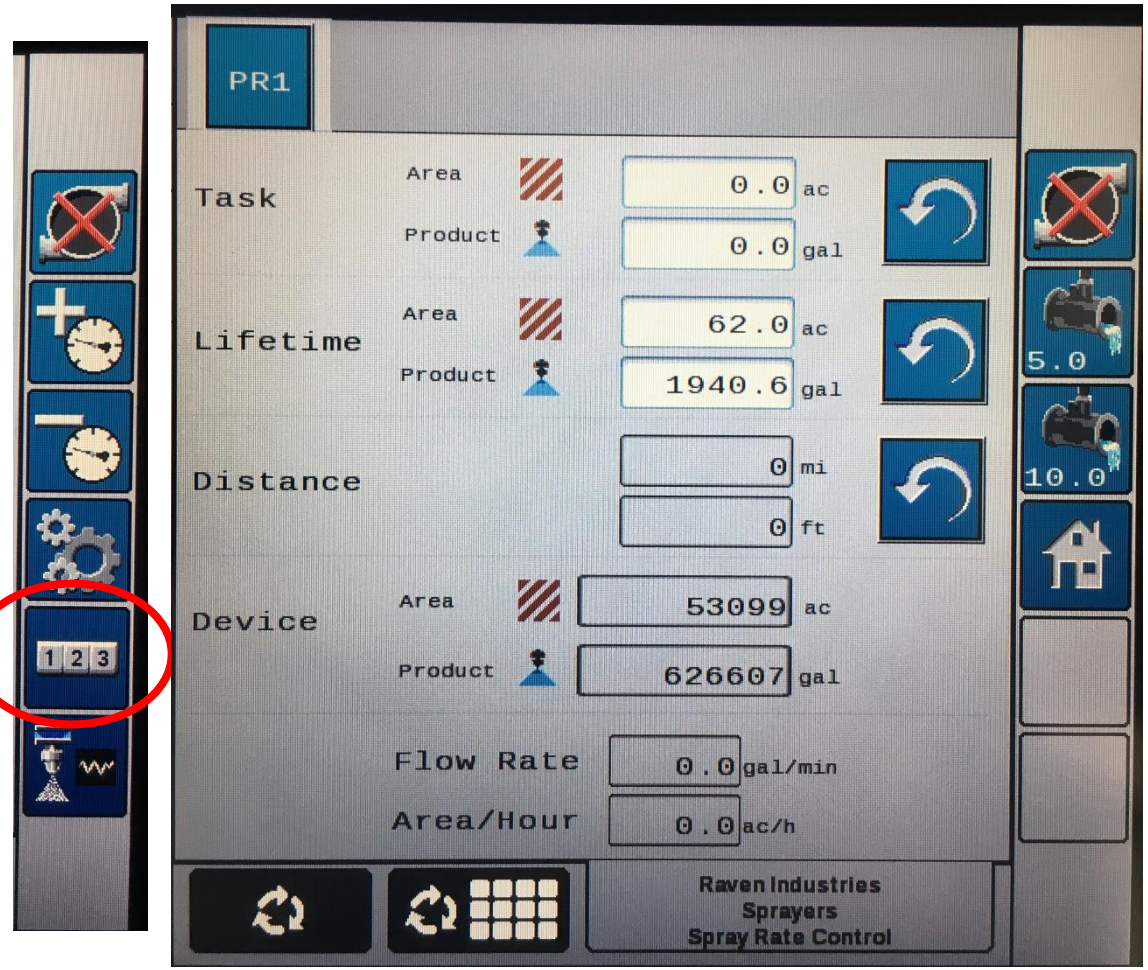


Flow Meter Calibration

There are 3 ways to do a flow meter calibration

Method 1

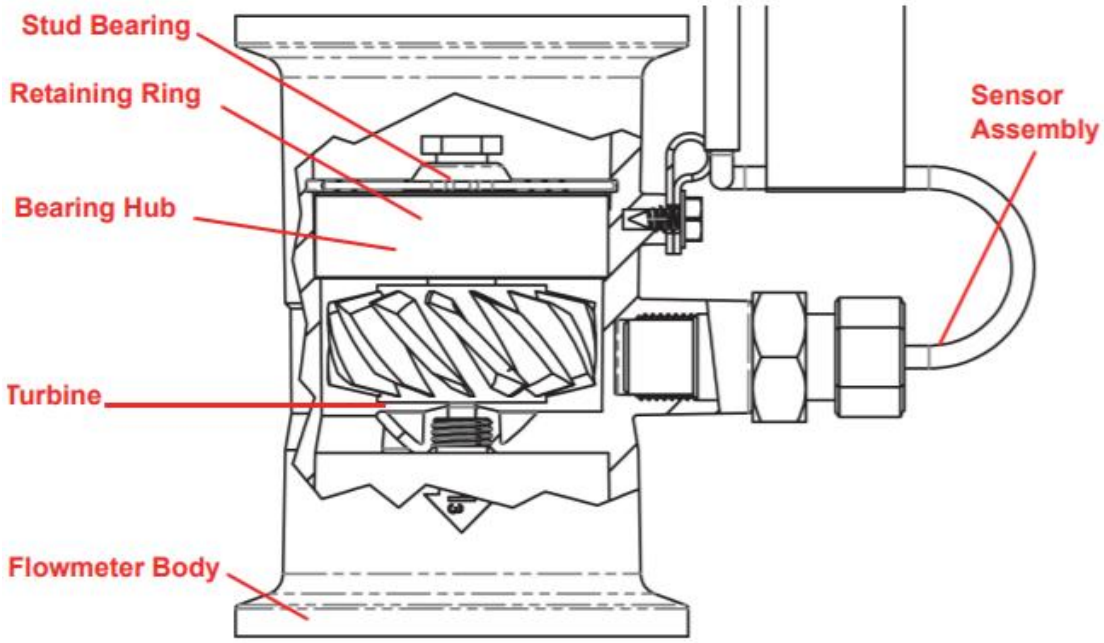
- If your cal number is close you can use this method
- 1. Switch all booms off.
- 2. Clear your total gallons applied
- 3. Put a known amount of product into the tank
- 4. Turn on the boom and master switch.
- 5. Pump until the tank is empty.
- 6. Next use this formula to get your new cal number:
- (Measured Amount / Actual Amount) X Old Calibration Number = New Calibration Number
  - E.g- (10.5gal/ 10gal) * 1380= 1449



Flow Meter Calibration

Method 2

- 1. Enter a meter cal number of 10 for gal, (38 for L).
- 2. Make sure your total volume is set to 0gal.
- 3. Switch all booms off.
- 4. Remove a boom hose and place it in a 5 gallon [19 liter] container.
- 5. Turn on the boom and master switches.
- 6. Pump exactly 10 gallons [38 liters].
- 7. The readout in total volume is the new meter cal number. This number should be within +/-3% of the number stamped of the flowmeter tag.
- 8. Zero out the total volume.
- 9. Repeat the calibration procedure several times to confirm the reading accuracy.



IntelliSpray

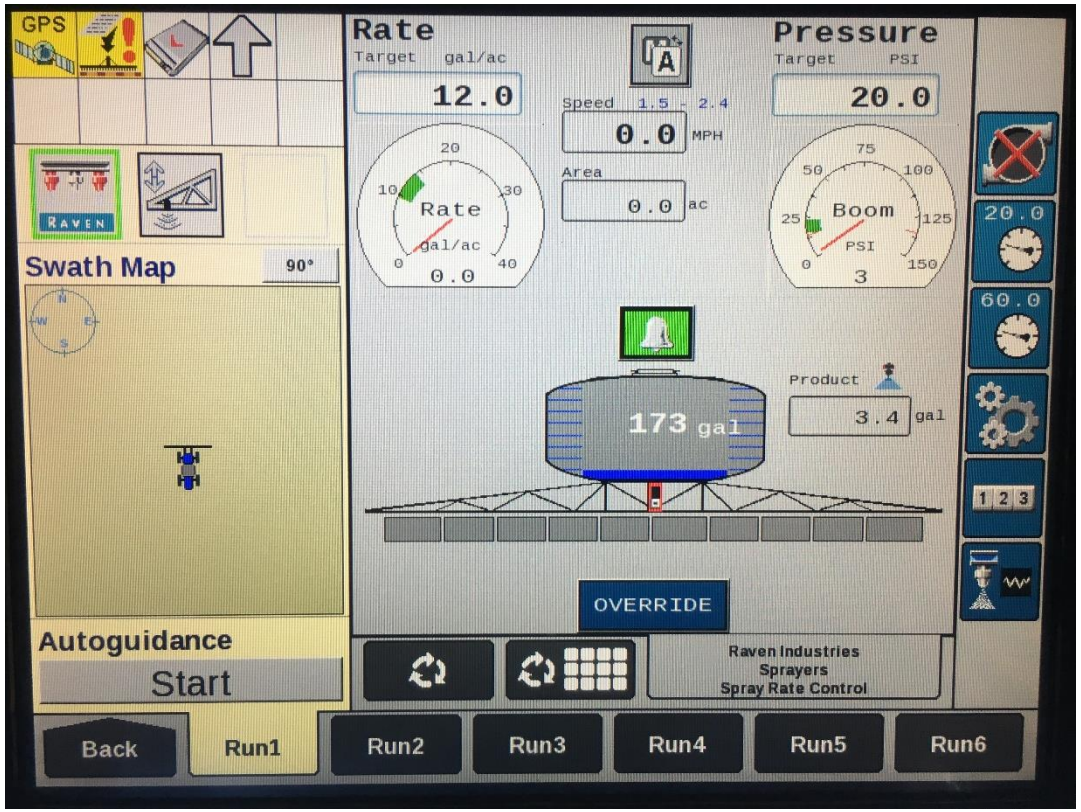
On Guardian Sprayers

IntelliSpray

What is IntelliSpray?

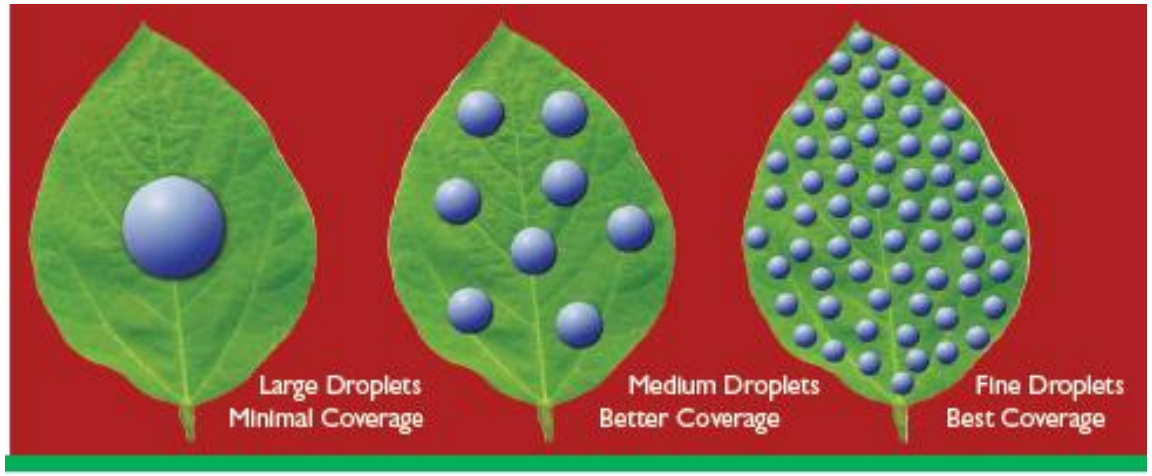
- IntelliSpray is a Pulsating Nozzle System that maintains droplet size as the speed of the sprayer changes
  - This results in better coverage
  - Less drift as the speed of the sprayer increases

- Also known as Aim Command Flex (Case) and Hawkeye (Raven)



How Does IntelliSpray Work?

- IntelliSpray maintains a constant droplet size by maintaining a constant spray pressure
  - All chemicals have a recommended droplet size to do a accurate job of coverage
  - Droplet size requirements should be listed on the chemical label (although current weather conditions may influence your decision)
  - Droplet size is one of the criteria you use to choose your spray tips



How Does IntelliSpray Work?

- This is what normally happens on a conventional system
  - You choose a spray tip to match your needs – Lets say:
    - ✓ I want to spray at 14 mph
    - ✓ I would like to run at 40 psi
    - ✓ I would like to apply 10 gpa
    - ✓ I need a tip that will maintain a medium droplet size
- As you speed up the pressure increases to maintain an accurate flow rate - Droplet size decrease or goes to a fine droplet size – Thus excessive drift occurs and you are off of the recommended droplet size
- If you slow down the pressure decreases to maintain an accurate flow rate - Droplet size increase or goes to a course droplet size – You have less drift **but** again you are off of the recommended droplet size

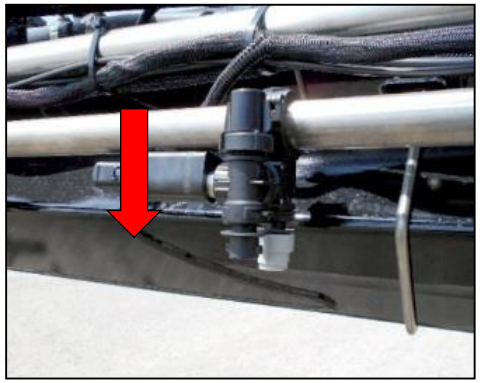
How Does IntelliSpray Work?

- IntelliSpray maintains a constant droplet size by maintaining a constant spray pressure
- What happens with a IntelliSpray system
  - If your tip will allow it, whatever speed you are going 8 mph or 18 mph the pressure will remain constant at whatever pressure you chose
  - If the pressure stays constant the droplet size stays constant
    - ✓ Better job of spraying
    - ✓ Less susceptible to drift
    - ✓ Maintaining droplet size requirements from the chemical producer

How Does IntelliSpray Work?

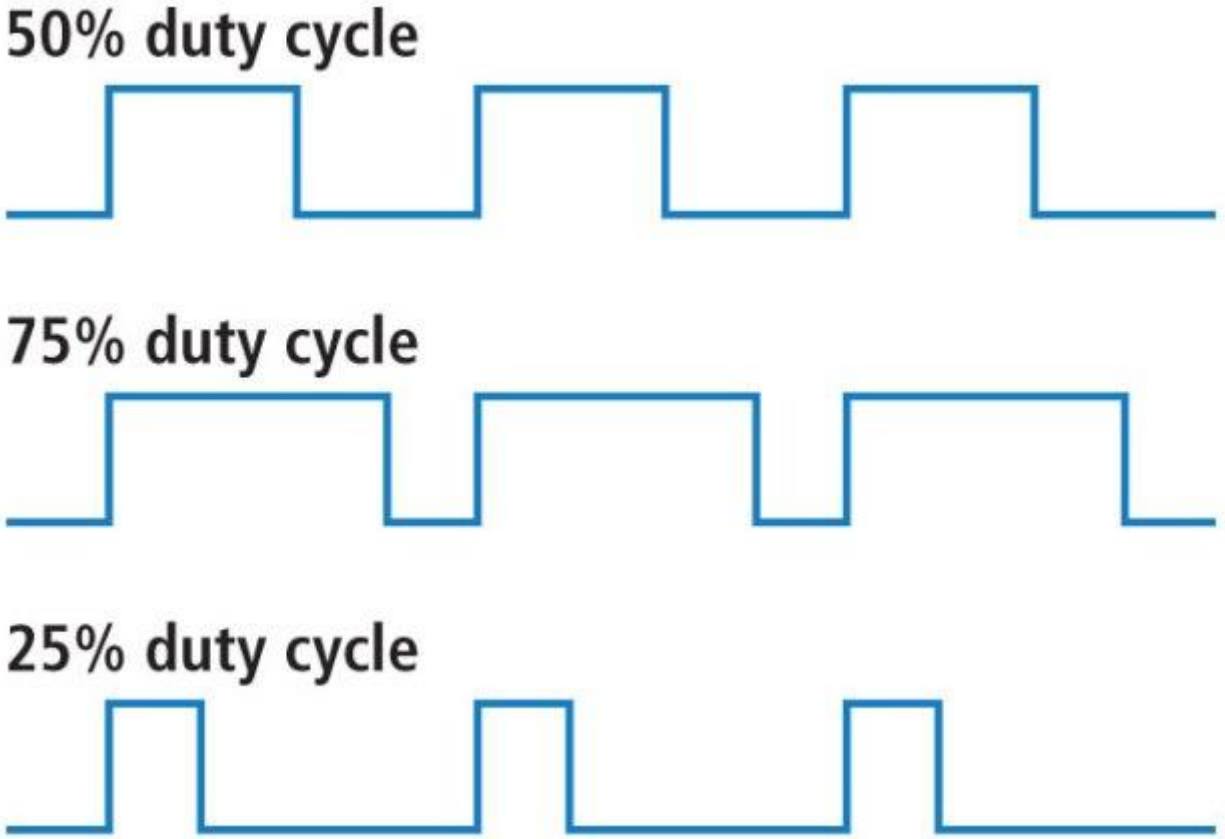
If my pressure stays constant but my speed changes – how does IntelliSpray maintain the correct output or application rate???

- IntelliSpray maintains the correct output or application rate by using what is called Pulse Width Modulation
- Pulse Width Modulation Solenoids open and close 10 times every second
- The duration of time that they are opened or closed varies the rates depending on how fast you are going
  - The slower your travel speed the shorter period of time the solenoid stays open
  - The faster your travel speed the longer period of time the solenoid stays open
  - All while maintaining a constant pressure
- That is how they maintain the proper Output or application rate
- Note: this does not mean you can do "**One tip for All**" this just helps extend the range of the tip.



Intellispray Duty Cycle

- The open and close percentage of the PWN solenoid is known as a duty cycle.
- As you speed up, your duty cycle will increase to allow more product out and maintain your desired pressure.
- As you slow down, your duty cycle will decrease to allow less product out and maintain your desired pressure.

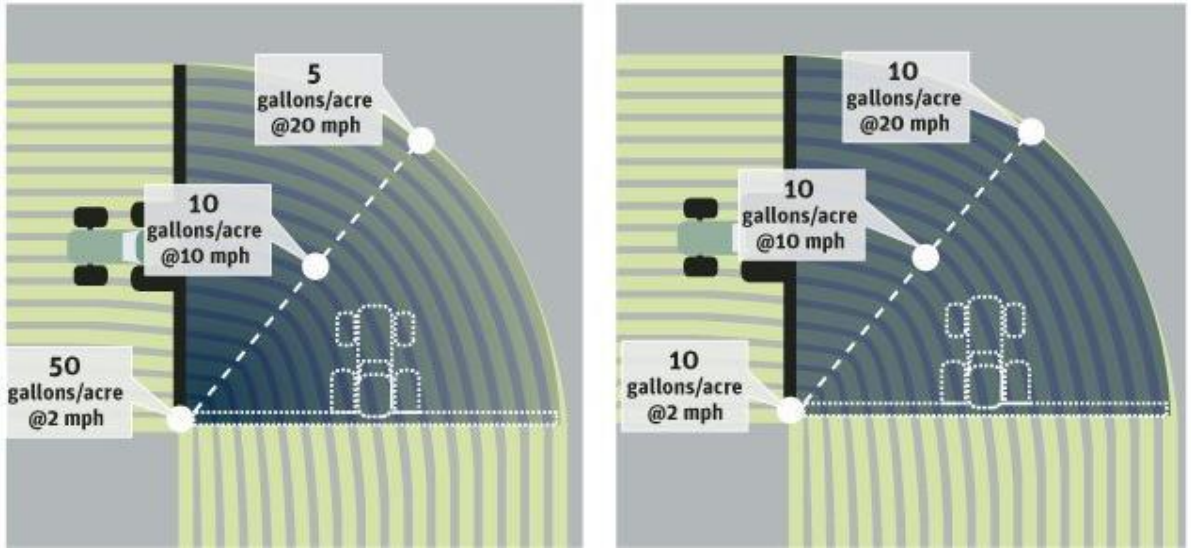


Turn Compensation

- What is Turn Compensation?
- Turn compensation will control the output of the nozzles at different rates as you are turning

  Example:

  - If you are turning to the left with a 120 foot boom
    - ✓ The right tip is going significantly faster than the right tip
    - ✓ The system will increase the nozzle out put on the right side of the boom and decrease the nozzle output on the left side for a more accurate application rate



AccuBoom Sectional Control with Intellispray

- AccuBoom will control 10 sections of nozzles

Example:

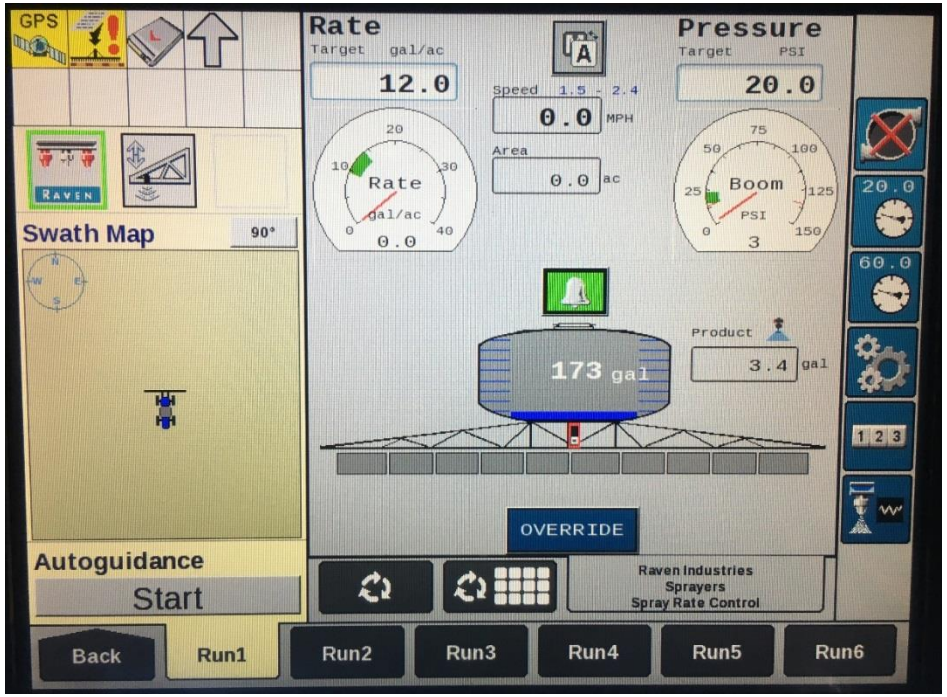
- A 120 foot boom on 20 inch spacing will have 73 nozzle bodies
- Intellispray controls 36 virtual sections on the boom. The number of nozzles on these sections vary, with the boom tips having smaller section and the middle sections having more nozzles

Manual Sectional Control – with IntelliSpray

- You can still manually control sections with the boom valves. When you close off section 1 and 2 for example, the associated boom valves will close, and the nozzles on those sections will also turn off.

IntelliSpray

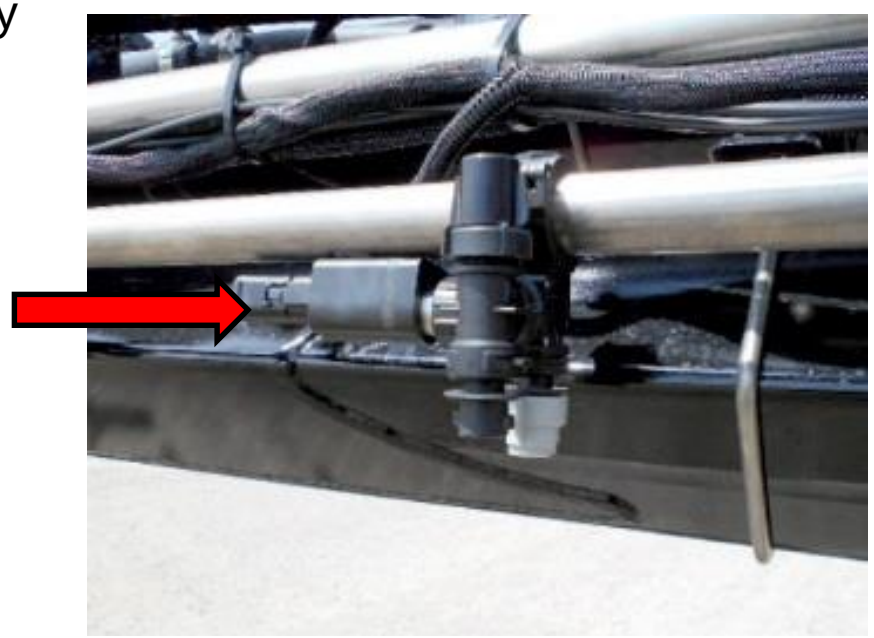
- There is not a control box in the cab
  - The Intelliview IV or Viper 4 Field Computer will control it.
  - If you ordered a sprayer and it has the new Raven ISO rate controller on it and your don't have Intellispray, you can add Hawkeye to your sprayer without and new computer hardware. (Only get 16 sections)



Intelliview IV Main Screen

What is the flow capacity of IntelliSpray?

- IntelliSpray solenoids will have approximately 1 gpm maximum flow rate
  - That equates to about 20 gallons per acre @ 15 mph
  - If you need more capacity than that you can still spray conventionally



IntelliSpray

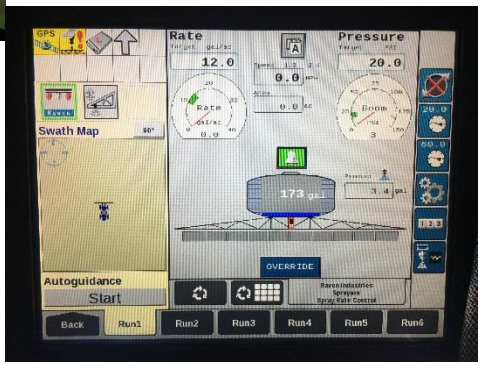
What does IntelliSpray Require?

- IntelliSpray will need to have a ISO Field Computer
  - Viper 4
  - IntelliView IV
    - ✓ Envizio and Viper Pro will not operate it

- Can I operate it with a Non Raven Field computer?
  - Yes – as long as it is ISO compatible

Viper 4

Intelliview IV

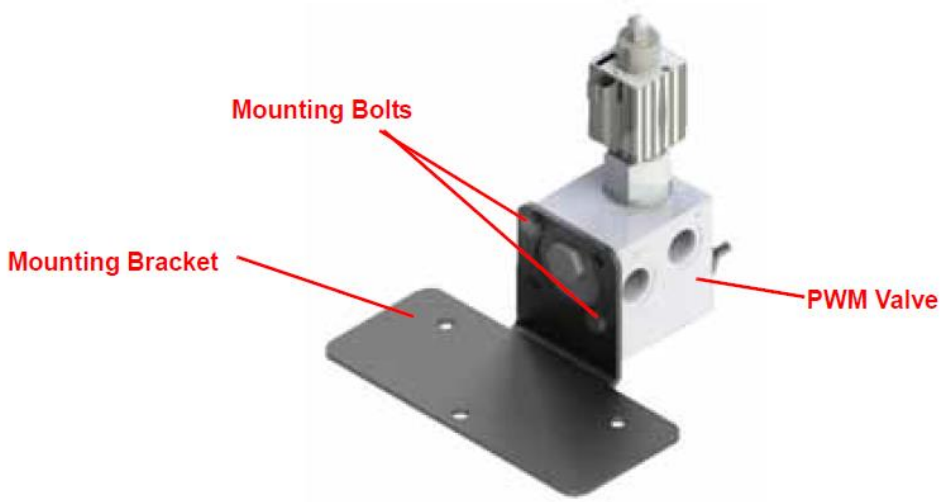


IntelliSpray

What will IntelliSpray Require?

- IntelliSpray will require a PWM (Pulse Width Modulation) valve
  - On older models a Servo Valve was used to control the output of the product pump (rpm)
  - The PWM valve replaces the Servo Valve on newer sprayers– much quicker response times

Servo Valve



PWM Valve

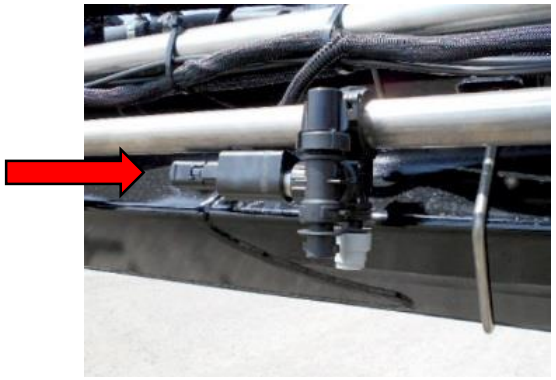
IntelliSpray

What will IntelliSpray Require?

- Stackable Nozzle Bodies (recommended)
  - ✓ Each solenoid can apply about 1gal/min
  - ✓ Maximum pressure approx. 80 psi
  - ✓ If you plan on using higher rates - that will require the second nozzle body to obtain those rates
  - ✓ You will be able to use either nozzle body by its self or both at the same time
  - ✓ Only one tip will have a solenoid
  - ✓ If a solenoid fails you can open the secondary nozzle and continue spraying

Note: It is **Not Recommended** to use Air Induction spray tips with the IntelliSpray system

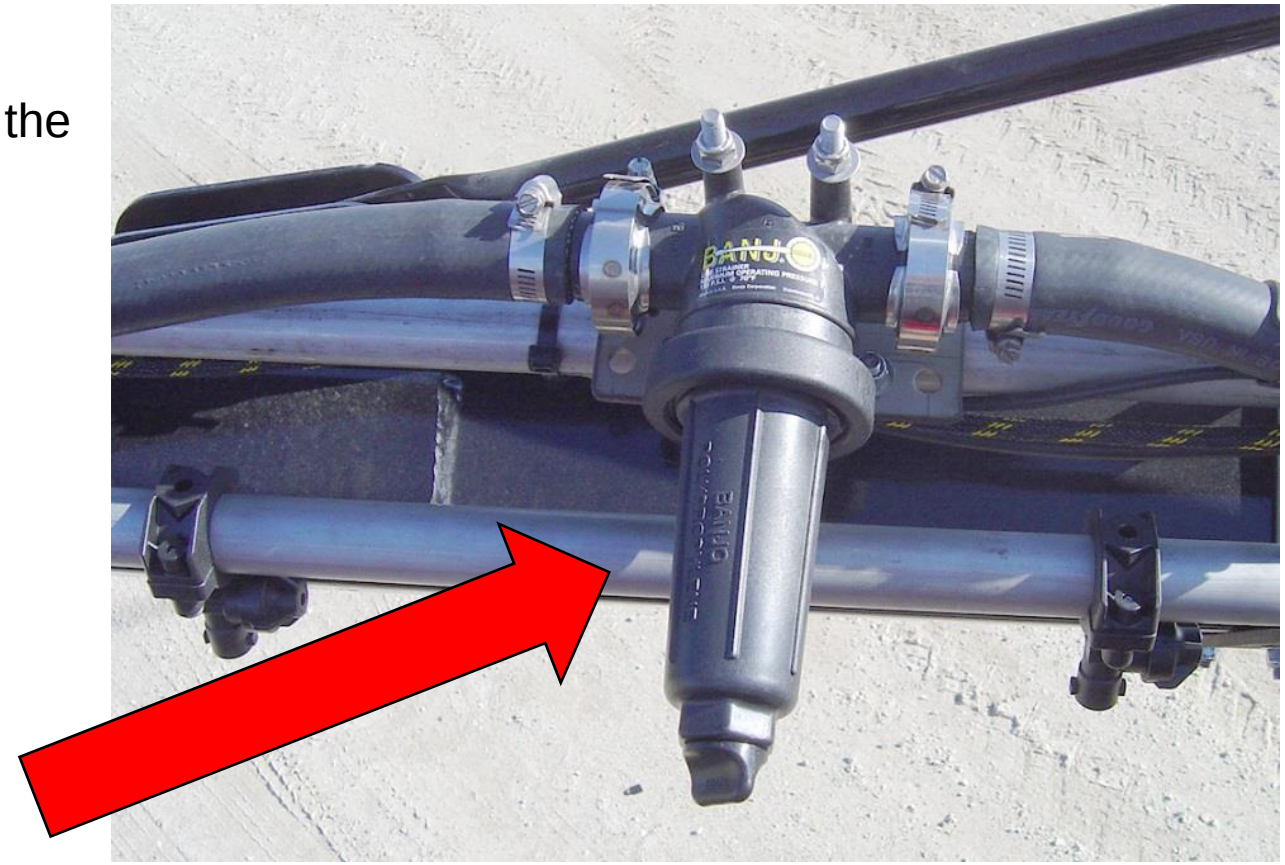
IntelliSpray Solenoid



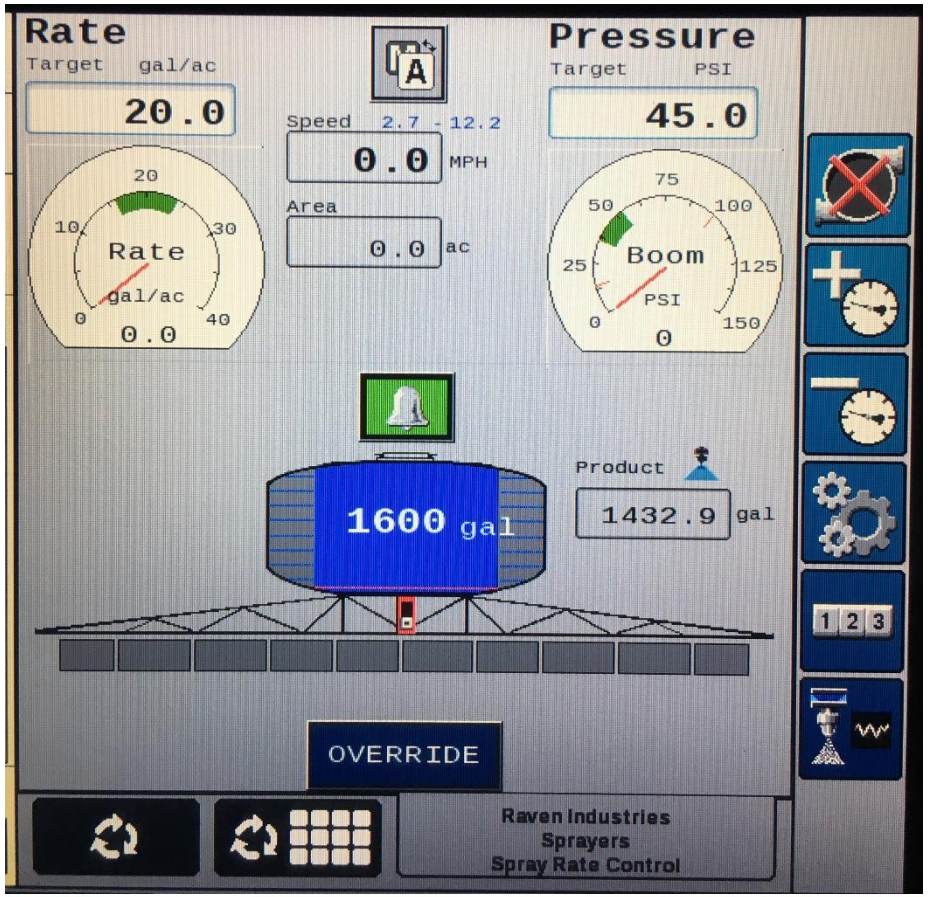
TeeJet Nozzle Body

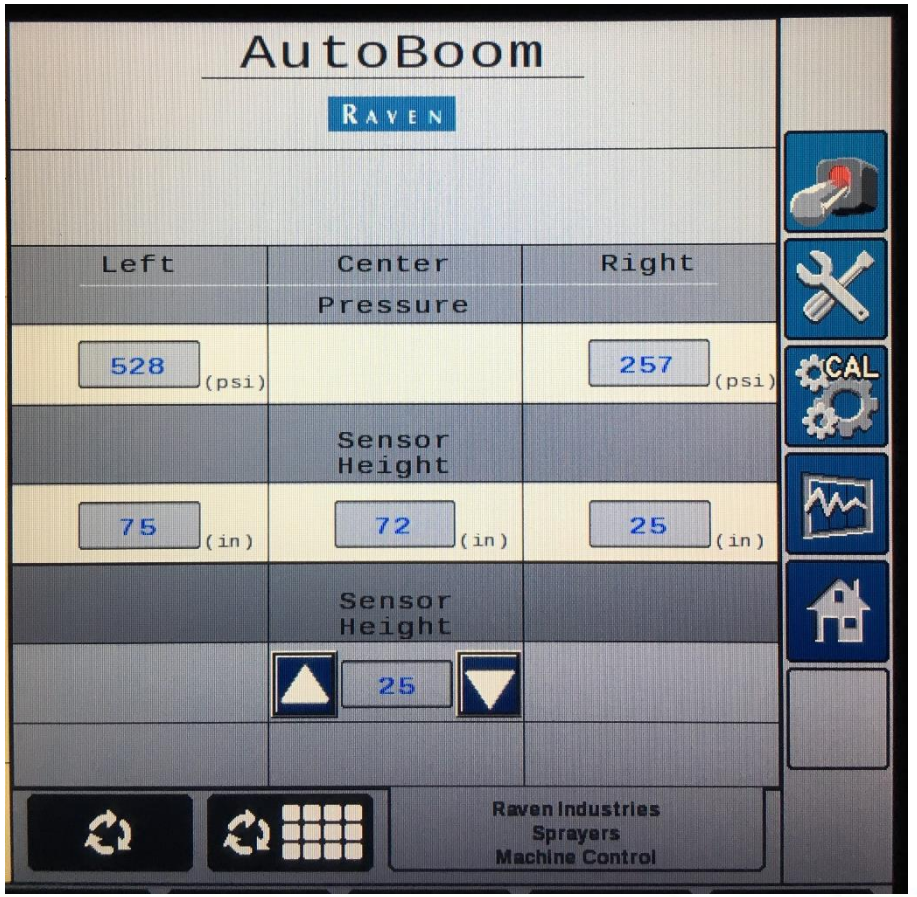
What will IntelliSpray Require?

- In Line Filters
  - The IntelliSpray system recommends the 100 mesh in line filter kit

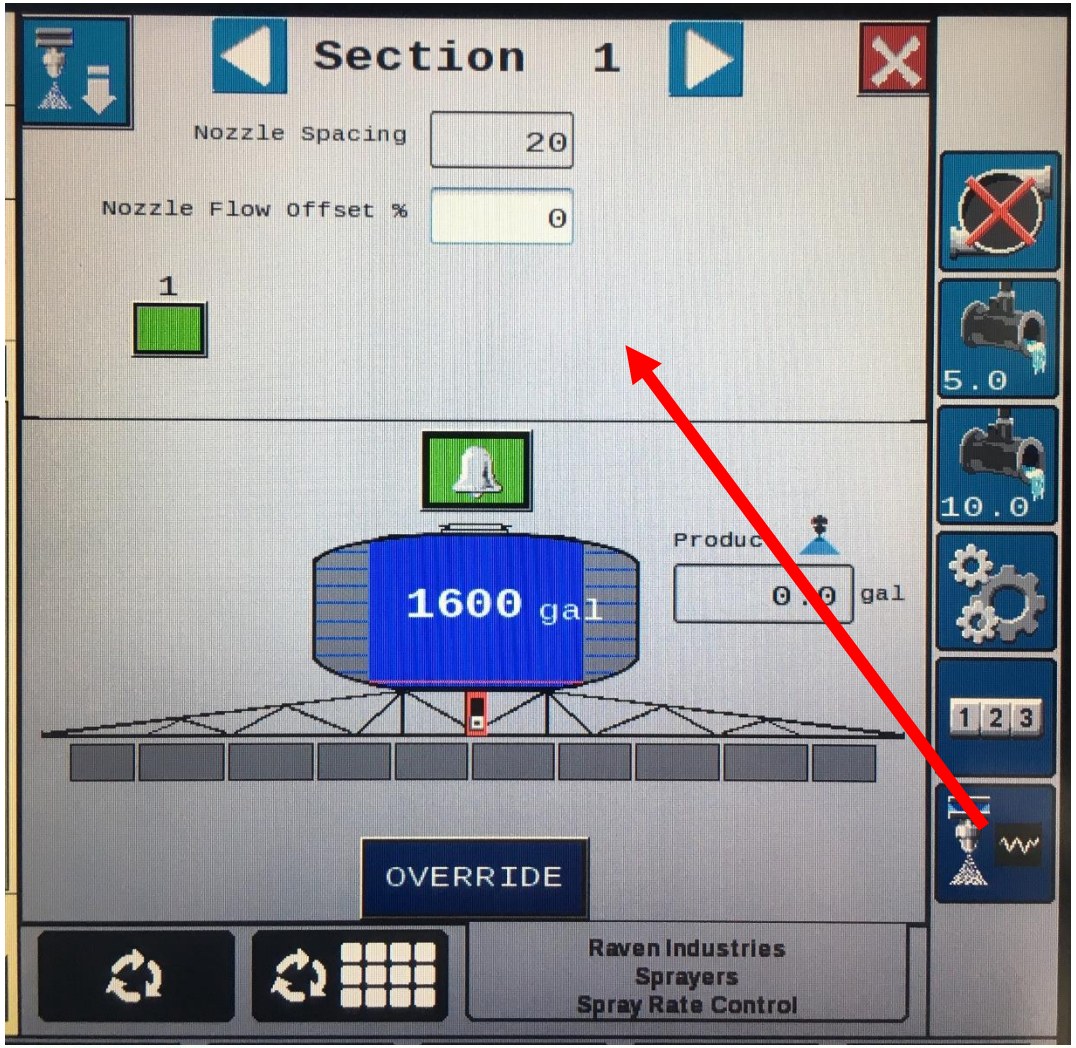


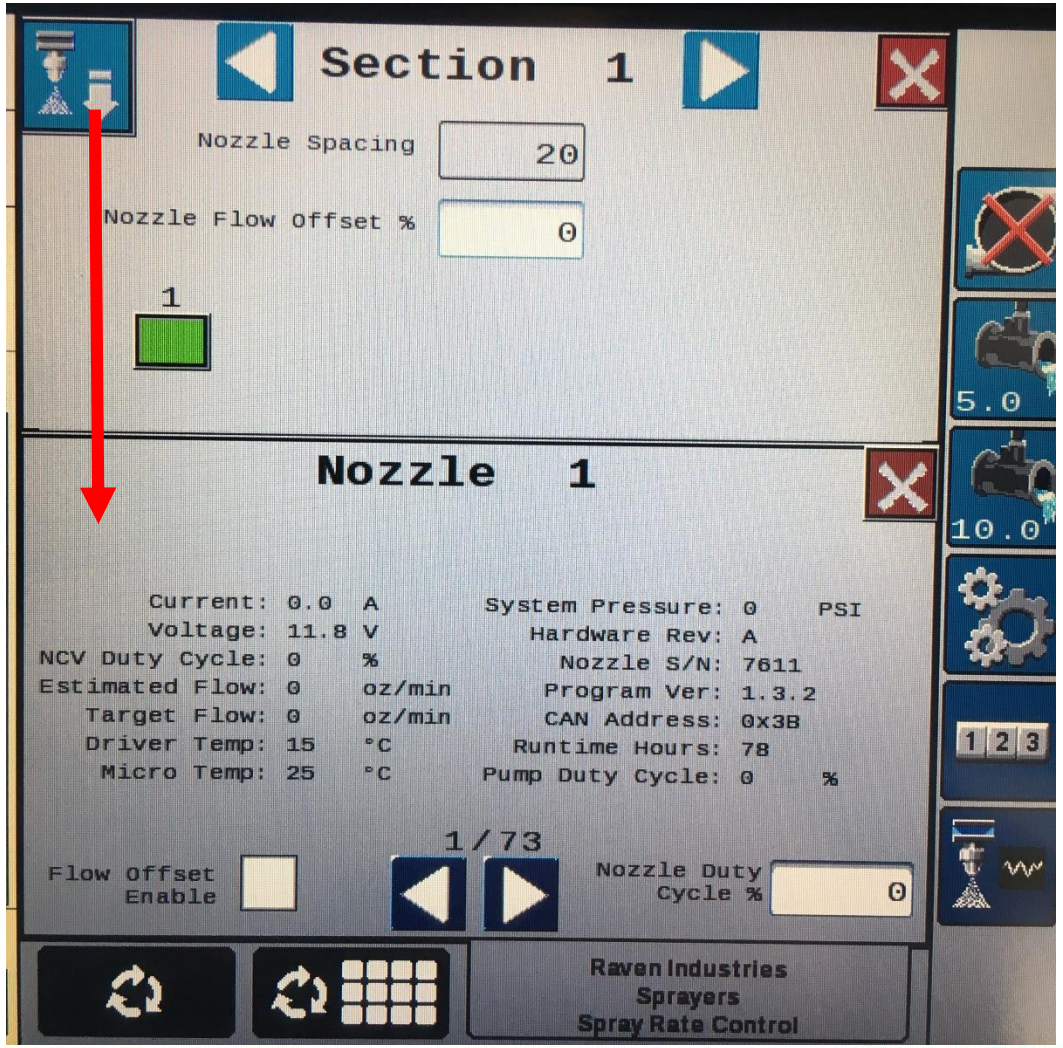
Intelliview IV Virtual Terminal





Virtual Terminal





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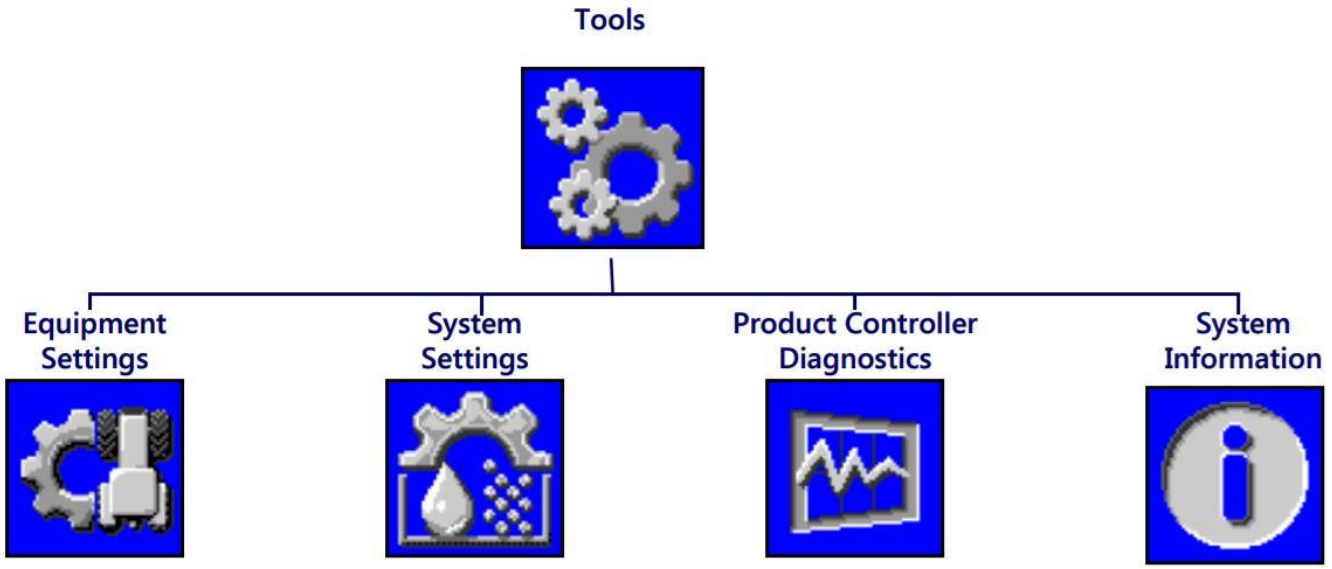
NCV Colours

LED Indicator	Rate	Color	State
Flashing	1 Hz	Green	Ready
		Blue	Actuating Mode (Auto)
		Red	Loading New Software
		Amber	Shutdown Alarm Active
	5 Hz	Amber	No ISOBUS Communication
Alternating	1 Hz	Blue/Green	Actuating Mode (Manual)
		Red/Green	Not Calibrated
		Amber/Red	No ECU Detected/Invalid ISO Name
		Amber/Green	Ready – Warning Alarm Active
		Amber/Blue	Actuating Mode – Warning Alarm Active
Solid	-	Any	NCV Failure

Tools Menu

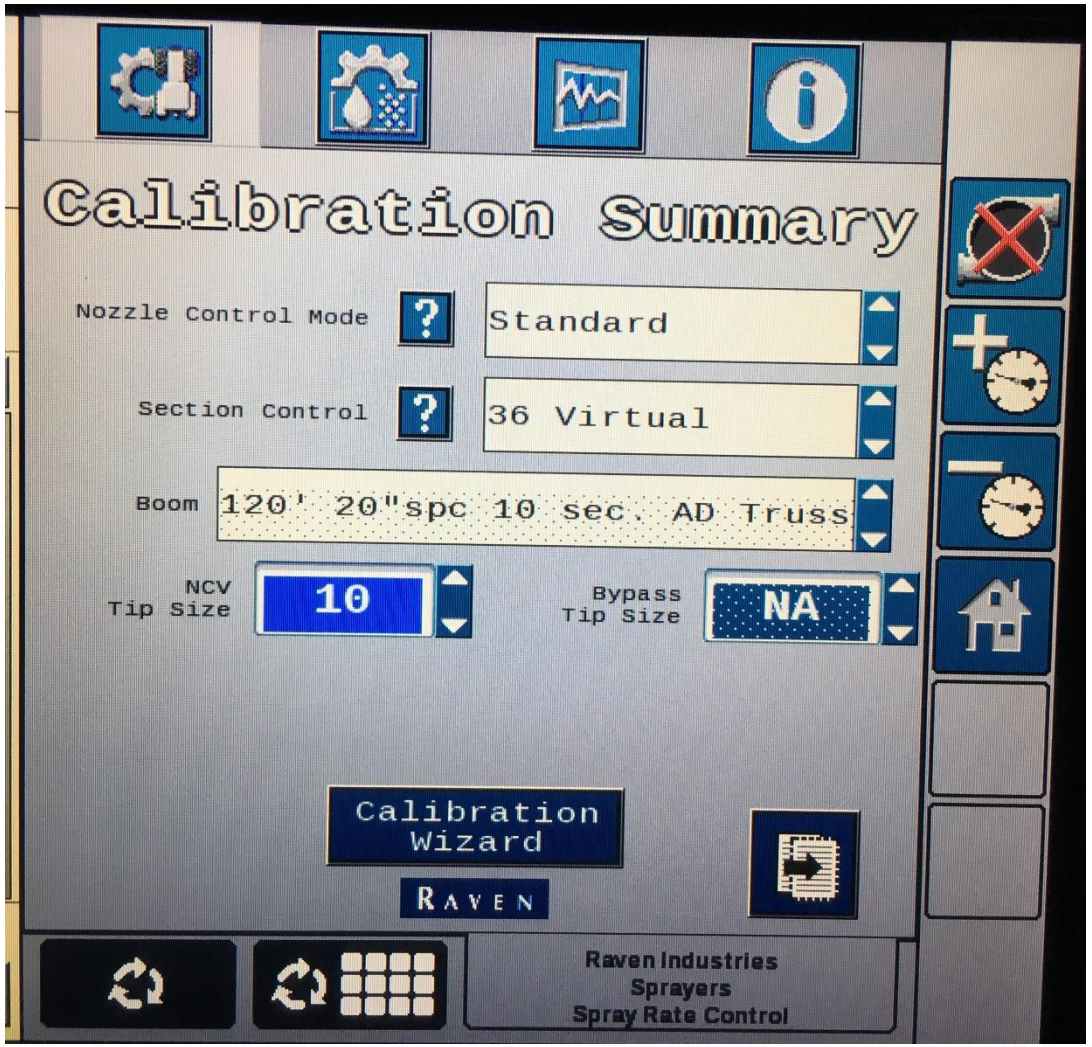
- Machine settings and information are displayed in four categories which may be viewed by selecting the tabs displayed along the top of the tools menu.



Virtual Terminal

Equipment Settings

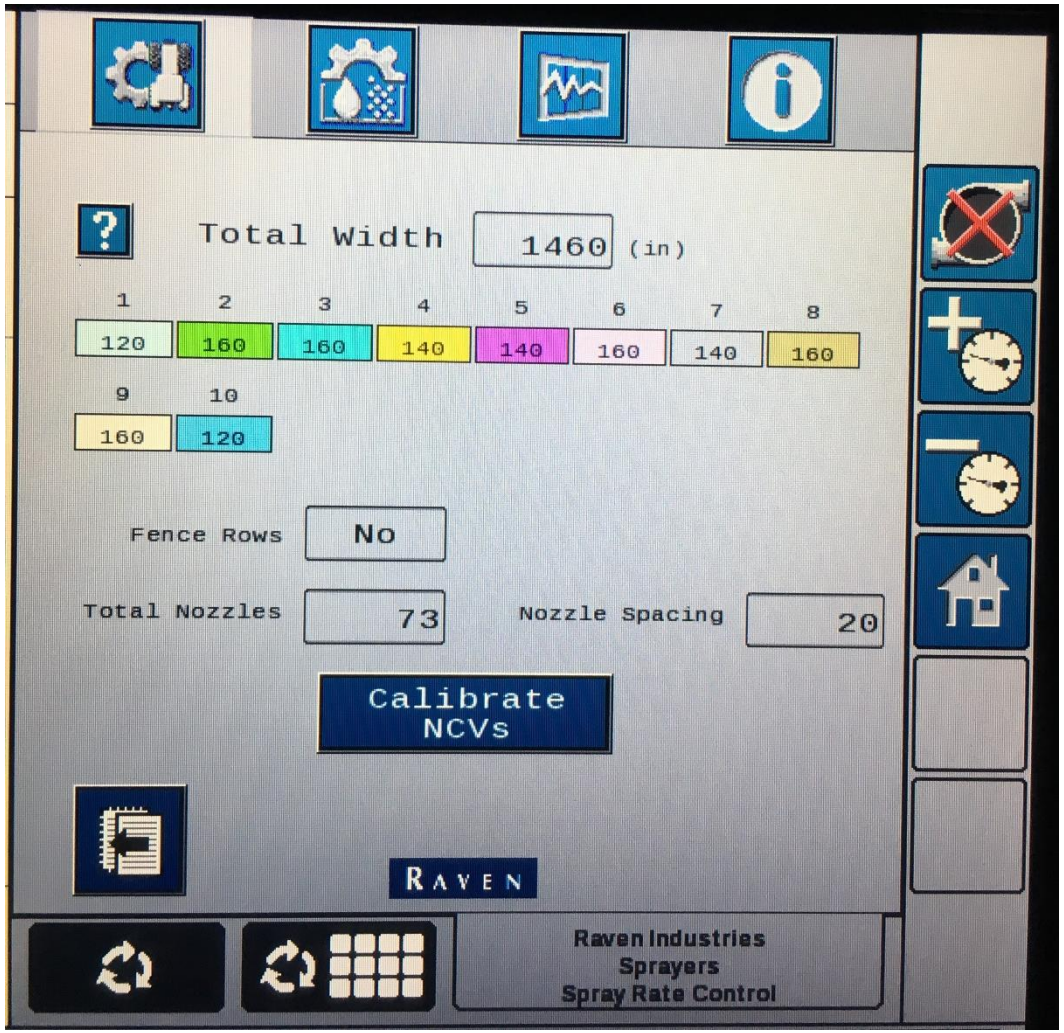
- Nozzle Control Mode- you will most likely only be using two modes on your sprayer Standard or bypass. Bypass mode will disable and close the solenoids so you can spray with your second set of nozzles.
- Sectional Control- you shouldn't have to adjust.
- NCV tip size- you should tell the system what size of tip you are using so it can properly compensate the rate and pressure.



Virtual Terminal

Equipment Settings

- This screen is mainly used to calibrate your solenoids. To calibrate push the “Calibrate NCV’s” and it will take you through a wizard. The wizard actually describes the steps very well.

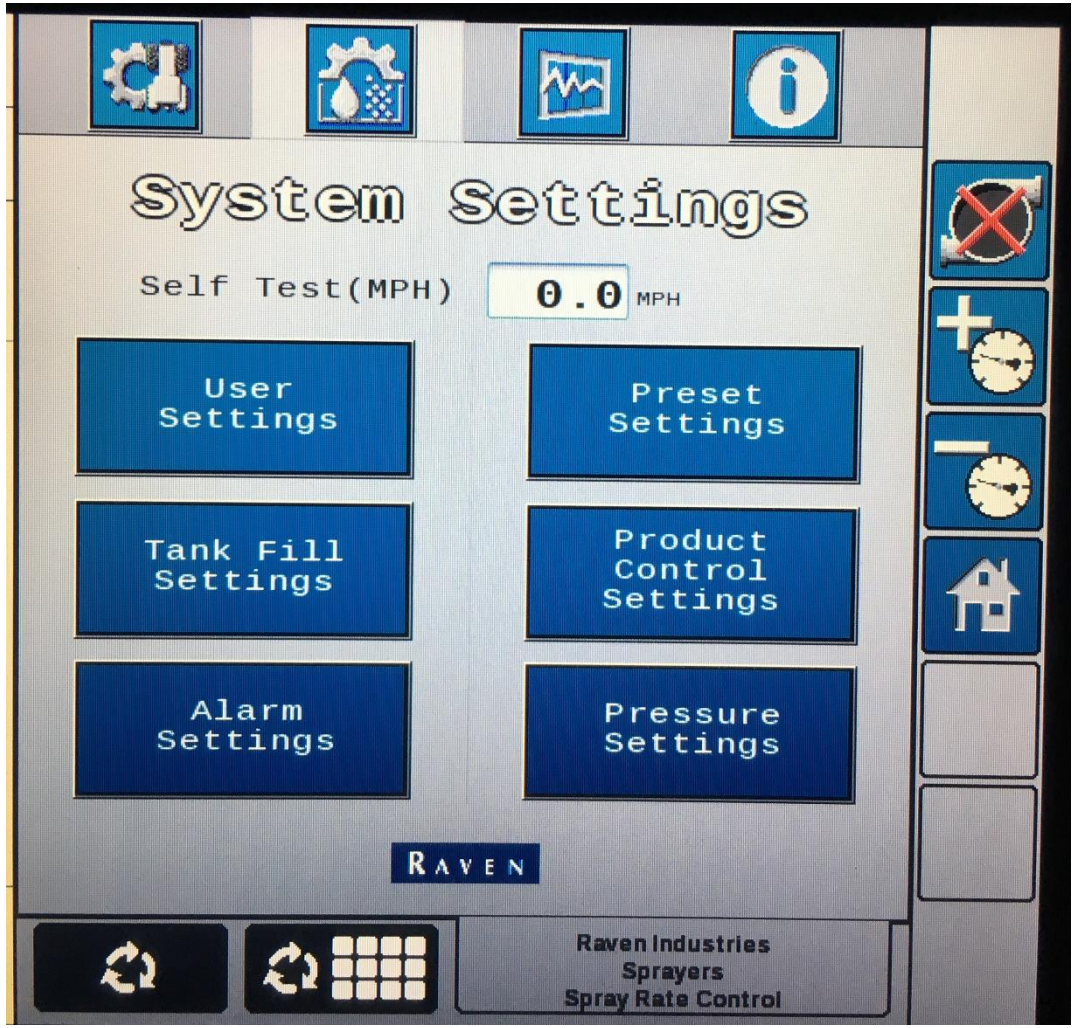


Virtual Terminal

System Settings

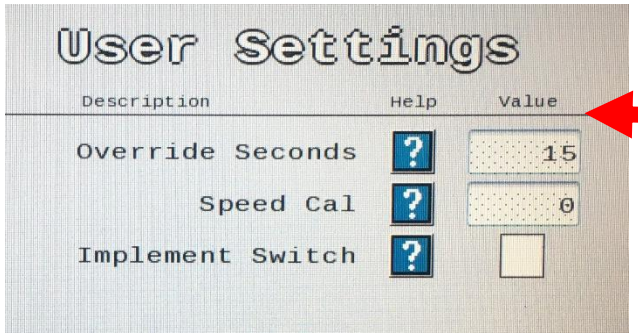
This is the main system settings menu. The self test speed is used when you are troubleshooting or when you are rinsing/ blowing out the sprayer.

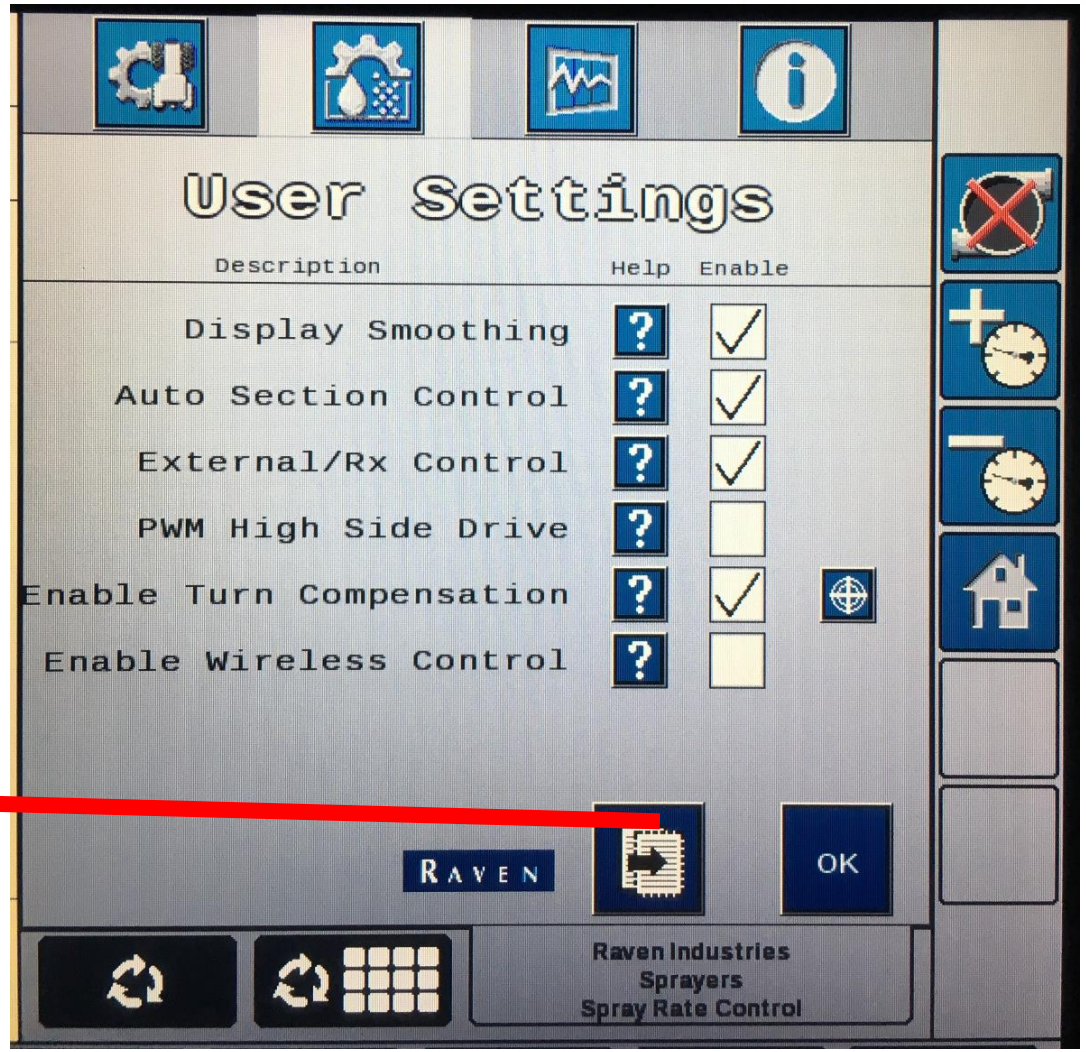
- This will also be your most used settings menu.



System Settings

The only thing in this menu you should use is the Wireless control and the Override seconds. The wireless control allows you to control the boom section and pump outside from your phone and the override seconds lets you set the amount of time you will override the sectional control for.

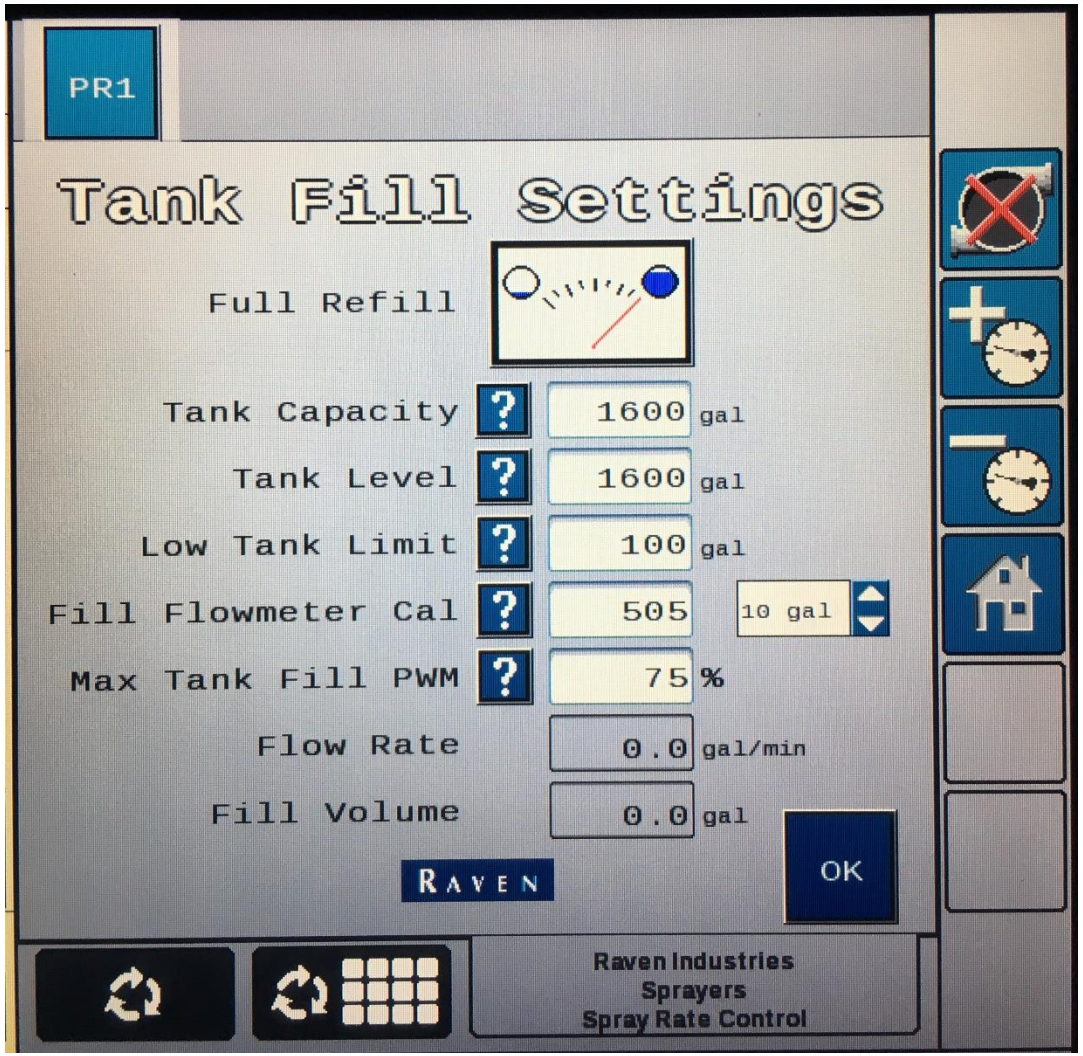




Virtual Terminal

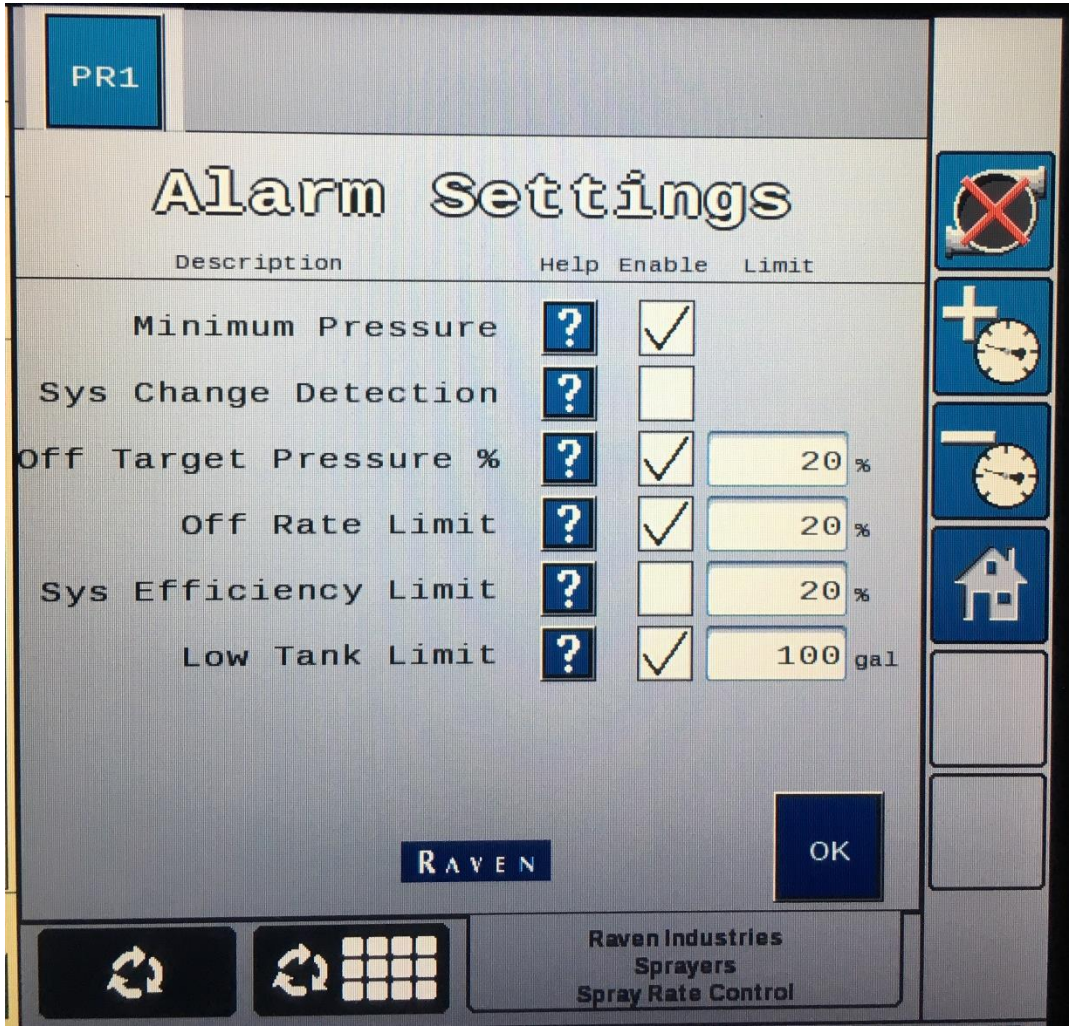
System Settings

- Tank Fill Settings:
- The main use for this screen is to refill the tank, set your low tank alarm and to enter your fill flow meter cal If you have that option.



System Settings

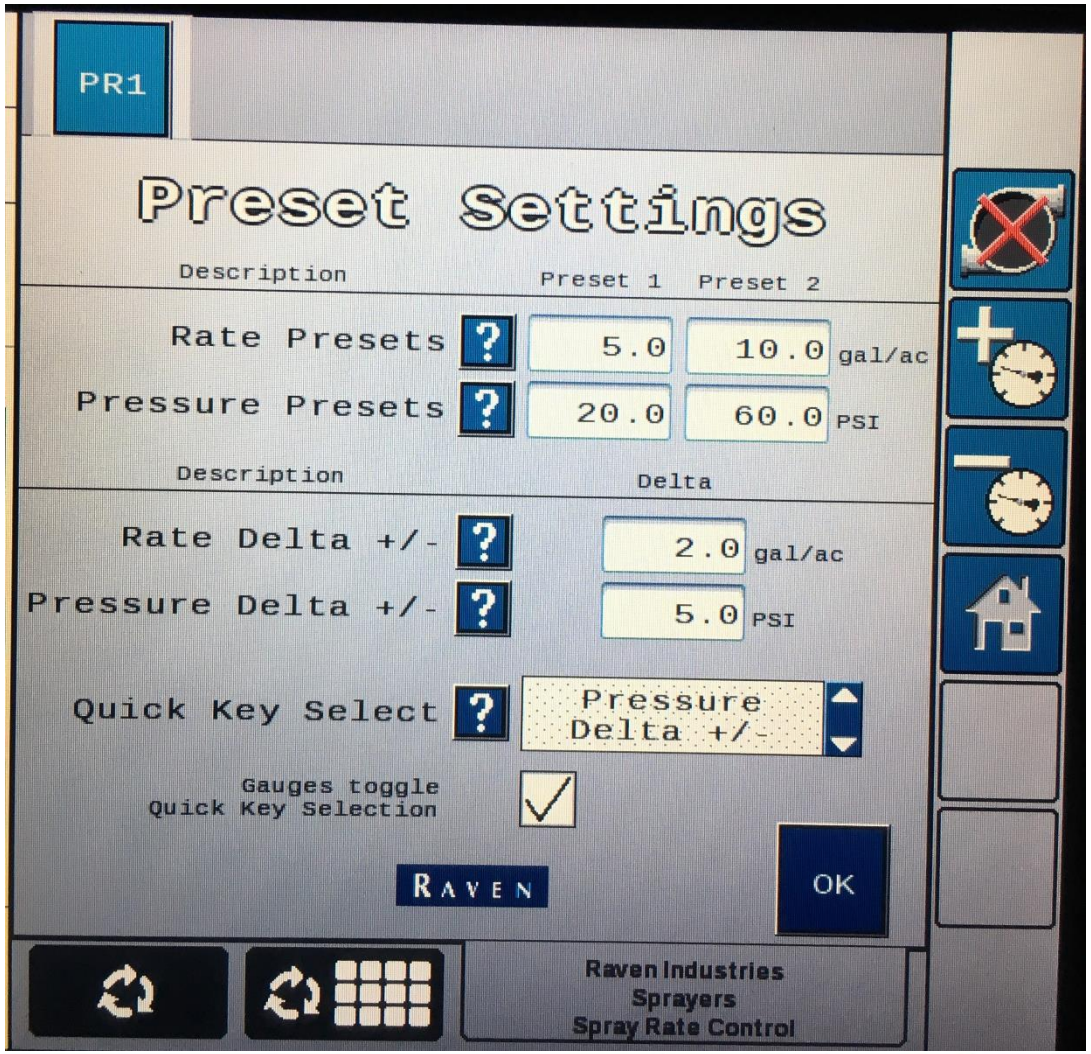
- Alarm Settings
- Here you set the thresholds of multiple alarms



Virtual Terminal

System Settings

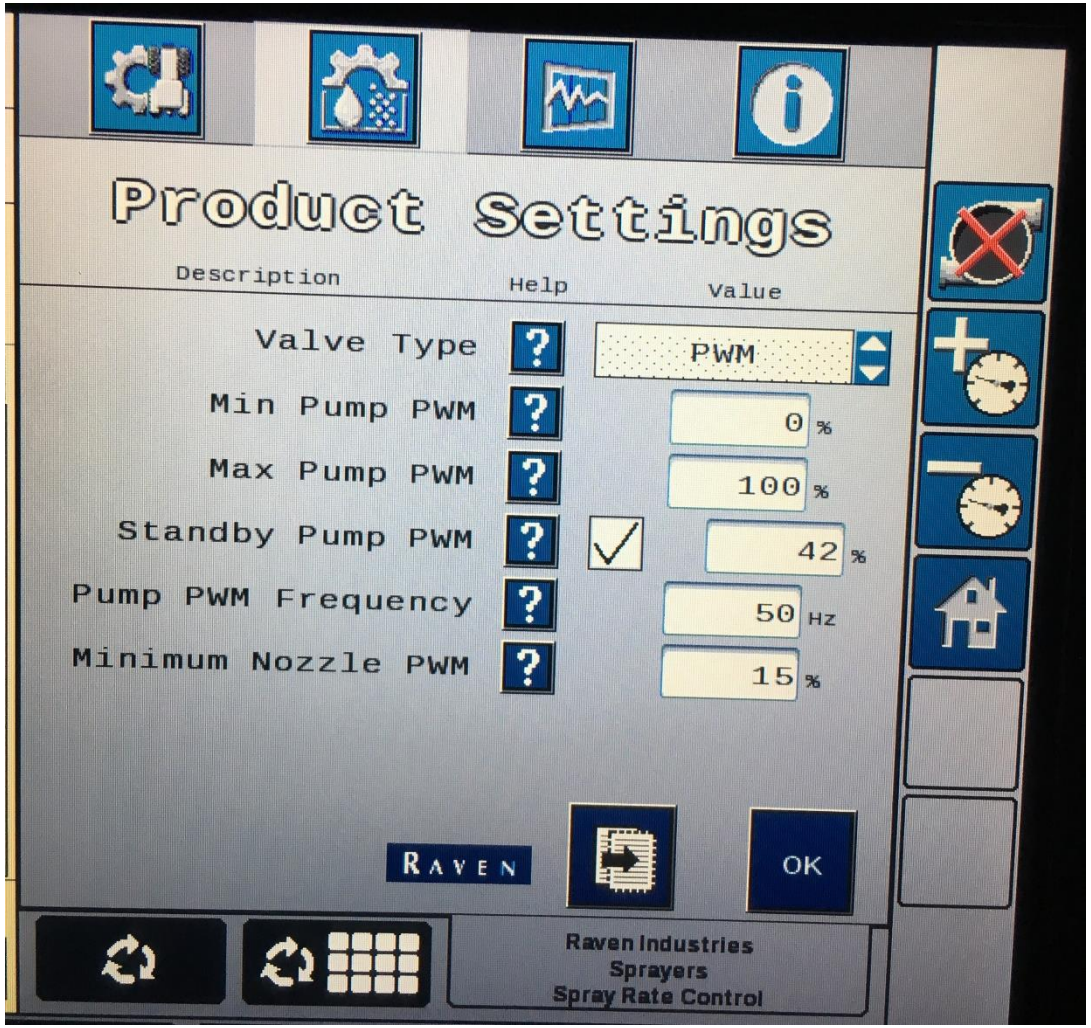
- Preset Settings
- Here you set your two preset rates and pressures, and your delta increments.



Virtual Terminal

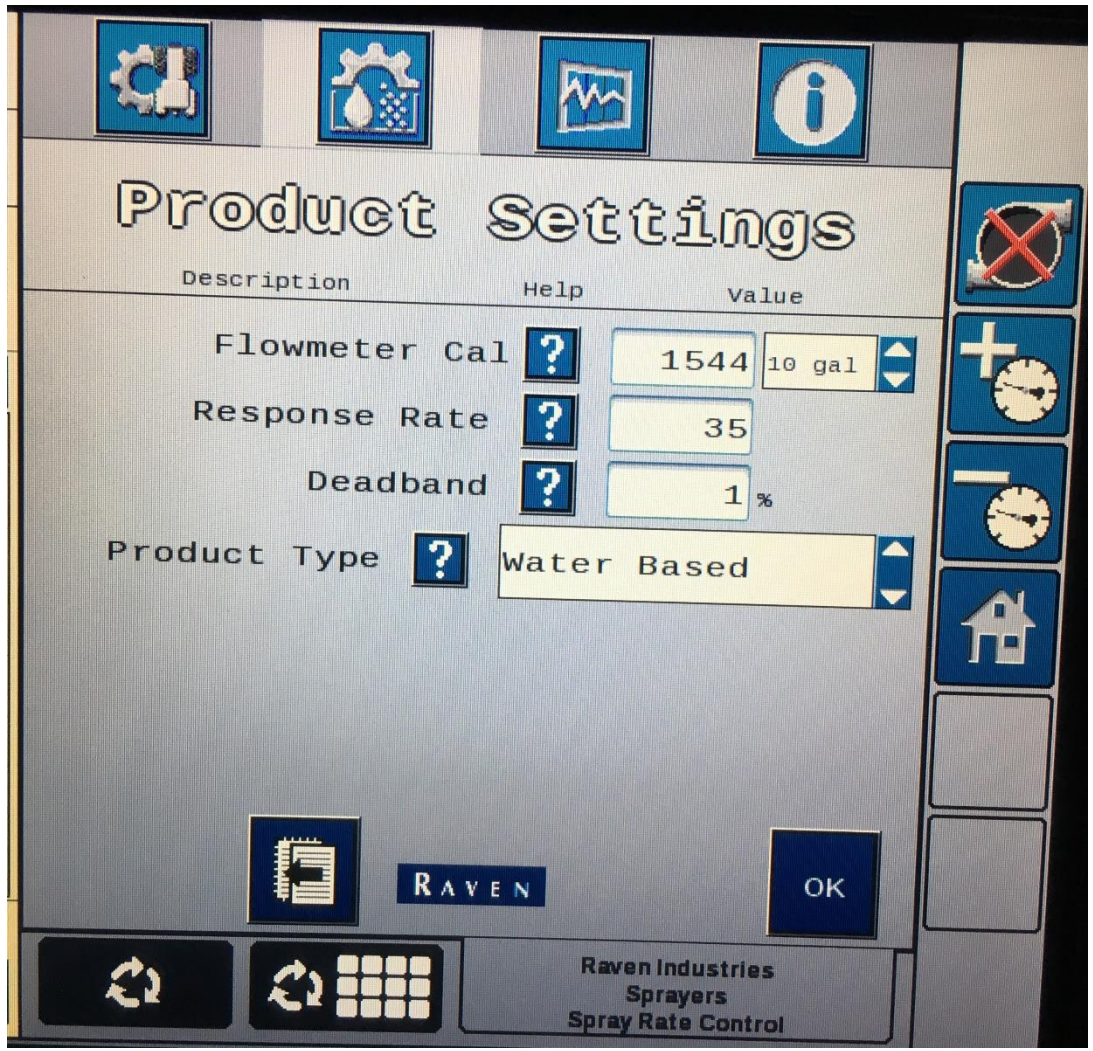
System Settings

- Product Settings
- These settings can severely affect how your machine holds a rate.
- Min/Max PWM is the minimum and maximum amount the valve will open.
- Standby Pump PWM is the amount the valve will be open to hold a pressure when all boom valves are turned off.
- Pump PWM Frequency sets the coil frequency of the PWM valve (don't adjust this number).
- Minimum nozzle PWM is the minimum time the solenoid will be open. A value too small can cause a bad pattern/ under application.



System Settings

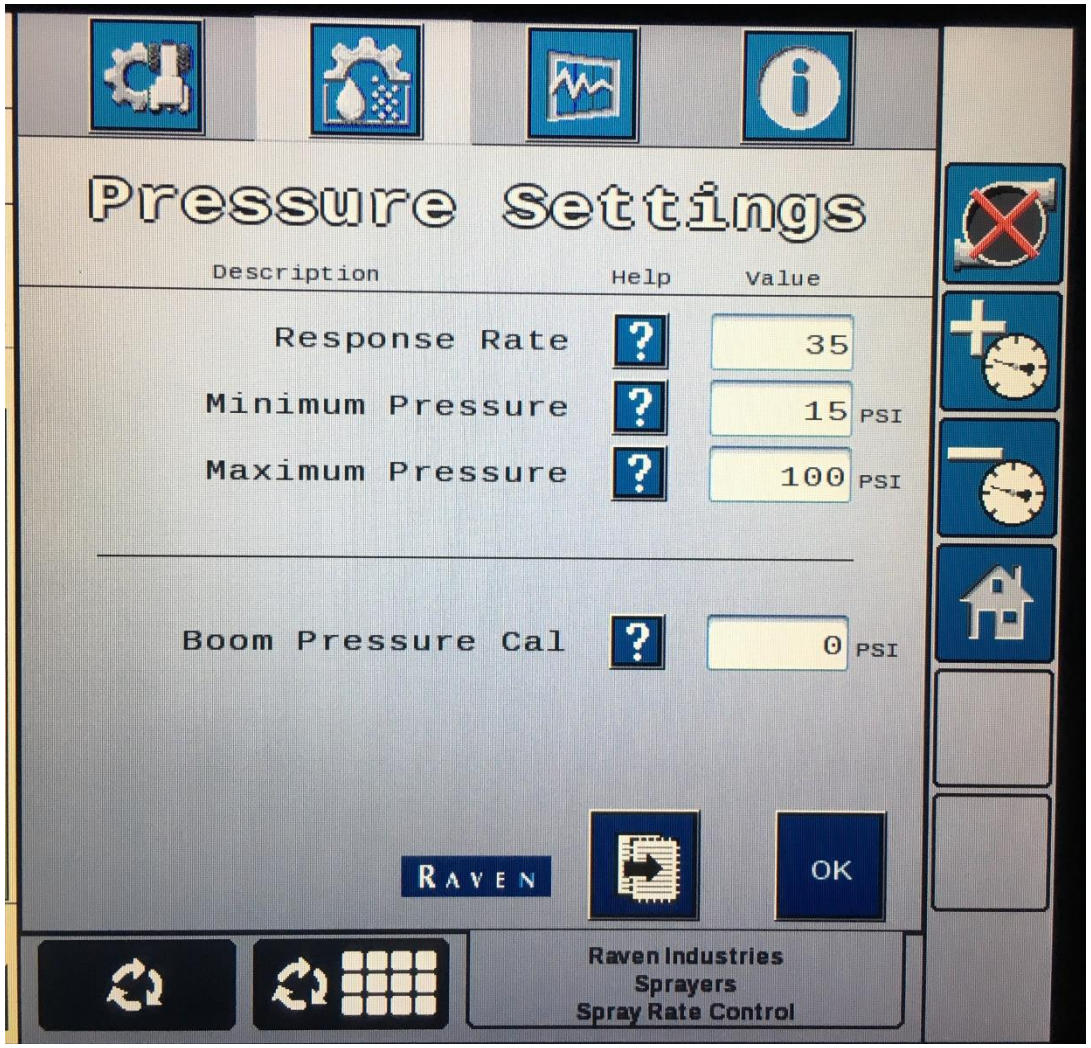
- Product Settings
- The second page of the product settings has your flowmeter cal, response rate, deadband and product type.
- Response rate is how fast the valve responds to rate change. Lower number is slower change, larger number is faster change.
- Deadband- allowable tolerance in rate before the valve responds.



Virtual Terminal

System Settings

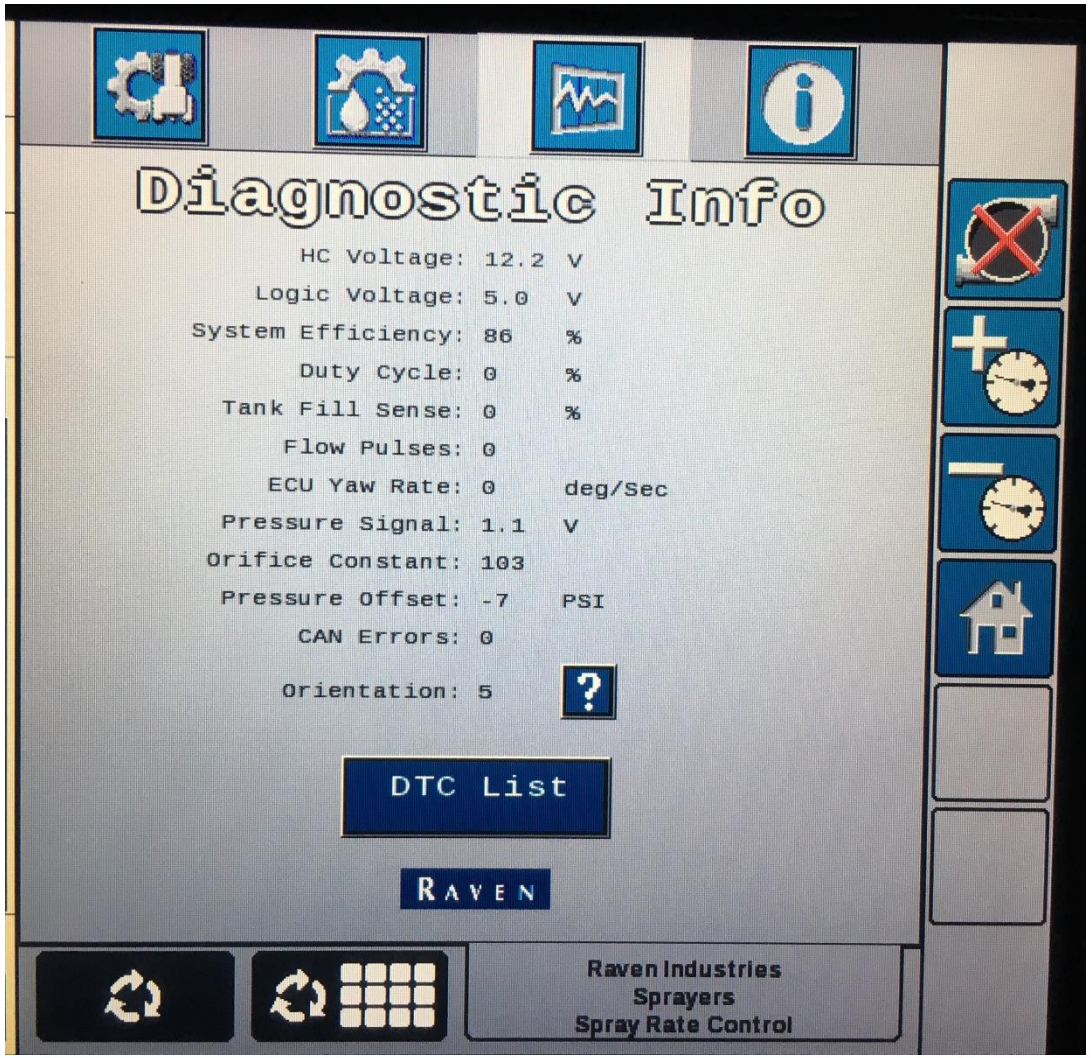
- Pressure Settings
- Response Rate- how fast the machine is going to compensate for pressure changes
- Min/max pressures- the range where the machine will keep the pressure values between, and if these values are exceeded alarms start sounding.
- Boom pressure cal- cal number for the boom pressure transducer.



Virtual Terminal

Diagnostics Menu

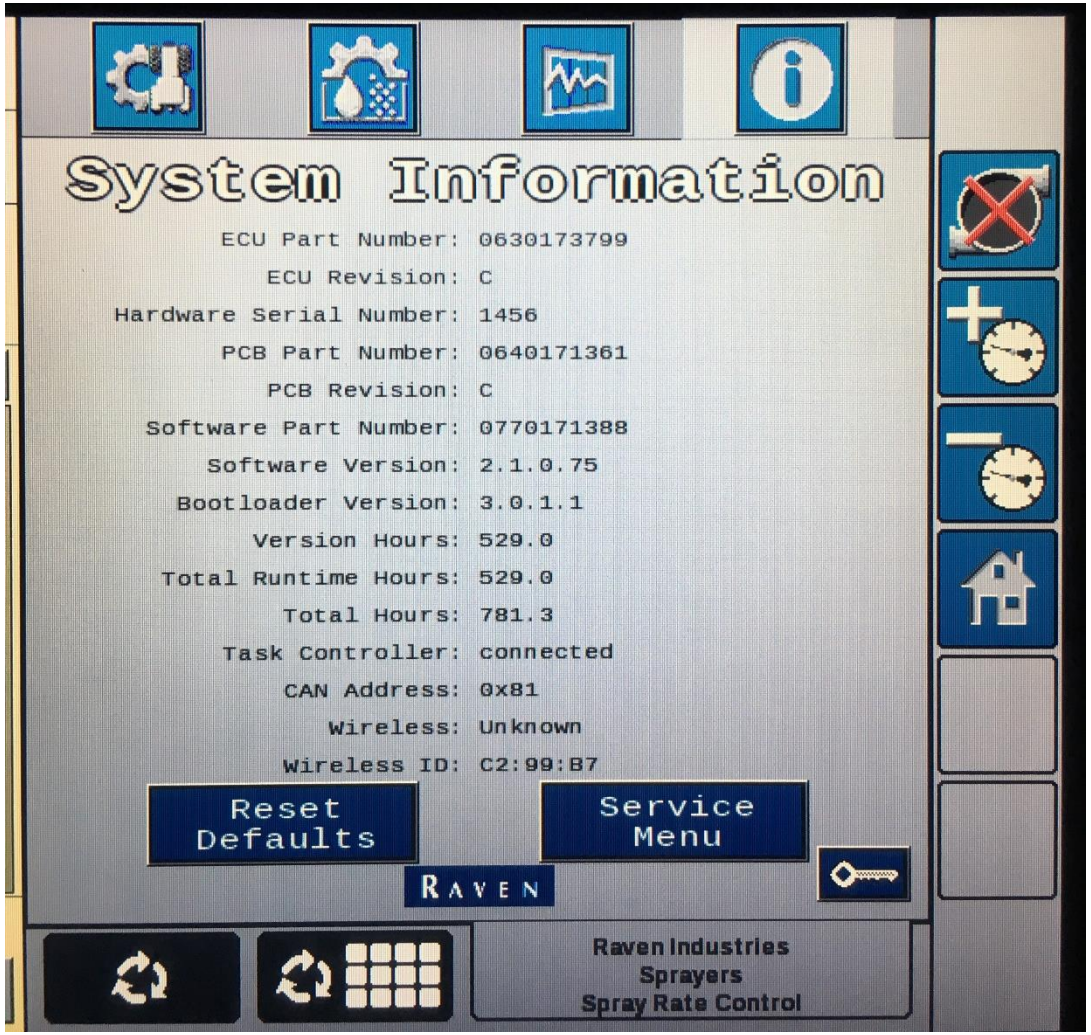
- Here you can do a brief check over of your system. I may ask you to go to this screen if you call me with a problem.



Virtual Terminal

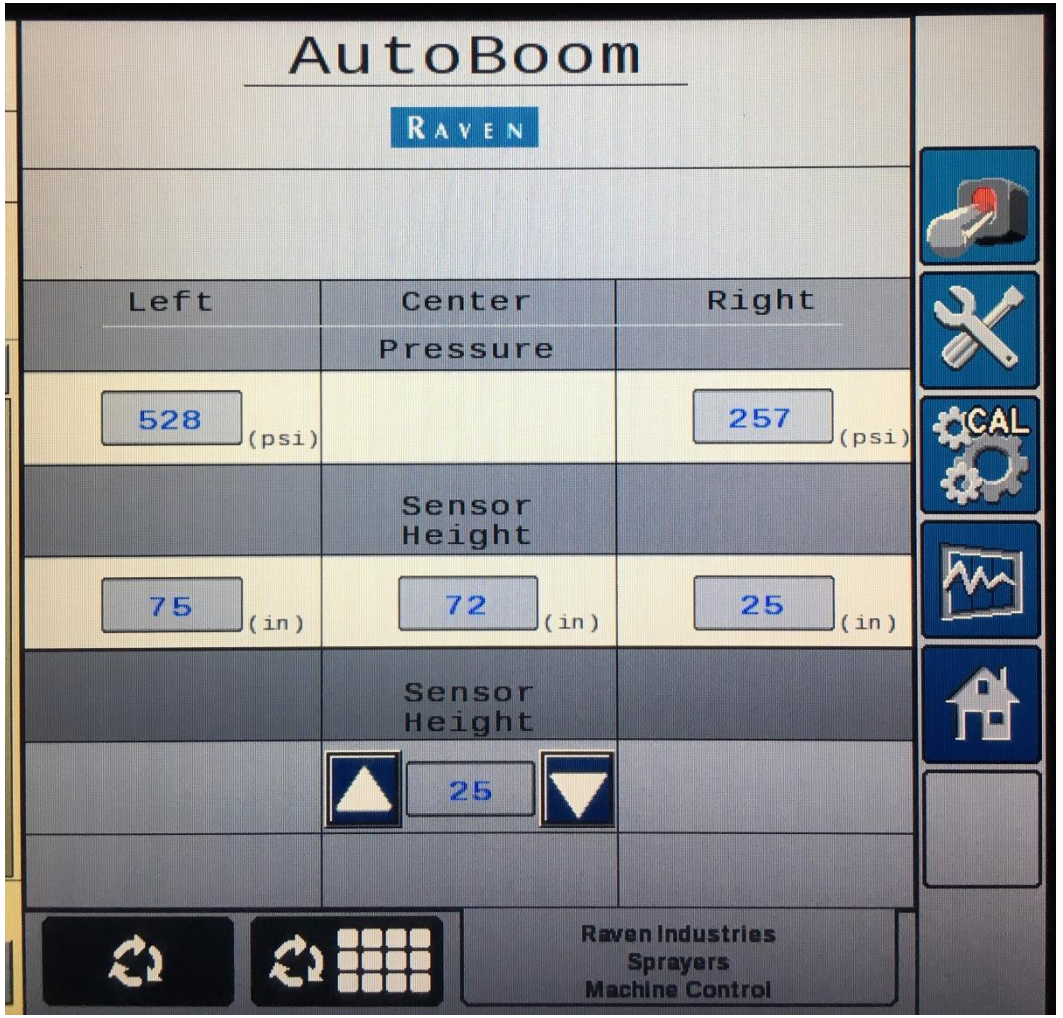
System Information

- Here you can see your Software Versions, and reset your machine defaults in the case of a extreme error or bug. Call one of us first before performing a reset.



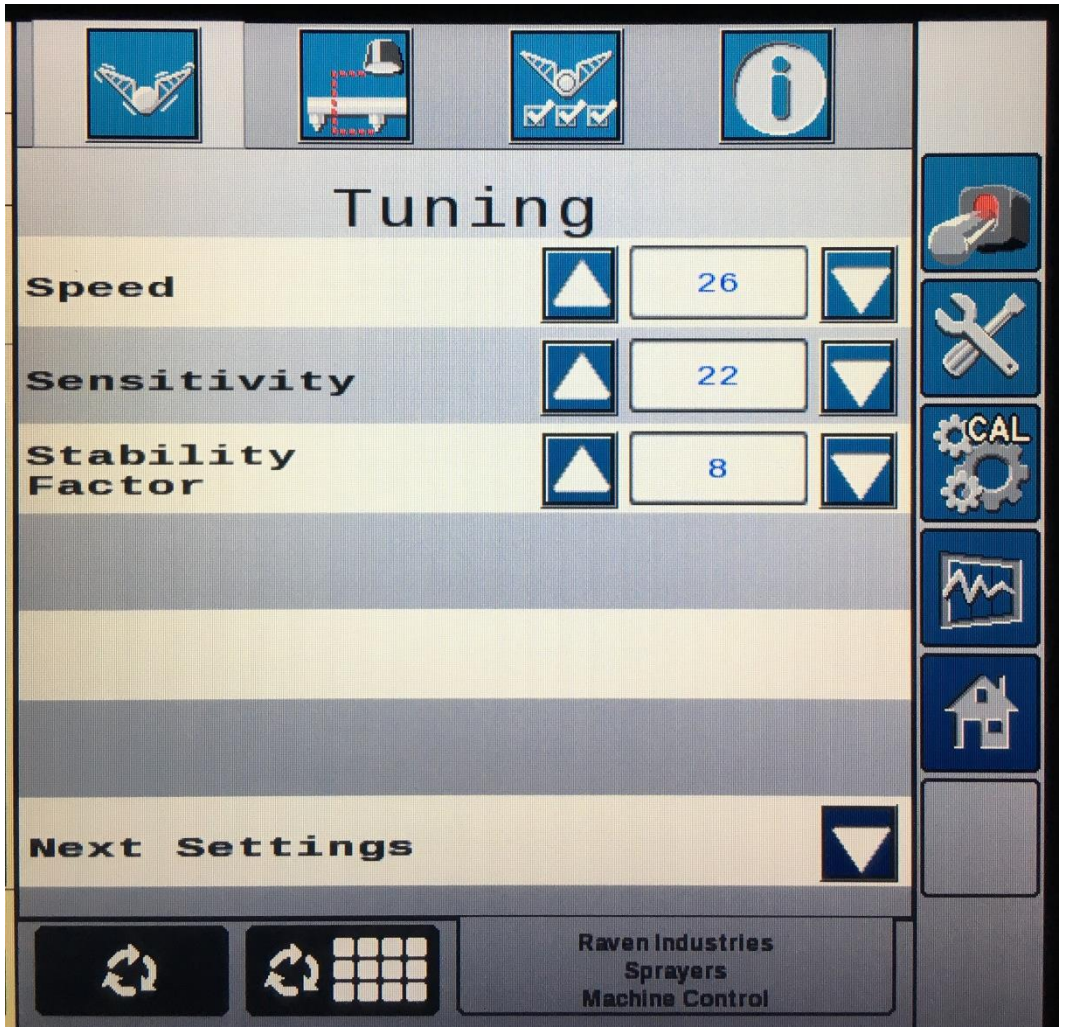
Main Screen

- This is your main runscreen for your Autoboom. You can see your left, right, center height and change your target height.



Autoboom Tuning

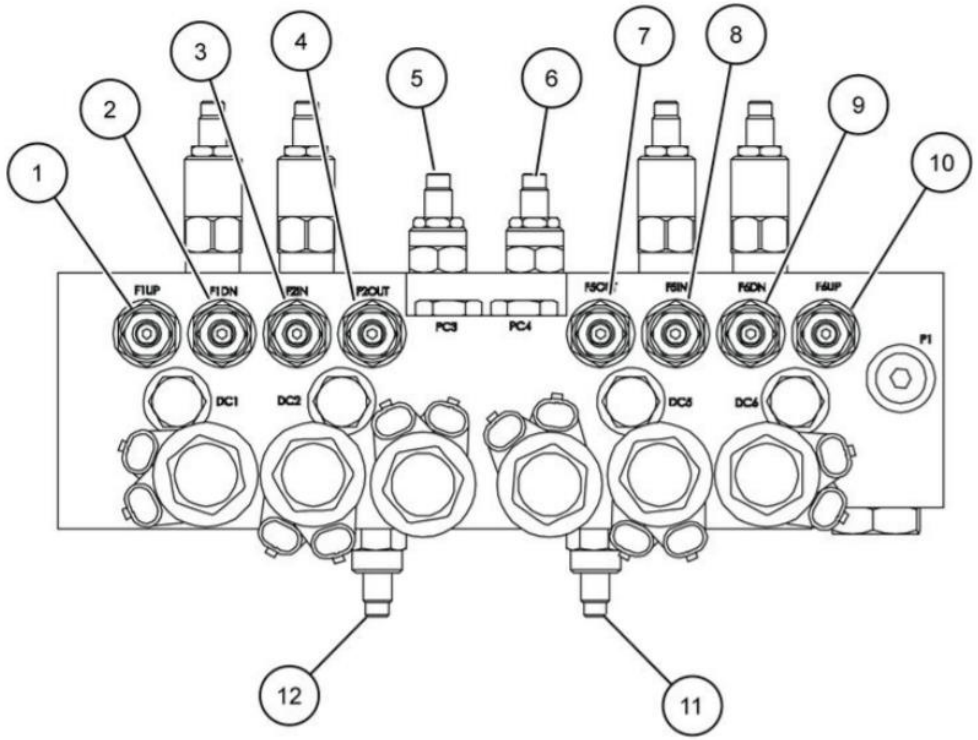
- Sensitivity
  - Controls sensitivity of sensors to height changes
  - The lower the sensitivity, the less the boom will react to terrain / canopy changes.
- Speed
  - Controls how fast the boom moves away from the terrain / canopy.
- Stability
  - Fine tunes control based on rigidness of the center rack
  - 20 = center rack is rigid (Guardian)
  - 8-14 = center rack floats freely
  - If this setting is too low when one of your booms lift up the other will rock down slightly due to the force of the lifting one.



Adjusting Boom Cylinder Speed

F1Up- Left Side Secondary Out	**- 1**	**F1Dn- Left Side Secondary In**	**- 2**
F2In- Left Side Primary In	**- 3**	**F2Out- Left Side Primary Out**	**- 4**
F3Up- Left Side Lift Cylinder Up	**-12**	**F3Dn- Left Side Lift Cylinder Down**	**- 5**
F4Up- Right Side Lift Cylinder Up	**-11**	**F4Dn- Right Side Lift Cylinder Down**	**- 6**
F5In- Right Side Primary In	**- 8**	**F5Out- Right Side Primary Out**	**- 7**
F6Up- Right Side Secondary Out	**-10**	**F6Dn- Right Side Secondary In**	**- 9**

To Adjust flow through the valve loosen the jam nut and using a Allen wrench loosen the Allen screw to allow more flow and tighten to allow less flow. Be sure to retighten the jam nut after finishing

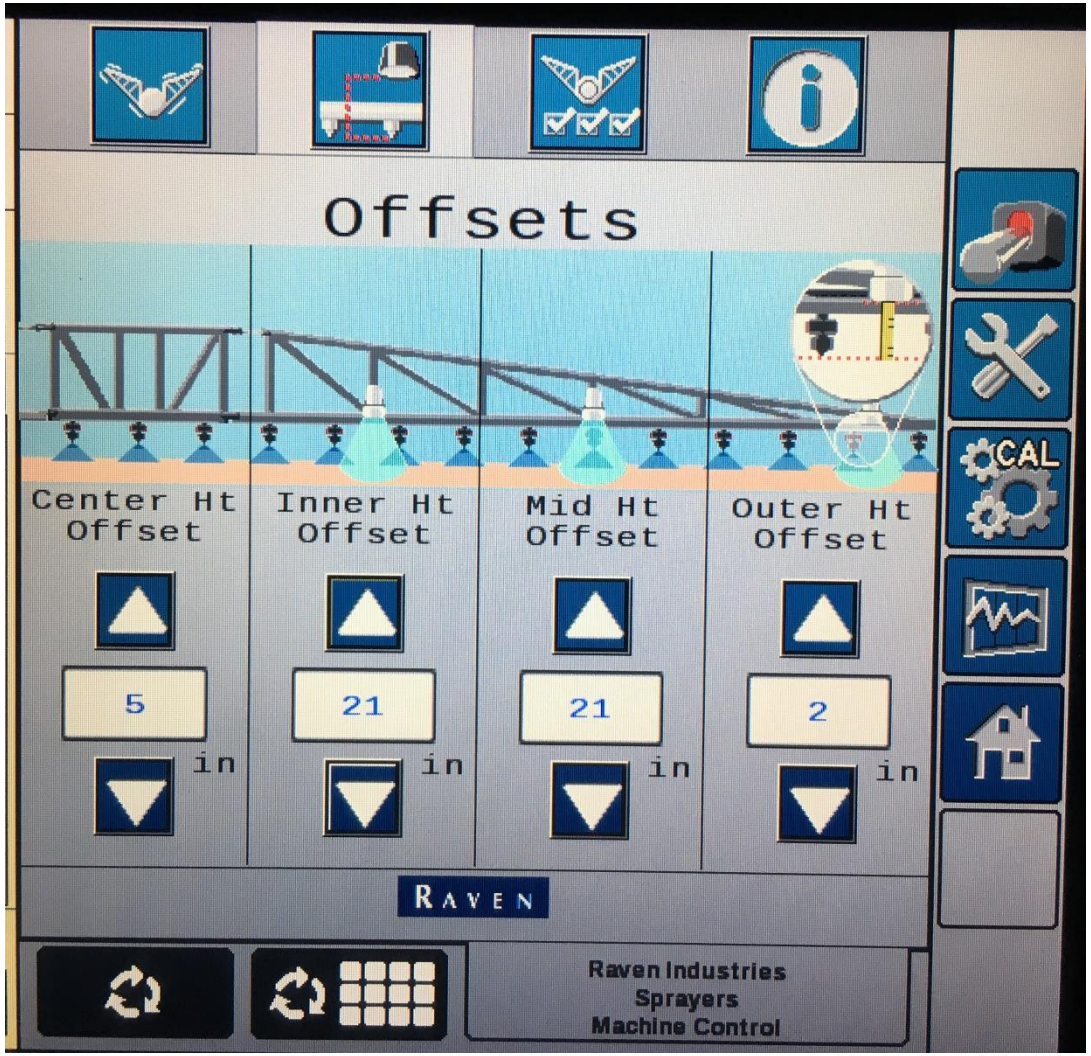


Note: Adjust in 1/8 or ¼ turn intervals. Adjusting these too much can cause damage to the machine.

Autoboom Virtual Terminal

Offsets

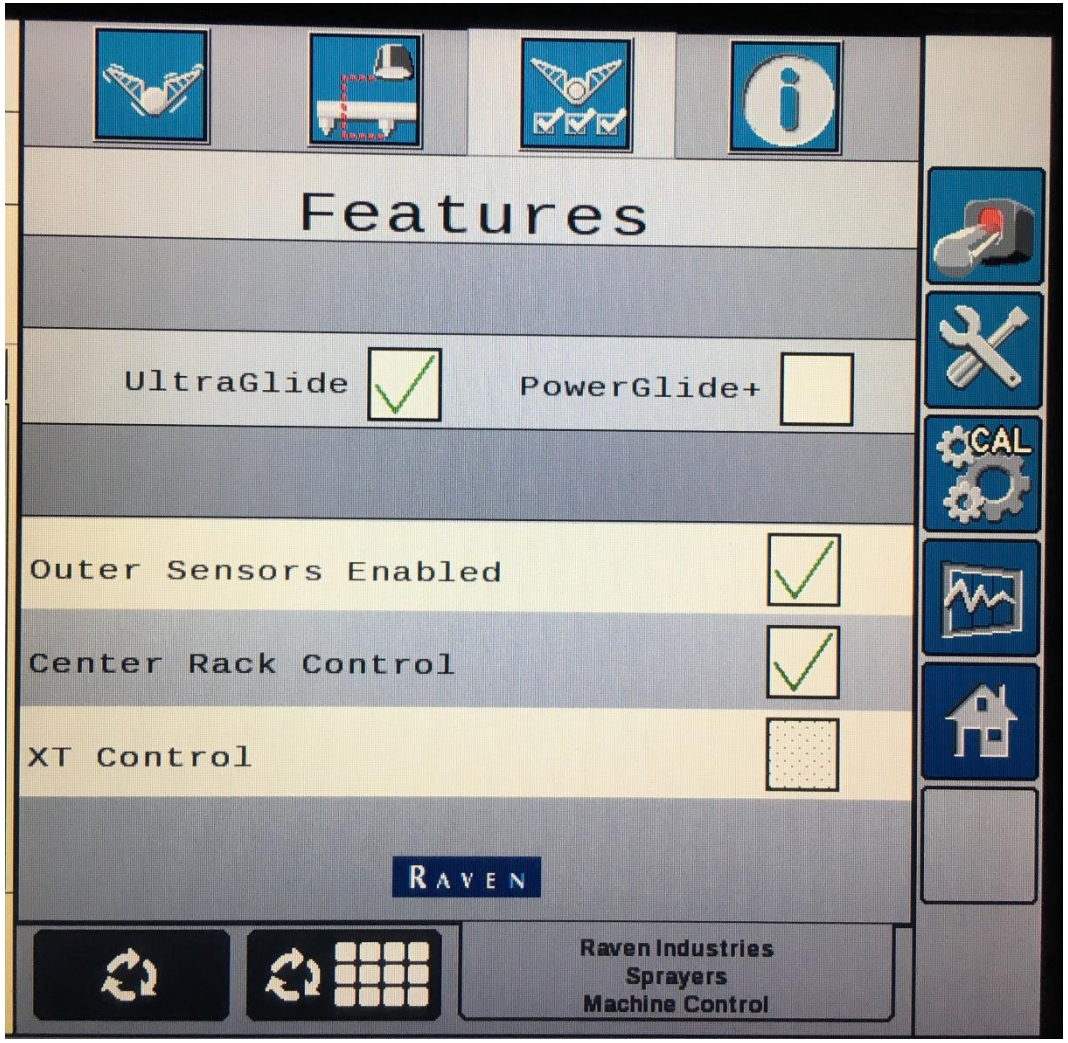
- On all of our sprayers we have either a 3 or 5 sensor Autoboom.
- Here you adjust the height offsets from the bottom of the sensor to the bottom of the nozzle tip.
- Each measurement applies for both sides of the boom.



Autoboom Virtual Terminal

Autoboom Features

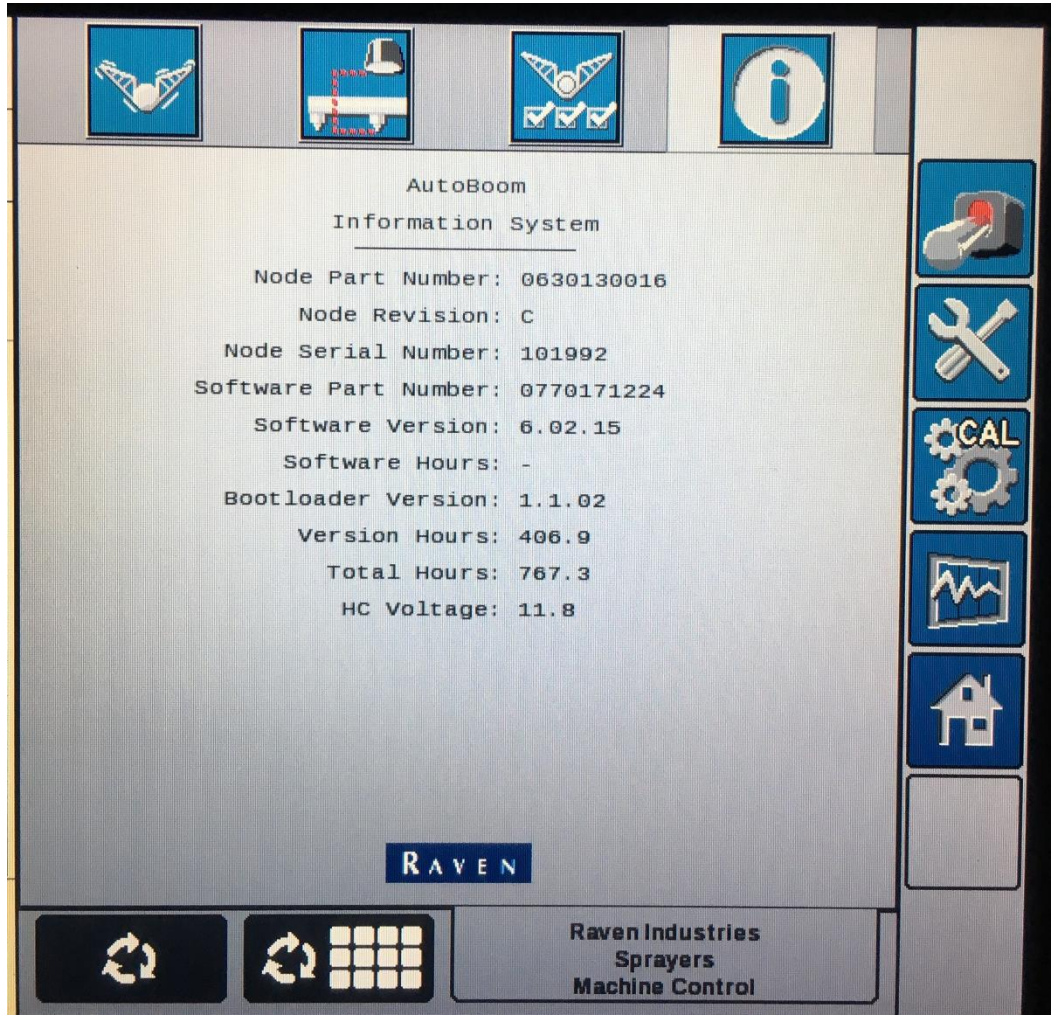
- You shouldn't need to adjust anything here, but if you do you can enable/disable certain sensors and change your Autoboom type.



Autoboom Virtual Terminal

System Information

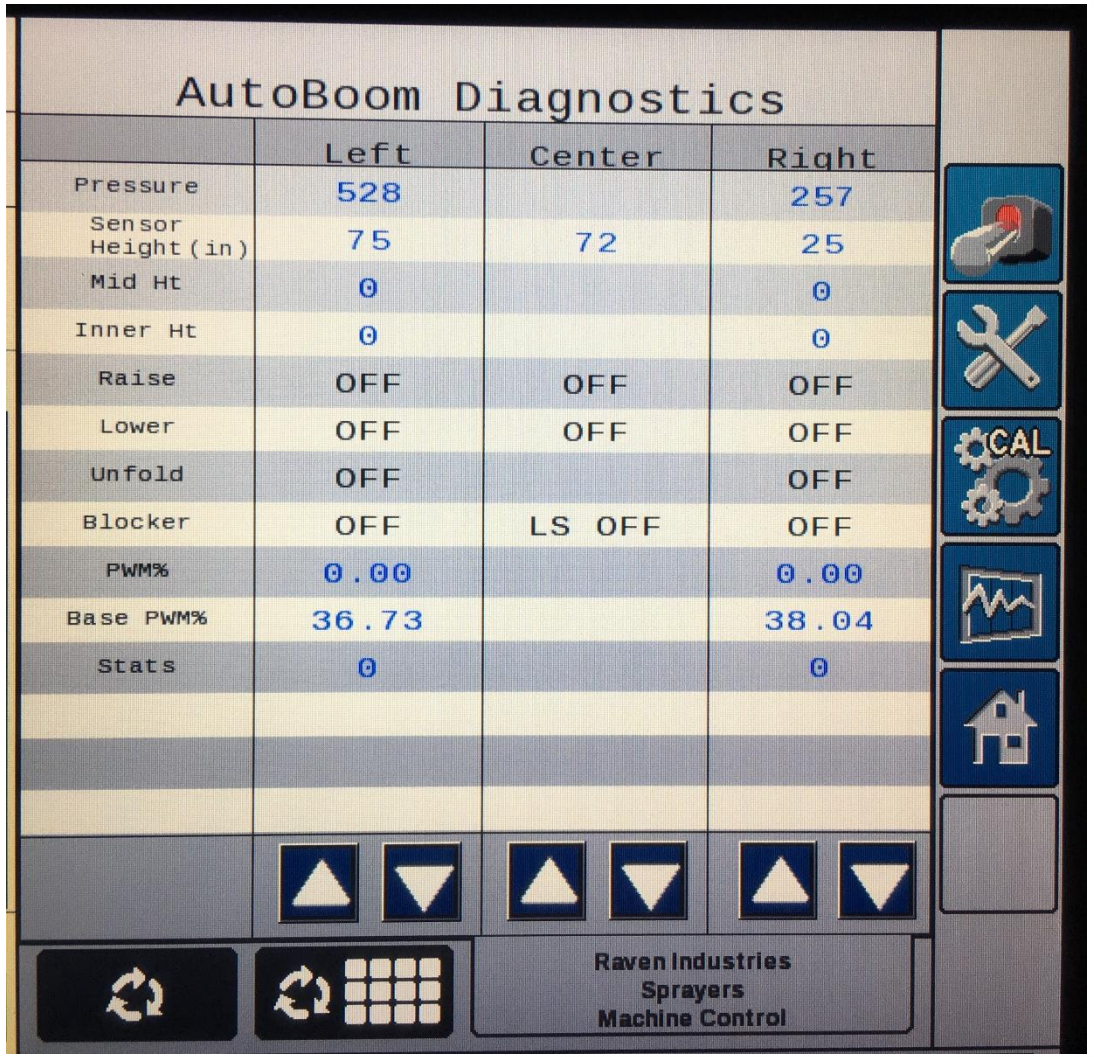
- Not much for you on this screen either. You can se your version, and system voltage but that's it.



Autoboom Virtual Terminal

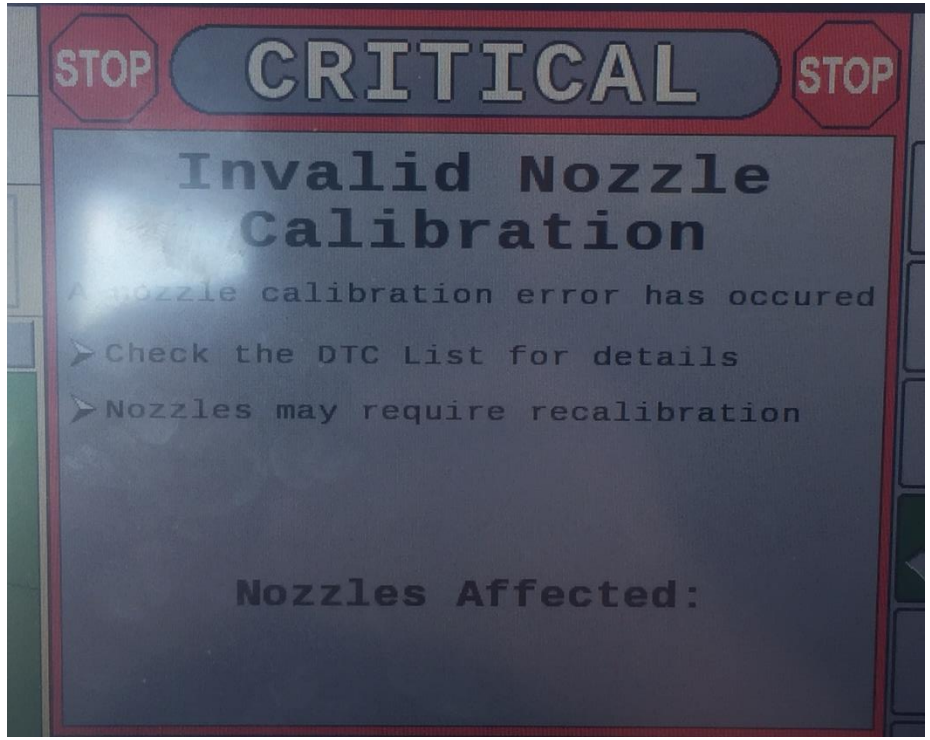
Diagnostics

- This is probably the best way to troubleshoot your Autoboom system.
- You can manually raise each boom to test if the valve works properly and if all the wiring is working properly.
- Each sensor height is shown on this screen.
- The easiest way to test a sensor is to go outside, and stick your hand under the sensor, and within half a second the boom should start lifting up. (Watch your head when the boom is lowering down. It does not feel the greatest).



VT Troubleshooting

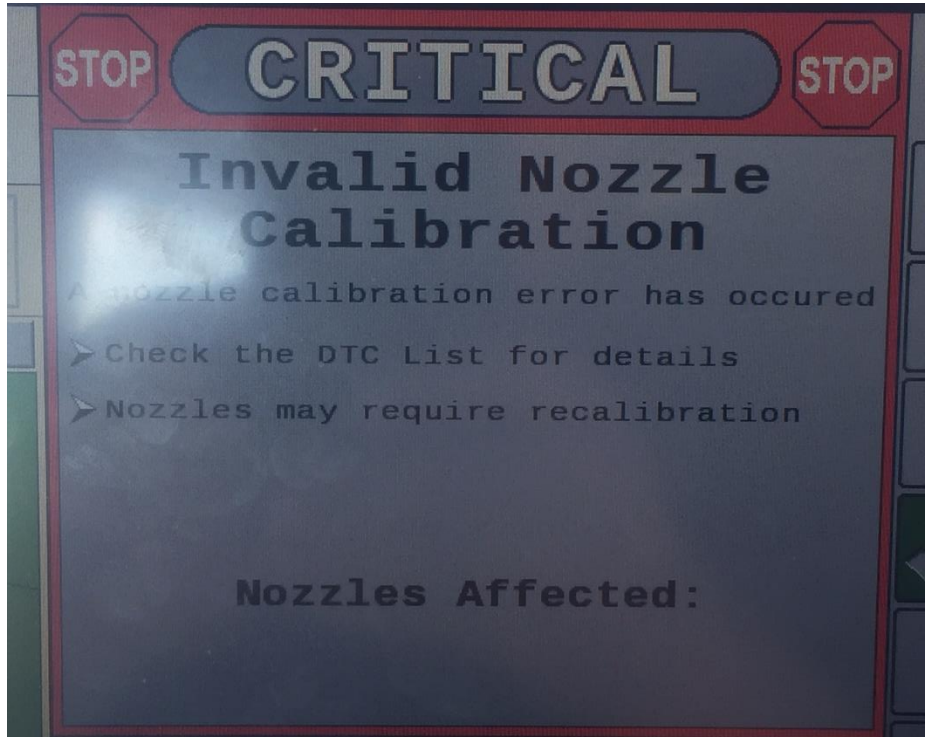
I turned on the machine and this pops up. It says no nozzles are affected. What is happening?



VT Troubleshooting

I turned on the machine and this pops up. It says no nozzles are affected. What is happening?

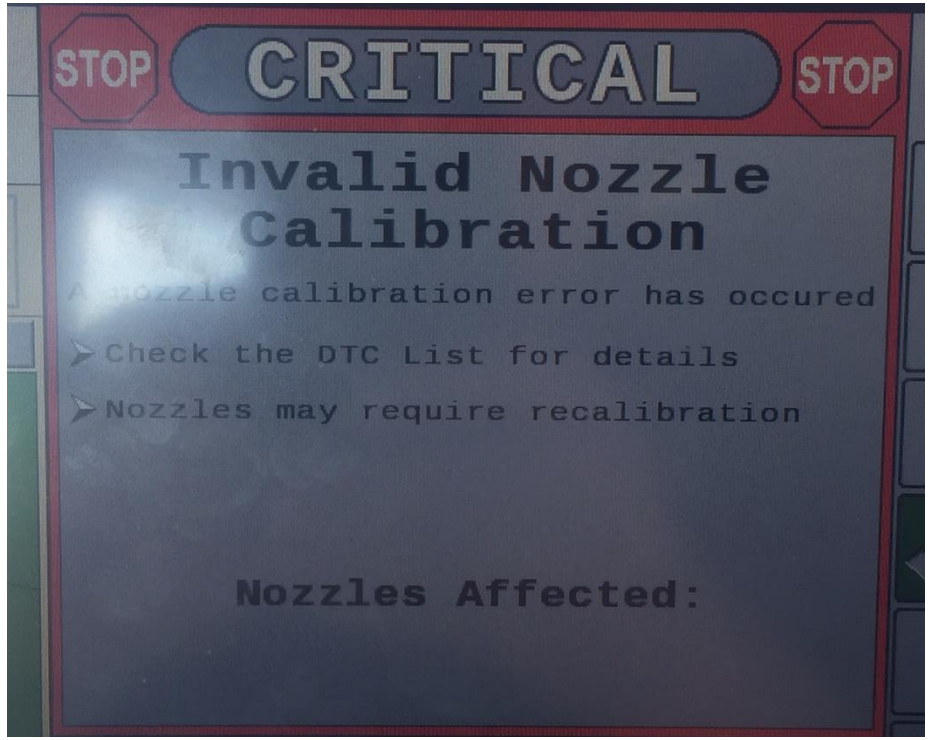
In this case there was a short in the switched power system that caused a couple solenoids to loose all power for a couple seconds and then power back on. Try and locate the short; a re-calibration may be required.



VT Troubleshooting

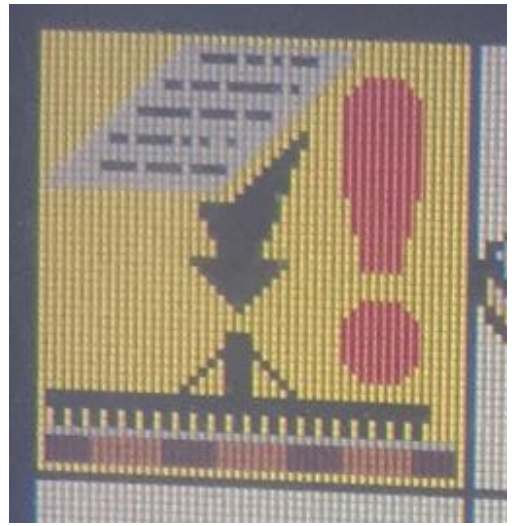
I turned on the machine and this pops up. It says no nozzles are affected. What is happening?

You can go through the nozzle diagnosing screen to see where the problem starts. The solenoids work like Christmas lights, where if the switched power going into one is cut, the rest of the line wont work.



VT Troubleshooting

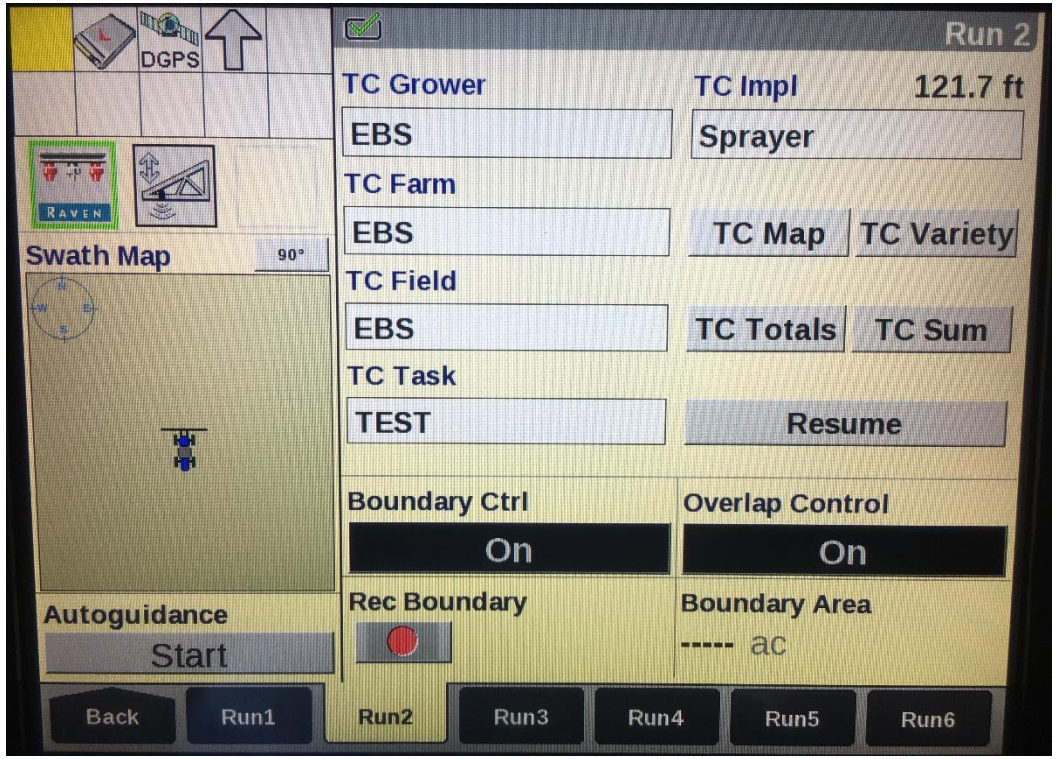
This is flashing at me in the top left corner and I cant spray anything. What is happening?



VT Troubleshooting

This is flashing at me in the top left corner and I cant spray anything. What is happening?

You don’t have a job started. Usually on runscreen 2 you need a grower, farm, field, and task, as well as a implement selected. Next you need to push “Start or Resume” and the icon on the top left will stop flashing.



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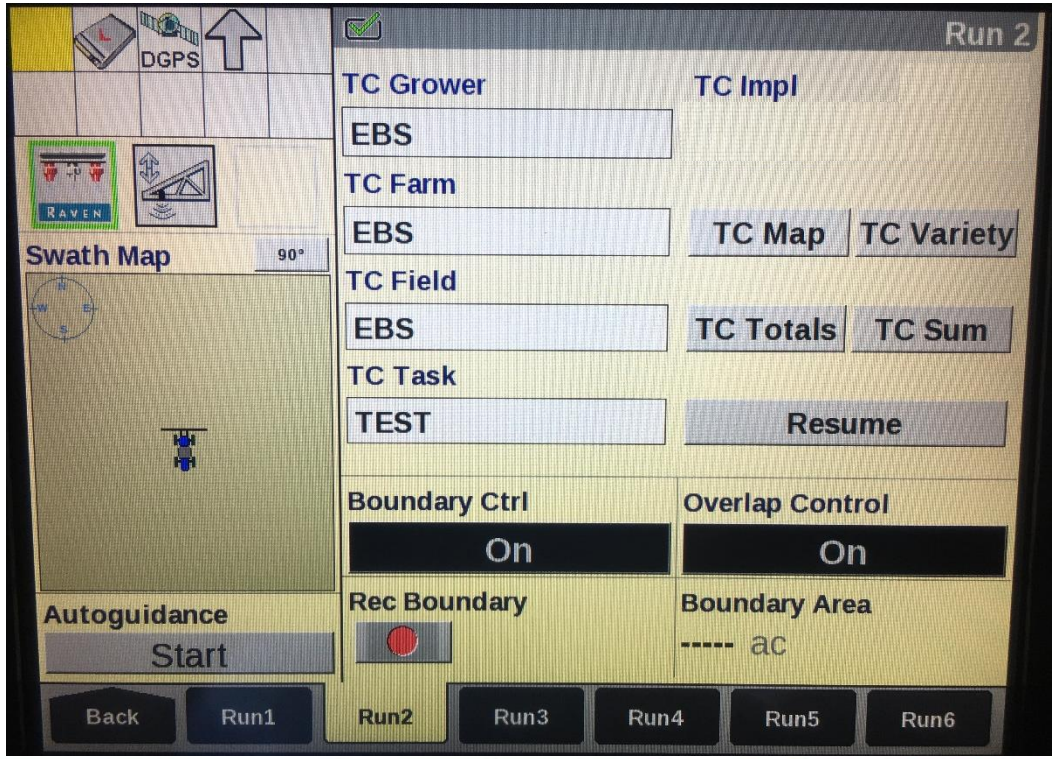
VT Troubleshooting

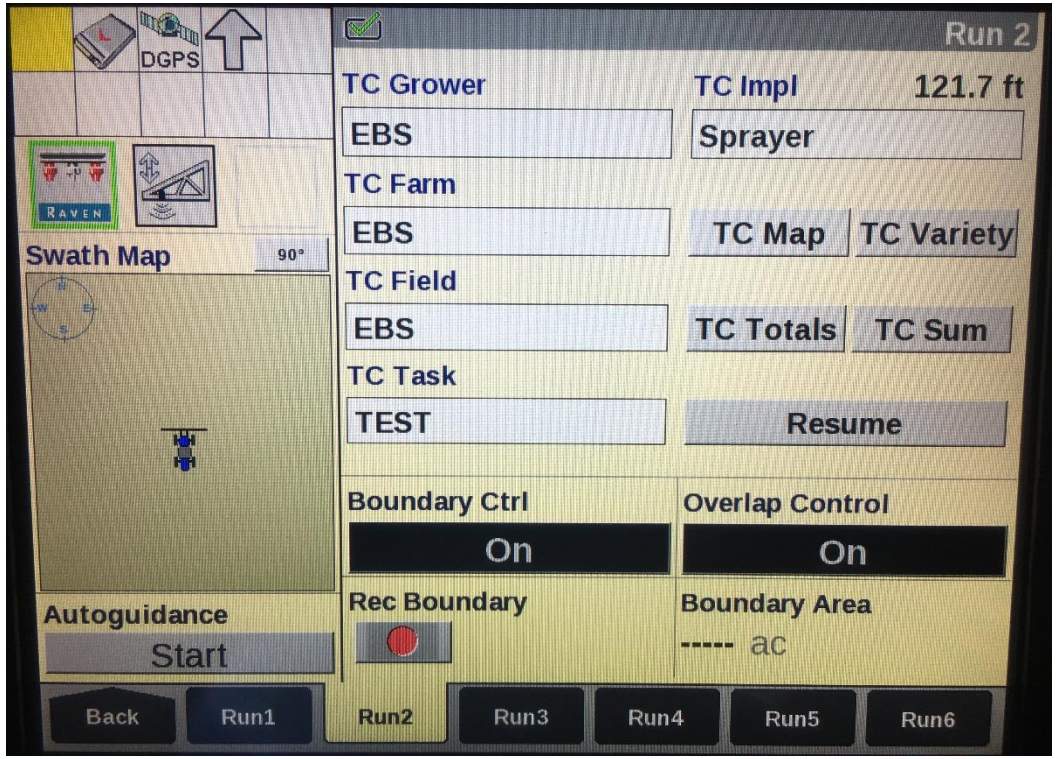
I can’t start a job because I Have No TC Implement. It wont let me select one. What is happening here?



VT Troubleshooting

I can’t start a job because I Have No TC Implement. It wont let me select one. What is happening here?

Usually when this happens there is a corrupt file in the ISOXML file on the USB drive. I recommend backing up the file onto your computer before deleting in case you need the files in the future. Bring back the clean USB and plug it back in. You should then be able to select a TC Implement.



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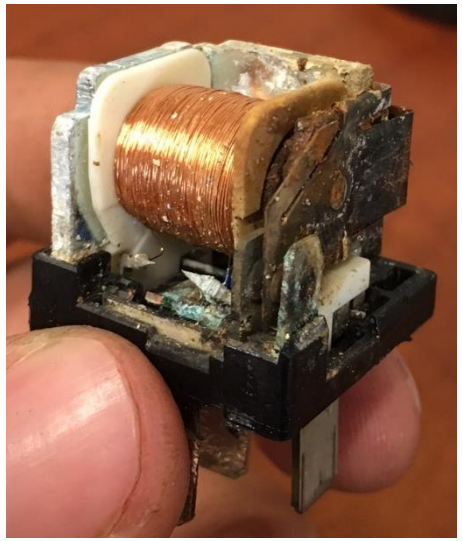
VT Troubleshooting

Lots of my nozzles show zero or low voltage. Sometimes when I restart they come back but others go offline maybe immediately, maybe a couple days later. What is happening here?

VT Troubleshooting

Lots of my nozzles show zero or low voltage. Sometimes when I restart they come back but others go offline maybe immediately, maybe a couple days later. What is happening here?

On the center boom there are three relays going up the lift arms. Each of these relays control voltage going to the solenoids. In this case, moisture got into the relays and caused them to work intermittently. When the boom is folded and cradled ensure that the relay covers are facing up and the wires are facing down. (Although the relay may look fine on the outside, the inside could look like this).



QUESTIONS?

Clear as Mud?

GUARDIAN

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