



**SETUP GUIDE
LQS120FC**

**CNHi RAVEN RATE CONTROL MODULE
SINGLE LIQUID – SECTION CONTROL**

DOCUMENT NO.	MAN0043
REVISION	A
REVISION DATE	6/09/2023

Overview

This document provides instructions for setting up a Liquid Systems (SA) Rate Control Module with a Raven ISOBUS controller. These instructions were developed and tested with a Raven Rate Control Module (RCM) connected to an ISOBUS compatible display. The scenario covers set up of single liquid system being controlled by the Raven RCM with section control.

This document should be read in conjunction with Raven RCM Operator’s Manual.



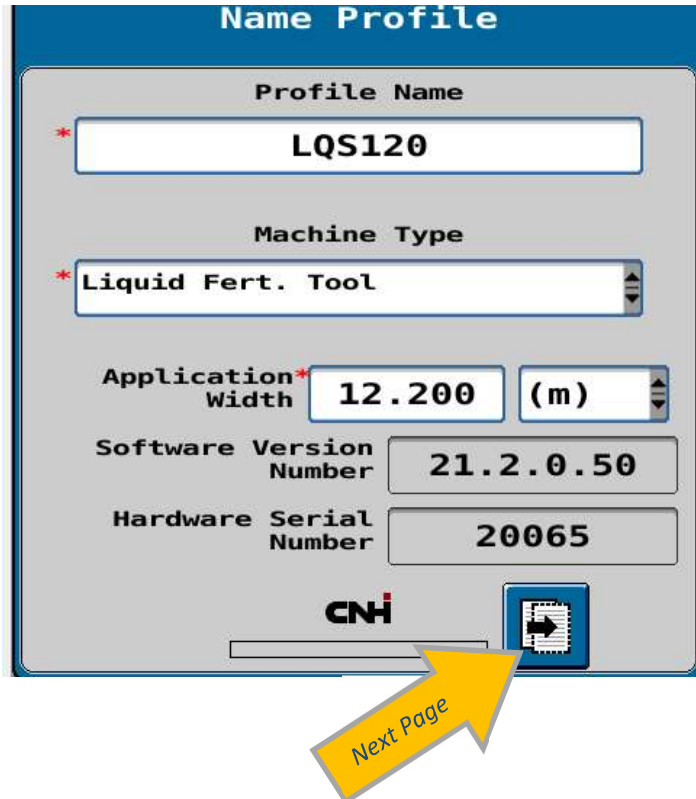
Configuration Prerequisites

Before the system can be configured in an ISOBUS compatible display following steps need to be completed.

- Physical installation of a Liquid Systems (SA) Rate Control Module including tank plumbing.
- Physical installation of a Stacker distribution system on the tool bar or planter.
- Installation and connection of a Raven RCM to the display unit with a Front Extension Harness.
- Connection of a Foot Switch (Master Switch) to the Front Extension Harness using the Raven Foot Switch cable.
- Verify ISOBUS connection of in cab display to Raven RCM. An Icon representing the Raven Controller should appear on screen.
- If required, install Height Switch on planting implement.
- Fill product tanks with enough water to conduct testing.

Raven Liquid Control Setup

1. Create an appropriate **Profile Name**. Select **Liquid Fert Tool** from Machine Type drop down menu. Enter **Application Width** and press **Next Page** (right arrow) button.



Name Profile

Profile Name
* LQS120

Machine Type
* Liquid Fert. Tool

Application Width* 12.200 (m)

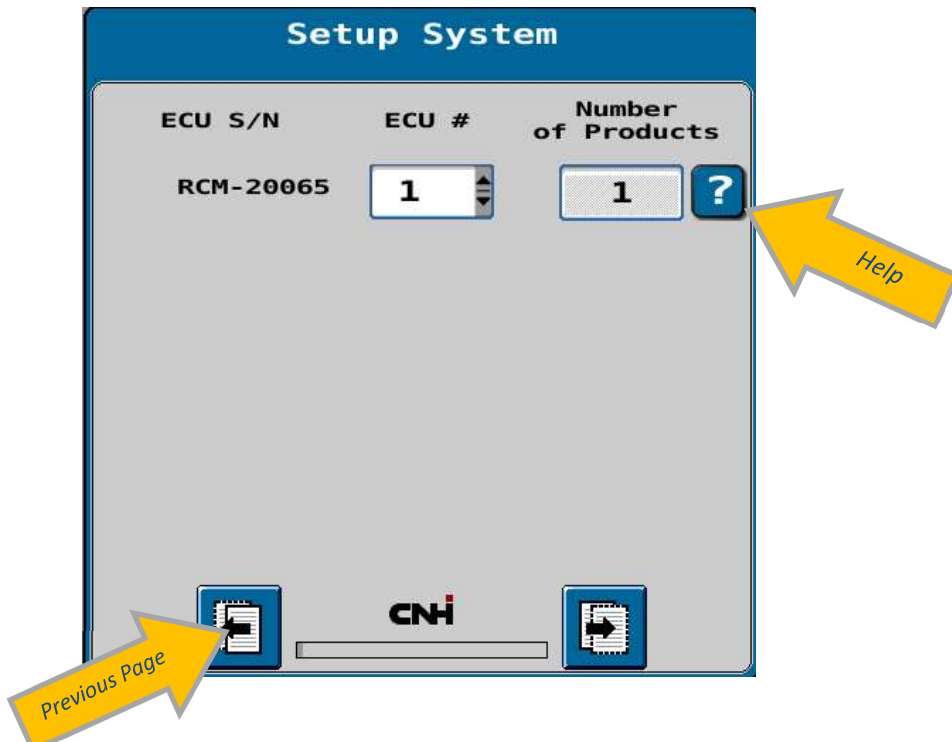
Software Version Number 21.2.0.50

Hardware Serial Number 20065

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Next Page

2. Enter **1** for Number of Products and press **Next Page** button. Press **Previous Page** (left arrow) button to go back & re-enter data any time if required. Press **Help** button If any clarification is needed with set up.



Setup System

ECU S/N	ECU #	Number of Products
RCM-20065	1	1 ?

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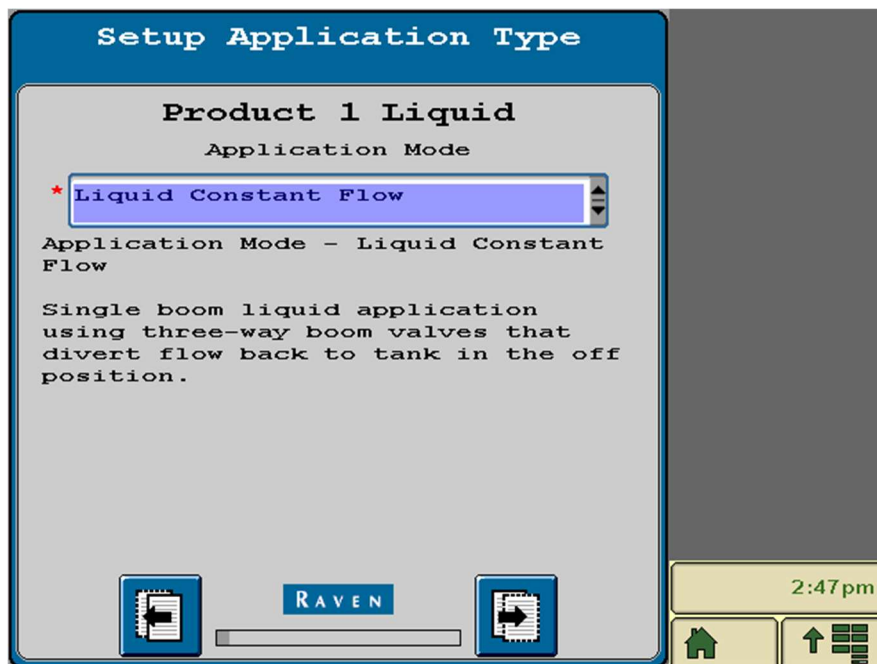
Previous Page

Help

3. Select **Liquid (L)** from Application Type drop down menu and press **Next Page** button.



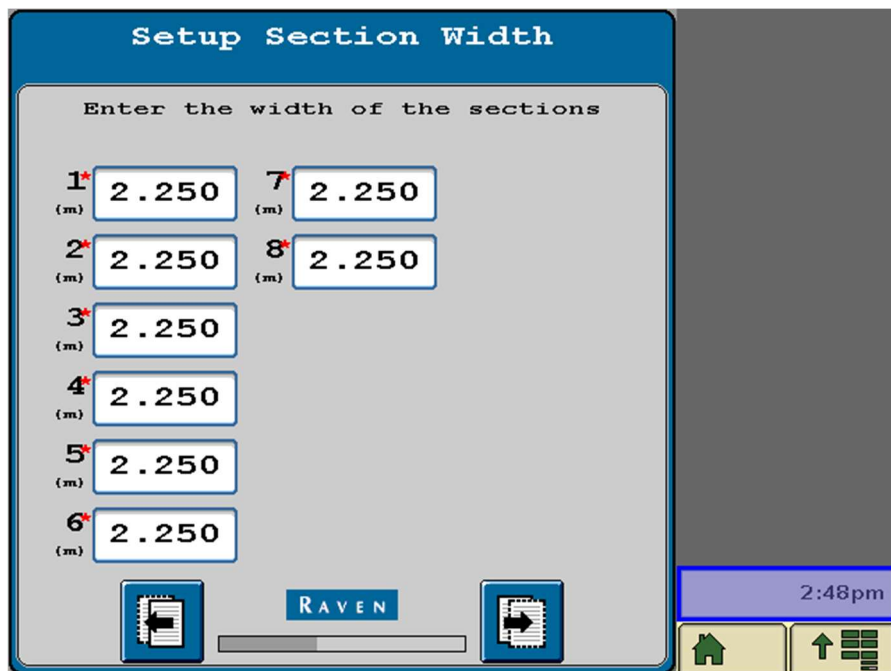
4. Confirm Application Mode as '**Liquid Constant Flow**' for Product 1 and press **Next Page** button.



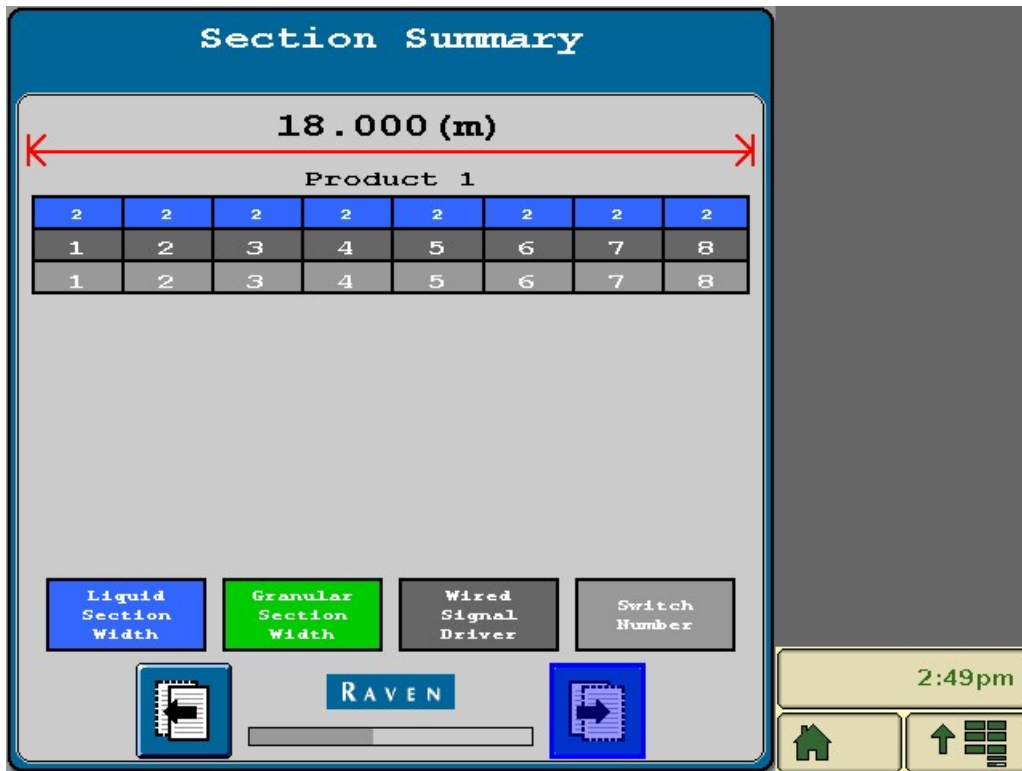
5. Enter Number of Sections, select '3-Wire' for Valve Type. If all sections are equal tick the Equal Width Section box. Press **Next Page** button.



6. Enter Section Widths and press **Next Page** button.



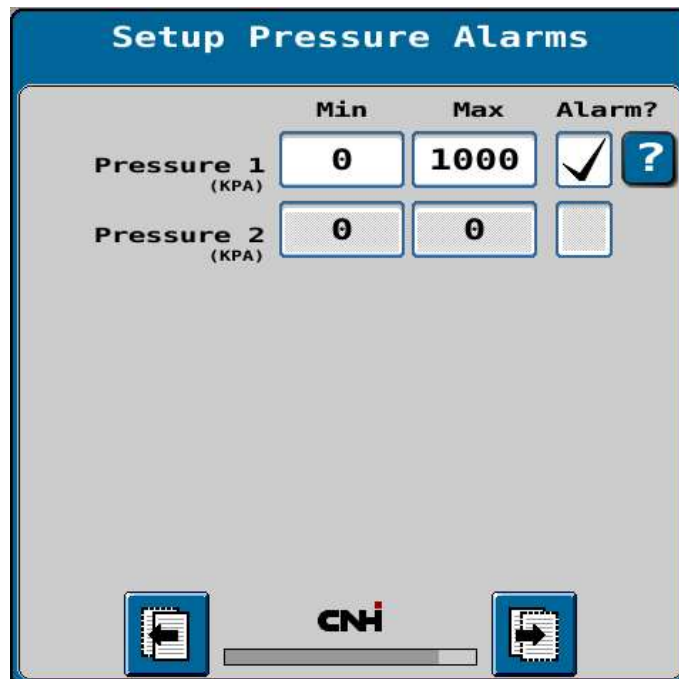
- Review Section Summary and press **Next Page**.



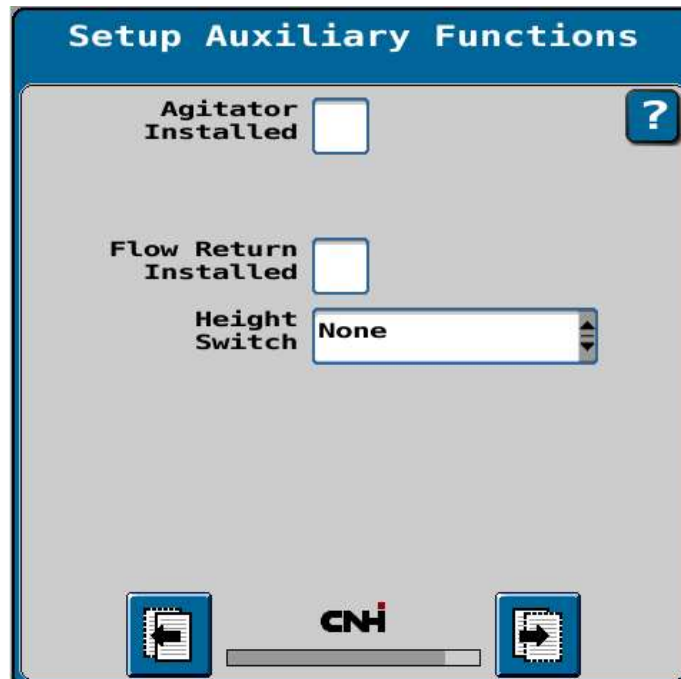
- Select **Custom** for Pressure Sensor Type from drop down menu for Product 1 and press **Next Page** button.



- Enter **0 kPa** for Minimum & **1000 kPa** for Maximum pressure alarm settings. Tick the Alarm box to trigger an audible alarm for system pressure readings outside the set limits. Press **Next Page** button.



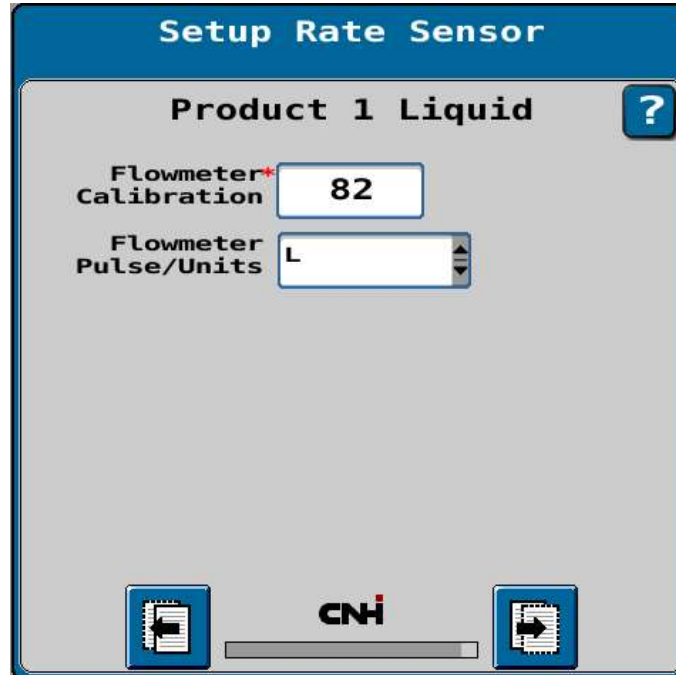
10. Leave Agitator and Flow return unselected, if a height switch is used, select and setup accordingly.



11. Enter following Control Valve settings for Product 1 as a starting point. Settings can be adjusted later if rate control is erratic. Press **Next Page** button. Refer to Help button for each parameter and their impact on rate control.

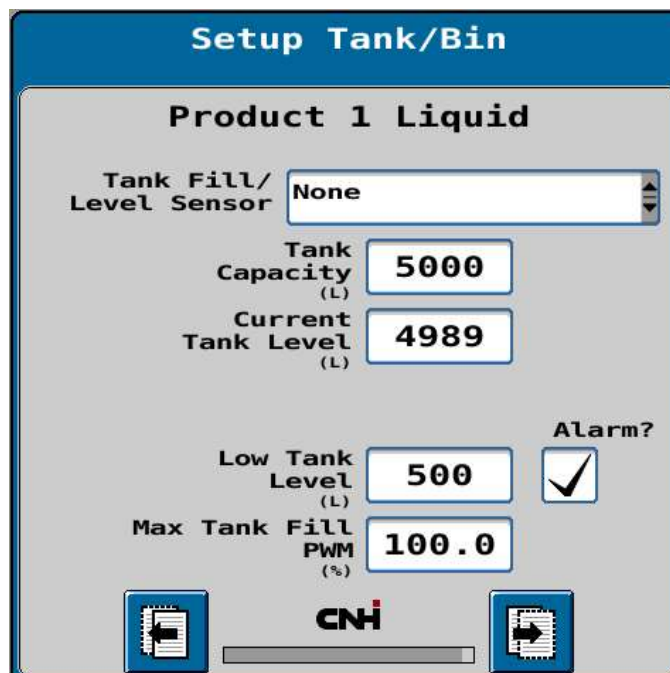


12. Enter Flowmeter Calibration factor for Product 1 and press **Next Page** button. Refer to table below for applicable factor for various types of flowmeters.

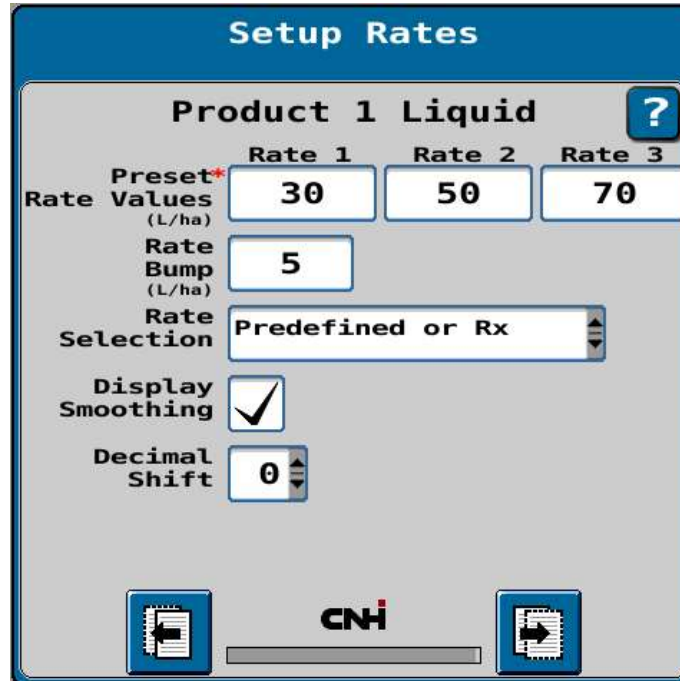


Flowmeter Calibration Factor	Flowmeter Type	Pulses/Litre
	Tee Jet 801	82
	ARAG Orion 2 0.5-10 L/min	6,000
	ARAG Orion 2 1-20 L/min	3,000
	ARAG Orion 2 2.5-50L/min	1200

13. Enter tank parameters for Product 1 and press **Next Page** button.



14. Enter target application rates for Product 1. Refer to Help button for guidance with set up. Press **Next Page** button when data entry is complete.



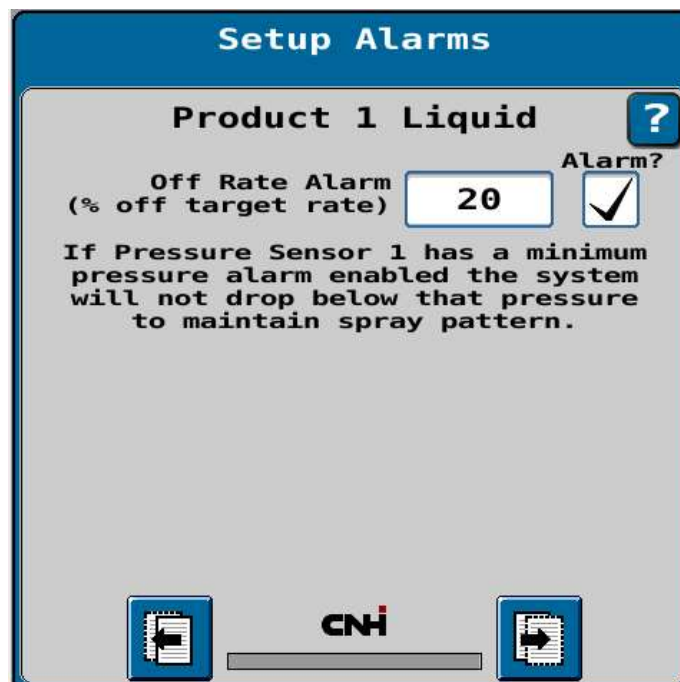
Setup Rates

Product 1 Liquid ?

	Rate 1	Rate 2	Rate 3
Preset* Rate Values (L/ha)	30	50	70
Rate Bump (L/ha)	5		
Rate Selection	Predefined or Rx		
Display Smoothing	<input checked="" type="checkbox"/>		
Decimal Shift	0		

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15. Enter Alarm parameters for off target rate % and press **Next Page** button.



Setup Alarms

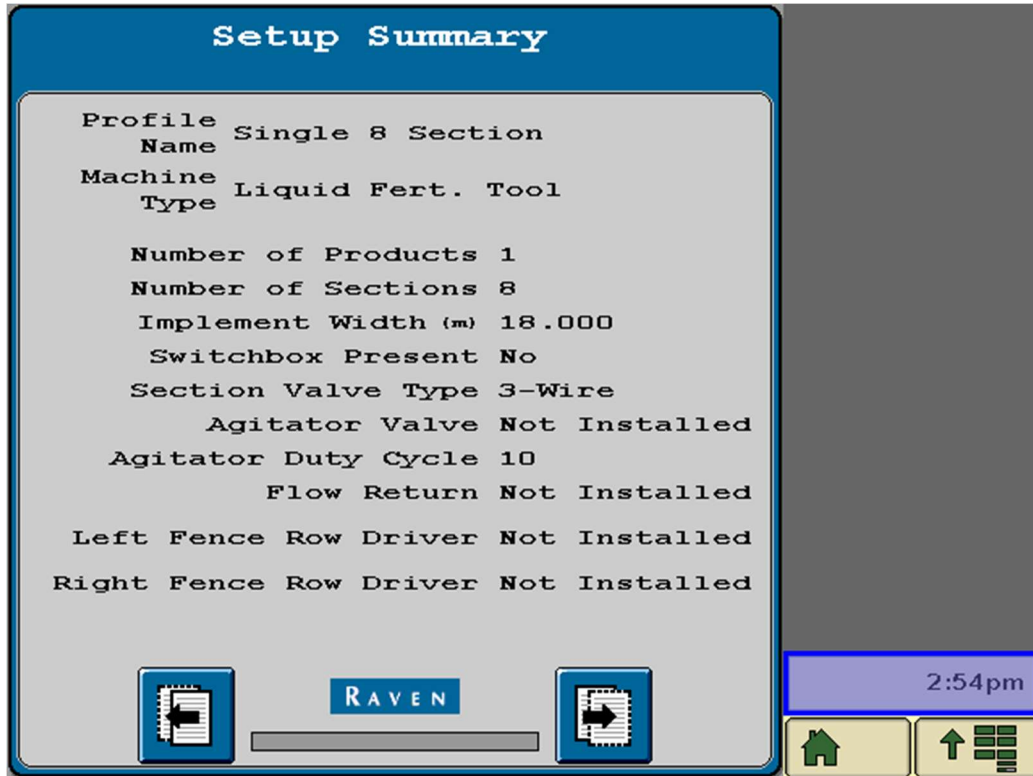
Product 1 Liquid ?

Off Rate Alarm (Alarm?)
(% off target rate) 20

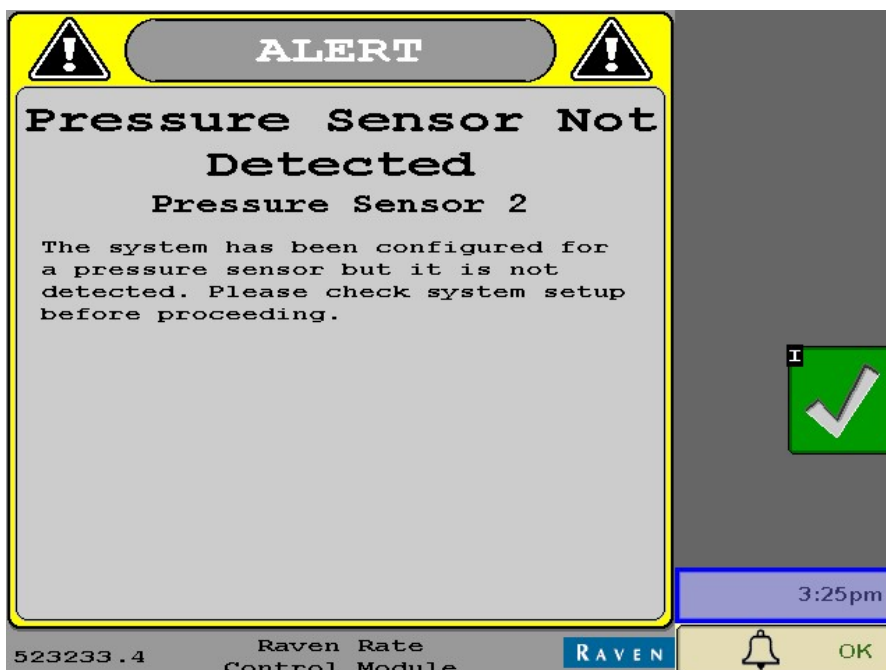
If Pressure Sensor 1 has a minimum pressure alarm enabled the system will not drop below that pressure to maintain spray pattern.

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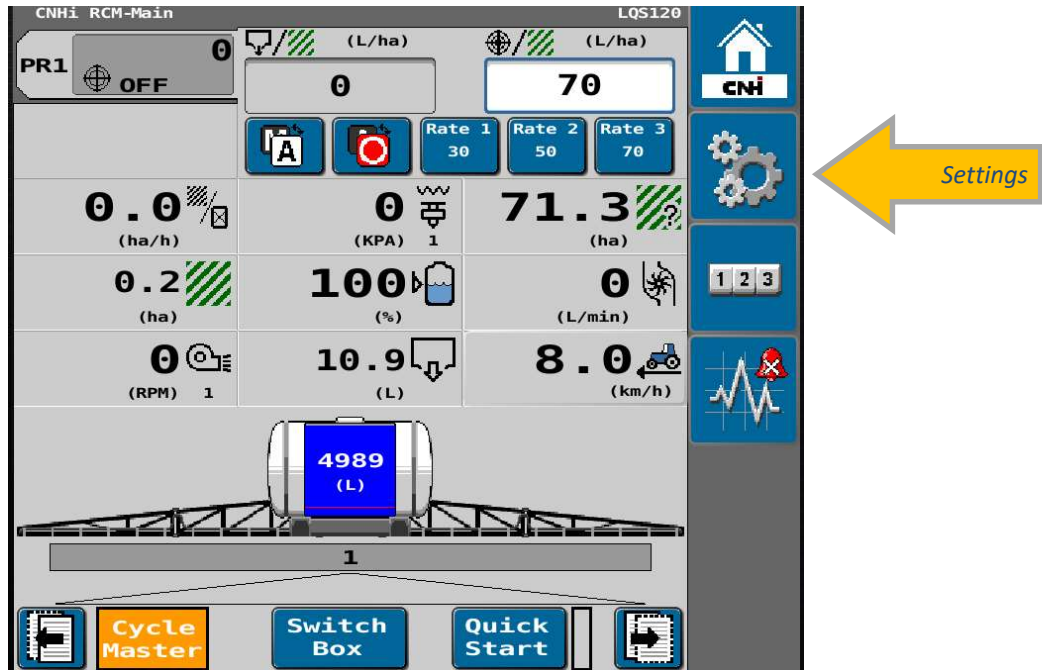
16. Review Setup summary. Press **Next Page** button to continue or press Previous Page button to go back and edit data.



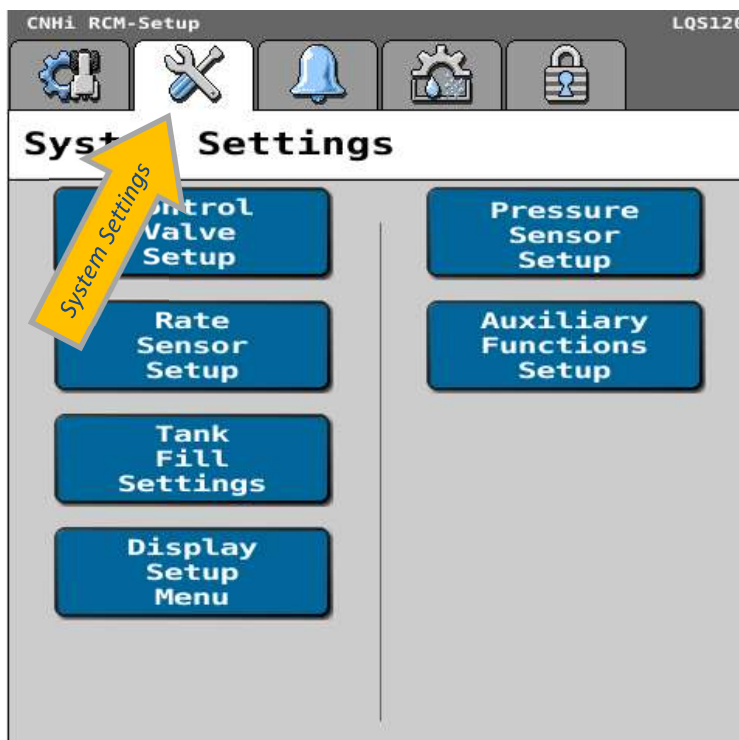
17. Ignore this alert and press **Green Tick** button to proceed to pressure sensor set up.



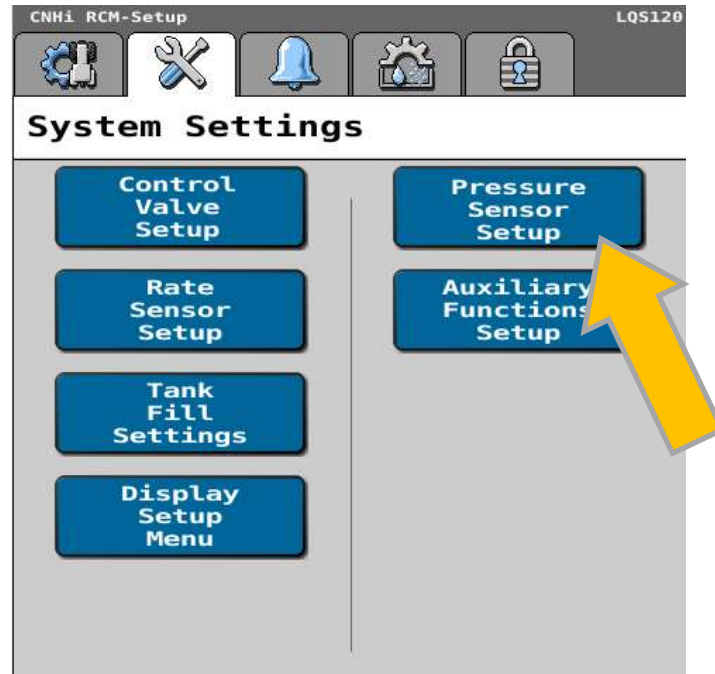
18. Select **Settings** from the Set-up screen.



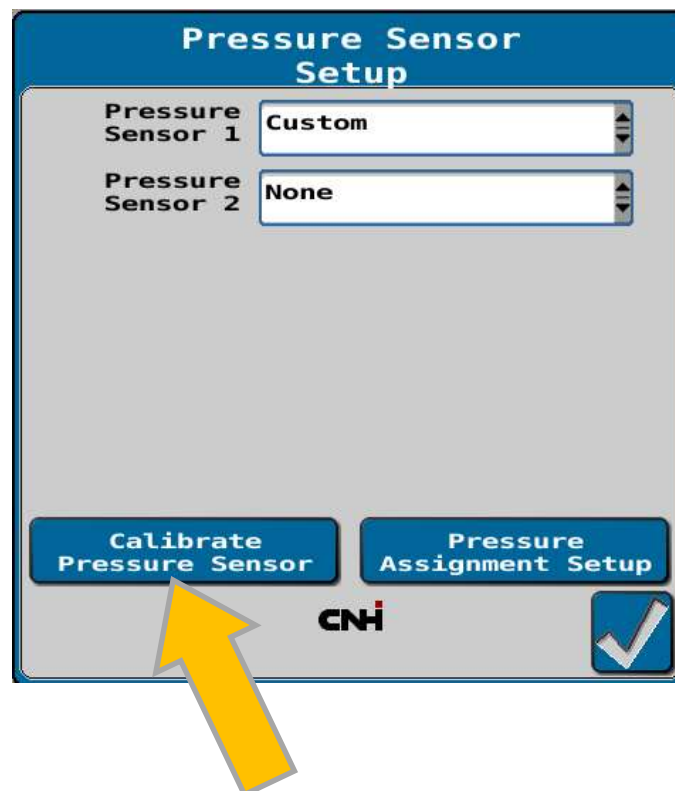
19. Select **System Settings** tab.



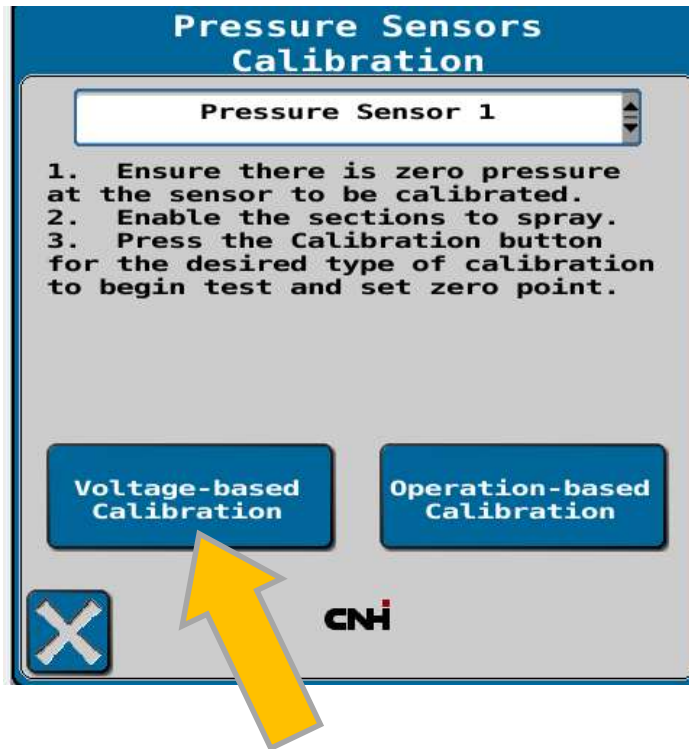
20. Select **Pressure Sensor Setup**.



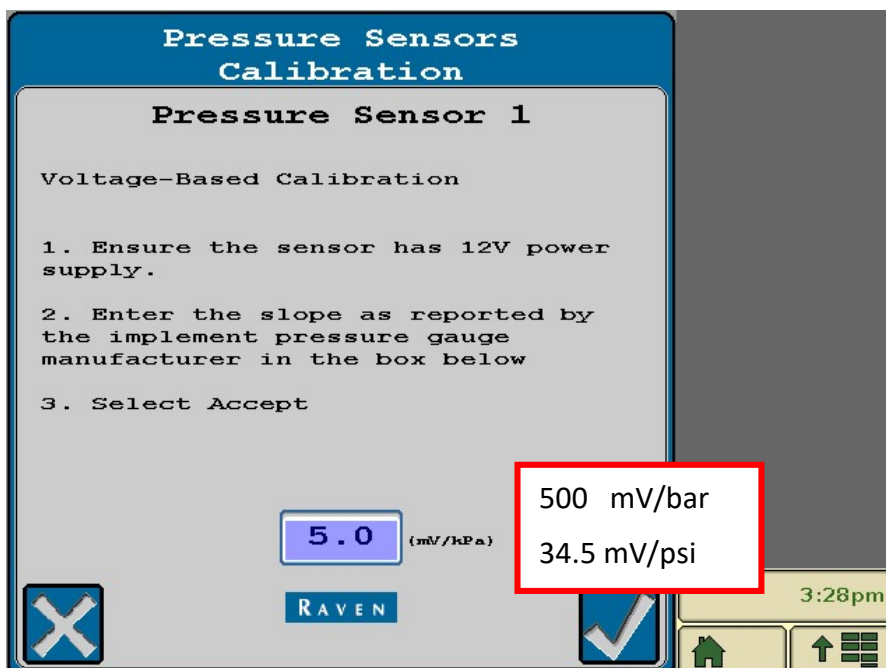
21. Select **Calibrate Pressure Sensor** option and press **Blue Tick** button.



22. Ensure pump is **NOT** running. select **Pressure Sensor 1** from the drop-down menu and select **Voltage-based Calibration**.



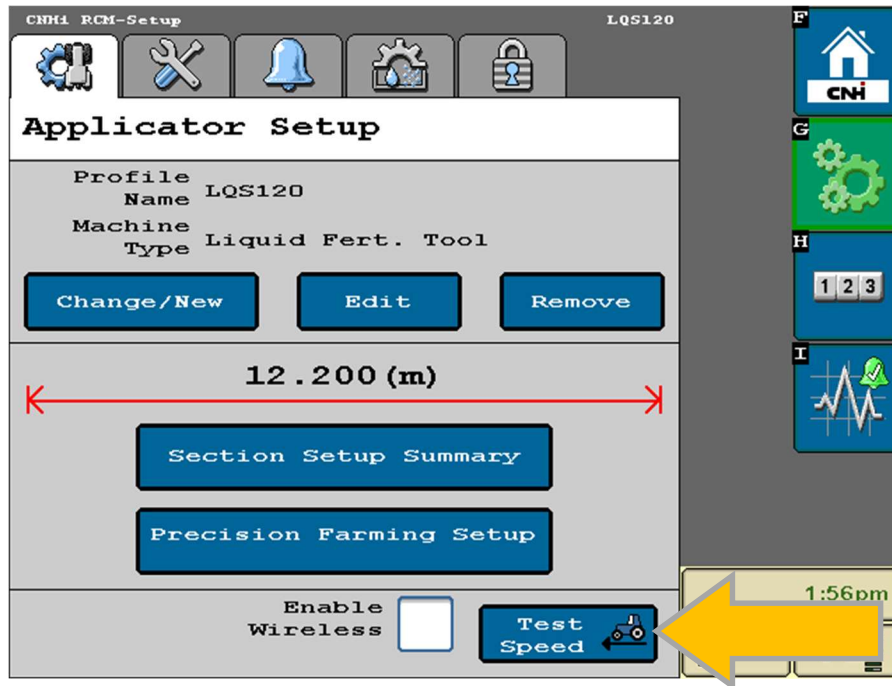
23. Enter Pressure Sensor Calibration factor 5mV/kPa : 500mV/bar : 34.5mV/psi
Press **Blue Tick** button to save settings.



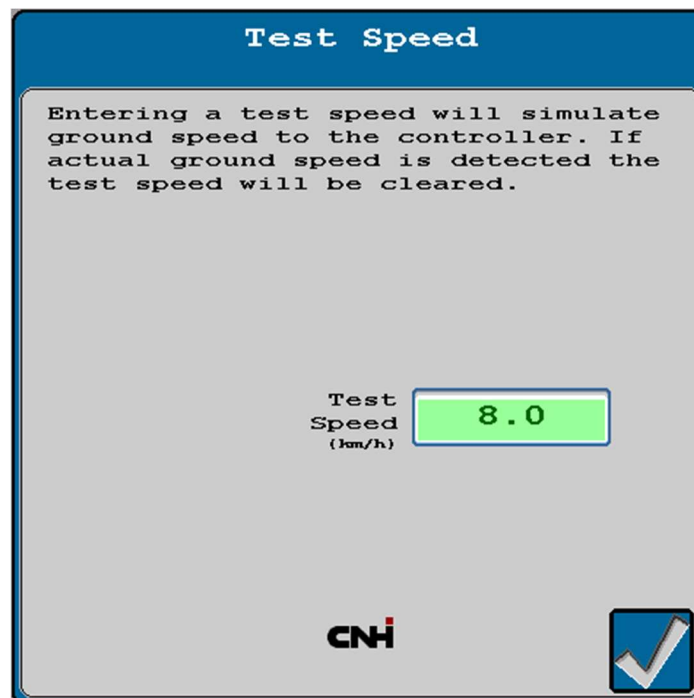
System Set Up Verification Tests

Start the pump and perform a stationary test to verify control settings.

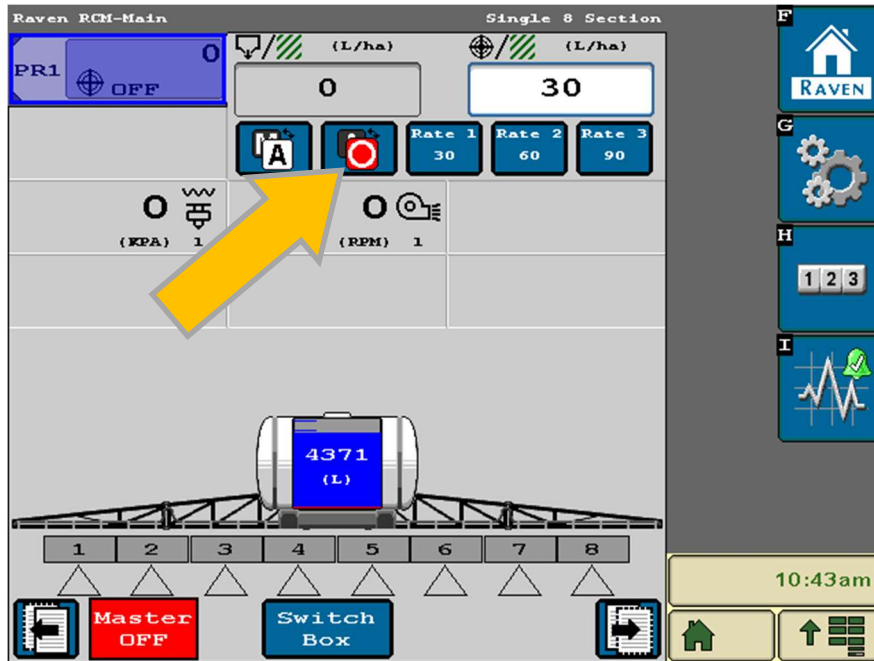
1. Enter the settings menu, and select **Test Speed**



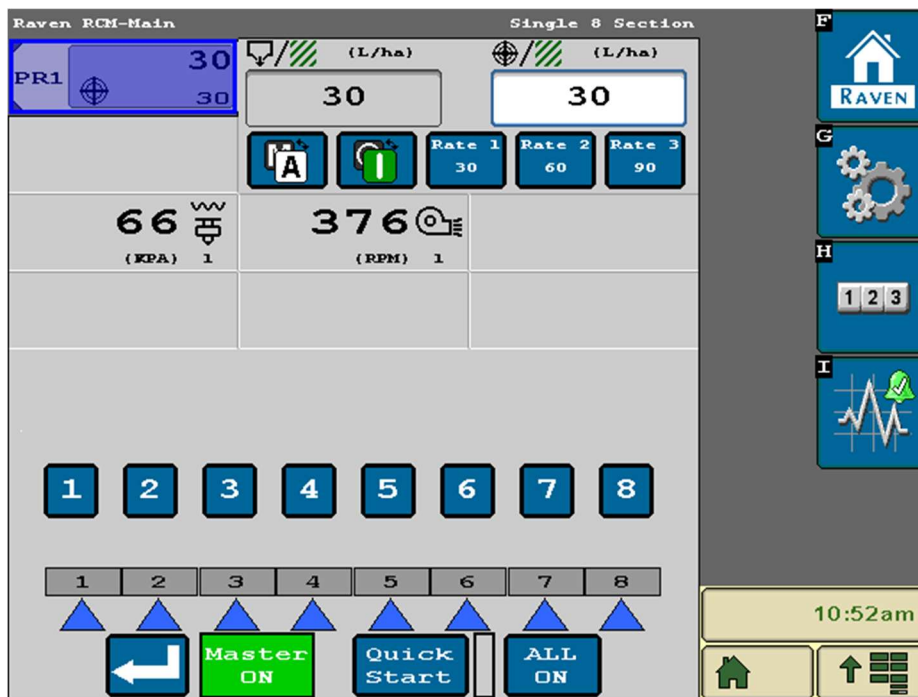
2. Enter a test speed and press **Accept** button to return to home screen



- Actual system pressure, flow and application readings should be displayed on the screen. Turn the master switch on and activate the liquid product.



- Vary the application rates to test the control system is performing correctly across the entire set up range. Turn the master switch (foot switch) off to terminate the test.



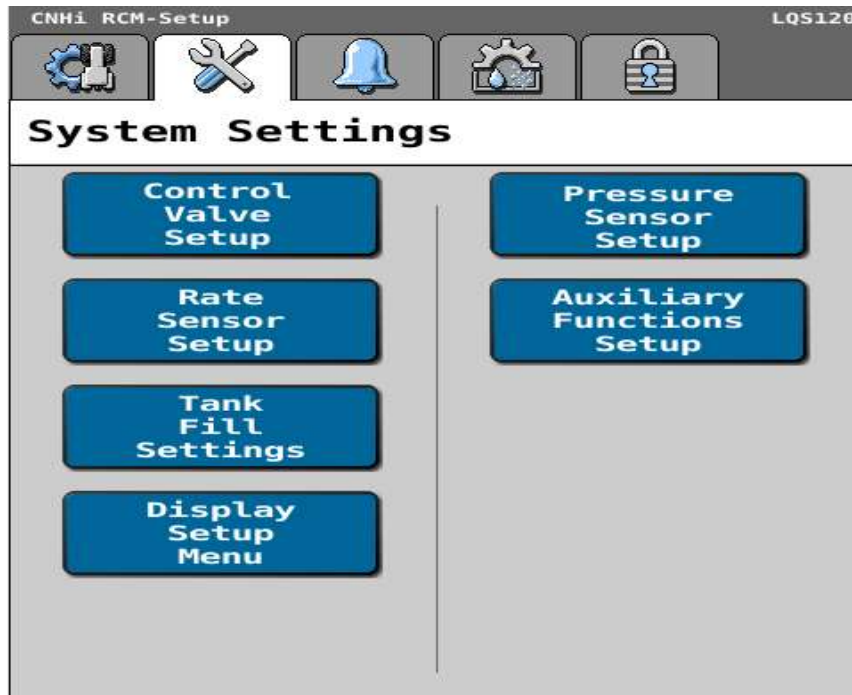
System Stability and Application Consistency

If the system is unstable or is unable to maintain a consistent application rate, set up parameters can be adjusted to improve performance. Return to Control Valve set up page and adjust control parameters. Refer to Help button for impact of adjusting each parameter on system stability and consistency.

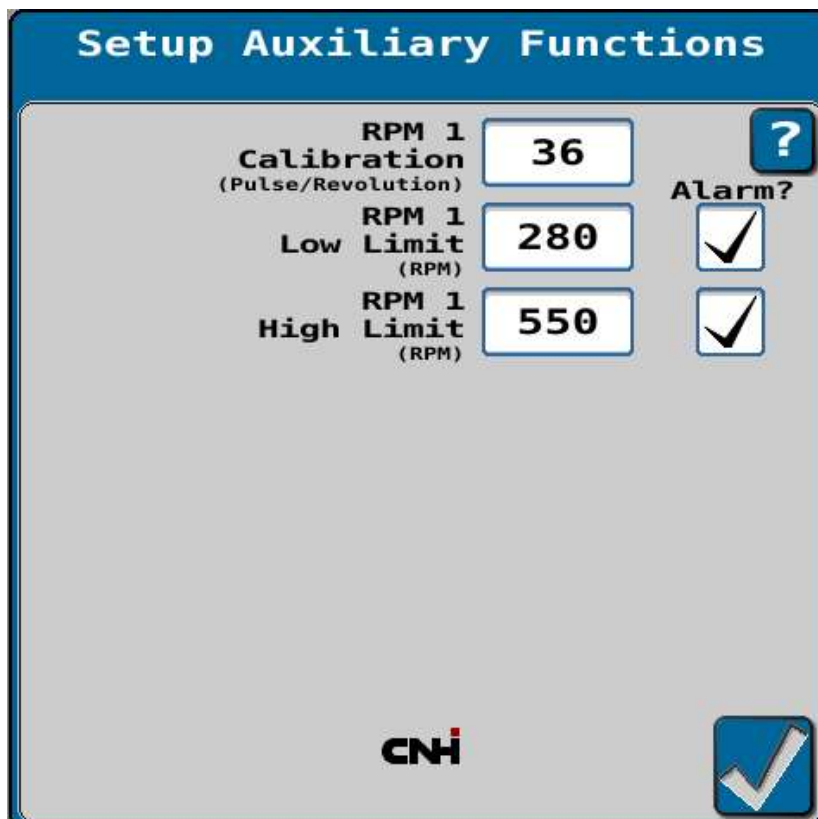


RPM Sensor Integration

1. Return to **System Settings** Screen and select **Auxiliary Functions Setup**.



2. Enter RPM calibration of **36** and **Low and High RPM** alarm limits. Tick the Alarm box to trigger an audible alarm for RPM readings outside the set limits. Press **Next Page** button to save settings.



Run Screen Setup & Operation

Raven RCM can be configured to display a variety of operational information. Selecting various fields and parameters as shown in the following screen image provides a useful set of information for monitoring of liquid application in real time.

