



SETUP GUIDE

JOHN DEERE RATE CONTROLLER 2000

SINGLE LIQUID - SECTION CONTROL

| | |
|---------------|------------|
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| REVISION DATE | 27/01/2026 |

Overview

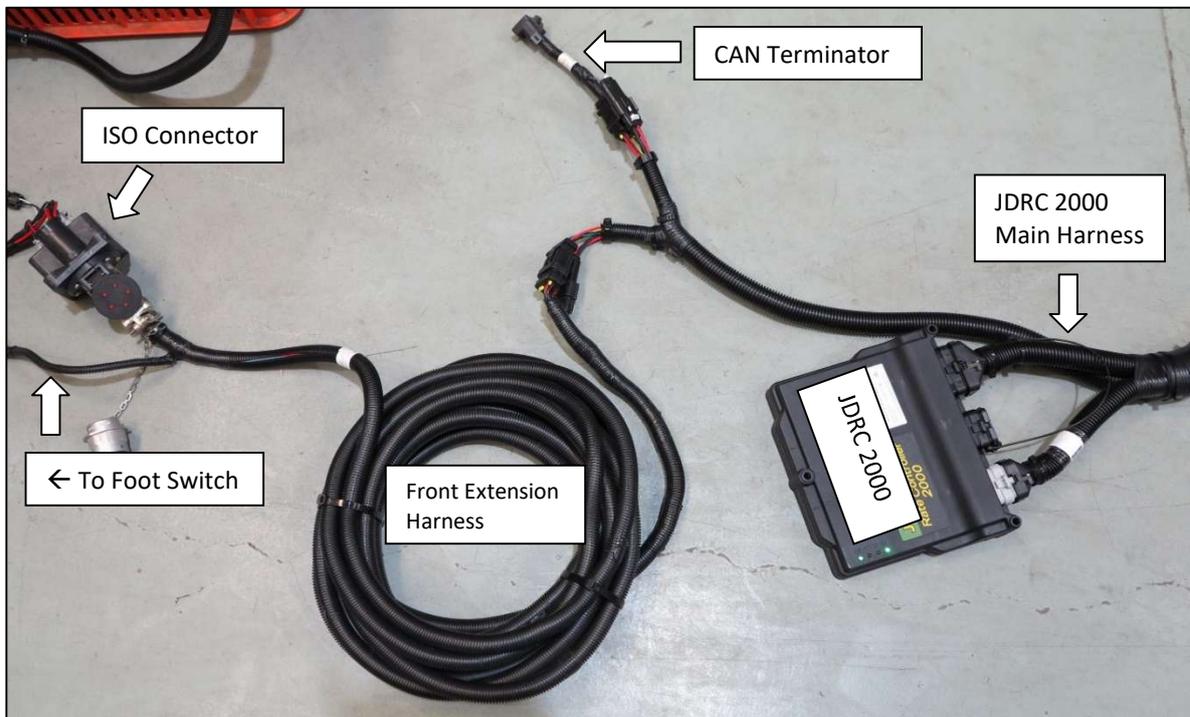
This document provides instructions for setting up a Liquid Systems (SA) Rate Control Module with a John Deere Greenstar Display using a John Deere Rate Controller 2000 (JDRC 2000). The scenario covers setup of a single liquid system with section control where it is the one and only product being controlled by the JDRC 2000.

This document should be read in conjunction with JDRC 2000 Operator’s Manual.

Configuration Prerequisites

Before the liquid system can be configured in the Greenstar Display (2630 or newer), the following steps need to be completed.

- Physical installation of Liquid Systems (SA) Rate Control module including tank plumbing.
- Installation and connection of JDRC 2000 to the Greenstar Display with Front Extension Harness and Foot Switch – see photo below.
- Installation of Height Switch on planting implement if required.



Physical Connection to Liquid Systems module

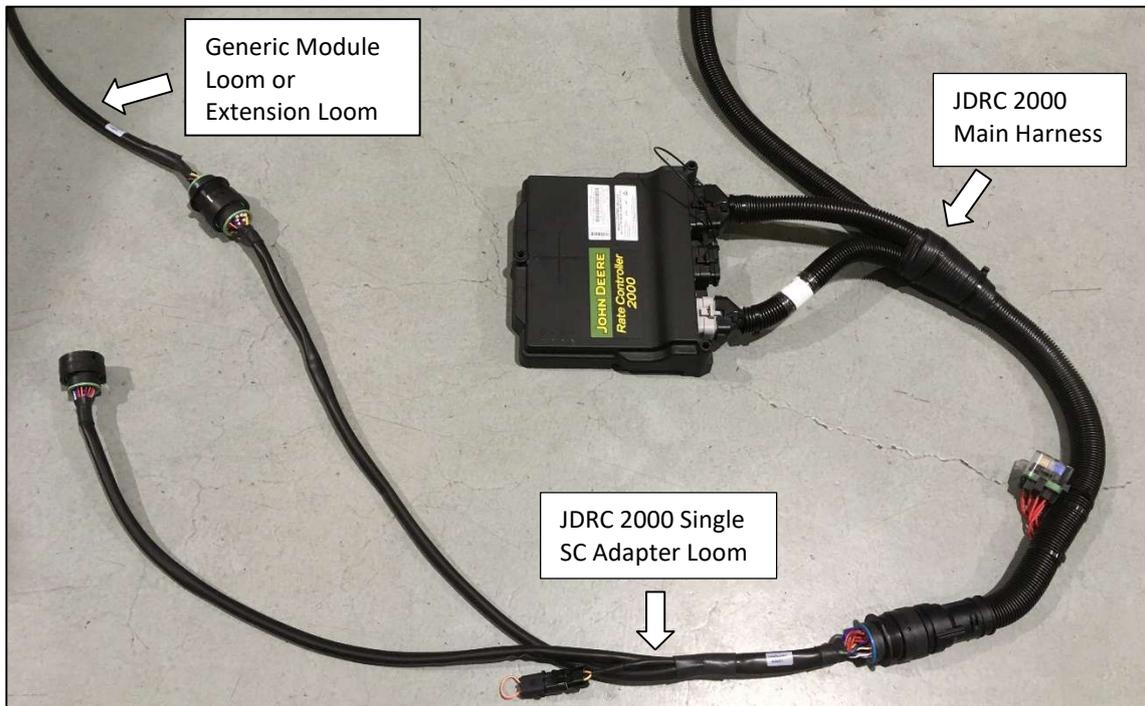
Connect Liquid Systems (SA) module to the JDRC 2000 with wiring looms supplied.
Liquid Systems (SA) looms available for single liquid set up with section control are:

| Part No. | Name | | Description |
|--|---|--|---|
| LL07019 | JDRC2000 Single SC Adapter Loom (47 pin) |  | Adapter that connects to 47 pin connector on JDRC 2000 Main Harness. |
| LL07072 | Generic Module Loom (5m) |  | Connects to individual device connectors on LQS pump module. Connects to LL07019 Adapter Loom via 23 pin circular connector. |
| LL07015 (optional) or LL07020 (optional) | Generic Module Loom Extension (6m) Generic Module Loom Extension (12m) |  | Extensions of Generic Module Loom for when additional length is required from LQS pump module to JDRC 2000. |
| LL07086 or LL07087 Or LL07090 | Section Loom (6 Section, 6m) Section Loom (8 Section, 6m) Section Loom (12 Section, 6m) |  | Connects to individual section valve connectors on LQS section module. Connects to LL07019 Adapter Loom via 20 pin circular connector. |
| LL07014 (optional) or LL07021 (optional) | Section Loom Extension (12 Section, 6m) Section Loom Extension (12 Section, 12m) |  | Extensions of Section Loom for when additional length is required from LQS section module to JDRC 2000. |

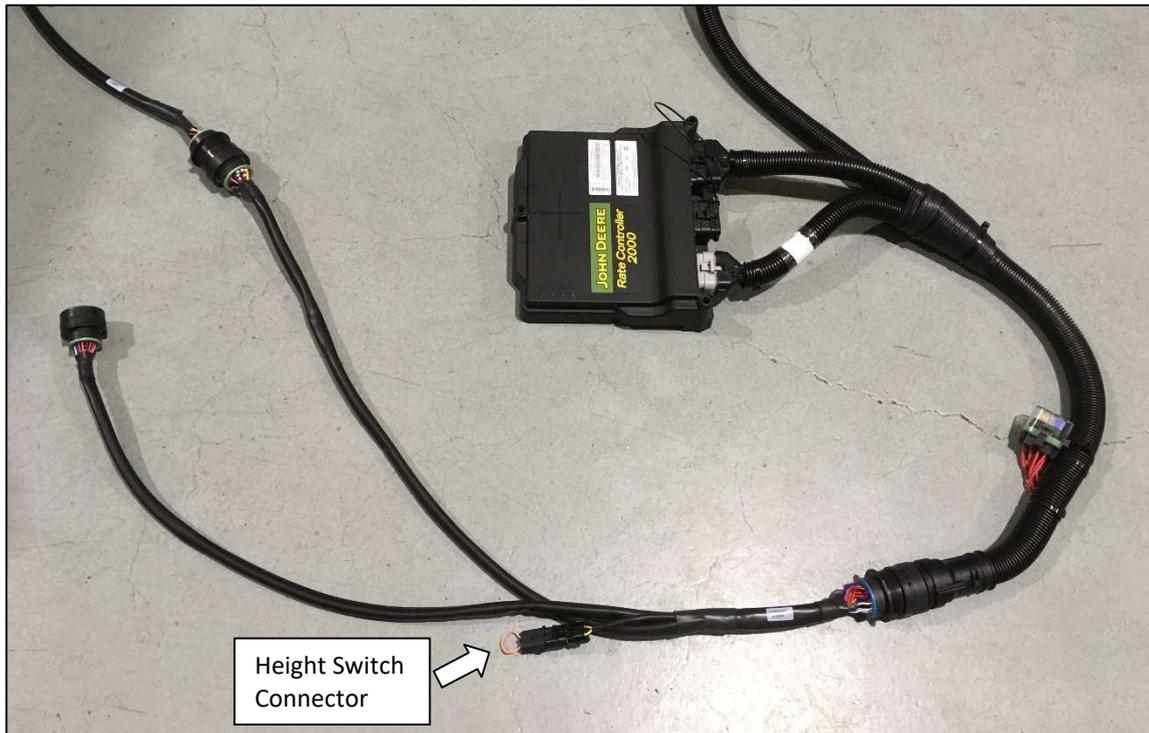
1. Connect Generic Module Loom (LL07072) to device connector on Liquid Systems (SA) module, ensuring connector is securely clipped in.



2. Connect and route Extension Loom (LL07015 or LL07020) to reach JDRC 2000 if required for the routing distance.
3. Connect JDRC 2000 Single SC Adapter Loom (LL07019) to the Generic Module Loom (or Extension Loom if installed) and to the JDRC 2000 Main Harness.



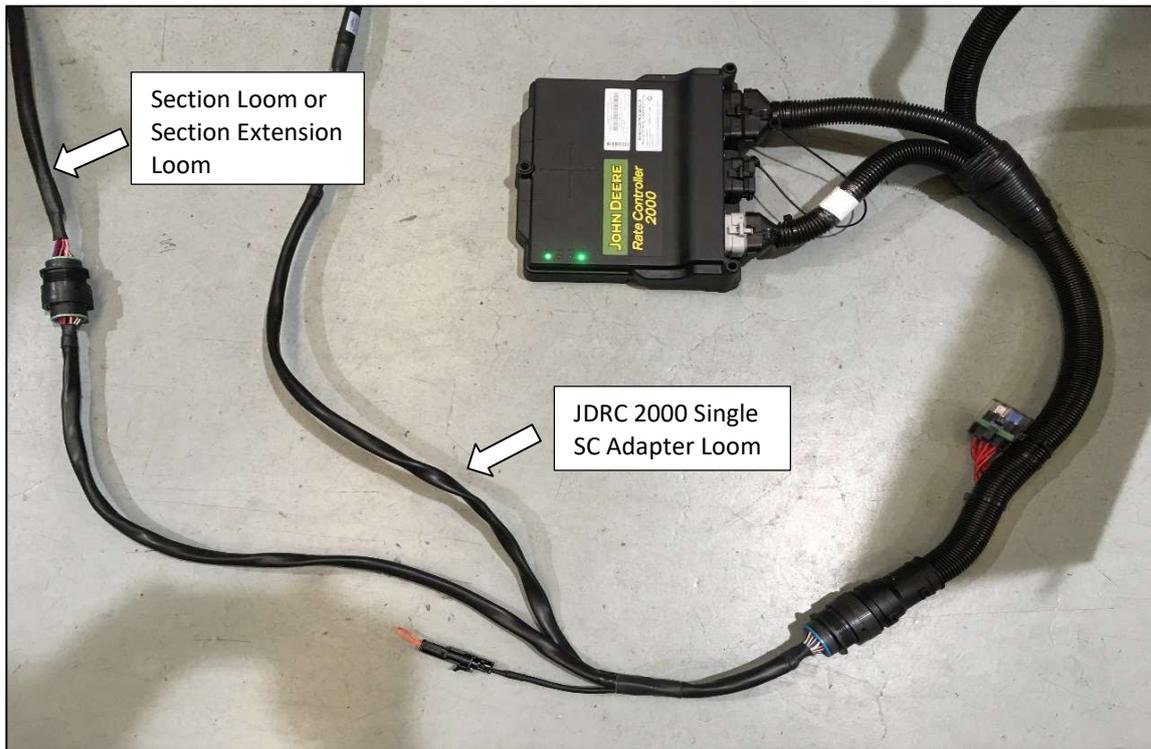
4. If installed connect Height Switch to height switch input on Adapter Loom (LL07019).



5. Connect Section Loom (LL07079 or LL07080 or LL07082) to individual connectors on the Liquid Systems (SA) section module. Ensure section valve number matches connector number. e.g. valve No. 1 plugs in to connector No.1. Insert dust plugs into un-used connectors on the Section Loom.



6. Route Section Loom towards JDRC 2000 module.
7. Connect and route Section Extension Loom (LL07014 or LL07021) to reach JDRC 2000 if required for the routing distance.
8. Connect JDRC 2000 Single SC Adapter (LL07019) to the Section Loom (or Section Extension Loom if installed) and to the JDRC 2000 Main Harness.



FLOW METER Identification & Settings-----

All Liquid Systems (SA) Pump and Rate Control Modules are available with multiple flow meter configurations to suit specific applications and flow rates. Each flow meter has a ‘Calibration Factor’ which needs to be input to the rate controller by the operator. If the incorrect calibration factor is used, the system will not operate correctly, and the applied rate will be incorrect. The below images and tables show the different flow meter and calibration factors.



IDENTIFICATION LABEL
 ARAG Flow Meters all appear visually the same, although can be identified by the label on the side. This label shows the range and calibration factor in pulses per litre.

TeeJet 801 Flow Meter (STD)

ARAG Flow Meters

| Flow Meter Variations & Calibration Setting | TeeJet 801 Flow Meter (Standard) | ARAG Electromagnetic Flow Meter | | |
|---|----------------------------------|---------------------------------|-------------|-------------|
| | | 2.5-50L/Min | 1.0-20L/Min | 0.5-10L/Min |
| Flowmeter Range | 7.5-250L/Min | 2.5-50L/Min | 1.0-20L/Min | 0.5-10L/Min |
| Pulses Per Litre | 82 | 1200 | 3000 | 6000 |
| Pulses Per US Gallon | 310 | 4542 | 11355 | 22710 |
| Pulses Per Imperial Gallon | 373 | 5455 | 13638 | 27277 |

SHUTOFF VALVE Identification & Settings-----

LQS Modules are built with 3 different Fast-Shutoff Valves, the images below show the difference between the two KZ Valves and TeeJet Valve.

KZ Valve- L03067



KZ Valve- L03085 (STD)



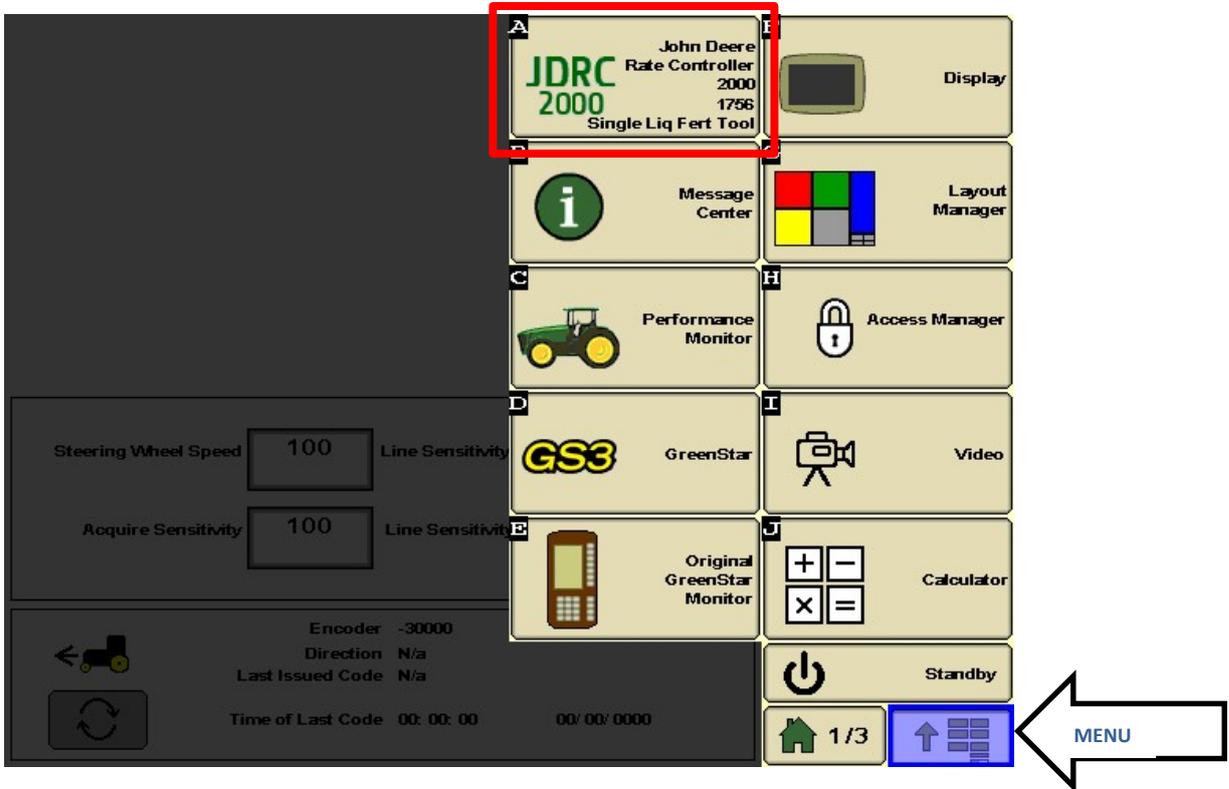
TeeJet Valve



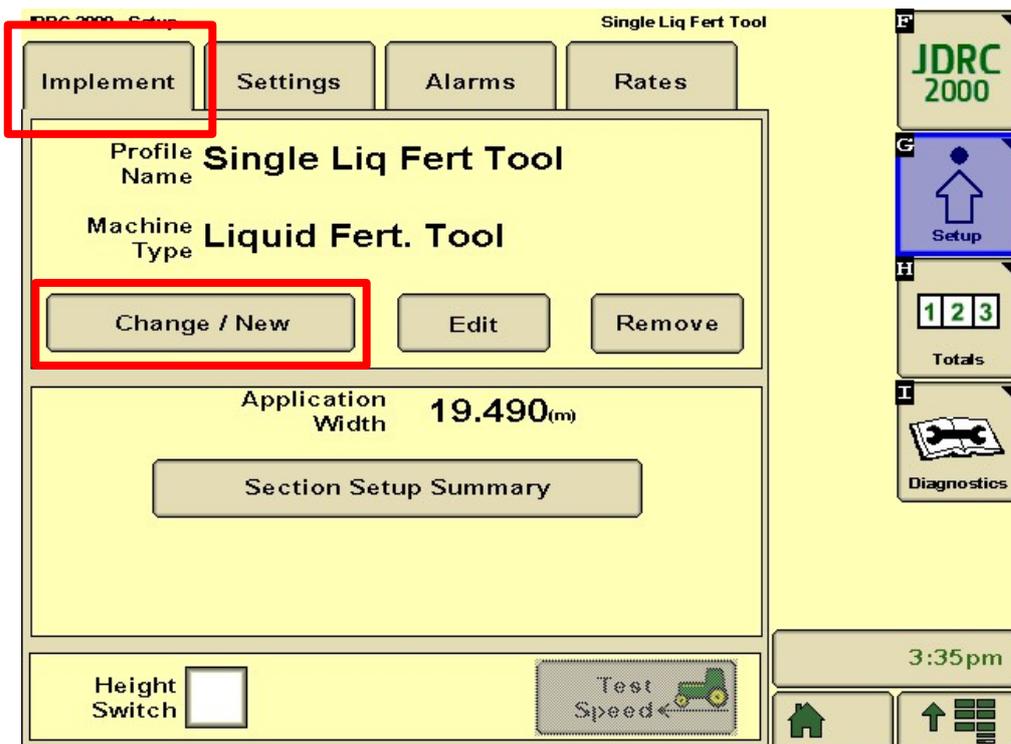
| Shut off VALVE TYPE | Modules Pre 2025 | | | Modules 2025 – BPOD <i>Note: BPOD – Back Pressure Orifice Diffuser</i> | | |
|---------------------|---------------------|------------------|----------------|---|------------------|----------------|
| | Valve Response Rate | Control Deadband | Control Effort | Valve Response Rate | Control Deadband | Control Effort |
| L03067 | 50 | 2 | 3 | 100 | 4 | 17 |
| L03085 (Standard) | 50 | 2 | 3 | 100 | 3 | 36 |
| TeeJet | 50 | 2 | 3 | 100 | 3 | 30 |

Rate Controller 2000 Setup

1. Press **Menu** button & select JDRC2000 button



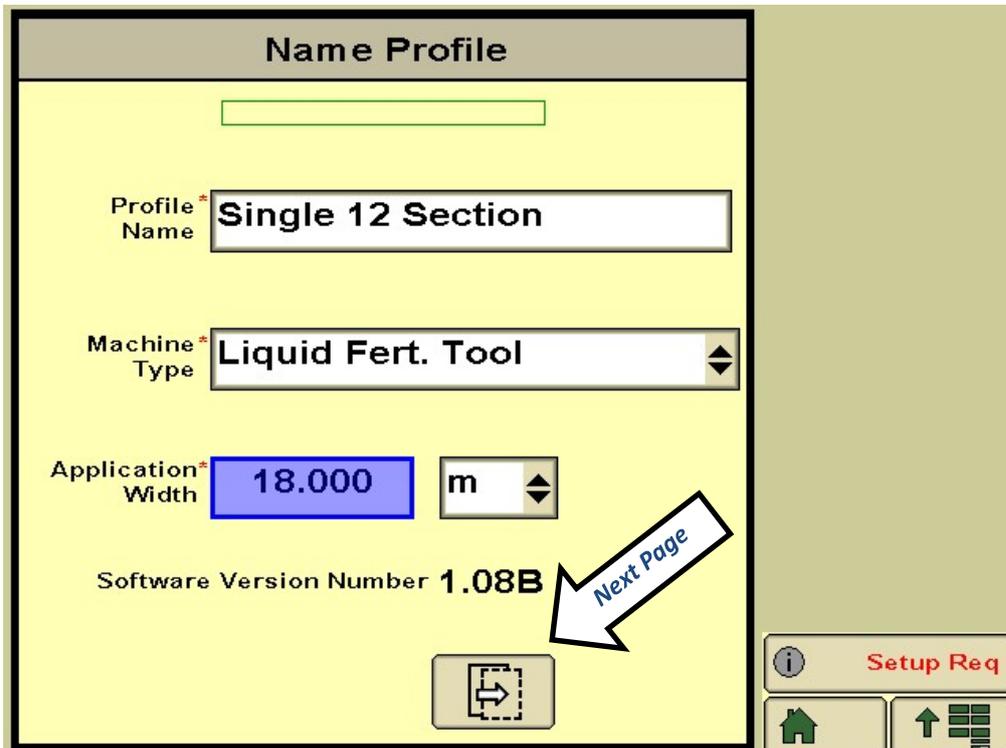
2. Enter Rate Controller **Setup** and press **Change/New** button on the Implement tab



3. Select **New Profile** from drop down menu and press **Accept** button.



4. Assign an appropriate **Profile Name**. Select **Liquid Fert Tool** from Machine Type drop down menu. Enter effective operating width of implement and press **Next Page** button (right arrow).

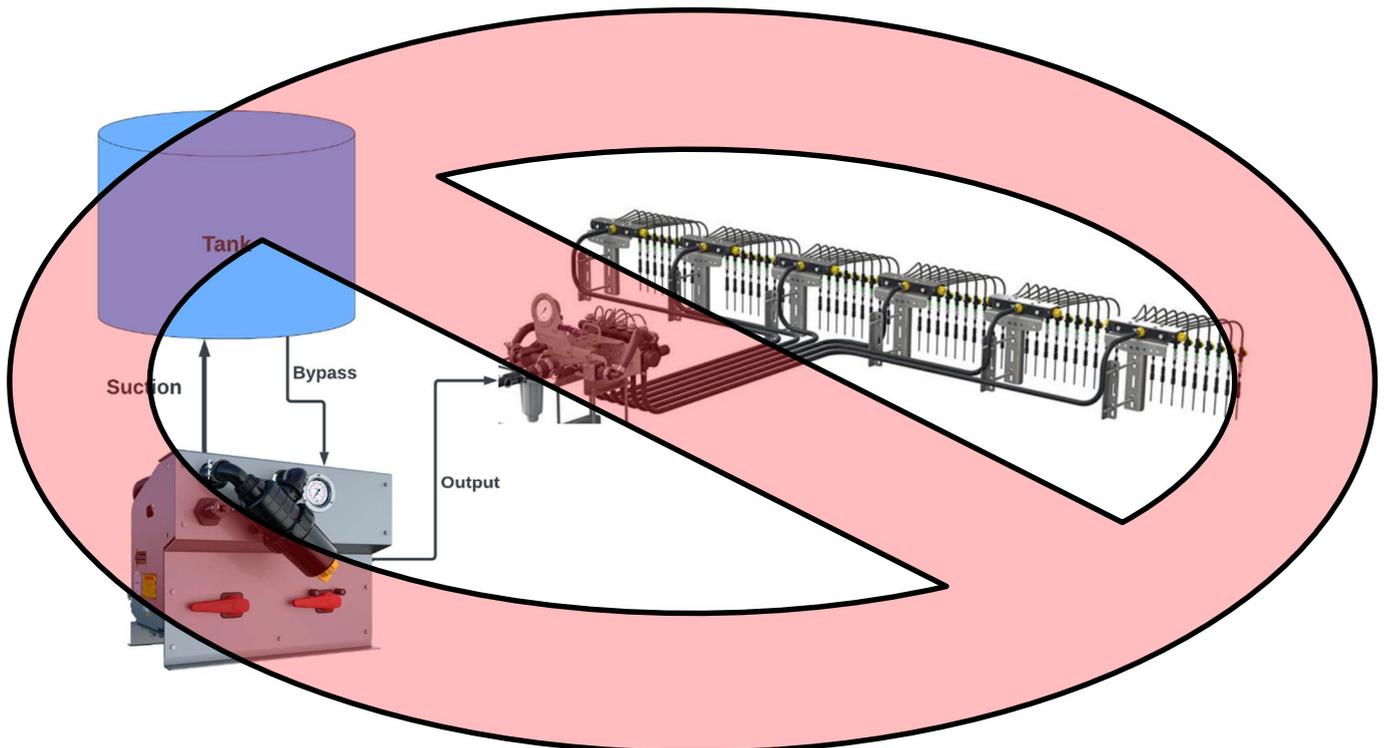
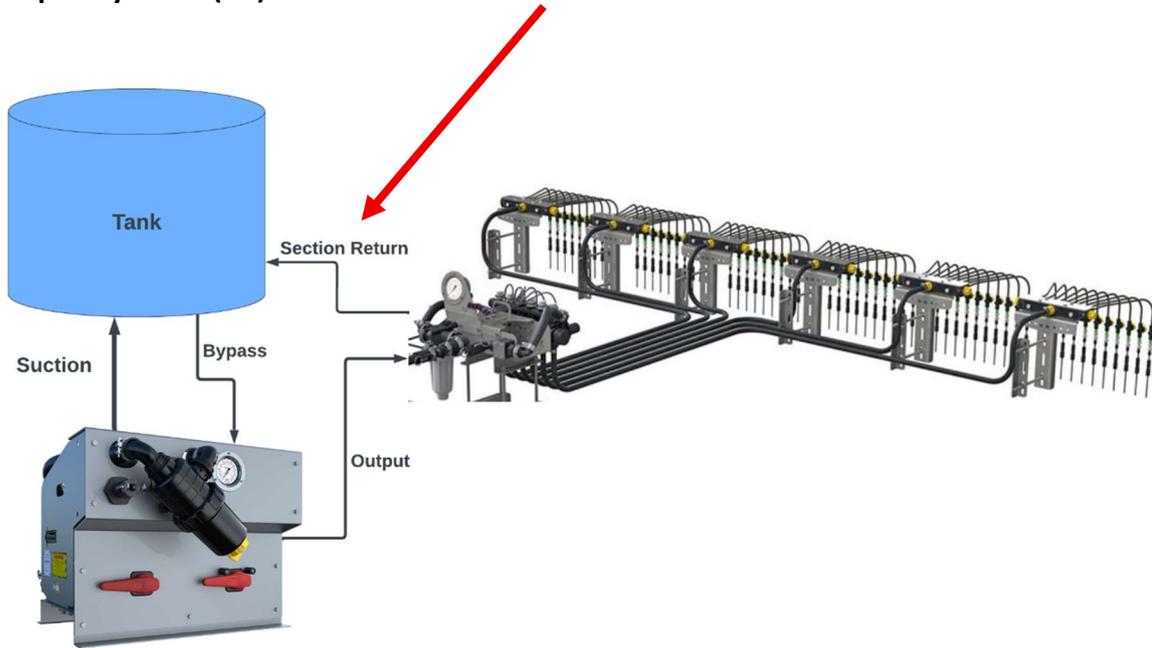


Constant Flow

The LQS Stacker Section Control Module is designed to operate in both Constant Flow and Hard Shut-off mode. When a section valve is switched off in Constant Flow mode, excess flow is diverted back to tank thus maintaining a constant flow through remaining section valves.

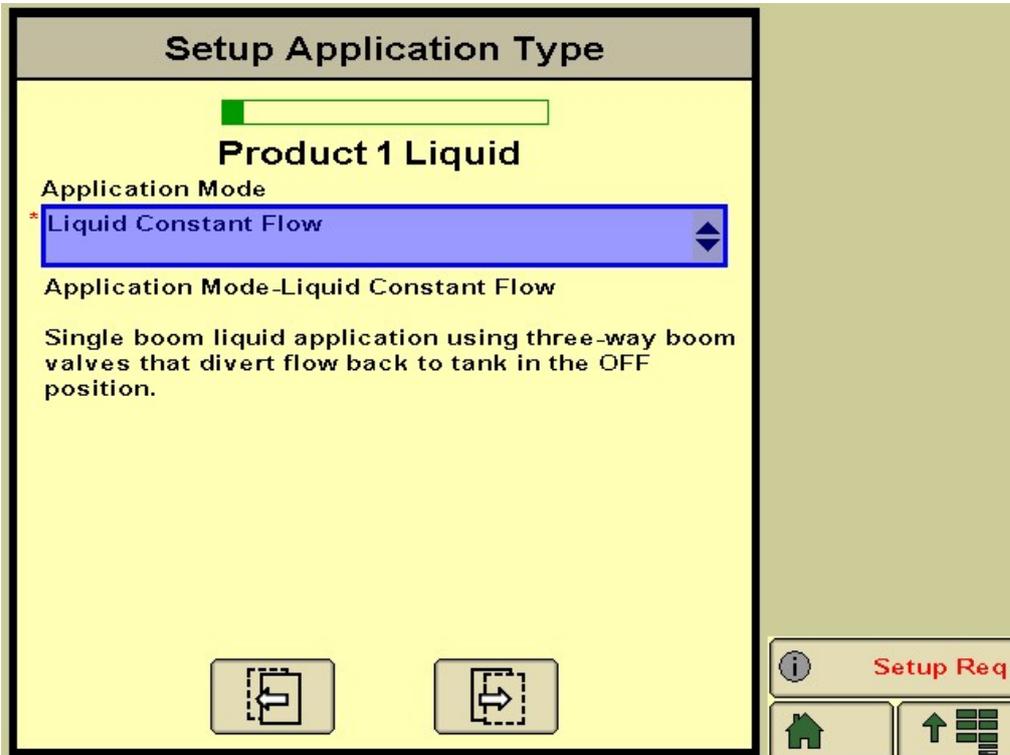
In Hard Shut off mode there is no return line to tank from the section valves. When a section valve is switched off, the control system needs to reduce output from the pump module so flow to remaining open sections remains the same. This is only recommended if a dosing system is installed, and the contaminated product cannot be returned to the tank **or if the RC200 profile is setup as a Generic or Air cart multi product system.**

Liquid Systems (SA) recommends **CONSTANT FLOW** mode for better rate control.

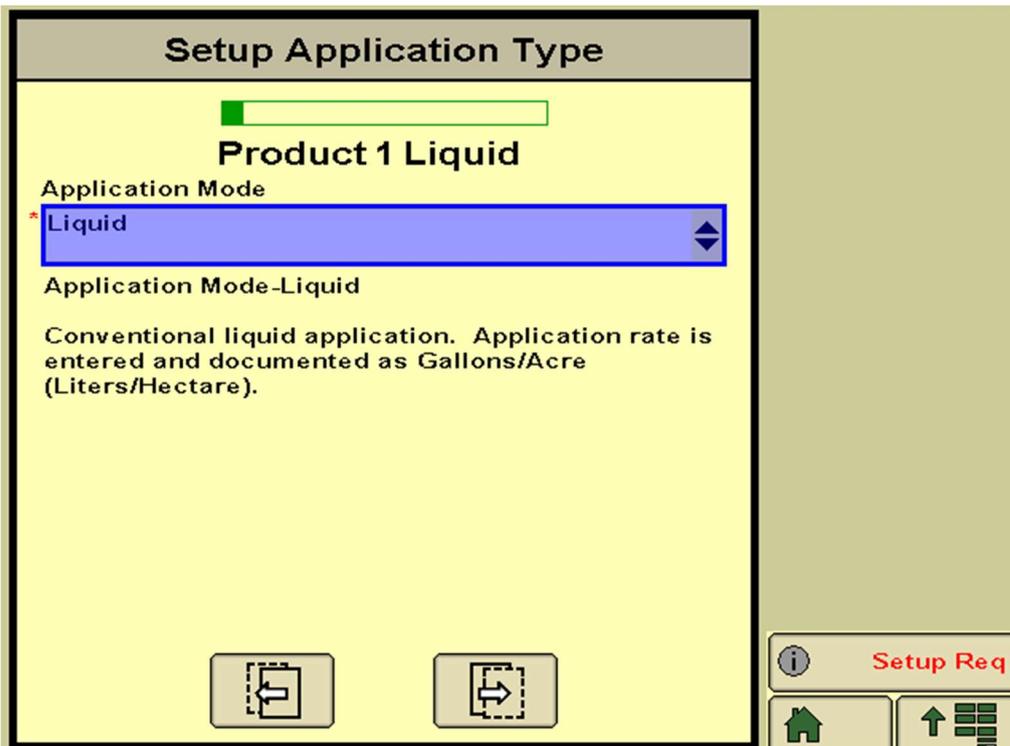


5. Select appropriate section control mode from Application Mode drop down menu.

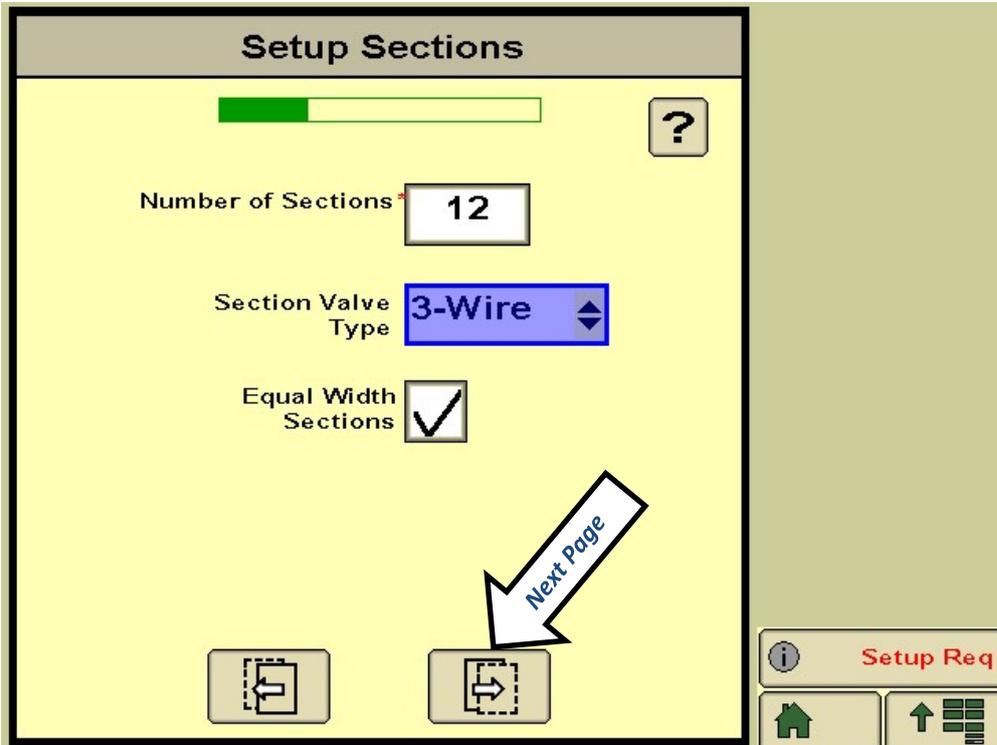
Liquid Constant Flow for Constant Flow Mode or



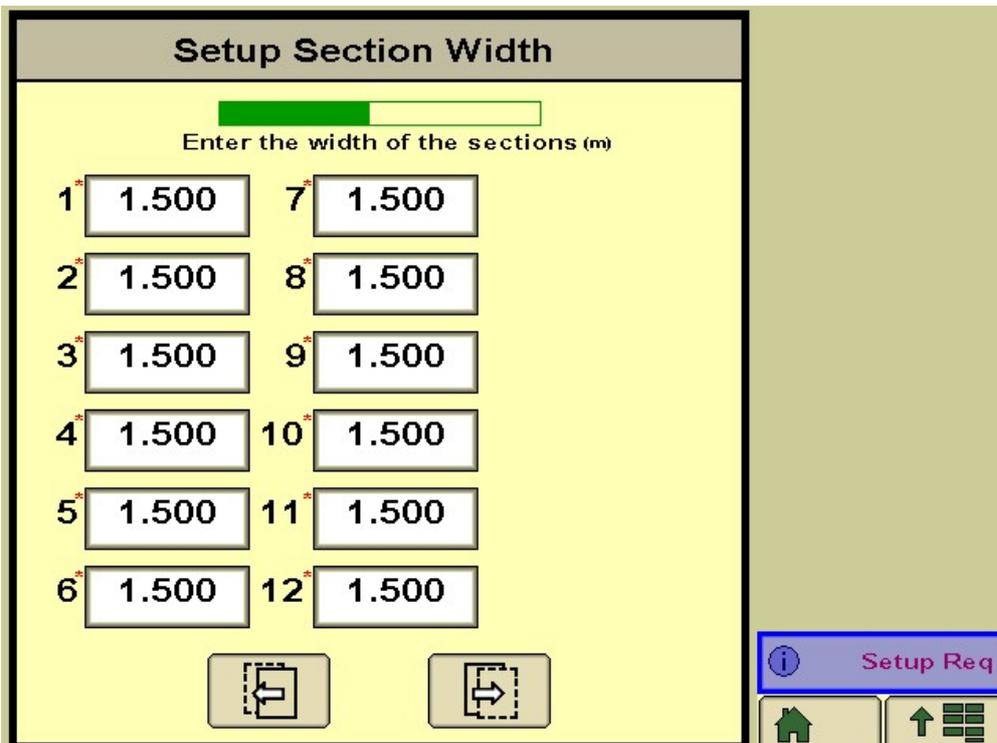
Liquid for Hard Shutoff mode. Press **Next Page** button (right arrow).



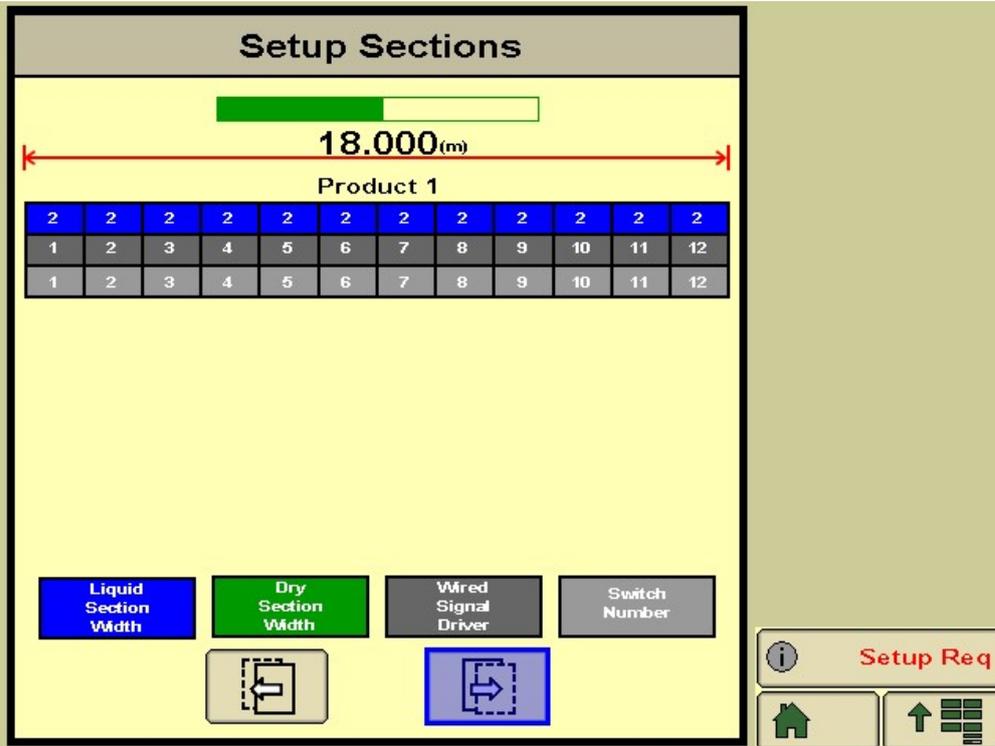
- Enter Number of Sections. Select **3-Wire** for Section Valve Type. Tick Equal Width Sections. Press **Next Page** button (right arrow). If required, press **Previous Page** button (left arrow) to go back and re-enter data.



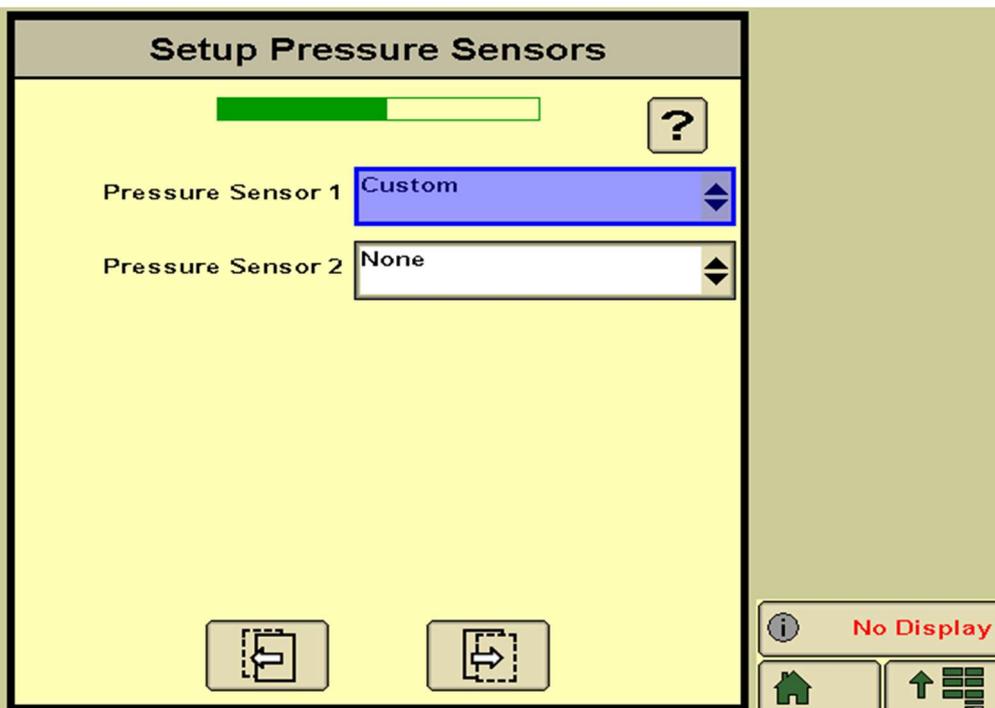
- Enter Section widths. (widths will be pre-filled if Equal Width Sections was ticked in previous screen)



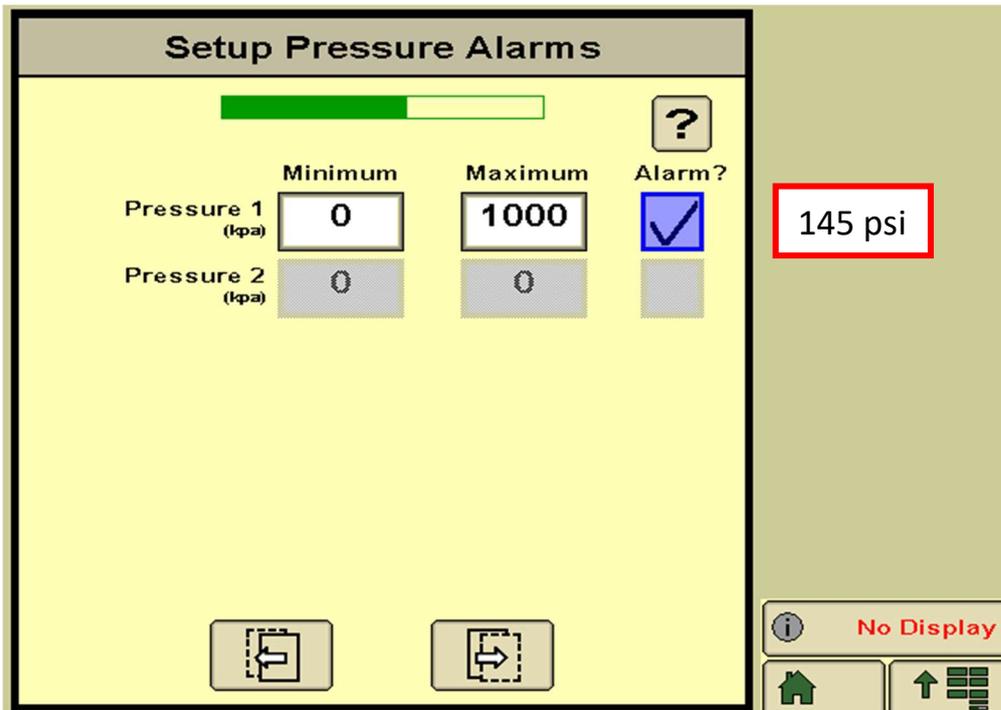
8. Review section set up data and press **Next Page** button (right arrow).



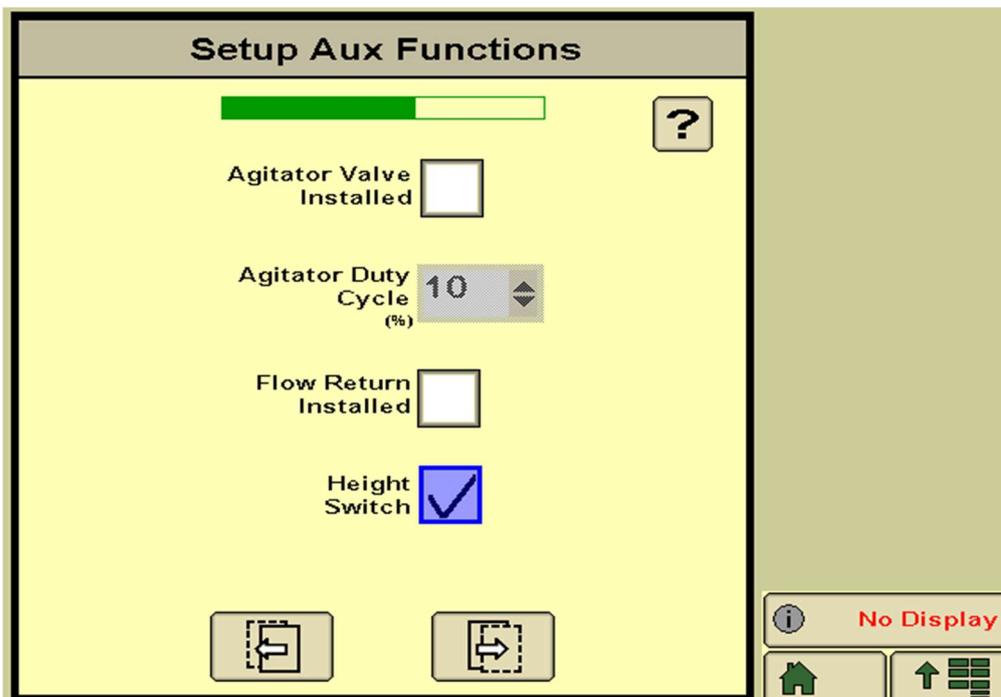
9. Select **Custom** from Pressure Sensor 1 drop down menu. Ignore any warnings at this stage.



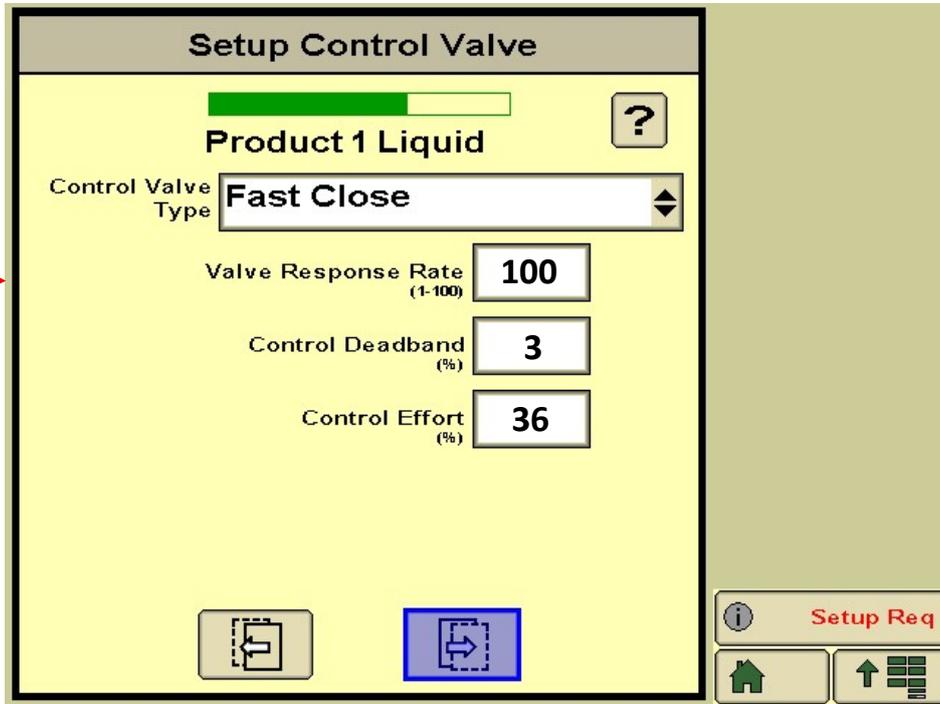
10. Set Maximum pressure alarm at **1000 kPa** (or 145 psi).



11. If installed, enable Height Switch and press **Next Page** button.

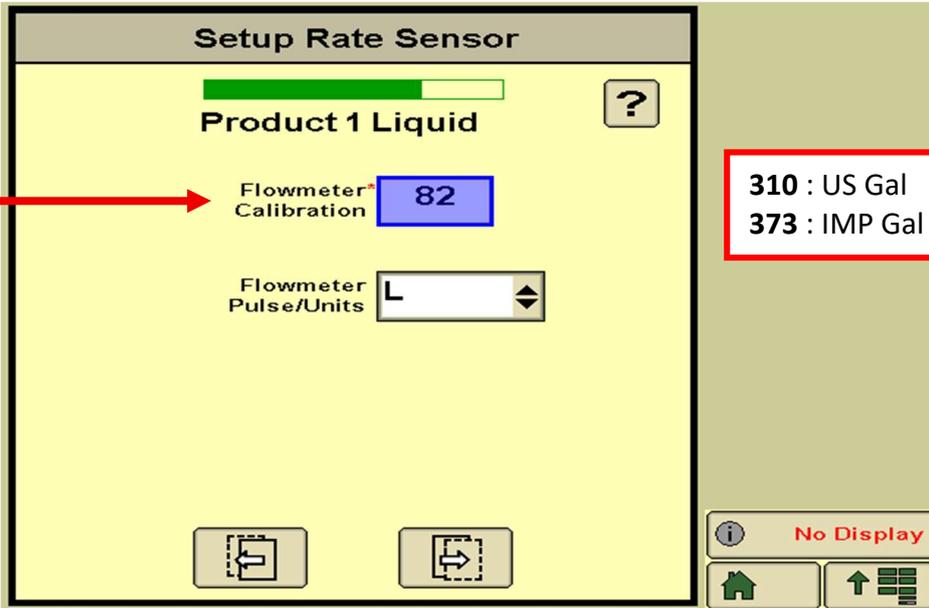


- Enter following Control settings for Product 1 as a starting point. Settings can be adjusted later if rate control is erratic. Press **Next Page** button. Refer to Help button for each parameter and their impact on rate control.



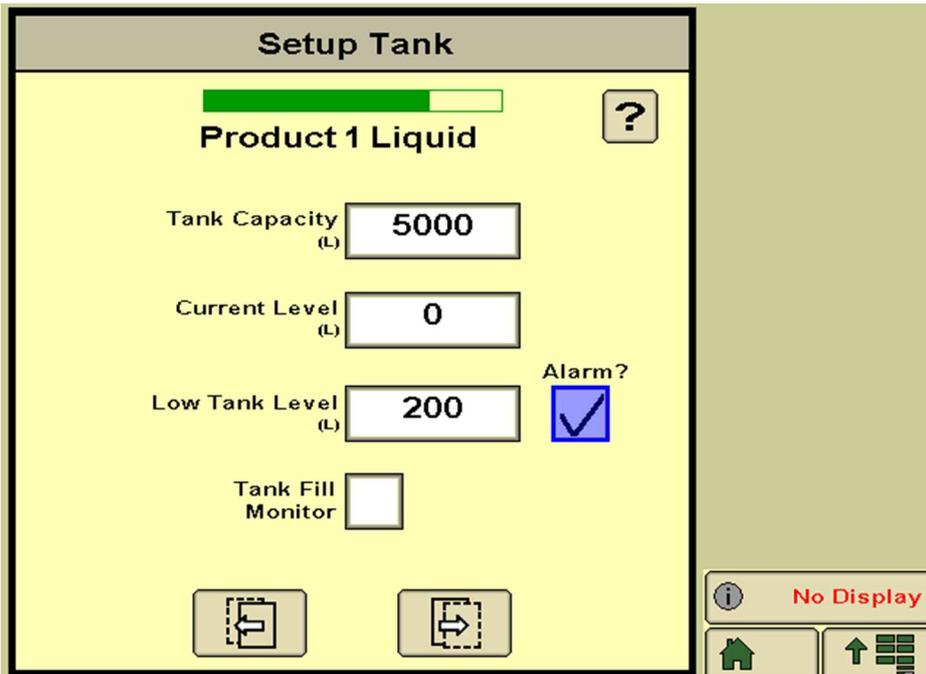
NOTE: This Control Valve Calibration settings are for the **Standard KZ L03085**. For Modules with other Control Valves **SEE Calibration settings on Page 7 at the start of this guide.**

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

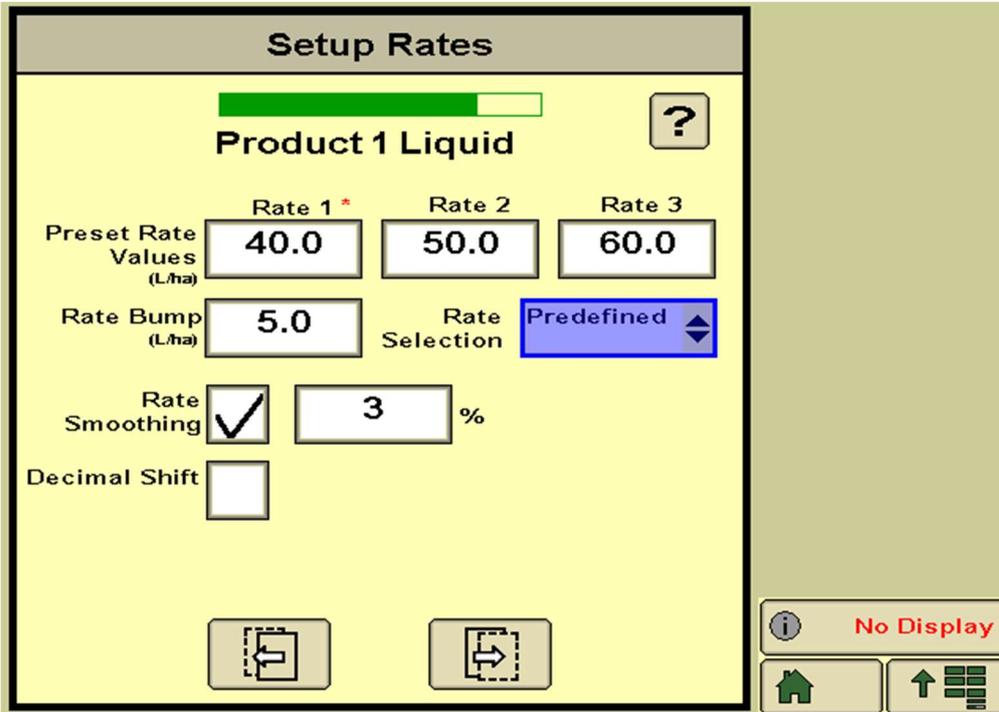


NOTE: This Flow Meter Calibration setting is for a **Standard TeeJet 801 Flowmeter** in Litres. For modules with **ARAG Electromagnetic** Flowmeter, check label for calibration setting. **SEE Calibration settings on Page 7 at the start of this guide.**

- Enter Tank Capacity, Level and Alarms as required.



15. Enter Target Application Rates as required.



Setup Rates

Product 1 Liquid

Preset Rate Values (L/ha)

| | | |
|----------|--------|--------|
| Rate 1 * | Rate 2 | Rate 3 |
| 40.0 | 50.0 | 60.0 |

Rate Bump (L/ha): 5.0

Rate Selection: Predefined

Rate Smoothing: 3 %

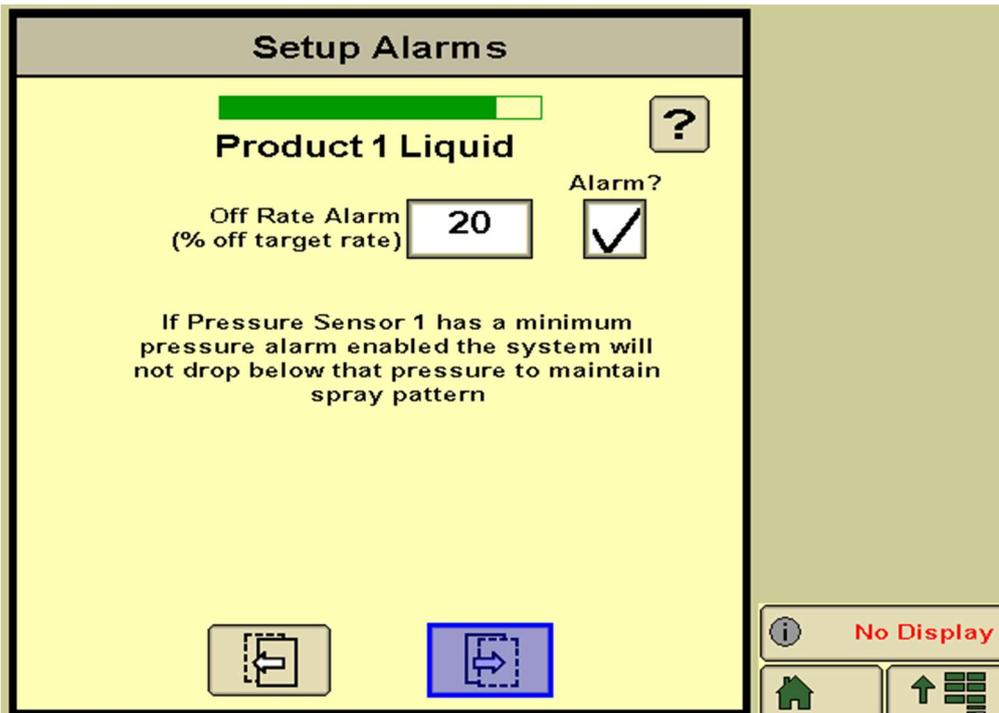
Decimal Shift:

Navigation: [Left Arrow] [Right Arrow]

Info: No Display

Home: [Home Icon] [Up Arrow]

16. Enter Off Target Rate Alarm as required.



Setup Alarms

Product 1 Liquid

Off Rate Alarm (% off target rate): 20

Alarm?

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

Navigation: [Left Arrow] [Right Arrow]

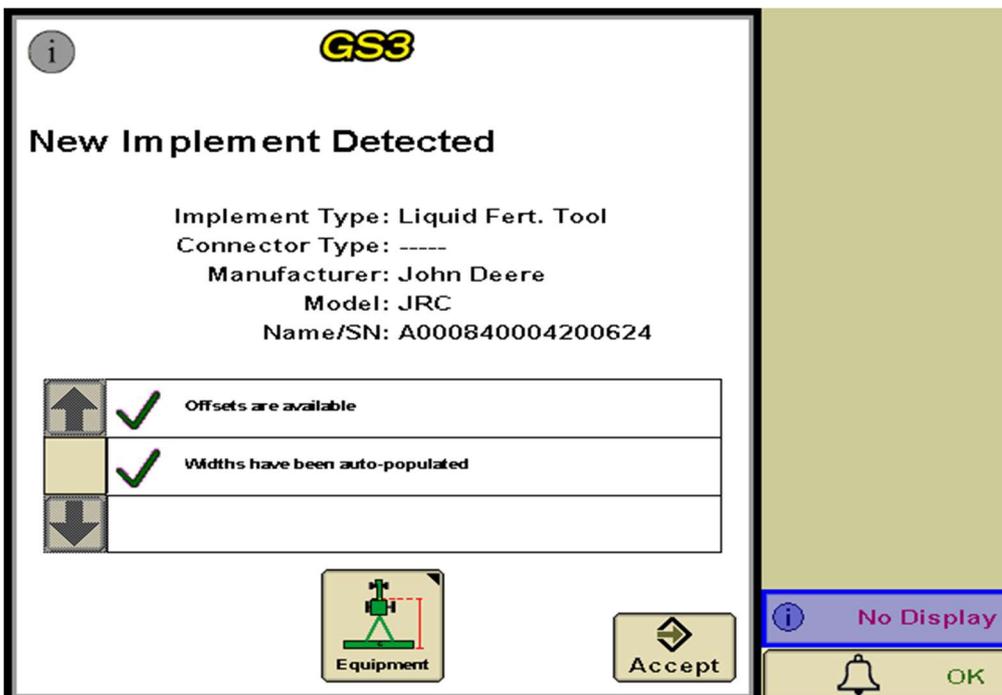
Info: No Display

Home: [Home Icon] [Up Arrow]

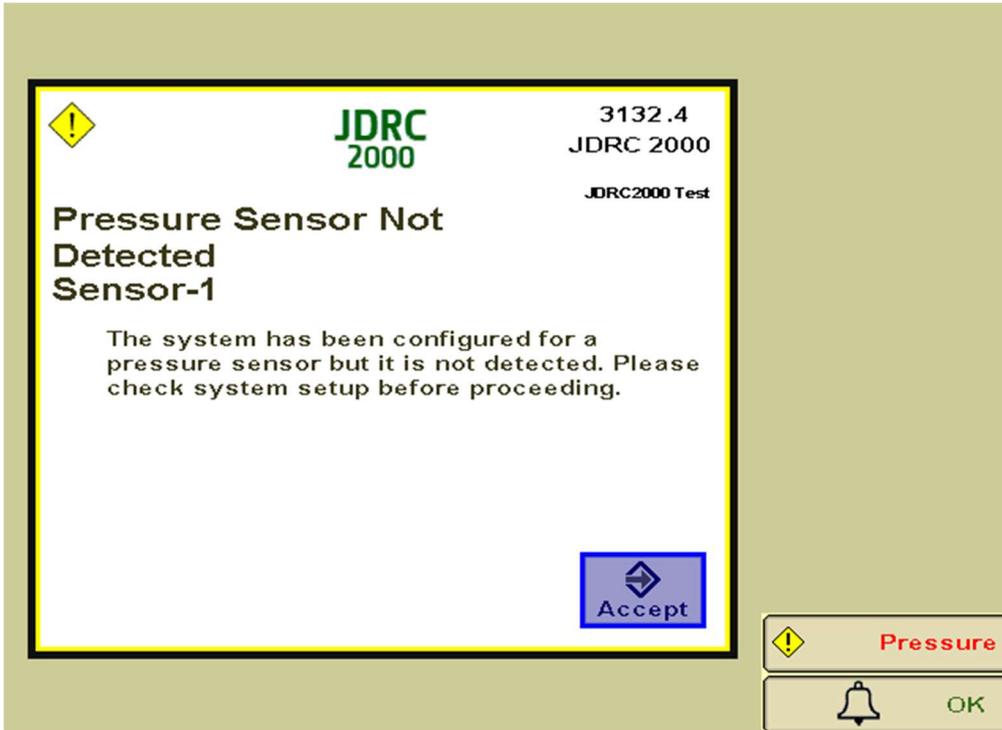
17. Review Setup summary. Press **Accept** or Previous Page button (left arrow) to edit.



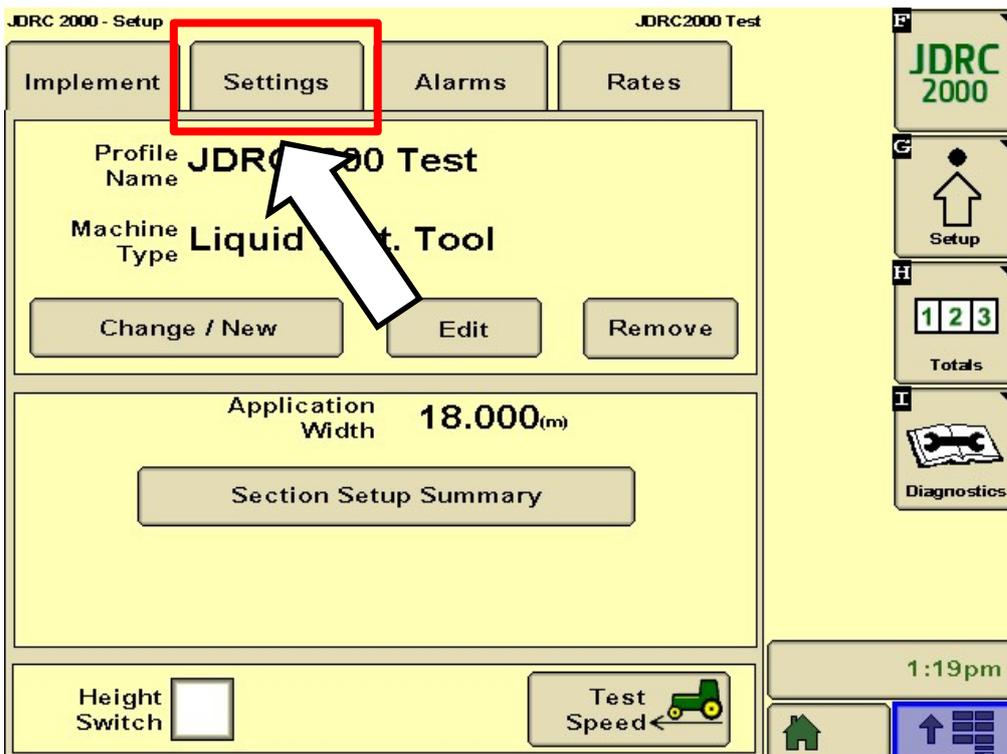
18. At this stage of set up, following screen will be displayed. Press **Accept**.



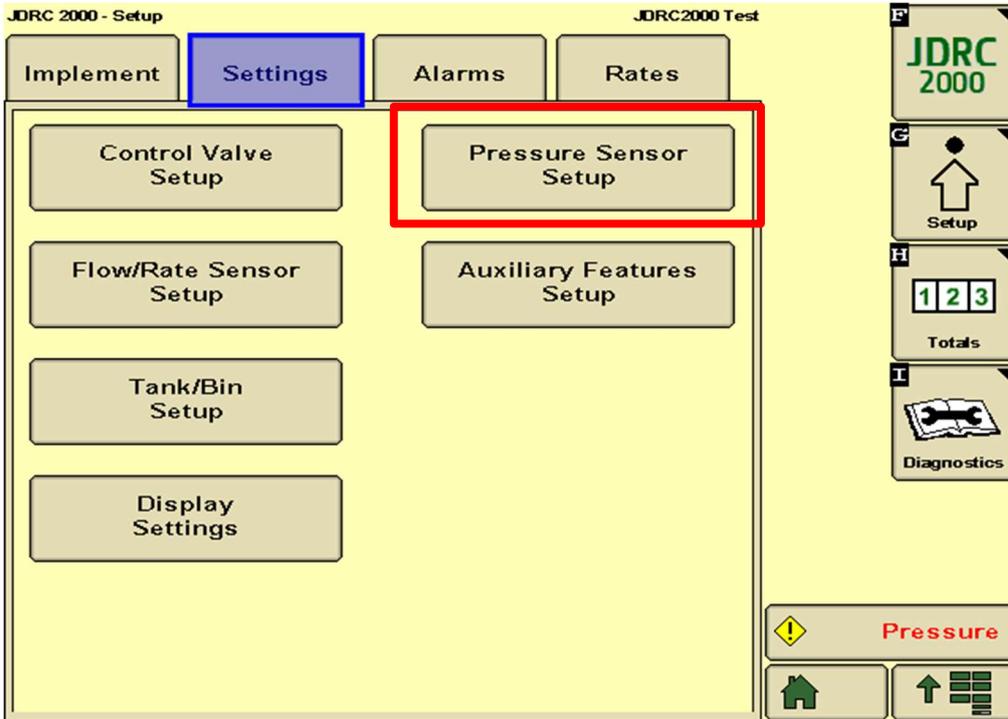
19. IGNORE THIS ALERT. Press **Accept** to proceed to pressure sensor set up.



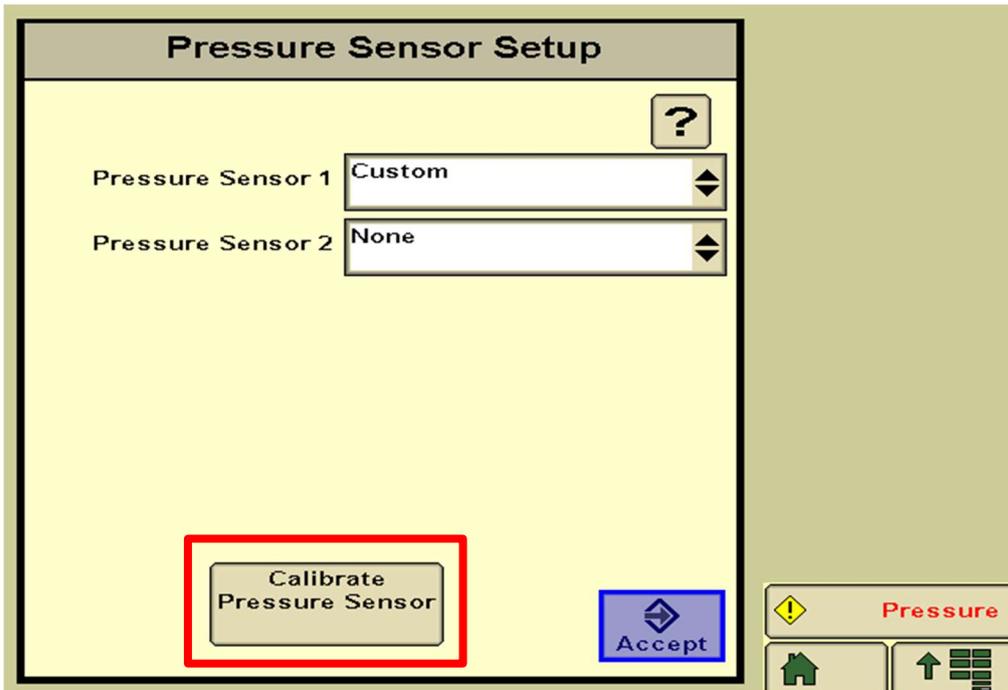
20. Select **Settings** tab from the Setup screen.



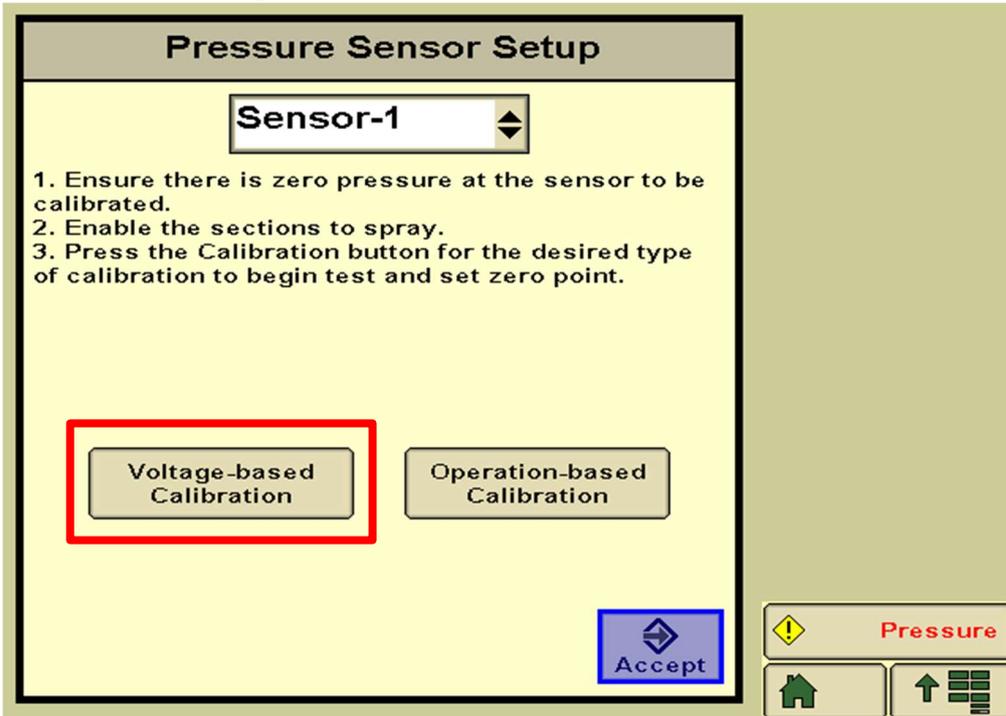
21. Select **Pressure Sensor Setup**.



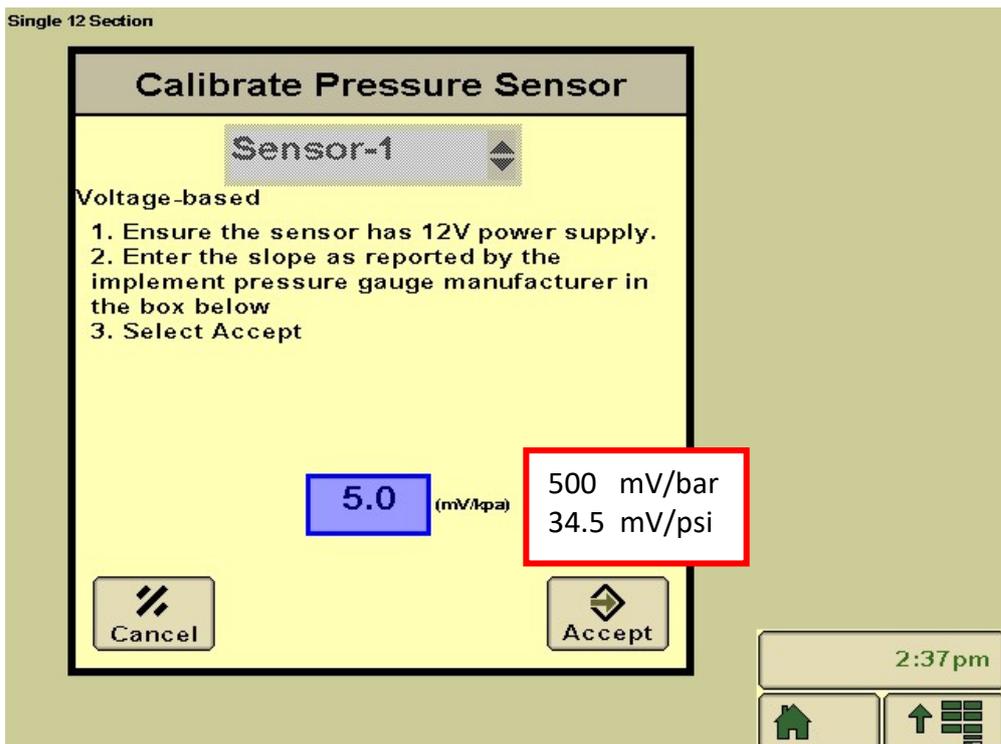
22. Select **Calibrate Pressure Sensor** and press **Accept**.



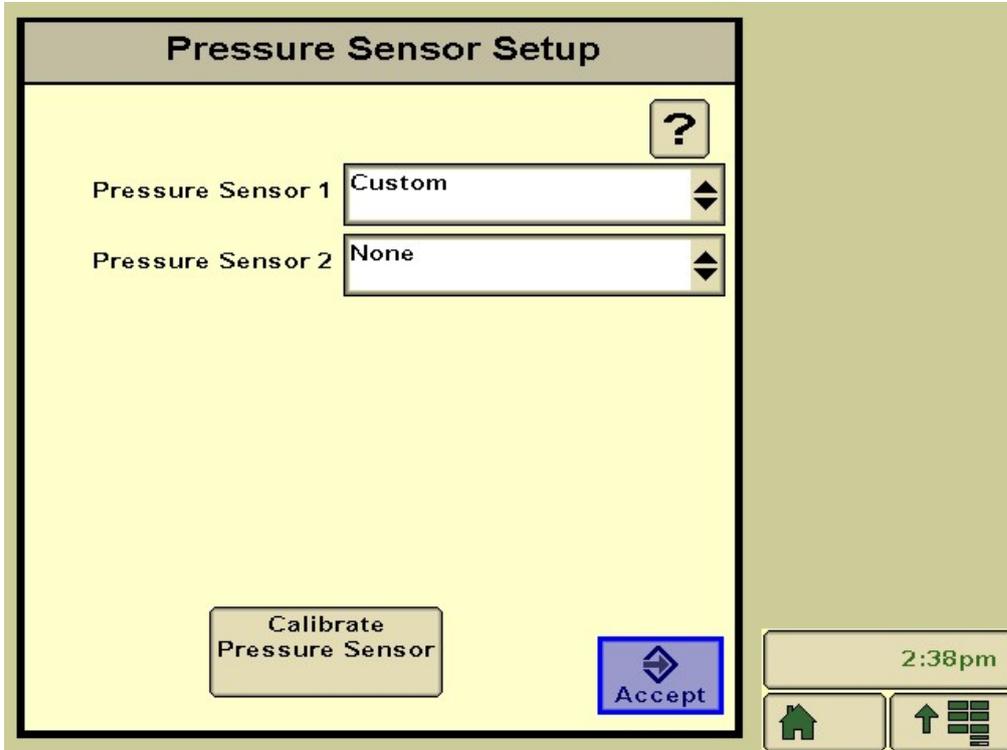
23. Ensure pump is **NOT** running. select **Pressure Sensor 1** from the drop-down menu and select **Voltage-based Calibration**.



24. Enter Pressure Sensor Calibration factor 5mV/kPa : 500mV/bar : 34.5mV/psi Press **Accept**.



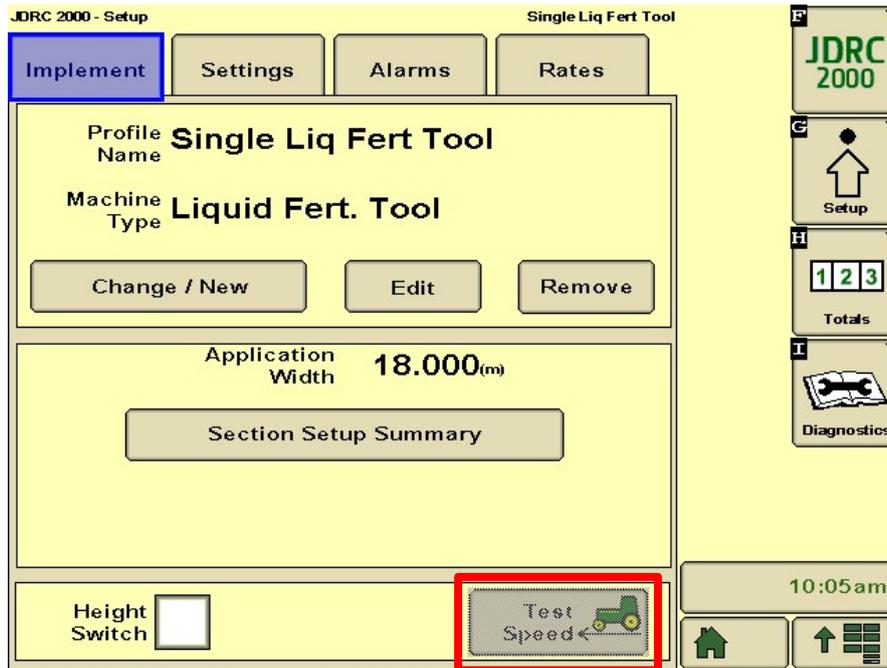
25. Press **Accept** to save settings and return to the Setup screen.



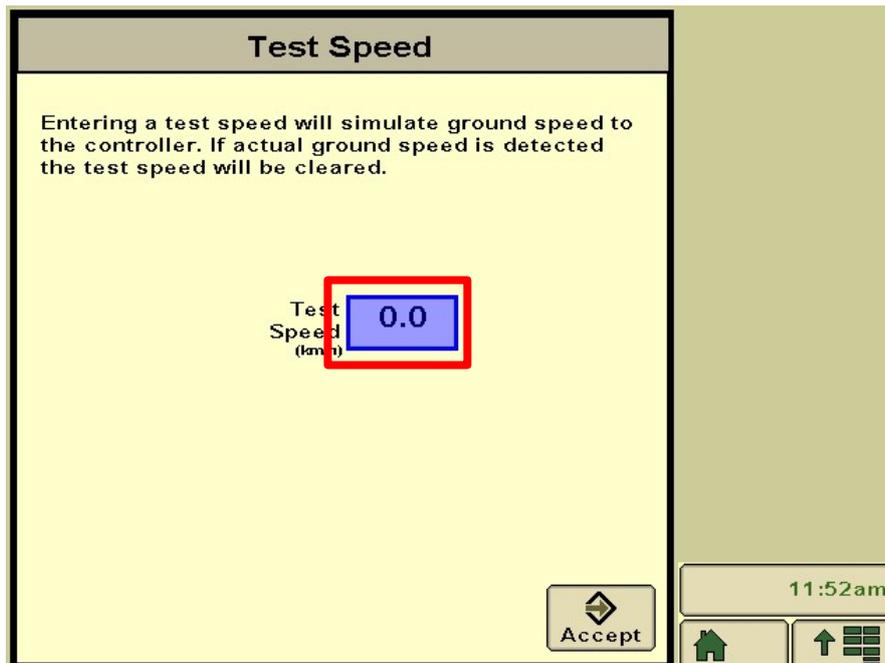
Section Valve Tuning

For correct application of liquid in **Constant Flow** mode, section valves must be tuned while the module is running using the following procedure.

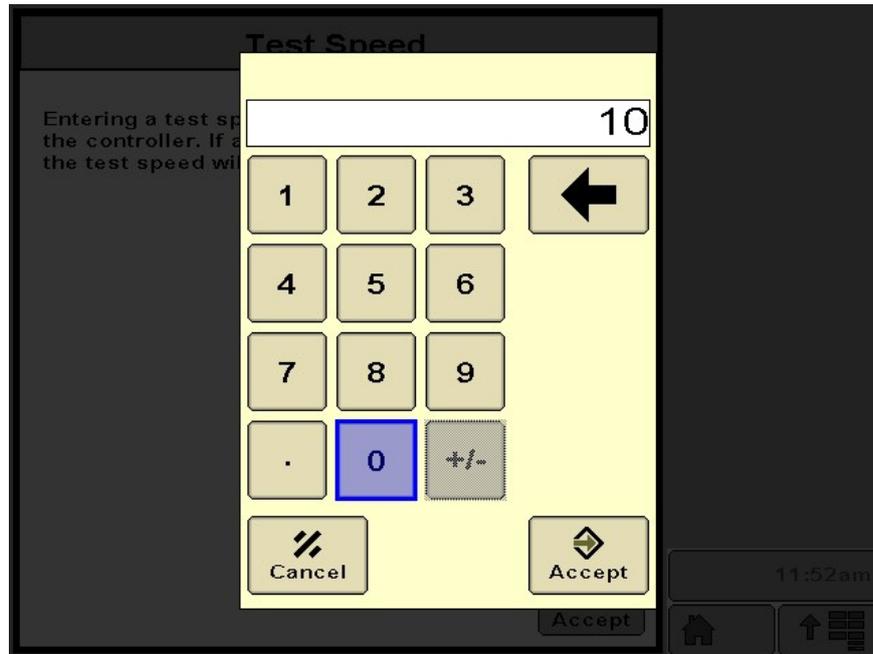
1. Start the pump and press **Test Speed** button on Implement tab of the Setup screen.



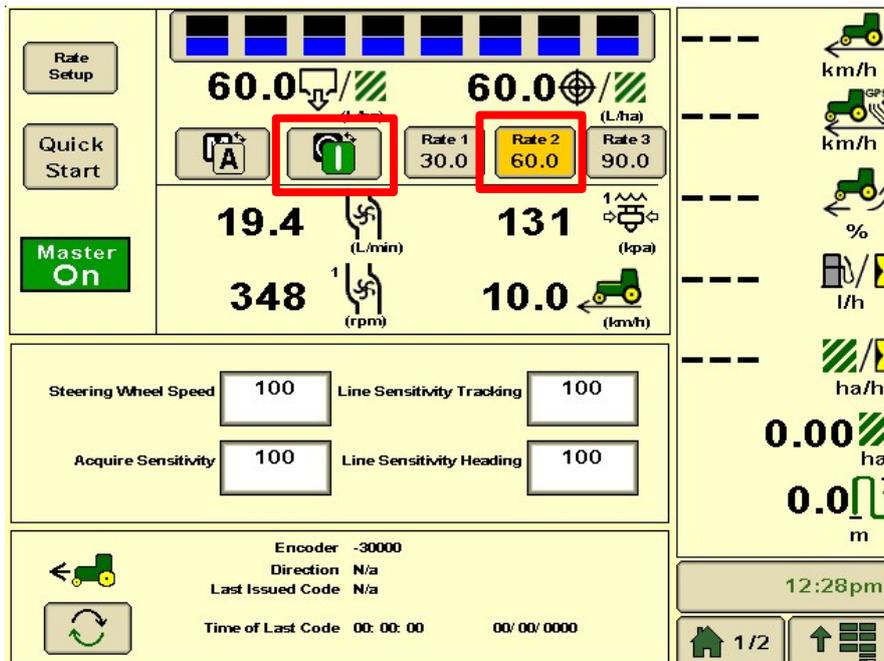
2. Press **Test Speed**.



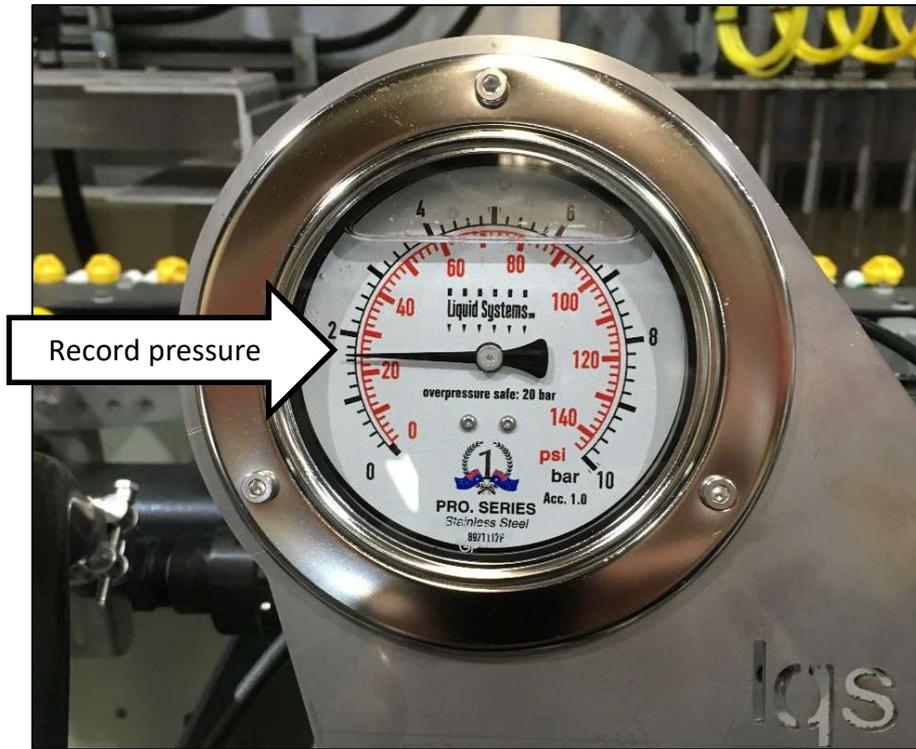
3. Enter a typical operating speed using the virtual keyboard and press Accept.



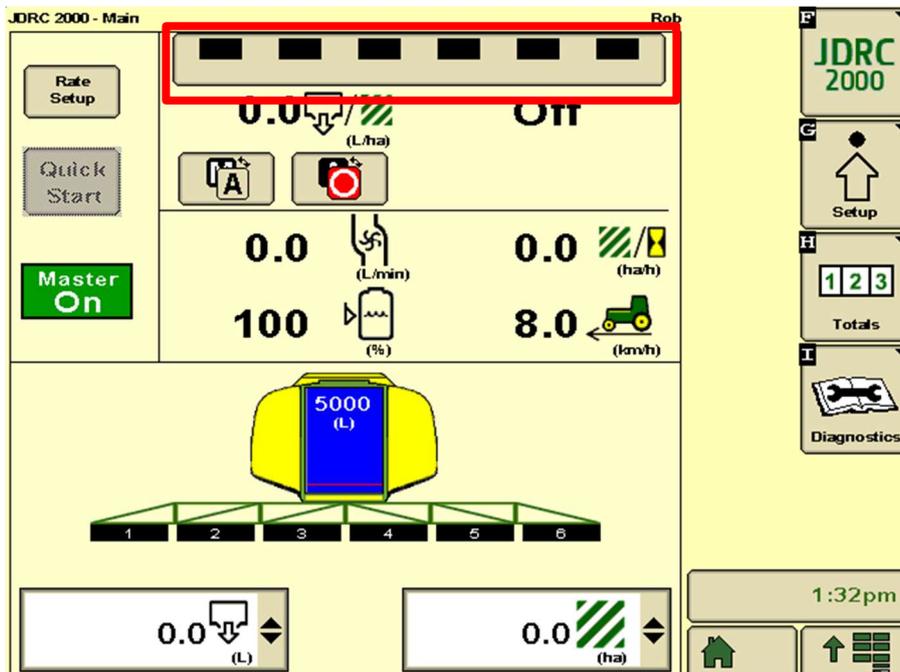
4. Press  icon to go to the JDRC 2000 Run screen. Select a typical application rate and turn the system on using the virtual toggle switch. Ensure all sections are open.



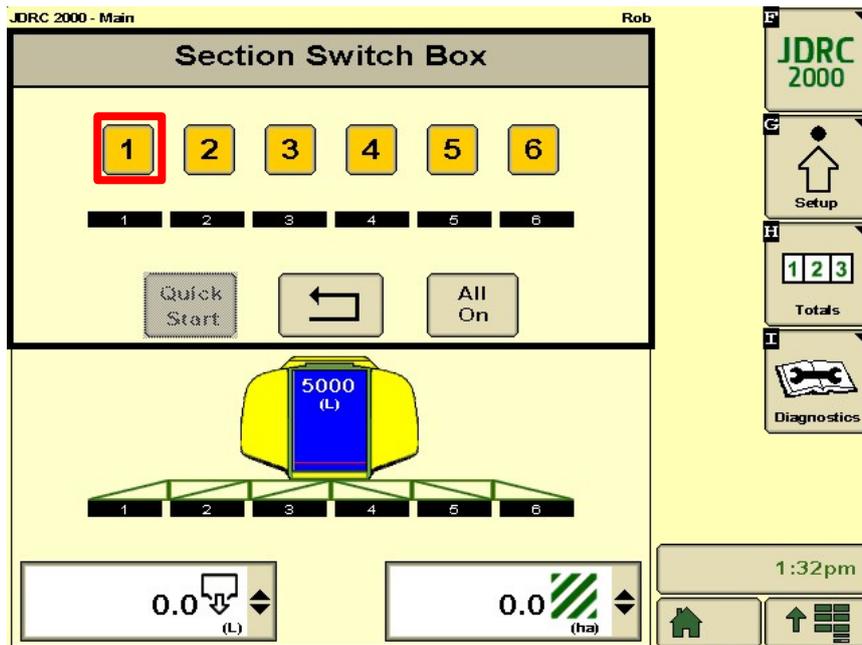
- Record indicated pressure on the section control module gauge. Taking a photo on a smartphone is an easy way to do this.



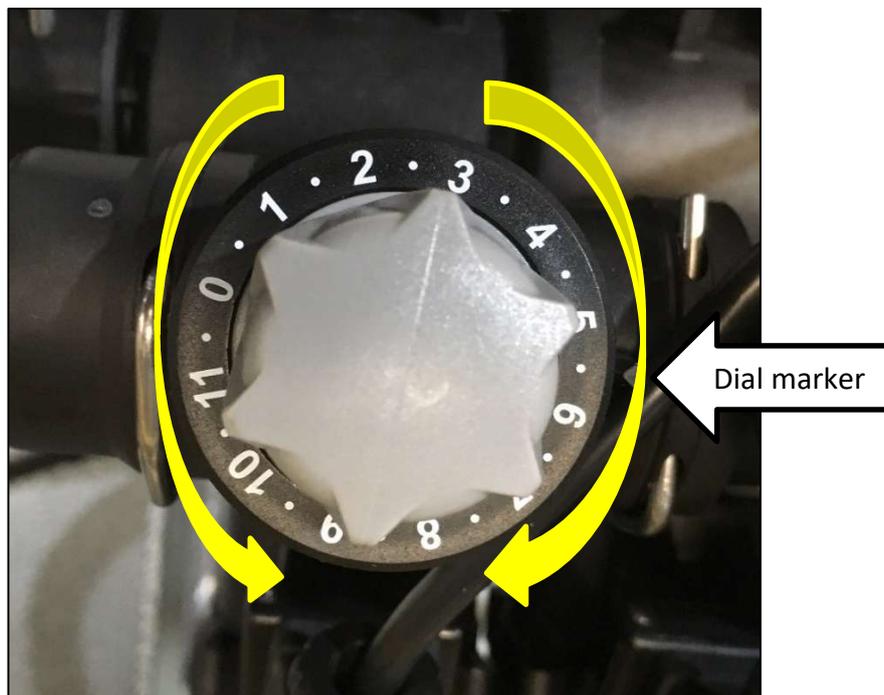
- Select the Section virtual switch bar to display all section switches



7. Shut off Section 1 and observe any pressure change.



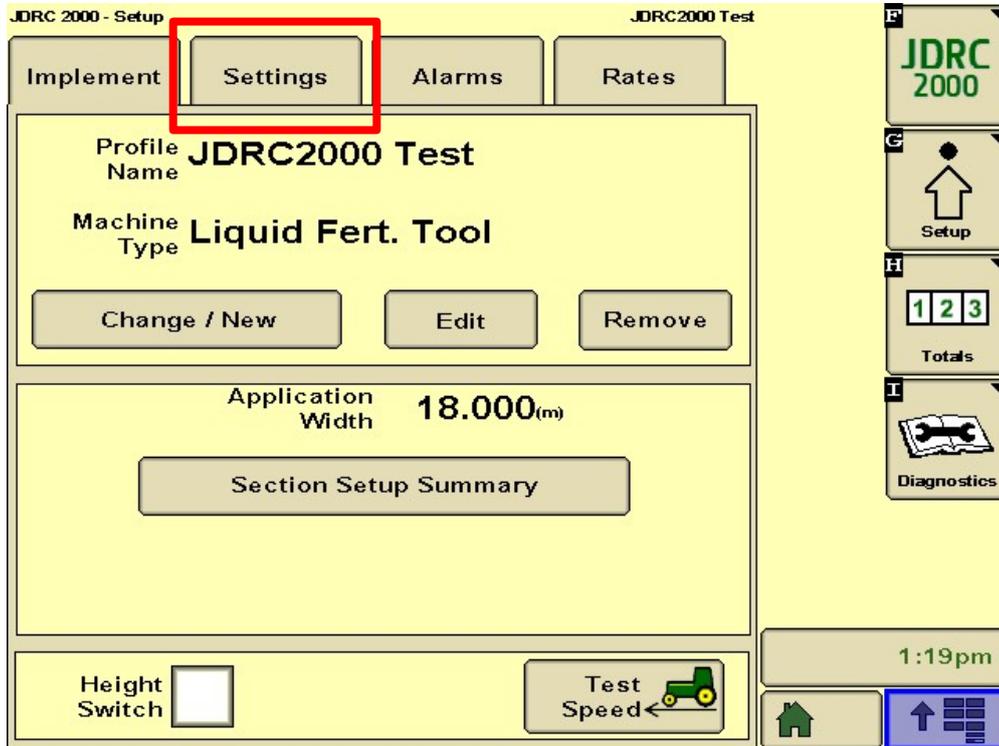
- If pressure has increased, rotate the dial on the valve anti-clockwise until pressure drops to the level recorded in step 5.
- If pressure has decreased, rotate the dial clockwise until pressure increases to the level recorded in step 5.



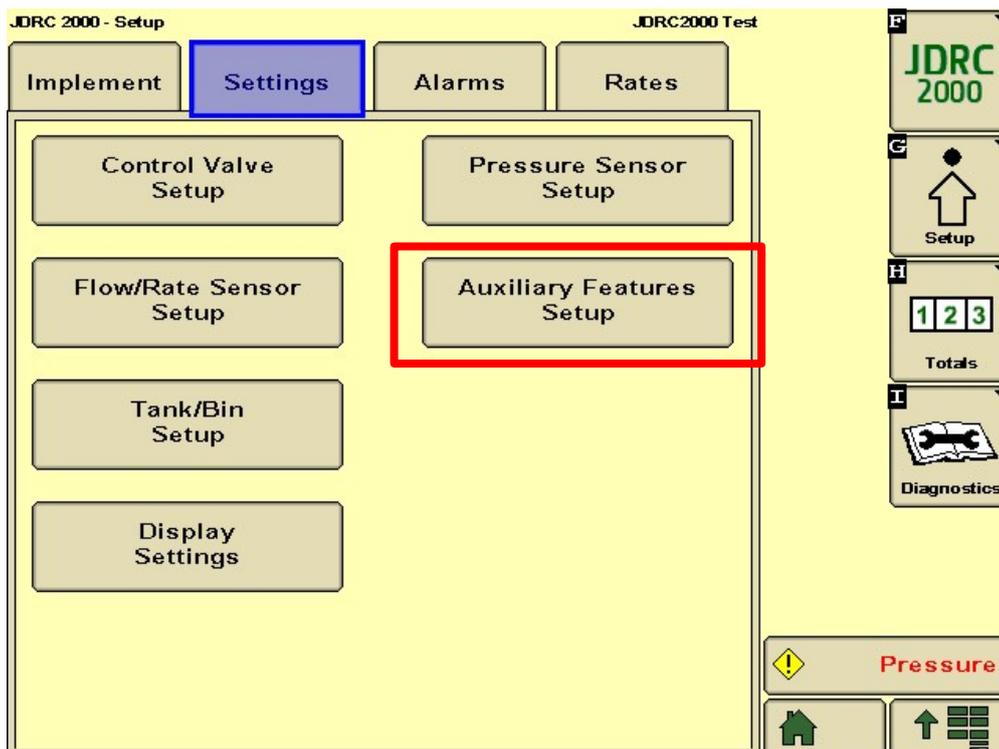
8. Repeat step 7 for remaining valves one at a time. Sections with the same number of outlets will normally end up with the same setting on the dial.

RPM Sensor Integration

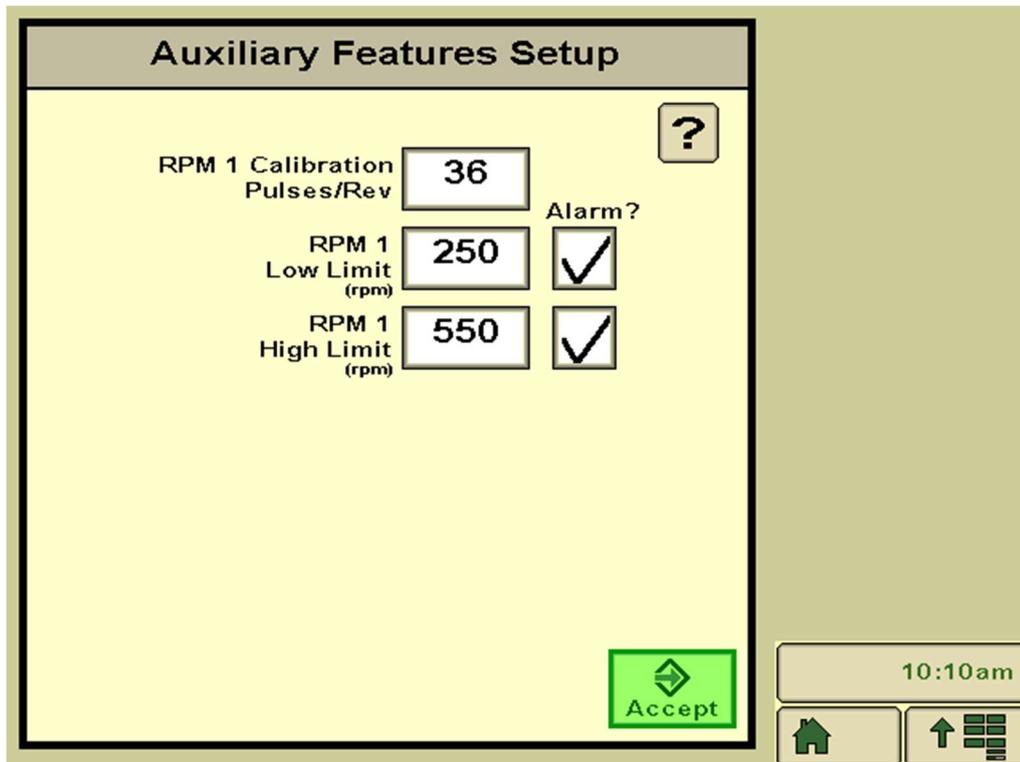
1. Select **Settings** tab from the Setup screen.



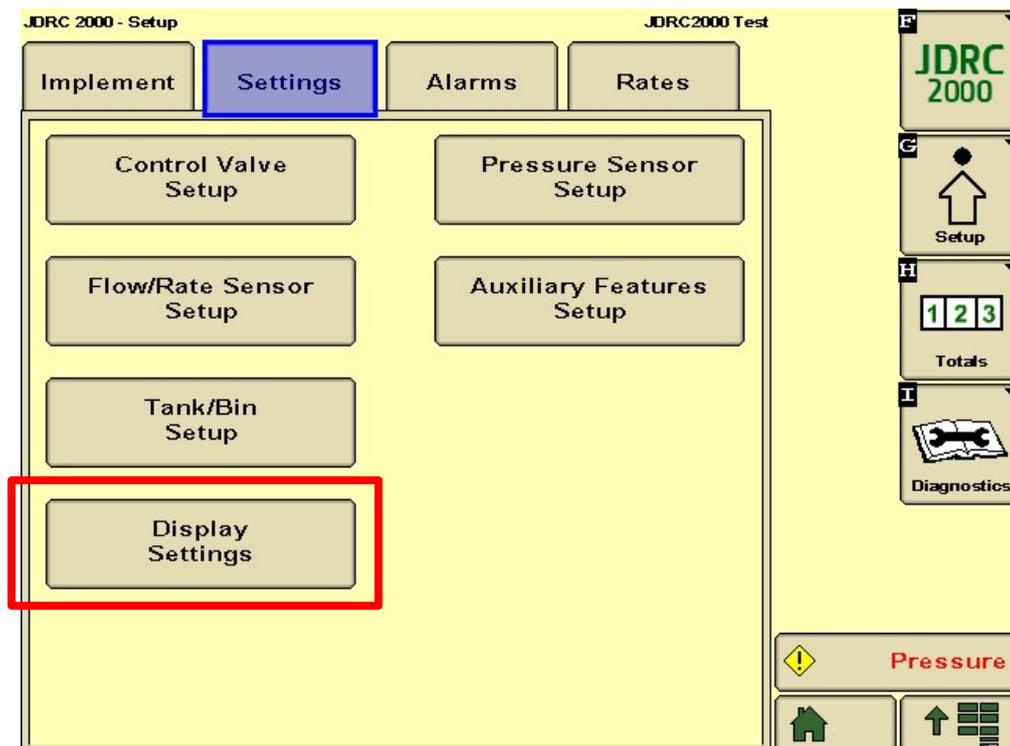
2. Select **Auxiliary Features Setup**.



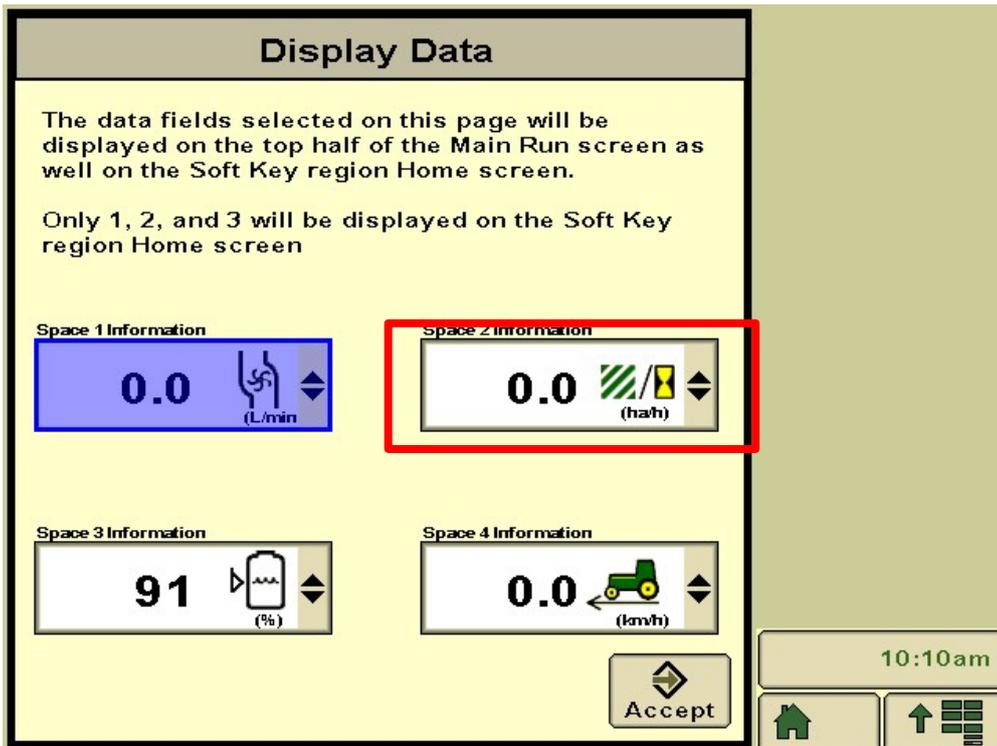
- Enter **36** for RPM Calibration Pulses/Rev and **250** & **550** for Low & High RPM Alarm limits respectively. Press **Accept** to save settings and to return to Set up screen.



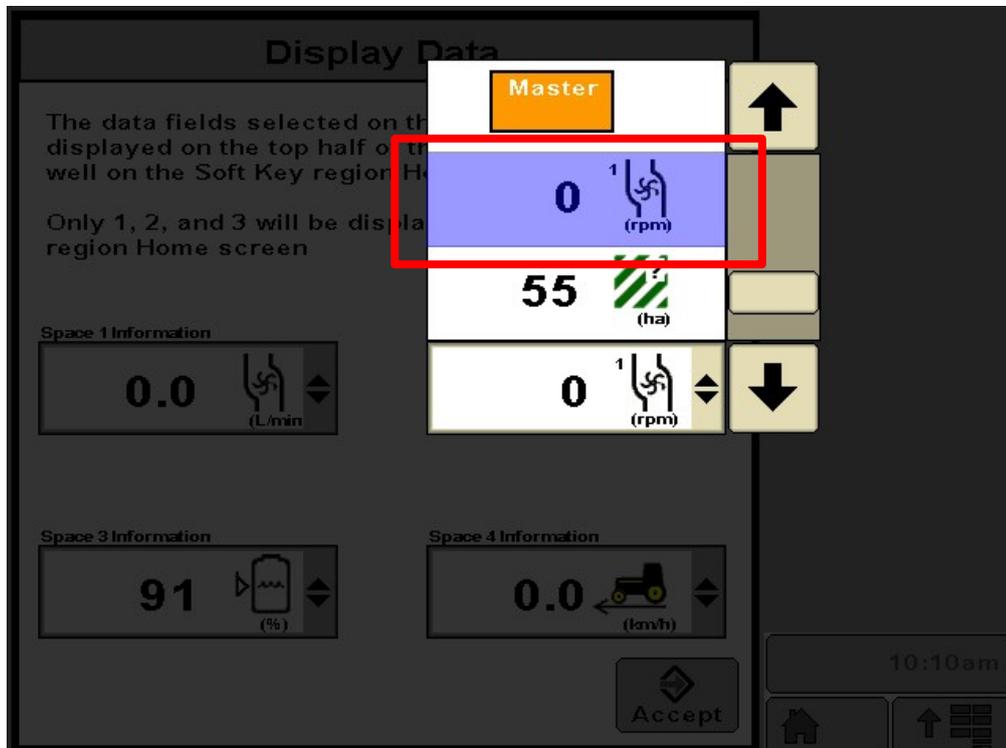
- To configure the screen to display Pump speed, select **Display Settings**.



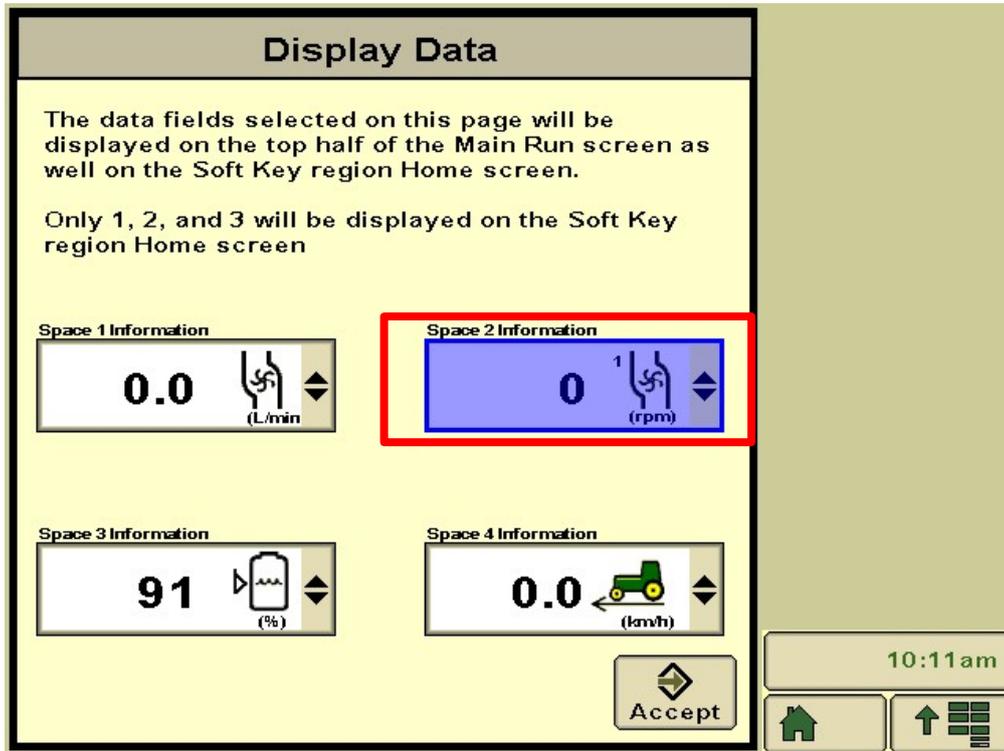
7. Select a **Data Field** to display pump speed.



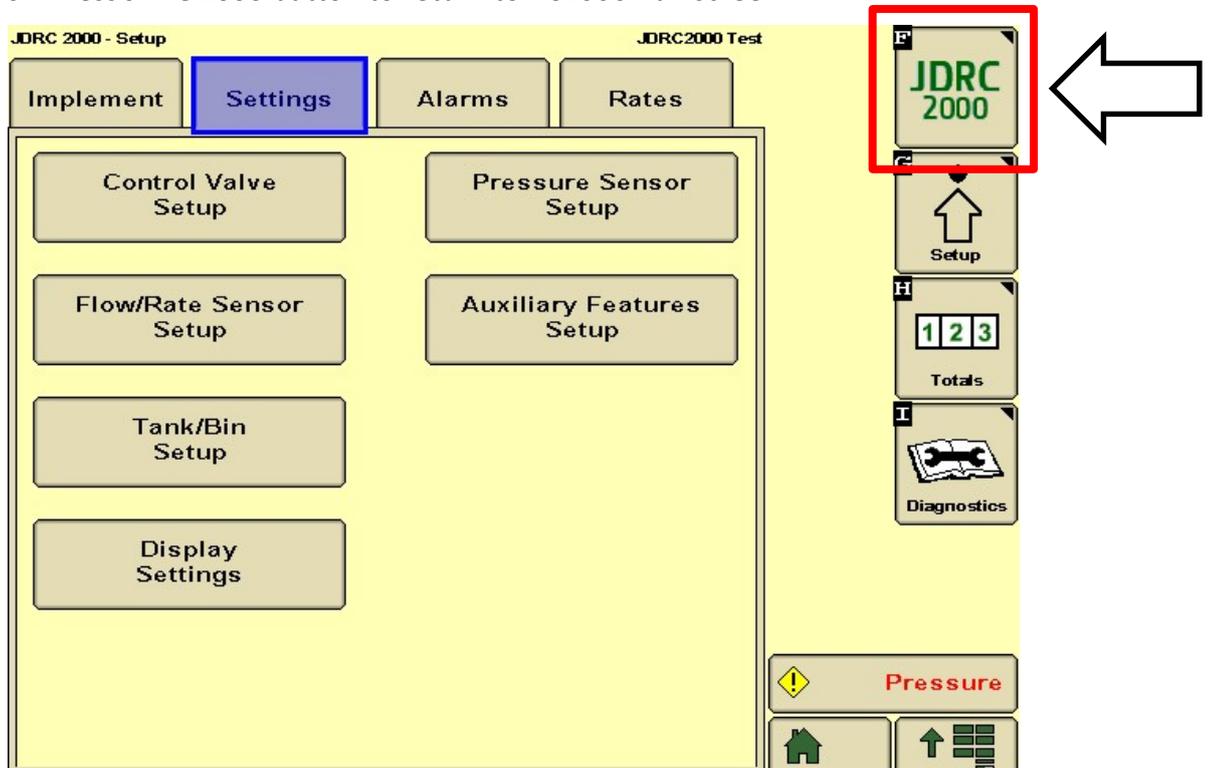
8. Scroll down the menu and select **Pump Speed (RPM)** option.



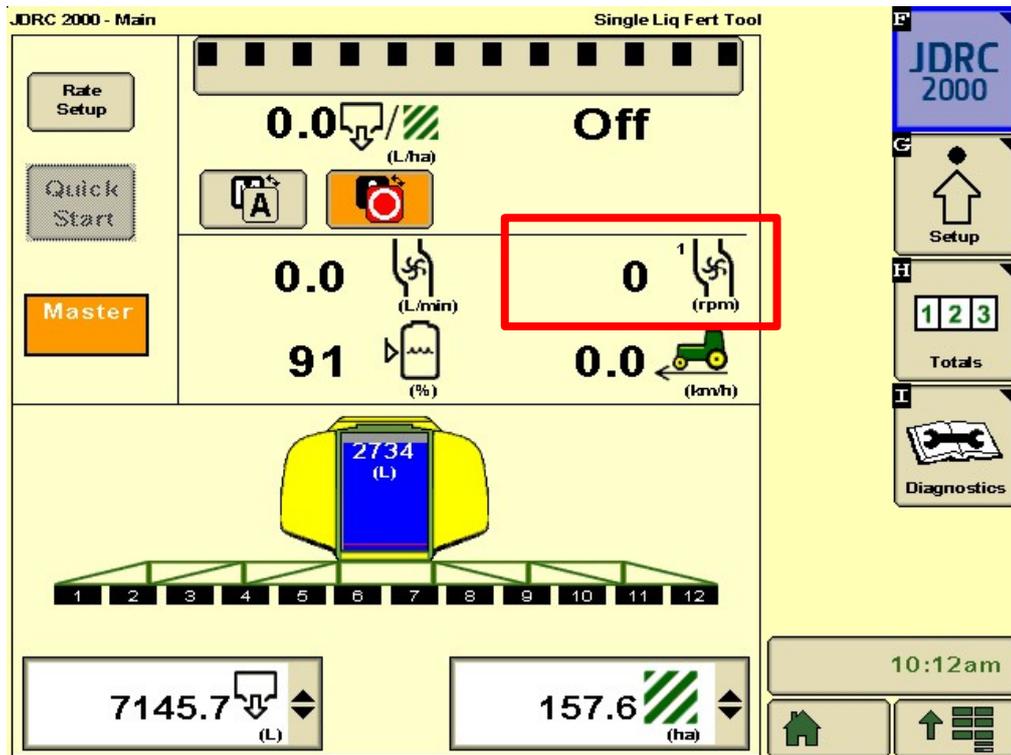
9. **Pump Speed** should now be displayed in the data field. Press **Accept** to save settings and return to Set up screen.



10. Press **JDRC 2000** button to return to RC2000 Run screen.



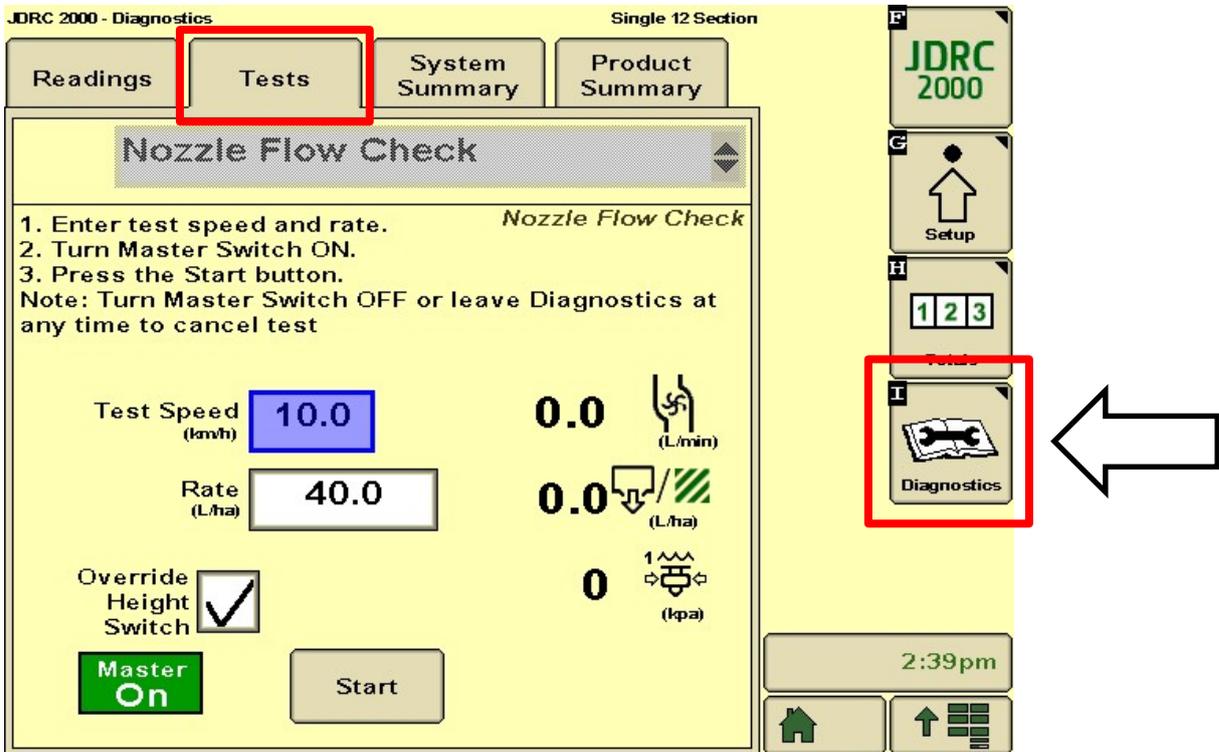
11. **Pump Speed** should now be displayed on the RC2000 Run screen.



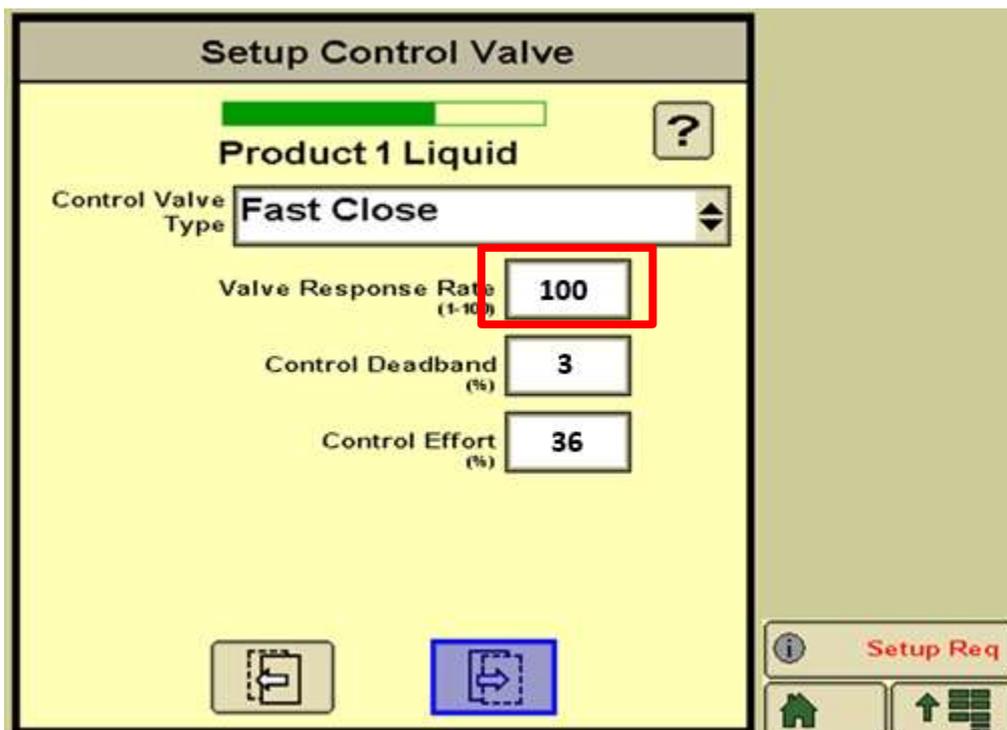
System Set Up Verification Tests

Enter **Diagnostics** screen and select **Tests** tab.

1. Start the pump and perform **Nozzle Flow Check** to test control. Use typical speed and application rate to start the test then vary the speed and application rates to ensure the control system is performing correctly across the required range. Turn the master switch (foot switch) off to terminate the test.



If rate control is erratic or slow, go to **Control Valve Setup** screen and tune valve parameters based on guide and instructions on p.33



System Stability and Application Consistency

Regulator-Valve control parameters can be specific depending on the individual system set-up and flow/pressure dynamics.

If the system is unstable or is unable to maintain a consistent application rate, setup parameters can be adjusted to improve performance. Return to Control Valve set up page and adjust control parameters. Refer to help for further guidance

Valve Response Rate:

How fast the actuator will respond to being off-rate. How fast the valve will move, this can generally be left at 100 but if fluctuation is persistent, reduce to 85.

Control Deadband:

A range of being off-rate (higher and lower) that the actuator will tolerate before adjusting. A lower value will keep it tighter on rate, but can result in “chatter” or unnecessary small adjustments that can lead to “hunting” around the target rate.

Control Effort:

How far the actuator will move with each adjustment step. **This is crucial for performance.** A lower value can result in slower times getting to rate, while too high a value will lead to “hunting” around the target rate. Start low when tuning and bring up in small steps until hunting is observed, then drop down to a previous steady value.

