

# **SETUP GUIDE**

# **JOHN DEERE RATE CONTROLLER 2000**

# FAST SHUT OFF - SINGLE LIQUID – SINGLE SWATH

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### **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 without section control where it is the one and only product being controlled by JDRC 2000.

This document should be read in conjunction with the JDRC 2000 Operators Manual.

### **Configuration Prerequisites**

Before the liquid system can be configured in the Greenstar Display (2630 or newer), following actions 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.
- 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 without section control are:

Part No.	Name	Description
LL07017	JDRC 2000 Single Adapter Loom (47 pin)	Adapter that connects to 47 pin connector on JDRC 2000 Main Harness.
LL07011	Generic Module Loom (5m)	Connects to individual device connectors on LQS pump module. Connects to LL07017 Adapter Loom via 23 pin circular connector.
LL07015 (optional)	Generic Module Loom Extension (6m)	Extensions of Generic Module Loom for when additional length is required from LQS pump module to JDRC 2000.
LL07020 (optional)	Generic Module Loom Extension (12m)	

- Liquid Systems 📾
  - 1. Connect Generic Module Loom (LL07011) to device connectors (regulating valve signal and power, flow meter, pressure sensor and RPM sensor) on Liquid Systems (SA) module and route towards JDRC 2000.



- 2. Connect and route Extension Loom (LL07015 or LL07020) to reach JDRC 2000 if required for the routing distance.
- 3. Connect JDRC 2000 Single Adapter Loom (LL07017) to the Extension Loom and to the JDRC 2000 Main Harness.







4. If installed, connect Height Switch to connector on Adapter Loom (LL07017).





## **Rate Controller 2000 Setup**

Enter Rate Controller Setup. Select **New Profile** from drop down menu and press **Accept** button.

Select Profile	
Select the Profile that you would like to load. If "New" is selected the Setup Wizard will begin and a new Profile will be created.	
New Profile	
Accept	
	9:12a

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).



Select Liquid from Application Mode drop down menu. Press Next Page button (right arrow).

Setup Application Type	
Product 1 Liquid	
* Liquid	
Application Mode-Liquid	
Conventional liquid application. Application rate is entered and documented as Gallons/Acre (Liters/Hectare).	
	i Setup Req

Setup single section as below. Press **Next Page** button (right arrow). If required, press **Previous Page** button (left arrow) to go back and re-enter data.



Setup Sections	
18.000(m)	
Product 1	
18 1	
1	
Liquid Dry Wired Switch Section Signal Number	
	i Setup Req

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

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

Setup Pressure Sensors	
?	
Pressure Sensor 1	
Pressure Sensor 2 None	
	No Display

Setup Pressure Alarms	
Minimum Maximum Alarm? Pressure 1 (Ipa) 0 1000 0 Pressure 2 (Ipa) 0 0	
	No Display

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

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

Setup Aux Functions	
Agitator Valve Installed	
Agitator Duty Cycle (%) Flow Return Installed	
Height Switch	
	No Display

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Enter following Control Valve settings as a starting point for KZ Valve. If rate control is erratic, these settings can be adjusted later. For **SPIKER** module, enter **Valve Response Rate** of **30**.



For Teejet Valve, enter Valve Response Rate of 90

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LQS Modules are built with 2 different Fast-Shutoff Valves, the images below show the difference between the KZ Valve and Teejet Valve.



### **KZ Valve**

## **Teejet Valve**



Enter Flowmeter Factory Calibration number as below.

Flowmeter	Pulses/Litre	Pulses/US Gal	Pulses/IMP Gal
Teejet 801	82	310	373
ARAG Orion 2.5-50L/Min	1200	4542	5455
ARAG Orion 1-20L/Min	3000	11355	13638
ARAG Orion 0.5-10L/Min	6000	22710	27277



Enter Tank Capacity, Level and Alarms as required.

Setup Tank	
Product 1 Liquid	
Tank Capacity (L) 5000	
Current Level O	
Low Tank Level 200	
Tank Fill Monitor	
	No Display



Setup Rates	
Product 1 Liquid	
Rate 1*Rate 2Rate 3Preset Rate Values (L/ha)40.050.060.0	
Rate Bump 5.0 Rate Selection	
Rate Smoothing 3%	
	No Display

Enter Off Target Rate Alarm as required.

Setup Alarms	
Product 1 Liquid 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	
	No Display

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

Setup Summary	
Profile Name JDRC2000 Test Machine Type Liquid Fert. Tool Number Of Products 1 Number of Sections 1 Application Width(m) 18.000 Switchbox Present No	
Accept	No Display

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

i	<b>GS</b> S	
New Im	plement Detected	
	Implement Type: Liquid Fert. Tool Connector Type: Manufacturer: John Deere Model: JRC Name/SN: A000840004200624	
	Offsets are available Widths have been auto-populated	
	Equipment Accept	<u>î No Display</u> <u>Д</u> Ок

### IGNORE THIS WARNING. Press Accept to proceed to pressure sensor set up.



Select **Settings** tab from the Set up screen.









#### Select Calibrate Pressure Sensor



Ensure pump is **NOT** running and then select **Voltage-based Calibration**.



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





Pressure	Sensor Setup	
Pressure Sensor 1 Pressure Sensor 2	Custom	
Calibr Pressure	ate Sensor	2:38pm

Press Accept to save settings and return to the Set up screen.

## **RPM Sensor Integration**

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



#### 2. Select Auxiliary Features Setup.



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3. 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 Setup screen.

Auxiliary Features Setup	
RPM 1 Calibration Pulses/Rev 36 Alarm? RPM 1 Low Limit (rpm) RPM 1 High Limit (rpm) 550	
Accept	10:10am

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





5. Select a Data Field to display pump speed.



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





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



8. Press JDRC 2000 button to display the Main Run screen.







9. **Pump Speed** should now be displayed in the Main Run screen.

## System Set Up Verification Tests

Enter Diagnostics screen and select Tests tab.

Start the pump and select **Nozzle Flow Check** from the drop-down menu 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 entire set up 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 reduce **Valve Response Rate** 

#### Select Setup





### Select Control Valve Setup



If rate response is slow- increase Valve Response Rate If rate control is erratic- reduce Valve Response Rate

