



Sample Profile Setup for Liquid. Your setup will be different than what is shown here.

If Liquid is used with this harness, it MUST be Product 3. The Dry products can share Section 1 (or 1&2 if they are operating with 2 sections). Liquid will start with Section 2 (or Section 3 if using 2 sections for DRY). If DRY and LIQUID products have the same number of sections they can share sections.

Products 1 and 2 will be DRY—Granular. If not using Section Control on DRY, use Granular Full Width.

See the *John Deere Rate Controller 2000 Operator's Manual* for important safety information and additional setup and operating instructions.

1. Navigate to the Profile Setup:

For initial setup, start a new profile. The JDRC 2000 allows you to store 8 profiles. Be prepared to wait during this phase of the setup.

2. Enter a Profile Name. Machine Type—Generic. Software Version Number should be 1.08 or higher.  
3. Number of Products = 2.

5. Select Application Type and Application Mode.

6. Set up Section Groups. Section Group 2 will start with Section 7. Other Section Setups are possible. The standard SureFire harness has Sections 1-6 with Product 1, and Sections 7-12 with Product 2.

Section Groups	* Starting Section Driver	* Number of Sections	Equal Section Widths
1	1	4	<input checked="" type="checkbox"/>
2	7	4	<input checked="" type="checkbox"/>

# QuickStart setup instructions for JDRC 2000 and SureFire:

Use with SureFire adapter harness: 213-00-3453Y1 or 3467Y1 or 3538Y1 or 3585Y1 for 2 Liquid/Dry products

7. The SureFire pressure sensor will be set up as a **Custom** sensor.  
Calibration will be done later.

**Setup Pressure Sensors**

Pressure Sensor 1: Custom

Pressure Sensor 2: Custom

Pressure Sensor 3: None

Pressure Sensor 4: None

**Setup Sensor Assignment**

Pressure Sensor 1

Product 1:

Product 2:

Pressure Sensor 1 will be assigned to Product 3 (Liquid) if used.

**Setup Pressure Alarms**

Pressure 1 (psi): Minimum 0, Maximum 0, Alarm?

Pressure 2 (psi): Minimum 0, Maximum 0, Alarm?

Do NOT check the Pressure Alarm boxes.

## 8. Optional Aux Functions—RPM Sensors

**Setup Aux Functions**

RPM 1 Calibration Pulses/Rev: 15

RPM 1 Low Limit (rpm): 0

RPM 1 High Limit (rpm): 0

RPM 2 Calibration Pulses/Rev: 15

RPM 2 Low Limit (rpm): 0

RPM 2 High Limit (rpm): 0

**Setup RPM Sensor Assignment**

RPM Sensor 1

Product 1:

Product 2:

If using RPM sensor for Product 1

On a typical setup, do NOT set RPM Limit Alarms.

On the Control Valve Setup for the Dry products, start with the Default settings for Valve Response Rate. Adjust as needed.

## 9. Control Valve Setup

**Valve Response Rate:** (Adjust as needed)

PumpRight (hydraulic)	80
Tower (electric)	100
Catalyst and Spartan	80

If pump is slow responding to rate or speed changes, increase **Valve Response Rate** 10 at a time. If product oscillates around rate going across the field, reduce **Valve Response Rate**.

**Control Deadband:** Start at 2

**Setup Control Valve**

Product 1 Liquid

Control Valve Type: PWM Close

Valve Response Rate (1-100): [ ]

Control Deadband (%): 2

**Low Limit** (Adjust in field as needed)

PumpRight (hydraulic)	25
Tower (electric)	10
Catalyst and Spartan	10

**PWM Startup** (Adjust in field as needed)

PumpRight (hydraulic)	40
Tower (electric)	40
Catalyst and Spartan	10

### Tip for Best Startup Performance

For best startup performance, set the **PWM Startup** at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts, it will go immediately to that Duty Cycle and then will have just a minor adjustment to lock on to the Target Rate.

**Setup PWM**

Product 1 Liquid

Coil Frequency (Hz): 100

High Limit (%): 100.0

Low Limit (%): [ ]

PWM Startup (%): [ ]

Normal Operation      PWM Startup

37.1 DC (%)	PWM Startup (%) 40.0
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If pump starts up too fast, lower the PWM Startup.



# QuickStart setup instructions for JDRC 2000 and SureFire: 2 liquid/dry products

## 10. Rate Sensor (Flowmeter) Setup

Caution: When choosing pulses/gal, be sure to choose the **gal** units, and not the **l gal** units.

## Flowmeter Calibration and Units

Flowmeter Size (GPM)	Pulses/Gal	Spartan model #	Puls/fl oz
0.08-1.6*	22710*		
0.13-2.6	3000		
0.3-5.0	3000	110	1760
0.6-13	2000	120	880
1.3-26	2000	130	440
2.6-53	2000	140	220

\*The JDRC 2000 will not accept a 5-digit flow cal number. For this flowmeter use **flow cal = 177** and **Units = fl oz**. (22710 / 128 = 177)

Check **Tank Fill Monitor** box if using a fill flowmeter. Then enter **Tank Fill Flowmeter Calibration (Units are 10 gal)**.

## 11. Tank and Fill Flowmeter Setup (Optional)

## 12. Rates and Rate Smoothing Setup

Set **Rates** and **Rate Smoothing** as desired. Check the **Decimal Shift** box to enter rates with one more decimal point (such as 0.25 gpa).

## 13. Off Rate Alarm Setup

Set **Off Rate Alarm** as desired. The **Minimum Flow Rate** box will not be present if a pressure sensor has been assigned to this product. Typically, Minimum Flow Rate will be left at 0.

This QuickStart sheet does not cover every possible setup. Your setup may be different. See the John Deere Rate Controller 2000 Operator's Manual for safety information and complete setup and operating instructions.

SureFire harnesses for the JDRC 2000 are designed for specific operating setups. Pinouts on the JDRC 2000 change depending on the Profile Setup and the number of products. See the wiring harness diagram for your harness.

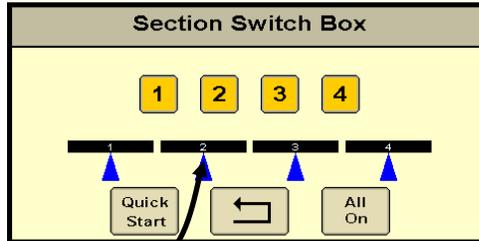
More information is available at [www.surefireag.com/support](http://www.surefireag.com/support).

14. All **Pressure Sensors** must be calibrated. See the boxes below for the procedure. Enter **50.0 mv/PSI** for SureFire 0-100 PSI sensor. (Be sure there is no pressure against the sensor when calibrating. Unplug the sensor during the calibration process. More on Pressure Sensor Diagnostics below.)

For complete information on how the sensor is operating, go to **Diagnostics > Readings > Pressure Sensors**. 0 Pressure Voltage should be 0.00 V. (May be 0.02)

# Advanced Setup and Operating Information, Run Page, Initial Startup

15. Set these 4 items in **Setup > Settings > Display Settings**  
 Gal/min  
 Pressure (PSI)  
 DC(%) (PWM)  
 Mi/hr



JDRC 2000 - Main

Generic 2 Liquids

Press on this bar to open Section Switch Box

0.0 (gal/ac) 20.0 (gal/ac)

Rate 1 20.0 Rate 2 25.0 Rate 3 30.0

0.0 (gal/min) 0 (psi)

0.0 DC (%) 0.0 (mi/hr)

Quick Start Master Off

PUMP RPM (For hydraulic pump)

5:10pm

AUTO MODE

0.0 (gal/ac) 20.0 (gal/ac)

Rate 1 20.0 Rate 2 25.0 Rate 3 30.0

System ENABLE / DISABLE (ON/OFF)

0.0 (gal/ac) Off

AUTO / MANUAL

0.0 (gal/ac) Off

MANUAL MODE

0.0 (gal/ac) Man

JDRC 2000 - Setup

One Liquid

Implement Settings Alarms Rates

Control Valve Setup Pressure Sensor Setup

Flow/Rate Sensor Setup Auxiliary Features Setup

Tank/Bin Setup

Display Settings Advanced Tuning

Setup

PID Valve Tuning

P 90 D 10

I 10 S 90

Start with these settings for SureFire electric pumps.

**16. Advanced Tuning**

On SureFire **electric pump systems** (Tower 110, Tower 200, Catalyst, and Spartan), it will be necessary to use the **Advanced Tuning** feature in addition to the regular Control Valve Calibration. To activate **Advanced Tuning**, press and hold the **Settings** tab for about 8 seconds.

On **electric pump** systems, set the PID Valve Tuning parameters as shown (below left). Press the "?" for an explanation of what each of these values does.

Fine-tuning of the system may require some adjustment of these numbers along with the Valve Response Rate on the Control Valve Setup.

For quickest response on Tower 110 systems set P = 100 and S = 100.

*Do not use Advanced Tuning on SureFire hydraulic pump systems.*

- TIPS: When first starting the system or when troubleshooting a problem, you can turn OFF either Product 1 or Product 2 and just run the system you want. You can also operate in the field with only one system turned on.
- (2) Go to *Diagnostics > System Summary* for a quick look at the System Settings.
  - (3) Go to *Diagnostics > Product Summary* for a quick look at the settings for each product setup.
  - (4) Go to *Diagnostics > Readings* for important information and feedback: *Hardware/Software, Delivery System, Section Status, System Voltage, Pressure Sensors, RPM Sensors and more.*

## Tests for Initial Operation

### **17. Initial Operation in MANUAL mode:**

1. Fill the system with water. For first time startup, open air bleed valve.
2. Enter a Test Speed at Setup > Implement
3. Navigate to MANUAL MODE as shown above for the product you are testing.
4. Height switch must be DOWN (or uncheck Height Switch box).
5. Turn on Master Switch. Press + to increase flow.
6. Monitor Flow (gal/min), PSI, DC, Pump RPM.
7. Go to Section Switch box (above). Turn Sections OFF and ON.
8. Turn Master Switch OFF.

### **OPTIONAL MANUAL PUMP OPERATION:**

Go to **Diagnostics > Tests > Calibrate PWM LIMITS**. This is a place where you can manually run the pump without the system shutting down if it doesn't read flow immediately. When you press START, the section valves will open. Press + to increase the PWM Duty Cycle. For electric pumps the DC will have to be 10%-15% to get flow. Hydraulic pumps will need to be around 30% to get flow. When priming the pump, it will help to open the air bleed valve and run the pump faster to get it primed and to get the air out.

**TROUBLESHOOTING TIP: Pump Won't Run**—Start the Calibrate PWM Limits Test. Run the PWM Duty Cycle (DC) to 100%. With a voltmeter check voltage at the 2-pin PWM connector. Should have 12-13 volts. If there is voltage here, but pump won't run, check the pump.

**Electric Pump**—Unplug the two big connectors at the black EPD module. Plug these together. This will take power from the battery directly to the pump(s). The pump(s) should run full speed.

**Hydraulic Pump**—On the hydraulic valve block, pop up the Manual Override button (red knob on top of solenoid). If unit has been in the field, you may need to loosen the dirt to move the knob. In cab, turn hydraulic flow to very low. Engage hydraulics. Pump should begin turning. Slowly increase hydraulic flow to speed up pump.

### **18. Initial Operation in AUTO mode: (Could also do Diagnostics > Nozzle Flow Check).**

1. Enter a Test Speed at Setup > Implement
2. Navigate to AUTO MODE as shown above. Select a Rate.
3. Height switch must be DOWN (or uncheck Height Switch box).
4. Turn on Master Switch.
5. Monitor Actual Rate (gal/ac), Flow (gal/min), PSI, DC, Pump RPM.
6. Go to Section Switch box (above). Turn Sections OFF and ON.
7. Turn Master Switch OFF. (NOTE: Pressure will be much less with water than with heavier, thicker fertilizer.)

Check out the other tests available at **Diagnostics > Tests**.

Other resources available:

396-3583Y1 SureFire PumpRight System for JDRC 2000

396-3616Y1 SureFire Tower System for JDRC 2000

396-3562Y1 QuickStart Setup Instructions for JDRC 2000 and SureFire harness for 1 Liquid/Dry Product

396-3564Y1 QuickStart Setup Instructions for JDRC 2000 and SureFire harness for 3 Liquid/Dry Products

396-3613Y1 Troubleshooting\_Service Guide for PWM Liquid Systems and JDRC 2000

396-3269Y1 Navigating the Metering Tube Maze—Metering Tube Explained

396-3391Y1 Spartan Injection Pump Instruction Sheet

[www.surefireag.com/support](http://www.surefireag.com/support)

See the *John Deere Rate Controller 2000 Operator's Manual* for important safety information and setup and operating instructions. Go to [www.surefireag.com/support](http://www.surefireag.com/support) for more help.

