



396-3564Y1

QuickStart setup instructions for JDRC 2000 and SurePoint harness for 3 Liquid/Dry Products

213-00-3517Y or 213-00-4889Y. This harness is NOT for NH3. This is NOT for Gen3 LiquiShift setup.

Below are typical SurePoint Liquid System setup screens. Not all screens are shown. *Your setup may vary.*

NOTICE

See the John Deere JDRC 2000 Operator's Manual and the SurePoint system manual for safety information and additional setup/operating information.

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.

2. Enter a Profile Name. Machine Type—Generic. Software Version Number should be 1.13 or higher.
3. Number of Products = 3. (Must be set for 3, even if only using 1 or 2—pinouts change for 3-product profile)
4. If you will be monitoring Pump RPM or Spinner RPM, select RPM Sensors-2.

5. Select Application Type and Application **6. Set up Section Groups. Section Group 2 will start with Section Driver 7.** **7.**

Other Section Setups are possible. There are 14 section drivers on this harness.
 PR1—Sections 1-6 (many other arrangements are possible)
 PR2—Sections 7-12
 PR3—Sections 13-14

Spartan injection pump should share sections with main product.

Are section drivers shared between all products in a product harness? **No**

Set as needed for this setup.
 Number of Section Groups: **3**

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"/>
3	13	1	<input checked="" type="checkbox"/>

Setup Section Width			
Enter the width of the sections (in)			
1	10.000	7	10.000
2	10.000	8	10.000
3	10.000	9	10.000
4	10.000	10	10.000
		13	40.000



QuickStart setup instructions for JDRC 2000 and SurePoint:

Use with SurePoint adapter harness: 213-00-3517Y_ or 213-00-4889Y_ for 3 Liquid/Dry products

7. The SurePoint pressure sensor will be set up as a **Custom** sensor. Calibration will be done later. This harness allows 3 sensors.

Setup Pressure Sensors

Pressure Sensor 1: Custom

Pressure Sensor 2: Custom

Pressure Sensor 3: Custom

Pressure Sensor 4: None

Setup Sensor Assignment

Pressure Sensor 1

Product 1:

Product 2:

If your system has pressure sensors: For a typical setup, assign Pressure Sensor 1 to Product 1, and assign Pressure Sensor 2 to Product 2. A Pressure Alarm becomes a control limit (used mainly for spray tip nozzles).

On a SurePoint PumpRight hydraulic setup, set the Maximum Pressure at 85 PSI and check the Alarm box so the pump does not overspeed if the pressure gets too high and opens the Pressure Relief Valve (PRV).

Setup Pressure Alarms

Pressure 1 (psi): Minimum 0, Maximum 85, Alarm?

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

You can put the display for a particular sensor on the product RUN screen so you can see all the information about that system on one screen. (See Display Settings)

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): 500

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:

213-00-3517Y_ and 4889 Pinouts

Product 1	Pressure 1	RPM1
Product 2	Pressure 2	RPM 2
Product 3	Pressure 3	RPM 1

SurePoint hydraulic pump with RPM sensor is 15 pulses/rev. Set RPM High Limit at 500 and check box to limit pump speed.

System Setup Notes

Product 3 cannot be a LiquiShift system. A Dry system may be run as any of the products.

If Section Drivers are shared between two products, you will need a 3-pin Y adapter harness to split each shared section driver signal.

See the harness drawings to see where each function connects.

9. Control Valve Setup

Valve Response Rate: (Adjust as needed)

PumpRight (hydraulic) PR17-80 PR30-70 PR40-60 D250-50

Tower (electric) 100

Catalyst and Spartan 5-15

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**.

Low Limit (Adjust in field as needed)

PumpRight (hydraulic) 25-30

Tower (electric) 10

Catalyst and Spartan 5

PWM Startup (Adjust in field as needed)

PumpRight (hydraulic) 35-40

Tower (electric) 15-25

Catalyst and Spartan 5-10

Setup Control Valve

Product 1 Liquid

Control Valve Type: PWM Close

Valve Response Rate (1-100): []

Control Deadband (%): 2

Setup PWM

Product 1 Liquid

Coil Frequency (Hz): 100

High Limit (%): 100.0

Low Limit (%): [] See

PWM Startup (%): [] Above

10. Rate Sensor (Flowmeter) Setup

Setup Rate Sensor

Product 1 Liquid

Flowmeter Calibration: [] See Below

Flowmeter Pulse/Units: gal

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	115	1700
0.6-13	2000	125	890
1.3-26	2000	135	450
2.6-53	2000	145	220



QuickStart setup instructions for JDRC 2000 and SurePoint: 3 liquid/dry products

10. Rate Sensor (Flowmeter) Setup

Flow/Rate Sensor Setup

Product-1

Flowmeter Calibration

Flowmeter Pulse/Units: gal

Flowmeter Low Limit (gal/min): 0—or

Adjusting the Flow Cal number:

Verify the acres worked and gallons applied and adjust the Flow Cal if needed. If you need more product, increase the Flow Cal. If you need less, decrease the Flow Cal.

Flowmeter Low Limit may be set at 0 or 0.13—set at 0.1 0.3—0.2 0.6—0.4 1.3—1.0 2.6—2.0

The flowmeter will read lower than what it is rated. Set the Low Limit when operating near the low end of the flowmeter.

11. Tank and Fill Flowmeter Setup

Setup Tank

Product 1 Liquid

OPTIONAL: Use as desired

Tank Capacity (gal): 0

Current Level (gal): 0

Low Tank Level (gal): 0 Alarm?

Tank Fill Monitor

Setup Tank Fill

SFA 3" Fill Flowmeter: 130

SFA 2" Fill Flowmeter: 300

Tank Fill Flowmeter Calibration

Tank Fill Flowmeter Pulse/Units: 10 gal

Check **Tank Fill Monitor** box if using a fill flowmeter (not often used). Then enter **Tank Fill Flowmeter Calibration (Units are 10 gal)**.

12. Rates and Rate Smoothing. Set as desired.

Decimal Shift- normally set at 1. Set at 2 for rates less than 1 gpa (such as 0.25 gpa). Can set at 0 for high rates.

JDRC 2000 - Setup SureFire Liquid

Implement Settings Alarms **Rates**

Product-1

Preset Rate Values (gal/ae): Rate 1: 3.0 Rate 2: 5.0 Rate 3: 8.0

Rate Bump (gal/ae): 0.0 Rate Selection: Predefined

Rate Smoothing: 10 %

Decimal Shift: 1

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 or set as shown above.

Setup Alarms

Product 1 Liquid

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

Enter minimum flow rate required to maintain spray pattern. Minimum Flow Rate: 0.0 (gal/min)

14. All **Pressure Sensors** must be calibrated. See the boxes below for the procedure. Enter **50.0 mv/PSI** for SurePoint 0 -100 PSI, 0 to 5 volt 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.)

JDRC 2000 - Setup Generic 2 Liquids

Implement **Settings** Alarms Rates

Control Valve Setup

Pressure Sensor Setup

Flow/Rate Sensor Setup

Auxiliary Features Setup

Tank/Bin Setup

Display Settings

Pressure Sensor Setup

Sensor-1

1. Ensure there is zero pressure at the sensor to be calibrated.
2. Enable the sections to spray.
3. Press the Calibration button for the desired type of calibration to begin test and set zero point.

Voltage-based Calibration

Calibrate Pressure Sensor

Sensor-1

Voltage-based

1. Ensure the sensor has 12V power supply.
2. Enter the slope as reported by the implement pressure gauge manufacturer in the box below
3. Select Accept

50.0 (mv/psi)

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

Valuable Tip for Best Startup Performance

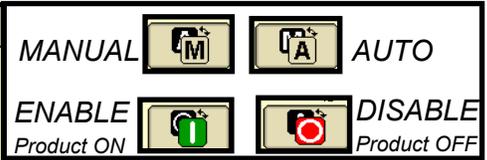
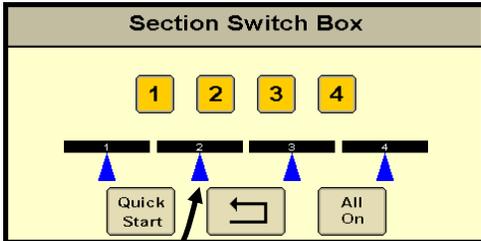
For best startup performance, set the **PWM Startup** at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts, it will go immediately to that Duty Cycle and then will have just a minor adjustment to lock on to the Target Rate. For example, if the normal DC% is as shown on the right, set the PWM Startup at 40% and the pump will start just a little faster than normal operating speed for a quick return to rate. If the pump starts up too fast, lower the PWM Startup %.

37.8 DC (%)

PWM Startup (%) 40.0

Display Settings, Section Switch Box, Run Page (Manual/Auto, Enable/Disable)

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



The screenshot shows the 'JDRC 2000 - Main' display. It features several gauges for Rate 1, Rate 2, and Rate 3. A red box highlights the 'DC (%)' gauge set to 15 and the 'Mi/hr' gauge. A red arrow points to a bar at the top with the text 'Press on this bar to open Section Switch Box'. Other elements include 'Quick Start', 'Master Off', and 'PUMP RPM'.

Four screenshots showing different mode combinations:

- AUTO MODE Product ENABLED:** Shows Rate 1 at 20.0, Rate 2 at 25.0, and Rate 3 at 30.0.
- AUTO MODE Product DISABLED:** Shows 'Off' for the product.
- MANUAL MODE Product DISABLED:** Shows 'Off' for the product.
- MANUAL MODE Product ENABLED:** Shows 'Man' for the product.

The screenshot shows the 'JDRC 2000 - Setup' screen. The 'Settings' tab is selected. Under 'Advanced Tuning-use', the 'Advanced Tuning' option is highlighted with a red box and labeled '16'. Other options include 'Display Settings' (15), 'Control Valve Setup', 'Pressure Sensor Setup', 'Flow/Rate Sensor Setup', 'Auxiliary Features Setup', and 'Tank/Bin Setup'.

16. Advanced Tuning

On SurePoint electric pump systems (Tower 110, Tower 200), 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.

The 'PID Valve Tuning' screen shows the following settings:

- P: 90
- D: 10
- I: 10
- S: 90

A red box highlights the settings with the text: **Start with these settings for SureFire electric pumps.**

- 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.
- Go to *Diagnostics > System Summary* for a quick look at the System Settings.
 - Go to *Diagnostics > Product Summary* for a quick look at the settings for each product setup.
 - 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.

NOTICE

Running these tests will dispense liquid. Be sure it is safe to dispense the liquid in your tank in this location.

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 as described next:

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 so you won't overspeed the pump. Engage hydraulics. Pump should begin turning. Slowly increase hydraulic flow to speed up the 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 at www.surepointag.com/support

396-3583Y1 SurePoint PumpRight System for JDRC 2000

396-3616Y1 SurePoint Tower System for JDRC 2000

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

WARNING

The operator is responsible for knowing and understanding the safe operation of this equipment. Systems with hydraulic equipment require additional safety precautions to prevent serious injury and/or death. See the full SurePoint Manual and the *John Deere Rate Controller 2000 Operator's Manual* for important safety information and setup and operating instructions. See www.surepointag.com/support for the SurePoint manual.

Harness Layouts

SurePoint Ag Systems



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