



396-3565Y1

QuickStart setup instructions for JDRC 2000 and SurePoint harness for 4 Liquid/Dry Products

213-00-3499Y_ This harness is NOT for NH3.

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 *You must set up 4 products because the pinouts change as you change the number of products.*

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 1.12 or higher.
3. Number of Products = 4. (Must be set for 4, even if only using 1 or 2.)
4. If you will be monitoring Pump RPM or Spinner RPM, select RPM Sensors-2.

5. Select Application Type and Application Mode. **6. Set up Section Groups. Many options are possible.**

Many Section Setups are possible. There are 16 section drivers on this harness.
 Section Connector 1— Sections 1-6
 Section Connector 2—Sections 7-12
 PR3—Sections 13-14
 PR4—Sections 15-16

Section	Width	Section	Width	Section	Width
1	10.000	7	10.000	13	40.000
2	10.000	8	10.000		
3	10.000	9	10.000		
4	10.000	10	10.000		



QuickStart setup instructions for JDRC 2000 and SurePoint: Use with SurePoint adapter harness: 213-00-3499Y_ for 4 Liquid/Dry products

7. The SurePoint pressure sensor will be set up as a **Custom** sensor. Calibration will be done later. This harness allows 4 sensors.

Setup Pressure Sensors

Pressure Sensor 1 Custom

Pressure Sensor 2 Custom

Pressure Sensor 3 Custom

Pressure Sensor 4 Custom

Setup Sensor Assignment

Pressure Sensor 1

Product 1

Product 2

Setup Pressure Alarms

Pressure 1 (psi) Minimum 0 Maximum 85 Alarm?

Pressure 2 (psi) Minimum 0 Maximum 0 Alarm?

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 over-speed if the pressure gets too high and opens the Pressure Relief Valve (PRV).

Monitor the sensor by placing it on the Run Screen using **Display Settings**.

System Setup Notes

Product 3 and 4 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.

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)

Setup RPM Sensor Assignment

RPM Sensor 1

Product 1

Product 2

213-00-3499Y_ Pinouts

Product 1	Pressure 1	RPM1
Product 2	Pressure 2	RPM 2
Product 3	Pressure 3	RPM 1
Product 4	Pressure 4	RPM 2

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

9. Control Valve Setup

Valve Response Rate: (Adjust as needed)

PumpRight (hydraulic)	80
Tower (electric)	100
Catalyst and Spartan	10-20

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)	25-30
Tower (electric)	10
Catalyst and Spartan	5

PWM Startup (Adjust in field as needed)

PumpRight (hydraulic)	40
Tower (electric)	25
Catalyst and Spartan	5-10

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	110	1760
0.6-13	2000	120	880
1.3-26	2000	130	440
2.6-53	2000	140	220



QuickStart setup instructions for JDRC 2000 and SurePoint: 4 liquid/dry products

10. Rate Sensor (Flowmeter) Setup

Flow/Rate Sensor Setup

Product-1

Flowmeter Calibration: 3000

Flowmeter Pulse/Units: gal

Flowmeter Low Limit (gal/min): 0-or

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 (Optional)

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.

Product-1

Preset Rate Values (gal/ao): 3.0, 5.0, 8.0

Rate Bump (gal/ao): 0.0

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

Minimum Flow Rate (gal/min): 0.0

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

Implement Settings Alarms Rates

Control Valve Setup

Flow/Rate Sensor Setup

Tank/Bin Setup

Display Settings

Pressure Sensor Setup

Auxiliary Features Setup

Setup

Pressure Sensor Setup

Sensor-1

Voltage-based Calibration

Calibrate Pressure Sensor

Sensor-1

Voltage-based

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

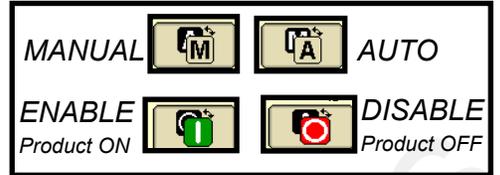
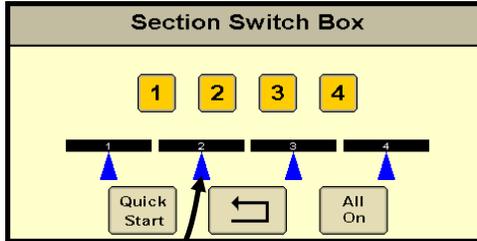
For best startup performance, set the **PWM Startup** at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts, it will go immediately to that Duty Cycle and then will have just a minor adjustment to lock on to the Target Rate. For example, if the normal DC% is as shown on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

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 Duty Cycle)
 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)

0 (gal) 0 (rpm)

PUMP RPM

5:10pm

AUTO MODE ENABLED
 0.0 (gal/ac) 20.0 (gal/ac)
 Rate 1 20.0 Rate 2 25.0 Rate 3 30.0

AUTO MODE DISABLED
 0.0 (gal/ac) Off

MANUAL MODE DISABLED
 0.0 (gal/ac) Off

MANUAL MODE ENABLED
 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

MUST DO Step 16 for Electric Pump Systems:

PID Valve Tuning

P 90 D 10

I 10 S 90

Start with these settings for SureFire electric pumps.

16. Advanced Tuning

On SurePoint electric pump systems, 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: (1) When first starting the system or when troubleshooting a problem, you can turn OFF either Product 1 or Product 2 or Product 3 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.

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

396-3583Y1 SurePoint PumpRight System for JDRC 2000

396-3616Y1 SurePoint Tower System for JDRC 2000

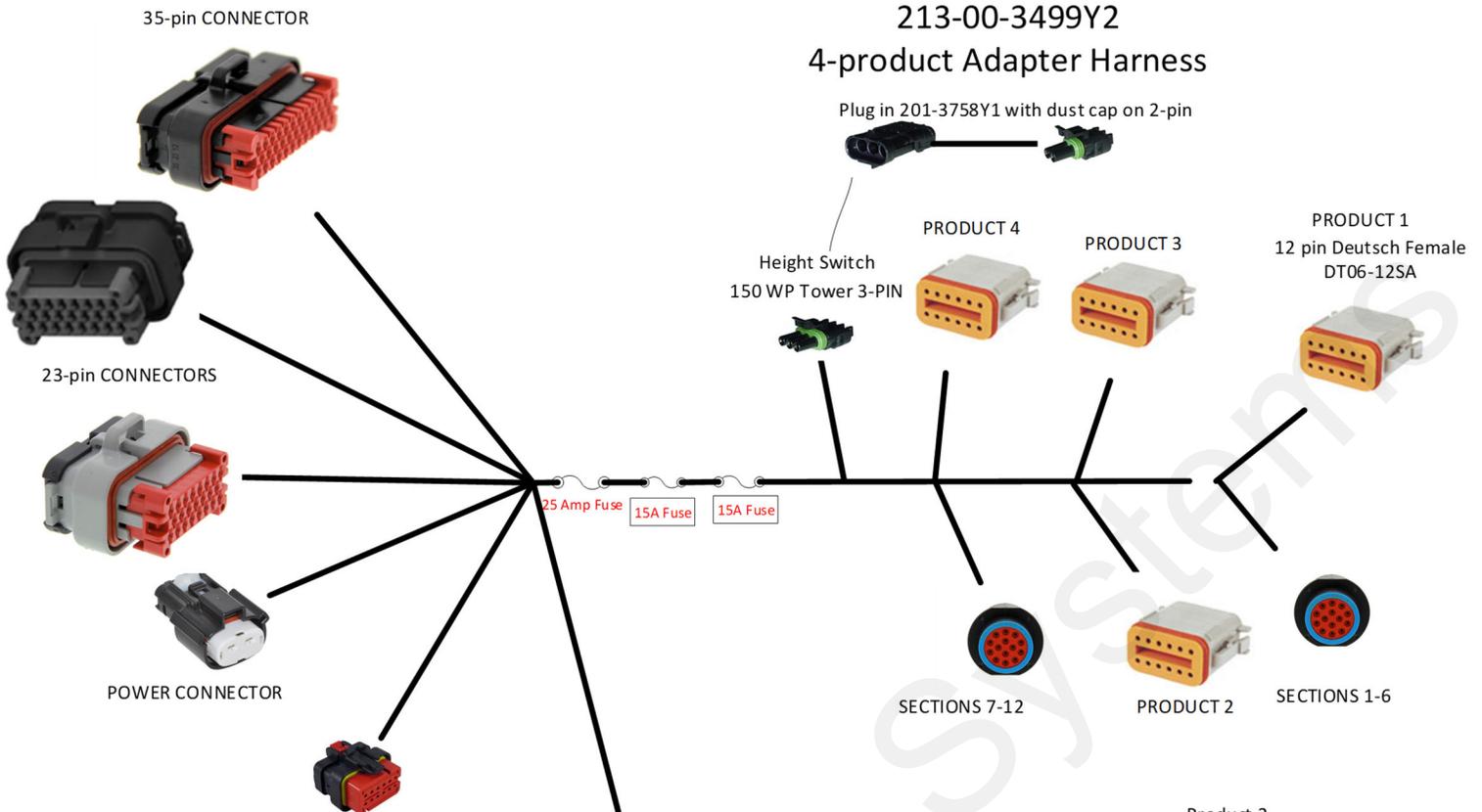
396-3613Y1 Troubleshooting Service Guide for PWM Liquid Systems and JDRC 2000

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.



213-00-3499Y2 4-product Adapter Harness



12 Pin ISO Connector
Product 1

1 RED	+12V DC
2 BLK	GND
3 BLU	Flow Signal 1
4 PUR	Pressure 1
5 YEL	PWM 1 (+)
6 GRN	PWM 1 (-)
7 BLU/WH	Fill Flowmeter 1
8 ORG	Pump RPM 1
9 ORG/WH	PR 1 Bin Level
10	
11 BLK	Section 1
12 BRN	Section 2

Product 2
12 pin Deutsch Female
DT06-12SA

1 RED	+12V DC
2 BLK	GND
3 BLU/WH	Flow Signal 2
4 PUR/WH	Pressure 2
5 WH/YEL	PWM 2 (+)
6 WH/GRN	PWM 2 (-)
7 BLU	Fill Flowmeter 2
8 ORG/WH	Pump RPM 2
9 ORG	PR 2 Bin Level Signal
10	
11 WH/BLK	Section 7
12 WH/BRN	Section 8

Product 3
12 pin Deutsch Female
DT06-12SA

1 RED	+12V DC
2 BLK	GND
3 BLU	Flow Signal 3
4 PUR	Pressure 3
5 YEL	PWM 3 (+)
6 GRN	PWM3 (-)
7 BLU/WH	Fill Flowmeter 3
8 ORG	Pump RPM 1
9 ORG/WH	PR 3 Bin Level Signal
10	
11 BLK/WH	Section 13
12BRN/WH	Section 14

Product 4
12 pin Deutsch Female
DT06-12SA

1 RED	+12V DC
2 BLK	GND
3BLU/WH	Flow Signal 4
4PUR/WH	Pressure 4
5WHT/YEL	PWM 4 (+)
6WHT/GRN	PWM 4 (-)
7 BLU	Fill Flowmeter 4
8ORG/WH	Pump RPM 2
9 ORG	PR 4 Bin Level Signal
10	
11WHT/BLK	Section 15
12WHT/BRN	Section 16

SECTIONS 1-6
14 pin Deutsch
HDP24-18-14PE

A RED	HC PWR 1
B RED	HC PWR 2
C BLK	HC GND 1
D BLK	HC GND 2
E YEL	PWM 1 (+)
F GRN	PWM 1 (-)
G PUR	Pressure 1
H	
J BLK	Section 1
K BRN	Section 2
L BLU	Section 3
M BLK/WH	Section 4
N BRN/WH	Section 5
P BLU/WH	Section 6

SECTIONS 7-12
14 pin Deutsch
HDP24-18-14PE

A RED	HC PWR 1
B RED	HC PWR 2
C BLK	HC GND 1
D BLK	HC GND 2
E WH/YEL	PWM 2 (+)
F WH/GRN	PWM 2 (-)
G PUR/WH	Pressure 2
H	
J WH/BLK	Section 7
K WH/BRN	Section 8
L WH/BLU	Section 9
M PNK	Section 10
N WH/YEL	Section 11
P DK GRN	Section 12

SurePoint Ag Systems and JDRC 2000 Harnessing

