396-3565Y1

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

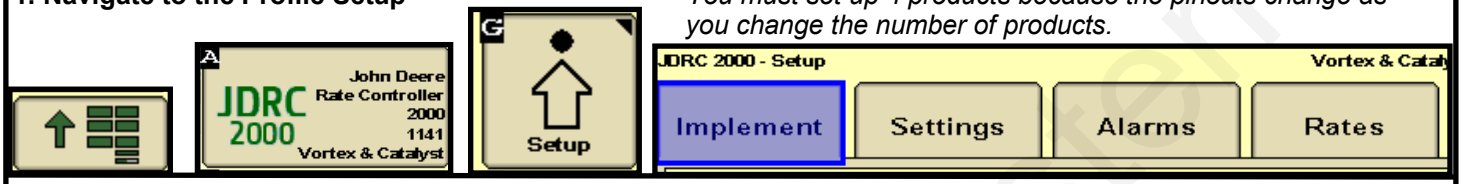
213-00-3499Y_ ***This harness is NOT for NH3.***

Below are typical SureFire 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 SureFire system manual for safety information and additional setup/operating information.***

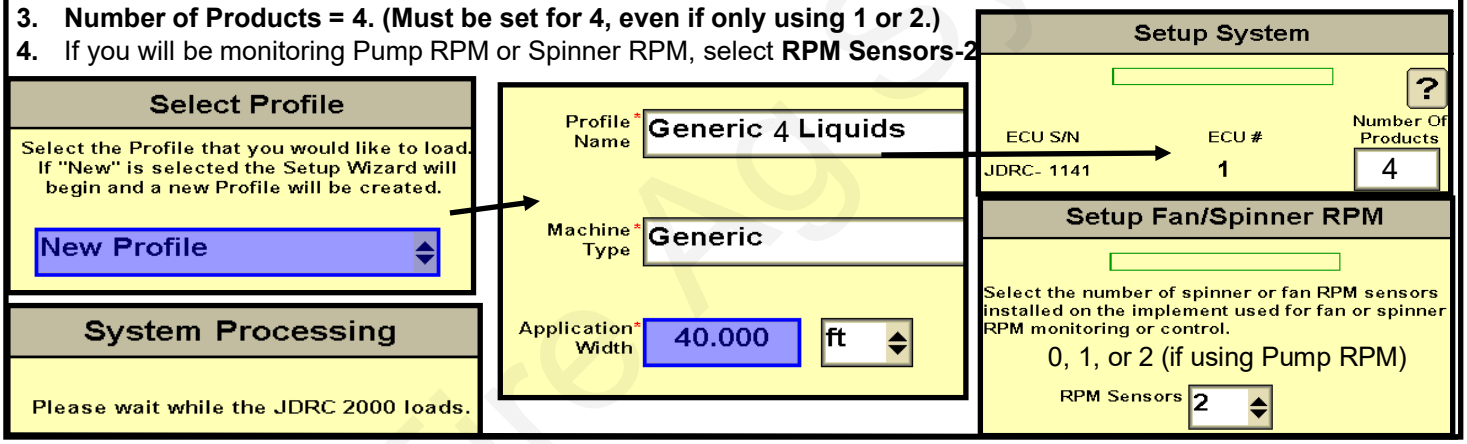
1. Navigate to the Profile Setup

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

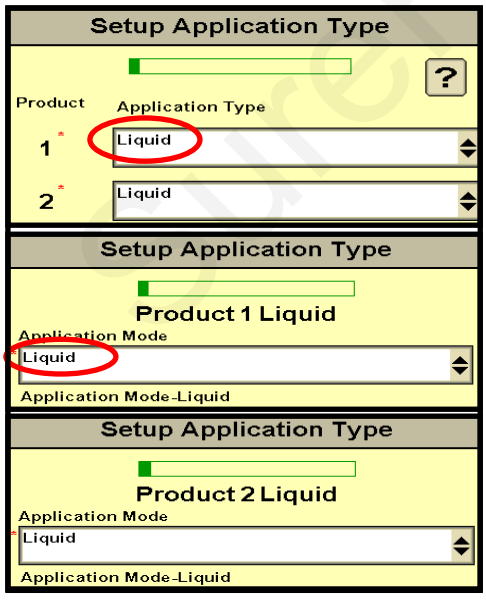


For initial setup, start a new profile. The JDRC 2000 allows you to store 8 profiles. Be prepared to wait during this phase.

2. Enter a **Profile Name**. **Machine Type—Generic. Software Version Number** should be 1.13 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**



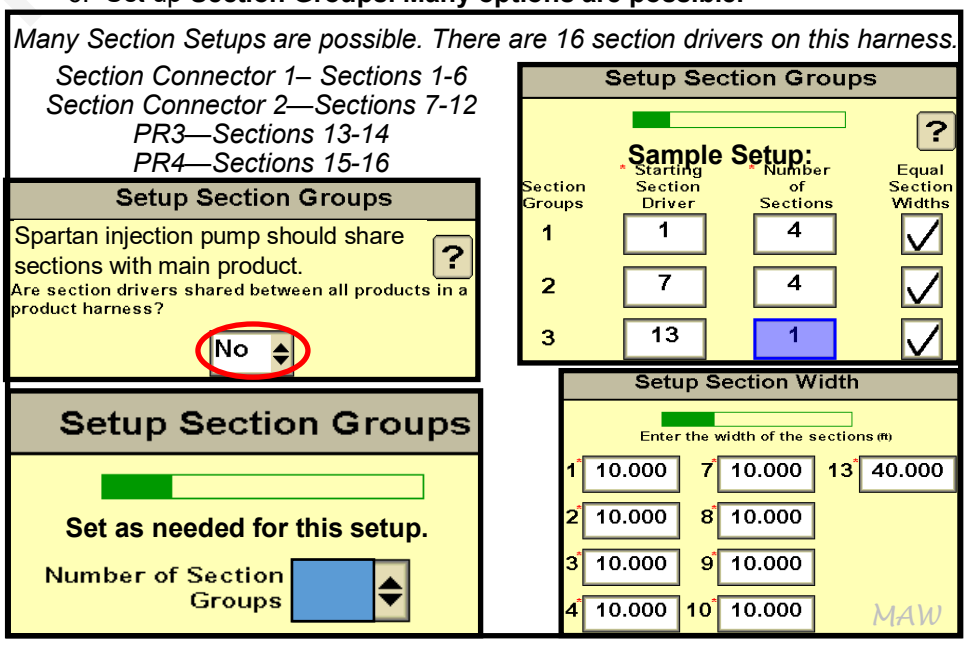
5.Select **Application Type** and **Application Mode.**



6. Set up **Section Groups. Many options are possible.**

Many Section Setups are possible. There are 16 section drivers on this harness.

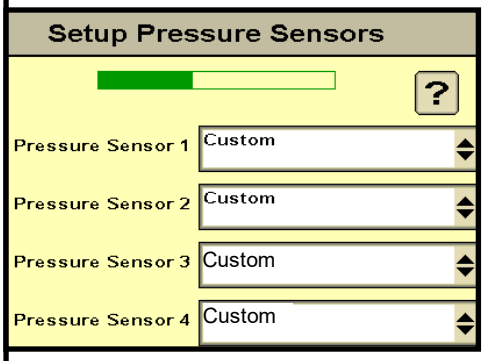
Section Connector 1– Sections 1-6
Section Connector 2—Sections 7-12
PR3—Sections 13-14
PR4—Sections 15-16

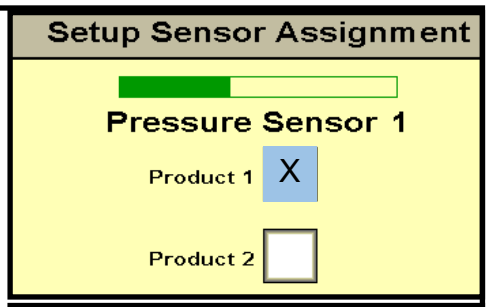


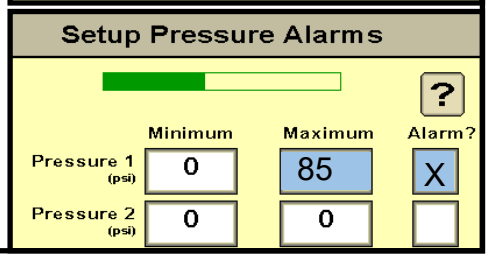
QuickStart setup instructions for JDRC 2000 and SureFire:

Use with SureFire adapter harness: 213-00-3499Y_ for 4 Liquid/Dry products

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





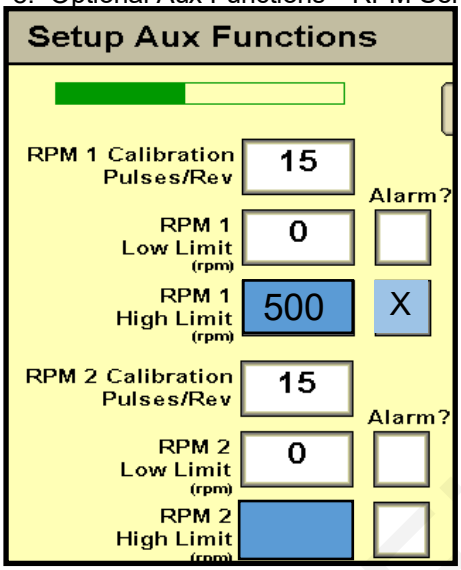


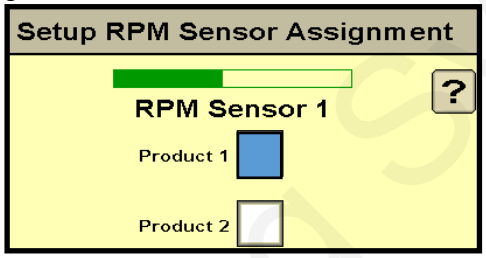
For a typical setup, assign Pressure Sensor 1 to Product 1, and assign Pressure Sensor 2 to Product 2. A Pressure Alarm becomes a control limit (used mainly for spray tip nozzles).

On a SureFire 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).

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

8. Optional Aux Functions—RPM Sensors





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

SureFire 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 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.

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 5-20

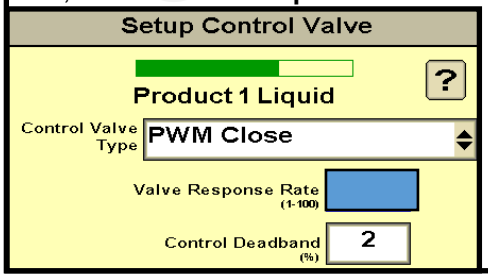
If pump is slow responding to rate or speed changes, increase **Valve Response Rate** 10 at a time. If product oscillates around rate going across the field, reduce **Valve Response Rate.**

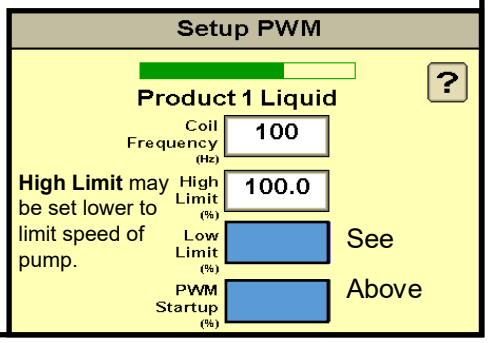
Low Limit (*Adjust in field as needed)*

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

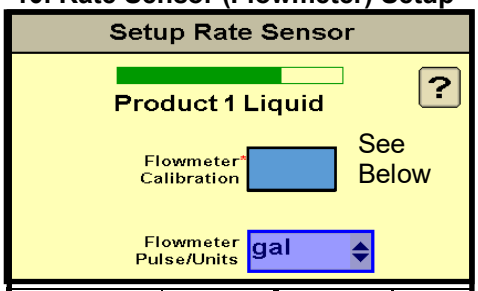
PWM Startup *(Adjust in field as needed)*

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





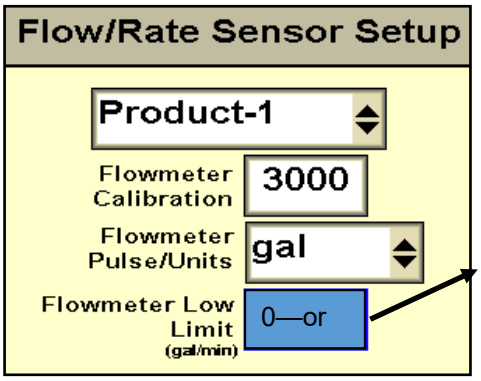
10. Rate Sensor (Flowmeter) Setup



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 SureFire: 4 liquid/dry products

10. Rate Sensor (Flowmeter) Setup



Verify *the acres worked and gallons applied in the field and adjust the flowmeter calibration if needed. If you need more product, increase the Flowmeter Calibration number. If you need less, decrease the number.*

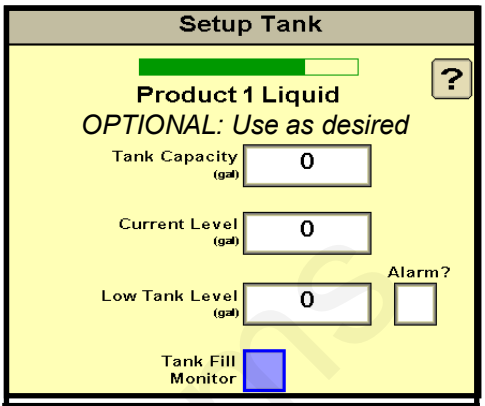
Flowmeter Low Limit may be set at 0 or

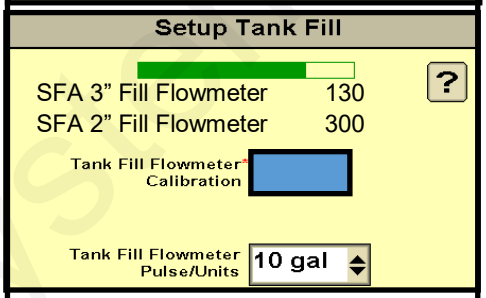
0.13*—set at 0.1* ***0.3****—0.2* ***0.6****—0.4*

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)

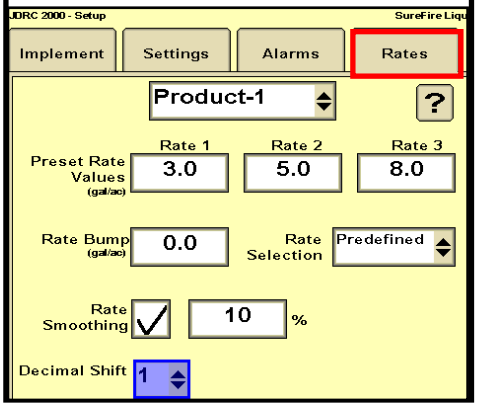




Check **Tank Fill Monitor** box if using a fill flowmeter (not often used). Then enter **Tank Fill Flowmeter Calibration (Units are 10 gal).**

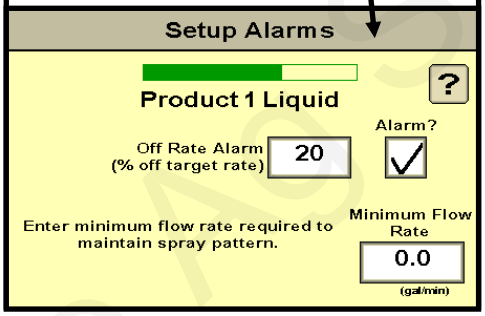
12. Rates and **Rate Smoothing.** Set as desired.

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.

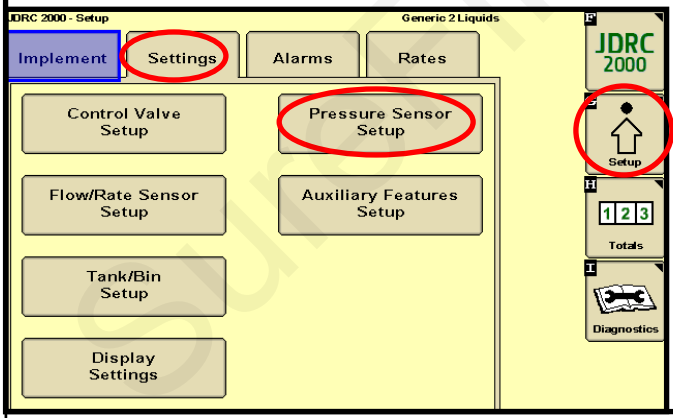


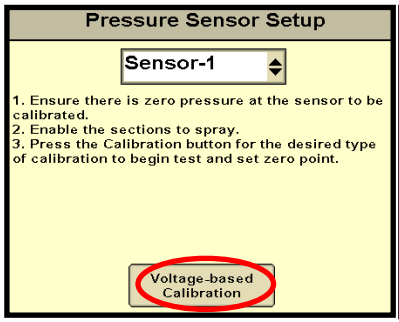
13. Off Rate Alarm Setup

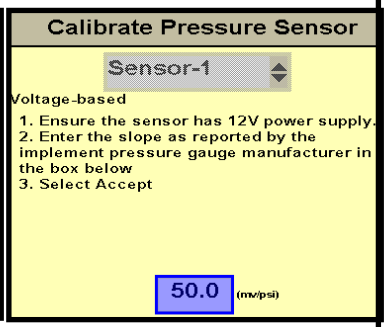
Set **Off Rate Alarm** as desired. The **Minimum Flow Rate** box will not be present if a pressure sensor has been assigned to this product. Typically, Minimum Flow Rate will be left at 0 or set as shown above.



14. All **Pressure Sensors** must be calibrated. See the boxes below for the procedure. Enter **50.0 mv/PSI** for SureFire 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.)*



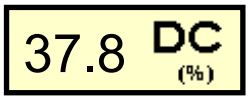


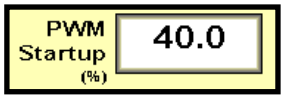


For complete information on how the sensor is operating, go to **Diagnostics > Readings > Pressure Sensors.**
0 Pressure Voltage should be 0.00 V.

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.

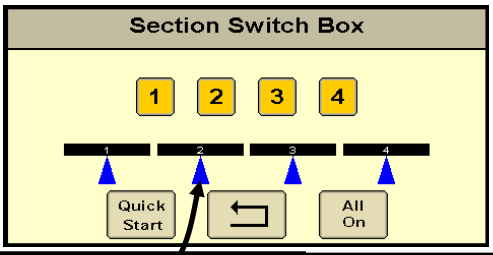


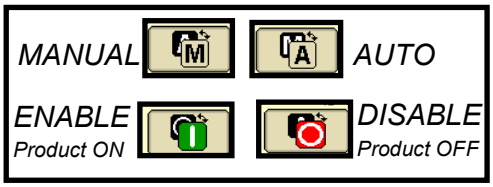


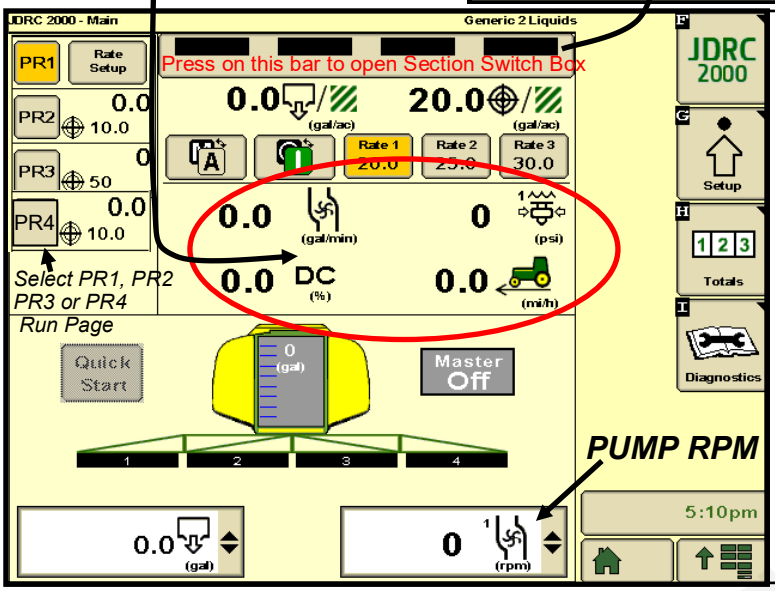
For example, if the normal DC% is as shown on the right, set the PWM Startup at 40% and the pump will start just a little faster than normal operating speed for a quick return to rate. If the pump starts up too fast, lower the PWM Startup %.

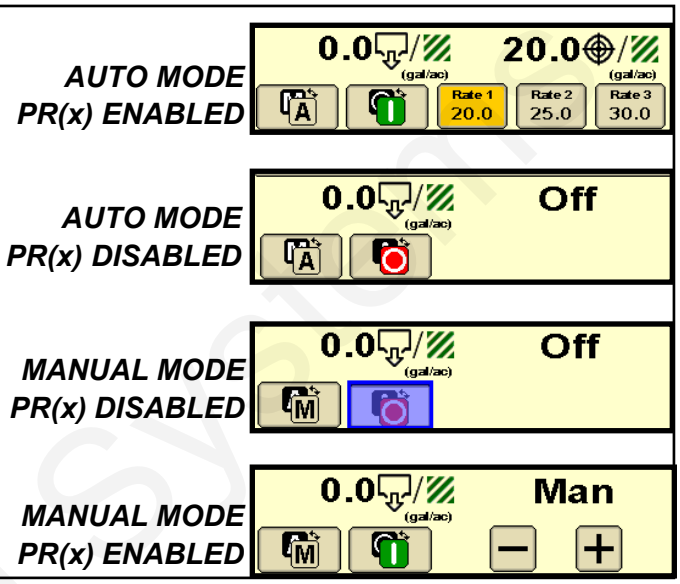
Advanced Setup and Operating Information, Run Page, Initial Startup

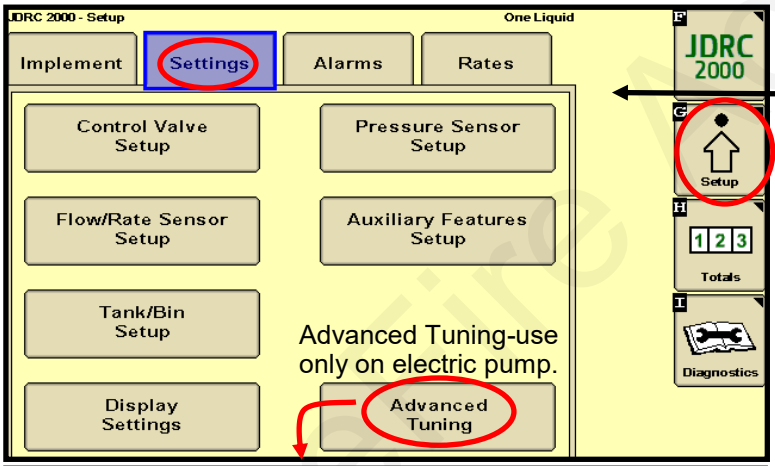
15. Set these 4 items in ***Setup > Settings > Display Settings***
Gal/min
Pressure (PSI)
DC(%) (PWM Duty Cycle)
Mi/hr

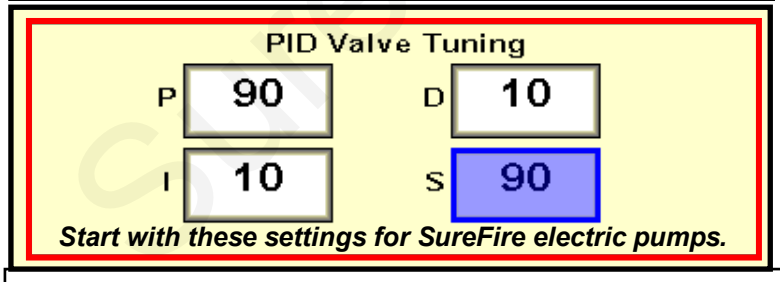












MUST DO Step 16 for Electric Pump Systems:

16. Advanced Tuning

On SureFire **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.surefireag.com/support

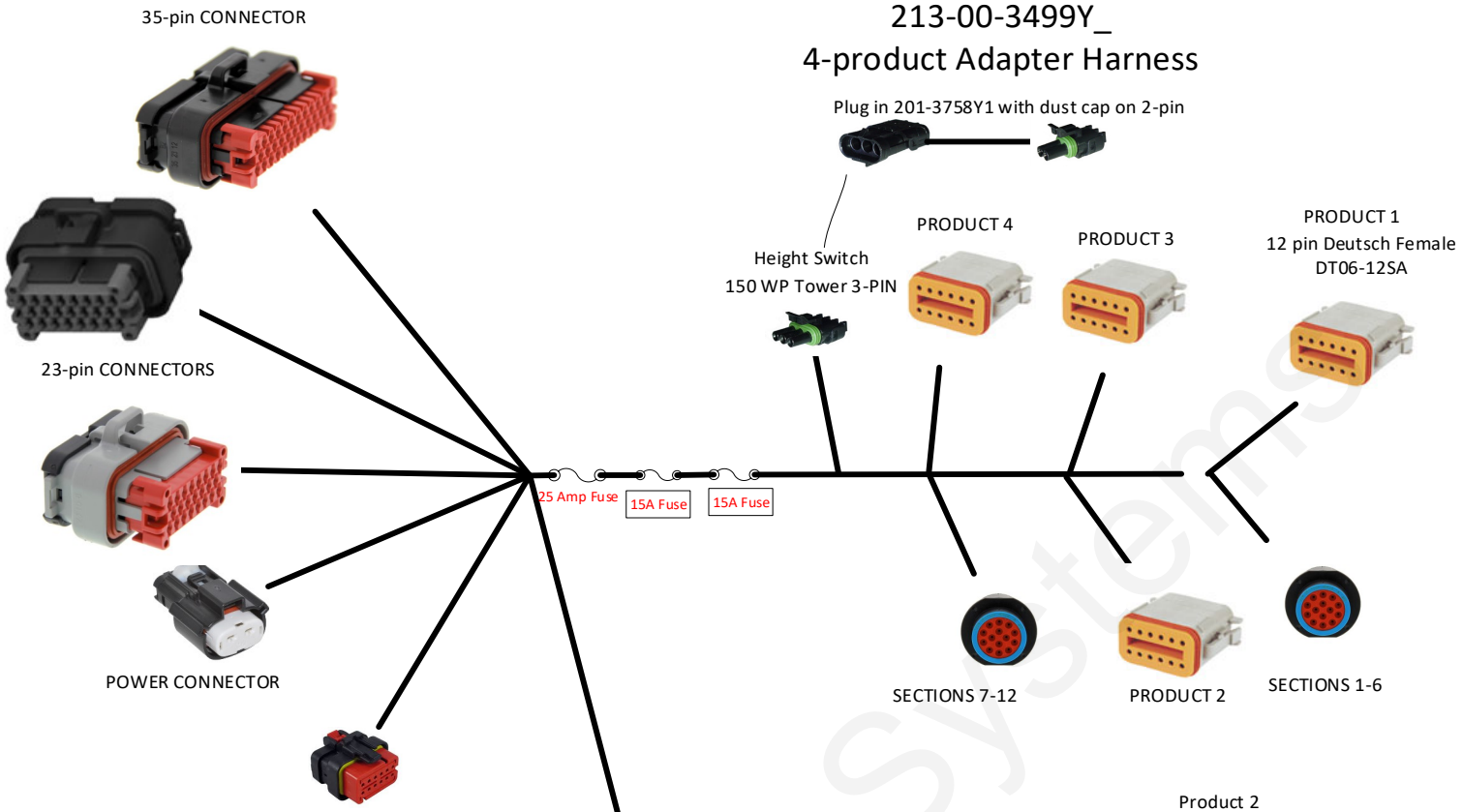
396-3583Y1 SureFire PumpRight System for JDRC 2000

396-3616Y1 SureFire 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 SureFire Manual and the *John Deere Rate Controller 2000 Operator's Manual* for important safety information and setup and operating instructions. See www.surefireag.com/support for the SureFIre manual.

213-00-3499Y_
4-product Adapter Harness



Product 1

12 pin Deutsch Female DT06-12SA

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	Sect 1
K BRN	Sect 2
L BLU	Sect 3
M BLK/WH	Sect 4
N BRN/WH	Sect 5
P BLU/WH	Sect 6

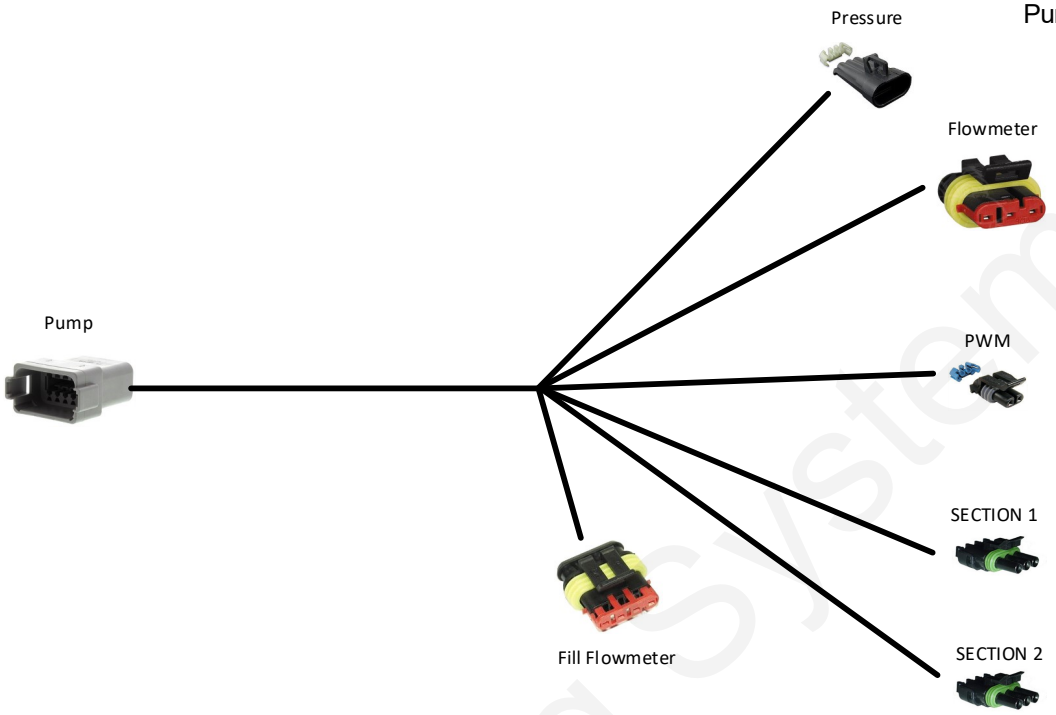
SECTIONS 7-12

14 pin Deutsch HDP24-18-14PE

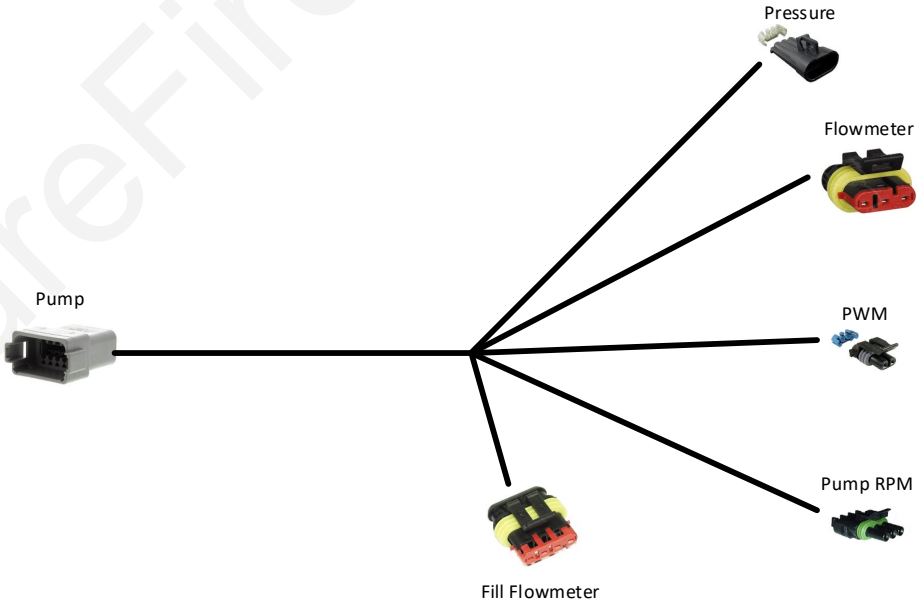
A RED	HC PWR 1
B RED	HC PWR 2
C BLK	HC GND 1
D BLK	HC GND 2
E WH/YEL	PWM 2 (+)
F WH/GRN	PWM 2 (-)
G PUR/WH	Pressure 2
H	
J WH/BLK	Sect 7
K WH/BRN	Sect 8
L WH/BLU	Sect 9
M PNK	Sect 10
N WH/YEL	Sect 11
P DK GRN	Sect 12

SureFire Ag Systems and JDRC 2000 Harnessing

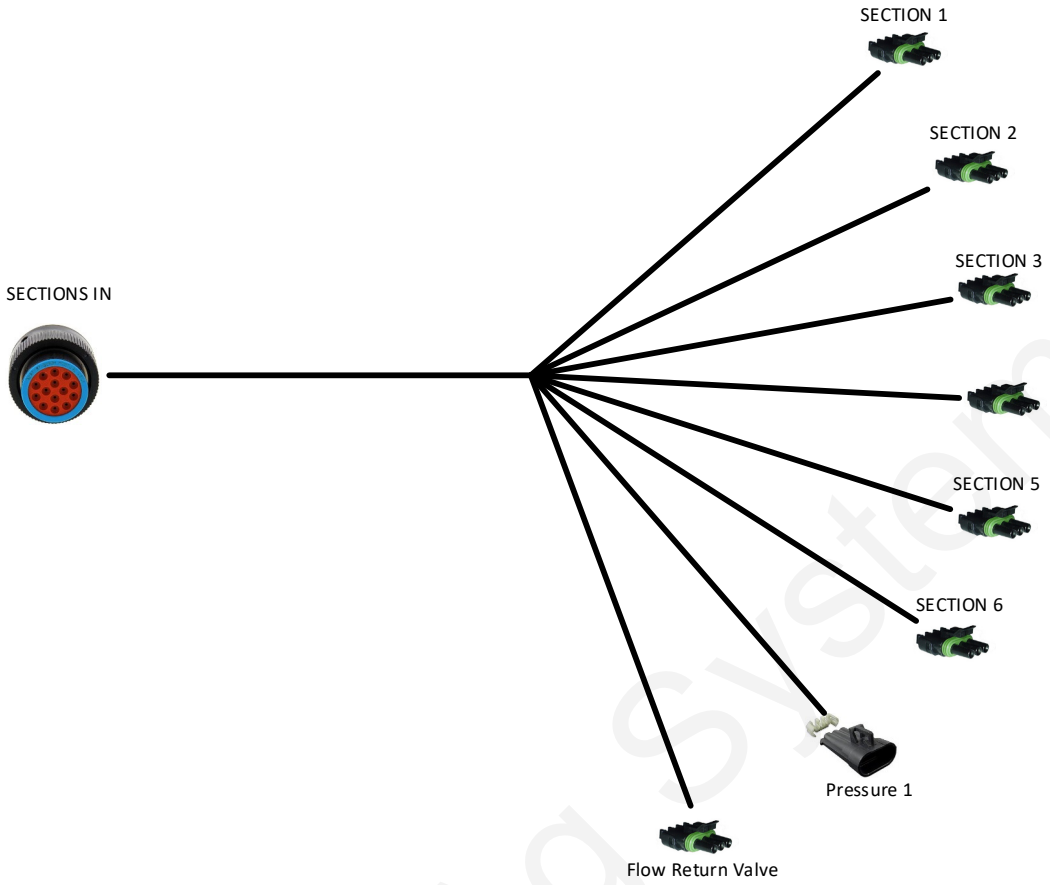
207-3461Y2
Final Liquid with 2 sections and NO Pump RPM



207-3462Y2
Final Liquid with Pressure, Flowmeter, PWM, Pump RPM, and Fill Flowmeter



207-3463Y1
Section Harness with 6 sections, Flow Return, and Pressure



Startup Checklist

1. Read the operator's manual that came with your system.
2. Fill tank with water first to check for leaks and to test the system.
3. Tighten the tank straps after filling with water.
4. Run each product in Manual Mode or with Calibrate PWM Limits Test.
5. Run each product in Auto Mode or with Nozzle Flow Check. Adjust Valve Response Rate if pump overshoots and oscillates or if system is slow to respond to rate or speed changes.
6. Do a catch test to verify that the flowmeter is measuring accurately. Verify the flowmeter calibration in the field. Adjust flowmeter calibration as needed.
7. If the unit may encounter freezing temperatures, winterize the system with RV antifreeze.
8. When you are comfortable with operating the system with water, you can switch to fertilizer if you are ready to go to the field. Double check the tank straps to make sure they are tight.
9. If system does not operate to your satisfaction, check with your SureFire dealer or contact SureFire Tech Support for assistance.
10. Thank you for choosing SureFire.