



# 396-3562Y1

## QuickStart setup instructions for JDRC 2000 and SureFire harness for 1 Liquid/Dry Product

213-00-3509Y\_

213-00-3417Y\_

213-00-3370Y\_

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

### NOTICE

**The operator must read the John Deere JDRC 2000 Operator's Manual and the SureFire manual that came with your system for safety information and additional setup/operating information.**

#### 1. Navigate to the Profile Setup

*Setup Tip: If a box is grayed out, the Master Switch may be on. Cycle the Master Switch.*

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

#### 2. Enter a Profile Name.

#### 3. Machine Type > Liquid Fert Tool

#### 4. Select Application Mode > Liquid

Check with JD dealer for latest software for JDRC 2000 and display.

#### 5. Set up Sections as appropriate. Verify widths.

#### 6. The SureFire pressure sensor will be set up as a Custom sensor. Calibration will be done later.

### NOTICE

#### Setup Pressure Alarms

**For a hydraulic pump setup, set the Maximum Pressure at 85 PSI and check the Alarm box.**

*For an electric pump system, you can leave pressure alarms at 0.*

*If Minimum and Maximum numbers are entered and the Alarm box is checked, those pressures will become control limits, and the system will not go below or above those limits.*

*Most fertilizer systems will not need a Minimum Pressure Alarm.*

MAW



# QuickStart setup instructions for JDRC 2000 and SureFire 1 Product:

Use with SureFire adapter harness: 213-00-3509Y\_ or -3417Y\_ or -3370Y\_ for 1 Liquid/Dry product

## 7. Complete Aux Functions Setup

**Setup Aux Functions**

Agitator Valve Installed ☐

Agitator Duty Cycle (%) 10

Flow Return Installed ☐

Optional Height Switch ☒

## 8. Control Valve Setup (use the numbers indicated for your system)

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

PumpRight (hydraulic) PR17-80  
PR30-70 PR40-60 D250-50  
Tower (electric) 100  
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**.

**Setup Control Valve**

Product 1 Liquid ?

Control Valve Type PWM Close

See Above Valve Response Rate (1-100)

Control Deadband (%) 2

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

PumpRight (hydraulic) 25  
Tower (electric) 10  
Spartan 5

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

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

**Setup PWM**

Product 1 Liquid ?

Coil Frequency (Hz) 100

High Limit (%) 100.0

Low Limit (%) See

PWM Startup (%) Above

## 9. Enter appropriate Flowmeter Cal.

**Setup Rate Sensor**

Product 1 Liquid ?

Flow Cal number is on serial number label on side of flowmeter.

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

## 10. 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 ☐ Check if using a fill flowmeter

**Setup Tank Fill**

SFA 3" Fill Flowmeter 130

SFA 2" Fill Flowmeter 300

Tank Fill Flowmeter Calibration

OPTIONAL: Use as desired

Tank Fill Flowmeter Pulse/Units 10 gal

## 11. Set Rates, Rate Smoothing, and Decimal Shift.

JDRC 2000 - Setup

Implement Settings Alarms **Rates**

Product-1 ?

Preset Rate Values (gal/ac)

Rate 1	Rate 2	Rate 3
3.0	5.0	8.0

Rate Bump (gal/ac) 0.0

Rate Selection Predefined

Rate Smoothing ☒ 10 %

Decimal Shift 1

Rate Bump Map-Based

## 12. Set Off Rate Alarm as desired.

**Setup Alarms**

Product 1 Liquid ?

Off Rate Alarm (% off target rate) 20

Alarm? ☒

**Flowmeter Troubleshooting:** Flowmeter connector: Pin 1—Ground; Pin 2—Power (12 v); Pin 3—Signal (4-5 v)

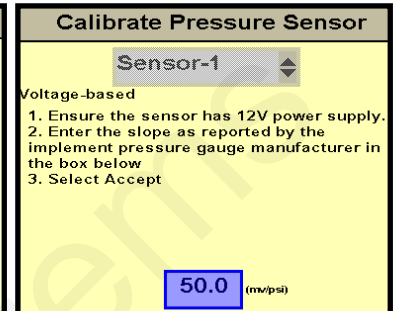
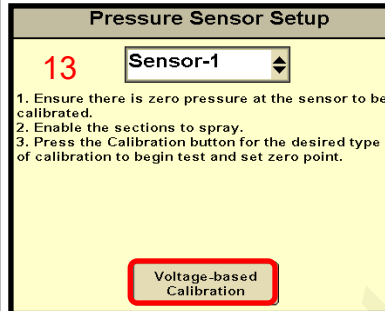
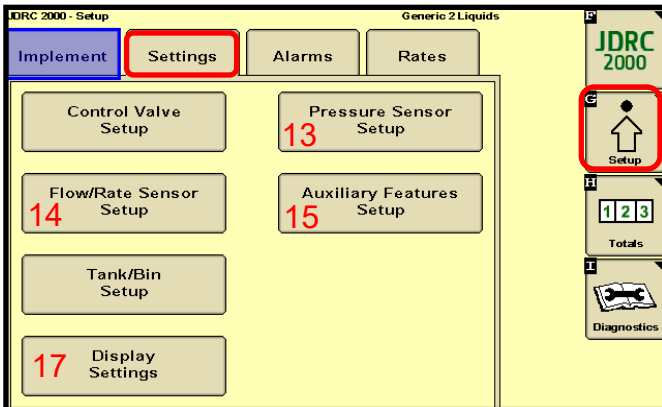
1. Confirm voltages between Power/Ground (12v) and Signal/Ground (4-5v).
2. Do a Tap Test: a) Change the Flow Cal to 1. b) Go to Diagnostics > Readings > Delivery System > Flow Meter or Flow Rate. c) Watch for numbers on Flow Meter or Flow Rate while someone uses a short piece of wire with one end held on Pin 1 (Ground) and taps repeatedly on Pin 3 (Signal). These pulses should show up as Flow readings. If there is no flow shown on the display, go back to the 12-pin connector and do the tests there. (Pin 1-Power; Pin 2-Ground; Pin 3-Signal). Reset the Flow Cal to the correct setting.
3. If the tap test works, the harnessing should be OK and there is probably a problem with the flowmeter. Sometimes, cleaning the inside of the flowmeter with a soft brush will restore the flowmeter. Usually, at this point, it is time to replace the flowmeter.

**Adjusting the Flow Cal number:** Verify the acres worked and gallons applied in the field and adjust the flowmeter calibration if needed for better accuracy. If you need more product, increase the Flow Cal number. If you need less product, decrease the Flow Cal number.

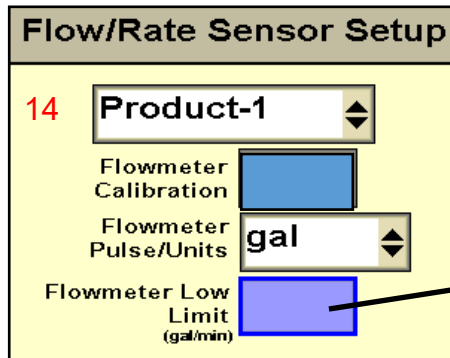


## QuickStart setup instructions for JDRC 2000 and SureFire: 1 liquid/dry product

**13. Pressure Sensor** must be calibrated. Enter **50.0 mv/PSI** for SureFire 0-100 PSI, 0 to 5 volt sensor. (Unplug the sensor during the calibration process.) Put the Pressure Sensor reading in your Display Settings on the Run Screen. Go to **Diagnostics > Readings > Pressure Sensors**. 0 Pressure Voltage should be 0.00 V. If pressure is running above 85 PSI check metering tube size and be sure both LiquiShift valves are opening.



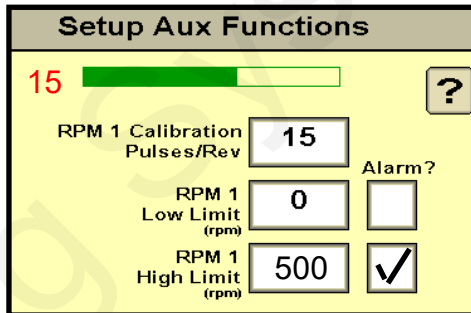
**14. Set Flowmeter Low Limit**



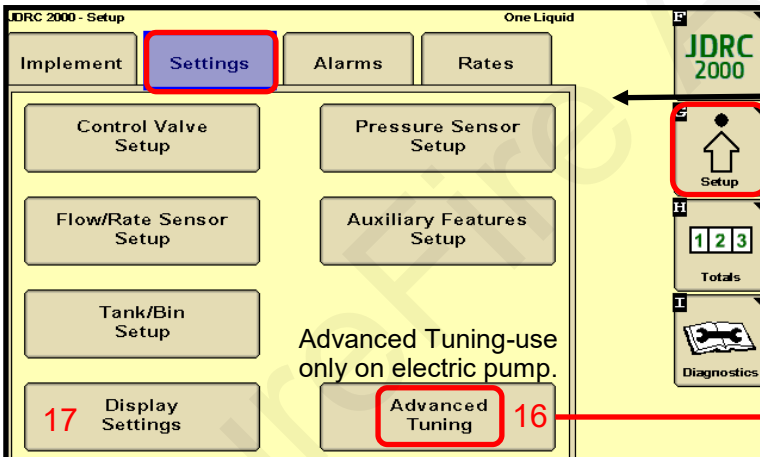
Flowmeter	Low Limit
0.6 to 13	0.4
1.3 to 26	0.8
2.6 to 53	1.6

**15. Set up Pump RPM sensor**

The pump is rated at 540 RPM.



If pump suddenly needs more RPM to reach output, check for restrictions on the inlet side (strainer, etc).

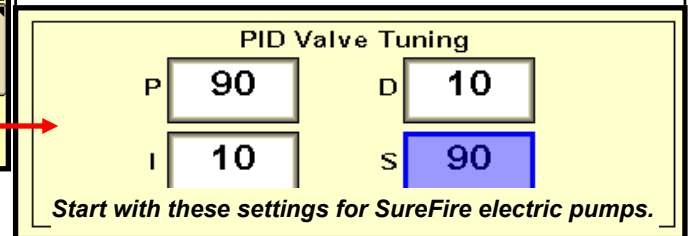


### 16. Advanced Tuning

**Do NOT use on hydraulic pump systems.**

On SureFire Tower (electric pump systems), it will be necessary to use the **Advanced Tuning** feature. 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.



### Setup and Operation Tip:

**How do I set the Recirculation knob?** Generally, the recirculation knob is closed. If tank agitation is necessary while applying, the recirculation hose can be plumbed back to the tank. Electric pumps do not have the capacity to do much agitation. A small amount of recirculation may be desired if the pump needs to run slowly and the output is not smooth. Start with a quarter turn of the knob (less on an electric pump). A half turn of the knob will recirculate a lot. If too much is recirculated, the pump may not be able to hit the rate to the rows. Opening recirculation will not lower the pressure required to push the desired product to the rows.

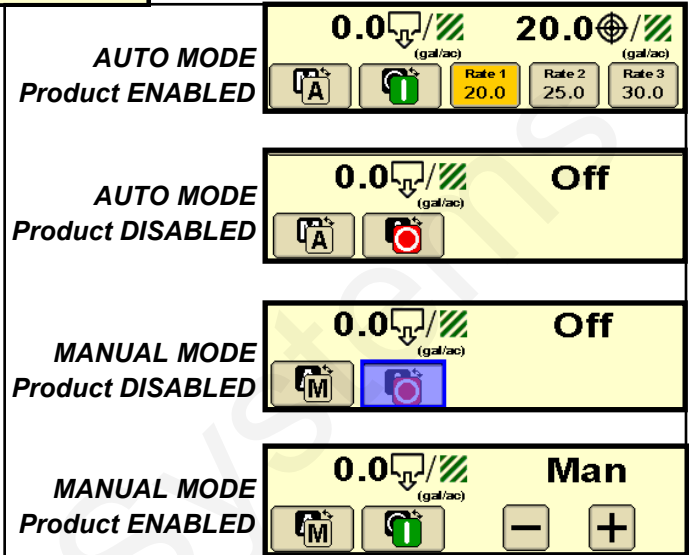
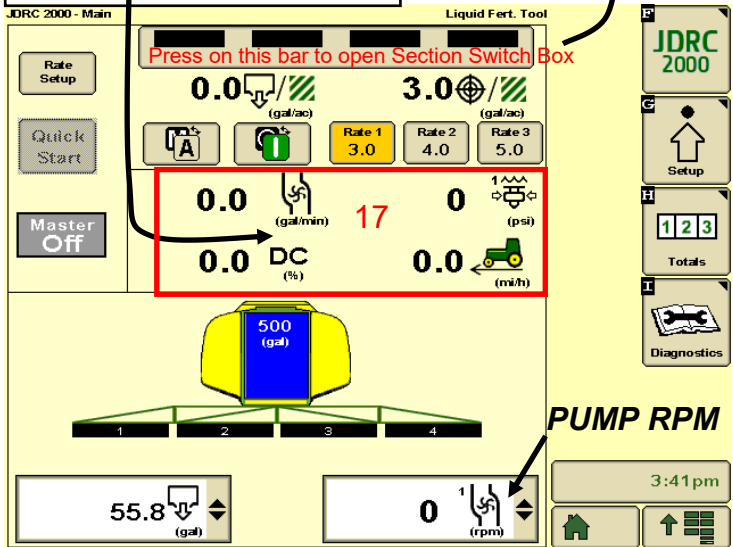
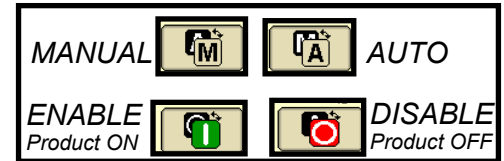
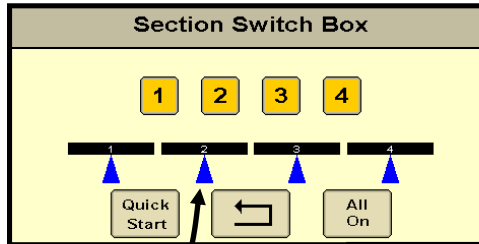
For system manuals and troubleshooting guides go to [surefireag.com/support](http://surefireag.com/support).



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

17. Set these 4 items in **Setup**  
> **Settings** > **Display Settings**

1. Gal/min
2. Pressure (PSI)
3. DC(%) (PWM Duty Cycle)
4. Mi/hr



## Initial Operation in MANUAL mode:

1. Fill the system with water. For first time startup, open air bleed valve, close recirculation.
2. Enter a Test Speed at Setup > Implement
3. Navigate to MANUAL MODE on the JDRC 2000 Run Page.
4. Height switch must be DOWN (or uncheck Height Switch box).
5. Turn on Master Switch. Press and hold (+) to increase flow. Do not worry if it says "SOLUTION PUMPLP DRY". The SureFire pump will not be damaged by running dry.
6. Monitor Flow (gal/min), PSI, DC, Pump RPM. Note: Pressure will be much lower when testing with water.
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. Hold (+) to speed up the pump. You will need at least 30% DC on a hydraulic pump to get flow. If pump does not run, turn hydraulic flow to low, raise Manual Override (red knob) on hydraulic valve block, start hydraulic flow, increase hydraulic flow to turn pump. You can also run pump manually at **Diagnostics > Tests > Control/Section Test**.

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

1. Enter a Test Speed at Setup > Implement > Test Speed.
2. Navigate to AUTO MODE on JDRC 2000 Run Page. Select a Rate.
3. Height switch must be DOWN.
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.)

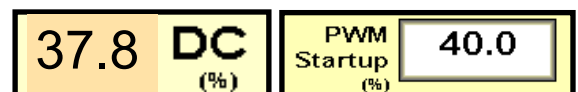
## NOTICE

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

## 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.





**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**—If the EPD has 4 quick flashes followed by a pause, the EPD has tripped due to low voltage. Unplug the power connector from the battery and plug it back in to reset. Check the connectors at the battery and at the hitch. Try running each pump by itself. If the pumps won't run, 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.

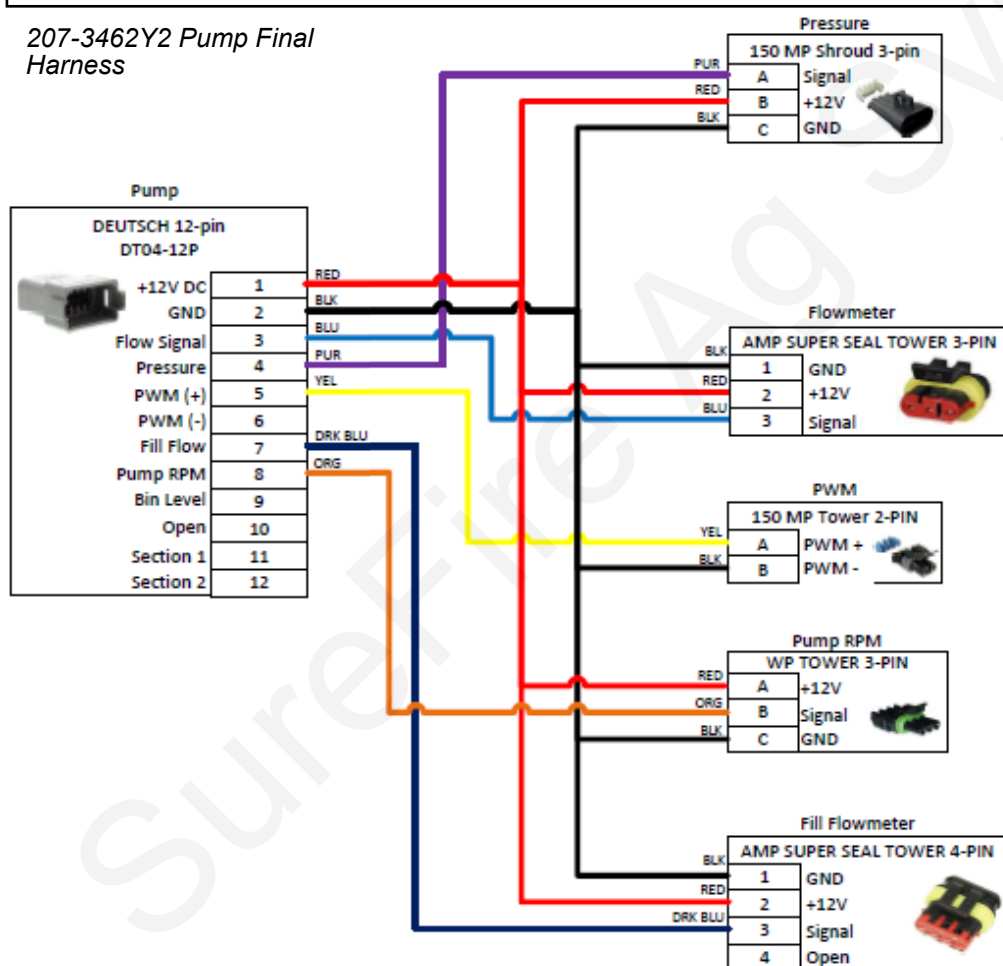
**Hydraulic Pump**—On the hydraulic valve block, pop up the Manual Override button (red knob on top of solenoid). If unit has been in the field, you may need to loosen the dirt to move the knob. In cab, turn hydraulic flow to very low. Engage hydraulics. Pump should begin turning. Slowly increase hydraulic flow to speed up pump. Do not overspeed pump.

DIAGNOSTIC TIPS: (1) Go to *Diagnostics > System Summary* for a quick look at the System Settings.

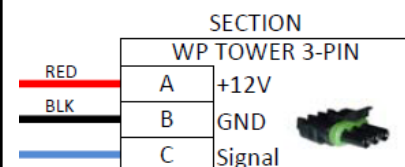
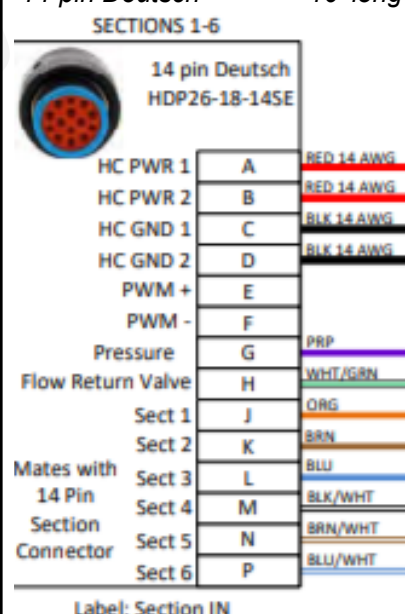
(2) Go to *Diagnostics > Product Summary* for a quick look at the settings for each product setup.

(3) Go to *Diagnostics > Readings* for important information and feedback: *Hardware/Software, Delivery System, Section Status, System Voltage, Pressure Sensors, RPM Sensors and more.*

207-3462Y2 Pump Final  
Harness



207-3463Y1 Section Harness  
14-pin Deutsch 10' long



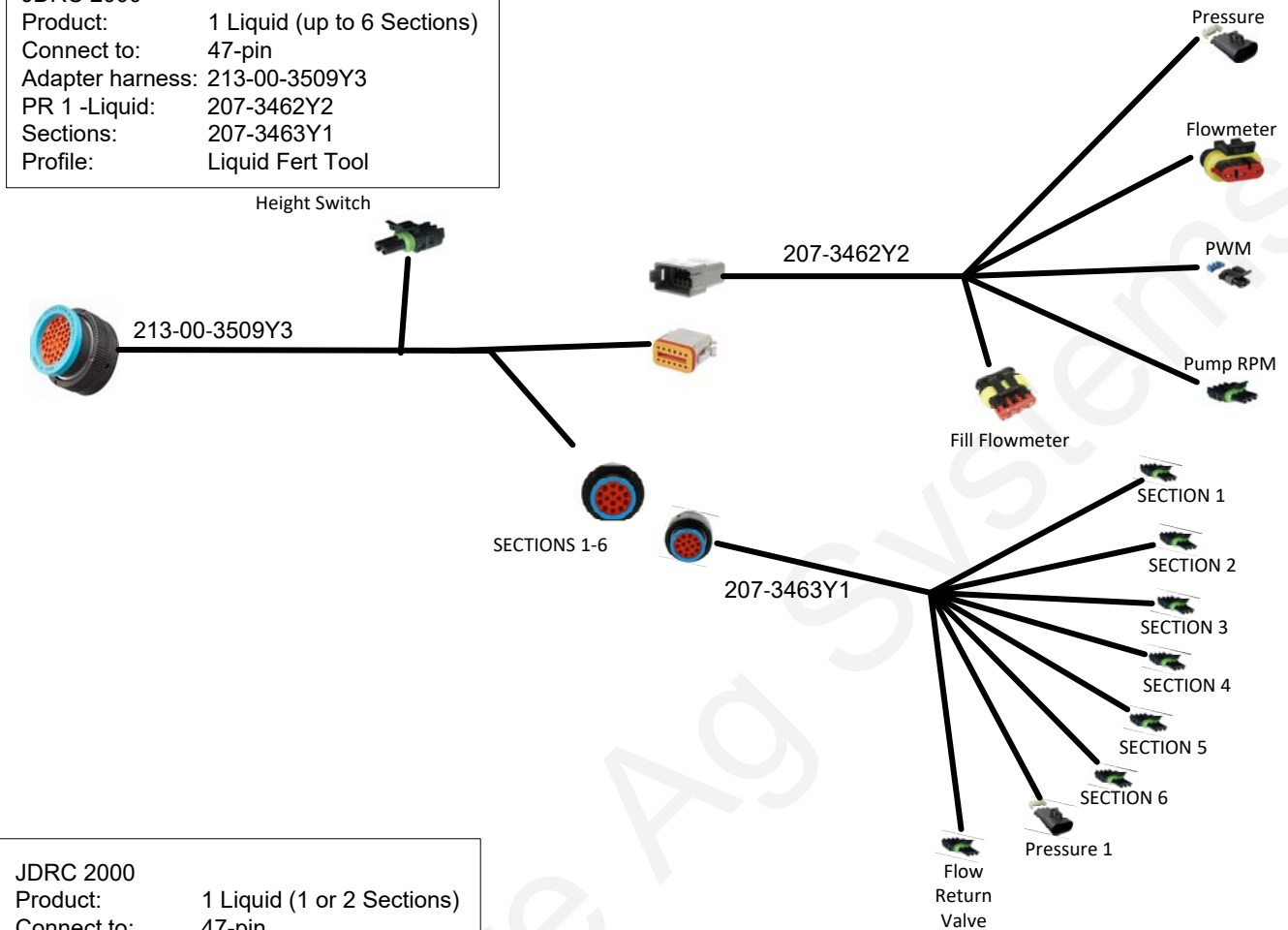
## WARNING

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*

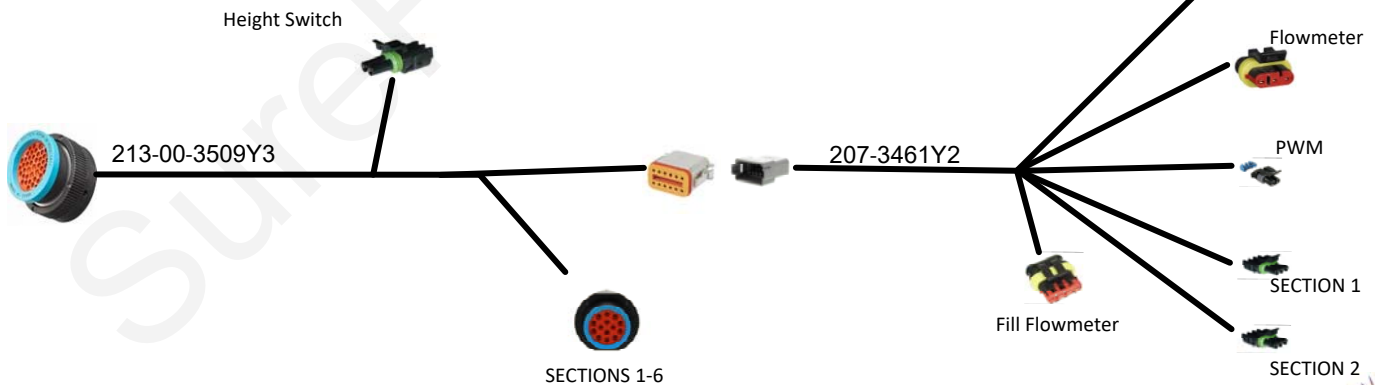
*Rate Controller 2000 Operator's Manual* for important safety information and setup and operating instructions. Go to [www.surefireag.com/support](http://www.surefireag.com/support) for the SureFire manual.

# SureFire Ag Systems and JDRC 2000 Harnessing

JDRC 2000  
 Product: 1 Liquid (up to 6 Sections)  
 Connect to: 47-pin  
 Adapter harness: 213-00-3509Y3  
 PR 1 -Liquid: 207-3462Y2  
 Sections: 207-3463Y1  
 Profile: Liquid Fert Tool

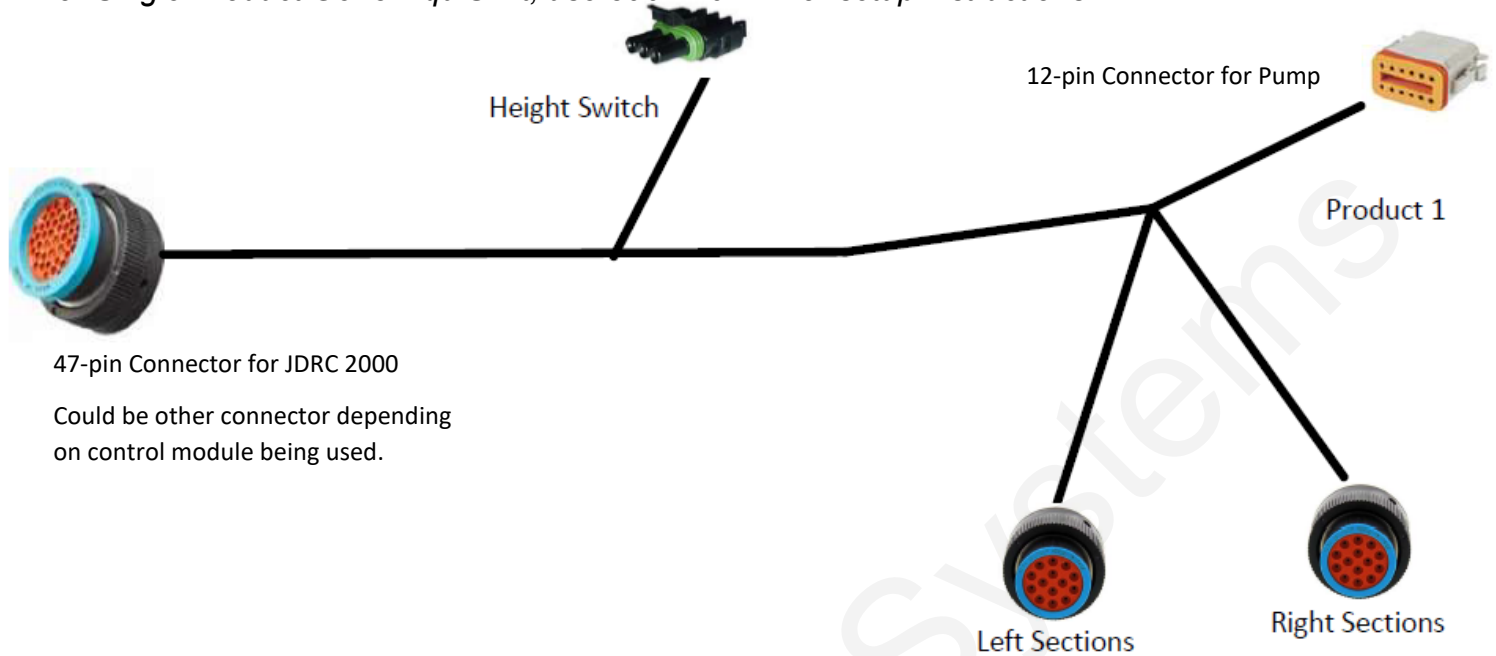


JDRC 2000  
 Product: 1 Liquid (1 or 2 Sections)  
 Connect to: 47-pin  
 Adapter harness: 213-00-3509Y3  
 PR 1 -Liquid: 207-3461Y2  
 Profile: Liquid Fert Tool

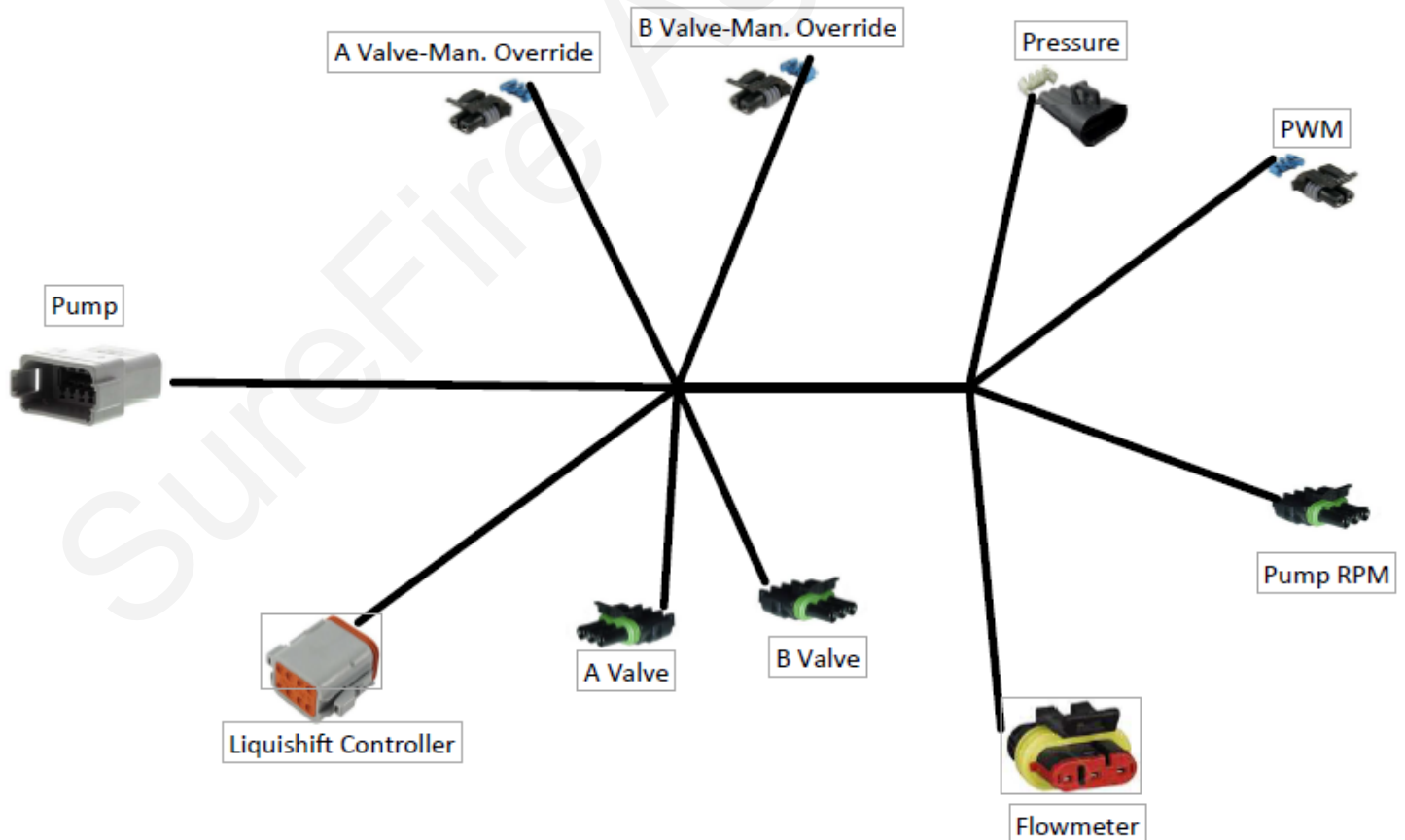


# Typical Harness Layout for Gen3 LiquiShift Systems

1) Main Adapter Harness (213-06-4xxx)—connects to rate control module  
*For Single Product Gen3 LiquiShift, use 396-4761Y1 for setup instructions.*



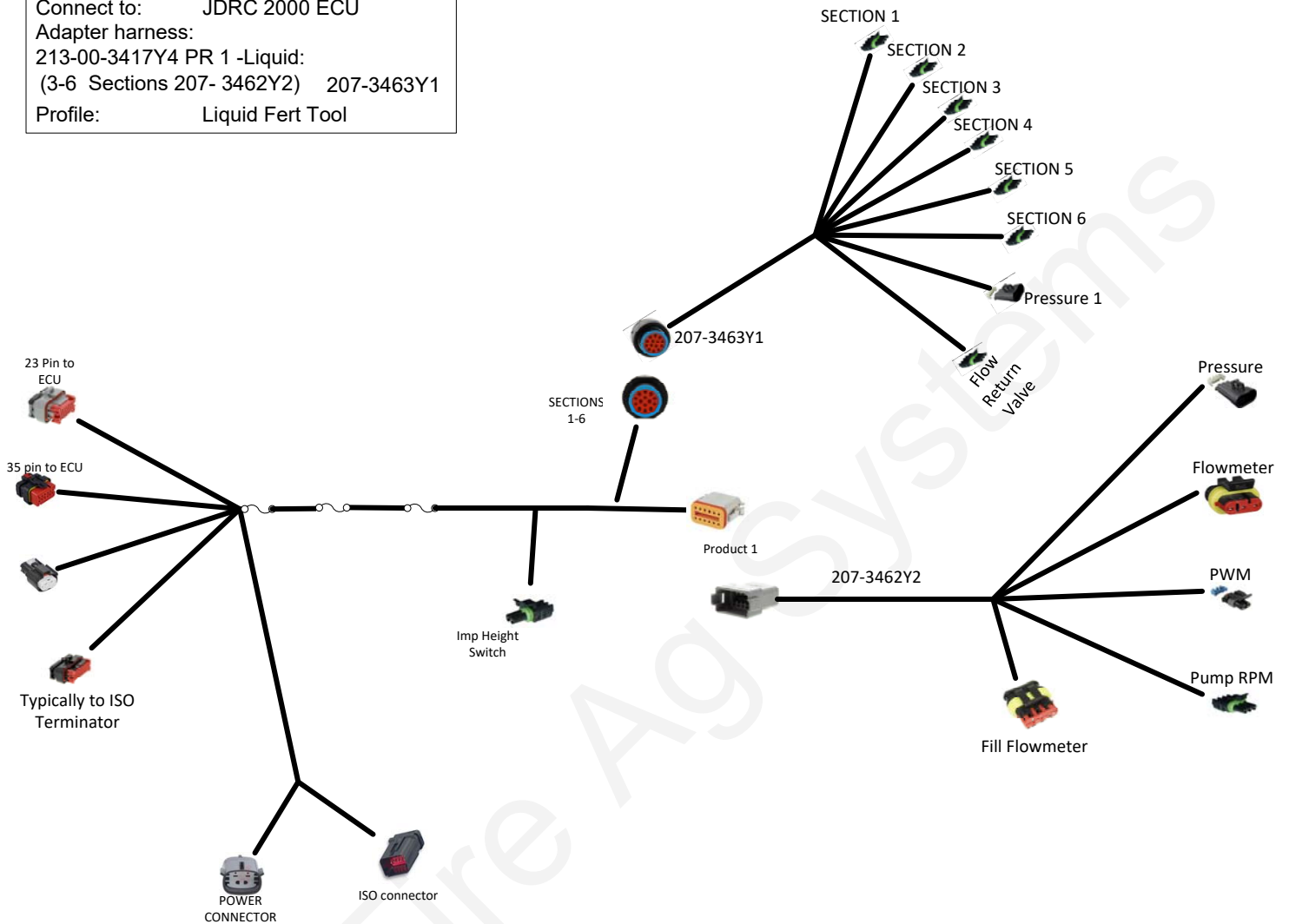
2) Pump Final Harness (207-01-4613Y1)



# SureFire Ag Systems and JDRC 2000 Harnessing

## JDRC 2000

Product: 1 Liquid (up to 6 Sections)  
 Connect to: JDRC 2000 ECU  
 Adapter harness: 213-00-3417Y4 PR 1 -Liquid:  
 (3-6 Sections 207- 3462Y2) 207-3463Y1  
 Profile: Liquid Fert Tool



## JDRC 2000

Product: 1 Liquid or 1 NH3  
 Connect to: 47-pin  
 Adapter harness: 213-00-3370Y3  
 PR 1 -Liquid: Existing 37-pin harness  
 Sections  
 Profile: Liquid Fert Tool (or NH3)

213-00-3370Y3  
 47-pin to 37-pin for  
 Liquid or NH3

