396-3564Y1

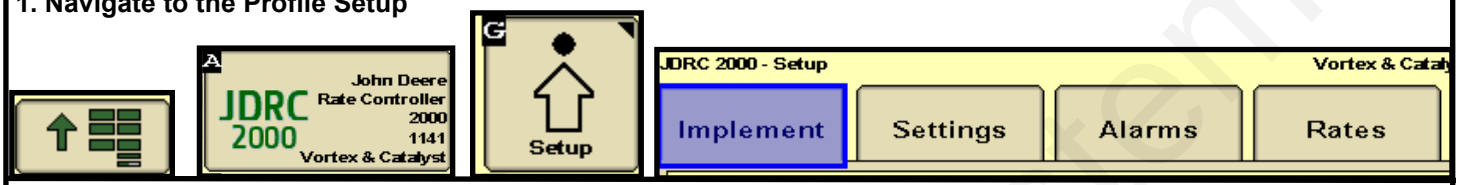
QuickStart setup instructions for JDRC 2000 and SureFire harness for 3 Liquid/Dry Products

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

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

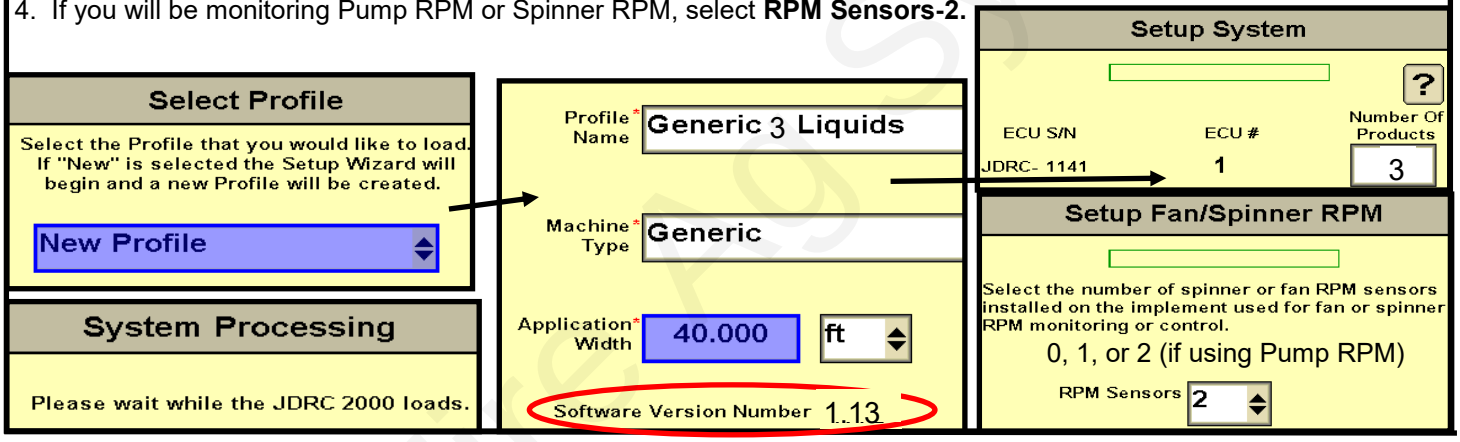
NOTICE ***See the John Deere JDRC 2000 Operator's Manual and the SureFire system manual for safety information and additional setup/operating information.***

1. Navigate to the Profile Setup

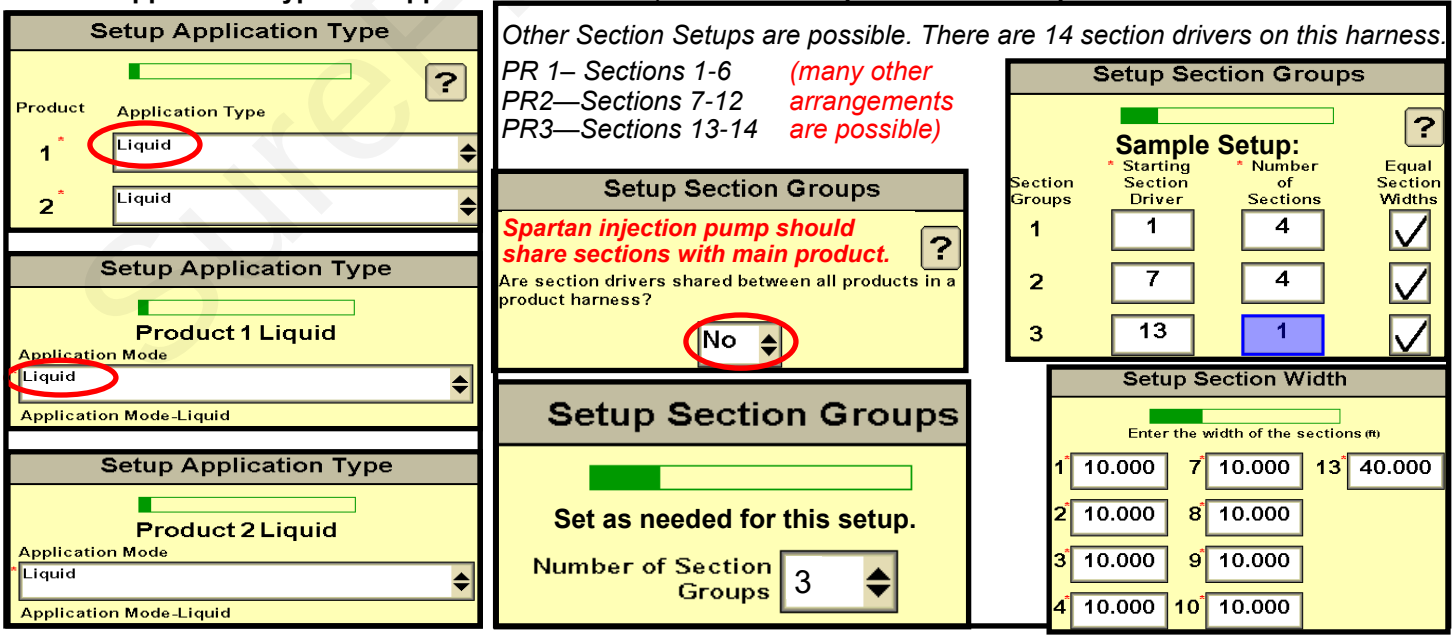


For initial setup, start a new profile. The JDRC 2000 allows you to store 8 profiles. Be prepared to wait during this phase.

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.**



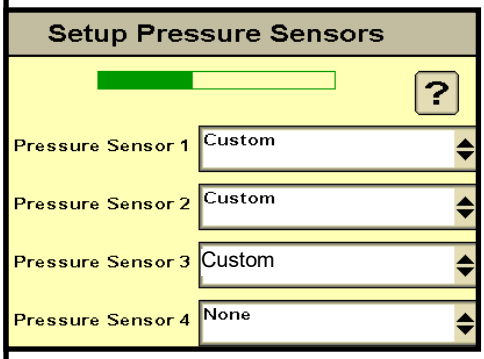
5.Select **Application Type** and **Application** 6. Set up **Section Groups. Section Group 2 will start with Section Driver 7.**

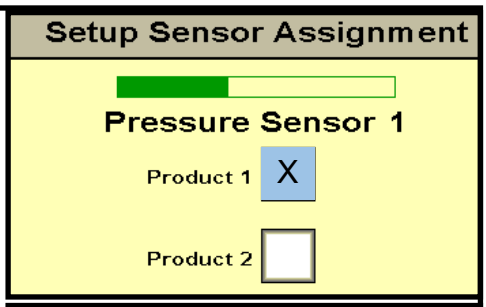


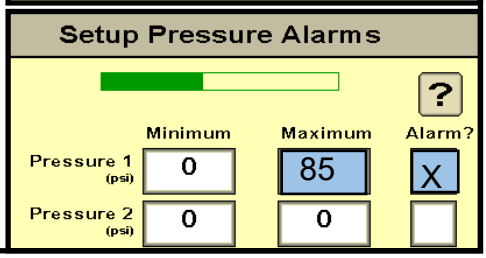
QuickStart setup instructions for JDRC 2000 and SureFire:

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

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





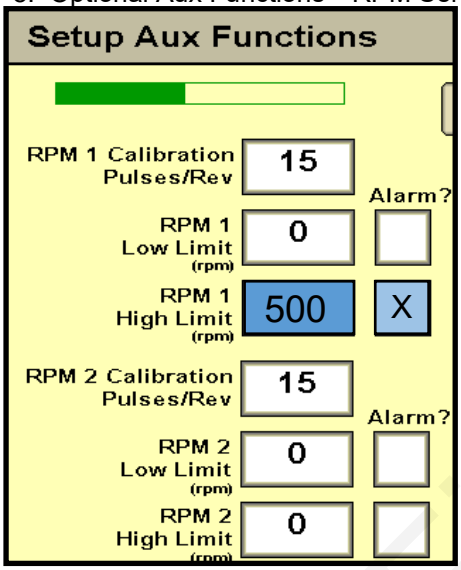


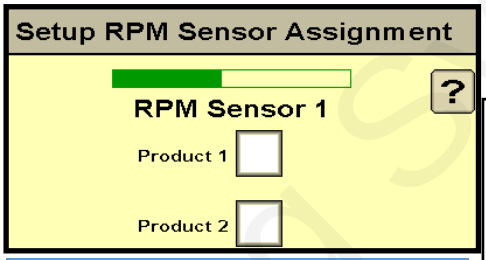
If your system has pressure sensors: For a typical setup, assign Pressure Sensor 1 to Product 1, and assign Pressure Sensor 2 to Product 2. A Pressure Alarm becomes a control limit (used mainly for spray tip nozzles).

On a 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).

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





213-00-3517Y_ and 4889 Pinouts		
Product 1	Pressure 1	RPM1
Product 2	Pressure 2	RPM 2
Product 3	Pressure 3	RPM 1

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 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

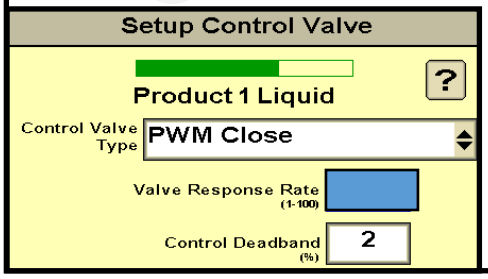
If pump is slow responding to rate or speed changes, increase **Valve Response Rate** 10 at a time. If product oscillates around rate going across the field reduce **Valve Response Rate.**

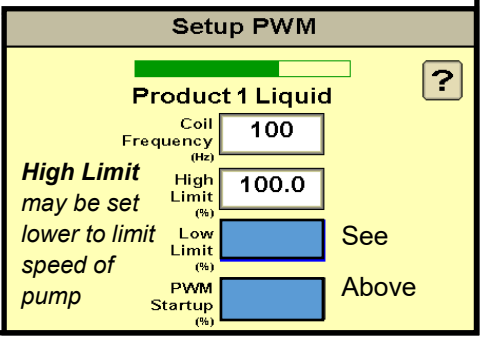
Low Limit (*Adjust in field as needed)*

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

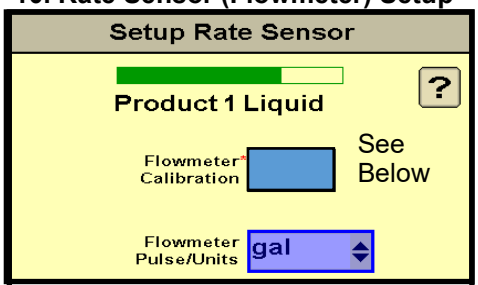
PWM Startup *(Adjust in field as needed)*

PumpRight (hydraulic)	35-40
Tower (electric)	15-25
Catalyst and Spartan	5-10





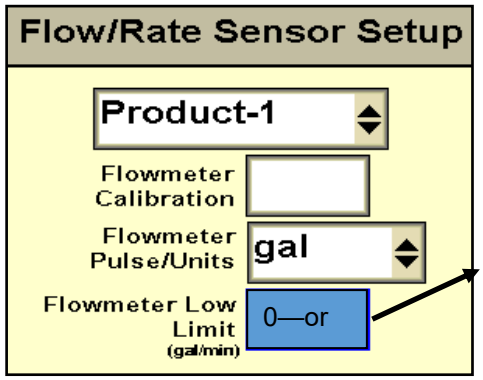
10. Rate Sensor (Flowmeter) Setup



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: 3 liquid/dry products

10. Rate Sensor (Flowmeter) Setup



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.

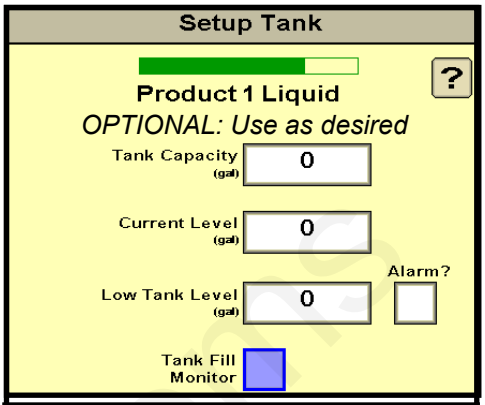
Flowmeter Low Limit may be set at 0 or

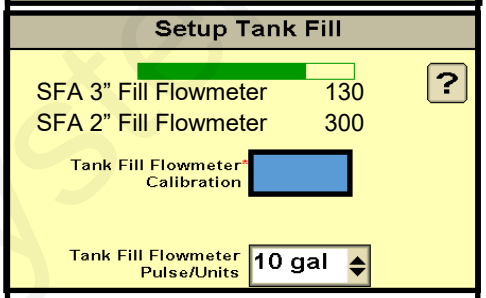
0.13*—set at 0.1* ***0.3****—0.2* ***0.6****—0.4*

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

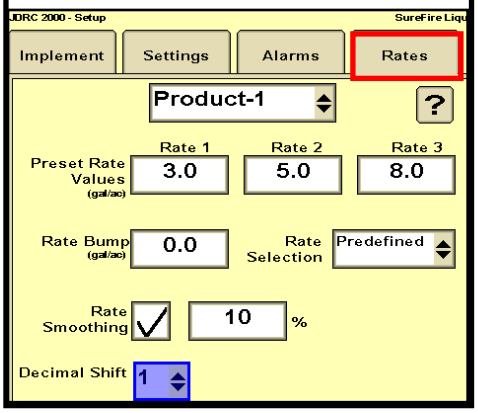




Check **Tank Fill Monitor** box if using a fill flowmeter (not often used). Then enter **Tank Fill Flowmeter Calibration (Units are 10 gal).**

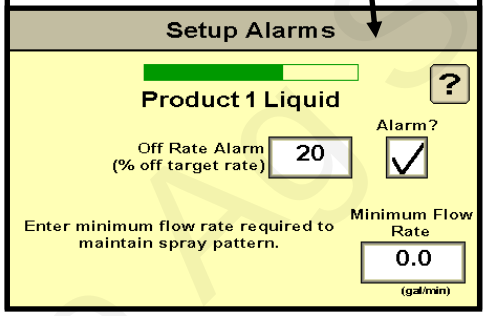
12. Rates and Rate Smoothing. Set as desired.

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.

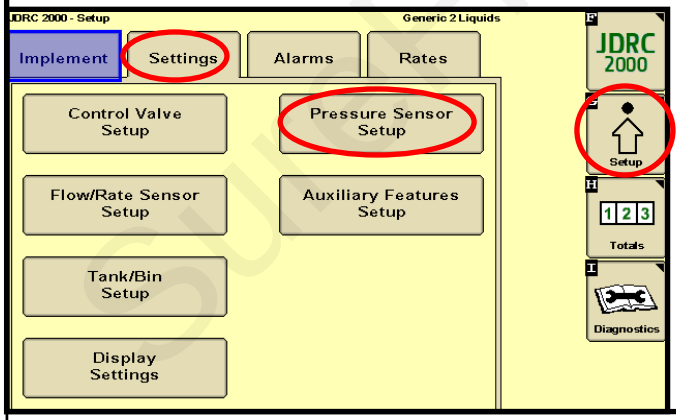


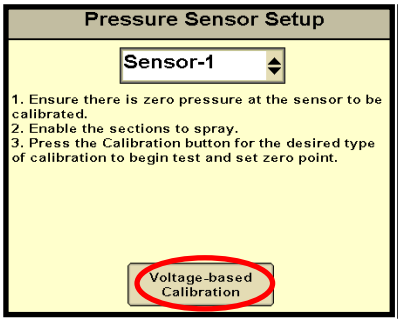
13. Off Rate Alarm Setup

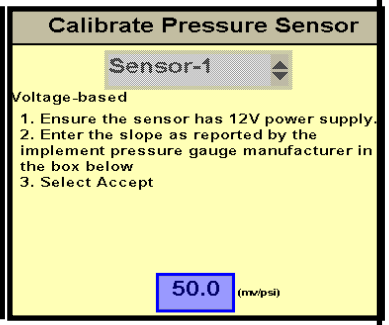
Set **Off Rate Alarm** as desired. The **Minimum Flow Rate** box will not be present if a pressure sensor has been assigned to this product. Typically, Minimum Flow Rate will be left at 0 or set as shown above.



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.)*



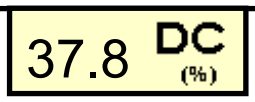


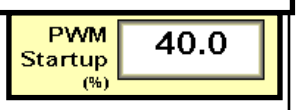


For complete information on how the sensor is operating, go to **Diagnostics > Readings > Pressure Sensors.**
0 Pressure Voltage should be 0.00 V.

Valuable Tip for Best Startup Performance

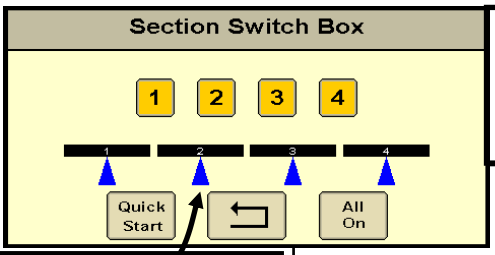
For best startup performance, set the **PWM Startup** at or slightly above the normal operating PWM Duty Cycle (DC%). When the pump starts, it will go immediately to that Duty Cycle and then will have just a minor adjustment to lock on to the Target Rate. For example, if the normal DC% is as shown on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

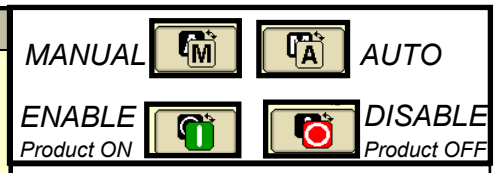


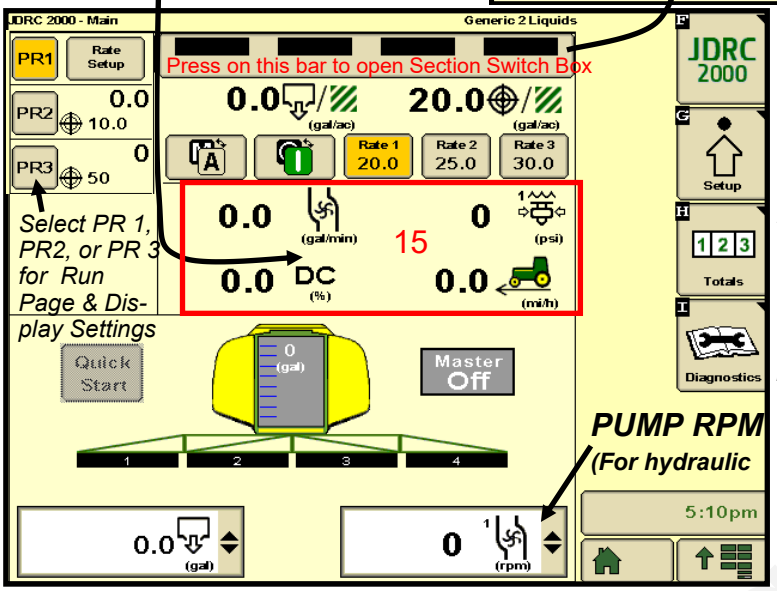


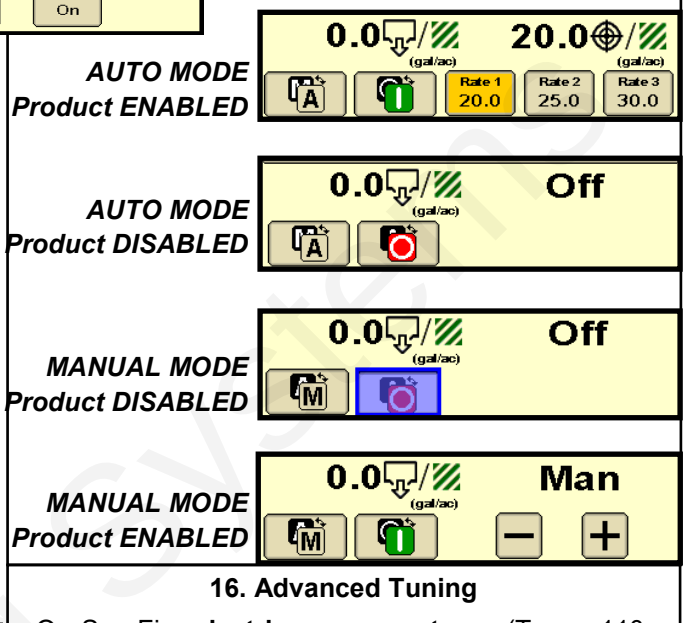
Display Settings, Section Switch Box, Run Page (Manual/Auto, Enable/Disable)

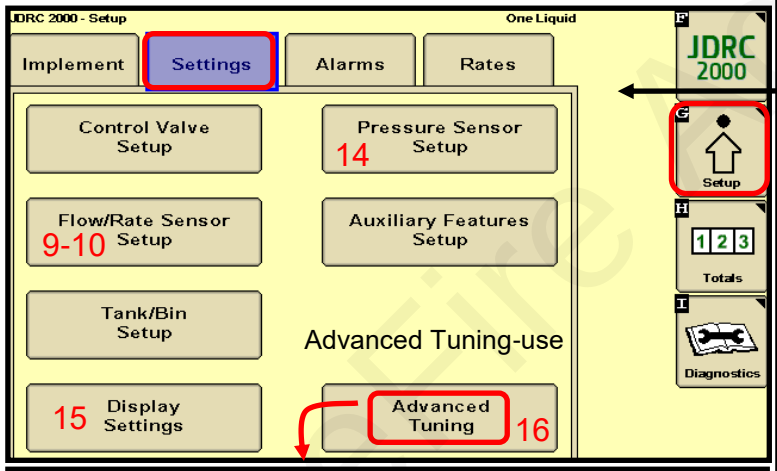
15. Set these 4 items in **Setup > Settings > Display Settings**
1. **Gal/min**
2. **Pressure (PSI)** 15
3. **DC(%) (PWM Duty Cycle)**
4. **Mi/hr**

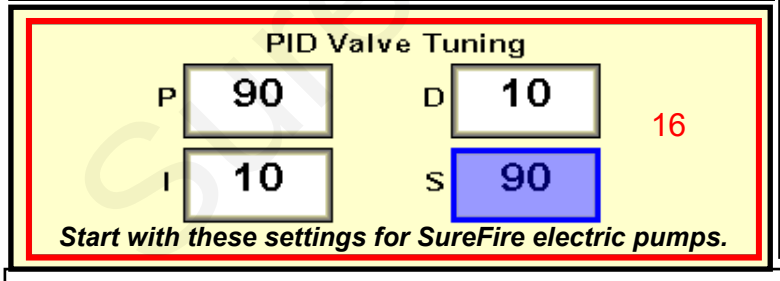












16. Advanced Tuning

On SureFire **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.

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.

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.

SureFire Ag Systems and JDRC 2000 Harnessing

JDRC 2000	
Product:	3—Liquid-Dry-Liquid
Connect to:	JDRC 2000 ECU
Adapter harness:	213-00-3517Y_
PR 1 -Liquid:	207-3462Y2
PR 1 Sections 1-6	207-3463Y1
PR 2 Dry	207-3492Y1
PR3 Liquid (2 sect)	207-3461Y2
Profile:	Liquid Fert Tool

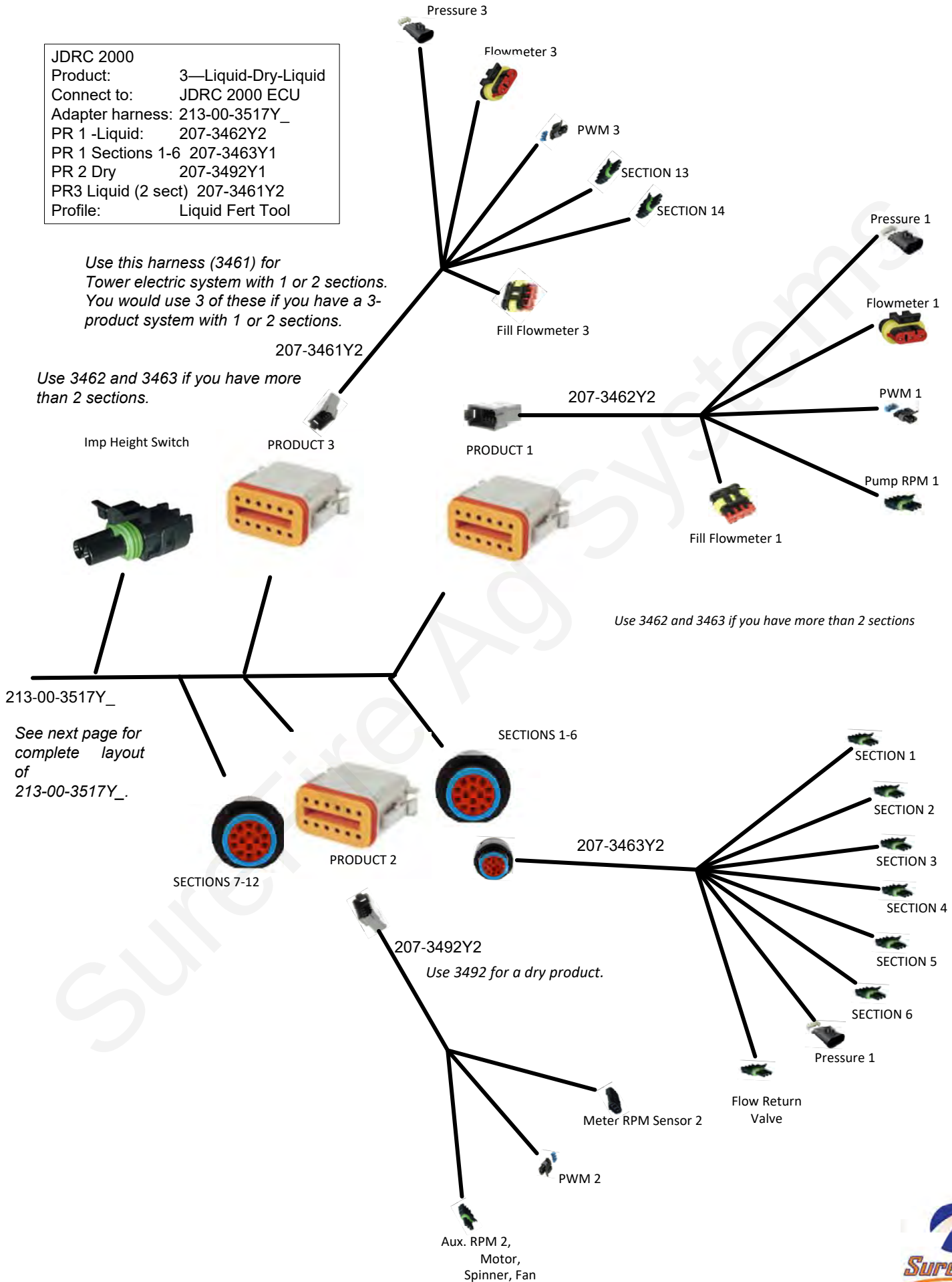
Use this harness (3461) for Tower electric system with 1 or 2 sections. You would use 3 of these if you have a 3-product system with 1 or 2 sections.

Use 3462 and 3463 if you have more than 2 sections.

See next page for complete layout of 213-00-3517Y_.

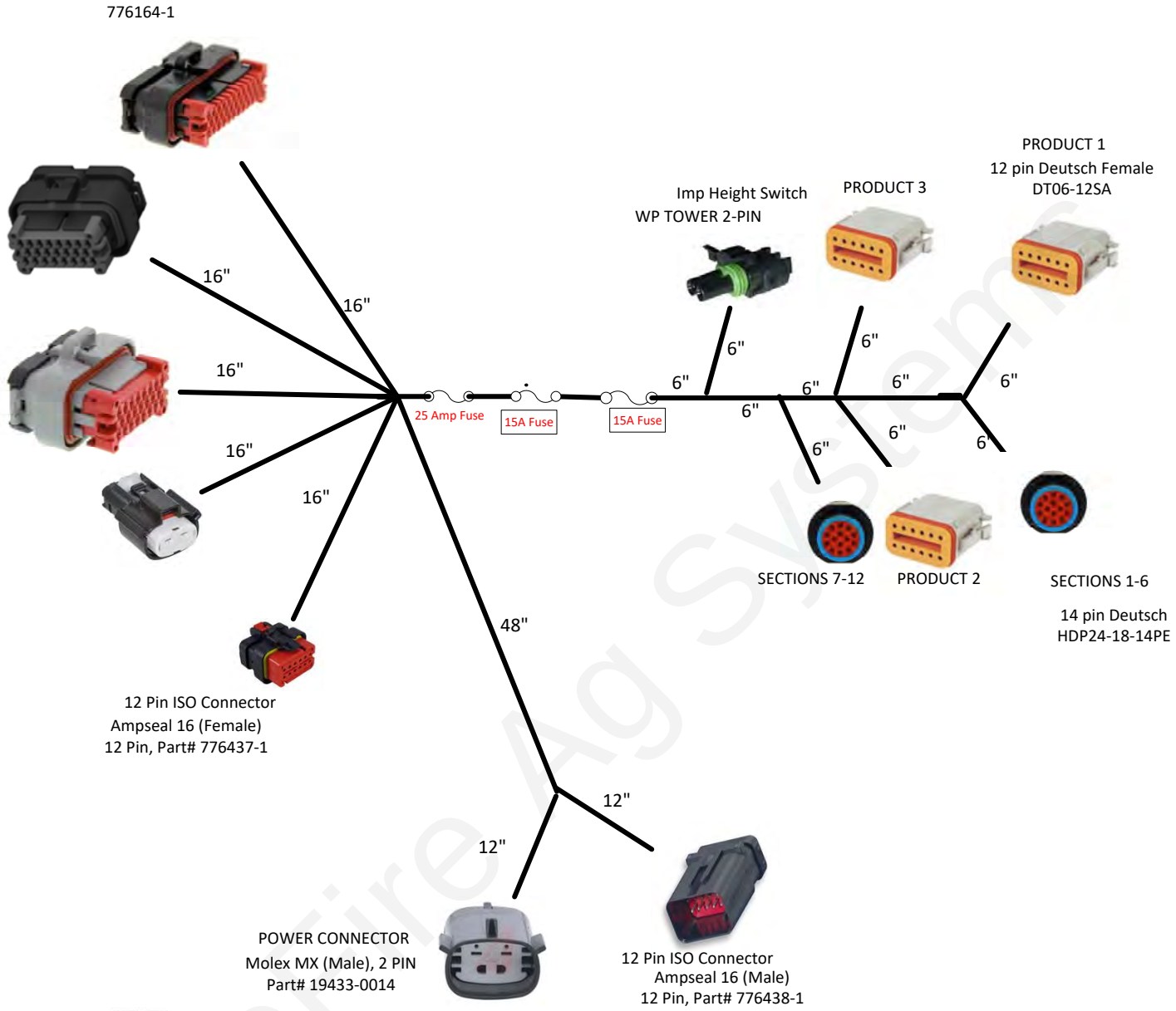
Use 3462 and 3463 if you have more than 2 sections

Use 3492 for a dry product.



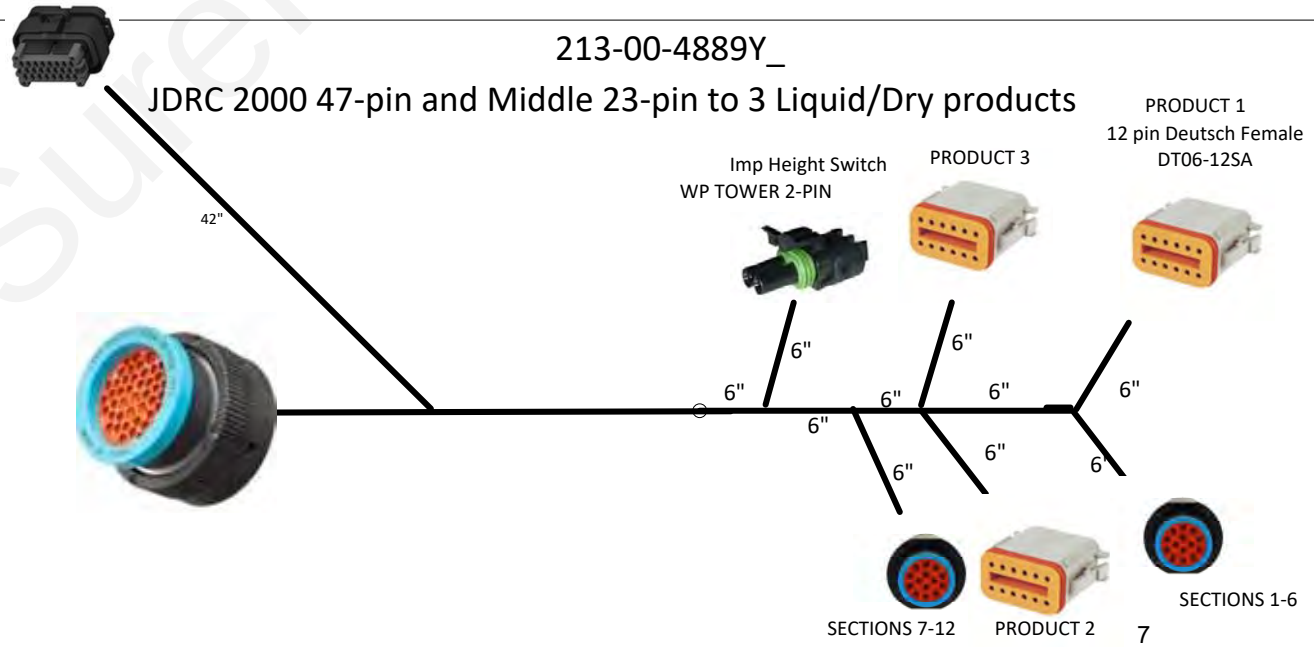
213-00-3517Y_

JDRC 2000 ECU to 3 Liquid/Dry products



213-00-4889Y_

JDRC 2000 47-pin and Middle 23-pin to 3 Liquid/Dry products



Startup Checklist Before Going to The Field

- ☐ Read your operator's manual (396-3583Y1 or 3616Y1) to learn the basics of operating your new system.
- ☐ Read and use the QuickStart Setup card to set up the controller/display for your system.
- ☐ Fill Tank with water first. DO NOT start with fertilizer. This step will allow you to test the system for leaks and will allow you to learn how to operate the system before you go to the field
- ☐ Tighten tank straps after filling with water. They are tightened at SureFire before the system ships, but will need re-tightened after liquid is added to the tank
- ☐ Run the system in Manual mode or Calibrate PWM Limits Test to get the system primed for the first time. This is a good time to test the system for leaks and ensure all mechanical components are operating correctly. (Note: when testing with water, the pressure will be much lower than with fertilizer, and some rows may not flow because the check valves don't open. Increase the flow to open all the check valves.)
- ☐ Run the system in an automatic test mode where you enter a speed and rate and make sure the system locks on rate at the desired speed entered. If the pump does not lock on rate you may need to make some adjustments to the valve calibration settings to get the pump to lock on rate. See operator's manual on adjusting valve calibration settings.
- ☐ If you can't get the pump to lock on rate after adjusting controller settings contact your SureFire dealer or SureFire technical support to assist you with setting changes.
- ☐ Do a catch test to verify that the flowmeter is measuring accurately. Verify the flowmeter calibration in the field. Adjust flowmeter calibration as needed.
- ☐ If the unit may encounter freezing temperatures, winterize the system with RV antifreeze.
- ☐ When you are comfortable with operating your new SureFire system you can offload the water and load fertilizer in your tank. Double check the tank straps one more time to make sure they are tight before going to the field.
- ☐ Enjoy your new SureFire fertilizer system.