

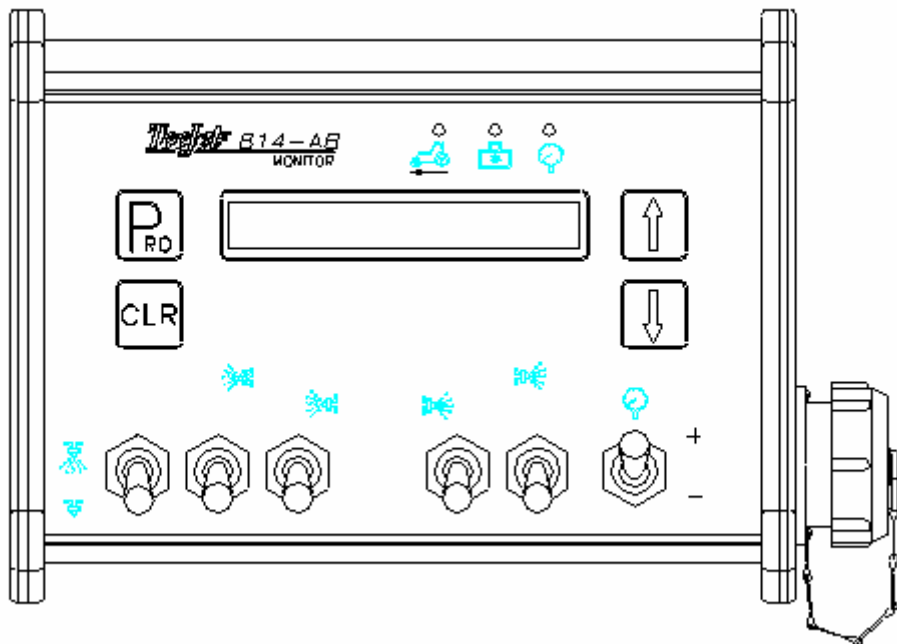
# TeeJet

**814-AB**

Airblast Sprayer Monitor

**Programming and Operating Manual**  
(v 2.10A)

**98-70012-R0**



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# Programming Guidelines

Make sure that all hardware components are properly installed and tested. Before you start the programming process you should first check if the console and all sensors are working properly.

## Important Preliminary Information

Before you begin, we recommend that you review the following Programming Guidelines that control the programming process:

- ☞ The **Pro** key is used for power ON
- ☞ **Clr & Down** key combination is used to power OFF (when not spraying)
- ☞ Holding **Pro** key for 3 seconds is used to enter and/or exit the programming mode
- ☞ Shortly pressing the **Pro** key once while in the programming mode saves the current parameter and advances to the next programming step
- ☞ Shortly pressing the **Clr** key restores the parameter with the default value
- ☞ Holding the **Clr** key restores the parameter with its minimum value (mostly zero)
- ☞ The value of a parameter is changed with the **Up** and **Down** keys. Holding the **Up** or **Down** key changes the parameter rapidly.
- ☞ Pressing the **Pro** key once while displaying the working width will allow the working width to be adjusted. Once adjusted, pressing the **Pro** key again will return to the normal operating mode.

# Start

To begin the programming process:

- ☞ Read above for programming tips.
- ☞ Be sure the Master switch is “OFF.”
- ☞ Turn console “ON” by pressing the **Pro** key. When the Control Console is turned on, the software version will be displayed for approximately 5 seconds. The software version and serial number of the console will be needed when calling for service support. The serial number is located on a sticker on the back of the console.

**814-AB US V2.10A**

**Example:** the 814-AB airblast monitor is working in US units and the software version is V2.10A.

- ☞ After a short time the console will change to the normal monitor mode. The first monitored value is the working width.

**10.0 ft**

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## ADJUSTING THE WORKING WIDTH

Default = 10 ft. (3 m )

**10.0 ft**

- While in the normal monitoring mode, the display selected must be the working width.
- Be sure that the Master switch is in the OFF position.
- Then press the **Pro** key once.

**10.0 ft <-O->**

The working width display will then be flashing. The value can now be adjusted using the **Up** and **Down** keys.

Once the value has been adjusted, return to the normal monitoring mode by pressing the **Pro** key once.

# System Setup Mode

The System Setup Mode contains the programming steps that customize the monitor to the sprayer or sprayer components. These include calibration steps and parameters that, once programmed, will likely never change. An overview of all programming steps is shown in “Appendix B: Overview of Programming Steps”.

To enter the System Setup Mode:

- ☞ First be sure that the console is ON (if not turn it on by pressing the **Pro** key and wait until the normal display is visible).
- ☞ Check if the Master switch is OFF
- ☞ Then press and hold the **Pro** key for 3 seconds to enter the System Setup Mode.

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## SELECTING UNITS

Default = US

>US units

Select the units that the monitor will be operating in using the **Up** or **Down** keys. Select US units for English measurement units or SI units for metric measurement units.

Depress the **Enter** key to accept the value and advance to the next program step.

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## SPEED SENSOR CALIBRATION

Default = 250 pulses/300 feet (100 meters)

>250 puls/300ft

The speed sensor needs to be calibrated in order to provide the proper speed and area readings. The value for this step is the number of pulses generated by the speed sensor in 300 ft (100 meters).

## Manual Calculation

To manually calculate the proper value for Wheel Speed Sensor pulses, you need to know the circumference of the wheel to which the sensor is mounted. It can be measured by marking the tire and measuring the distance covered as that mark makes one full revolution.

Then use the following formula:

$$\frac{3,600 \times \# \text{ Magnets On Wheel}}{\text{Wheel Circumference In Inches}} = e.g. \frac{3,600 \times 4}{30} = 480$$

Use the **Up** or **Down** keys to adjust the value. Press the **Pro** key to validate the value and advance to the next programming step.

**Note:** The wheel calibration should be repeated if you are changing to another wheel diameter. If a radar calibration number is to be entered manually, the **Clr** key must be pressed so that the "r" is displayed with the calibration number (see below).

## Auto Calibration

The speed sensor can be automatically calibrated by driving 300ft. The console will automatically detect a RADAR sensor (if used).

**To start the auto calibration procedure**, press simultaneously on the **Up** and **Down** keys. The display now will show :

**Start auto cal**

Now you have to drive to the starting point of the 300ft distance. Push the **Up** key to start counting speed pulses as you cross the start point. Drive 300ft and press the **Up** key again to stop the pulse counting.

**Drive300ft 176**

**Note:** During the pulse counting the Speed Indication LED will be flashing.

Press the **Up** key when crossing the end point of the 300ft course. The number now on the display is the number of pulses corresponding to 300ft.

**223 puls/300ft**

Depress the **Pro** key to accept the value and advance to the next program step.

A radar speed sensor will be indicated with an "r" on the display e.g.

**Drive300ft r 11**

The "r" will automatically appear during the auto calibration process when the console has determined that a radar is being used. When manually entering a radar calibration number the "r" must be turned on by pushing the **Clr** key. With this key you can toggle between radar or wheel sensor. The calibration value itself is adjusted with the **Up** and **Down** keys.

**>r12.4puls/300ft**

The auto calibration procedure can be escaped with the **Pro** key. The console will then return to the previous calibration value.

**Note: The auto speed calibration should be repeated at least twice and an average of the calibration numbers should be entered.**

### **Simulated Speed**

If you enter 0 in this programming step, then the console always shows a simulated speed of 6 mph. This can be used to test out the sprayer at stand still. The simulated speed feature allows you to check out the sprayer at a certain speed without actually moving the sprayer. This can be done prior to any spraying activity.

Depress the **Enter** key to accept the flow meter value and advance to the next program step.

---

## **FLOW METER CALIBRATION**

Default = 650 pulses/liter

**> 650 puls/l**

First, locate the factory calibrated Flow Meter pulse rate tag on the Flow Meter. If this varies from the default value of the console, use the **Up** and **Down** keys to modify the value.

**Note: The Flow Meter Calibration number will always be expressed in pulses/liter. The monitor will automatically make the necessary conversion if operating in US units.**

Depress the **Enter** key to accept the flow meter value and advance to the next program step.

---

## PRESSURE SENSOR CALIBRATION

If you don't have a pressure sensor connected to your system, you may skip this step. You only have to program the maximum pressure to zero in step 2.

If a pressure sensor is connected, it is calibrated with two programming steps. The first step calibrates the sensor at 0 PSI (bar), while the second step calibrates the maximum pressure of the sensor. The sensor can only be a 4 to 20 mA or 0 to 20 mA type.

### Step 1

Default = 4.0 mA

In the first step the number of mA corresponding to 0 psi must be entered.

Use the **Up** and **Down** keys to change the value. If a 4-20 mA sensor is being used, 4 mA would represent 0 PSI (bar) and should be entered here. If a 0-20 mA sensor is used, 0 mA would represent 0 PSI (bar).

**>4.0 mA 0.0 Psi**

Press the **Pro** key to save this parameter and to advance to the next programming step.

### Step 2

Default = 145 PSI (10 bar)

The second pressure calibration step specifies the maximum rated pressure of the sensor at 20mA. If no pressure sensor is connected then zero must be entered in this step.

Use the **Up** and **Down** keys to change the value.

**>145 Psi 20 mA**

Press the **Pro** key to save this parameter and to advance to the next programming step.

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## COMPLETING THE SYSTEM SETUP MODE

When you have completed the last calibration or programming step, you have completed the System Setup Mode.

NOW, PRESS AND HOLD THE **Pro** KEY FOR THREE SECONDS AND THE CONSOLE WILL RETURN TO THE NORMAL MONITOR MODE.

**Note: For your protection, the Console will not automatically power down while in the System Setup Mode. You must exit properly as described above to enable the auto power down feature.**

**Note: Cutting the power to the controller while in the System Setup Mode will not save any changes made into the computer's memory.**

# Normal Monitor Mode

## INTRODUCTION

The monitor mode is the normal working mode of the Console after power up.

The screen shows one or two values at the same time (one on the left and/or one on the right hand side). The displayed value can be recognized by the units displayed after the value [e.g. the speed value is shown in MPH (km/h) units].

The usage of the keys during monitoring is summarized as follows:

- ➡ **Pro** key is used to power ON
- ➡ **Clr & Down** key combination is used to power OFF (when not spraying)
- ➡ **Up** and **Down** arrow keys are used for scrolling through the list of display information
- ➡ Holding **Clr** key is used to clear counter: Ac, Gal (Ha,I)

In the following, the different monitor displays will be described in more detail. An overview is given in “Appendix A: Overview of Monitor Displays”.

## WORKING WIDTH

The working width for an airblast sprayer is defined as the distance between the tree rows. This distance is used for calculating the application rate and for making area measurements.

In the display the working width value is shown on the left hand side together with an arrow symbol on the right hand side. The arrow symbol represents visually which sections are open or closed. When the Master switch is OFF, only the total working width value is shown with no arrow symbol.

10.0 ft

The current active working width depends on which sections are closed and whether or not the master switch is turned off. When there is at least one section active on both sides (left and right) then the active width is the total width. When all sections on one side are closed then the active width is half of the total width (provided that there is at least one section active on the other side).

Both sides (left and right) are active:

10.0 ft <-O->

Only left hand side is active:

5.0 ft <-O

Only right hand side is active:

5.0 ft 0->

Press the **Up** or **Down** key to select another display.

### Changing the Working Width

The working width (distance between the trees) can quickly be changed by pressing the **Pro** key when the width is displayed. The following screen will be shown:

> 10.0 ft <---->

The width number will be flashing and can now be changed with the **Up** and **Down** keys. Pressing **Pro** again after the value is entered will save the new working width and the console returns to the steady working width screen.

---

### SPEED AND APPLICATION RATE

The next monitor display is the speed and application rate display. On the left the current speed is shown in MPH (km/h) and on the right hand side the current dose rate in GPA (l/ha) is shown. When the Master switch is switched off, the application rate shown is zero.

5.0 mph 50 Gpa

Press the **Up** or **Down** key to select another display.

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### APPLICATION RATE AND PRESSURE

In this display the application rate in GPA (l/ha) and the pressure in PSI (bar) are shown. The pressure is only shown when there is a pressure sensor installed.

20 Gpa 30 PSI

Press the **Up** or **Down** key to select another display.

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### FLOW RATE AND PRESSURE

In this display flow in GPM (l/min) and the pressure in PSI (bar) is shown. The pressure are only shown when there is a pressure sensor installed.

10.2 GPM 25 PSI

Press the **Up** or **Down** key to select another display.

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## **SPRAYED AREA AND SPRAYED VOLUME**

In this display the area and volume counters are shown. The area is measured in Ac (Ha) and the volume is measured in Gal (L). The counters can be reset to zero by pressing and holding the **Clr** key until the values are reset to zero. This can only be done when there is no spraying activity and the Master switch is OFF.

<b>0.000 Ac</b>	<b>0 Gal</b>
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Press the **Up** or **Down** key to select another display.

# Operating Instructions

## SPRAYER CHECKOUT

Before spraying check all connections related to the Sprayer Control assembly. Particular attention should be given to the speed sensor to be sure the sensor and bolts or magnets are in-line, and properly secured.

**Very important: Whenever you are working around a sprayer or farm chemicals, be sure to wear protective clothing and eyewear.**

Partially fill the sprayer tank with water to flush the system and make a visual check of the spray tips to be sure all tips are delivering a good spray pattern.

Follow these steps, in sequence, being sure the Master Switch is in its “OFF” position:

- ☞ Be sure the tank shut-off valve is open.
- ☞ Start the engine, engage pump, and set the rpm to that which will be used when spraying.
- ☞ Switch the computer on by depressing the **Pro** key on the display panel.
- ☞ Turn “ON” the toggle switches for each of the spray booms on your sprayer.
- ☞ Now, toggle the Master switch to “on.”
- ☞ Adjust the pressure with the +/- switch.

At this point, the sprayer will be activated and spray tip performance can be visually checked. The +/- switch can be used to raise or lower your spraying pressure. To stop spraying, toggle the Master switch to “OFF”.

The above steps provide a quick way to checkout your sprayer and computerized monitor system.

## THE SPRAYING OPERATION

You have filled the sprayer tank and have thoroughly mixed the chemical(s). Your application rate has been determined as well as the spray tip you will be using, with the sprayer data programmed into the computer.

- ☞ Switch the computer on by depressing the **Pro** key on the display panel.
- ☞ Toggle the boom switches to their “ON” position, for each of the booms on your sprayer.
- ☞ Take note of the “numbered” booms on each side of the sprayer, so that the appropriate boom can be toggled “OFF” as necessary.

☞ While spraying with the Master switch “ON”, you can scroll through the different displays until the information you want is on the display :

- ◆ actual working width in FT(m)
- ◆ actual application rate in GPA (l/ha)
- ◆ vehicle speed in MPH (km/h)
- ◆ pressure in PSI (bar)
- ◆ application area covered in Acres (hectares)
- ◆ total volume applied in Gallons (liters)

☞ Adjust the pressure and target application rate with the +/- switch.

As you enter the field to the point where you will begin spraying, turn the Master switch to “ON” position. This will activate the spraying operation. Maintain your usual vehicle speed for spraying. Use the +/- key to maintain the application rate.

If for any reason you need to stop, turn the MASTER SWITCH to “OFF.”

## Sensor Monitors

Speed, Flow and Pressure sensor monitors are located just above the monitor display. Each time a sensor receives a pulse, the appropriate sensor LED will flash or turn on. The LED display indicates which components are sending signals to the console. The LED's will be green when the console receives a signal from the sensed components. If a system malfunction occurs, check the sensor monitors to be sure that the LED displays are lit for the components being used. If one is not, you will know that a problem exists with the transmission or receipt of the signal associated with the component.

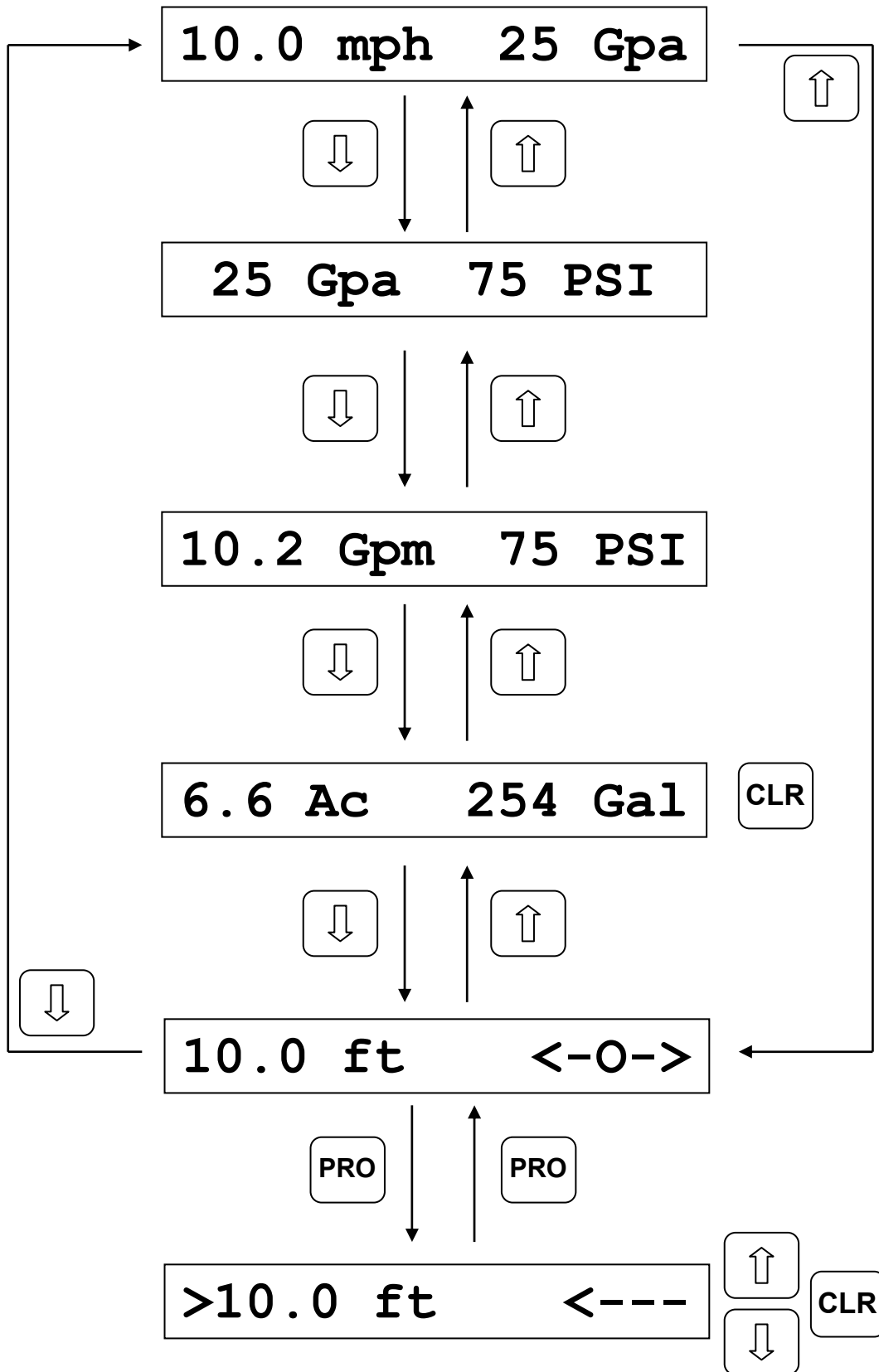
## Automatic Power Down

The Sprayer Monitor Console has an automatic power down feature. With the Master switch in the “OFF” position, the Console will automatically shut down after 10 minutes of no inputs (when in normal monitor mode). This prevents possible battery drainage.

You can also power down the controller by the following key combination: press simultaneously the **Clr** and **Down** keys and the console will power down immediately (only with Master switch OFF).

**WARNING: DO NOT SWITCH OFF THE CONSOLE BY REMOVING THE MAIN CABLE!**

# Appendix A: Overview of Monitor Displays



## Appendix B: Overview of Programming Steps

