834 Sprayer Control

L2.12

User Guide

98-70019-R1

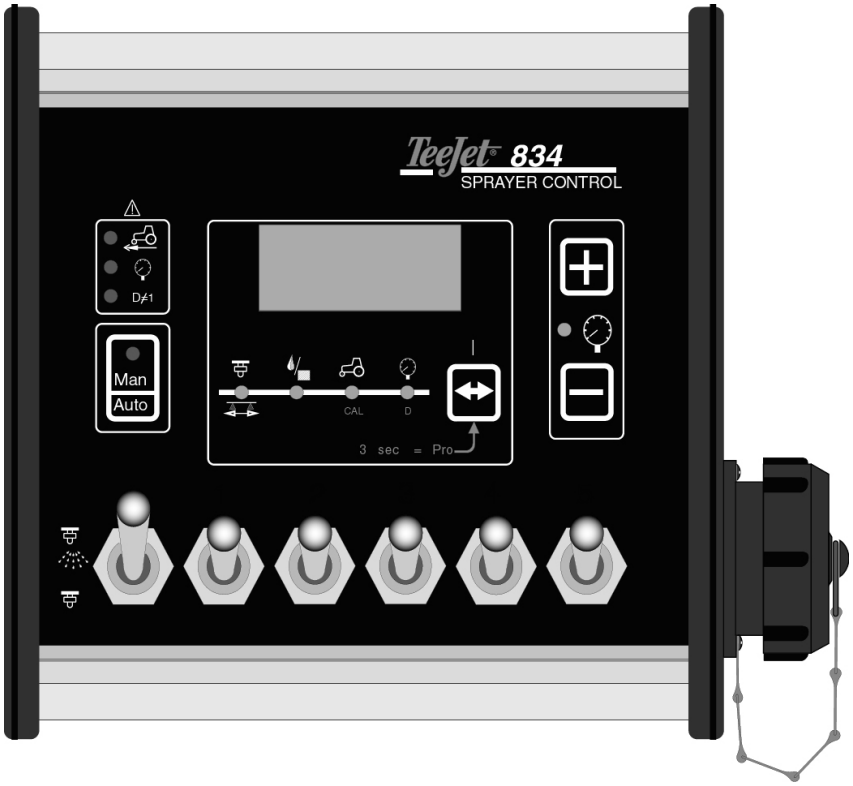


Table of Contents

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 ↔ key is used to power the console ON
- **Auto** & − simultaneous key combination is used to power OFF (when not spraying)
- Holding ↔ key for 3 seconds is used to enter programming mode
- Depressing the ↔ key saves the current parameter and advances to the next programming step during programming mode
- The value of a parameter is changed with the + and − keys. Holding the + or − key changes the parameter rapidly.

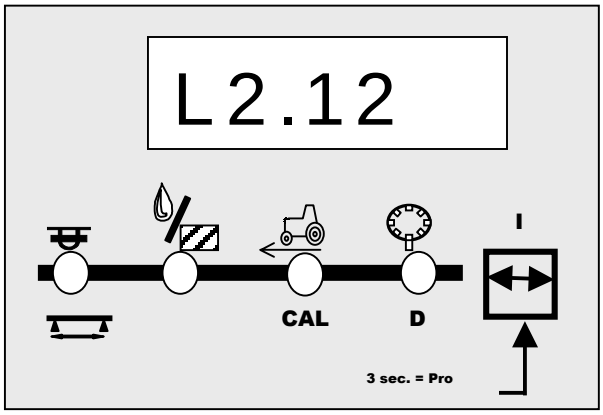
Start

To begin the programming process:

☛ Read above for programming tips.

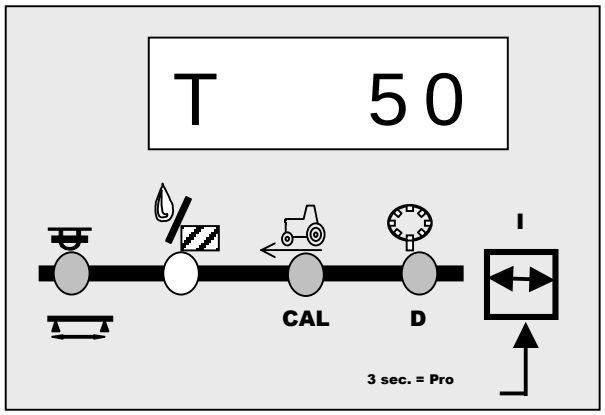
☛ Be sure the Master boom switch is “OFF.”

☛ Turn console “ON” by pressing the ⟷ key. When the control console is turned on, the software version will be displayed for approximately 5 seconds. At the same time all LED’s will be ON.
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.



Example: the software version is L2.12.

☛ After a short time the console will change to the target application rate display.



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.

To enter the System Setup Mode:

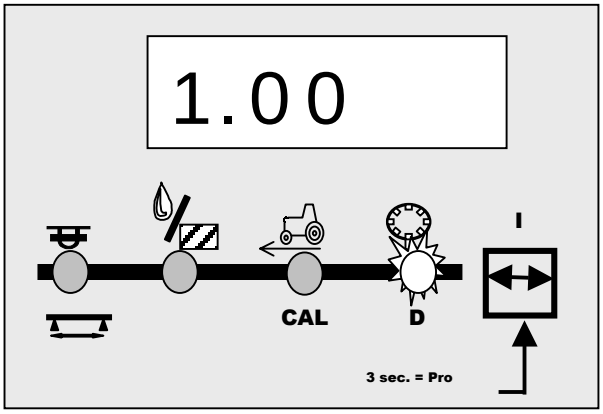
- ☛ First be sure that the console is ON (if not put it on by pressing the ↔ key and wait until the normal display is visible).
- ☛ Ensure the Master boom switch is OFF.
- ☛ Then press and hold the ↔ key for 3 seconds to enter the System Setup Mode.

DENSITY

Default = 1.00

If a substance other than water is being sprayed or used as a carrier (e.g. liquid fertilizer), enter the density of that fluid.

Weight of Solution Per Gallon	Liquid Density
7.0 lbs.	0.84
8.0 lbs.	0.96
8.34 lbs. - Water	1.00
10.0 lbs.	1.20
10.65 lbs. – 28% N	1.28
10.85 lbs. – 30% N	1.30
11.0 lbs.	1.32
12.0 lbs.	1.44
14.0 lbs.	1.68



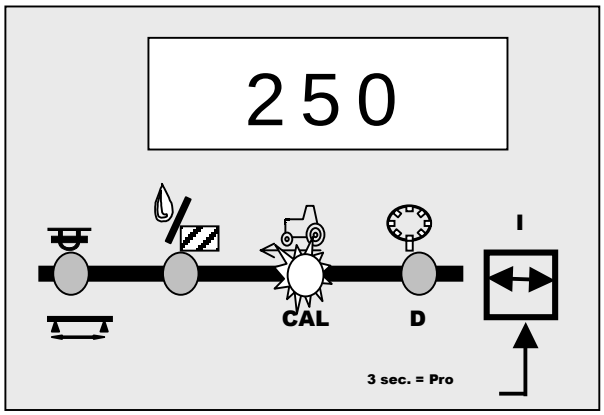
Note: If the solution that you are using can not be found in the chart at left, the Liquid Density can be calculated as follows:

$$\text{Density} = \frac{\text{Weight of Solution}}{\text{Weight of Water}}$$

Note: Water weighs 1 Kg/L

Use the + or − keys to adjust this value. Once the correct units have been selected, depress the ↔ key to advance to the next step.

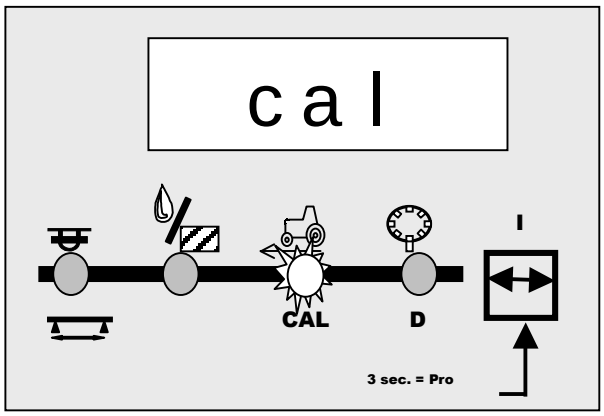
SPEED SENSOR CALIBRATION



Default = 250 pulses/100 meters

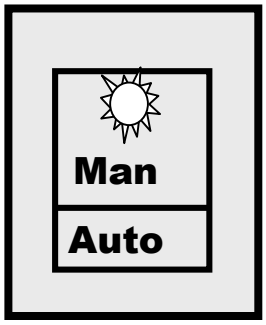
The speed sensor needs to be calibrated in order to provide the proper speed reading. The value for this step is the number of pulses generated by the speed sensor in 100 meters.

Auto Calibration



The speed sensor can be automatically calibrated by driving 100 meters. The console will automatically detect a RADAR sensor (if used).

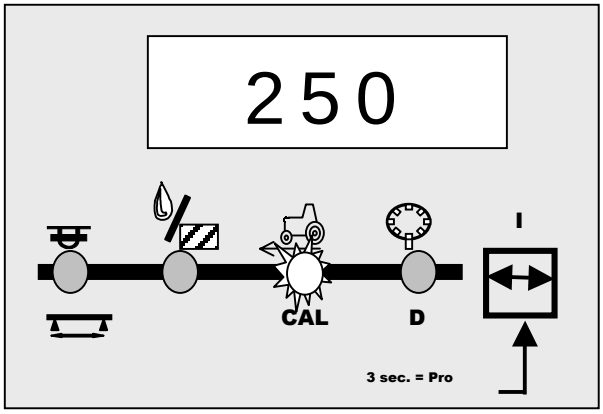
To start the auto calibration procedure, press simultaneously on the [+] and [−] keys. The display now will show CAL.
Now you have to drive to the starting point of the 100 meter distance. Push the [+] key to start counting speed pulses as you cross the start point. Drive 100 meters and press [+] again to stop the pulse counting as you cross the finish point.



Note: During the Auto calibration, each time a pulse is recorded the Man LED will flash.

The number now on the display is the number of pulses corresponding to 100 meters.

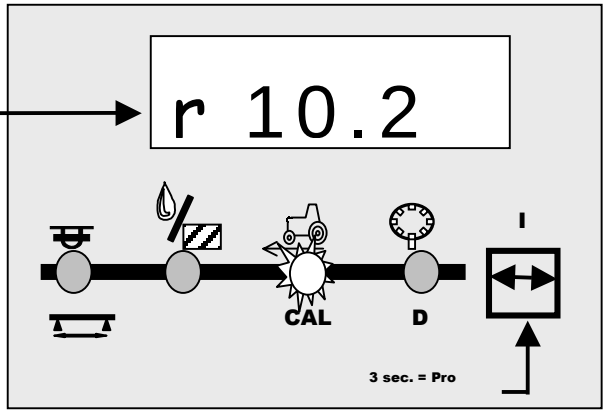
The auto calibration procedure can be escaped with the [↔] key. The console will then return to the previous calibration value.



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

Radar

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



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 **Auto/Man** key. With this key you can toggle between radar or wheel sensor. The calibration value itself is adjusted with the [+] and [−] keys.

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:

$$\frac{10{,}000 \times \#\ \text{Of Magnets On Wheel}}{\text{Wheel Circumference In Centimeters}} = \text{e.g.}\ \frac{10{,}000 \times 2}{80} = 250$$

Use the [+] or [−] keys to adjust the value. Press the [↔] 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.

Simulated Speed

If you enter 0 in the speed calibration step, then the console always works with a simulated speed. This simulated speed can be used to test out the sprayer at stand still.

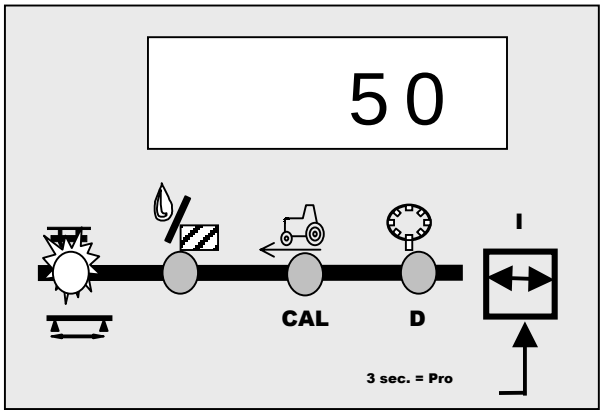
The simulated speed feature allows you to check out the sprayer at a certain speed without actually moving the sprayer. This can be done prior to any spraying activity. The simulated speed value can be changed with the [+] and [−] keys when the speed is shown on the display in normal working mode.

TIP SPACING

Default = 50 cm

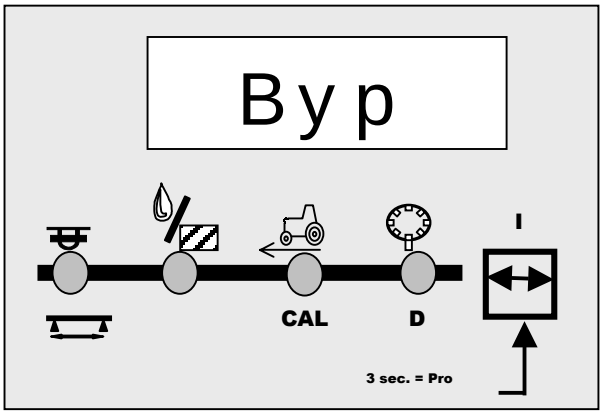
Use the + or − keys to adjust this value.
Once the correct spacing has have been entered, press the ↔ key to advance to the next step.

The value shown is represented in centimeters.



PRESSURE REGULATING MODE

Default = byP
The default value "byP" indicates that the pressure regulating valve is plumbed in a bypass line. If the default value is correct, press the ↔ key.
Use the + or − keys to change the value to throttle (tHr) mode if needed.



Note: This setting must match the actual plumbed mode of the regulating valve. Changing this setting will only reverse the polarity to the valve, it will not effect the physical operation of the valve.

Press the ↔ key to save this parameter and to return to the normal working mode.

Normal Working Mode

Introduction

In normal working mode, the display can show four different pieces of information indicated by the LED's below the display e.g.:

- Tip selection
- Application rate in L/Ha
- Speed in Km/H
- Pressure in bar

The usage of the keys during normal working mode is summarized as follows:

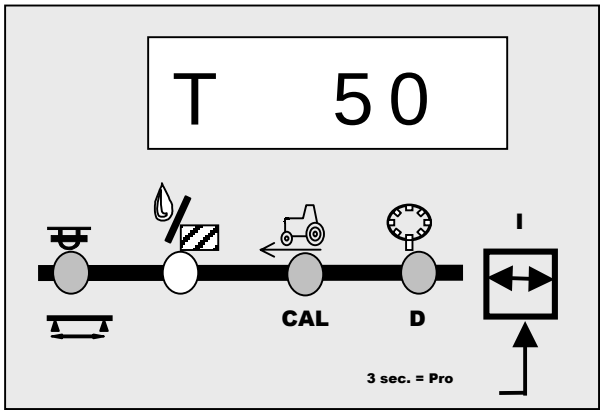
- **I** / ↔ key is used to power ON and to move to another information display
- **Auto/Man** & − key combination is used to power OFF (when not spraying)
- \+ and − keys are used for changing the target application rate or for changing the tip.
- In manual mode the + and − keys drive the regulating valve to adjust pressure.

Target Application Rate Display

In this display the application rate in L/Ha is shown. When a "t" is shown then the target application rate is displayed, otherwise the current application rate is shown. The target application rate will be displayed any time the master boom switch is in the off position.

Press the + or − keys to select another target application rate. This can be done before the spraying operation begins with the Master switch off or can be done on the go while spraying.

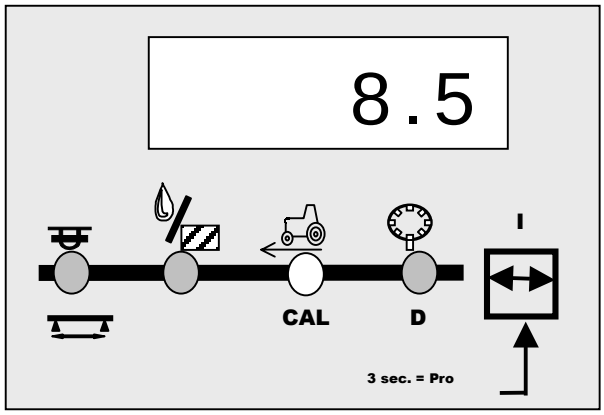
Press the ↔ key to advance to speed display.



SPEED DISPLAY

In this display the speed in Km/H is shown.

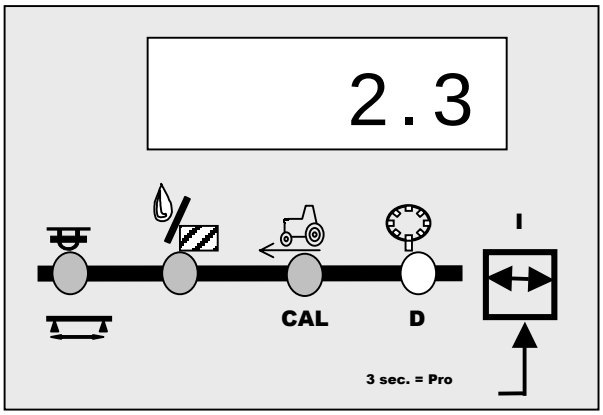
Press the ⟷ key to advance to pressure display.



PRESSURE DISPLAY

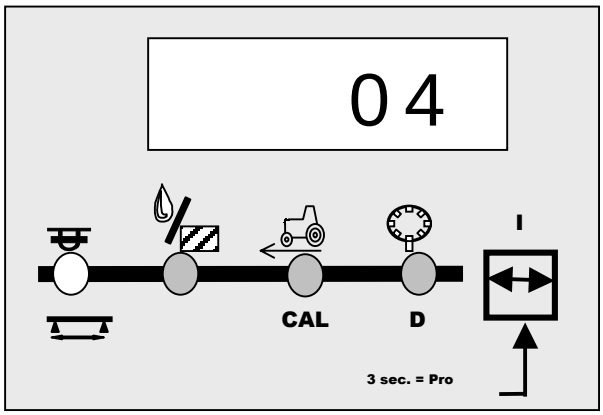
In this display the pressure in bar is shown.

Press the ⟷ key to advance to the tip selection display.



TIP SELECTION DISPLAY

This display is the tip selection display. On the display the two last digits of the VisiFlo® color coded tip are shown, e.g. an XR110**04** corresponds with _04. (See Table Below) The last selection _P is a programmable selection in case the tips being used do not match one of the preprogrammed flow rates.



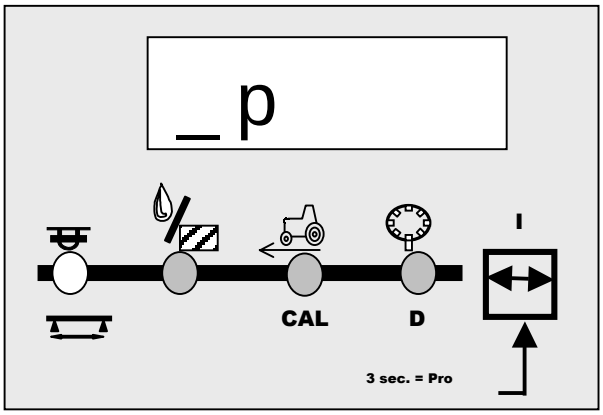
See the following page for programming instructions on the _P selection.

Press the ⊕ or ⊖ keys to select another tip.
Note: The tip size can only be changed with the Master switch in the OFF position and with the console in Auto mode

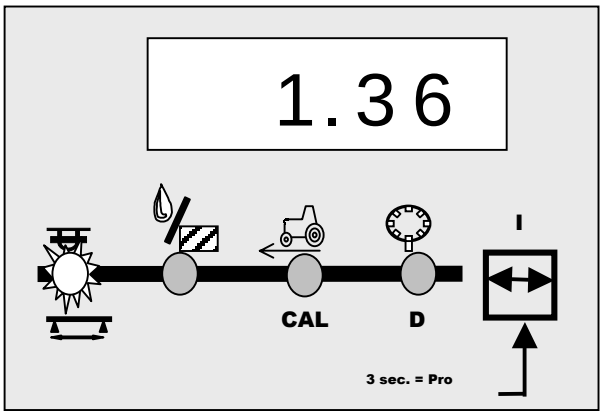
TeeJet® VisiFlo® Tip Color	Example TeeJet® Tip	Flow Rate In l/min @ 2 bar	TeeJet 834 Tip Size Designation
Orange	XR11001VS	0.32	_01
Green	DG80015VP	0.48	_01.5
Yellow	TJ60-6502VS	0.65	_02
Turquoise	AI110025-VS	0.81	_02.5
Blue	TT11003VP	0.96	_03
Red	AI11004-VS	1.29	_04
Brown	TT11005VP	1.61	_05
Gray	TP11006VS	1.94	_06
White	XR8008VP	2.58	_08
Lt. Blue	TK-VS5	3.23	_10
Lt. Green	TF-VS7.5	4.83	_15

Programmable Tip

As mentioned above the _P section of the Tip Selection Display can be programmed to match the flow rate of the tips on the sprayer if they do not fall into one of the categories listed above. To access the programmable section, while viewing the _P display, simulataneously press the **Auto/Man** and ↔ keys for 3 seconds.



The display will then display a flashing flow rate represented in l/min at 2 bar. The Tip Select LED will also be flashing. Use the + and − keys to adjust this value so that it matches the flow rate of one of your tips in l/min at 2 bar.



Note: It is critical that this flow rate be referenced at 2 bar for the controller to regulate the application rate correctly.

Press the ↔ key to save the _P value and return to the Tip Select 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 or that the radar is installed at the proper height and correct angle.

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 to 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 Boom 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 **I/** ↔ key on the display panel.

☛ Turn "ON" the toggle switches for each of the spray booms on your sprayer.

☛ Ensure that the **Auto/Man** key indicates manual mode.

☛ Now, toggle the Master switch to "on."

☛ Adjust the pressure with the + or − keys.

At this point, the sprayer will be activated and spray tip performance can be visually checked. The + or − keys can be used to raise or lower your spraying pressure.

Note: Pressing the + key in manual mode should increase the pressure. Pressing the − key should decrease pressure. If this is reversed, check the Pressure Regulating Mode Step in the Systems Setup Programming Mode.

To stop spraying, toggle the Master switch to "OFF".

The above steps provide a quick way to check-out your sprayer and computerized control 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 **I/** ↔ 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 using the ↔ key until the information you want is on the display :

- actual application rate in L/Ha
- vehicle speed in Km/H
- pressure in bar
- tip being used

☛ Adjust the target application rate with the + and − keys.

As you enter the field to the point where you will begin spraying, turn the Master boom switch to "ON" position. This will activate the spraying operation. Maintain your usual vehicle speed for spraying. Use the + or − keys to boost the application rate if needed. Small changes in vehicle speed are compensated by the automatic rate controller while spraying in Auto mode.

If for any reason you need to stop, turn the MASTER BOOM SWITCH to "OFF."

Automatic Power Down

The TeeJet 834 Sprayer Monitor 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 working mode). This prevents possible battery drainage.

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

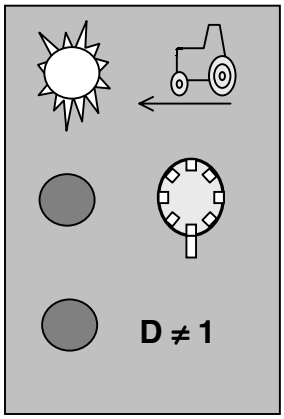
WARNING: DO NOT SWITCH OFF THE CONSOLE BY REMOVING THE MAIN CABLE!

Alarms and Warnings

On the 834 Console there are three LED's for indication of alarms or warnings.

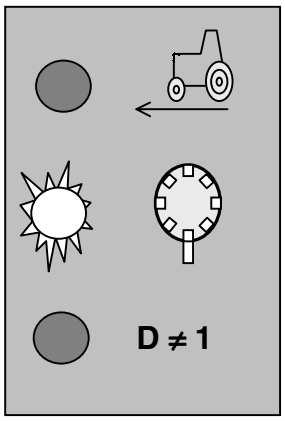
- The **Speed alarm** LED flashes when no speed pulses are received during spraying (Master in the ON position). This indicates that there is something wrong with the speed sensor or that you are standing still while spraying.

  Note: When this alarm is triggered, the display will automatically switch the application display to view speed (if not currently viewing speed) and the speed display will flash off and on as well. This allows the operator to immediately determine the location of the problem.



- The **Press alarm** LED flashes when the signal from the pressure sensor drops below 4mA while spraying (Master in the ON position). This indicates that the pressure sensor is not working properly.

  Note: When this alarm is triggered, the display will automatically switch the application display to view pressure (if not currently viewing pressure) and the pressure display will flash off and on as well. This allows the operator to immediately determine the location of the problem.



- The **Density** LED is a warning LED and it will be lit when the density selected in the programming mode is different from 1.00 (e.g. the density of water). This LED warns the user that the console is working with a density factor different from 1.00.