Precision Farming System

PF3000 Cotton Yield Monitor

Operators Manual

Welcome

Welcome to the ***Ag Leader Technology*** family. ***Ag Leader Technology*** is dedicated to the development of advanced, yet practical and cost-effective tools for agricultural production. Above all, however, we are dedicated to meeting your needs for support of existing products and development of product improvements.

We want to hear from you! Feel free to call any time to discuss:

- Operational problems with your system
- Features you don't like about your system
- Features you would like added to your system

We will do our best to ensure that you are happy with your current system and that it is upgraded in the future to better meet your needs.

System Upgrades

Ag Leader Technology will periodically provide free operating program upgrades that will improve the performance of your PF3000.

To receive free upgrades and new product news, you must send in or fax (*515-232-3595*) the Registration Form that is at the beginning of the operator's manual. Our mailing address is:

Ag Leader Technology
2202 South Riverside Drive
P.O. Box 2348
Ames, IA 50010

Internet http://www.**agleader.com**

Limited Warranty

Ag Leader Technology will repair or replace at no charge any component of the PF3000 system that fails during normal service on the equipment model that the system was intended for use within two years from the date of first use.

Warranty is not provided for damage resulting from abuse, neglect, accidents, vandalism, acts of nature, or any other causes that are outside the normal, intended use of the PF3000 system.

Ag Leader Technology shall not be liable for indirect, incidental, or consequential damages to the dealer, end user, or third parties arising from the sale, installation, or use of the PF3000 system.

Service

If you have a problem with your system, call your ***Ag Leader Technology*** dealer or call us directly at the phone number below. If we determine you have a hardware failure, we will ship replacement hardware immediately. Our mailing address and phone numbers are:

Ag Leader Technology
2202 South Riverside Drive
P.O. Box 2348
Ames, IA 50010

Phone: 515-232-5363
Fax: 515-232-3595

*Note**:** Return failed hardware to us by UPS (preferred) or US mail.*

Copyright Notice

Proprietary Technology Notice

The PF3000 system has patents or licensing agreements on its design and operational features. Copying features of this system relating to measurement and calculation of cotton flow and weight, or organization of field and load data may result in patent licensing infringement.

General Description

The PF3000 is a universal monitor/controller for crop production that is GPS compatible. In the cotton harvester it functions as a yield monitor and accurately measures and records pounds per acre, weight of current load and volume in bales.

The PF3000 has its own internal memory for recording field and load data. **GPS data, however, is not recorded in the internal memory, and must be logged to a memory card**.

The PF3000 **must** be setup and calibrated to record accurate information.

Fields and Loads

All the information recorded by the PF3000 must be recorded in a field and load. The operator must manually select or change the field and load on the PF3000 during field operation. A load is used to subdivide a field into smaller sections. The monitor load is not associated with the cotton picker basket, wagon, or truck load. It is recommended to use different loads for different hybrids or varieties or field conditions (like a wet hole).

Keypad

The monitor has "soft" keys which do not have labels on the keys to identify the function of the key. The labels for the keys will appear on the display screen next to the key. However, there are four major groups of the keys: arrow keys, display selection keys, menu key, menu selection keys.

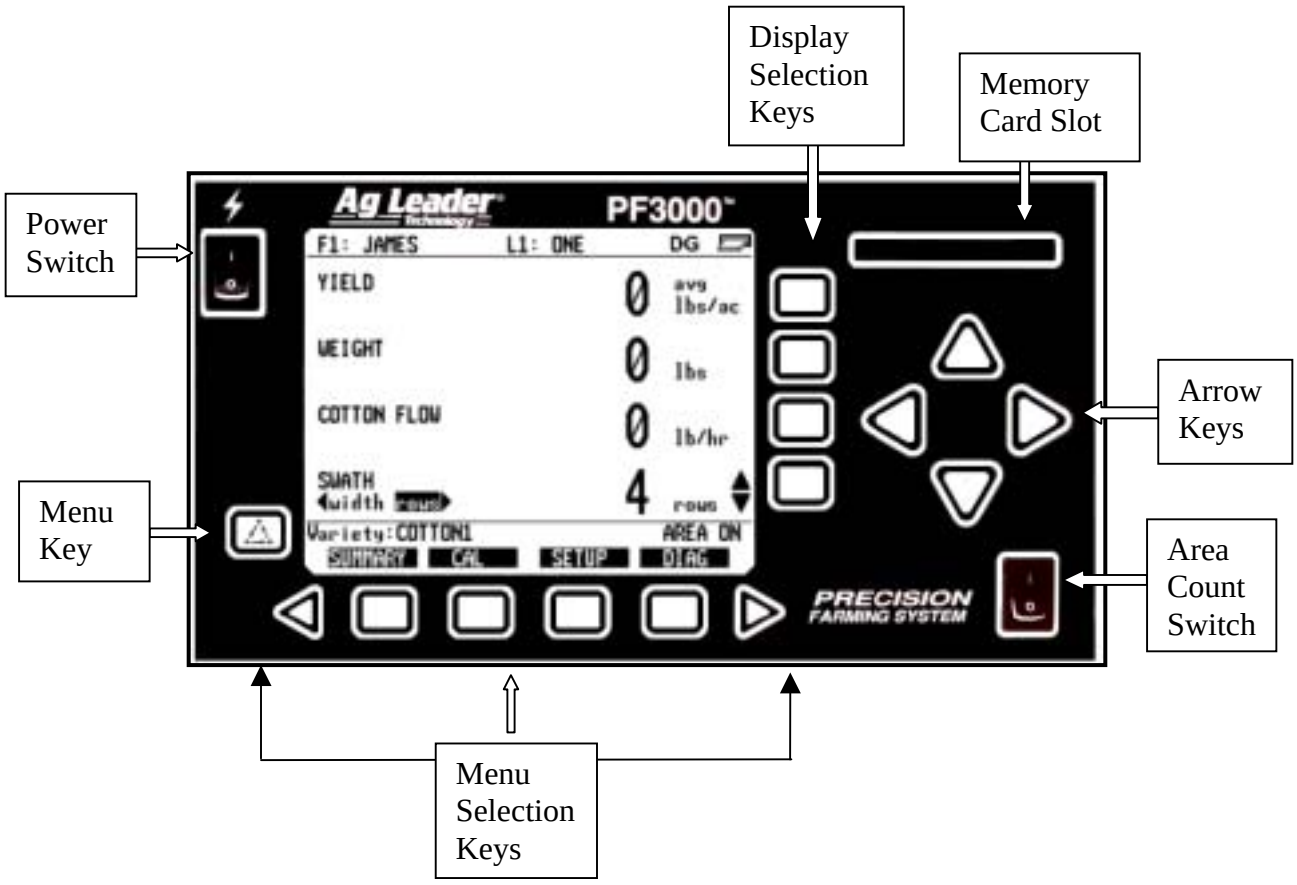


Figure 1: Front panel of the PF3000

Arrow Keys

The UP, DOWN, LEFT and RIGHT ARROW keys on the right side of the keypad are used to select and change a setting. The bottom LEFT and RIGHT ARROW keys are only used to view more menu or display items. They are never used to select or change a setting.

On the main operating screen, you may see an up and down arrow symbol that will be to the right of one of the display lines. This symbol indicates what item the UP or DOWN ARROW keys will change if pressed.

Display and Display Selection Keys

The PF3000 has four display lines for viewing items on the main operating screen. You can choose which items you see on the display and the position that the items appear on the display.

To change a display item on a display line you must select the line. The four display selection keys to the right of the display each select a display line. A rectangular box surrounds the display line to show that it is selected.

When the display line is selected the four menu items on the bottom change and show items you can select for display. Press a key below one of the four display items to put a different display item in place of the selected display item. There are more than four display items to choose for viewing. Press the bottom LEFT or RIGHT ARROW keys to scroll to the right or left and view other display items on the bottom.

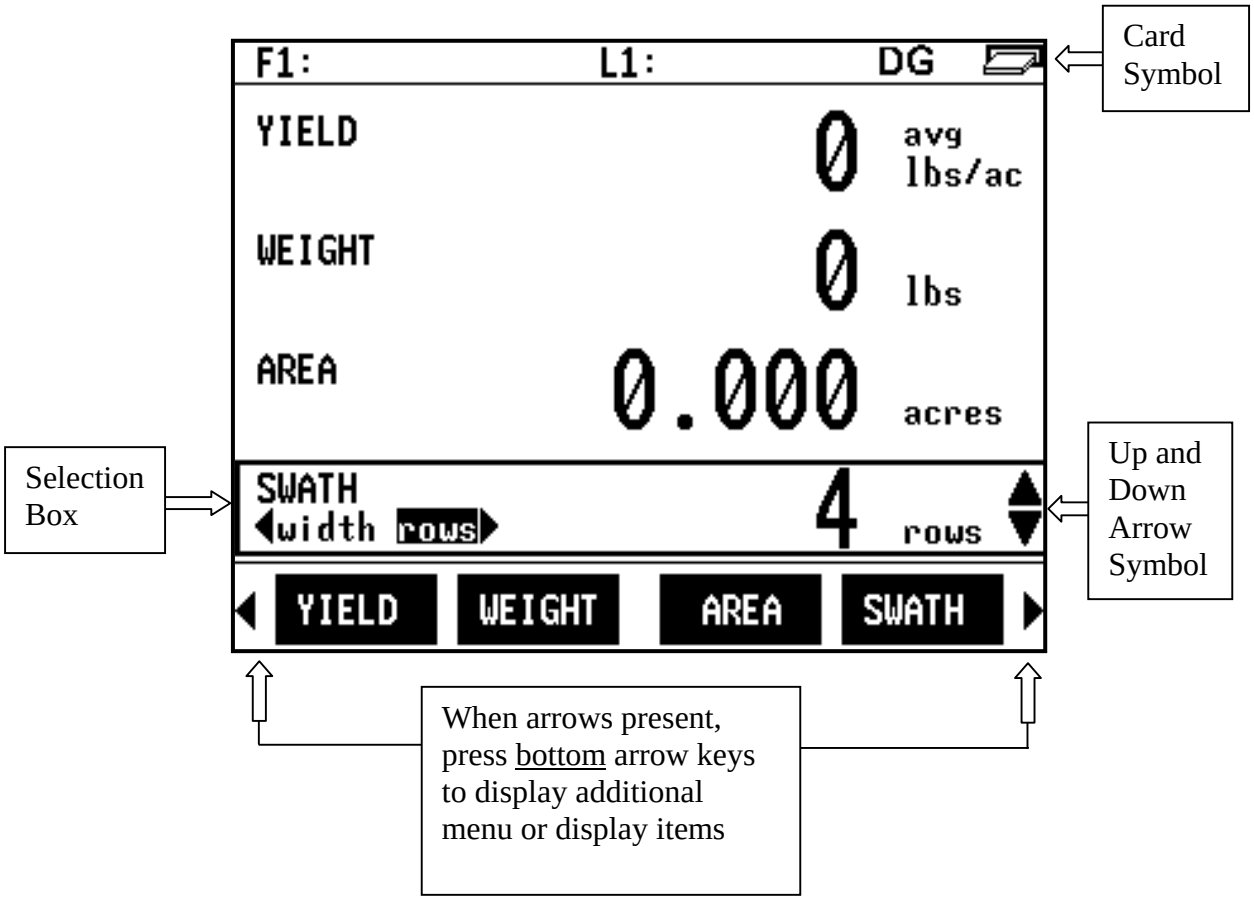


Figure 2: Main operating screen

When some display items (like swath) are selected, an up and down arrow symbol will appear on the right of the display line. This indicates you can change the setting of the item with the UP or DOWN ARROW keys. After you have made the change you must press the key to the right of the display line to deselect the line.

Menu Key

The MENU key switches the menus on the bottom of the display. There are two main menus that you can view by pressing the MENU key. They are shown below.

It is recommended to display the FIELD, LOAD, menu during normal operation of the monitor, unless you are marking and therefore need to display marks on the bottom.

Main Menus:

Menu Selection Keys

The name above the four menu selection keys on the bottom of the display will change depending on what you are doing on the monitor.

The bottom RIGHT and LEFT ARROW keys are used to view additional menu or display items. If you see a right and left arrow symbol on the display above the bottom RIGHT and LEFT ARROW keys, this indicates you can press the bottom RIGHT and LEFT ARROW keys to view more menu or display items. Refer to Figure 2.

Area Count Switch

The area count switch manually turns area counting on and off. When the switch is in the up position area is counting. When the switch is in the down position, area is not counting. The monitor will display either "AREA ON" or "AREA OFF" on the bottom right corner of the display to indicate the status of area counting.

Connectors

The PF3000 has four connectors on the bottom side of the console. The large 25-pin connector is for power and sensor connections. The three 9-pin ports (Port 1, Port 2 and Port 3) are for connecting a GPS receiver (Port 1) and as yet to be determined functions for Ports 2 and 3.

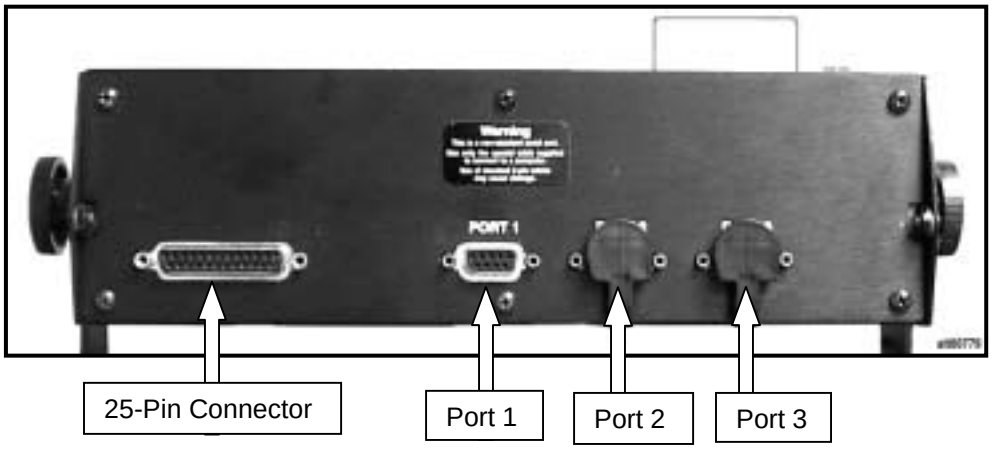


Figure 2: PF3000 Connectors

Flow Sensor

Below is an example of a flow sensor. On all cotton pickers, the flow sensor installs on the basket duct. The flow sensor measures the cotton weight in pounds as the cotton passes between the emitter and detector.

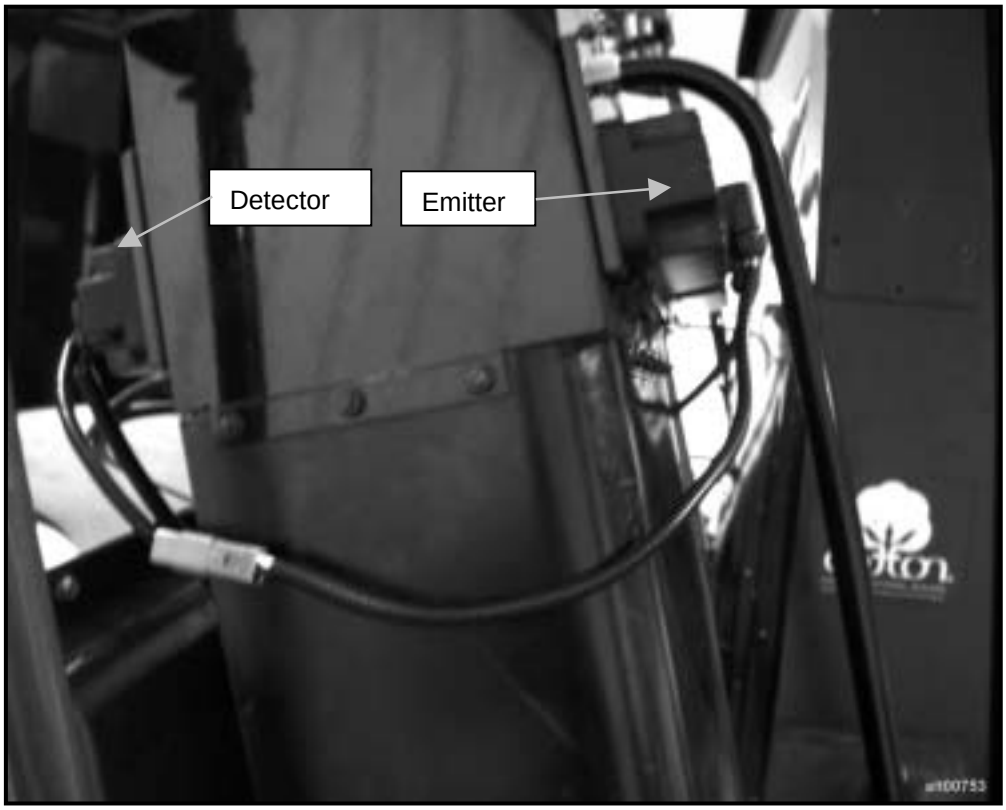


Figure 4: Flow Sensor

Header Height Sensor

Below is an example of a header height sensor installed underneath a picker cab. The header height sensor tells the monitor the position of the header so that when the head is raised on the end rows, the monitor stops counting area.

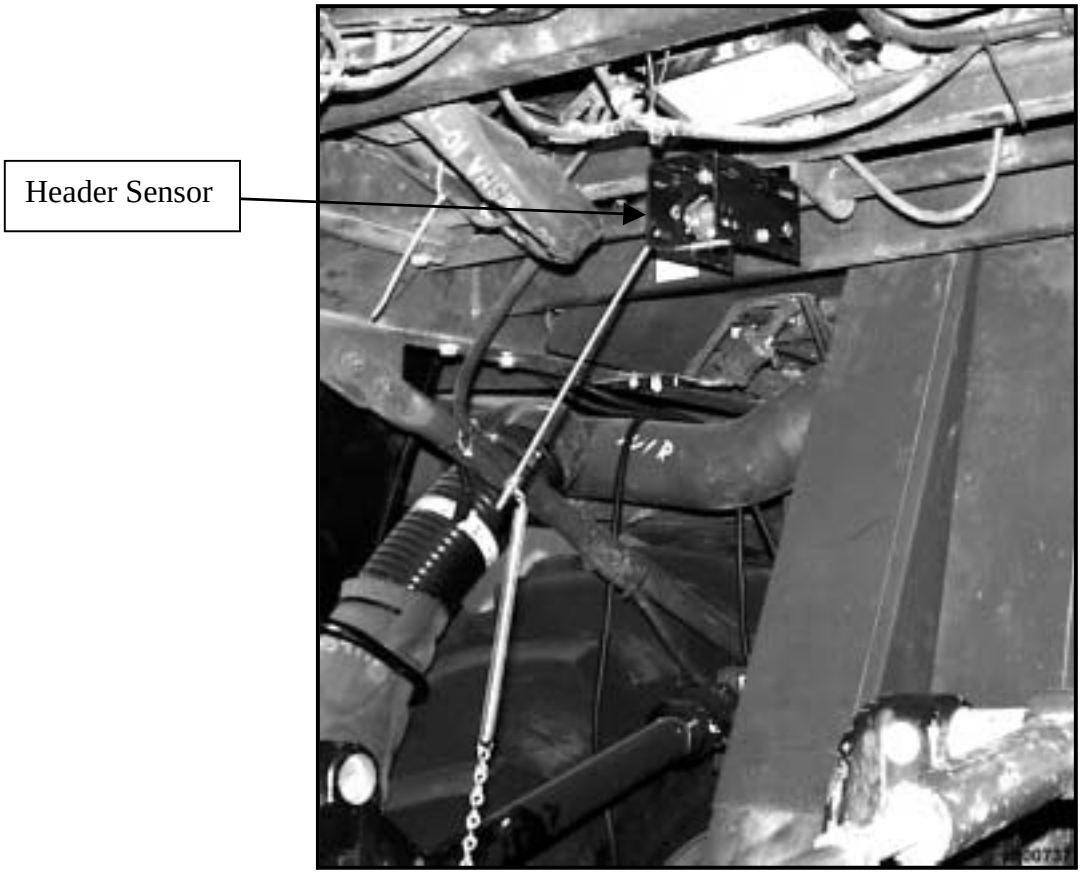


Figure 5: Header Height Sensor

Important Notices

The PF3000 must be set up before field operation, but before you begin the setup procedures, read the following notices:

- The PF3000 is a software upgradeable monitor. ***Ag Leader Technology*** will periodically offer free operating program upgrades to increase the capabilities of the PF3000. **To receive the program upgrade, you must send in the registration form found at the beginning of the Operator's Manual.**
- If you plan to make yield maps on your own computer, you will need to use a mapping program that can process data from the PF3000. Memory cards can be ordered through your ***Ag Leader Technology*** dealer.

Section Contents

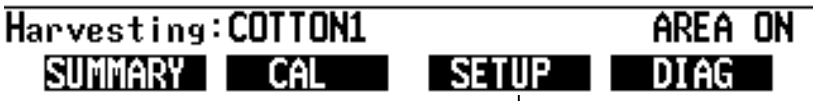
This setup section contains instructions for the following items. The operating modes that the instructions pertain to are also listed.

Using Power Supply

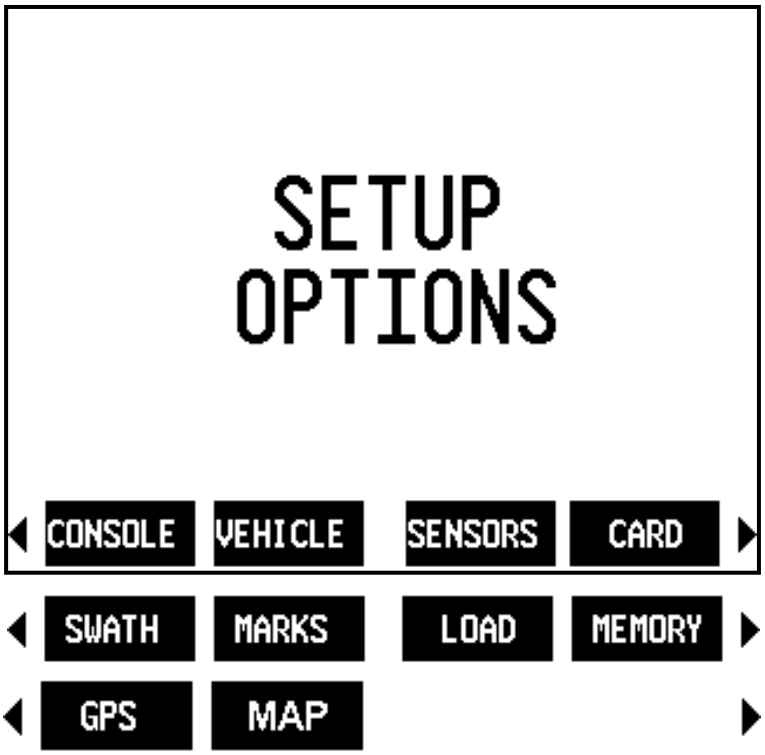
The PF3000 console does not need to be in the vehicle to set it up. You can use the provided power supply (plugs into 120v outlet) to power up the console inside your home or shop.

Order of Keys
(Harvest Mode)

Press the MENU key  until you see the following keys on the display.



Press the SETUP key to view the following setup menu items.



NOTE: Instructions for GPS Setup are located in the Add-On GPS 3000/3050/3100 Installation and General Instructions

Press the bottom LEFT or RIGHT ARROW keys to switch between and view the setup menu items shown above.

* * *

Introduction

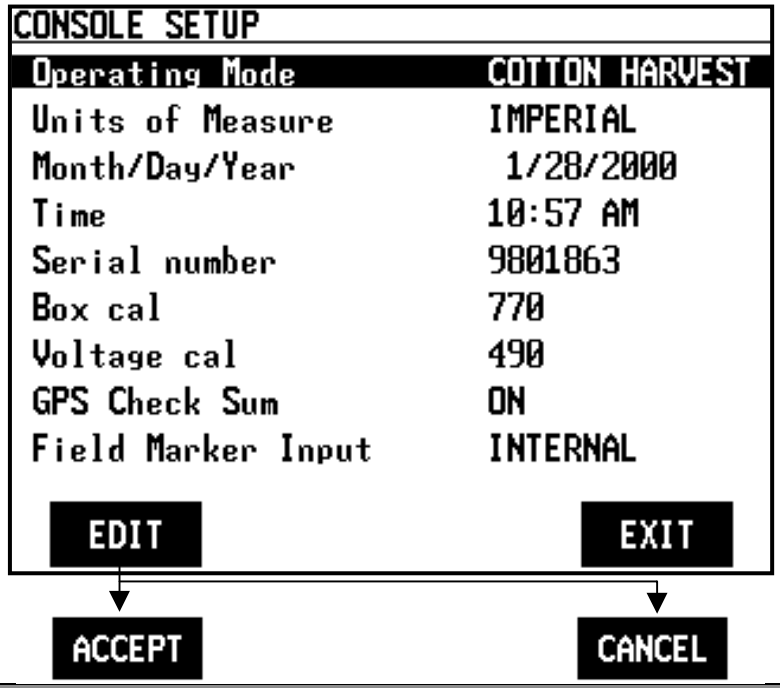
The console settings are general settings that apply to all operating modes and uses of the PF3000.

Console Setup Screen

To view the console setup screen press the:

MENU key 
SETUP key
CONSOLE key

Example of console setup screen:



Changing a Setting

Step	Action
1	Use the UP or DOWN ARROW keys to select the item you want to change. The item is selected when a black filled rectangular box surrounds the entire line.
2	Press the EDIT key and then use the UP or DOWN ARROW keys to change the number or setting.
3	Once you have changed a setting press the ACCEPT key. Press the EXIT key once you have made all the settings.

Operating mode

At this time, Cotton Harvest and Site Verification is the only operating mode available with the PF3000 Cotton Yield Monitor System. To use the PF3000 for grain harvest or app rate, a different operating program is available.

Units of measure

The units of measurement for the PF3000 Cotton Yield Monitor are Imperial or Metric.

Month/Day/Year

Use the LEFT or RIGHT ARROW keys to move from month to day to year. Use the UP or DOWN ARROW keys to change the value. The whole month, day or year is highlighted and only the last digit increments. Press LEFT or RIGHT ARROW to set to item to be edited.

Time

12 Hour Clock with AM/PM. The whole hour (2 digits) or minutes value (2 digits is highlighted when editing. AM changes to PM when incrementing by 12. Press LEFT or RIGHT ARROW to set to item to be edited. If you are using metric units of measure the 24 hour clock is used.

Serial number, Box calibration, Voltage calibration

The serial number, box calibration number and voltage calibration number can be found on the bottom side of the monitor. These numbers should be set correctly from the factory.

GPS Check Sum

If you are using a GPS receiver with the PF3000 the GPS Check Sum setting is used to enable or disable data string error checking.

NOTE: For all Ag Leader receivers (GPS 2000/2100, Add-on GPS 3000/3100), and Trimble 120,122,132 receivers the GPS Check Sum should be set to ON.

For most other brands of GPS receivers the GPS Check Sum should also be set to ON. If you can not get a "D" and "G", though, set this setting to OFF.

Field Marker

If you are…	Select
Marking field points with the PF3000's internal marker selection keys.	INTERNAL
Marking field points with an external Ag Leader Field Marker.	EXTERNAL

* * *

Introduction

For each operating mode, there are different items to setup in the vehicle setting screen. Below are the setup items for the cotton mode. Refer to your *Initial Calibration Sheet* to make the correct settings.

Vehicle Setup Screen

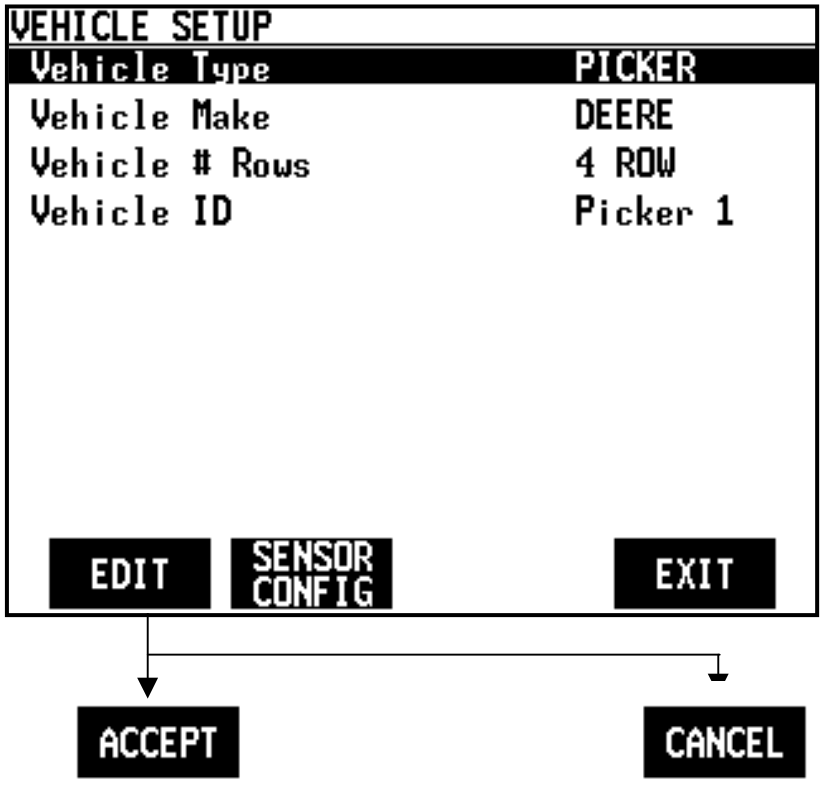
To view the vehicle setup screen press the:

MENU key 

SETUP key

VEHICLE key

Example of vehicle setup screen:



Changing a Setting

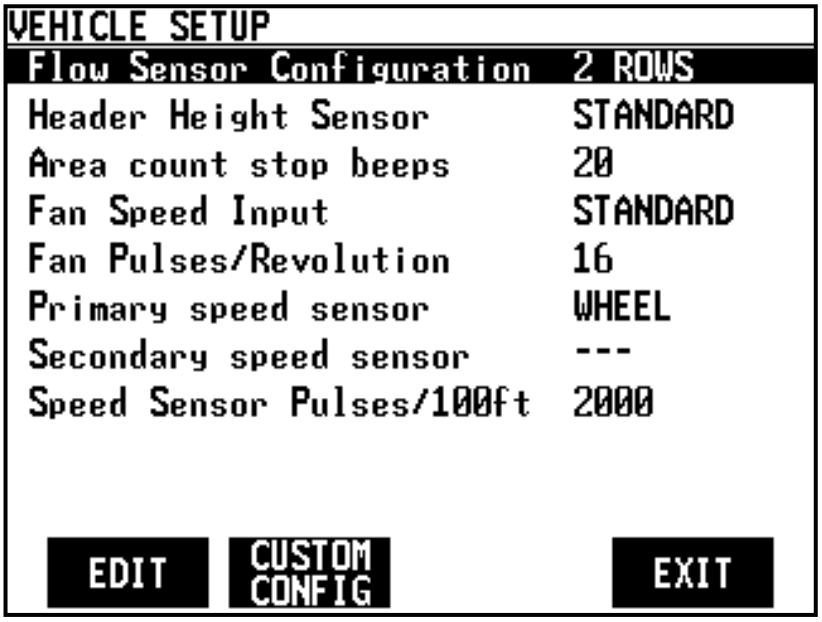
Step	Action
1	Use the UP or DOWN ARROW keys to select the item you want to change. The item is selected when a black filled rectangular box surrounds the entire line.
2	Press the EDIT key and then use the UP or DOWN ARROW keys to change the number or setting.
3	Once you have changed a setting press the ACCEPT key. Press the EXIT key once you have made all the settings.

Vehicle Type — This is currently set as picker.

Vehicle Make — At this time Deere and CASE-IH are the only selections. CASE-IH is the default setting.

Vehicle Nuber of rows — Set the number of picking units that are on your picker. The number of rows must be set before completing Swath Setup later in this section. The settings range from 2 to 6 rows.

Vehicle I.D. — Enter a name for the vehicle. The name of a driver or simply a unique name or number for each machine is recommended.



Flow Sensor Configuration

Set the number of flow sensors installed on the picker. 2 rows is the default. All rows will assign the appropriate number of sensors for each row. Cotton strippers are fixed at 3 sets of sensors regardless of the number of rows harvested.

Header Height

Set as either STANDARD or OPTIONAL. Standard is the only header height sensor available at this time.

Area Count Stop Beeps

The range for setting area count is 1 through 100. The default setting is 20. This is the number of times the monitor beeps when the head is raised.

Fan Pulses/Revolutions

Sets the number of pulses per revolution to correctly display fan speed on the PF3000. The default setting for CASE-IH pickers is 30. For John Deere pickers 16.

Primary and Secondary Speed Sensor

The monitor has four different primary speed settings. They are listed below.

Ground Speed Sensor	Primary Speed Sensor
Speed sensor on transmission	WHEEL
Speed sensor on tracks	TRACK
Radar gun	RADAR
GPS receiver (must be rated for accurate ground speed: GPS2000/2100, Add-On GPS3000/3100 and Trimble AgGPS receivers)	GPS

If you choose GPS as your primary speed sensor, you need to set the secondary speed sensor to WHEEL, TRACK, or RADAR. If the GPS signal is lost, the monitor will use the secondary speed sensor. If you do not choose GPS as your primary speed sensor you can not set the secondary speed sensor.

Speed sensor pulses / 100 ft.

It is not recommended that you change this setting. This number is the distance calibration number that is set when you perform a distance calibration for WHEEL, TRACK or RADAR. Refer to the calibrating distance instructions in the Calibration section. You must calibrate distance for a WHEEL, TRACK or RADAR setting for accurate ground speed.

*NOTE: If you want to use a radar gun, contact an **Ag Leader Technology** dealer and purchase a special adapter cable for your radar gun.*

Custom Configuration

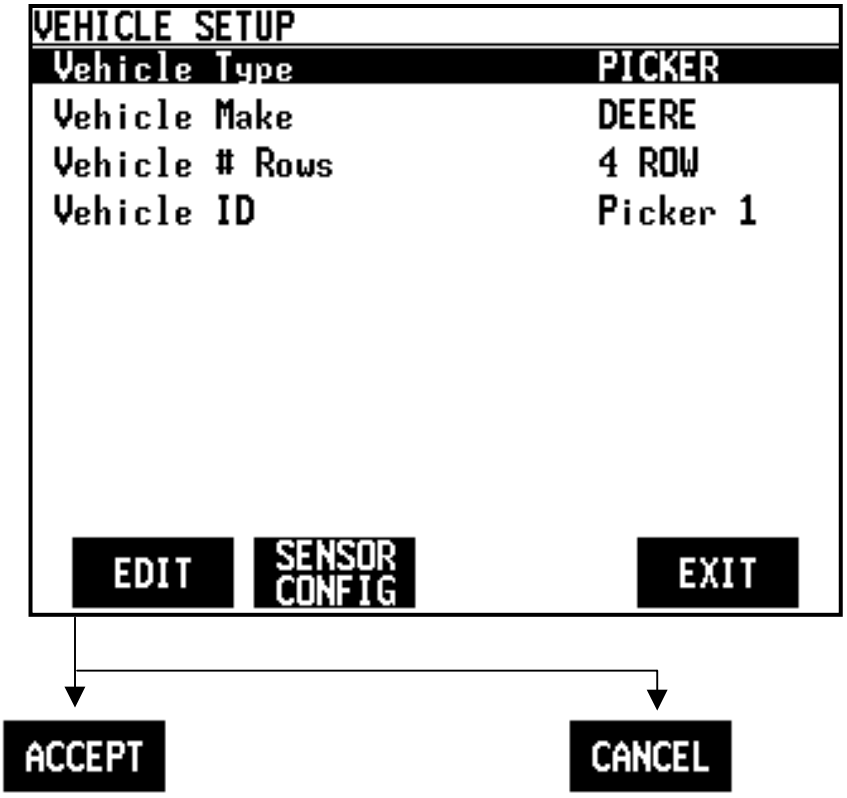
This screen allows you to define where the sensors are located. On the Vehicle Setup screen you defined the make, configuration and the number of rows sensed. The CUSTOM configuration is defined on this screen.

The number of rows displayed on this screen is defined by the Picker Configuration. The choices are limited by the Picker Make. Options will vary between picker and cotton strippers.

The Picker Configuration & Flow Sensor Configuration define the default sensor locations. For example:

4-Row Picker / 2 Rows: Row 1 and 4 are defined as FRONT/REAR.
5-Row Picker / 2 Rows: Row 1 and 5 are defined as FRONT/REAR.
6 Row Picker / 2 Rows: Row 2 and 5 are defined as FRONT/REAR.
2, 4, 5, 6 Row Picker / All Rows: All Rows are defined as FRONT/REAR.

NOTE: For CASE-IH Pickers the choices are NONE, FRONT/REAR and FRONT ONLY. For Deere Pickers the choices are NONE and INSTALLED.


VEHICLE SETUP
Vehicle Type
PICKER
Vehicle Make
DEERE
Vehicle # Rows
4 ROW
Vehicle ID
Picker 1
EDIT
SENSOR CONFIG
EXIT
ACCEPT
CANCEL

* * *

Introduction

If you are using a GPS receiver, all the GPS data must be logged to a memory card. If you are not using a GPS receiver, you do not need a card. The memory card must be formatted with a DOS format. Cards rarely need to be formatted since they are usually DOS formatted before they are shipped. If formatting is required, format the card in your PC before using.

If you will be using multiple PF3000 monitors, label the memory cards to identify them to a specific monitor. This will help prevent confusion when you download the card information to your PC.

IMPORTANT: You must copy memory to every log file you create and log to before you read the card into your computer. This is automatically performed on startup and shutdown.

Card Setup Screen

To view the card setup screen press the:

MENU key 
SETUP key
CARD key

Example of card setup screens:

Changing a Setting

Step	Action
1	Use the UP or DOWN ARROW keys to select the item you want to change. The item is selected when a black filled rectangular box surrounds the entire line.
2	Press the EDIT key and then use the UP or DOWN ARROW keys to change the number or setting.
3	Once you have changed a setting press the ACCEPT key. Press the EXIT key once you have made all the settings.

Logging Device

If you are using a GPS receiver with the PF3000 you must use a memory card to save the instantaneous GPS data.

If you...	Select
Do not have a GPS receiver.	NONE
Do have a GPS receiver.	MEMORY CARD

Logging Interval

This setting determines how often the GPS information is saved to the memory card. It also affects how large an area each GPS record will represent on a map and how many logging hours are available before the memory card becomes full.
There are three possible settings for the logging interval. 1, 2 or 3 seconds.

The recommended setting is either two or three seconds.

	Distance Traveled (ft)		
	1 sec	2 sec	3 sec
3 mph	4.4	8.8	13.2
5 mph	7.3	14.6	21.9

	Approximate Logging Hours Until Card is Full		
	1 sec	2 sec	3 sec
20 M SANDISK ATA Flash Card	25.8	47.2	65.2
32 M SANDISK ATA Flash Card	41.2	75.5	104.3

NOTE: The logging hours available can vary from the numbers shown above due to a variety of operating conditions. The number of fields and loads, the number of separate files on the card and the number of times the memory is copied to the card all affect the log file size.

Log File

The PF3000 requires a log file to store data on a memory card. The log file will always have a ".PFL" extension and be named with the date the file was created. *Example:* **98081502.PFL,** second file created on 08/15/98.

If you have multiple PF3000 monitors, the monitors will create the same log file name for each day's harvest. Before downloading the card information, create a separate file directory on your PC for each monitor and download card data to these directories.

IMPORTANT: You must copy memory to every log file you create and log to before you remove the card from your monitor. If you power the monitor down before you remove the card, this will be done automatically.

Type of Card	Log file criteria
SANDISK ATA FLASH card	A new log file must be created for each day. Can not add to an old log file after a new file has been created. Can store multiple log files on one card.

In order to log instantaneous GPS data or copy field and load data to a memory card, a log file must be selected. Every time you turn on the monitor, the monitor will prompt you to select or create a log file. Refer to the steps below to select or create a log file after the monitor has been turned on.

Step	Action
1	Select Log File and press the EDIT key.
2	Select a log file or press CREATE FILE key to create a new log file.
3	With the desired file selected, press the ACCEPT key.

NOTE: After you read all the log files on your card into your computer (and make backup copies of files), it is recommended to erase the log file(s) on the card.

Log File Format

For the PF3000 Cotton Yield Monitor, this option is not selectable.

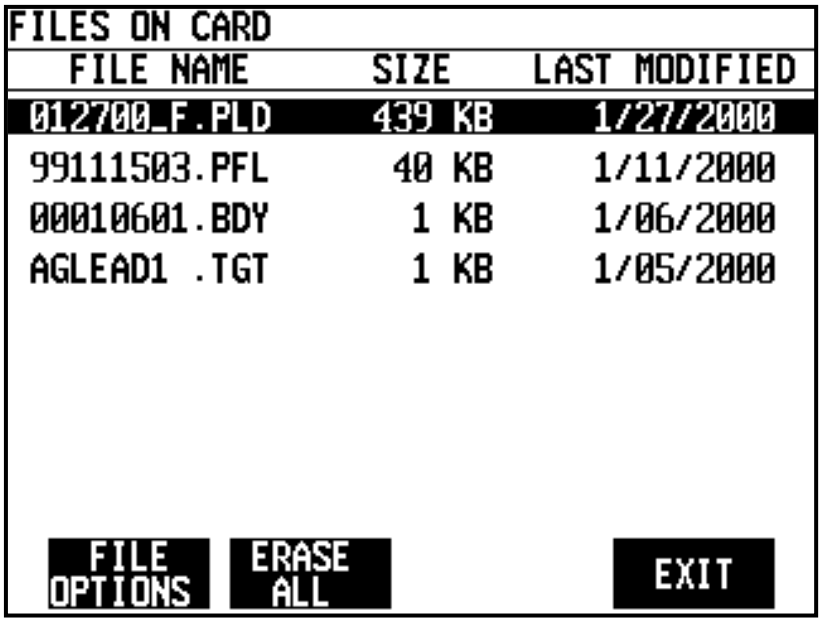
Logging Shutoff Delay

The shutoff delay range is from 0 to 30 seconds. The default setting is 3 seconds.

Copying Data to Log File

IMPORTANT: Before you remove the memory card from the monitor, you must copy memory to <u>every</u> log file that you have logged to, otherwise your data could be lost. Every time you turn off the monitor, it will automatically copy memory to card (this copies memory only to the file set as the log file).

To copy memory to log files that are not set as the current log file, press the SHOW FILES key and select one of the log files. Press the FILE OPTIONS key and press the COPY TO FILE key. At the card setup screen, press the COPY TO CARD key to copy memory to the file set as the log file (this is the same copy to card function that you are prompted to do during shut down).

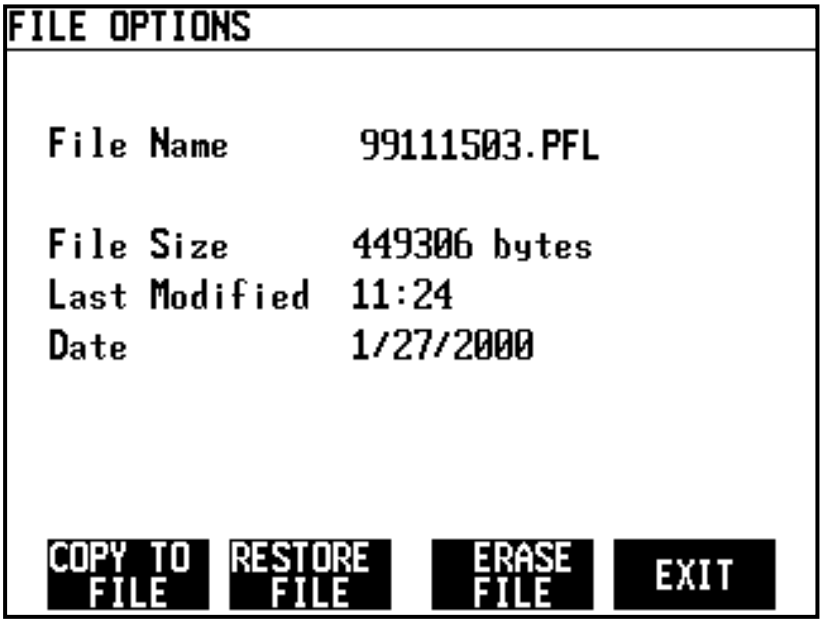


Restoring from File

You can restore field and load data into the monitor's memory from a log file on a memory card..

IMPORTANT: It is dangerous to restore memory from a card because the current data in the monitor will be replaced with the data on card.

Step	Action
1	Press the SHOW ALL FILES key. Select the log file and press the FILE OPTIONS key. Press the RESTORE FILE key.
2	Press the RESTORE key again if you really want to restore the data.
3	Press the EXIT key once you are finished.



Erasing File

You can erase individual log files from a memory card

Step	Action
1	Press the SHOW ALL FILES key. Select the log file and press the FILE OPTIONS key. Press ERASE FILE key.
2	Press the ERASE key again if you really want to erase the file.
3	Press the EXIT key once you are finished.

* * *

Introduction

NOTE: Ensure you have set the number of rows for your cotton picker on the Picker Configuration line of the Vehicle Setup screen before completing Swath Setup.

The swath setup screen is used to set the permanent, full swath of your head. Do not adjust the swath setting on this screen when you encounter a partial swath while harvesting. Refer to the Swath Setting instructions in Operation Section and select swath as a display item and set a partial swath.

Swath Setup Screen

To view the swath setup screen press the:

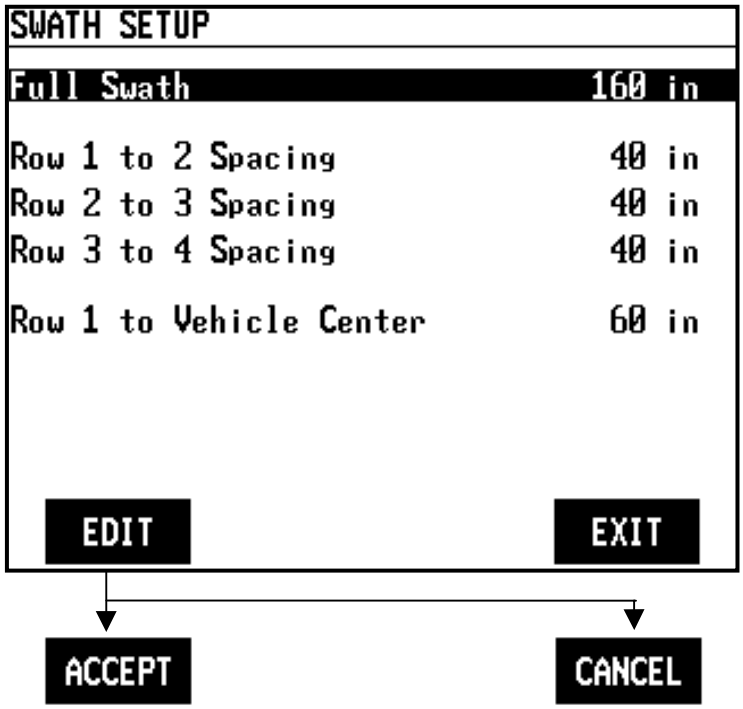
MENU key 

SETUP key

Bottom RIGHT ARROW key

SWATH key

Example of swath setup screen:



Changing a Setting

Step	Action
1	Use the UP or DOWN ARROW keys to select type of spacing to be set.
2	Press the EDIT key to change the spacing. Use the UP or DOWN ARROW keys to change the number. Press the ACCEPT key after you have changed the number.
3	Press the EXIT key once you have made all the settings.

Full Swath

Adjustable in 1 inch increments. The range of settings is from 30 to 500 inches. Set the full swath in the monitor to the full swath of your header. For broadcast headers it is advisable to set the swath to 6" to 12" less than the actual swath width of the header because you can rarely maintain a full swath while harvesting. In some cases, the number of rows the header can harvest will exceed the limit of the monitor. If this happens, the full swath is what you should be concerned with. It does not matter if the number of rows or the width of each row in the monitor does not exactly match your true situation.

Row to Row Spacing

Selecting this option changes the line selected to only highlighting the spacing value. The UP or DOWN ARROW keys will adjust the value by whole number increments. When swath is edited, all row spacings become equal to the full swath divided by the number of rows. The default is 40 inches. The limits are from 10 to 100.

Row 1 to Vehicle Center

Adjustable in 1 inch increments. Limits are from 0 to full swath value. This accounts for offset headers.

Refer to the Swath Setting instructions in the Operation Section for more information about partial swath.

* * *

Introduction

If you are using an external Field Marker ignore the instructions below. The marker setup screen is only used for making settings for the Internal marker selection keys. You may make up to 4 marks on the internal setting.

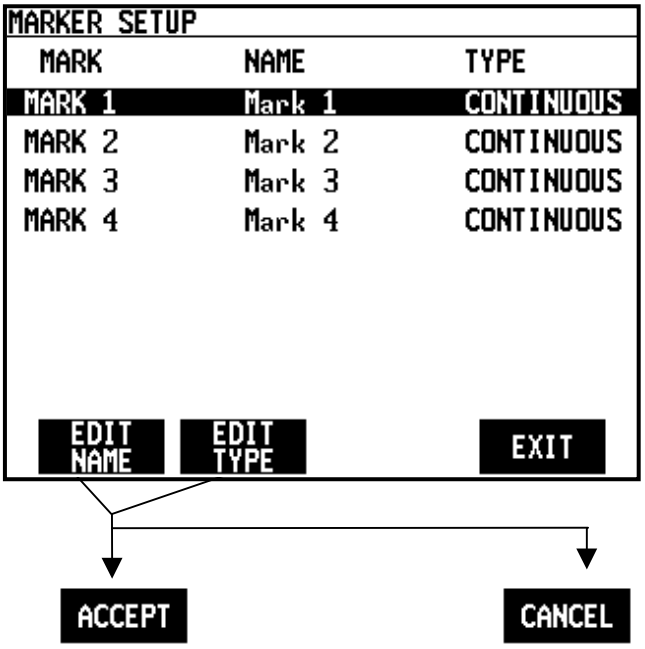
IMPORTANT:
If you are using the external field marker, make sure that under the CONSOLE key you set Field Marker to EXTERNAL.

Marker Setup Screen

To view the marker setup screen press the:

MENU key
SETUP key
BOTTOM right arrow key
MARKS key

Example of marker setup screen:



Changing a Setting

Step	Action
1	Use the UP or DOWN ARROW keys to select the mark. The mark is selected when a black filled rectangular box surrounds the entire line.
2	Press the EDIT NAME key to rename an existing mark. Use the UP or DOWN ARROW keys to change a character in the name. Use the LEFT or RIGHT ARROW keys to move the cursor over another character within the name. Press the ACCEPT key after you have changed the name.
3	Press the EDIT TYPE key to set the mark for continuous or spot marking. Use the UP or DOWN ARROW keys to change the setting. Press the ACCEPT key after you have changed the setting.
4	Press the EXIT key once you have made all the settings.

Continuous marking
Set the marking type to continuous if the item in the field you are marking requires you to make several marks in a row (for example: marking large weed patches or tile lines).

When you press a mark key that is set for continuous marking, the mark will remain on until you press the mark key again to turn off the mark.

Spot marking
Set the marking type to spot if the item in the field you are marking requires just one mark (for example: marking a rock or tile hole).

When you press a mark key that is set for spot marking, the mark will remain on only for a few seconds and then will automatically go off.

*** * ***

Recommendations

All the information recorded by the PF3000 must be recorded in a field and load. The field and load that the monitor is set on is located on the top line of the display on the main operating screen.

Fields

You should at least create all the fields and name them before you begin to use the PF3000. You should choose field names that you can use year after year.

If you are unable to properly set-up your monitor before harvest, you may create fields as you harvest. If there are errors made by the operator in that the fields did not get changed at the proper time or did nor get changed at all, you may use a sort feature in the SMS software that allows you to automatically sort the data into the correct field. This is **only** possible if you have created boundaries for each of the fields.

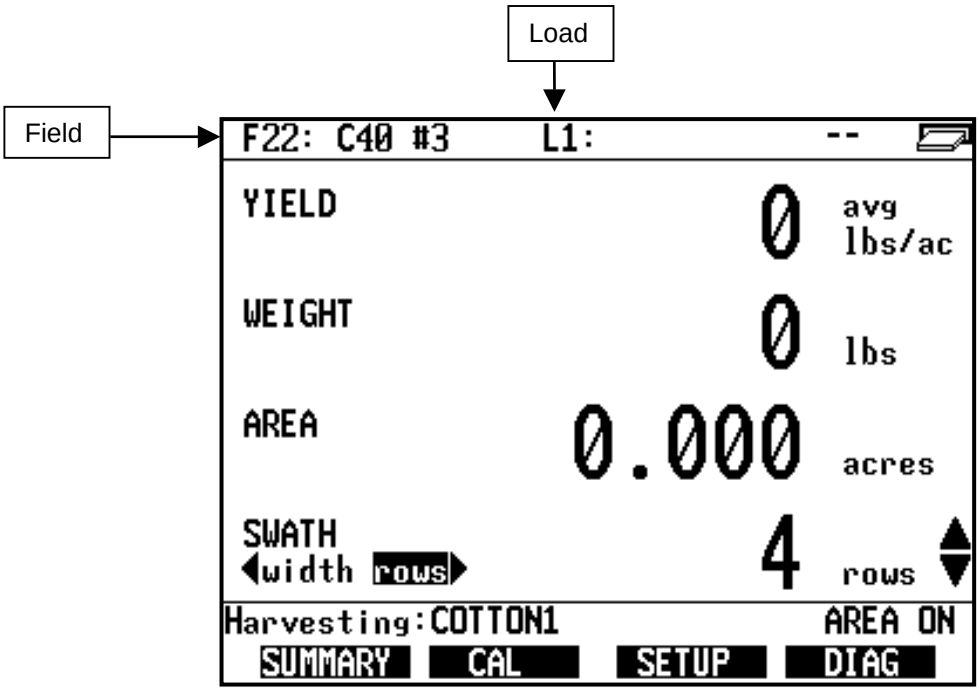
Second Pick Option: The second pick feature is available so if you second pick a field, you can separate the data from the first pick which allows for further analysis. The second pick feature also allows there to be **one** calibration set for **all** second pick fields and loads.

Loads

It also recommended to create and name loads within fields before you use the PF3000. **Each operating mode of the PF3000 will have its own set of loads for each field.**

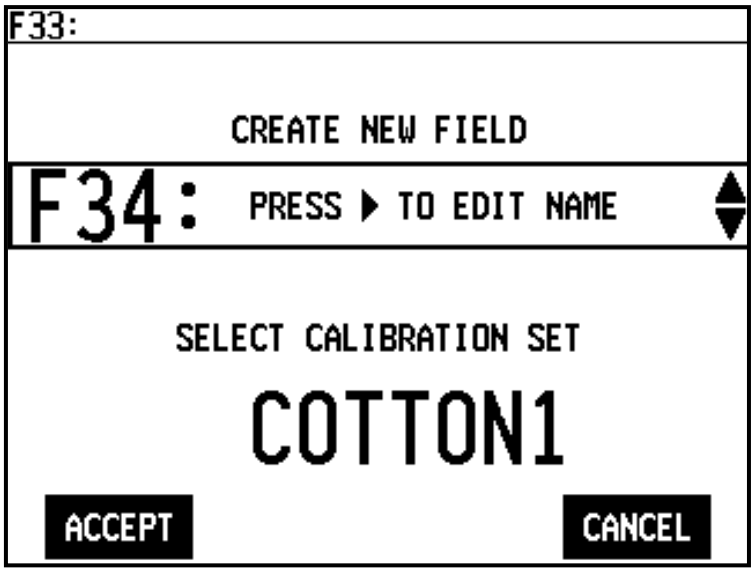
Definition:

Load: A load is used to subdivide a field into smaller sections. The monitor load is not associated with the picker basket, wagon, or truck load.



Creating and Naming Fields

Step	Action
1	Press the MENU key  until the following is displayed on the bottom of the display. FIELD LOAD SHOW MAP MARKS
2	Press the FIELD key twice to view the screen below.



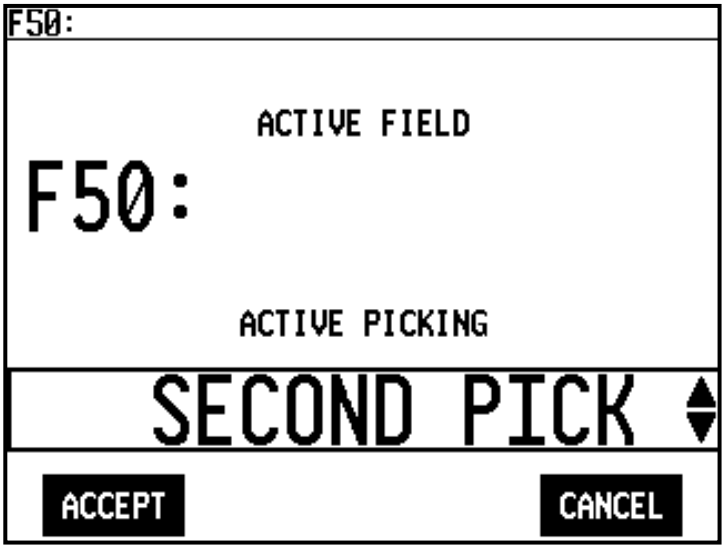
Step	Action
3	**Naming Field** With the line displaying the field number selected (rectangular box surrounds line), press the RIGHT ARROW key to move the cursor to the right to enter a name. Use the UP or DOWN ARROW keys to scroll through letters, numbers and other characters. After you have set the character, move the cursor to the right by pressing the RIGHT ARROW key and set a new character. You can enter up to a 10-character name. Press the ACCEPT key once you have entered a name.
4	**Creating Fields** Press the UP ARROW key to scroll through all the fields. Once you scroll past the last field, "Create New Field" will be displayed. Name the field and set the variety then with "Create New Field" displayed above the field number press the ACCEPT key to create the new field.
5	When creating fields you have the option to change the calibration set. You would want to do this if you know you will calibrate this field (or set of data) different from other fields (or sets of data). Refer to the calibration section for further details. Field calibration sets can be modified at a later date as well.
6	Repeat Step 5 and create and name all your fields.

Changing to Second Pick:

The second pick option is available so first and second picking can be separated and calibrated differently. In addition, SMS mapping software allows you to do analysis of each picking or merge the two together. Due to the extreme difference in harvesting and yield conditions from first and second pick, it is required to calibrate the second pick separate from the first pick.

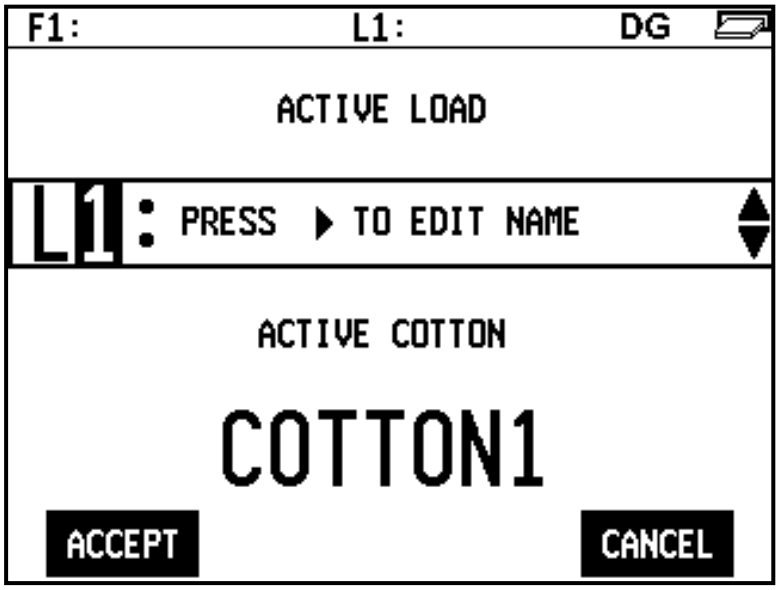
At the change field screen indicated below, the active picking indicates first pick or second pick. The field below has already been toggled to the second pick option. Select the item by pressing the key to the right of the item. A rectangular box will be drawn around the item, indicating it is selected. Use the arrow keys at the right to toggle the options. Press accept after the second pick option has been selected. You will be required to change the second pick instance for each field you wish to second pick.

If this is the first second pick field and a calibration set has not been created, a new calibration set will automatically be created to be used by **all** second pick fields. Refer to the calibration section for further details on calibration.



Creating and Naming Loads

Step	Action
1	Press the MENU key  until the following is displayed on the bottom of the display. FIELD LOAD SHOW MAP MARKS
2	Press the LOAD key twice to view the screen below.



Step	Action
3	**Naming Load** With the line displaying the load number selected (rectangular box surrounds line), press the RIGHT ARROW key to move the cursor to the right to enter a name. Use the UP or DOWN ARROW keys to scroll through letters, numbers and other characters. After you have set the character, move the cursor to the right by pressing the RIGHT ARROW key and set a new character. You can enter up to an 10-character name. Press the ACCEPT key once you have entered a name.
4	When creating loads you have the option to change the calibration set. You would want to do this if you know you will calibrate this load (or set of data) different from other loads (or sets of data). Refer to the calibration section for further details. A Load's calibration sets can be modified at a later date.

Step	Action
5	**Creating Loads** Press the UP ARROW key to scroll through all the loads in the field for the variety. Once you scroll past the last load, "Create New Load" will be displayed above the load number and name. Name the load and set the variety, then with "Create New Load" displayed above the load number press the ACCEPT key to create the new load.
6	Repeat step 4 and create and name all your loads.

Note: Refer to Load Setup to change variety, product or site type for an existing load.

Changing Fields and Loads

Changing Field
Press the FIELD key twice to display current field. Press the UP or DOWN ARROW keys to scroll through the fields. Press the ACCEPT key to change to the different field.

Changing Load
Press the LOAD key twice to display the current load. Press the UP or DOWN ARROW keys to scroll through the loads. Press the ACCEPT key to change to the different load.

* * *

Introduction

The PF3000 has its own internal memory which stores all the field and load summary data and setup and calibration settings. The internal memory does not store any GPS data. All GPS data must be logged to a memory card.

Memory Screen

To view the memory screen press the:

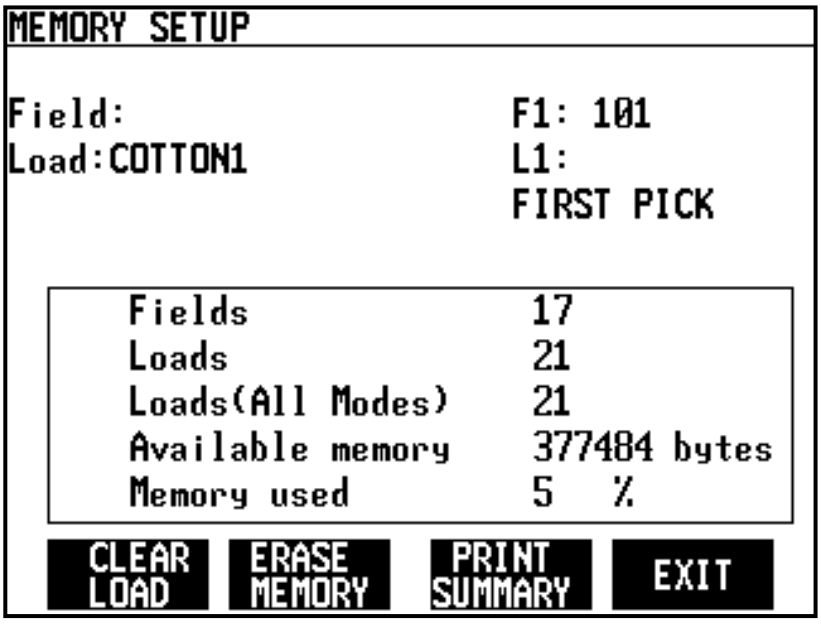
MENU key 

SETUP key

bottom RIGHT ARROW key

MEMORY key

Example of memory screen:



Available Memory

The monitor does not have a pre-determined number of fields and loads that it can store. It is only limited by memory. Instead, you should look at the % memory used to get a relative idea of how many more fields and loads you can create.

Clear Load

If you want to clear one load or all loads in a field, press CLEAR LOADS key. Press EDIT key use the UP or DOWN ARROW to select the field where loads are to be cleared and press ACCEPT key. Scroll down to LOAD and press EDIT key use the UP or DOWN ARROW key to highlight a specific load from a field and press ACCEPT key. Press the CLEAR LOAD key to remove a specific load. The next screen will advise you to press ACCEPT key to clear the load or CANCEL to abort. To remove all loads from a field press CLEAR ALL key. The next screen will advise you to press ACCEPT to clear all loads or CANCEL to abort.

Erase Memory

If you want to clear all the setup, calibration and field and load data in the monitor press the ERASE MEMORY key. The monitor will warn you that you will lose all the data. Press the ACCEPT key to remove all the data. You should normally only clear all the data at the beginning of the season.

Restoring Data from a Memory Card

You can restore field and load data from a memory card. The field and load data can be from another PF3000 Cotton Yield Monitor or PF3000 Pro Cotton Monitor. Refer to the card setup instructions in the setup section.

* * *

Introduction

The flow sensor setup screen will allow you to set the sensitivity of the flow sensor alarms. The sensor alarms warn you that one or more flow sensors are not operating correctly and no yield data can be obtained from that sensor.

Sensor Screen

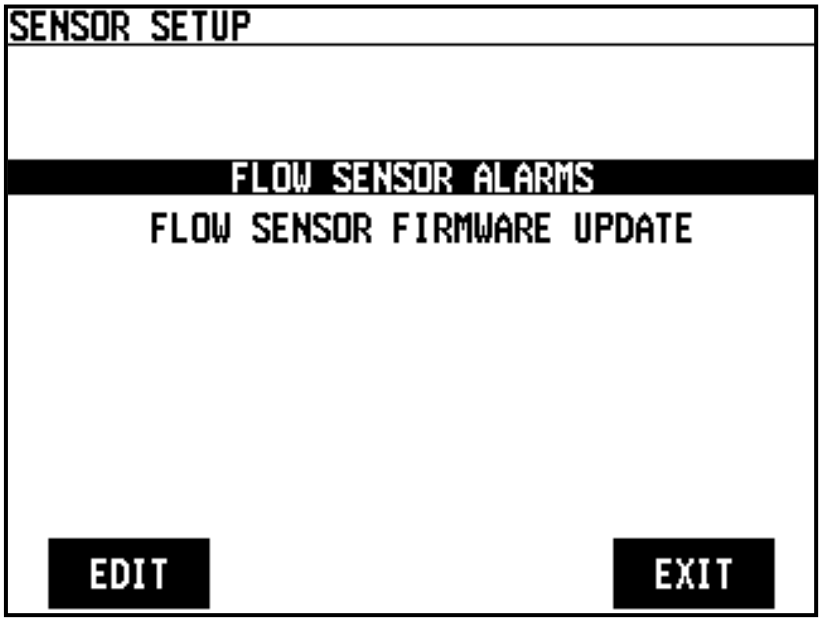
To view the sensor setup screen press the:

MENU key 

SETUP key

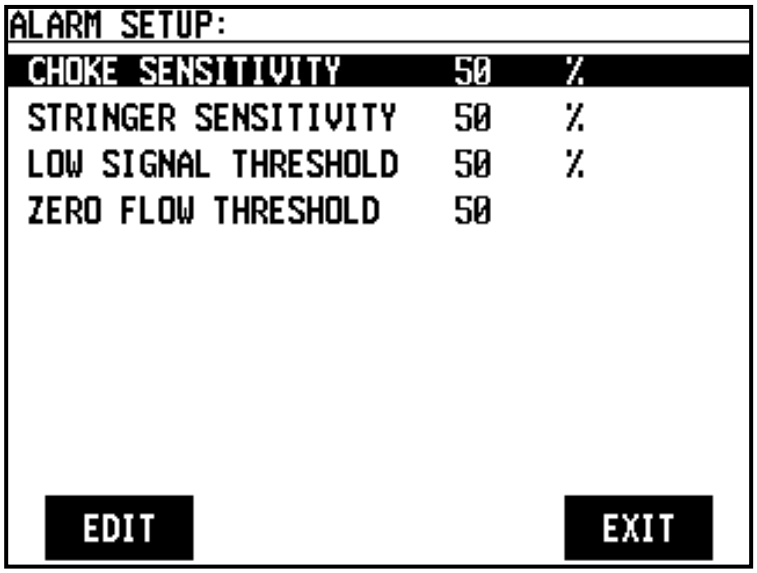
bottom RIGHT ARROW key

SENSOR key



Changing a Setting

Step	Action
1	Highlight the setting to be changed and press the EDIT key.
2	Press the UP or DOWN ARROW keys to select the setting to be changed and press the EDIT key.
3	Use the UP or DOWN ARROW keys to change the number value and press the ACCEPT key.
4	Press the EXIT key when the sensors are set.



Choke Sensitivity

The choke alarm is to alert you when one or more conveyors have blockages, which could damage your picking drums. The sensitivity of this alarm can be adjusted from 0 to 100 percent. A sensitivity of zero means that the alarm is disabled. The zero flow threshold sets a maximum amount of flow which a conveyor is considered blocked. The best setting varies widely with yield and the consistency of the yield throughout the field.

NOTE: If your picker is equipped with a factory-installed choke alarm system, we recommend using the factory-installed system for choke alarms.

Stringer Sensitivity

The stringer alarm is to alert you when one or more conveyors have strings or ropes of cotton hanging in them which will cause large false flow readings. The sensitivity of this alarm can be adjusted from 0 to 100 percent. A sensitivity of zero means that the alarm is disabled. The zero flow threshold sets a minimum amount of flow which a stringer must cause before the alarm is activated. The recommended setting is 50 percent, but the best setting varies with field conditions.

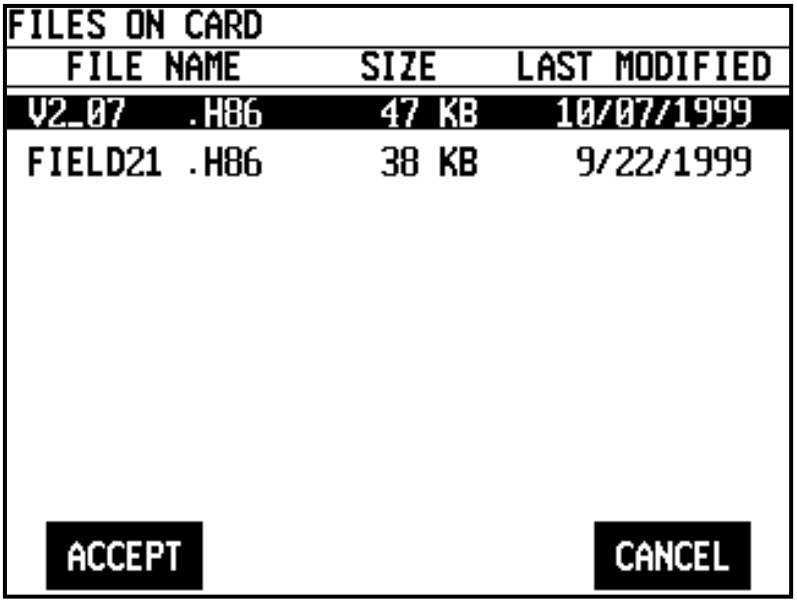
Low Signal Threshold

The low signal alarm is to alert you to sensors which are too dirty or are misaligned, causing the yield data to be inaccurate. The threshold of this alarm can be adjusted from 0 to 60 percent of the full-strength signal. A threshold of zero means that the alarm is disabled. The recommended setting is 20 percent.

NOTE: The monitor will still measure yield very accurately even at signal strengths as low as 20 percent.

Zero Flow Threshold

The zero flow threshold affects both the stringer and choke alarms. It can be adjusted from 0 to 65000, but typical settings are within the range of 50 to 500. The zero flow threshold sets the amount of flow which is considered negligible. When driving your picker around, you may see very small but non-zero flow readings in the Sensor Data Diagnostics. This threshold should be set larger than the average of these non-zero readings to avoid false stringer and choke alarm activations.



Flow Sensor Firmware

To view the flow sensor firmware version, highlight the Flow Sensor Firmware Update line and press EDIT. Highlight the setting to be changed and press the EDIT key. Press the UP or DOWN ARROW keys to select the setting to be changed and press the EDIT key. Use the UP or DOWN ARROW keys to change the number value and press the ACCEPT key. Press the EXIT key when the sensors are set.

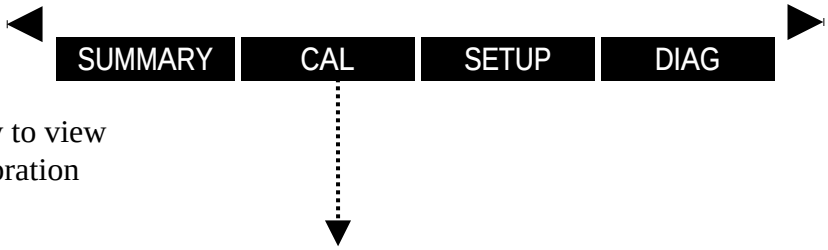
Introduction

You must calibrate the monitor for it to be accurate.

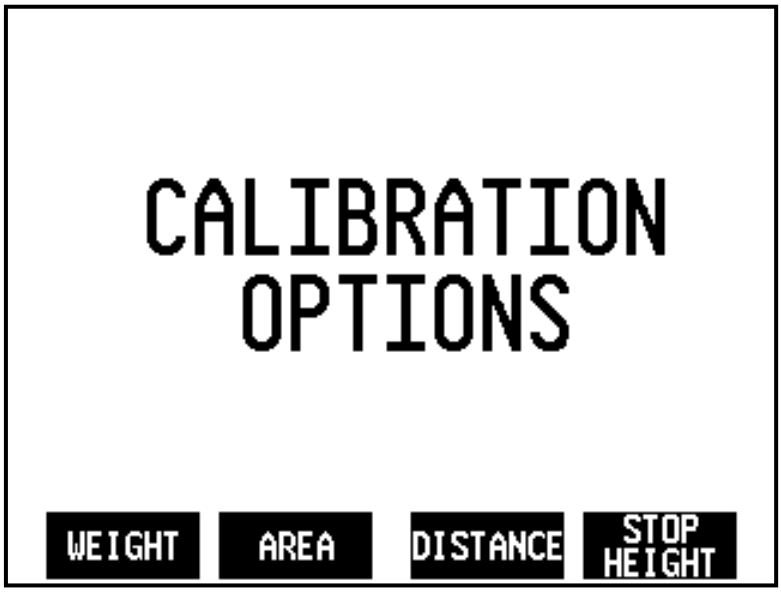
The calibration section contains instructions for the following items:

Order of Keys

Press the MENU key  until you see the following on the display.



Press the CAL key to view the following calibration menu items.


CALIBRATION
OPTIONS
WEIGHT
AREA
DISTANCE
STOP
HEIGHT

* * *

Introduction

The Calibration Set is used to create categories of different types of cotton, different harvest conditions, or any other crop condition unique to your operation you wish to identify. Your monitor is calibrated based on the harvested loads of these calibration sets in a field. For example, in the screen below, Cal Set 1 could be named for a specific type of cotton, or could be a Cal Set you create during harvest because of changes observed (post rain, green cotton, etc) in the cotton.

Many users of the PF3000 Cotton Yield Monitor believe it is important to have the monitor calibrated as accurately as possible at all times.

When the physical characteristics of the cotton change, there could be a shift in the accuracy of the yield monitor. This means that if the average error was at 1% (ranging from +3 to –1%) and you moved to a new field and the error shifts to 15% it would also have the same range 17% to 13%. The point is within each characteristic change, the yield monitor will be very consistent. If you goal is to make a yield map showing the variability relative to other areas within that field, you generally should not need to re-calibrate. This is assuming that most physical characteristics of the cotton are generally similar within a field. In addition, you will have the opportunity to scale the data in SMS mapping software and correct any error.

Cotton Cal Set Setup Screen

Create a name for an actual variety of cotton planted or for different harvest conditions. To view the cotton Cal Set setup screen press the:

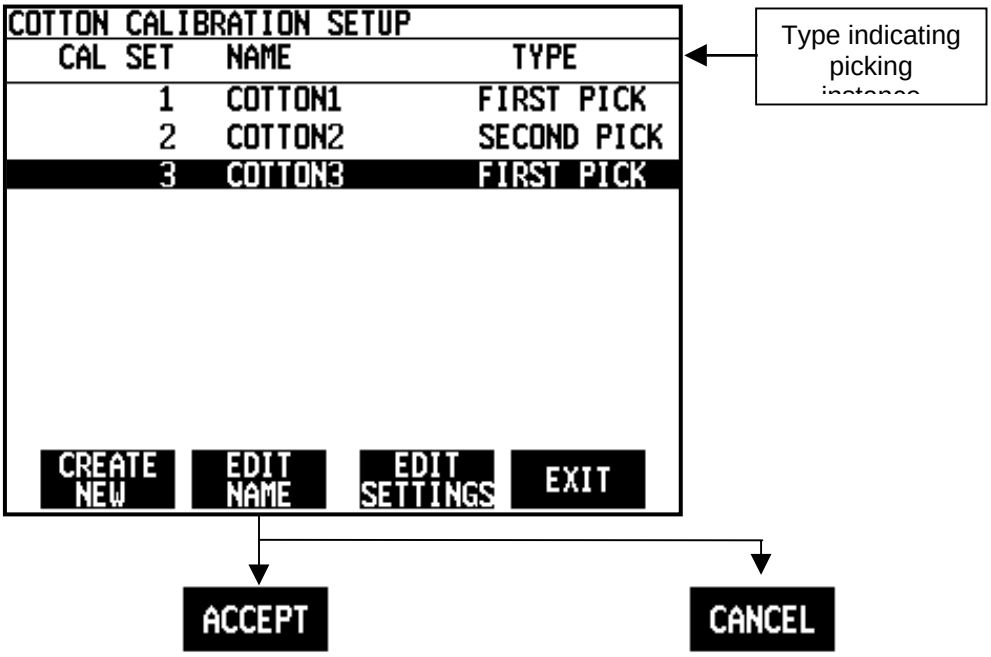
MENU key 

CAL key

WEIGHT key

SETUP CAL key

Example of cal set setup screen:



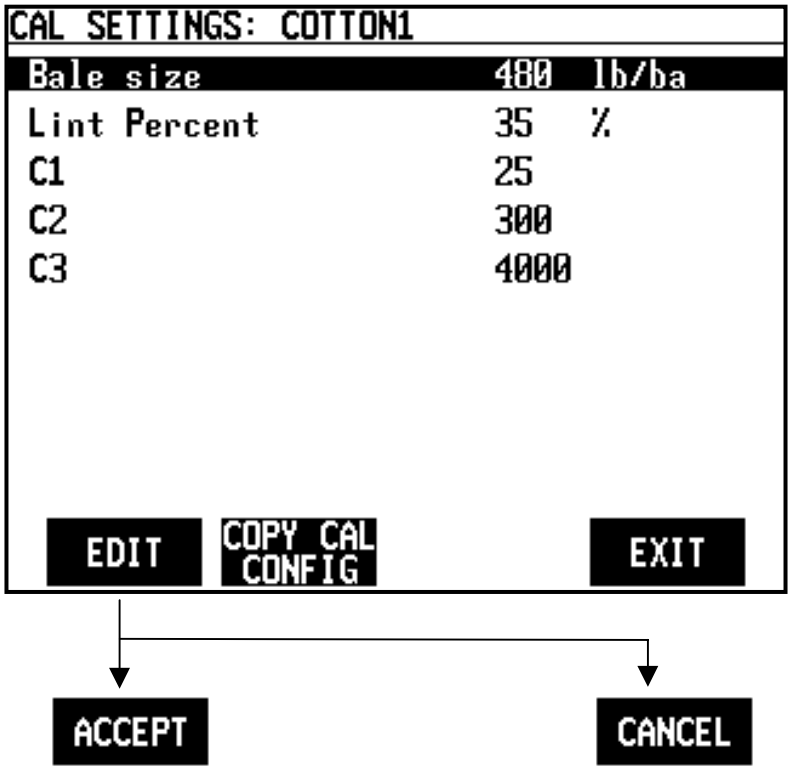
Edit Name

Step	Action
1	Press EDIT NAME key.
2	Use the UP or DOWN ARROW keys to change the letter. Use the LEFT or RIGHT ARROW keys to add letters or numbers to the name.
3	Press the ACCEPT key to complete the name change.

Changing a Setting

Step	Action
1	Press the EDIT SETTINGS key to move to another screen and change the settings of the default bale size, lint percent, and C values. Refer to the screen below. See section below for further details on editing the C values.
2	Press the EDIT key to change the desired item. Use the UP or DOWN ARROW keys to change the value. Once you have changed the value press the ACCEPT key.
3	Press the EXIT key once you have made all the settings.

Example of cal set setup screen:



Bale size — Bale size can be set between 200 and 800 pounds

Lint percent — Sets the percent of lint per bale. (Lint turn out.)

Setting Initial C Numbers

The three C Numbers, C1, C2 and C3 determine the pounds of cotton the monitor calculates. At first, the C1, C2 and C3 will be set to default value, these initial numbers will change and become more accurate after you have calibrated.

The C values: C1, C2, and C3 represent the following:

C1: C1 is the vibration cal number. This number represents some minimum value that the sensors must output before cotton flow is calculated. Any signal below this value will not be recorded and cannot be modified by post calibration. This is the number to be adjusted if a significant amount of cotton is accumulating when sitting still in logging mode. (this value should only be adjusted after all other possible sources are ruled out.) Increase the value to decrease the influence of vibration.

C2: This value is a scaling value that should never be changed.

C3: The C3 value is the value that will change as a result of performing a calibration on that cal set. This represents a mathematical value used to calculate the yield, specific to that cal set.

The C values can be edited as described in the previous steps.

IMPORTANT: Do not change the C numbers after you have calibrated. If you change the C number after calibration, the accuracy of the monitor will be effected.

Calibration Procedure

Before You Begin

Before the monitor will accurately measure weight, you must calibrate the monitor for seed cotton weight (lbs) before you harvest. You should be able to calibrate the PF3000 for load weight to an average error of 3 percent to 5 percent.

Although it is recommended, you do not have to calibrate load weight at the beginning of the season to get accurate results. When you calibrate the monitor, it will automatically correct weights for all the loads of that cotton calibration set that were previously harvested.

Harvesting Calibration Loads

The monitor calibrates itself on the basis of actual weights you enter into the monitor. You get the actual load weights by weighing the load on accurate scales or by obtaining accurate module weights for a load from your gin.

IMPORTANT: For accurate calibration results, you should obtain at least three calibration loads for each calibration set. Three calibration loads should reflect the conditions present for the remainder of the harvesting under that calibration set.

You will get the best results when conditions are the same throughout all loads harvested within a cotton calibration set. So, it is best to harvest calibration loads during the afternoon, when moisture is normally at its lowest point of the day. Moisture variations will have an impact on scale readings, although it will not in large affect the monitors estimated weight or maps generated from the yield data. Keep in mind the optical flow sensors are measuring volume and the scales are measuring weight. The amount of volume the monitor reads is then matched with the scale weight, thus calibrating the monitor.

Also, different varieties are more or less fluffy and have different seed mass so they should not be mixed within a single calibration for maximum accuracy.

Carefully follow these directions when harvesting your calibration loads.

The following procedure applies to **both** first and second pick calibrations.

Step	Action
1	With the cotton picker stopped, the cotton basket completely empty, and a hauling vehicle empty, set the monitor on a load that does not have any data. Make sure the load is set on the correct cotton calibration set.
2	Harvest cotton into the calibration load in the monitor. *NOTE: Harvest 3,000 or more lbs for calibration loads.*
3	Unload one or more times into the hauling vehicle, finishing with the following: • Cotton basket again empty • All the cotton from the calibration load on the hauling vehicle • No cotton from any other picker on the hauling vehicle
4	Immediately change to another load that does not have any data.
5	Weigh the cotton on the hauling vehicle and record the actual load weight on a log sheet in the back of this section of the manual. *NOTE: If you are using a weigh wagon to weigh the cotton, make sure the wagon has been calibrated properly.*
6	Repeat the above steps and harvest another calibration load. You can also enter an actual weight and calibrate as you obtain each actual weight.

Seed Cotton Weight Calibration Screen

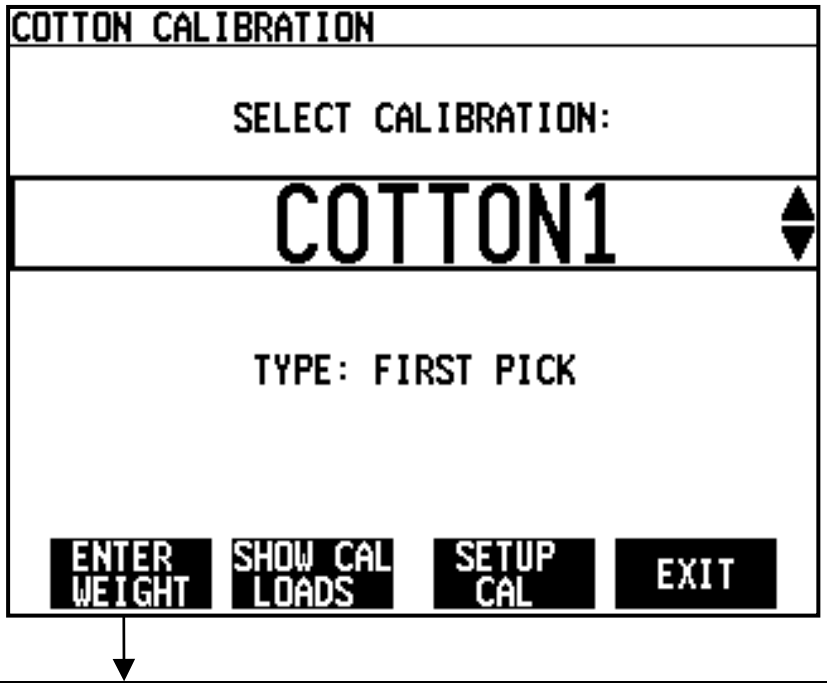
To view the weight calibration screen press the:

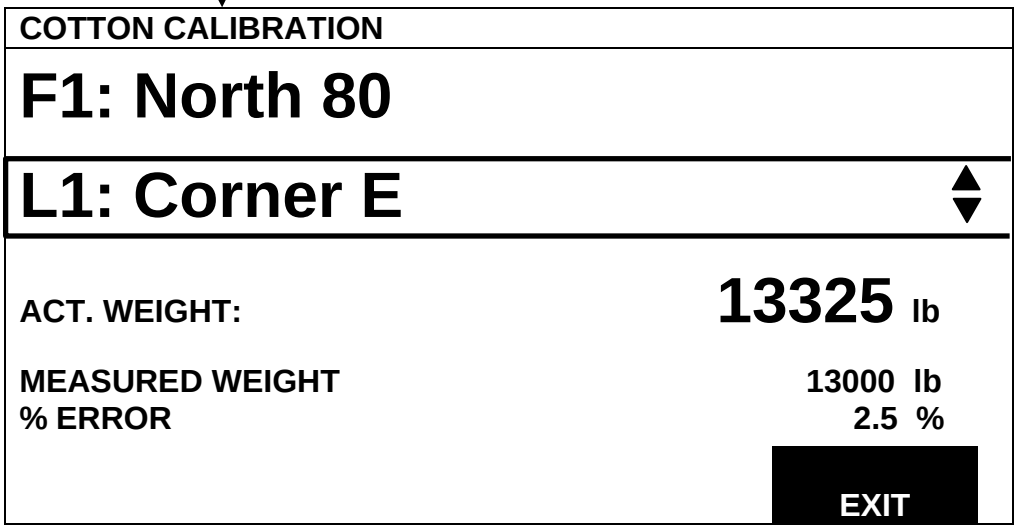
MENU key 

CAL key

WEIGHT key

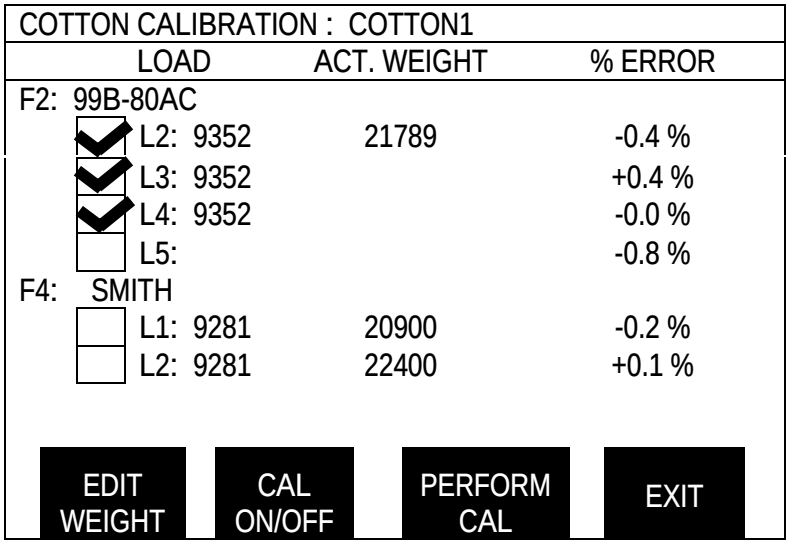
Calibration Procedure





Step	Action
1	Use the UP or DOWN ARROW keys to select the cotton calibration set. Press the ENTER WEIGHT key.
2	Refer to the next screen and change the load (and field if necessary) to a load for which you want to enter an actual weight. Use the UP or DOWN ARROW keys to change the field or load, depending on which is selected. You must have the field or load line selected (rectangular box surrounds line) before you can change a field or load. To select either field or load, press the key to the right of the field or load line. If the Fields and loads do not appear that you feel should, check the previous screen to verify you selected the correct cal set.
3	Press the key to right of the "Act. Weight" line to select that line.
4	Use the UP or DOWN ARROW keys and enter the actual weight for the load. Press the ACCEPT key.
5	Repeat steps 2-4, and enter all the actual weights for all the calibration loads.
6	Press the EXIT key once you have finished to return to the screen where you selected the cal set.
7	Press the SHOW CAL LOADS key to view the screen below.

Example of calibration loads screen:



Step	Action
8	The screen above allows you to include a load in the calibration or exclude it by “unchecking” it and turning it off.
9	Press the PERFORM CAL key to start the calibration. The monitor will start calibrating and then it will stop and display "Full Calibration Complete". *NOTE: The calibration error is the percent difference between the actual weight and the estimated weight. The maximum error is the error of the calibration load that has the highest error.* Example: Actual weight: 10,000 Lbs. Estimated weight: 10,100 Lbs. Error: + 1 %
10	**Good Calibration Results:** If you have three or more calibration loads, your goal after completing a calibration should be to achieve an **average error of less than 5 percent and a maximum error of 10 percent** If you have at least three calibration loads, and you find a load with a high calibration error after completing the calibration, you should remove the load as a calibration load by pressing the CAL ON/OFF key. Press the PERFORM CAL key again to restart the calibration. Once you are satisfied with your calibration results, press the EXIT key until you return to the main operating screen.

Reasons for high calibration errors on loads

- Cotton calibration set is incorrectly set for the load
- Cotton moisture or density is considerably different between loads.
- Actual pounds value is not correct
- Cotton weighed is not the same amount of cotton that was harvested into the load (for example: picker basket was not empty before starting the load or forgot to change loads in the monitor and added more cotton into the load (in the monitor) after cotton weighed or cotton spilled onto the ground)
- Installation problem with flow sensor

Recalibrating the Monitor

To improve the monitor's calibration accuracy, you can add or eliminate a calibration load and recalibrate the monitor at any time. If you have not achieved satisfactory calibration results after entering 4 to 5 calibration loads something is wrong. Refer to the Troubleshooting Section instead of adding more actual weights.

Periodic Checks for Accuracy

Throughout the season you should occasionally check the monitor for calibration accuracy by weighing a monitor load of cotton. If you find the monitor is not accurate, enter that actual weight into the monitor and calibrate the monitor again.

It is recommended you verify the calibration when you observe a change in lint density or seed mass for example; when changing seed varieties or continuing harvest after a heavy rain.

If a difference is found, you would want to create a new Cal Set, otherwise previous data will be affected.

***

Adjusting Field Area

If you know the exact field area, you can adjust the monitor field area to the correct value after you finish the field. Follow these steps to adjust the field area:

Area Calibration Screen

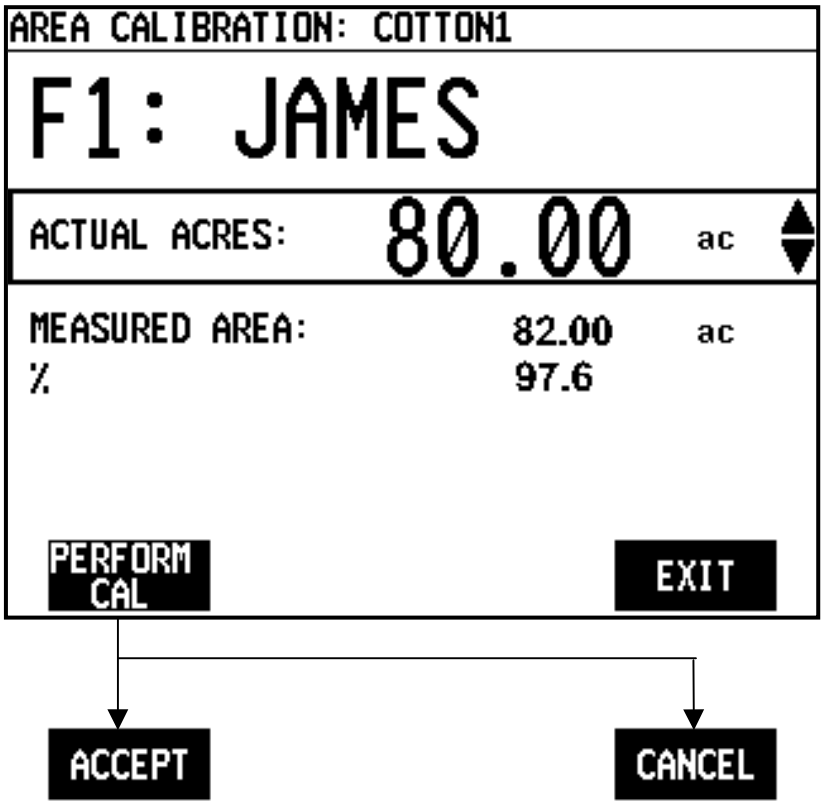
To view the area calibration screen press the:

MENU key 

CAL key

AREA key

Example of area calibration screen:



Calibration Procedure

Step	Action
1	Change the field to a field for which you know the exact area. Select (rectangular box surrounds line) the field by pressing the key to the right of the line displaying field. Use the UP or DOWN ARROW keys to change the field.
2	Select the "Actual Area" line by pressing the key to the right of the line displaying actual area. Use the UP or DOWN ARROW keys to set the actual area.
3	Press the PERFORM CAL key. Press the ACCEPT key.
4	Repeat steps 1-4 for all the fields for which you know the actual area.
5	Press the EXIT key once you have finished.

NOTE:

- *The monitor proportionally adjusts all the load areas so that the areas from all the loads equal the total field area.*

- *The "Area Cal" number is the actual area divided by the area the monitor originally counted. When you press the PERFORM CAL key, the monitor determines the area calibration number and adjusts the measured area accordingly.*

- *Usually the monitor slightly over counts area when turning on the ends due to error in <u>not</u> turning on and off area counting exactly at the start and end of a pass. It is suggested that you determine an average percent error in counting area and adjust the field area accordingly, even if you do not know the exact field area. Typical area calibration numbers for harvesting row crops are 97-99%.*

***

Introduction

You must calibrate distance for a primary or secondary speed setting of WHEEL, TRACK or RADAR.

Distance Calibration Screen

To view the distance calibration screen press the:

MENU key 

CAL key

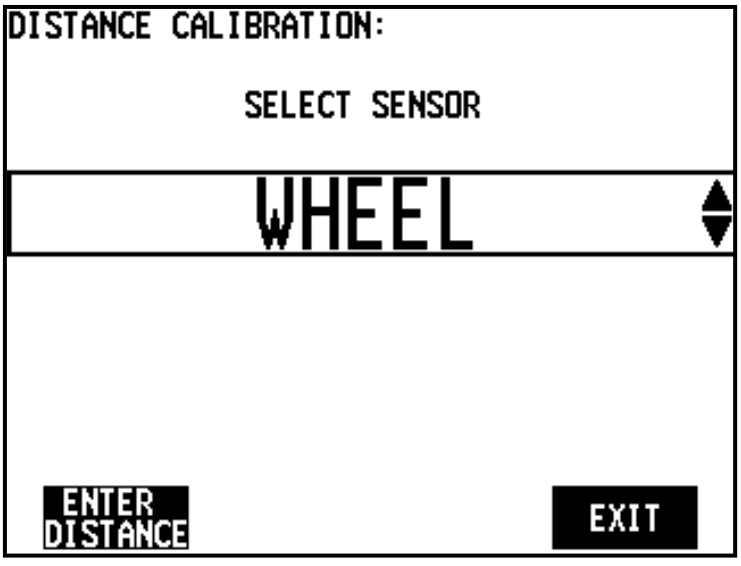
DISTANCE key

Choosing Speed Sensor

You must choose the speed sensor you are using for ground speed before you can calibrate distance. Use the UP or DOWN ARROW key to select either:

- WHEEL
- TRACK
- RADAR

Press the ENTER DISTANCE key after you have set the ground speed sensor.



Preparing to Calibrate Distance

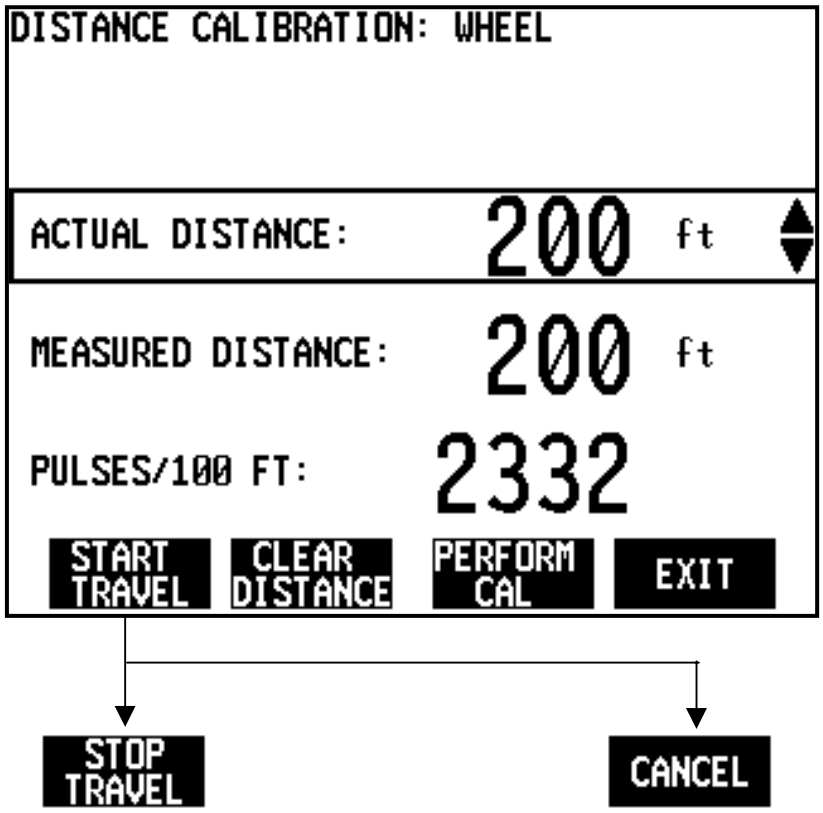
You must accurately measure a known distance, setting flags or making a mark at each end of the path.

NOTE:

- *Use at least a 200 feet travel path to obtain an accurate calibration.*
- *For maximum accuracy, calibrate on a ground surface that is similar to field conditions.*

Calibration Procedure

Example of distance calibration screen:



Step	Action
1	Use the UP or DOWN ARROW keys to set the actual distance to the known length of the travel path. *NOTE: The actual distance line must be selected (rectangular box surrounds line) before you can set the actual distance. Press the key to the right of the actual distance line to select it if it is not already selected.*
2	Position the vehicle at the beginning of the travel path. Pick a spot on the vehicle and align it with the mark at the beginning of the travel path. Press the START TRAVEL key.
3	Drive the length of the path stopping at the end marker and press the STOP TRAVEL key.
4	Press the PERFORM CAL key to calibrate the distance. Press the ACCEPT key to accept the calibration.
5	Press the CLEAR DISTANCE key and repeat steps 2-4 and drive the travel path again to double check the accuracy of the distance calibration.
6	Press the EXIT key twice after you have finished calibrating distance.

NOTE:

- *Upon pressing PERFORM CAL, the monitor automatically adjusts the "pulses / 100 ft" number so that the "Measured Distance" is equal to the "Actual Distance".*

- *You can manually change the "pulses / 100 ft" number. Select "pulses / 100 ft" by pressing the key to the right of the line. Then use the UP or DOWN ARROW keys to set the number. Do not change this number after calibrating.*

NOTE:

You should record the pulses/100 ft on the log sheet provided. If problems with the monitor occur, you can enter this value and you will not have to repeat the Distance Calibration. This value can also be accessed under the "Vehicle Setup" screen, then "Sensor Config".

* * *

Introduction

The stop height is the height at which the head must be raised at the end of a pass to shut off area counting. The stop height number is a reference number for the monitor to determine the height of the head. It does not pertain to feet or inches of height.

The stop height number must be set.

You must have the monitor installed in the picker to set the stop height.

Stop Height Calibration Screen

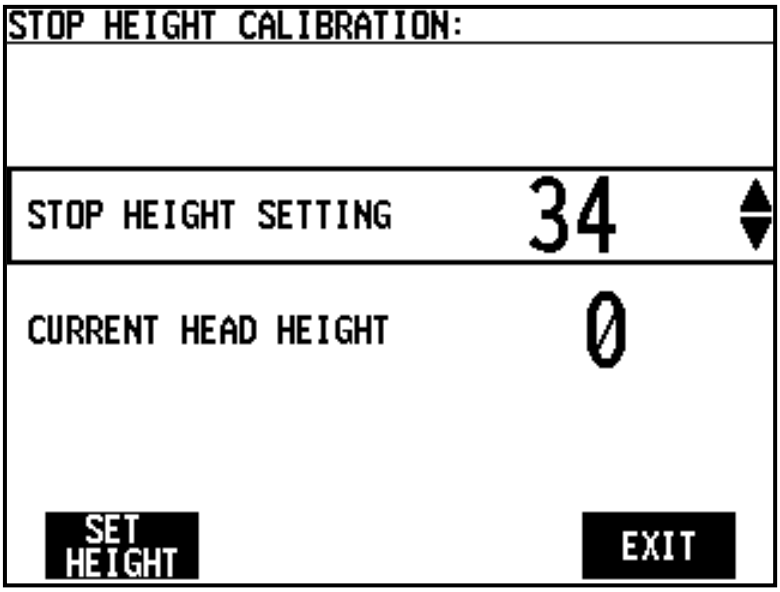
To view the stop height calibration screen press the:

MENU key 

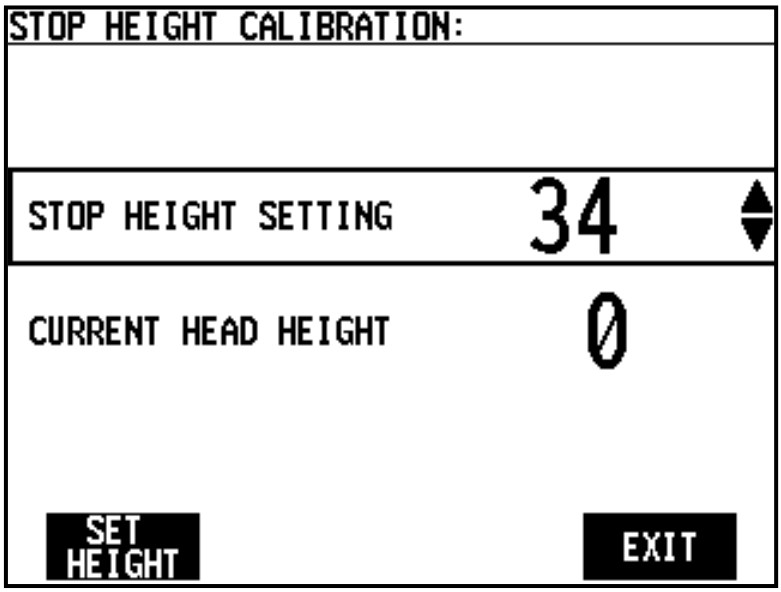
CAL key

STOP HEIGHT key

Calibration



Step	Action
1	Use the UP or DOWN ARROW keys to select stop height setting.
2	Press the SET HEIGHT key.



Step	Action
3	Move the picker head to the height at which you want the monitor to stop counting area.
4	Press the SET HEIGHT key. The monitor will automatically set the stop height setting equal to the current stop height. Press the ACCEPT key.
5	Press the EXIT key twice to return to the main operating screen.

NOTE: You can manually adjust the stop height number by pressing the UP or DOWN ARROW key when the screen above is displayed. Adjustment of the sensor maybe needed to gain more range of motion. Adjust the point at which the chain attaches to the threaded rod and/or adjust the location that the chain is attached to the head.

* * *

Calibrating for Vibration

The vibration calibration is not automated at this time. If you suspect that vibration is causing false cotton flow, call ***Ag Leader Technology*** Technical Support at 515-232-5363.

Refer to the previous section on "Calibrating Seed Cotton Weight" where the C Values are discussed.

C Numbers

The three C Numbers, C1, C2 and C3 determine the pounds that the monitor calculates. You can display the C numbers by pressing the SET UP CAL then EDIT SETTINGS at the cotton weight calibration screen where you choose the cotton calibration set.

IMPORTANT: Do not change the C numbers after you have calibrated.

Refer to the previous section on "Calibrating Seed Cotton Weight" where the C Values are discussed.

* * *

Log Sheet

Field		Load		Calibration Set	Date	Actual Lbs	Indicated Lbs	Acres	Yield	Comments
#	Name	#	Name							

After Calibration – Record C Values

Cal. Set Name:		Cal. Set Name:		Cal. Set Name:	
C1		C1		C1	
C2		C2		C2	
C3		C3		C3	
Comments:		Comments:		Comments:	
Speed Sensor Pulses/Rev (under Vehicle Setup)					

Log Sheet

Field		Load		Calibration Set	Date	Actual Lbs	Indicated Lbs	Acres	Yield	Comments
#	Name	#	Name							

After Calibration – Record C Values

Cal. Set Name:		Cal. Set Name:		Cal. Set Name:	
C1		C1		C1	
C2		C2		C2	
C3		C3		C3	
Comments:		Comments:		Comments:	
Speed Sensor Pulses/Rev (under Vehicle Setup)					

Log Sheet

Field		Load		Calibration Set	Date	Actual Lbs	Indicated Lbs	Acres	Yield	Comments
#	Name	#	Name							

After Calibration – Record C Values

Cal. Set Name:		Cal. Set Name:		Cal. Set Name:	
C1		C1		C1	
C2		C2		C2	
C3		C3		C3	
Comments:		Comments:		Comments:	
Speed Sensor Pulses/Rev (under Vehicle Setup)					

Important Notices

The PF3000 Cotton Yield Monitor must be properly setup and calibrated. Carefully read and follow the directions in the setup and calibration section before using the PF3000.

Section Contents

This section contains instructions for the following items.

***

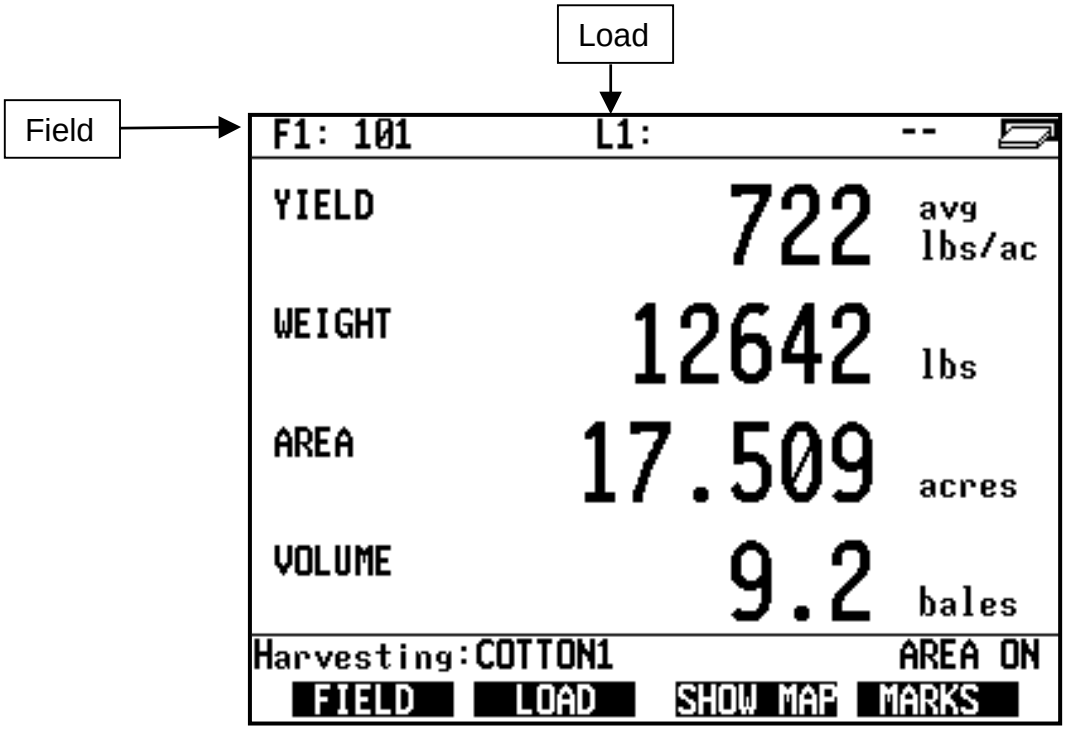
Recommendations

All the information recorded by the PF3000 must be recorded in a field and load. The field and load that the monitor is set on is found on the top line of the main operating screen.

Fields
You should at least create all the fields and name them before you begin to use the PF3000. You can create and name your fields using any operating mode. You should choose field names that you can use year after year. If you have multiple cotton monitors harvesting in the same field, setup the same field names with the same field number. This will simplify merging yield data into one map from multiple machines.

Loads
You can also create and name loads within fields before you use the PF3000. New loads can be created on-the-fly. Load numbers do not have to match between monitors of multiple machines in the field.

Definition:
Load: A load is used to subdivide a field into smaller sections. The monitor load is not associated with the picker basket, wagon, or truck load.



Creating/Naming Fields and Loads

Instructions for creating and naming fields and loads are in the setup section.

Changing Fields and Loads

The top line of the display indicates the field and load, which are currently selected. The monitor can display either field totals or load totals. If field totals are displayed, the current load is not indicated.

Changing Field
If the field totals are not displayed, press the FIELD key twice and use the UP or DOWN ARROW key to change the field. Press the ACCEPT key to change to a different field.

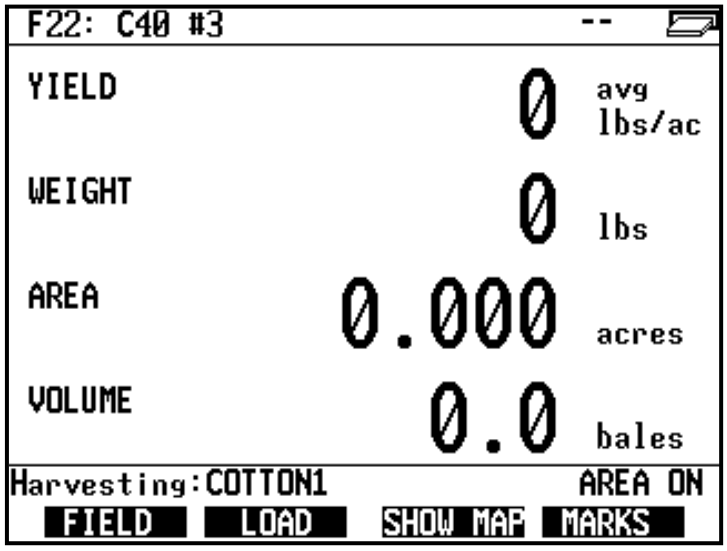
Changing Load
Press the LOAD key twice and use the UP or DOWN ARROW keys to scroll through the loads. Press the ACCEPT key to change to the different load.

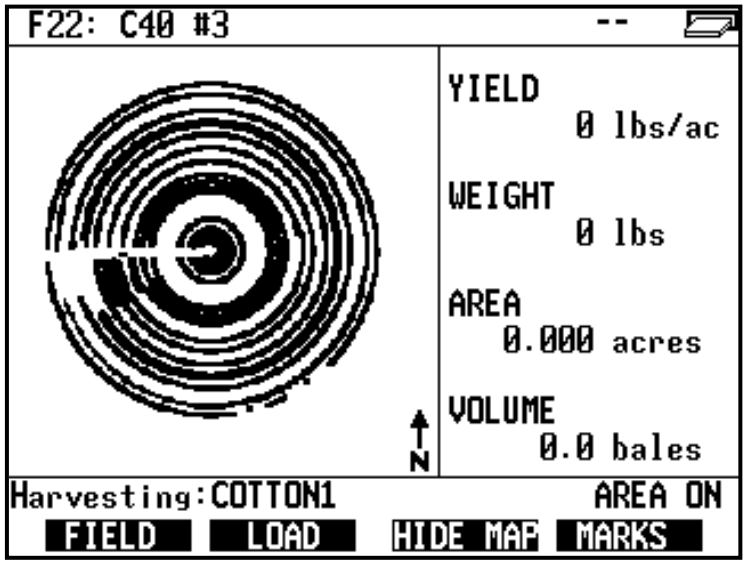
* * *

Introduction

The PF3000 can show a coverage map on its display of the path the combine, tractor or other vehicle has traveled for the field. The PF3000 makes the map from all the GPS data for the selected field that is on the card inserted in the monitor.

The map only shows the path the vehicle has driven or covered, it does not show any yield values.





Making a Map

You must have the card that was used to log a field's GPS data inserted into the monitor to make an on the screen map for a field. You must also have the log file that was used to log a field's GPS data set as the current log file at the card setup screen. If you used more than one log file to log the GPS data for a field, you can only make a map from the GPS data that is on one of the log files.

You can display the map on the go and watch it being created as you drive. You can view the map at any time as long as the is in the monitor.

At this time you can only make a map for a field and not individual loads.

Follow the steps below to make a map.

Step	Action
1	Set the monitor on the field for which you desire to make a map.
2	With the card inserted and the appropriate log file set as the current log file at the card setup screen, press the SHOW MAP key. The screen will change and the map will be displayed on the left half of the screen and the other normal display items will be on the right half of the screen.
3	Press the HIDE MAP key to stop viewing the map and see the normal display items on the full screen.

NOTE:

- *If the monitor is set on a field for which there is not any GPS data on the card and you press the SHOW MAP key, the screen will still change but the left half of the screen will be blank.*

- *The monitor automatically scales the map so that the largest view of the map can be displayed in the left half of the screen.*

* * *

Introduction

In the bottom right corner of the display, the monitor always displays either:

- AREA ON
  or
- AREA OFF

The area count switch is located on the bottom right corner of the front panel. The switch manually controls area counting. The header sensor, implement switch or spray booms automatically turns area counting on and off if the area count switch is in the up position.

When the switch is in the down position, the monitor displays and flashes "Area Off" and stops counting area.

When the switch is in the up position, the monitor will display "Area On" and count area unless the header sensor, implement switch or spray booms are connected and are automatically shutting off area counting.

Stop Height

The stop height number in the monitor determines at what head position the monitor will turn on and off area counting. Refer to the calibrating stop height instructions in the calibration section.

Area Count Stop Beeps

This setting determines how many times the monitor will beep to indicate that the monitor is not counting area when turning on the ends. To view and change the area count stop beeps you must press the SETUP key and then the VEHICLE key. Instructions for changing the area count stop beeps are in the setup section under vehicle setup.

NOTE:

- *It is recommended that the area count stop beeps be set high enough so that lowering the picker head after turning on the ends turns off the beeping rather than the beeps just timing out. This gives the operator an audible signal that the monitor is counting area again.*
- *Usually an area count stop beeps value of 20 to 30 is high enough.*

Ground Speed Sensor

The monitor can record its ground speed from three different sources:

Ground Speed Sensor	Primary Speed Sensor
Speed sensor on transmission	WHEEL
Radar gun	RADAR
GPS receiver (must be rated for accurate ground speed, GPS2000/2100, Add-On GPS3000/3100 and Trimble AgGPS receivers)	GPS

To view and change the ground speed sensor you must press the SETUP key and then the VEHICLE key. Instructions for changing the speed sensor setting are in the setup section under vehicle setup.
You have to calibrate distance for wheels, tracks, or radar, depending on which ground speed sensor you use. Refer to the distance calibration instructions in the calibration section.
The primary speed sensor type is recorded for each load. If you have recorded data for several loads but, you had the wrong primary speed sensor setting, you can switch the speed sensor setting on the loads. Refer to load settings instructions in the operation instructions.
If you are getting your ground speed from a GPS receiver and you lose your GPS signal, the monitor will take readings from the secondary speed sensor.

* * *

Introduction

You must have a GPS receiver and memory card to do field marking. To perform field marking you can use the internal marker selection keys built into the PF3000 to identify the 4 marks available or connect the external field marker device. You can not use both at the same time. You can make marks in all operating modes of the PF3000.

IMPORTANT: Make sure that under the CONSOLE setup key, you have the Field Marker set correctly to either INTERNAL or EXTERNAL.

If you are using the internal marks, you can rename the marks and also set them up as a continuous or spot mark. If you are using the external Field Marker, you can not rename the marks but can do continuous or spot marking.

Continuous marking
Making several marks in a row (for example: marking large weed patches or tile lines).

Spot marking
Marking just one mark (for example: marking a rock or tile hole).

Setting Up Marks

Press the SETUP key and MARKS key to display the marker setup screen and name and set the internal marks. If you are using the external Field Marker, you do not need to make any settings on the Marker Setup screen.

Making Marks

You can mark more than one item at a time. When a mark is turned on the monitor will beep and the mark will flash.

Follow the steps below to make marks when using the internal marks.

Step	Action
1	Display FIELD, LOAD, MARKS on the bottom by pressing the MENU key  .

Step	Action
2	Press MARKS key.
3	**Marks that are set as a Continuous Mark** Press the marker key to start marking at the beginning of the area you want to mark. Press the marker key again to stop marking after you have driven through and reached the end of the area that you want to mark. **Marks that are set as a Spot Mark** Press the marker key once when you are directly over the item you want to mark. The monitor will log one mark and automatically shut off the marking for that mark.
4	After you have finished marking, press the MENU key again to display FIELD, LOAD, MARKS on the bottom.

Follow the steps below to make marks when using the external Field Marker.

Continuous Marking:
Press the ON key on the appropriate switch at the start of the distance to mark. Travel all the way through the distance, and at the end, press the OFF key on that switch.

Spot Marking:
Press the MARK key once on the appropriate switch just as the vehicle passes over the location of the item in the field.

Connecting External Field Marker

The external Field Marker connects to Port 1. Make sure that under CONSOLE setup Field Marker is set to EXTERNAL.

Mapping Marks

The marks you make in the field are all logged to the memory card. If you read your card into a mapping program, your marks should appear on your yield map.

* * *

Introduction

The PF3000 can read position information from a GPS receiver and record data for mapping. To save GPS data, you must use a memory card. You must use a mapping software to download and archive data on a memory card.

IMPORTANT: You must copy memory to every log file you create and log to before you read the card into your computer. This is done automatically when the monitor powers down with the card in the slot.

Memory Card Requirements

The following characteristics are required of memory cards you intend to use with the monitor:

Card Type	Sizes	Specifications (all cards)
SANDISK ATA Flash card	2 to 32 megabytes (max)	Type 1 or 2 PCMCIA 68-pin connection 200 ns speed rating

IMPORTANT: ATA Flash cards are the only brand of ATA Flash cards that are guaranteed to work in the PF3000.

*Note: 32 MB SANDISK ATA Flash cards are available from your **Ag Leader Technology** dealer.*

Setting Monitor to Log to Card

Press the SETUP key and CARD key to view the card setup screen. Set the logging device to a card and select or create a log file.

If you turn the monitor on or start the picker fan(s) without a card in the monitor and the monitor is set to log to a card, the monitor will display "INSERT CARD. When you insert the card, a log file will be created and the monitor will return to the main screen.

Setting the Logging Interval

Press the SETUP key and CARD key to view the card setup screen. Set the logging interval to 1, 2 or 3 seconds.

When the monitor records a reading for any one of the logging intervals, it takes an average of all the yield readings in that interval.

The number of hours of instantaneous data that can be logged on a memory card depends on the card size and logging interval listed below.

	Approximate Logging Hours Until Card is Full		
	1 sec	**2 sec**	**3 sec**
Ag Leader 20 M ATA Flash Card	25.8	47.2	65.2
Ag Leader 32 M ATA Flash Card	41.2	75.5	104.3

NOTE: The logging hours available can vary from the numbers shown above due to a variety of operating conditions. The number of fields and loads, as well as the number of separate files copied to the memory card all affect the log file size.

The number of readings taken per foot traveled are also dependent on your logging interval:

	Distance Traveled (ft)		
	1 sec	**2 sec**	**3 sec**
3 mph	4.4	8.8	13.2
5 mph	7.3	14.6	21.9

Log File

The PF3000 requires a log file to store GPS data on a memory card. The log file will always have a ".PFL" extension and be named with the date the file was created.

Example: **98081502.PFL** This file was the second log file created on 08/15/98.

Type of Card	Log file criteria
SANDISK ATA FLASH card	A new log file must be created for each day. Can not add to an old log file after a new file has been created. Can store multiple log files on one card.

In order to log instantaneous GPS data or copy field and load data to a memory card, a log file must be selected. The monitor will prompt you when you turn it on to select or create a log file. Refer to the steps below to select/create a log file after you have turned the monitor on.

Step	Action
1	With the memory card inserted into the PF3000, card setup screen displayed, and "Log File" selected, press the EDIT key.
2	Use the UP or DOWN ARROW keys to select a log file. If a log file does not exist on the card or you do not want to log to any of the existing log files on the card, press the CREATE FILE key to create a new log file.
3	With the desired file selected, press the ACCEPT key.

NOTE: After you read all the log files on your card into your computer (and make backup copies of files), it is recommended to erase the log file(s) on the card. This will prevent confusion on which files have been read into your computer the next time you read the card.

Inserting Memory Cards

IMPORTANT: Before you insert the memory card into the monitor, touch the monitor with your hand to ground yourself and prevent any static electricity transfer to the monitor through the card.

Insert the end of the card that has 68 small holes into the monitor with the "front" side of the card (the side with the manufacturer's name or logo) facing up. Be sure to insert the card completely, so that it makes good contact and remains in place. When you insert a memory card the card symbol will appear in the top right corner of the display.

Formatting Card

The memory card must be formatted with a DOS format. You can format the card using the PF3000 or your computer and card reader (using Windows 3.1 or Windows 95 and 98. Windows NT is not supported). Refer to the instructions for formatting a card in the Card Setup section.

IMPORTANT: Formatting a card erases all data on the card.

Copying Data to Log File

IMPORTANT: If you have logged to two or more files during the day without coping to card; when you power down the monitor, only the LAST log file will be copied to card.

To copy memory to log files that are not set as the current log file, press the SETUP key and CARD key. Press the SHOW FILES key and select one of the log files. Press the FILE OPTIONS key and press the COPY TO FILE key.

At the card setup screen, press the COPY TO CARD key to copy memory to the file set as the log file (this is the same copy to card function that happens during shut down).

Logging Data to a Memory Card

When the monitor logs data to a memory card, a small arrow that points to the memory card symbol at the top right corner of the display appears.

Operating Mode	Condition to start logging to card
Cotton Harvest Mode	Picker units engaged (fan speed must be above 2500 rpm) and the monitor is counting area.

Checking Free Space on Card

To check the percent of space free on the card display CARD INFO.

* * *

Introduction

You can connect a GPS receiver to the PF3000 to collect field position information for making a map. The GPS receiver sends the exact coordinates in degrees latitude and degrees longitude to the monitor every second. You must use a memory card with the monitor to record GPS position information.

NOTE: If you are using the Add-On GPS 3000 or 3100, refer to the Add-On GPS General Instructions you placed in the Options Section for specific instructions.

Compatible GPS Receivers

Almost all GPS receivers made for agriculture applications are compatible with the PF3000 and thus meet the requirements listed below. ***Ag Leader Technology*** sells a Coast Guard compatible receiver, the Add-On GPS 3000 and also a machined Coast Guard and Satellite differential compatible receiver, the Add-On GPS 3100. Receivers other than the Add On GPS 3000/3100 must be configured to send GPS data according to the following parameters:

- NMEA standard data output protocol
- 4800-X-8-1 communications protocol
- GGA data string—the only data string needed
- Send all messages once per second

NOTE: If you use the Ag Leader GPS 2000 or GPS 2100 , Trimble AgGPS 120, 122, 132 or other high accuracy receiver that outputs the VTG data string, you can obtain ground speed readings from the GPS signal. If you are using the Add-On GPS 3000/3100, you can get ground speed from it also, but outputting the VTG string does not apply.

Mounting a GPS Receiver

Follow the mounting instructions provided with the GPS receiver. Some general guidelines are listed below for mounting the receiver on a vehicle.

- Make sure the GPS antenna is in the middle of the vehicle.
- Generally, the antenna should be the highest point on the vehicle.
- Keep the antenna away from "electrical noise" sources, such as a cab fan motor or the engine compartment.
- On most cotton harvesters, the center of the cab is the highest, safest place to mount the GPS antenna.

Connecting a Receiver to the Monitor

The GPS receiver connects to Port 1 on the monitor. The GPS receiver normally has a separate power cable that connects to a 12-volt power source. You can supply power to the GPS receiver through the GPS cable that connects to Port 1. Pin 4 is switched 12 volts and pin 6 is ground.

The GPS manufacturer supplies the cable that connects the GPS receiver to the monitor. If the cable provided with your receiver is not specifically designed for the PF3000, you must use a GPS null modem cable that you can purchase through your ***Ag Leader Technology*** dealer. You will know that you need to use the GPS null modem cable if your GPS cable does not insert into port 1 of the PF3000 or if the monitor does not receive the GPS signal when the GPS cable is connected (no D or G in the top display).

IMPORTANT: Do not use a null modem that you buy from a store because most have the wrong connections and can cause damage.

NOTE: The GPS null modem cable switches pins 2 and 3, and pin 5 goes straight through. Refer to the reference section for the pin-outs of Port 1.

GPS Status Indicator

The PF3000 will display a "D" and "G" on the top right corner of the display to indicate you have a GPS signal. If you do not have a GPS receiver connected you will see two dashes "- -".

NOTE:

- *A "D" indicates that you have a differential signal.*
- *A large "G" indicates that you have a GPS signal and your GPS receiver is tracking four or more satellites.*
- *A small "g" indicates that you have a GPS signal but your GPS receiver is tracking only three satellites.*

Your GPS receiver must track four or more satellites (large "G") to get an elevation reading.

* * *

Introduction

To more accurately measure ground speed on sloping fields or in muddy conditions where the wheels slip, you can use a radar gun. Sensors compatible with the monitor are:

- Dickey-john
- Magnavox
- MicroTrak sonar gun
- Case IH Magnum
- John Deere

Necessary Cables

If you intend to use a radar gun, you must buy a radar cable for your specific sensor from an ***Ag Leader Technology*** dealer.

Installing a Radar In a Cotton Picker

Step	Action
1	Disconnect the existing ground speed cable from your picker speed sensor at the distribution cable. Leave the cable routed in case you want to use the picker's speed sensor again.
2	Mount the radar unit on the picker in a position where it will not be damaged and will be aimed between plant rows. Consult your installation instruction.
3	Route the radar cable (or if Dickey-john, the radar unit's integral cable) to the Distribution cable of the PF3000.
4	Connect the radar cable (if Dickey-john, integral cable) to the four-pin round connector on the distribution cable.

Changing Speed Setting

Press the SETUP key and VEHICLE key to view the vehicle setup screen. Refer to the vehicle setup instructions in the setup section and change the primary speed sensor to "Radar". You must perform a distance calibration for radar. Refer to the distance calibration instructions in the calibration instructions.

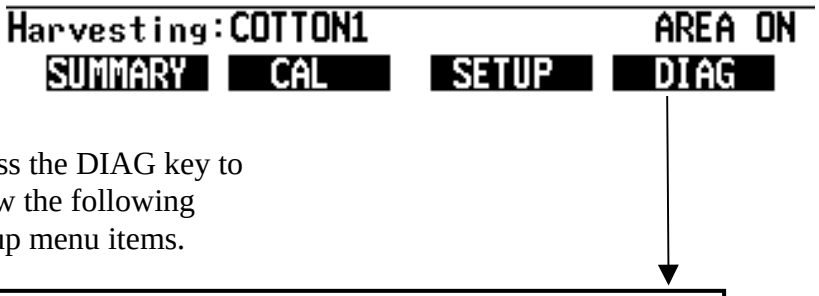
***

Introduction

The diagnostic screens provide troubleshooting and reference information for the PF3000.

Order of Keys
(Harvest Mode)

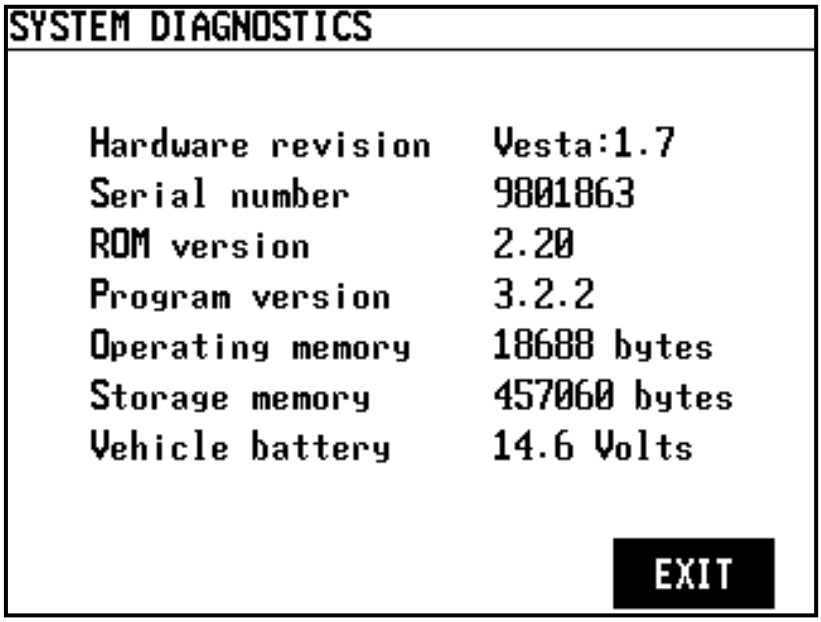
Press the MENU key  until you see the following keys on the display.

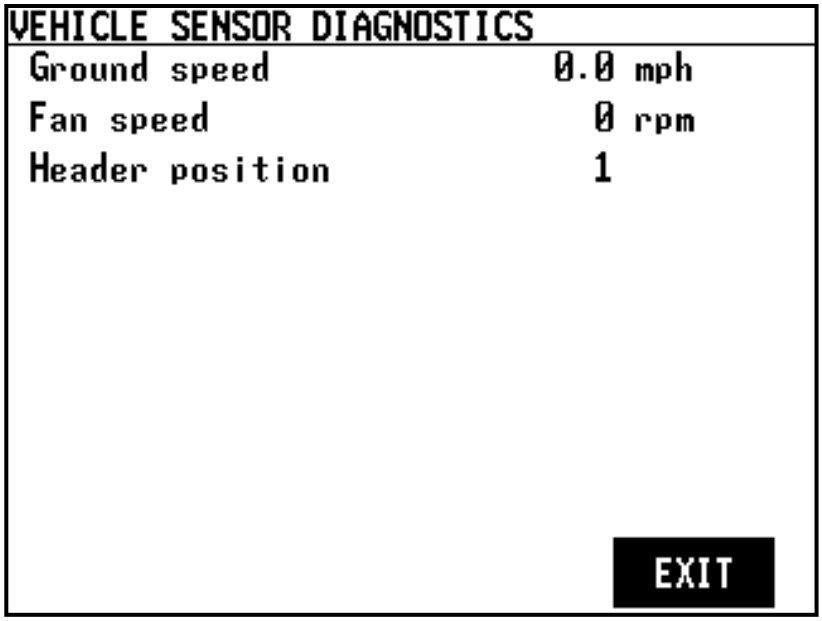


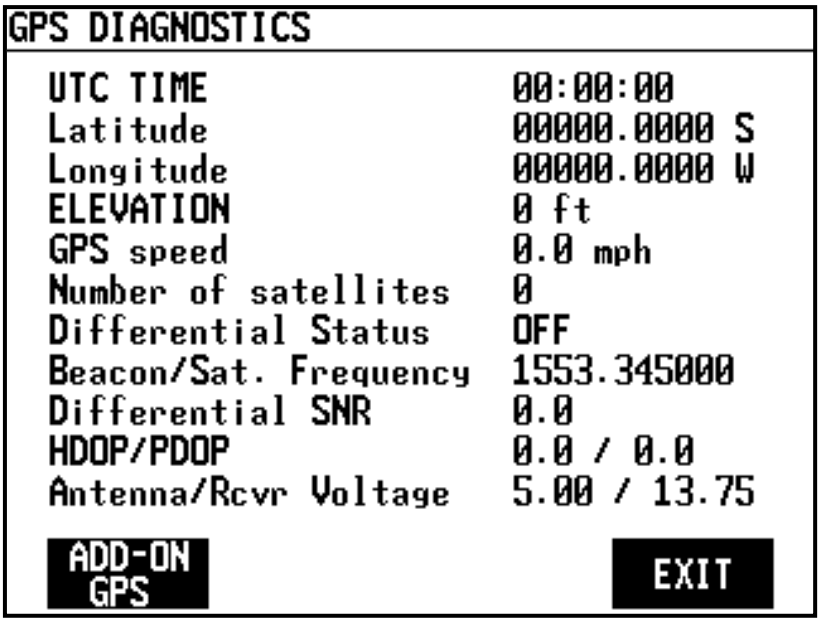
Press the DIAG key to view the following setup menu items.

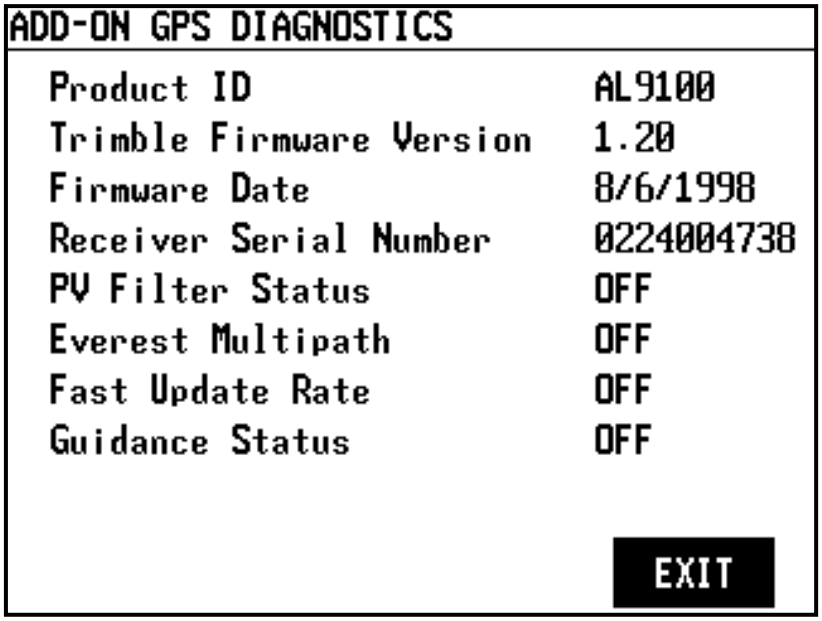
Press the bottom LEFT or RIGHT ARROW keys to itch between and view the setup menu items shown ɔve.

The following are examples of diagnostic screens:



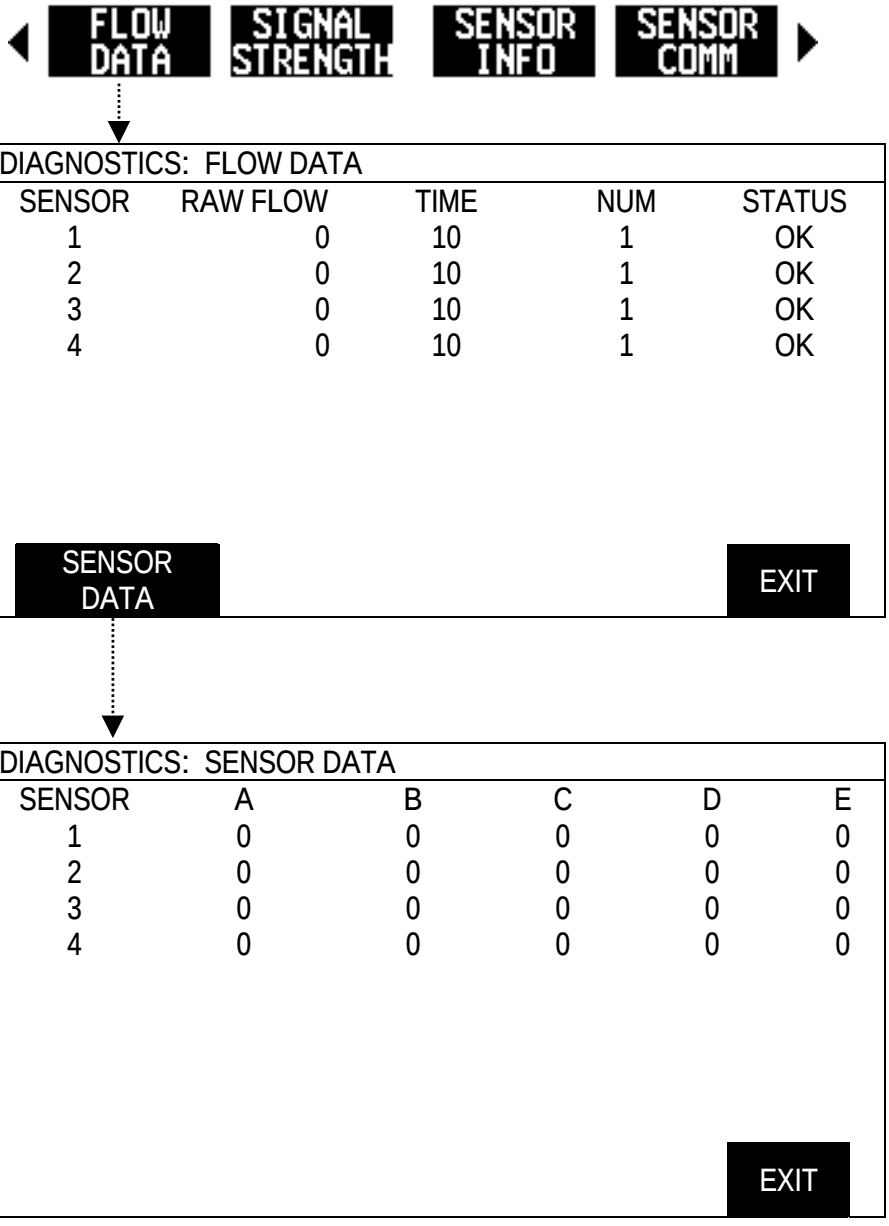



GPS DIAGNOSTICS
UTC TIME 00:00:00
Latitude 00000.0000 S
Longitude 00000.0000 W
ELEVATION 0 ft
GPS speed 0.0 mph
Number of satellites 0
Differential Status OFF
Beacon/Sat. Frequency 1553.345000
Differential SNR 0.0
HDOP/PDOP 0.0 / 0.0
Antenna/Rcvr Voltage 5.00 / 13.75
ADD-ON GPS
EXIT


ADD-ON GPS DIAGNOSTICS
Product ID AL9100
Trimble Firmware Version 1.20
Firmware Date 8/6/1998
Receiver Serial Number 0224004738
PV Filter Status OFF
Everest Multipath OFF
Fast Update Rate OFF
Guidance Status OFF
EXIT

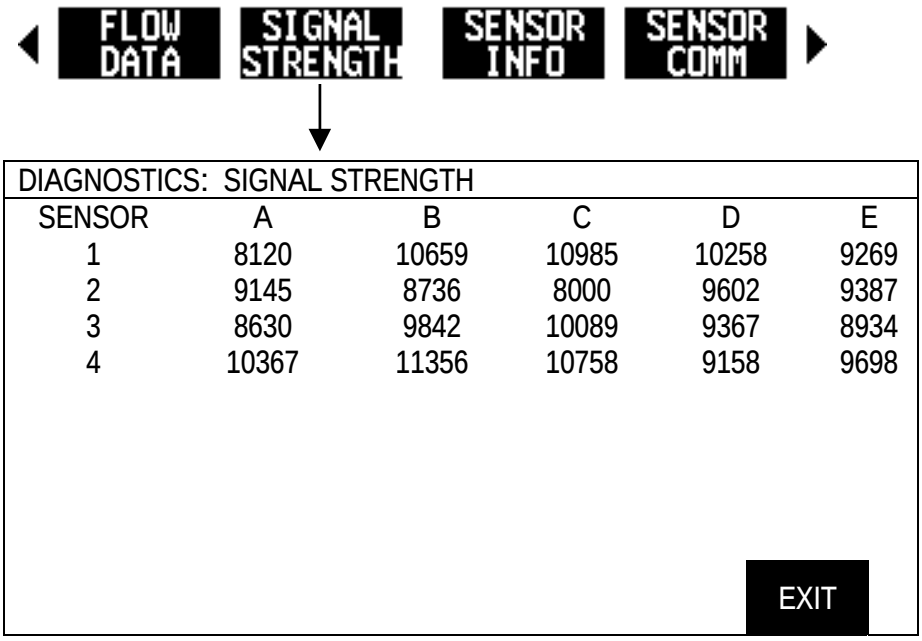
Flow Data Screen

This screen shows the raw flow readings from each sensor broken down by each lens.



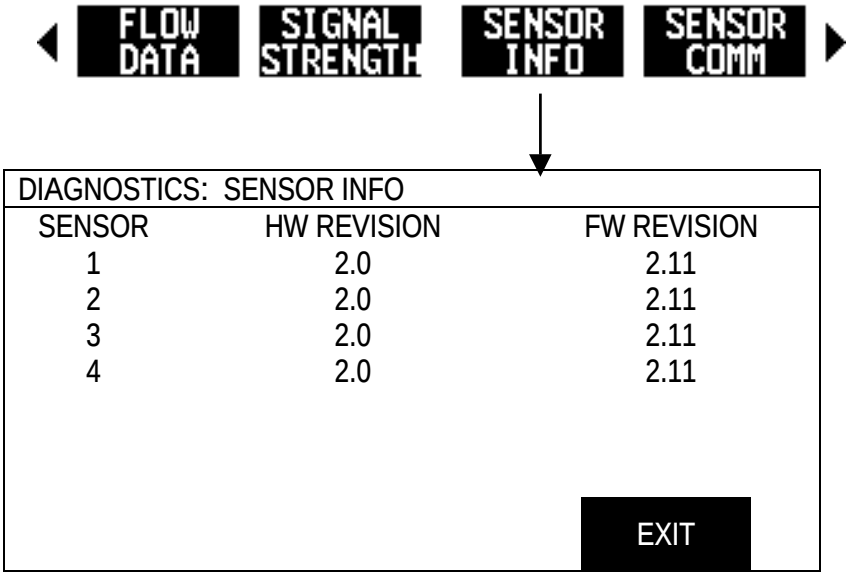
Signal Strength

This screen shows the signal strength from each sensor broken down by each lens. This number is used to indicate the amount of light coupled from the emitter to the detector. After a new installation and before picking, this value should be greater than 8000 or higher.



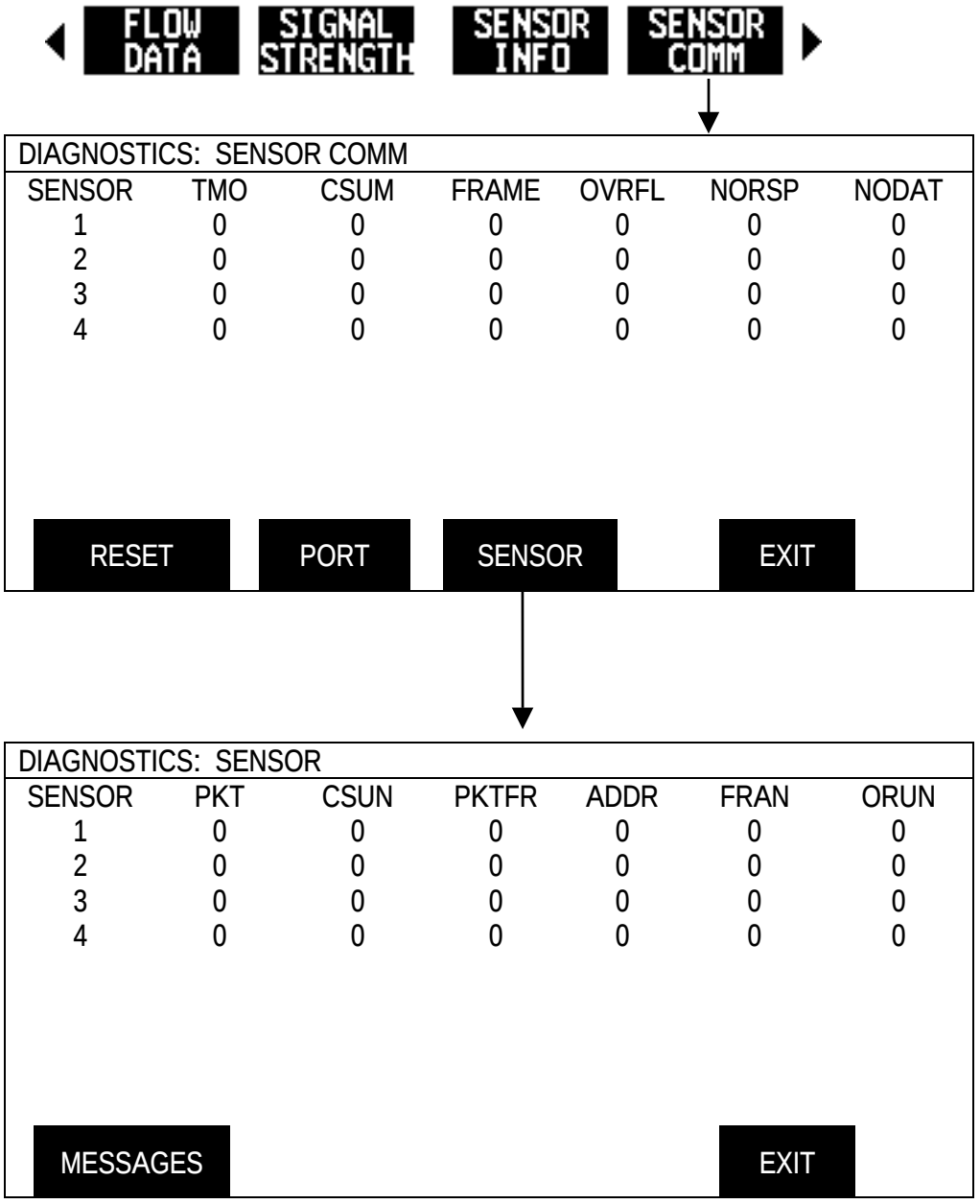
Sensor Info

This screen shows the hardware and firmware revisions of each sensor.



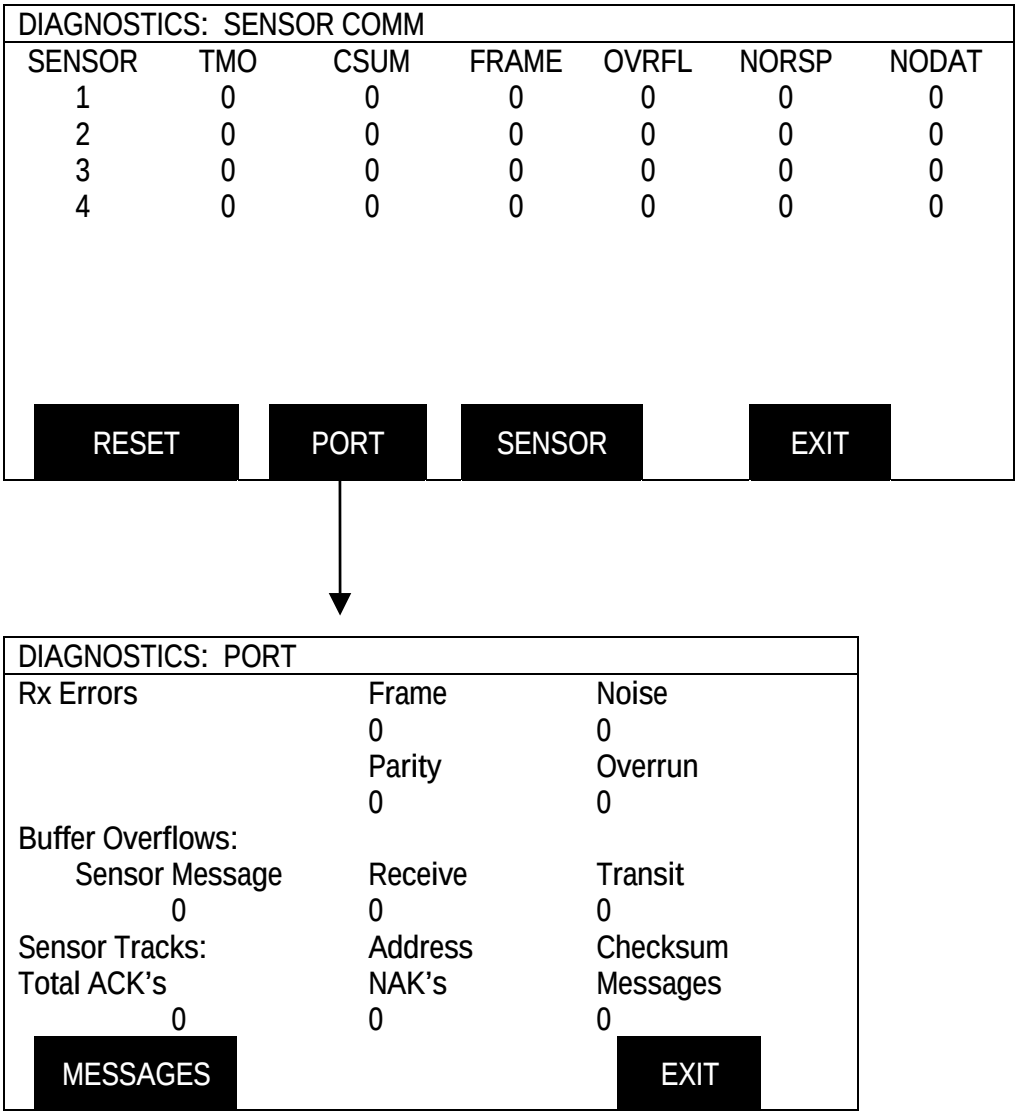
Sensor Com

This screen shows communication errors detected by the monitor broken down by sensor



Port Diagnostics

This screen shows the total communication errors detected by the monitor.



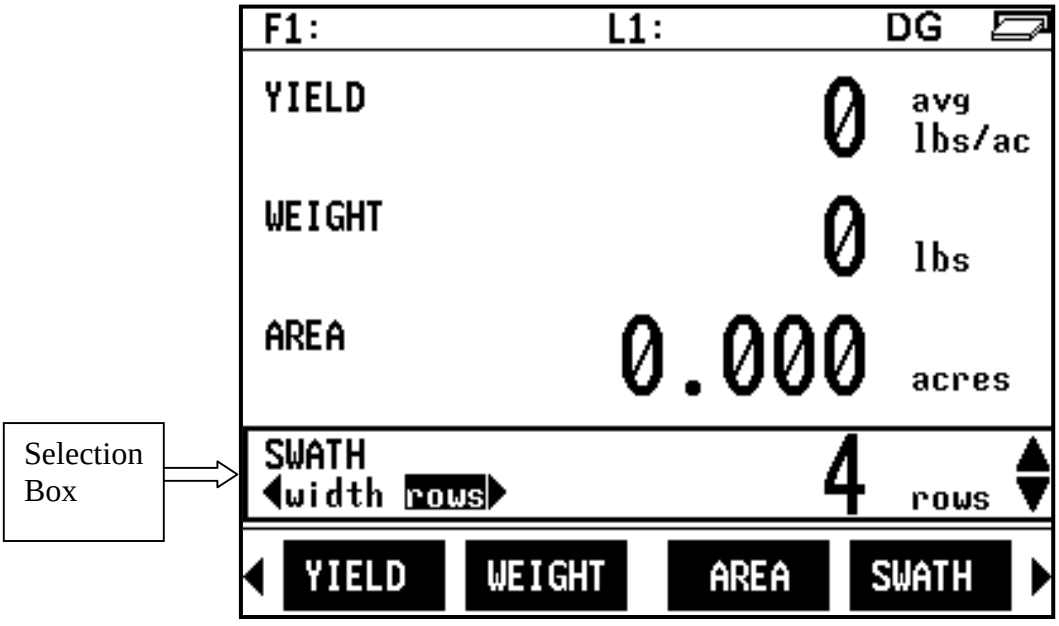
Introduction

The PF3000 has four display lines for viewing items. You can choose what items you see on the display and the position that the items appear on the display.

To change the display item on a display line you must select the line. The four keys to the right of the display each select a display line. A rectangular box surrounds the display line to show that that line is selected.

When the display line is selected the four menu items on the bottom change and show items you can select for display. Press a key below a display item to put a different display item in place of the selected display item. There are more than four display items to choose for viewing. Press the bottom LEFT or RIGHT ARROW keys to scroll to the right or left and view other display items on the bottom.

When some display items (like swath) are selected, an up and down arrow symbol will appear on the right of the display line. This indicates you can change the setting of the item with the UP or DOWN ARROW keys. After you have made the change you must press the key to the right of the display line to deselect the line.



Field and Load Totals

When the following are displayed you can see a field, load total or average.

Yield	Volume
Weight	Lint Weight
Area	Lint Yield

To view a field total you must have the field displayed without the load. Press the FIELD key to display the field alone on the top line. To view a load total, you must have the load displayed with the field on the top line. Press the LOAD key to display the load on the top line.

Harvest Display Items

Below are listed in order the available display items for the harvest mode.

YIELD
This displays the instantaneous seed cotton yield in pounds per acre (kg per hectare) while you are harvesting. If you are not harvesting, the average yield is displayed. If you select this line it will also show the average yield while you are harvesting.

WEIGHT (seed cotton)
Displays the total weight of seed cotton of that load or field in pounds (kg)

AREA
This displays the area harvested for the current field/load in acres (hectares).

SWATH
This displays the swath width of the picker in feet (meters) or as the number of rows. If you have swath selected, you can use the UP or DOWN arrow keys to set a partial swath and adjust it back to full swath again.

LINT YIELD
This displays the instantaneous lint yield per acre while you are harvesting. This can be displayed as either bales per acre or lbs per acre. If you are not harvesting, the average yield is displayed. If you select this line it will also show the average yield while you are harvesting. This is calculated using the lint percent turnout entered under its calibration set.

LINT WEIGHT
Displays the total weight of the lint cotton of that load or field in pounds (kg). This is calculated using the lint percent turnout entered under its calibration set.

VOLUME
This displays the total volume of the current load in bales. A bale is defined to be equivalent to 480 pounds (217.7 kg) of lint, but is configurable in the Calibration Set setup screen.

COTTON FLOW
This displays the instantaneous seed cotton flow rate in pounds per hour (kg per hour).

FAN SPEED
This displays the fan speed in rpm.

GROUND SPEED
This displays the vehicle ground speed in miles per hour (km per hour).

DISTANCE
This displays the total distance traveled for the current load in feet (meters).

AREA PER HR
This displays the instantaneous area harvested in acres per hour (hectares per hour).

LAT LON
This displays the latitude and longitude coordinates and the elevation from the GPS receiver.

DATE TIME
This displays the current date and time.

CARD INFO
This displays the free space available on the card.

HEAD HEIGHT
This displays a number to indicate the position of the head. This number is not in feet or inches, but is a number that is relative to the height of the head.

* * *

Introduction

The summary screen shows totals and averages for the fields and loads. You can also see the field and load totals on the main operating screen (refer to the display item instructions).

You can view items on the summary screen on the go. You should use the summary screen to view data from loads you have previously harvested.

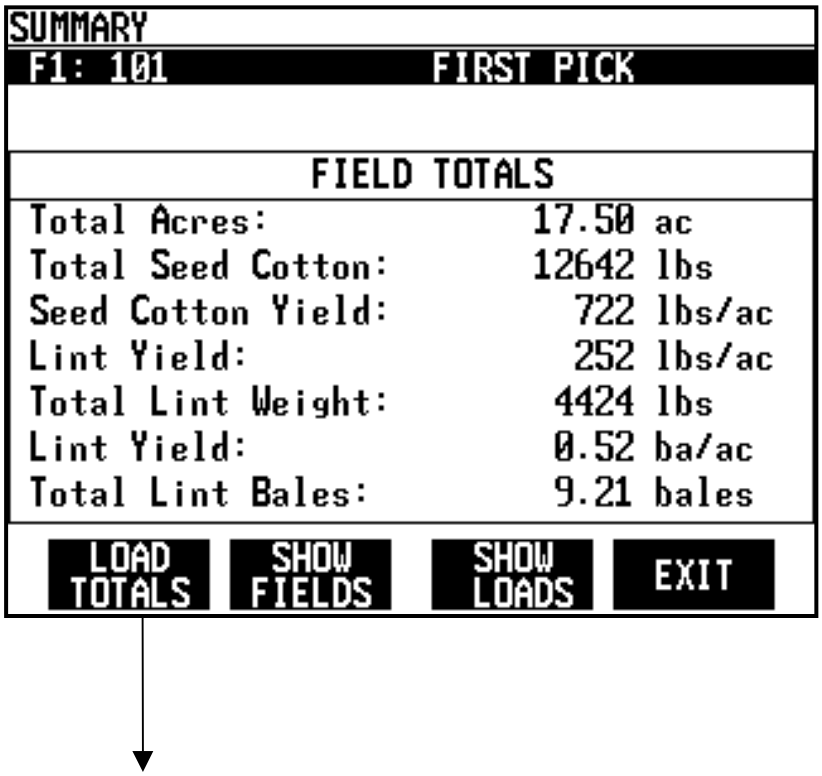
Summary Screen

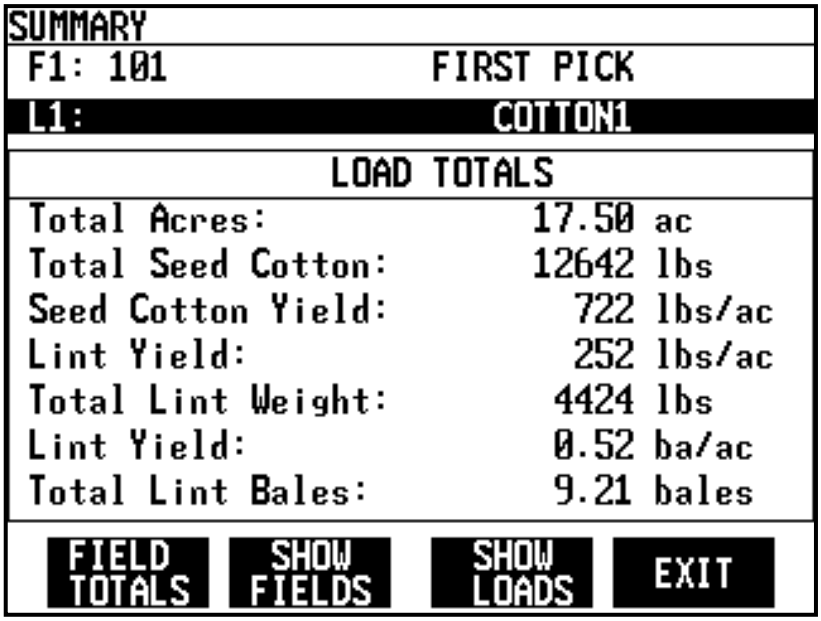
To view the summary screen press the:

MENU key 

SUMMARY key

Once you have finished viewing the summary screen press the EXIT key.





Changing Field and Load

The first key on the menu selection line displays LOAD TOTAL. When LOAD TOTALS is pressed, the active load is displayed on the second line. The first menu key will display FIELD TOTALS. The title for the summary table reflects the highlighted item. When FIELD TOTALS is displayed when the field line is highlighted. When LOAD TOTALS is displayed when the load line is highlighted.

Field and Load Totals

If load is displayed with the field, then the totals and averages are for the load.

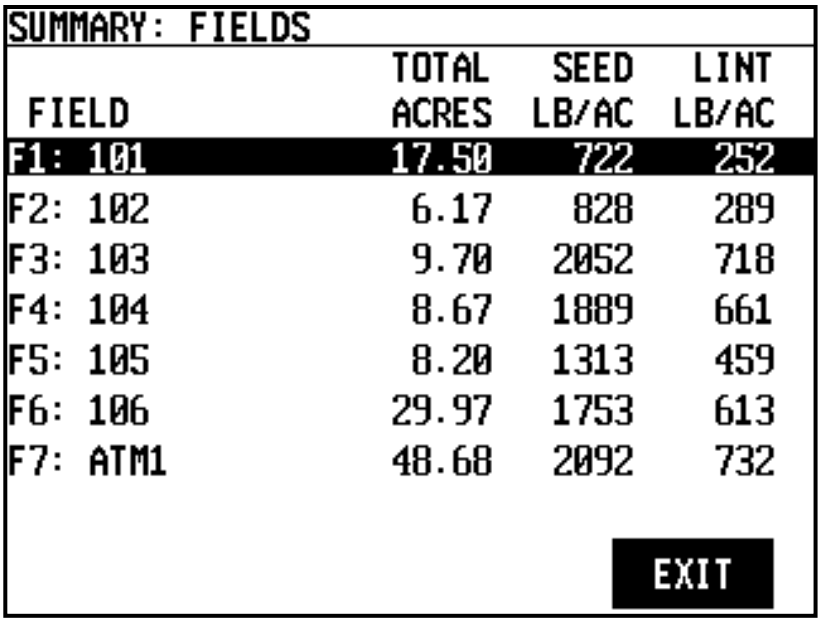
If the field only is displayed, then the totals and averages are for the field.

Show Fields

Press the SHOW FIELDS key to view a list of all the fields as shown below. If you have several fields you will have to use the UP or DOWN ARROW keys to scroll through the all the fields.

One of the fields will be selected or highlighted. You can change the field that is selected by using the UP or DOWN ARROW keys. When you press the EXIT key, the monitor will return to the main summary screen showing the data for the field that was selected.

Example of a field summary screen:

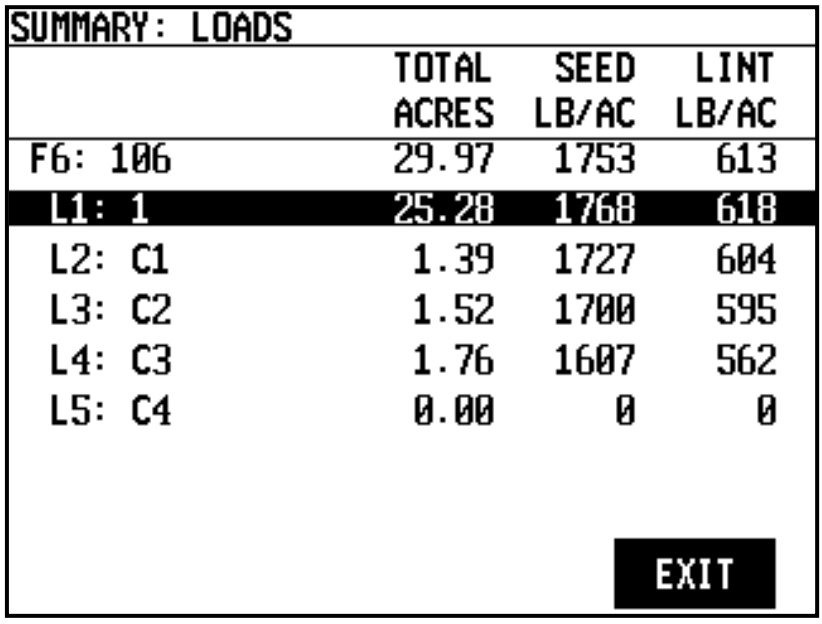


Show Loads

Press the SHOW LOADS key to view a list of all the loads in the field as shown below. If you have several loads you will have to use the UP or DOWN ARROW keys to scroll through the all the loads.

One of the loads will be selected or highlighted. You can change the load that is selected by using the UP or DOWN ARROW keys. When you press the EXIT key, the monitor will return to the main summary screen showing the data for the load that was selected.

Example of a load summary screen:



* * *

Introduction

The monitor uses the number of rows and row space you set in the monitor to determine the total swath.

Full Swath

The full swath is the normal swath that the vehicle takes during field operation. It is the permanent swath based on the number of picker units. To view and change the full swath settings, you must press the SETUP key and then SWATH key. In the case of a broadcast type header, configure the vehicle to the most rows, then change the Full Swath to reflect the actual swath of your header. Refer to the swath setup instructions in the setup section for more instructions.

Partial Swath

You can temporarily enter a partial swath setting when you encounter a less than full swath during field operation (for example point rows). Follow the steps below to enter a partial swath.

Step	Action	
1	**If...**	**Then...**
	Swath is displayed on the main operating screen	Press the key to the right of the line displaying swath to select the line (rectangular box surrounding line).
	Swath is <u>not</u> displayed on the main operating screen	Press one of the four keys to the right of the display and display swath on the main screen. Press the key to the right of the line displaying swath to select the line (rectangular box surrounding line).
2	With swath selected, press the DOWN ARROW key to decrease the swath to the appropriate swath width.	
3	After you have finished the partial swath in the field, press the UP ARROW key to increase the swath back to a full swath.	
4	Deselect swath by pressing the key to the right of swath.	

NOTE: When you decrease the swath, the monitor will beep to remind the operator that the monitor is set on a partial swath. The monitor will not stop beeping until the swath is increased to the full swath.

* * *

Introduction

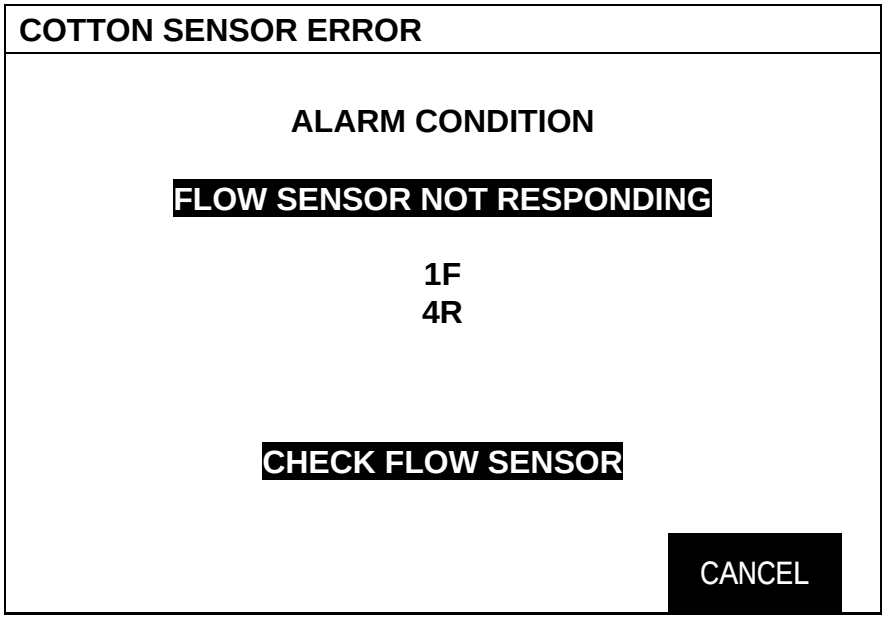
The flow sensor alarms warn you when one or more flow sensors are not operating. The types of alarms are Communications, Low Signal, Stringer and Choke.

Alarm Activation

The activation of the alarm will be by a buzzer sounding and a full screen message telling you which sensors are not sending data to the yield monitor. Simply note which sensors are reporting and press the CANCEL key.

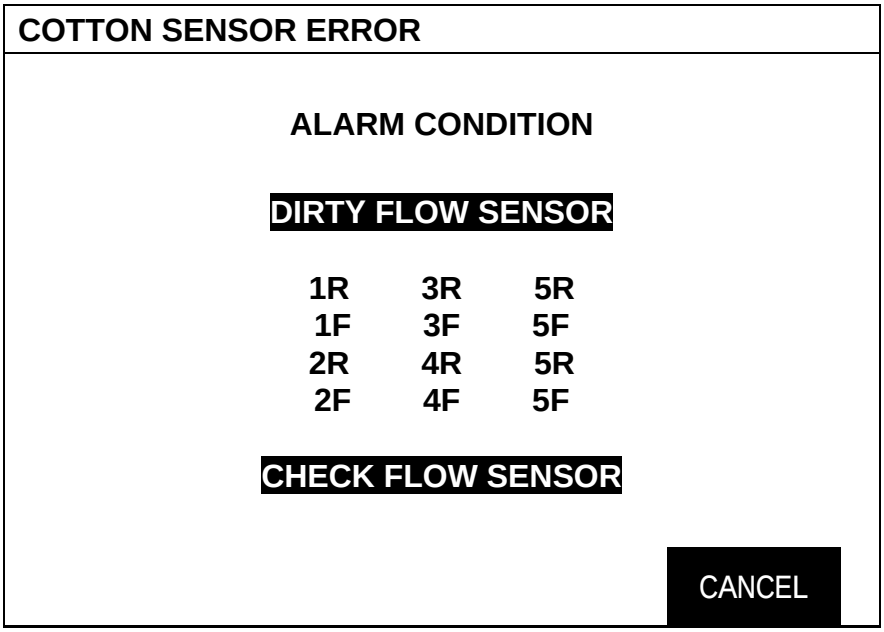
Communications Alarm

This alarm warns you to sensors that are not operating properly resulting in lost yield data. The example below shows sensor communication alarms for sensors 1 and 4 for a Case-IH picker



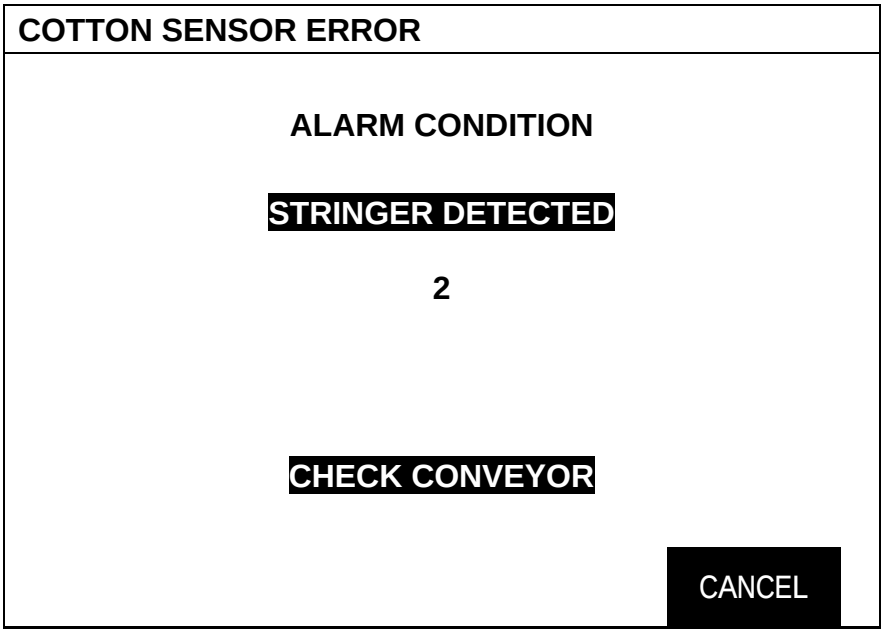
Low Signal Alarm

This alarm sounds when one or more of the flow sensors have insufficient light levels to measure flow accurately. This example shows low signal alarms for all conveyors of a 5-row Case-IH picker.



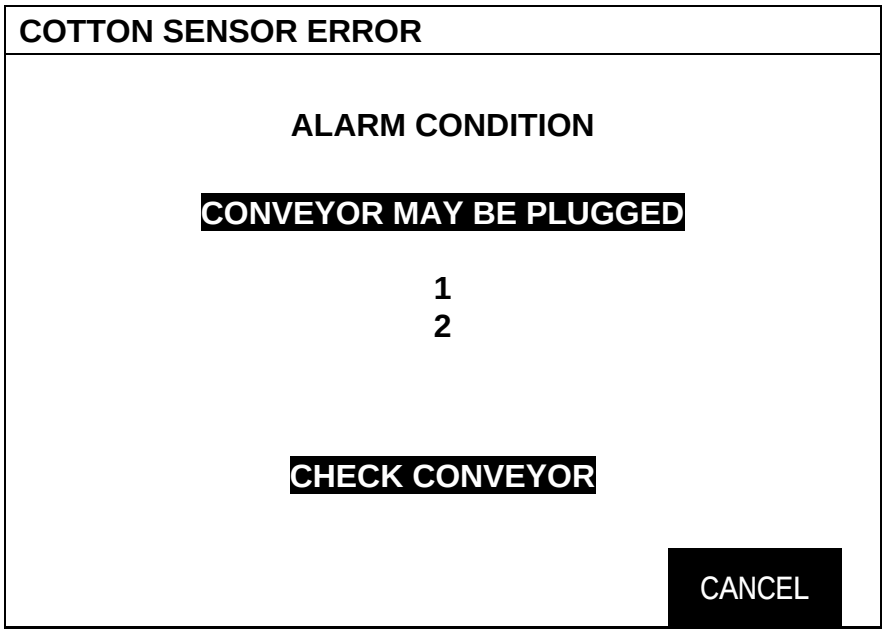
Stringer Alarm

This alarm tells you when one or more of the conveyers have strings of cotton hanging in them causing large false flow readings. This example shows a stringer alarm for conveyor 2 on a Deere picker.



Choke Alarm

This alarm informs you of one or more conveyors may have blockages. This example shows choke alarms for conveyors 1 and 2 on a John Deere picker.



Flow Sensor Inspection

For the best performance of the cotton flow sensor, they should be inspected periodically. It is recommended this inspection be done after 20 hours of picker operation.

Care and Cleaning

To inspect the cotton flow sensor complete the following:

1. Loosen the captive nut and carefully rotate the flow sensor down. Remove any excess pieces of cotton and clean the lens with a clean cloth.
2. Complete Step 1 for each detector and emitter installed on your picker.
3. While cleaning the sensors, inspect the lens covers for wear and damage. If the lens covers require replacement, order replacement lenses from you ***Agleader Dealer***

NOTE: It is recommended that the lenses on the emitters and detectors be replaced after two harvest seasons or 2000 acres (800 hectares) to insure optimum sensor performance.

***

Introduction

The monitor records various settings for each load used for harvesting.

Load Setup Screen

To view the load setup screen press the:

MENU key
SETUP key
bottom RIGHT ARROW key
LOAD key

Example of load setup screen:

Changing a Setting

Step	Action
1	Use the UP or DOWN ARROW keys to select a line. A line is selected when a black filled rectangular box surrounds the entire line.
2	Press the EDIT key. Use the UP or DOWN ARROW keys to change the setting. Press the ACCEPT key.
3	Press the EXIT key once you have made all the settings.

NOTE: If you change the speed setting, you will change the distance and area for that load.

Before You Begin

After the harvest season ends, remove the monitor from the picker cab. Use the provided 110-volt power supply to turn on the monitor in your house or shop and check the recorded yield data for errors. Options for checking the data follow:

- If you are using a GPS receiver and memory cards, print the season summary using SMS.
- If you do not have a GPS receiver, connect the monitor to a computer and print the field/load summary as instructed in the Printing Field/Load Summary document in this section.
- If you cannot print a summary, follow the instructions on these pages and use the monitor to check your data for accuracy.

Calibration

Any load for which you see an error listed in the **% Err** column of the summary is a calibration load. Check the following:

- Actual weight of each calibration load, ensuring that the loads are set correctly
- Load with a large error in the **% Err** column, which is any load with an error 10% or higher. Most loads should be less than 8%.
- Loads with unusually large errors may need to turn off the loads as calibration loads by pressing the CAL ON/OFF key.

Refer to the Weight document in the Calibration section for instructions on examining and correcting any errors.

If you do not have a summary print out, follow these steps to check the calibration errors on the monitor:

Step	Action
1	Press the Menu Key, CAL , WEIGHT, select the cotton type and press SHOW CAL LOADS.
2	On the Calibration screen for the selected cotton type press PERFORM CAL.
3	When the monitor completes its full calibration, press EXIT to scroll through each calibration load and its calibration error to look for high errors.

Acres

Check the number of acres for each field and load, ensuring they are correct. If you know the exact number, you can set the field acres that the monitor measured to the exact number of acres in the field. You can also change the load acres. Refer to the Acre Calibration instructions in the Acre Counting section for more information.

IMPORTANT: If you are using multiple harvesters to harvest <u>one field</u>, DO NOT adjust the acre count for that field on the harvester monitors. If you change the acre count in each monitor, the results will be inaccurate for the harvest of that field.

Field/Load Name

Review all fields and loads, ensuring that you have entered the correct names. If you have not entered a name for a field or load yet, you still can.

NOTE: Enter a name for the field that you can reuse every year. Keeping track of fields from year-to-year with a field number does not work because of the way the monitor creates the fields. Also, SMS mapping software and other mapping programs are designed to keep track of fields based on a field name, not a field number.

Updating the Monitor

All changes made to the data in the monitor will automatically be saved to memory with the monitor is shut down. After making changes to the monitor data, print another summary.

Updating Field Maps

If you are using a GPS receiver and memory cards, press the Menu Key, SETUP, CARD, COPY TO CARD to copy memory to the card one last time to apply the final calibration and other settings to the GPS yield data.

Read this data into SMS. Print the maps for each field.

NOTE: If you previously printed field maps but made large changes to your data at the end of the season (particularly calibration changes), print the maps again with the new data to ensure your maps are accurate.

Do not erase your fields until the next harvest season.

* * *

Introduction

Ag Leader Technology will offer free operating program upgrades to the PF3000 as new capabilities are added. The new operating program is a computer file that you must load into the PF3000. The name of the file will always have a pld extension in the name of the file.

*NOTE: You must be registered to receive free upgrades from **Ag Leader Technology**. The latest upgrade file is posted on our Internet site,* http://www.agleader.com

You can install the new operating program using a memory card or by connecting a computer to the PF3000. The recommended method of installing a new operating program is by using a memory card.

The version of operating program that the monitor is using is displayed when you turn on the PF3000.

Updating from a Memory Card

Step	Action
1	Using a computer and card reader, copy the file "upgrade.pld" from the floppy disk to the memory card. Delete all other files off the memory card.
2	Insert the memory card in the monitor and turn on the monitor.
3	The monitor will detect a new operating program on the card. Press the SHOW FILES key. The monitor will display the version number of the current program and new program. Press ACCEPT key to install the new version.
4	The monitor will erase the old program and install the new program.
5	Check some of the field/load information and settings to confirm that the new program is operating correctly.

Using The Serial Port Upgrade Utility for Windows 95

If you do not have a memory card and card reader available you can install the Serial Port Upgrade Utility program on your computer. This utility program enables your computer to transfer the (upgrade.pld) file to the PF3000 using the PC interface cable.

*NOTE: The Serial Port Upgrade Utility program is available from **Ag Leader Technology** on the Precision Map 2000 V3.3 CD or by downloading it from http//www.agleader.com or calling (515)-232-5363.*

Step	Action
1	Install the PF3000 Serial Port Upgrade Utility program on your computer.
2	After program has been installed in Windows 95 or Windows 98, click Start, Programs, PF3000 Serial.
3	On the Serial Port Upgrade Utility screen, click UPGRADE THE PF3000 button and follow steps on the screen.
4	Select a COM port number (usually COM1).
5	Switch PF3000 power OFF.
6	Connect PC interface cable to PORT 1 on PF3000
7	Connect PC interface cable to the selected COM port of your PC (usually COM1).
8	Click CONNECT and switch the PF3000 power ON. "PC communication established" will be displayed on the monitor.
9	Click HERE to select the upgrade file. The upgrade.pld file can be selected from a floppy disk or a directory on the computer's hard drive.
10	The file you have selected will be displayed, if that is the correct upgrade.pld file, click HERE in the bottom box to install.
11	The program will begin to prepare the PF3000 to receive. A bar with twelve boxes will light up one-at-a-time until PF3000 is ready to receive the file.
12	When file transfer begins a new screen appears with Bytes Transferred, Time Remaining, Percent Complete and Cancel to stop upgrading. **IMPORTANT: If you press cancel while the file transfer is in progress the PF3000 will not be upgraded and the monitor will no longer have an operating program. You will have to restart the serial port upgrade process or upgrade from a memory card.**
13	When file transfer is completed "Upgrade Completed Successfully" will be displayed in lower right hand box on the screen. Click EXIT then Yes, shut off the PF3000 and disconnect PC interface cable.
14	Turn on the monitor and verify the new program has been installed and is operating correctly

***

Introduction

You can use your PF3000 monitor console with your GPS receiver in a tractor or other vehicle to record data for making maps of where:

- You plant different seed varieties or seed populations
- You apply different herbicides, pesticides, or fertilizers, or use different application rates
- tile lines, known problem areas, or other fixed field features
- To perform grid and field boundary function for soil sampling, refer to Operation Section for instruction.

Requirements

- GPS receiver
- Memory card
- Cables to install the monitor in a tractor or other vehicle
- Monitor-mounting bracket

NOTE:
Cables (to connect to a ground speed sensor or implement switch) and monitor-mounting bracket can be ordered from your ***Ag Leader Technology*** *dealer.*

You do not have to have ground speed and count area to do site verification.

Site Verification Operating Mode

To perform site verification, you must have the monitor set on the "Site Verification" operating mode. To view and change the operating mode you must press the SETUP key and then the CONSOLE key. Instructions for changing the operating mode are in the setup section under console setup.

Logging to the Card

In the "Site Verification" operating mode the following starts or stops logging to the card:

- If the area count switch is in the up position and the monitor displays "Area On" the monitor will log to the card (if you are using an implement switch, it automatically starts and stops logging to the card when the implement is raised and lowered on the ends).
- If the area count switch is in the down position and the monitor displays "Area Off" then the monitor will not log to the card.

Note: You should log only one kind of site verification data (tile lines, or location of hybrids, varieties, etc.) on a card.

Example:
Do not log tile line data and hybrid data on the same card. Instead, read the card after you have finished logging the tile line and erase the card and then log the hybrid data.

Naming Loads

You must name the load the name of the product or item you are site verifying. Your mapping program will use the loads for the map legend and assign a different color for each load when the map is made. Instructions for creating and naming fields and loads are in the setup section.

Example:
F2: WEST 80 L1: HYBRID A
L2: HYBRID B
L3: HYBRID C

Field Boundary , Gridding and Tile Lines

Refer to the Boundary and Gridding instructions in the Operations Section of this manual. To map a tile line you will need to change the monitor to Site Verification mode. Choose your field and create a name; now create and name a load for that tile line. The example shows Load 1 as 8 inch plastic tile installed in 1999 and Load 2 12 inch clay tile installed in 1963 in Field 2 named as West 80.

Example:
F2: WEST 80 L1: 8plast99
L2: 12clay63

Making a Map

If you are using a GPS receiver and memory cards, press the MENU key, SETUP, CARD, COPY TO CARD to copy summary information to the file so that maps can be made

Read this file into a program that will read the yld file format. Print the maps for each field.

* * *

Introduction

Use the navigate function to return to a specific point in a field. You must have GPS in order to use this option. You can navigate in any operating mode.

There are two ways to navigate:

1. Navigate to points in a grid file (*.PFN).
2. Navigate to a latitude and longitude that you have manually entered.

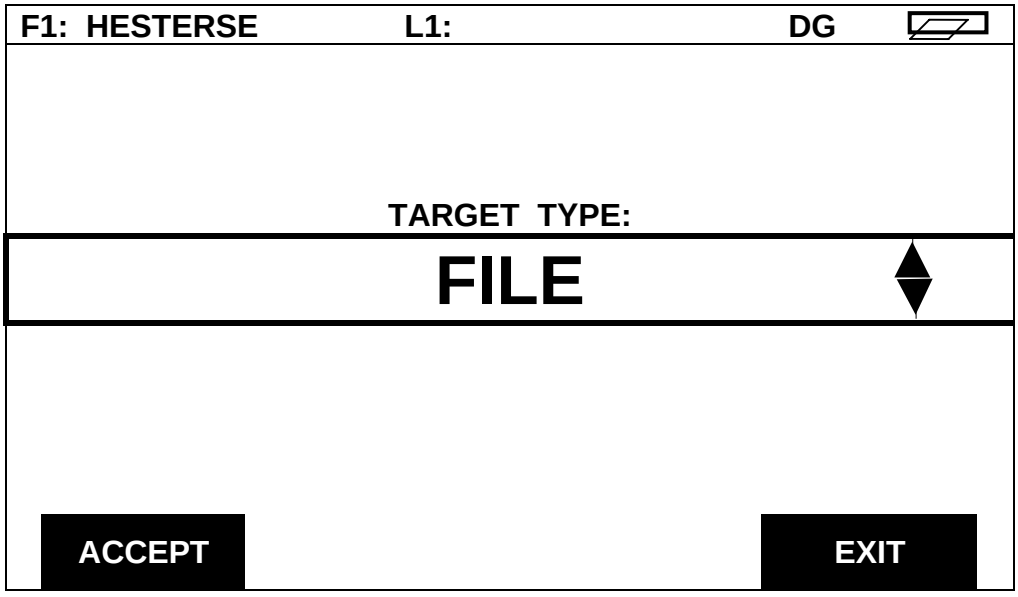
The target points will display one-at-a-time while navigating. The display map scales to the navigation files scale, or a boundary file if available, or the scale between your current location and the entered LAT/LON position. The map will not re-scale as you move closer or farther away from the target.

You may log data in this mode by moving the Acre Count Switch to the UP position. The logged data is stored in a *.YLD file and data will be stored in the active field and load.

NOTE: Navigation accuracy will depend on the quality and accuracy of the GPS receiver that you are using.

Navigate Screen

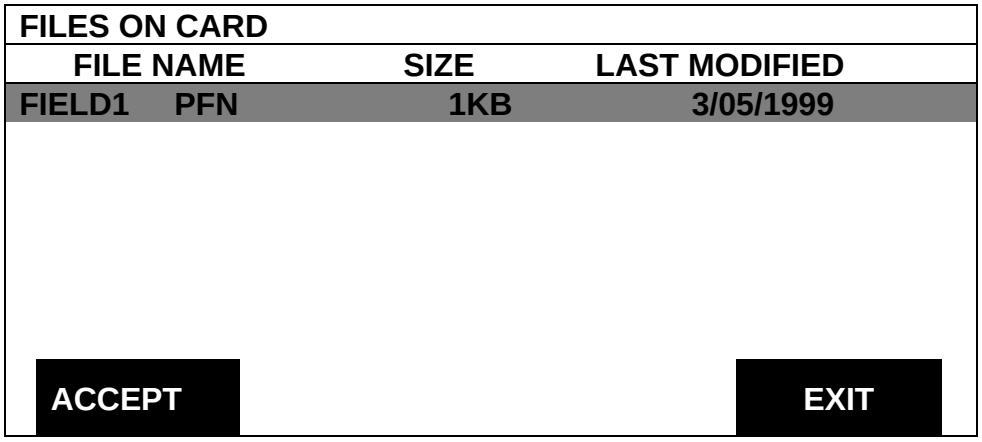
To use either navigate function, press the MENU key until OPTIONS is displayed and press OPTIONS key. Press the NAVIGATE key to display the following:



Navigate using a grid file

To navigate using a grid file complete the following:

Step	Action
1	Use the UP or DOWN ARROW keys an set target type to "FILE". Press the ACCEPT key to display *.PFN file (s) on the memory card.
2	Use the UP or DOWN ARROW key to scroll to the file you require and press ACCEPT key to display map.
3	Skip to the "Navigating to Point(s)" instructions to proceed to navigate to grid points

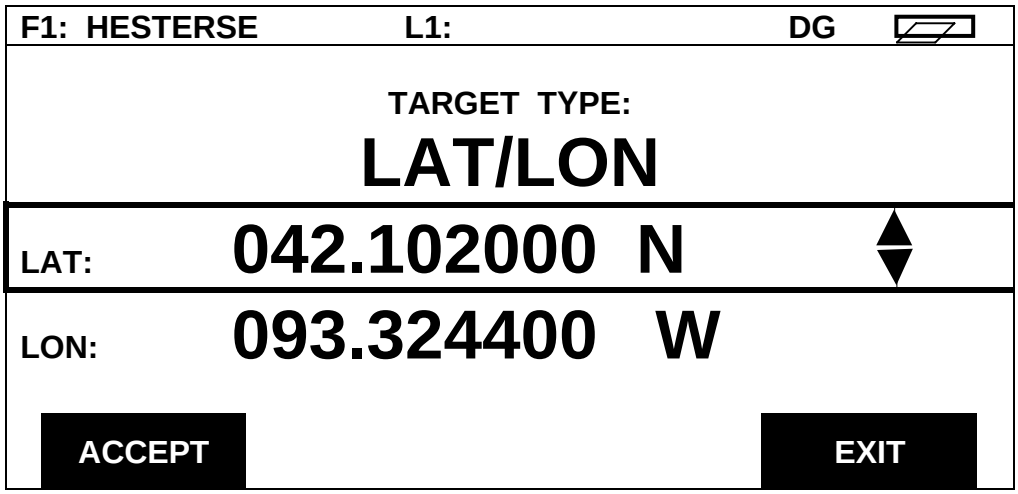


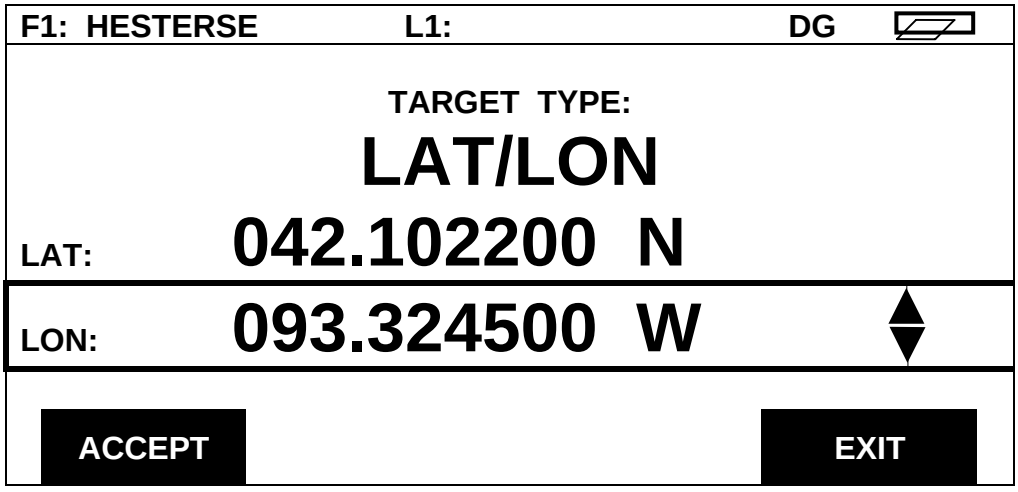
Navigate to manually entered point

The LAT/LON target should be entered when you have the antenna connected, the system is running, and you are in the general area of the target. The LAT/LON value will default to your current location, which will make it easier to input your target location.

To navigate using a manually entered LAT/LON complete the following:

Step	Action
1	Press the UP or DOWN ARROW key and set target type to LAT and LON.
2	Press key to the right of LAT line to highlight, use the UP/DOWN and LEFT/RIGHT ARROW keys to input the latitude and press ACCEPT key.
3	Press key to the right of LON line to highlight, use the UP/DOWN and LEFT/RIGHT ARROW keys to input the longitude and press ACCEPT key.
4	Press the ACCEPT key again to display map.
5	Skip to the “Navigating to Point(s)” instructions to proceed to navigate to grid points





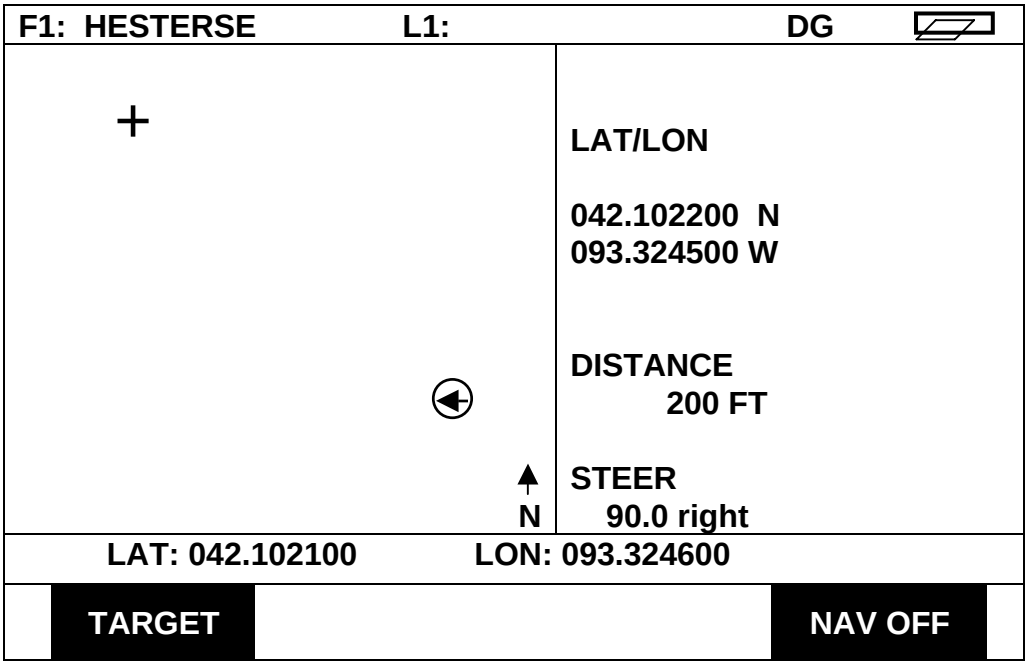
Navigating to point(s)

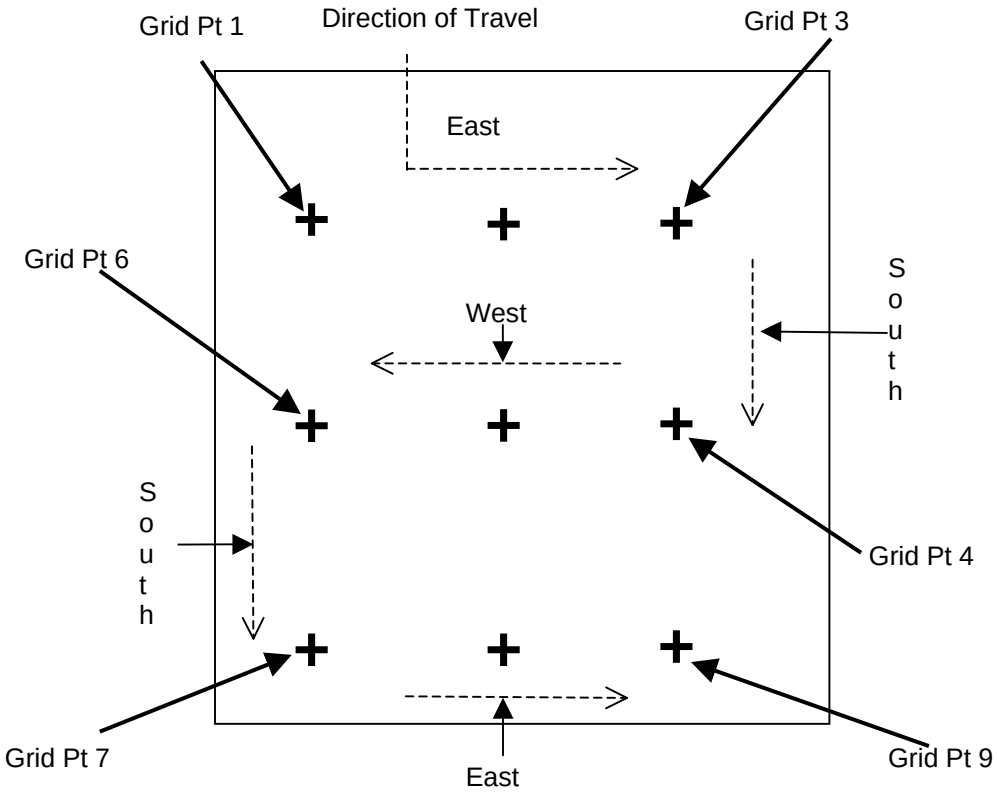
You can not change any of the display items on this screen.

The LAT/LON at the bottom of the screen is your current position and the LAT/LON display item is your target.

STEER information is displayed in degrees from your current travel direction to the target.

The target points will display one-at-a-time while navigating.





Example of navigating to grid points in order

NOTE: You can navigate to grid points in order or select any grid point at any time by pressing the UP or DOWN ARROW key.

Step	Action
1	Select the first grid point to drive to.
2	Use the DISTANCE and STEER information to accurately guide yourself to the target. When the distance gets to zero or near zero, you have navigated to the point.
3	If you are navigating from a file, press the UP or DOWN ARROW key to select the next grid point.
4	If you are manually inputting grid points, press the TARGET key and input the next LAT/LON point.
5	When you have completed navigating to each of the desired points, press NAV OFF, to return to the main screen.

***

Introduction

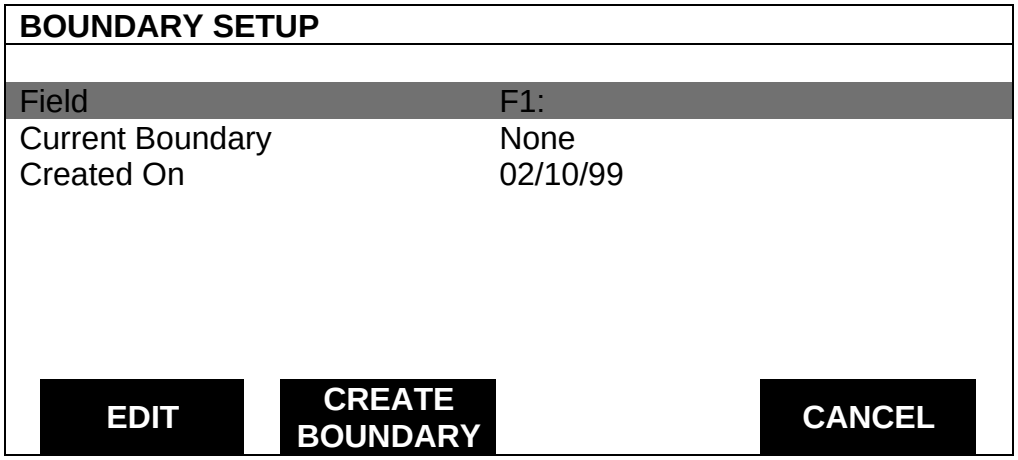
If you have a GPS receiver you can create a boundary file in any mode by driving around the outside of the field. If you create a boundary for all your fields and always keep the boundary files on your memory card, you will see the field boundary appear on the on screen map when you press SHOW MAP key. This is useful because you can show a map of where you have driven and a map of the field boundary at the same time. Boundary files are required to grid a field.

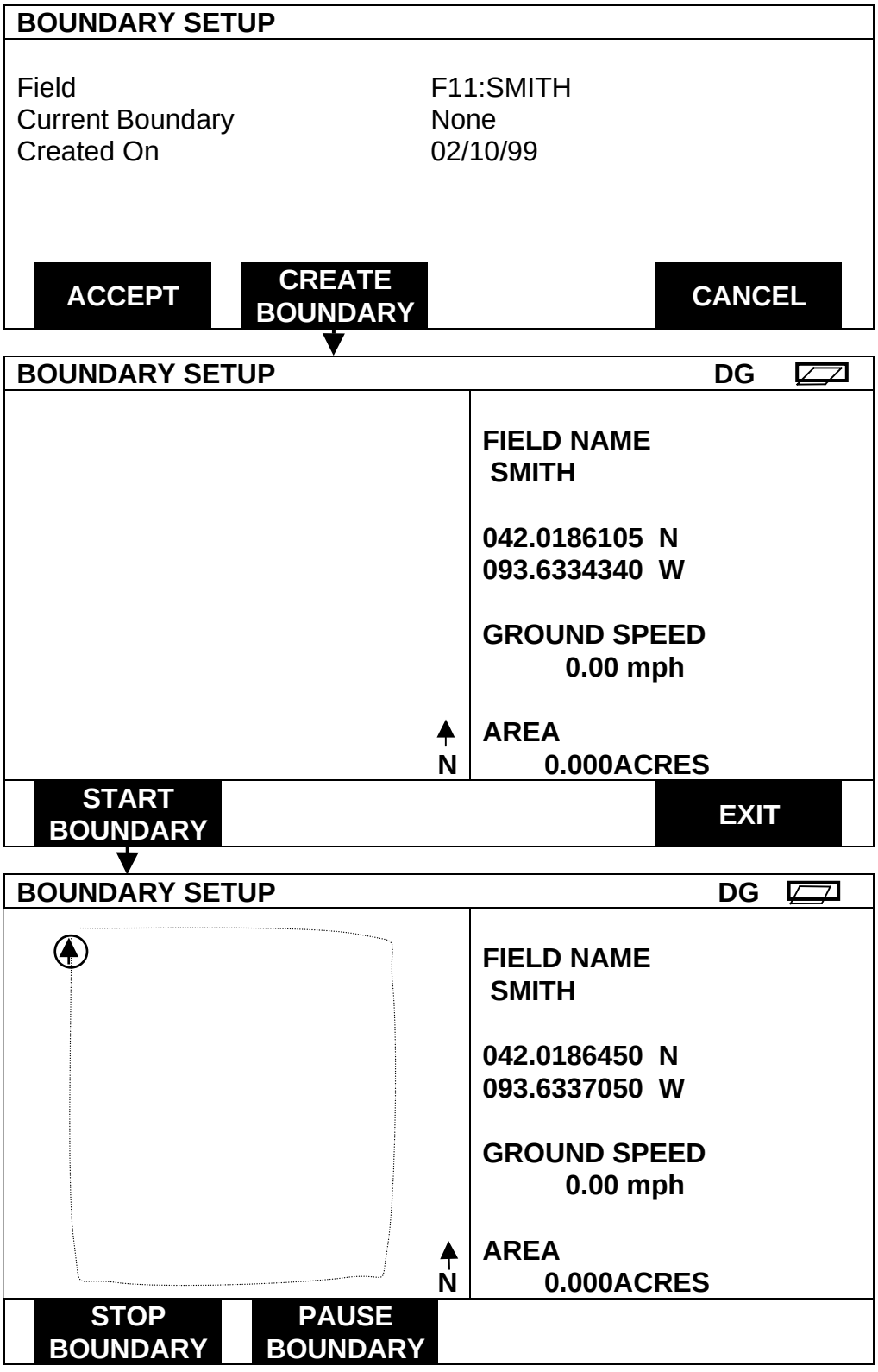
Boundary files are stored as *.BDY files on the card. Only one boundary file can be selected and displayed for a field. Sub boundaries can not be created or displayed for a field.

Boundary Setup Screen

With a card inserted into the monitor, press MENU key until OPTIONS is displayed and press BOUNDARY key. Press the EDIT key to change to a different field from the one being viewed. After selecting the field press ACCEPT key.

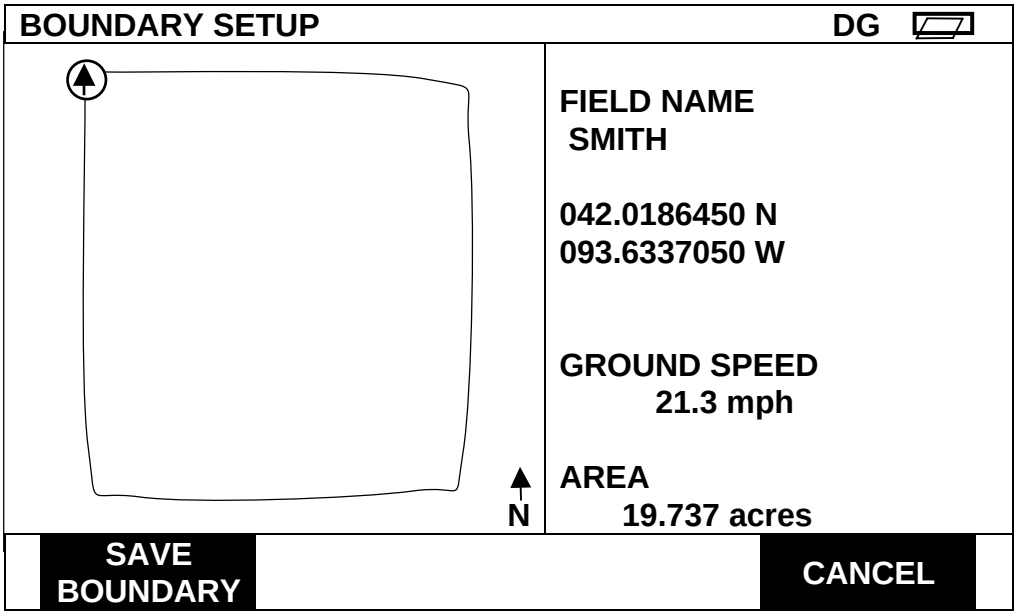
NOTE: The area count switch must be in the down position before entering boundary setup screen.




BOUNDARY SETUP
Field
F11:SMITH
Current Boundary
None
Created On
02/10/99
ACCEPT
CREATE BOUNDARY
CANCEL
BOUNDARY SETUP
DG
FIELD NAME
SMITH
042.0186105 N
093.6334340 W
GROUND SPEED
0.00 mph
N
AREA
0.000ACRES
START BOUNDARY
EXIT
BOUNDARY SETUP
DG
FIELD NAME
SMITH
042.0186450 N
093.6337050 W
GROUND SPEED
0.00 mph
N
AREA
0.000ACRES
STOP BOUNDARY
PAUSE BOUNDARY

Step	Action

1	Position the vehicle at a starting point on the outside of the field.
2	Press START BOUNDARY key and drive the outside edge of the field.
3	Use the PAUSE/CONTINUE feature to drive around an obstacle (wet spot) without including the path around the obstacle in the boundary map. When you reach the obstacle, press the PAUSE key. Drive around the obstacle and press CONTINUE key. The PF will draw in a straight line across the void area in the boundary map.
4	When you have completed driving the boundary of the field, press the STOP BOUNDARY key. Then press the SAVE BOUNDARY key. *NOTE: You should drive back to the starting point before pressing STOP BOUNDARY key. If you do not, the area calculated for the field may be inaccurate.*
5	Press EXIT key and repeat above steps for other fields. Refer to the gridding instructions to grid the field.



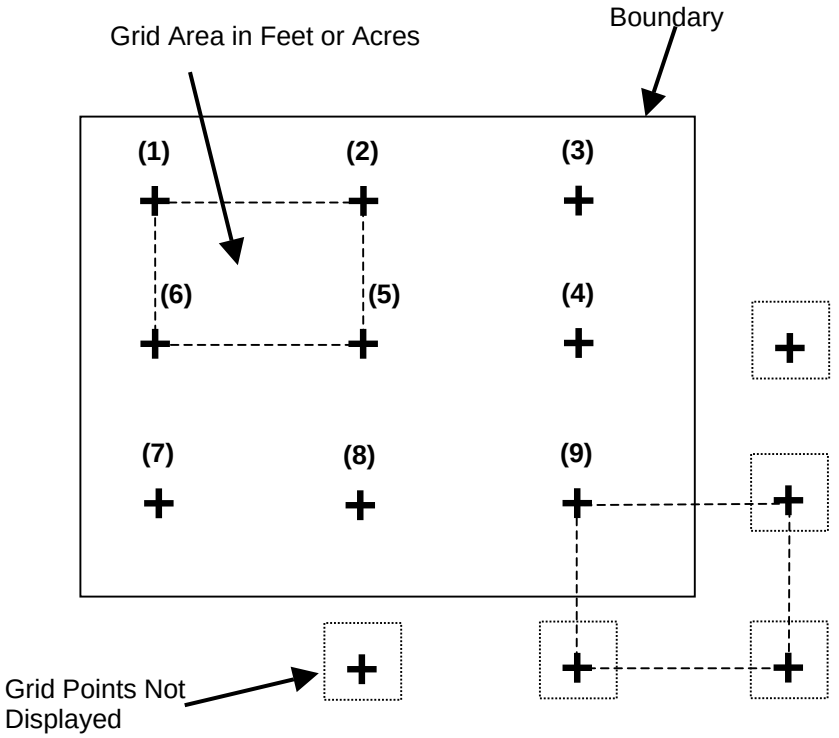
IMPORTANT: The Boundary and Grid screens are the only location where you can view the FIELD AREA information. If you come back to review information, DO NOT SAVE GRID OR BOUNDARY AGAIN. If you do this you will lose the boundary for this field. After reviewing the information, press EXIT key.

***

Introduction

To use this feature the PF3000 must be in Site Verification Mode. Before gridding, you must have a boundary file for the field. When using this feature, the entire PF3000 screen is gridded, but only the grid points inside the boundary will be displayed. The points are created with a preset name starting with Point 1 in the northwest corner of the field and ending in the southeast corner of the field. See example below. The order of points is from west to east, then south, then east to west, then south. The grid spacing may be set in either feet or acres. At this time, the grid points may only be shifted as a whole, not individually.

The PF saves the grid to a *.PFN file. At this time, the PF is the only device that can create a *.PFN file. ***Ag Leader Technology*** is working on an import/export file to convert *.PFN files to a format that can be used by mapping software companies. We are also encouraging third party mapping software companies to support this open format. Contact ***Ag Leader Technology*** for information regarding mapping programs that support *.PFN grid files.

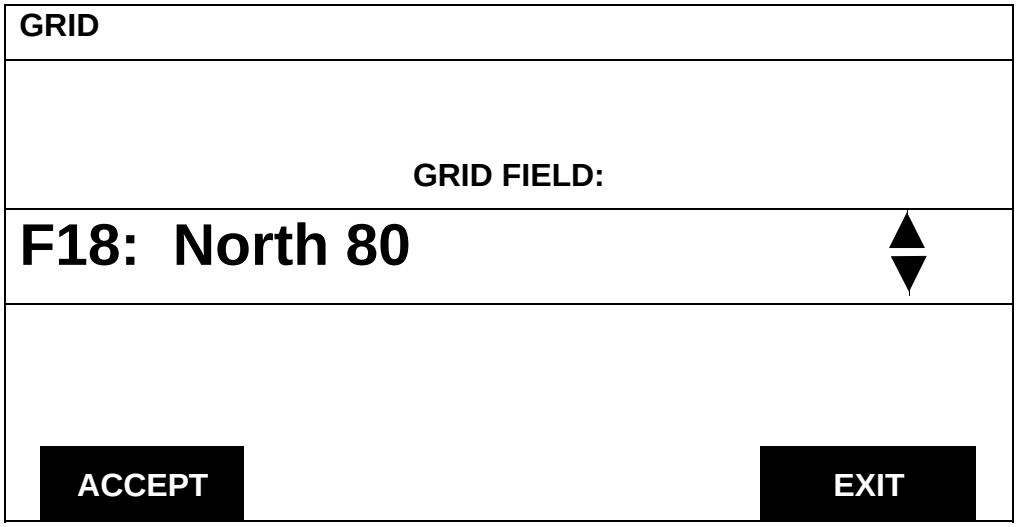


Gridding a field

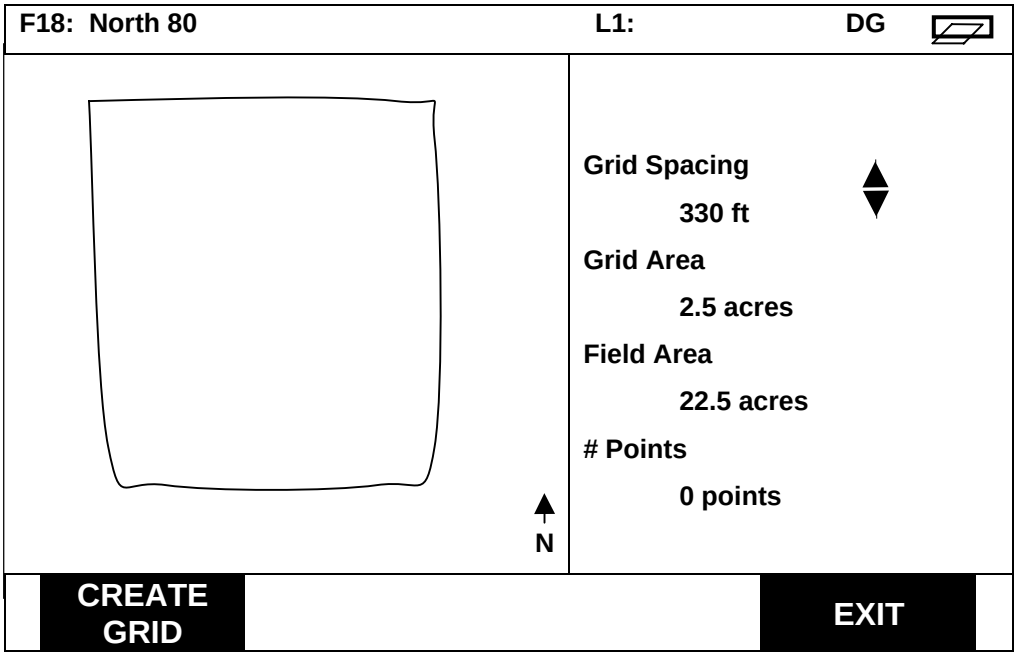
If you have not created a boundary file for a field, refer to the boundary instructions and create a boundary.

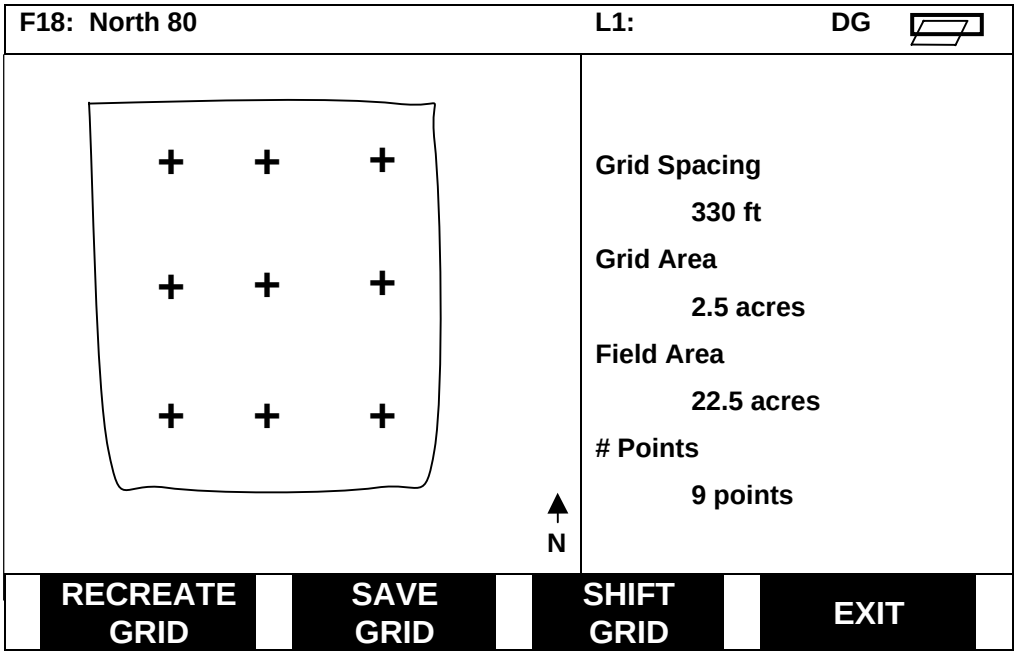
Press the MENU key until OPTIONS is displayed and press OPTIONS key. Press the LEFT or RIGHT small ARROW key until GRID is displayed and press the GRID key. A boundary must exist for a field to grid.

Step	Action
1	At the Grid Field screen, use the UP or DOWN ARROW key to move to the field you want to grid and press the ACCEPT key.

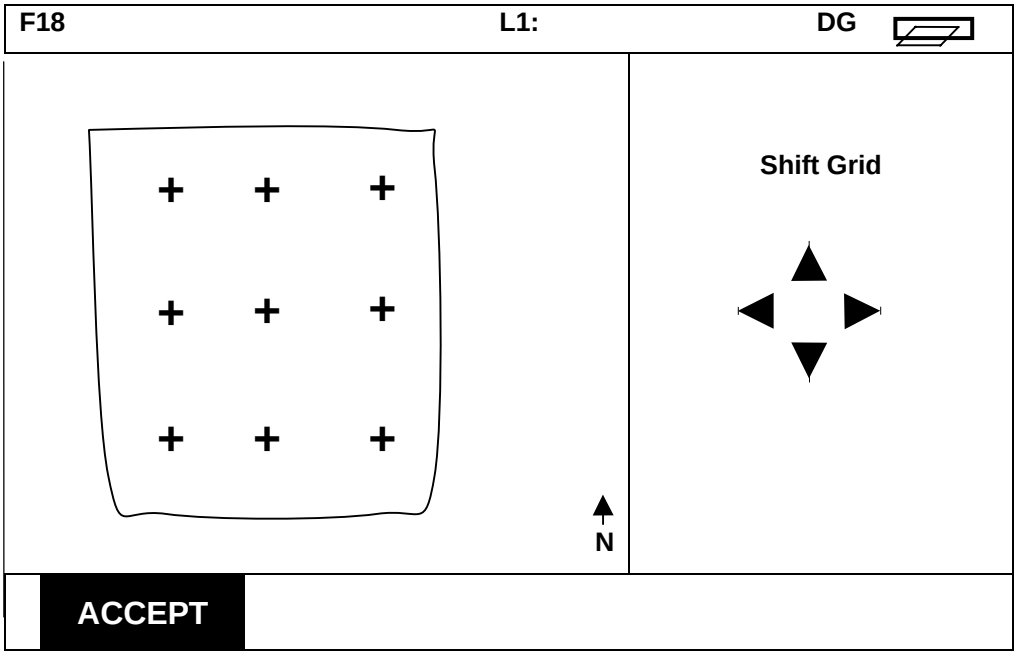


Step	Action
2	Press the UP or DOWN ARROW key to change the Grid Spacing and Grid Area. Pressing the UP or DOWN ARROW key changes both settings at the same time. Grid spacing increments are 10 ft.





Step	Action
3	After setting the grid spacing, press CREATE GRID key.
4	If you want to change the grid spacing or grid area, press the Up or DOWN ARROW key. Then press RECREATE GRID key to re-grid the field.
5	Press the SAVE GRID key to save the information to a *.PFN file.



By shifting the grid you can get points that were outside of the boundary, into the inside of the boundary. This may increase or optimize the sample location within a boundary. The grid only shifts in one pixel increments.

Step	Action
1	If you want to move an existing set of grid points, press the SHIFT GRID key. *NOTE: The shift grid screen only allows you to shift the entire grid and not individual grid points.*
2	Use the UP or DOWN, LEFT orRIGHT ARROW keys to shift the grid pattern, then press the ACCEPT key.
3	Press the SAVE GRID key to save the information to a *.PFN file.

IMPORTANT: The Boundary and Grid screens are the only place you can view the field area. If you come back to this screen after saving to review information, DO NOT SAVE GRID OR BOUNDARY AGAIN. If you do this, you will lose the boundary for this field. After reviewing the information, press EXIT key.

***

Introduction

Use the procedures on the following pages to troubleshoot, calibration, operation, and installation problems. If you cannot pinpoint the problem, call ***Ag Leader Technology*** at 515-232-5363 (fax: 515-232-3595).

If you think you have a hardware failure, call ***Ag Leader Technology*** and a service unit or replacement hardware will be shipped to you immediately.

Problem	Cause	Solution
Lbs/ac Yield Too High or Low.	Average and instantaneous yields do not agree.	See "Average and Instantaneous Yield Do Not Agree" in this section.
	You are not counting the correct amount of acres.	Display AREA on the screen of the PF3000 to show the total acres. If they are incorrect for the field of load, see "Incorrect Acre Counting" in this section.
	Weight in pounds is inaccurate.	See "Incorrect Cotton Weight (lbs)" in this section.
	The cab, distribution, or flow sensor cables connection is bad, or the flow sensor is bad.	Check cab, distribution and flow sensor cable for loose connections or cable damage.
	The Box Cal, or Voltage Cal number has changed.	To view Box Cal, and the Voltage Cal number, press MENU, SETUP and CONSOLE keys. Check each value against the Initial Calibration Sheet. None of the values should change unless the monitor was changed. If the monitor was changed and these values have not changed, all new loads must be set to a different calibration set (e.g., COTTON to COTTON 3) and calibrate the monitor for cotton weight and for that cotton type. To change the voltage or box calibration values, highlight the selection and then press EDIT to change the settings, using the up/down arrows to change the values.
Yield in Lbs/ac is Always Zero	Zero flow in lbs/hr.	Push Display Selections key, push the right/left Menu Selection keys until COTTON FLOW is displayed and push key. If the value is zero or erratic, refer to "Fan Speed is Zero or Erratic" in this section
	Acres are not being counted.	Push Display Selection key, push right/left Menu Selection key until AREA is displayed and push key. If this is incorrect for the field of load, refer to "Incorrect Acre Counting" in this section.

Problem	Cause	Solution
Zero Flow in Lbs/hr.	Fan speed is zero or erratic. *NOTE: Fan speed must be above 2500 rpm to record cotton flow.*	Push Display Selection key, push the right/left Menu Selection key until FAN SPEED is displayed and push key. Engage the fan and harvest as you watch the fan speed. The speed should be in 4000 range at max rpm and never drop close to 2500. Compare the Ag Leader displayed fan RPM with the fan speed on the machine display. Refer to "Fan Speed is Zero or Erratic" in this section.
	The C1 number (vibration calibration number) is too high and eliminating pounds of cotton.	Press MENU, CAL and WEIGHT key. Press SHOW CAL NUMBERS to display C1. C1 is defaulted at 25 and should not exceed 50. Refer to "weight accumulated when stopped" in this section to learn more about C1.
	Calibration number set to zero	Press MENU, CAL and WEIGHT key. Press SHOW CAL NUMBERS to display calibration numbers C2 and C3. If the C2 and C3 calibration numbers are set to zero, select that C value and press EDIT key. Use up/down arrow keys to set the values on the calibration sheet for that cotton type, then press ACCEPT key. Calibrate the monitor for cotton weight. The C numbers will set automatically to their correct value.
	The cab, distribution, or flow sensor cables connection is bad, or the flow sensor is bad.	Check the cab, distribution and flow sensor cable for loose connections or cable damage.
Incorrect Acre Counting.	Harvesting an area that has been picked once.	Do not harvest the same spot twice in the picking. This will add acres but not a significant amount of yield.
	Incorrect swath	See "Swath Setup" in the Setup Section and Swath Setting in the Operation Section for instructions.
	Distance is not counting correctly (mph is incorrect).	See "Incorrect Distance and MPH" in this section.

Problem	Cause	Solution
Incorrect Acre Counting. (cont)	Area calibration number is set incorrectly	Press MENU, CAL and AREA to display the AREA CAL number. This number should be set to 100 unless you have manually changed it to adjust the total acres. If it is set to a different number, it will count the percentage of acres the number represents. Use the up/down arrow keys to adjust the ACTUAL ACRES to the correct setting. Then press PERFORM CAL key to correct the AREA CAL number. *NOTE: Changing Actual Acres will change the Area Cal number to a value other than 100, but will correct the total acres for that field.*
	Distance and area counting are not activated.	Ensure the area count switch is in up position and the stop height number is set high enough so that when you lower the head, AREA ON appears in the lower right corner of the display. See "Area Count Always Off" in this section.
Average and Instantaneous Yield Do Not Agree	The area calibration is not set to 100%	The instantaneous yield does not account for the acre calibration number and thus can give a different yield from the average yield if the Area Cal number is much different from 100%. Press MENU, CAL and AREA to display Area Cal. See "Incorrect Acre Counting" in this section if the number is not 100%.
Incorrect Cotton Weight (lbs)	Incorrect actual weight entered.	Press MENU, CAL, WEIGHT, and SHOW CAL LOADS. Scroll through the calibration loads and verify that you have entered the actual weight in the correct load and ensure the actual weight is correct. Remove any loads for which you know the actual weight is incorrect. After actual weights are adjusted calibrate the monitor again. See "Calibrating Cotton Weight" in Calibration Section.

Problem	Cause	Solution
Incorrect Cotton Weight (lbs) (cont)	Stringers	Remove sensor and check for ANY cotton that could interfere with the sensors. Check around the lens covers for small pieces of trash or lint that can interfere with proper sensing. File or smooth any sharp edges below the sensor that may cause cotton to catch.
	Lens covers excessively dirty	Refer to "Poor Signal Strength" in this section.
	Calibration numbers C1, C2, C3 are set incorrectly	Refer to "Weight accumulated when stopped" section.
	Sun light on sensors	Check the chute for any holes that could allow sunlight to directly shine or reflect into the detector. Fill with RTV (silicone)
	Sensor out of alignment	Refer to "Poor Signal Strength" in this section.
	The result of changing field conditions.	Create a new calibration set. Weigh and enter one or two calibration loads for different field conditions.
Fan Speed is Zero or Erratic. *NOTE: Fan speed must be above 2500 to record cotton.*	Fan clutch not engaged.	Engage fan clutch.
	Bad connection	Check cable connections
	Speed sensor out of adjustment	Adjust sensor to be as close as possible to the sensed gear.
	Magnetic speed sensor bad	Replace magnetic speed sensor.
	Monitor set on wrong fan pulses per revolution.	Press MENU, SETUP and VEHICLE. Fan Pulses/Revolution appears at top of display. Refer to initial calibration sheet, then press EDIT and use up/down arrow keys to set pulses correctly.

Problem	Cause	Solution
AREA OFF Always Displayed *NOTE: The AREA ON must be displayed to count acres.*	Area count switch is in down position.	Area count switch must be up to make AREA ON appear on the screen.
	Stop height number is set too high.	Press MENU, CAL, STOP HGT and ENTER HEIGHT to display stop height setting. Adjust stop height so that when the head is raised AREA OFF appears on the screen.
	Header sensor installed backwards.	Refer to Installation Instruction. Ensure header sensor is installed in the correct place with the correct orientation (cable toward the rear of machine, open end of black header sensor bracket pointing towards ground).
	Header sensor set to OPTIONAL solution.	Set to STANDARD under vehicle setup. *NOTE: The Optional setting is not used at this time*.
	Cable connections are bad.	Disconnect cab and distribution cables and inspect pins for corrosion. Inspect the cables for cuts or pinches. Reconnect cables and check area.
	Header sensor bad.	Check resistance of the header sensor between pins, A, B, and C on header sensor cable. Refer to Reference Section for correct resistance readings.
Monitor Chirps While Harvesting	Monitor is set on a partial swath.	Display SWATH on the screen. Use the up/down arrow keys to adjust to a full swath.
		When you have Fan Speed but are not recording area.
		If Continuous Marks was left on.
Incorrect Distance and MPH	Calibration for distance is incorrect or has not been done.	Refer to "Calibrating Distance" in Calibration Section. After you calibrate for distance, the monitor automatically corrects any incorrect distance and acres for previously harvested loads. *NOTE: You must calibrate the secondary speed sensor setting if GPS is the primary speed sensor.*
	Monitor is set on the incorrect ground-speed setting.	Press MENU, SETUP, and VEHICLE to display Primary Speed Sensor. Use up/down arrow keys to correct the speed setting. If loads were set to the incorrect setting, change the loads to correct speed setting and the monitor will automatically correct acres and distance.

Problem	Cause	Solution
Incorrect Distance and MPH (cont.)	Distance and acre counting is not activated because AREA OFF is displayed.	Move Area count switch to up position and the stop height number is set high enough so that when the head is lowered, AREA OFF changes to AREA ON. See "AREA OFF Always Displayed", in this section.
	Ground Speed Sensor has no signal or signal is erratic.	Refer to Installation Instructions to ensure that the machine ground speed sensor is installed correctly. Check machine ground speed readout while driving. Disconnect the ground speed cable from the ground speed sensor and check read out again. If readout is still erratic or zero, replace the ground speed sensor. Inspect the distribution and ground speed cable connections. Inspect the monitor cables for signs of pinching or cutting. Use a volt-ohm meter to check for shorts and continuity in the ground speed cable, distribution cable and cab cable. Refer to the Reference Section for readings. Determine that the ground speed sensor and fan speed cables have not been interchanged.
Monitor Has No Display.	Cable connecting to monitor is disconnected or damaged.	Remove top nine screws securing the front panel and open. Inspect display cable for cuts or other damage. If cable is damaged, call ***Ag Leader Technology*** and send the monitor in for repair.
	An external device, such as a GPS receiver or datalogger is improperly connected to monitor.	Disconnect external devices and turn the monitor ON. If the monitor screen turns on correctly, make sure that he correct cable is used to connect the external device to the monitor. See "Using a GPS Receiver" or "Logging Map Data to a Datalogger" in the Operation Section.
	One of the PF3000 sensor cables has a bad connection	Disconnect the PF3000 cables from the distribution cable, one at a time, leaving the power cable connected. After disconnecting each cable, look at the display and see whether it has turned on.

Problem	Cause	Solution
No GPS Signal. *NOTE: "D" or "G" not appearing on the top right hand corner of PF3000 screen.*	The GPS receiver is not sending a signal to the monitor.	Some receivers require 5 to 15 minutes to acquire a signal after turning on the monitor. Inspect the cable from the GPS receiver to the antenna for damage and proper connection.
	Cable used to connect he GPS receiver to the monitor is incorrect.	If a cable designed for the PF3000 was not provided with the GPS receiver cable, obtain a GPS null modem cable from ***Ag Leader Technology***. **IMPORTANT: Do NOT use a null modem cable from a local store because it may be wired incorrectly and could damage the monitor or reset the memory in the GPS receiver.**
	GPS receiver cable connected to the wrong port on PF3000.	Ensure the GPS receiver cable is installed to Port 1 on PF3000.
No Marks on Map When using External Marker	GPS Check Sum setting need to be set to OFF.	*NOTE: For all **Ag Leader Technology** receivers (GPS 2000/21000, Add-On GPS 3000/3100) PGS 4100 and Trimble 114, 120, 122,132 receivers the GPS Check Sum should be set to ON.* For GPS receivers not listed in the above NOTE, the GPS Check Sum should be set to ON. If you can not get a "D" and "G", change this setting to OFF by pressing MENU, SETUP and CONSOLE. Use the up/down arrow keys to mark GPS Check Sum. Press EDIT and change the setting. Press ACCEPT and then EXIT.
	The Field Marker setting in the monitor is set to INTERNAL.	Press MENU, SETUP and CONSOLE keys. Scroll down to Field Marker Input and press EDIT. Use up/down arrow keys to change to EXTERNAL and press ACCEPT, then EXIT.
	Field Marker is plugged into the wrong port	Plug Field Marker into Port 1.

Problem	Cause	Solution
Monitor Does not Find Correct Number of Flow Sensors on Initial Power Up.	Cables not connected	Check all cable connections.
	System checks out OK initially but monitor cannot find the sensors later.	Try cycling the power to the monitor.
	Flow sensor cable damage	Check all cables for damage.
	Problem in wiring	Trade flow sensor with another. If the problem stays in the same location, the problem is in the wiring.
	Damaged flow sensor	Trade flow sensor with another. If the problem moves with the flow sensor it is a damaged flow sensor.
	The machine setup is configured for a different machine	Press Menu, SETUP, VEHICLE and EDIT to change the machine make as well as to change the configuration of the number of sensors the monitor should locate.
Weight Accumulating When Stopped	Stringer	Remove sensor and check for ANY cotton that could interfere with the sensors. Check around the lens covers for small pieces of trash or lint that can interfere with proper sensing. File or smooth any sharp edges below the sensor that may cause cotton to catch.
	Calibration C1 number may need adjusting or excessive vibration	C1 is for Vibration accumulation . It's default is at 25 and should not be adjusted higher than 50. If chutes have excessive vibration, it may be necessary to stabilize them to prevent additional error. Excessive accumulation is defined as collecting one lb of cotton every several seconds. It is desired to have the system collect no more than one lb every 15-20 seconds or more. The collecting of weight every 15 to 25 seconds <u>WILL NOT</u> introduce significant error as it will be calibrated out. It is important to change the C1 number for the specific calibration set before you calibrate. Changing C1 in post calibration will not correct any previous loads harvested under the "old" C1 number.

Problem	Cause	Solution
Poor Signal Strength	Lens covers excessively dirty	Check signal strength. Remove sensors and check for build up or damage to the lens cover. If damaged replace the lens covers.
	Sensor out of alignment	After cleaning lenses and checking for damage: Check the signal strength. Press the Menu key, DIAG , and Signal Strength. After a new install the signal strengths should be 8000 or more. After operation they may drop to the 1000 to 3000 range. If the signal strength falls below 500, refer to the Installation Instructions to ensure proper alignment. Make the proper changes to align the sensors. If this does not improve the signal strength, call Ag Leader Technical Support.
	Telescoping chute is blocking sensor	Raise header. If any row shows near 0 signal strength, remove sensor and determine if the top portion of the bottom telescoping chute, of that row, is blocking the sensors. This is more likely to occur to Deere chutes. Cut the appropriate amount off of the chute. DO NOT cut more than 3 inches.

Section Contents

* * *

Calculating Lint Weight

Lint Weight = Seed Cotton Weight x Lint Percentage

Memory Card Requirements

The following characteristics are required of memory cards you intend to use with the monitor:

Card Type	Sizes	Specifications (all cards)
SANDISK ATA Flash card	2 to 32 megabytes (max)	Type 1 or 2 PCMCIA 68-pin connection 200 ns speed rating

IMPORTANT: ATA Flash cards are the only brand of ATA Flash cards that are guaranteed to work in the PF3000.

*Note: 32 MB SANDISK ATA Flash cards are available from your **Ag Leader Technology** dealer.*

GPS Receiver

Almost all GPS receivers made for agriculture applications are compatible with the PF3000 and thus meet the requirements listed below. ***Ag Leader Technology*** sells a Coast Guard compatible receiver, the GPS 3000 and also a machined Coast Guard and satellite differential compatible receiver, the GPS3100 and GSP 4100 with satellite differential and WAAS capability. The GPS receiver must be configured to send GPS data according to the following parameters:

- NMEA standard data output protocol
- 4800-X-8-1 communications protocol
- GGA data string—the only data string needed
- Send all messages once per second.

NOTE: If you use the Ag Leader GPS 2000/2100, Add-On GPS 3000/3100, Trimble AgGPS 120, 122, 132 or other high accuracy receiver that outputs the VTG data string, you can obtain ground speed readings from the GPS signal.

Radar Guns

Below are listed compatible radar guns:

Dickey-john
Magnavox
MicroTrak sonar gun
Case IH Magnum
John Deere

* * *

System Wiring

Refer to the last page to see a table of the pin-outs of the picker cables for the PF3000.

Pin-Out of Port 1

Pin	Signal
1	**Regulated 5 volts** (limit current draw to 50 ma)
2	**RS-232 Transmit** (from monitor)
3	**RS-232 Receive** (into monitor)
4	**12 Volt Power** (switched, reverse polarity protected, limit current draw to 1 amp) The PF3000 must be ON for current to flow.
5	**RS-232 Ground**
6	**Ground**
7	**Second RS-232 Transmit** (not in use)
8	**Second RS-232 Receive** (not in use)
9	**Auxiliary A/D Input** (keep input voltage between ground and 5 volts)

Checking Header Sensor Connections

To check the header sensor for electrical connection, use an ohmmeter and check for the following resistance's:

Check at:	Pins	Ohms
Cab Cable (rectangular 25 pin conn.)	11 + 18	100-200
Cab Cable (rectangular 25 pin conn.)	10 + 18	700-1000
Cab Cable (rectangular 25 pin conn.)	10 + 11	1000
Distribution Cable (large round 24 pin conn.)	10 + 16	100-200
Distribution Cable (large round 24 pin conn.)	9 + 16	700-1000
Distribution Cable (large round 24 pin conn.)	9 + 10	1000
Header Sensor Cable (rectangular 3 pin conn.)	A + B	100-200
Header Sensor Cable (rectangular 3 pin conn.)	B + C	700-1000
Header Sensor Cable (rectangular 3 pin conn.)	A + C	1000

* * *

Signal	PF3000 Rectangular 25 pin	Cab / Distrib. Round 24 pin	Power Rectangular 3 pin	Ground Spd Rectangular 2-pin	Fan Spd Rectangular 2 pin	Flow Round 4 pin	Header Rectangular 3 pin	Radar 4-pin
Power (14V)(US)	1	1	A					
RS(485C)	2	-						
RS(485A)	3	2				4		
Moist2 (-)	4	3						
Temp	5	4						
SP1	6	5			A			
SP2	7	6		A				
A5V	8	7						
QMinus	9	8						
GND	10	9					C	1
Vcc (+5V)	11	10					A	
D12V	12	11						3
Power (14V)(S)	13	12				1		
RS(485B)	14	13				3		
RS(485D)	15	-						
Moist1 (+)	16	14						
Field Marker	17	15						
HDR	18	16					B	
SP3	19	17			B			
SP4	20	18		B				2
QPlus	21	19						
AGND	22	20						
GND	23	21						
Vcc (+5V)	24	22						
GND	25	23	C			2		
Drain	shell	24						

Parts List for PF3000 Console Kit		
Part Name/Description	**Part No.**	**Quantity**
PF3000 Console Kit		1
PF3000 Electronic Unit	3000110	1
CD –ROM – Ag Leader Software Suite	2001601	1
Power Supply Kit – Ag Leader	2000462-1	1
PC Cable Kit	2000492-1	1
Manual – Generic PF3000 Cotton	3000112-C	1

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W

Z

PF3000 Cotton Yield Monitor Owners Registration

The PF3000 Cotton Yield Monitor is an upgradable product. You will not receive free operating program upgrades unless you send in this registration form.

Return this sheet in the enclosed postage-paid envelope or by fax.
515-232-3595 - fax

Name: _____

Street Address: _____

City, State, ZIP: _____

Phone # (including area code): _____

Mobile Phone #: _____ Fax #: _____

Email Address:_____

Ag Leader Dealer:_____

Dealer Address:_____

Cotton Picker Make: _____Cotton Picker Serial (Model and Rows): _____

PF3000 Serial #: _____# Rows Monitored (2, 4, 5, 6): _____