



The Sprayer

Operator's Manual

CONTROLLER HC 8500/9500

Instruction book - SW 6.X

67023803 - Version 1.10

US - 06.2015

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Welcome letter



Dear Owner,

Thank you for purchasing a HARDI® product and welcome to the ever-increasing family of HARDI® sprayer owners.

Our sprayers and accessories are a familiar sight on North American farms. We believe that this results from growers becoming increasingly conscious of crop protection input costs and the vital need for cost effective spray application equipment.

Please take the time to thoroughly read the Operator's Manual before using your equipment. You will find many helpful hints as well as important safety and operation information.

Some of the features on your HARDI® controller were suggested by growers. There is no substitute for "on farm" experience and we invite your comments and suggestions. If any portion of this instruction book remains unclear after reading it, contact your HARDI® dealer or service personnel for further explanation before using the equipment.

For Product, Service or Warranty Information:

- Please contact your local HARDI® dealer.

To contact HARDI® directly:

- Please use the HARDI® Customer Service number: 1-866-770-7063

- Or send your email to CUSTSERV@hardi-us.com

HARDI® NORTH AMERICA INC.

1500 West 76th St.
Davenport, Iowa 52806
Phone: (563) 386-1730
Fax: (563) 386-1280

Visit us online at: www.hardi-us.com

Sincerely,

A handwritten signature in black ink, appearing to read "Dale M. Szuminski". The signature is fluid and cursive, written over a white background.

Dale M. Szuminski
President

Operator Safety

Symbols

These symbols are used through the book to designate where the reader needs to pay extra attention.



This symbol means DANGER. Be very alert as your safety is involved!



This symbol means WARNING. Be alert as your safety can be involved!



This symbol means ATTENTION. This guides to better, easier and safer operation of your sprayer!



This symbol means NOTE.

Precautions

Note the following recommended precautions and safe operating practices before using the sprayer.

General info



Read and understand this instruction book before using the equipment. It is equally important that other operators of this equipment read and understand this book.



If any portion of this instruction book remains unclear after reading it, contact your HARDI® dealer for further explanation before using the equipment.



Keep children away from the equipment.



Press the keys with the underside of your finger. Avoid using your fingernail.



Local law may demand that the operator is certified to use spray equipment. Adhere to the law.



Tractor driver's seat is the intended working place during operation.

Service



Test with clean water prior to filling with chemicals. Rinse and wash equipment after use and before servicing.



Never service or repair the equipment while it is operating. Always replace all safety devices or shields immediately after servicing.



Turn electrical power off before connecting and disconnecting the display and transducers, servicing or using a battery charger.



If an arc welder is used on the equipment or anything connected to the equipment, disconnect power leads before welding. Remove all flammable or explosive material from the area.



Do not use a high pressure cleaner to clean the electronic components.

2 - Safety Notes

Display

General info

The display is a full-featured, year-round hub of any precision farming operation. A full-color, high-brightness, high-resolution touchscreen display is easy to read and offers powerful, year-round precision farming tools. Built-in manual guidance, full-screen mapping, planter and application control, yield monitoring, real-time data logging and automated steering make up the core functionality of the display.



ATTENTION! This manual only describes functions relevant for spray use with a HARDI® sprayer.



WARNING! Read manual completely before operating display. Understand and follow all operating and safety instructions for proper use of this display. Failure to use display properly could result in an impairment of the safety features of this product.

System Uses

- Manual Guidance
- AutoTerrain/AutoHeight/AutoSlant UC5
- ParaDyme™ automated steering
- Video Camera Inputs
- Mapping tillage operations
- Mapping and logging product application
- Mapping of all field boundaries, sub-boundaries, waterways and terraces
- Grain yield monitoring
- Variety logging
- Granular and liquid fertilizer application
- Liquid spray system control
- NH3 application control
- Application control of multiple bin spinner spreaders

System Features

- Sunlight-readable screen
- Rugged sealed enclosure
- Compatible with most NMEA GPS receivers
- HARDI® ISOBUS product control using industry standard CAN-bus interface
- Adjustable volume control
- Perspective 3D View Map
- Report preview
- Automatic field selection
- Automated module firmware upgrade
- Advanced GPS Diagnostics
- USB media slot
- 28-pin plug for JobCom connection.
- 28-pin auxiliary connection
- HARDI® mounting bracket

3 - Description

Display Hardware

Rear side

A. USB media slot

Used for data transfer in and out of the display.

B. Speaker

The built-in speaker is used for audible warnings. The volume can be adjusted through the display setup routine.

C. RAM mount

D. Power/Reset switch

The Power/Reset switch is used for turning the display on and off in installations where the system is connected to a continuous power supply.

If the display ever stops responding, the manual power switch may be held in for five seconds to restart the system. Only do this as a last resort, data loss could occur during times of improper shutdown.

E. 28-pin auxiliary connection

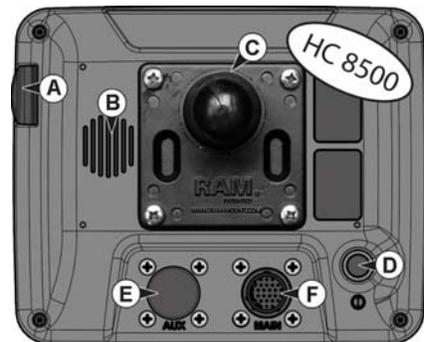
Used for camera input.

F. 28-pin plug

The 28-Pin round display connector contains CAN, RS-232 serial, and system power and ground connections. It is compatible with some certain other displays. Ethernet for ParaDyme automated steering is included in connection.

G. VGA video output (not HC 8500)

Can be used to connect to a video projector for demonstration purposes.



Front side

A. USB media slot

Used for data transfer in and out of the display.

H. Light sensitivity sensor (not HC 8500)

Used to automatically dim the display during nighttime or low-light situations.

I. Power light (not HC 8500)

The power light displays one of three states:

Green = ON

Pulses amber = Standby Mode

Solid amber = Running on battery power



USB Flash Drive

The display utilizes a USB Flash Drive slot that you can use to save and transfer your data in and out of the display.

Color Touch Screen

The display features a color touch screen display. The touch screen allows easy and intuitive navigation through the screens on the display without the need for any external keypad or mouse devices. Here are a few key things to remember if you are new to using a touch screen device:

- Do not use any sharp objects for running the touch screen device, this could result in damage to the display. Using the tip of a finger is the recommended method of operating the display touch screen.
 - Do not use any harsh chemicals to clean the touch screen. Using a damp soft cloth or an anti-static wipe made specifically for cleaning computer displays is the correct way to clean the screen and the enclosure.
 - The touch screen requires only a gentle touch of about half-second in duration to operate correctly. A common mistake is to try to navigate too quickly through the system using firm taps instead of gentle presses.
-

ISOBUS Technology

The ISOBUS system uses Controller Area Network (CAN) technology. CAN systems are comprised of individual modules, each with their own high speed processor, connected through a high-speed communications cable.

CAN has many benefits:

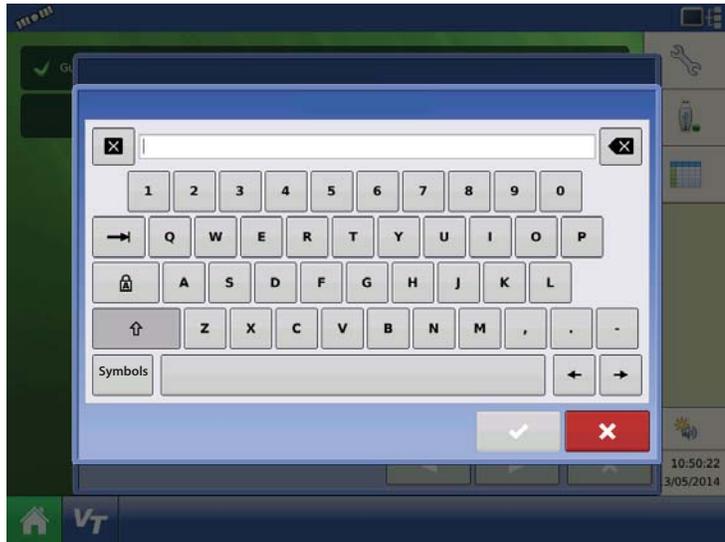
- Greater ability to configure and expand the system.
- Compatibility.
- Simpler installations with less wiring.
- Increased system dependability.

3 - Description

Screen Icon Conventions

The following control buttons are made available for entering names and calibration values into the system.

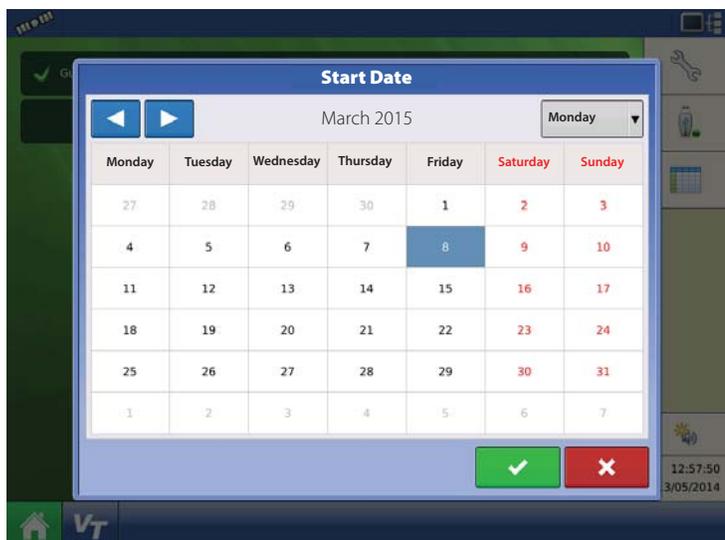
An on-screen Keyboard is made available when appropriate for use during all setup processes. Press the  button to access the on-screen text entry screen.



An on-screen Numeric Keypad is made available for changing configuration settings and calibration numbers. Press the  button to access the on-screen numeric entry screen.



An on-screen calendar is made available for changing dates. Press the  button to access the calendar screen.



Map Screen

Work Screen

The appearance of the Map screen varies, depending upon which operation you are performing, and your specific operating configuration.

- A. Status Bar
- B. On-screen Light bar
- C. Mapping Toolbox
- D. Mapping Function Tabs
- E. Product Control Toolbox
- F. Product Tabs
- G. Function Buttons
- H. Task Bar
- I. Main Screen Buttons
- J. Equipment Tab
- K. Virtual Terminal Button
- L. AutoTerrain/AutoHeight/AutoSlant Settings



The task bar (H) displays buttons relating to various functions of the display. These buttons and status indicators include:

- Home
- Mapping
- AutoSectionControl (Autoswath)
- Logging

These buttons are shown in front of a green background when you are at that screen; otherwise they are shown in front of a blue background.

Equipment Tabs

Different Display Items can be selected by pressing the Equipment tabs (J).

Home Button



Pressing the Home button takes you to the Home screen.

Map Button

Pressing the Map button takes you to the Map screen. Pressing it more than once cycles the Map screen to zoom in and out.



ZOOM DETAILS



ZOOM TO EXTENT



PERSPECTIVE VIEW



NOTE! The Perspective View is only available when guidance is active.

3 - Description

Video Button



Pressing this button takes you to the video screen. Pressing this button repeatedly cycles through the video inputs.



NOTE! For more information on the Video screen, see "Video" on page 3.11.

AutoSwath Button

Pressing this button turns the AutoSwath feature on and off.



AutoSwath - ON



AutoSwath - OFF

AutoTerrain/AutoHeight/AutoSlant button

The AutoTerrain/AutoHeight/AutoSlant Engage button enables boom height control.



AutoTerrain/AutoHeight/AutoSlant Engage - Enabled (Automatic Mode)

- When enabled the display beeps three times.



AutoTerrain/AutoHeight/AutoSlant Engage - Disabled (Manual Mode)

- When you disable Automatic Mode on any part of the boom and the display switches to Manual Mode, this button turns grey and the display beeps twice.
- If less than the full boom remains in Manual Mode, the display will continue beeping twice every three seconds.

AutoSteer Button

The Engage icon status of the AutoSteer system. The appearance of this icon displays the following:



AutoSteer is ON and ready to use.



AutoSteer is OFF but ready to engage.



AutoSteer is OFF and unable to engage.



NOTE! For more information, see "General info" on page 6.1.

Master Switch Status

This bar shows that the Master Switch is active.



Master Switch - ON (GREEN)



Master Switch - OFF (RED)

GPS Signal Indicator

The GPS button in the upper left-hand corner of the Map screen, displays the following colors:



Differential GPS

Green if you are receiving a differential GPS signal



GPS - No differential

Yellow if you are receiving GPS, but no differential signal



No GPS

Grey if you are receiving no GPS signal.

Flex Mode icon

Appears for ParaDymes using Flex Mode. Flex mode provides continuity of position solution to maintain automated steering by seamless flexing (transitioning) to a lower accuracy mode when a higher accuracy mode is lost; such as loss of the RTK radio link.



Flex Mode - ON (GREEN)



Flex Mode - Exceeded (YELLOW)

Device Information button

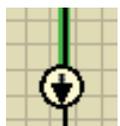


Opens screens that display Device Information, Memory, Display, and display diagnostics.



NOTE! For more information, See "Device Information" on page 7.1.

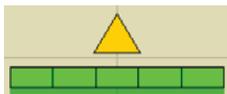
Vehicle Icons



Vehicle Icon - Zoom to Extent

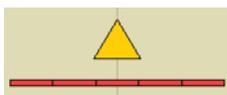
The Vehicle Icon is shown by an arrow inside a circle if the Map screen is viewed in Zoom to Extent.

The vehicle appears as a gold-colored triangle if the Map screen is viewed in Zoom Detail. The appearance of the zoomed-in icon changes depending upon the data being logged in the field.



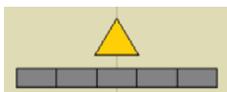
Vehicle Icon - Spraying (with all sections ON)

When the vehicle is logging data from the implement split into sections, then these sections appear in the implement icon.



Vehicle Icon - Not Spraying. Sections OFF by Switch (with all sections OFF)

The vehicle is not logging data, when the implement icon appears as a red bar.



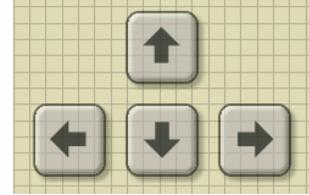
Vehicle Icon - Not Spraying. Sections OFF by AutoSectionControl (AutoSwath) (with all sections OFF)

The vehicle is not logging data, when the implement icon appears as a grey bar.

3 - Description

Map Screen

Press the grid area of the Map screen, and four arrow icons appear at the bottom right of the Map screen. Pressing these arrow icons will move the center of the Map screen in the direction of the arrow button.



The Zoom Tool icons, which resemble a magnifying glass, are shown at the right-hand side of the Map screen.

- Pressing the zoom tool with the plus sign increases the scale of the Map screen.
- Pressing the zoom tool with the minus sign decreases the scale of the Map screen.
- Pressing the zoom tool with the four arrows underneath re-centers the Map screen and brings its scale back to the default.



The escape button, visible when in full screen mode.

- Pressing the button will escape from full screen mode.

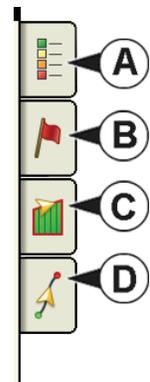


Mapping Toolbox

At the upper left hand side of the Map screen is the Mapping Toolbox. Press any of the four buttons on the toolbox and it expands. The toolbox consists of the following buttons:

- Map Legend
- Map Markers
- Boundary
- Guidance

The Map Legend, Map Markers and Boundary buttons are explained in the rest of this chapter. The Guidance button is described in "General info" on page 6.1.



Map Legend tab

Press the Map Legend button at the top of the Mapping Toolbox, and the Legend appears, either for Rate or Coverage.

Map Legend - Rate



Map Legend - Coverage



Map Options

Press the Legend Setup  tool, and the Legend Select screen appears. Here you can adjust Legend Settings, clear the map.

- Clear Map

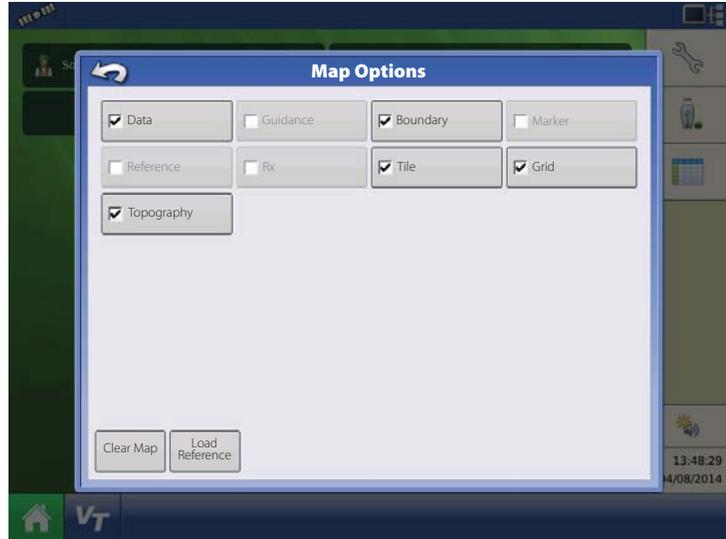
Permanently removes on-screen map from the active field operation, but the log data will still be exported to the USB drive.



WARNING! Once you clear the map, this information cannot be retrieved.

- Load Reference

Loads a list of maps of previous operations performed in that field. For each operation, you can view As-Applied or Coverage attributes; and Varieties if you are performing a Planting operation.



Markers tab

Markers are a collection of point objects that are available on the Map Markers tab of the Mapping Toolbox. Map markers allow you to map points on the go in order to identify specific features within a field. Press an individual marker to indicate a Map Marker on the Map screen.

If all of the Markers that you created are not immediately visible in this screen, use the Cycle Markers button to view more that you created.

Cycle Markers 



Field tab

Field tab allows the user to setup boundaries, headlands, and topography.



3 - Description

Boundary tab

Press the Boundary button on the Field tab to access the Boundary Options screen.

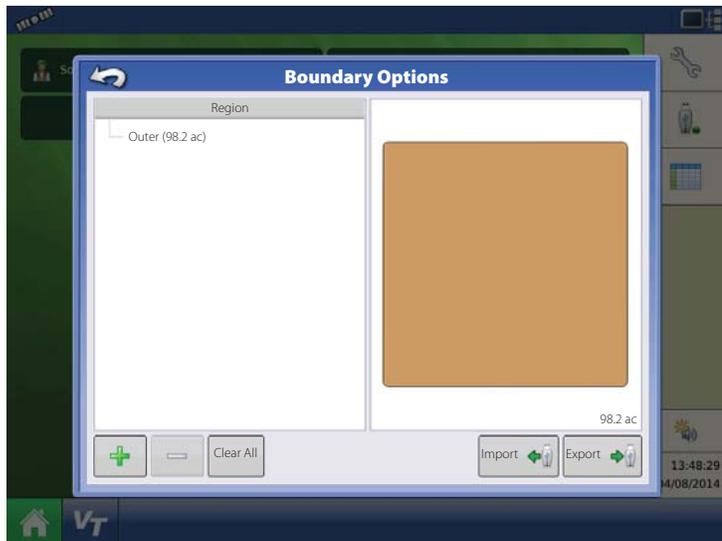


On the Boundary Options screen, you can Import Boundaries, Export Boundaries, and Clear All Boundaries.

- Pressing  on the Boundary Options screen opens the Boundary Settings screen.
- Highlighting an existing region and pressing  on deletes that region.
- Use Import and Export buttons to move regions to and from USB drive.
- Press Clear All to permanently delete all Boundary information for that field.



WARNING! Once you clear this information, it cannot be retrieved.



Video

 NOTE! Video is only available when enabled in the Console Setup menu - see "Display Button" on page 4.62.

 Video button. Press and the Video screen appears.

- Brightness
Press  /  to increase or decrease the brightness of the video input.
- Contrast
Press  /  to increase or decrease the contrast of the video input.
- Camera Number Selection
The display can receive input from up to four video cameras. Press the numbered buttons to switch views between video cameras.

 NOTE! You can adjust the brightness and contrast of each input individually.



3 - Description

Miscellaneous

About AutoTerrain/AutoHeight/AutoSlant

For the use of AutoTerrain/AutoHeight/AutoSlant together with HC 8500/9500, please refer to the specific AutoTerrain/AutoHeight/AutoSlant UC5 instruction books.

Glossary of Application Settings

Configuration Settings

- Rate Outside of Field
Rate that will be used outside of the field boundary. This is controlled by the HARDI® VT software.
- Rate Display Smoothing
Determines how the feedback from the JobCom will be displayed on the Work Screen.
 - When checked, the system will display the target rate when the application rate is within 10% of the target rate setting.
 - When unchecked the system will display the raw feedback from the rate sensor.
- Controller Time Delay
Compensates for any delay in the control system. This is controlled by the Look-Ahead settings - see "Automatic Swath Control (AutoSectionControl)" on page 4.71.

Speed Input Settings

- Primary Speed Source
Main source used by the display.
- Backup Speed Source
If the primary speed source fails, the display will use the backup speed source if one is available.
- Manual Speed
If both of the sources are unavailable, manual speed can be used in order for the control channel to provide application. Manual speed setting is for use during static machine testing or by the control system in the absence of primary and backup speed signals.

Automatic Swath Control Settings

- Turn-On Look-Ahead
Determines how far ahead the system looks to turn the swath sections back on. This setting compensates for any delay in the product control system when the sections are turned on.
- Turn-Off Look-Ahead
Determines how far ahead the system looks to turn the swath sections off. This setting compensates for delay in the product control system when the boom sections are turned off.
- Outside Boundary Option
Determines the behavior of the sections when exiting the field boundary or prescription-mapped area.
- Coverage Option
Based on the coverage option selected, this setting determines the behavior of the swath section when entering/exiting an already applied area or field boundary. Options available include: Minimize Skip, Minimize Overlap, and User Defined Percentage.

Field Notes

- Auto Generate Report
When checked, this option will automatically generate the SmartReport each time product application is completed and the Field button is selected.
- Prompt for Report Details
When checked, this option will automatically launch the region summary data collection dialog each time a new region is created at the run screen during application rate control.

- Report Map Appearance

Multi-Color Rate

- Select this option to have the SmartReport display the application maps using the rate legend as displayed on the run screen.

Single Color Coverage

- Select this option to have the SmartReport display single color product coverage maps.

Run Screen

- AutoSwath (AutoSectionControl)

Use to enable/disable automatic control of boom section on/off state based upon field boundaries, prescription files, and previously applied areas.

Fertilizer default Product Settings

Material	Type	Abbreviated name for display and predefined name for SMS	Percentage (in terms of lbs. 100 lbs.)			Density
			N	P (P ₂ O ₅)	K (K ₂ O)	
Anhydrous Ammonia	Liquid under pressure	NH ₃	82	0	0	5.14 lbs./gal. (at 60°F)
28% UAN	Liquid	28% UAN	28	0	0	10.67
30% UAN	Liquid	30% UAN	30	0	0	10.86 lbs./gal.
32% UAN	Liquid	32% UAN	32	0	0	11.06 lbs./gal.
Ammonium polyphosphate (starter)	Liquid	Ammonium polyphosphate	10	34	0	11.73 lbs./gal.

3 - Description

Installation

Installation Instructions

All machine installation and mounting kits are shipped with instructions specific to that kit. Instructions include special details relating to mounting, wiring and display configuration.

Mount the display to a secure support inside the vehicle cab. When choosing a mounting location, consider if the display:

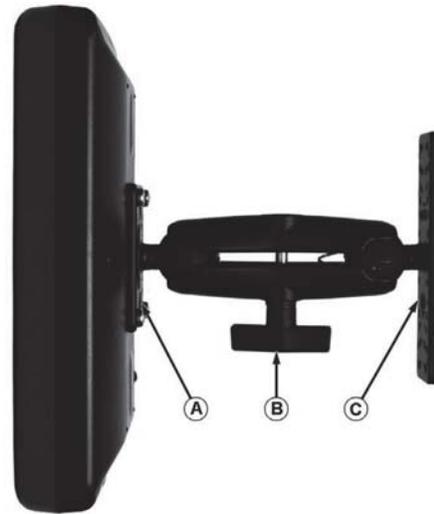
- is readily accessible to the machine operator.
- does not obstruct the machine operator's normal driving view.
- does not interfere with or limit access to any of the existing machine controls.
- is fitted so the ISOBUS system cabling is routed and secured without interfering with existing machine controls.



WARNING! If drilling holes is required during the mounting process, care must be taken to ensure that damage is not done to existing vehicle wiring, mechanical, or cab structure. Refer to vehicle manufacturer documentation for specific details on your equipment. Follow all OEM instructions, cautions, and warnings when working around equipment.

Components of Ram mount kit (HARDI® Part # 72802400):

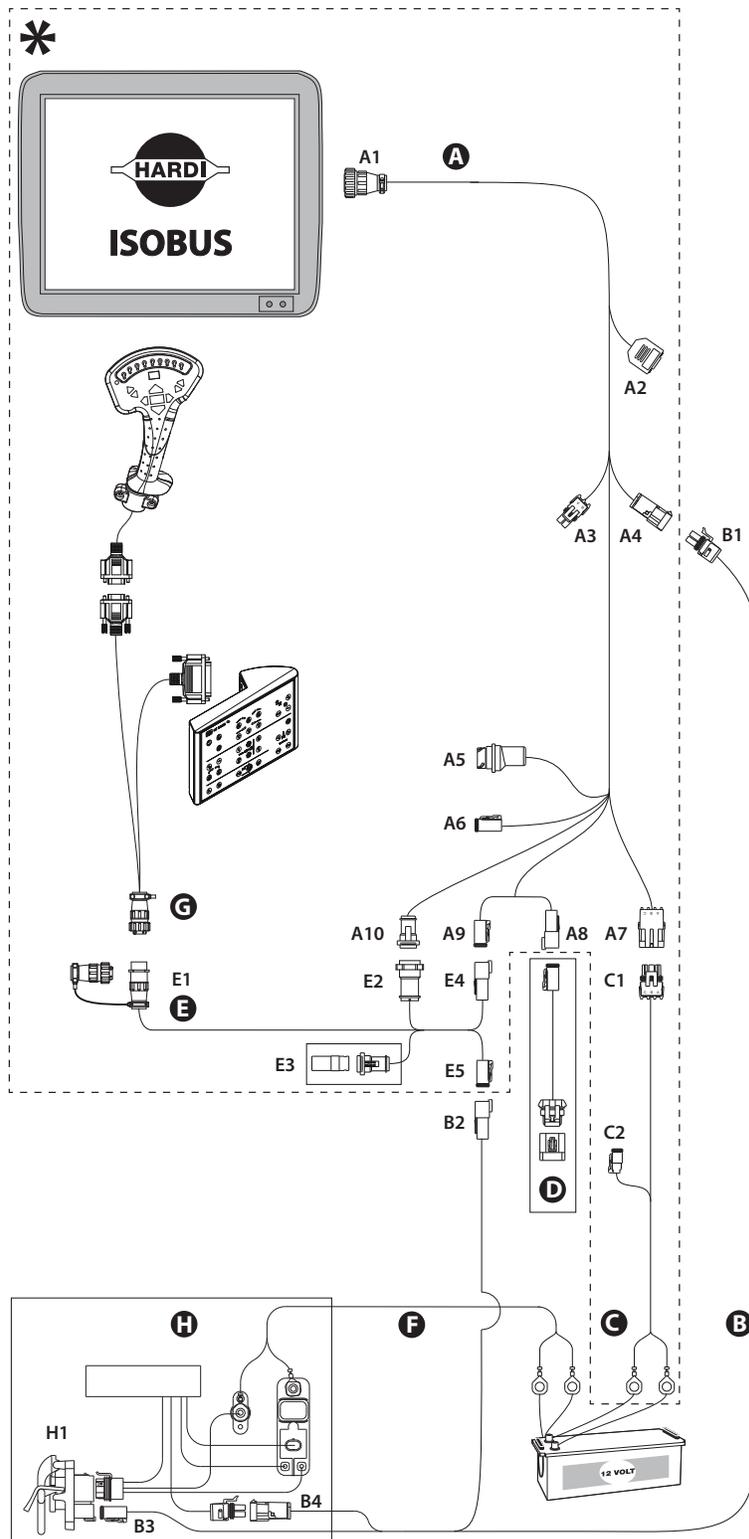
- A. RAM Base
- B. RAM Arm
- C. Base



4 - System setup

Cable connections

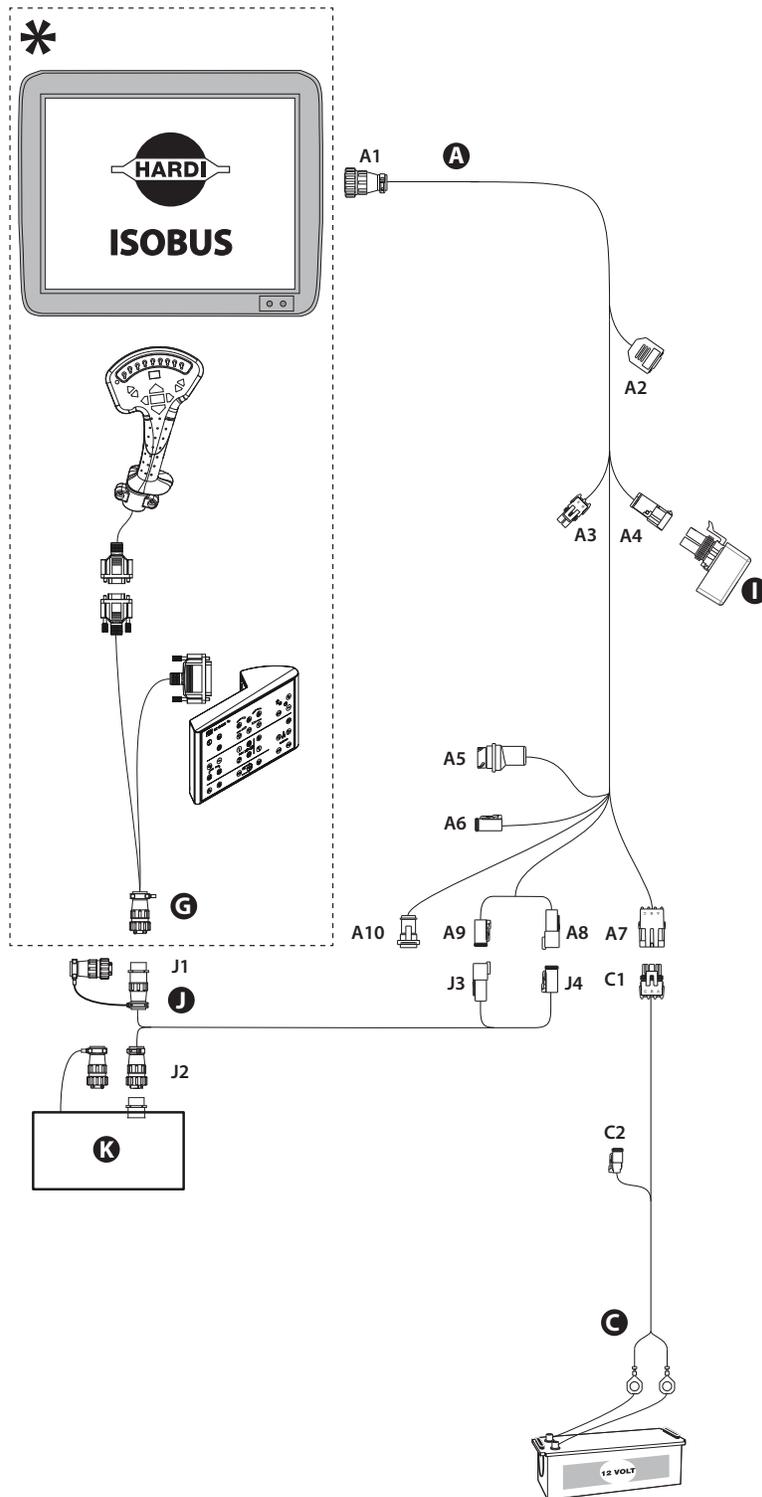
Non ISOBUS Tractor



4 - System setup

ISOBUS Tractor with cabin connector (alternative 1)

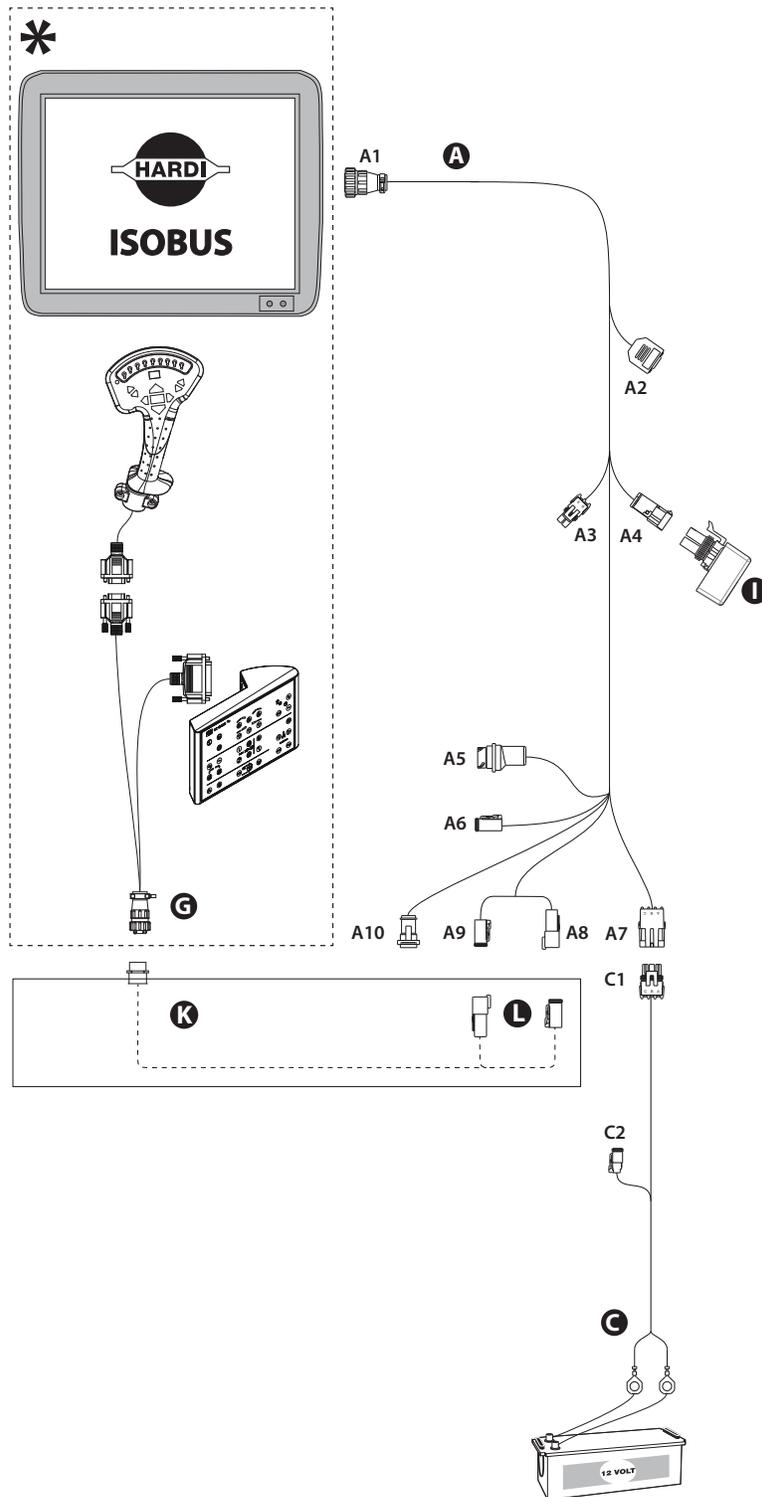
Alternative 1: Display, SetBox and Grip connected to cabin connector.



4 - System setup

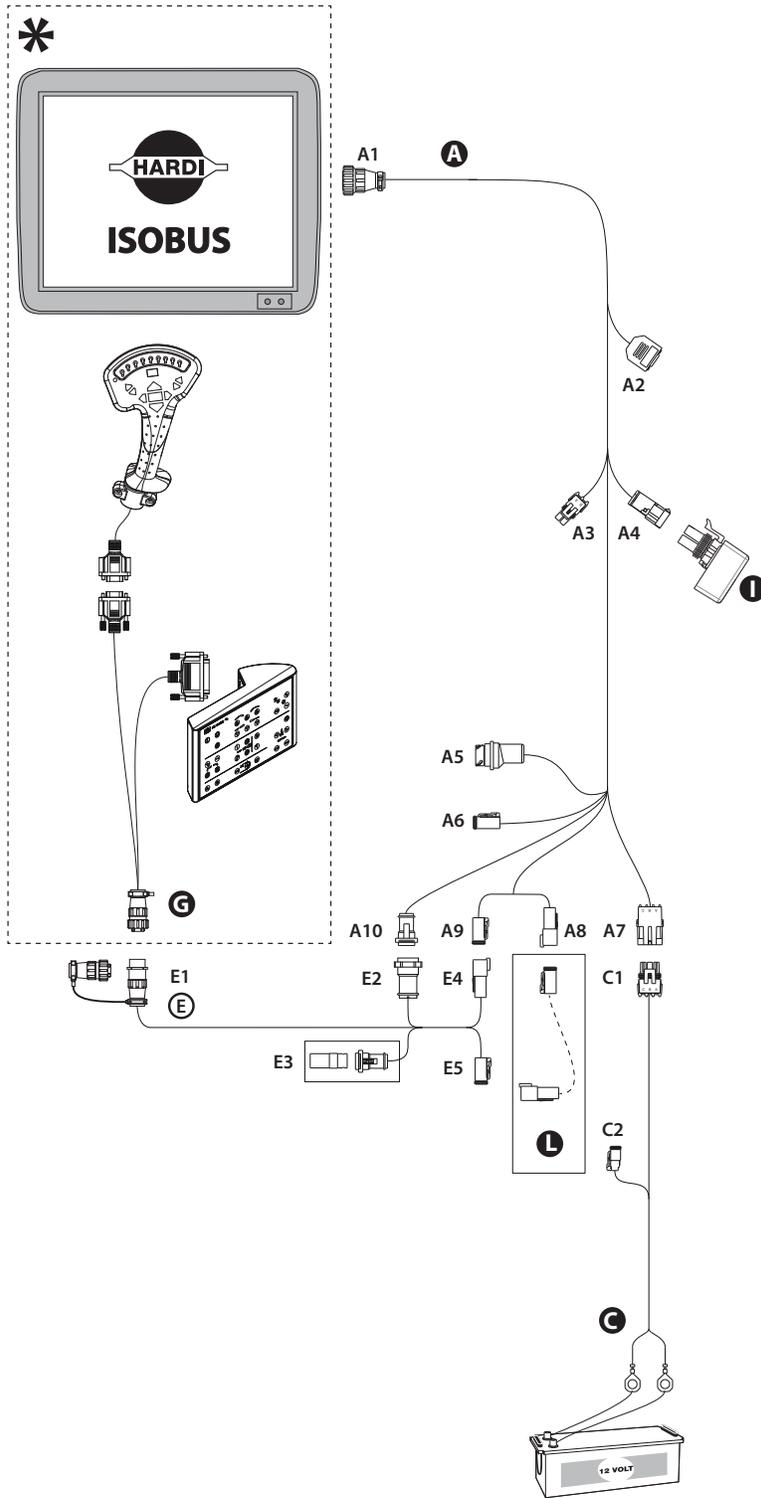
ISOBUS Tractor with cabin connector (alternative 2)

Alternative 2: Display connected to tractor ISOBUS. SetBox and Grip connected to cabin connector.



4 - System setup

ISOBUS Tractor without cabin connector



4 - System setup

Initial Startup

General info

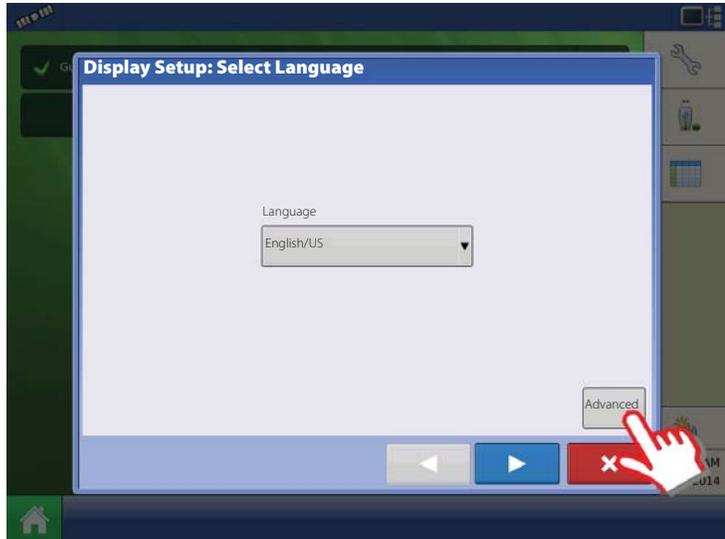
An Initial Setup wizard is presented on startup. The wizard is presented if the display is brand new out-of-the-box with 6.0 software or following the 6.x upgrade.

i NOTE! Not all of the following parts may be required to follow - it depends on your specific setup.

Once the wizard is completed, it is not shown again unless the display memory is cleared.

Advanced Options

Press "Advanced" button on Language Selection screen (first screen to appear on initial startup).



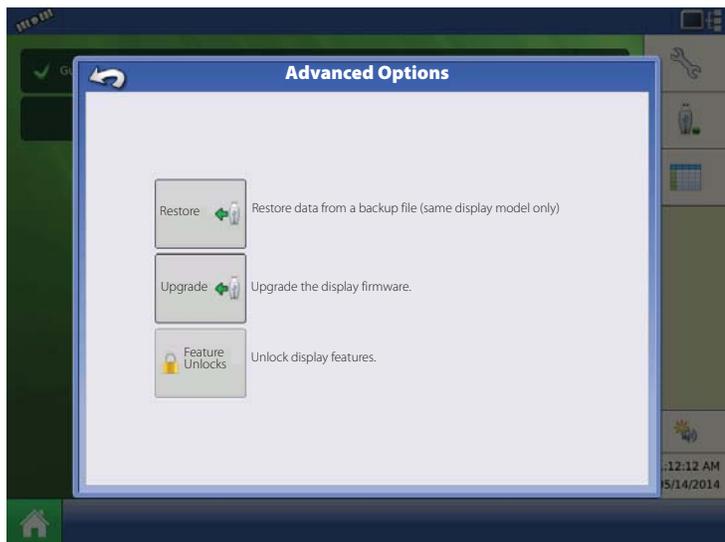
Select:

- Restore Backup
- Upgrade Firmware
- Unlock Display Features

i NOTE! Using the Restore backup option is not the proper method to get multiple displays set up to be the same. Use the AGSETUP file.

It is acceptable to complete the initial setup wizard and then upgrade. Setup information will not change.

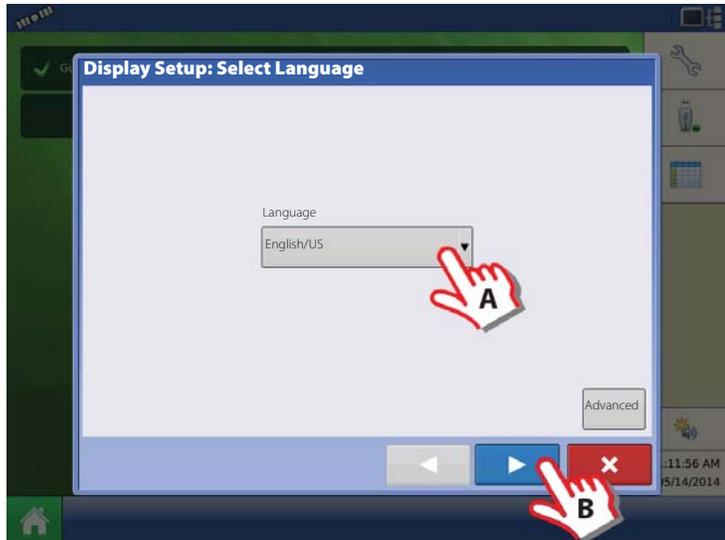
- On a "clean" display going out for service, to stand in for a failed display, the customer should use the Restore backup option in the initial setup wizard.



Location Specific Setup

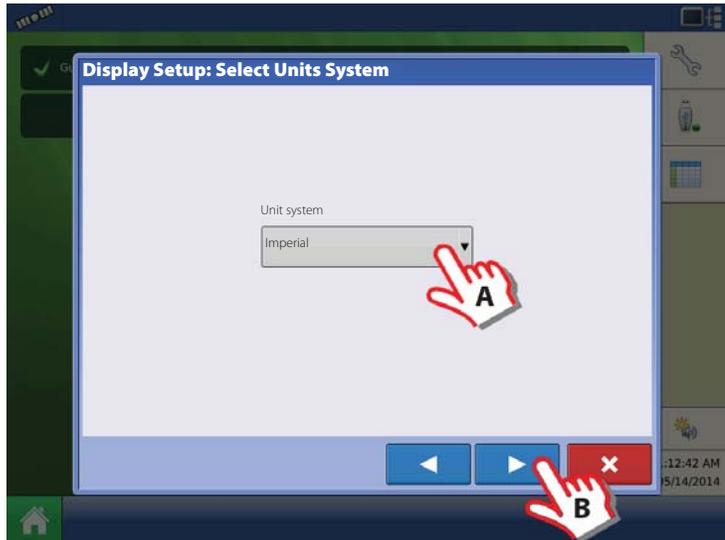
1. Language

- A. Select your language.
- B. Press  to confirm.



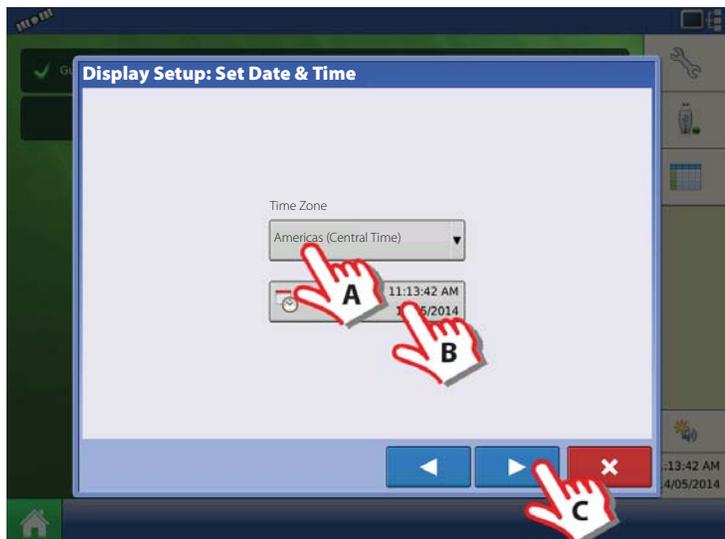
2. Unit System

- A. Press to select units.
- B. Press  to confirm.



3. Set Time and Date:

- A. Press to select Time Zone
- B. Press to set Time and Date
- C. Press  to confirm.



4 - System setup

4. Set Time and Date.

Press  to confirm.

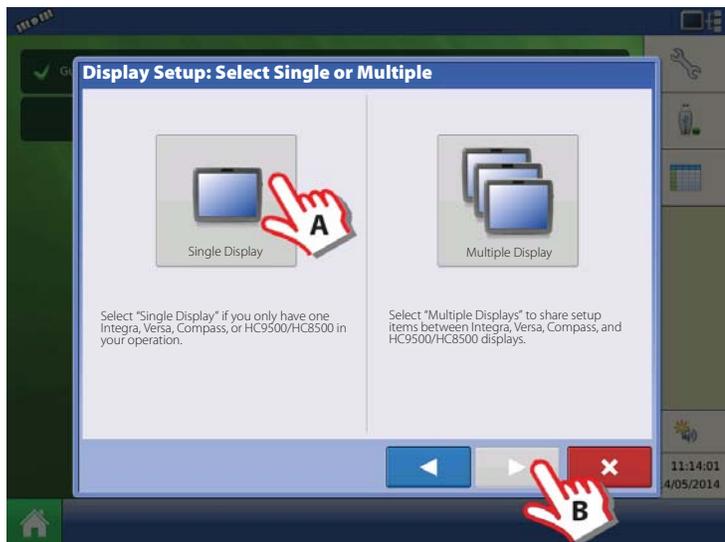


Single Display

Used if you have only one display to setup.

A. Press "Single Display" button.

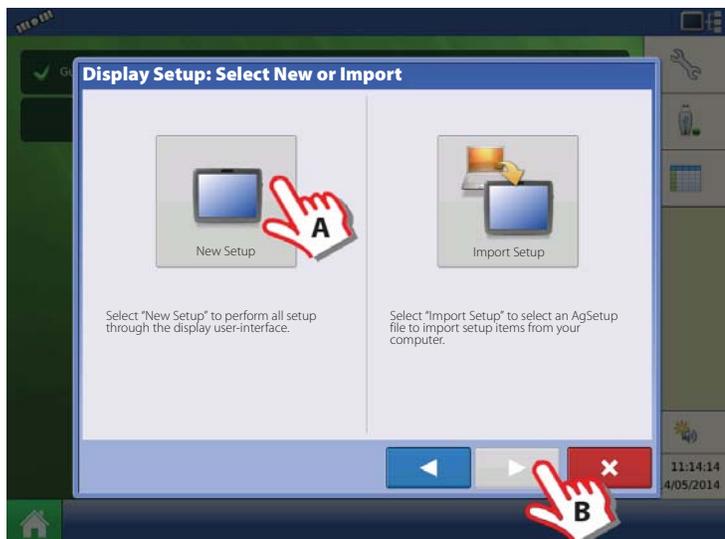
B. Press  to continue.



New setup

A. Press "New Setup" button.

B. Press  to continue.



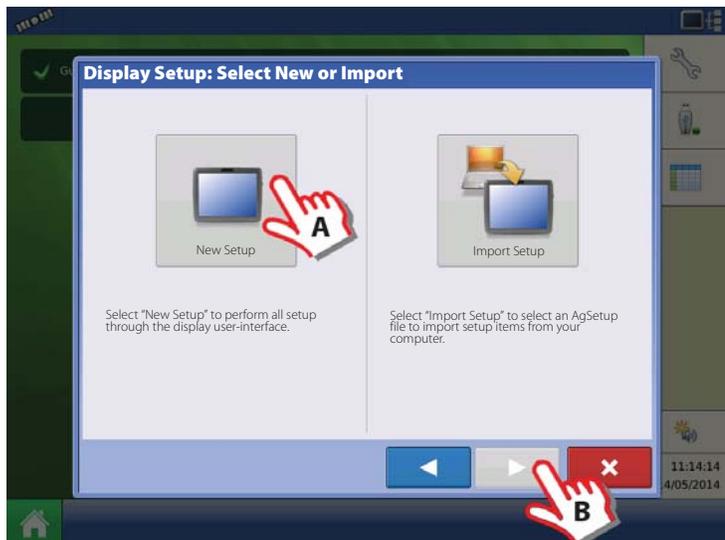
4 - System setup

- A. Press  to enter a Display Owner (Business Name).
- B. Press  to enter a display nickname.
- C. Press  to continue.

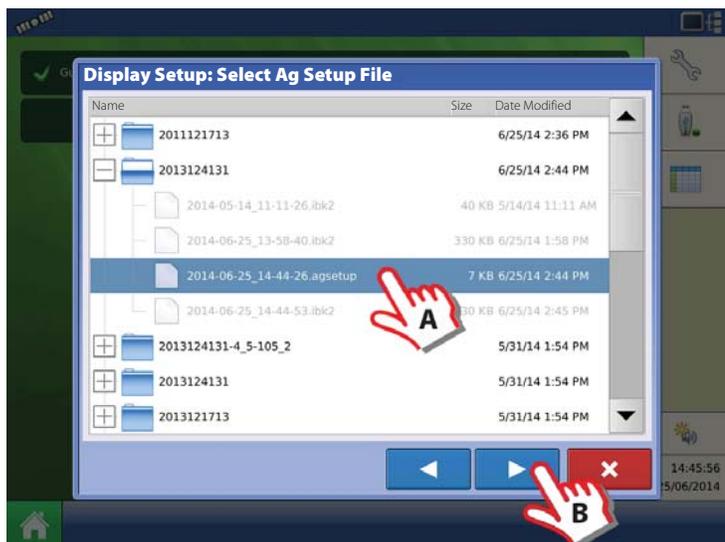


Import setup

- A. Press "Import Setup" button.
- B. Press  to continue.

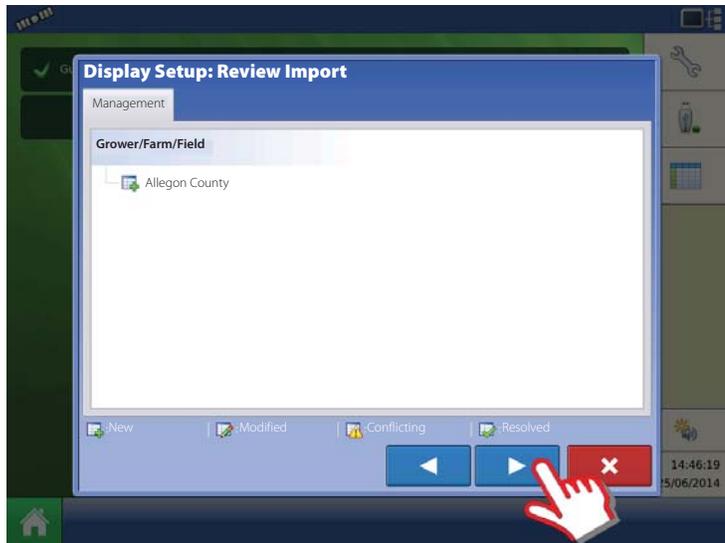


- A. Select desired setup file from directory.
- B. Press  to accept the setup and return to Home screen.

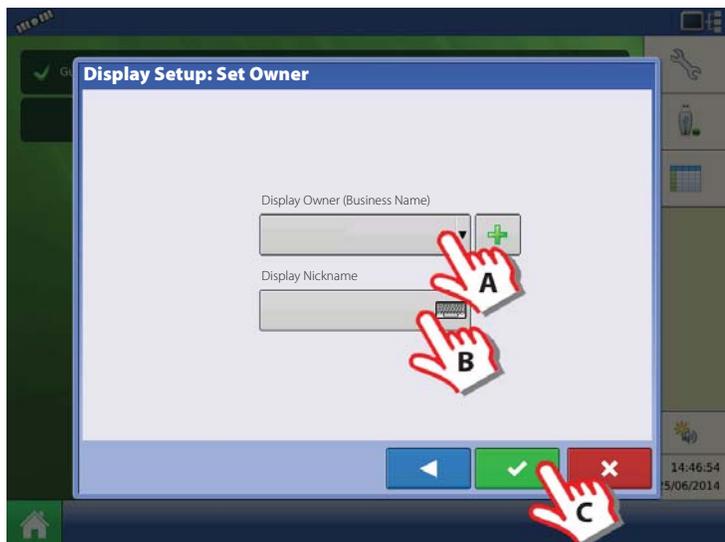


4 - System setup

Press  to accept and import setup file.



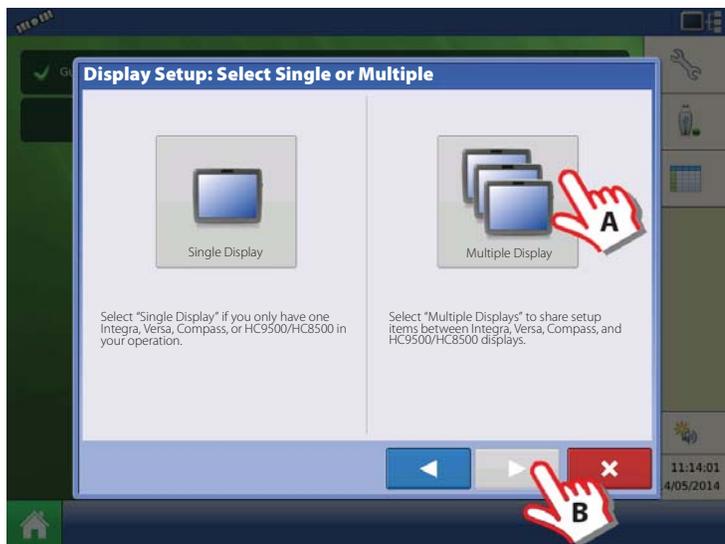
- A. Press  to select a Display Owner (Business Name).
- B. Press  to enter a display nickname.
- C. Press  to accept the setup and return to Home screen.



Multiple Displays

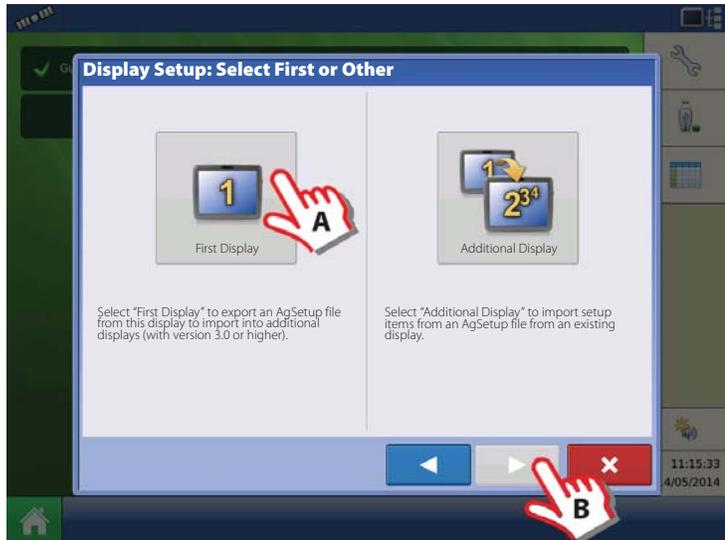
Setup First Display

- A. Press "Multiple Display" button.
- B. Press  to continue.



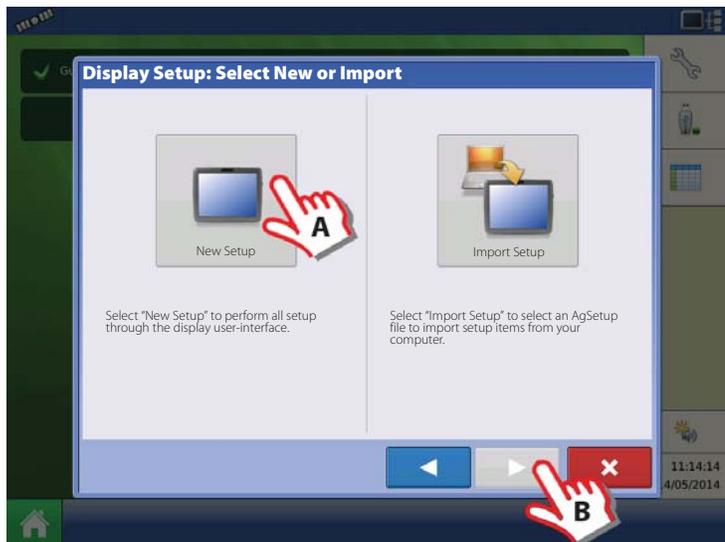
4 - System setup

- A. Press "First Display" button.
- B. Press  to continue.

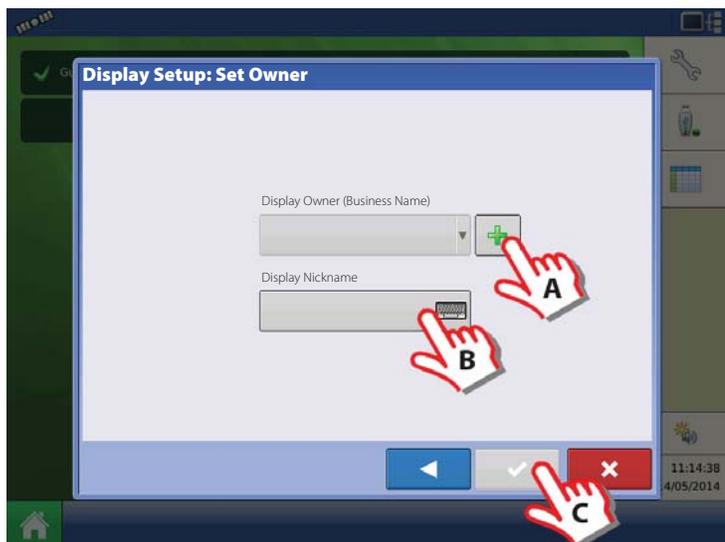


New setup

- A. Press "New Setup" button.
- B. Press  to continue.



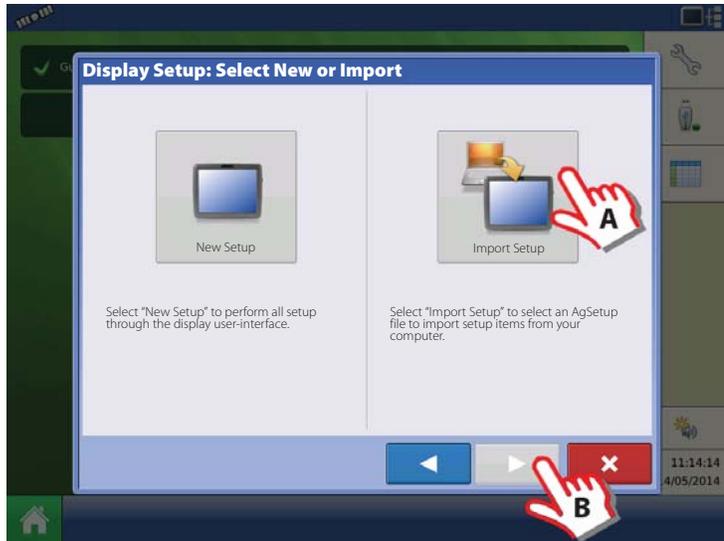
- A. Press  to enter a Display Owner (Business Name).
- B. Press  to enter a display nickname.
- C. Press  to accept the setup and return to Home screen.



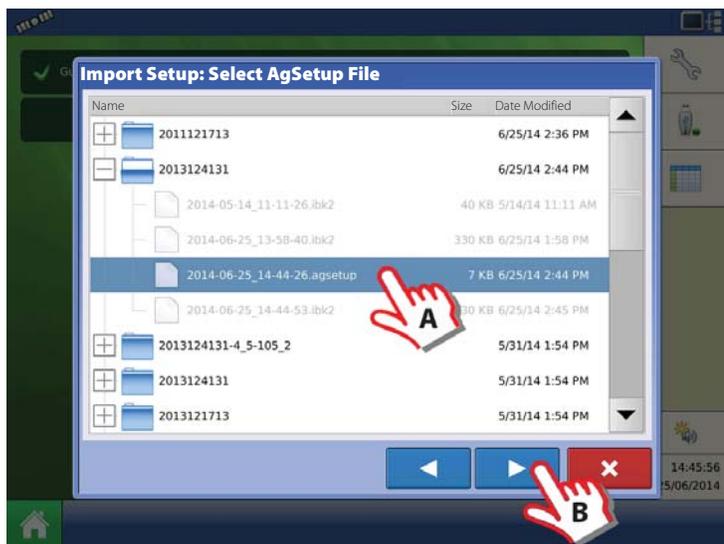
4 - System setup

Import setup

- A. Press "Import Setup" button.
- B. Press  to continue.

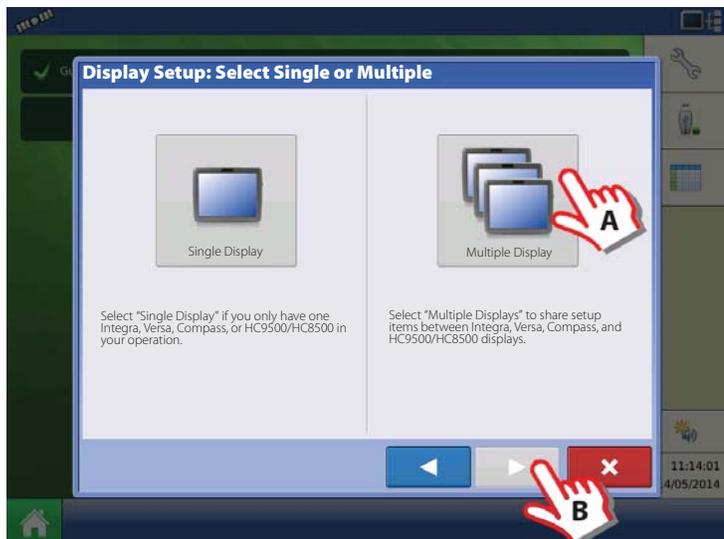


- A. Select desired setup file from directory.
- B. Press  to accept the setup and return to Home screen.



Setup Additional Display

- A. Press "Multiple Display" button.
- B. Press  to continue.



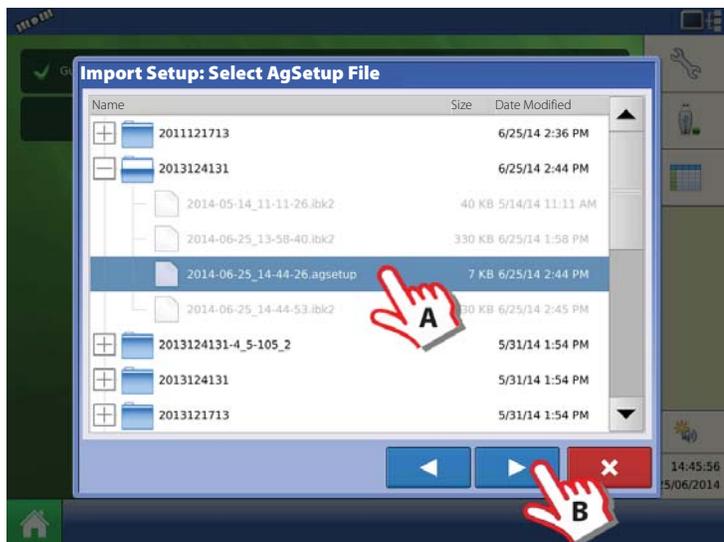
4 - System setup

- A. Press "Additional Display" button.
- B. Press  to continue.



- A. Select desired setup file from directory.
- B. Press  to continue.

 The business created on the first display, and any other management and equipment items, will be imported to the additional displays.



4 - System setup

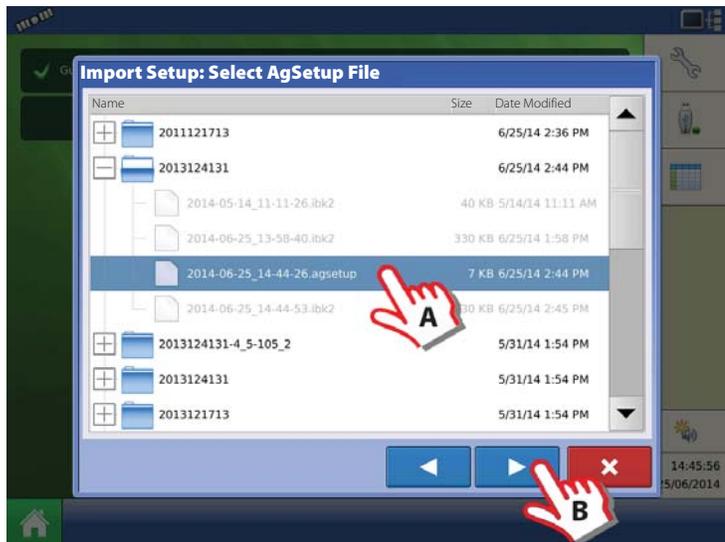
Import Setup Data



Use the scroll bar to find the file you wish to import.

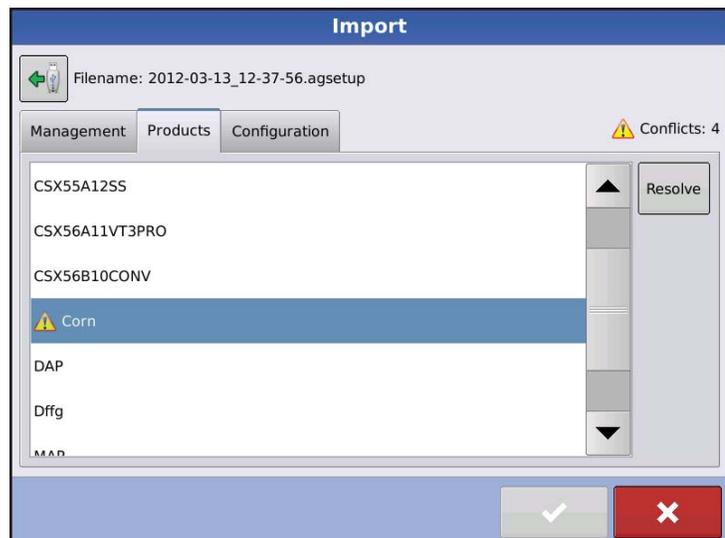
When a setup file is created, it is saved in a folder titled with the displays serial number _nickname. The file will include a date and have the .agsetup suffix.

- A. Select desired setup file from directory.
- B. Press  to continue.



Highlight item with conflict .

Press .



Conflicts can be resolved by:

- Rename Import
- Rename Existing
- Merge

Product Mixes and Configurations can not be merged. The Merge button will be grayed out and not selectable for these items.

Once all conflicts have been resolved.

Press .



Home Screen



Most of the functionality of the display is not available until the basic setup process is completed.

- A. Status bar.
- B. Setup button.
- C. Task bar.

You must complete these initial configuration steps for the Run Time Environment to be active:



ATTENTION! It is strongly recommended to set up the controller by using the "Quick Setup Guide" on page 4.16.

- Grower, Farm, and Field management.

For more information, See "Management button" on page 4.51.

- Equipment Operating Configuration.

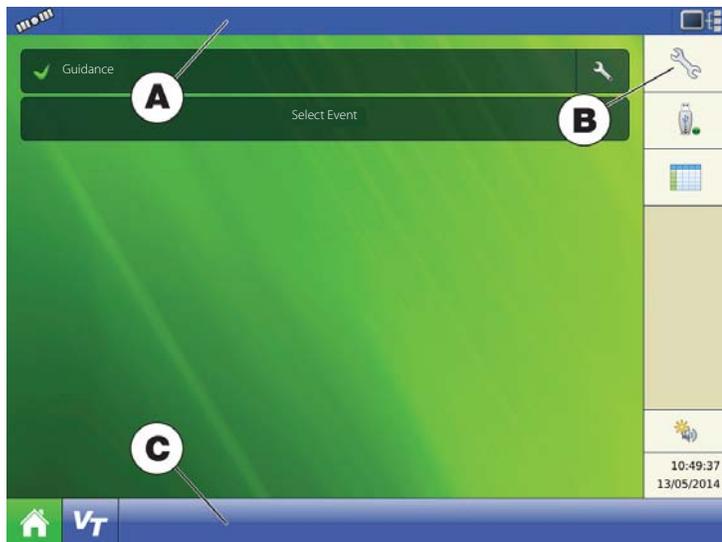
You can access Configuration Setup by pressing the Setup (wrench) button (B) at the upper right-hand portion of the Home screen. For more information, see "Configuration button" on page 4.49.

- Product setup.

For more information, see "Product tab" on page 4.50, as well as the additional configuration information described in each Operations chapter.

- Start Field Operation.

For more information, "Configuration Setup Screen" on page 5.1.



4 - System setup

Quick Setup Guide

General Info

For a quick and easy start with your new HC 8500/9500 controller, it is strongly recommended to set up the controller by using this quick setup guide.

To change settings later, or for a more in-depth explanation of settings, please refer to the following parts of this chapter.

Sprayer Types

The following configuration is split into two parts, depending on the sprayer type:

- Trailer and Lift sprayers. See “Configuration for Trailer and Lift sprayers” on page 4.16 (below).

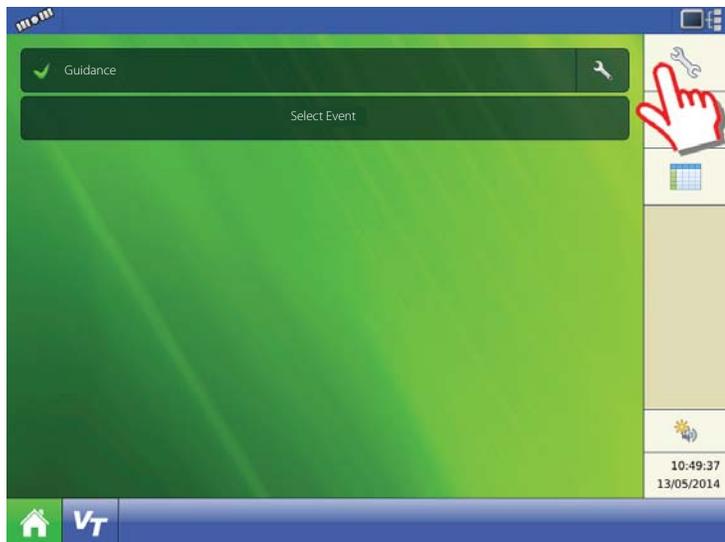


ATTENTION! As this part covers both Trailer and Lift sprayers, please note that some steps may vary, as some do not appear while others may be specific to your sprayer type.

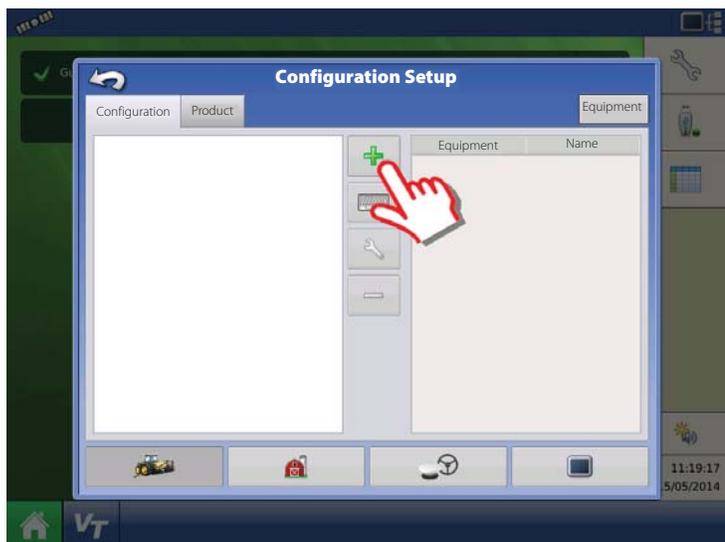
- Self-Propelled sprayer. See “Configuration for Self-Propelled sprayers” on page 4.33.

Configuration for Trailer and Lift sprayers

1. At the HC9500 Home Screen, press  to enter the Configuration Setup.

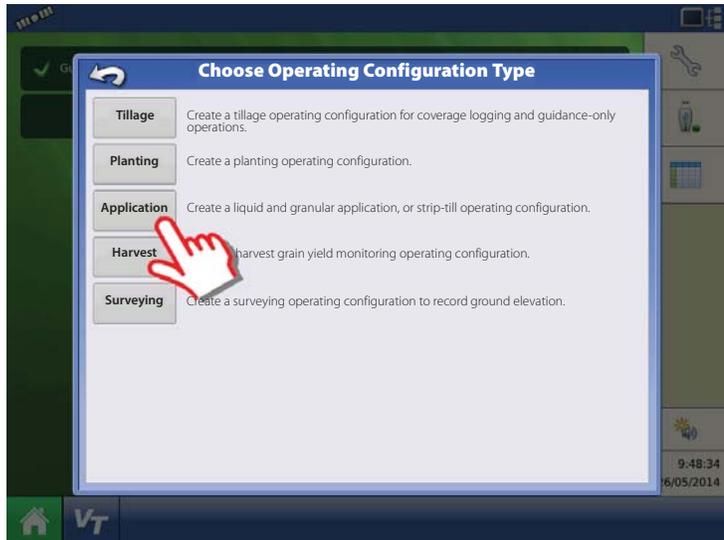


2. Press  to add a Configuration.

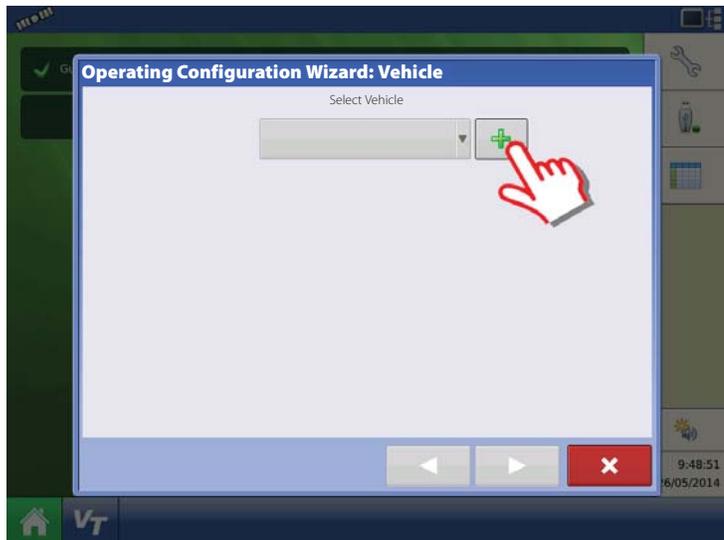


4 - System setup

3. Press "Application" to create an application setup.



4. Press  to select a vehicle.

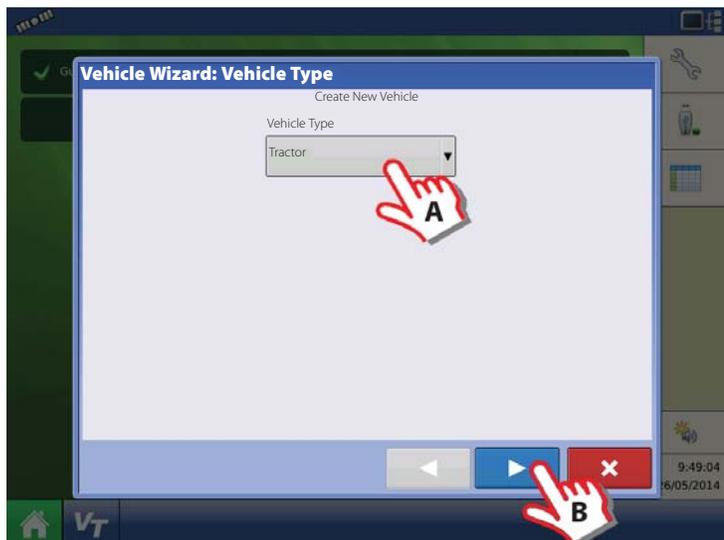


5. Vehicle Type:

- A. Select "Tractor".

 ATTENTION! Lift sprayers must also select "Tractor".

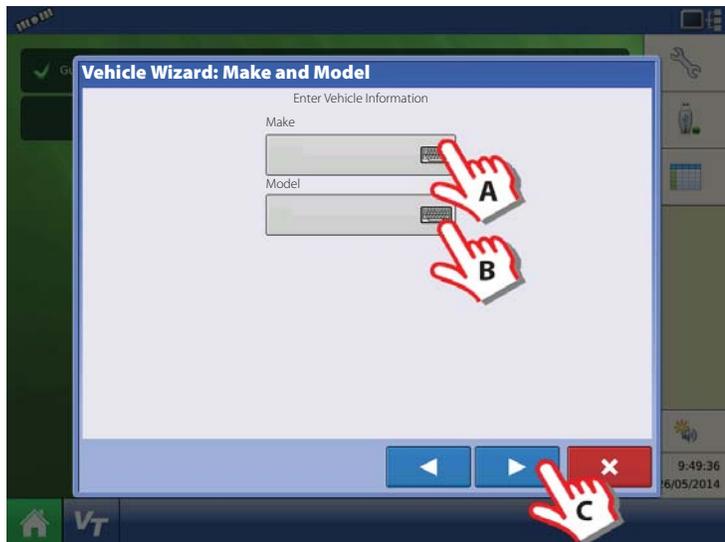
- B. When "Tractor" is selected, press  to confirm.



4 - System setup

6. Enter Vehicle Information:

- A. Press the "Make"  to type in the vehicle name.
- B. Press the "Model"  to type in the vehicle model.
- C. Press  to confirm.



7. Enter distance from Rear Axle of the tractor to the following locations:

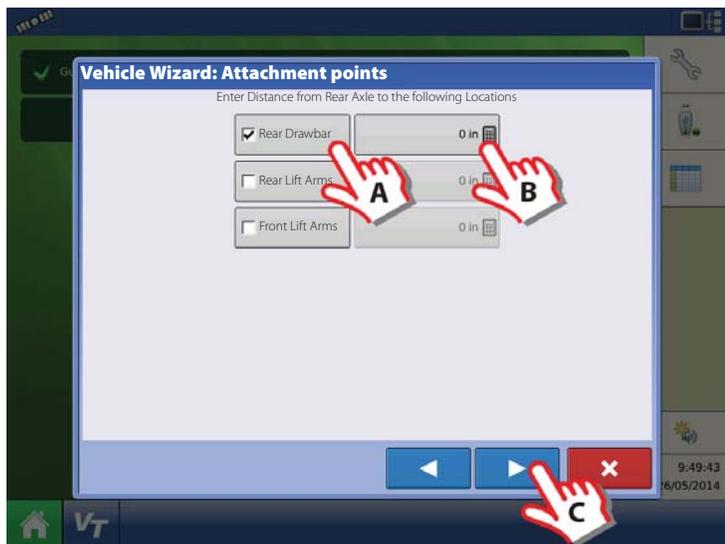
- "Rear Drawbar" for a trailer sprayer.
- "Rear Lift Arms" for a lift sprayer.



ATTENTION! The option "Front Lift Arms" is not used for HARDI® sprayers.

Trailer as example:

- A. Chose "Rear drawbar".
- B. Press  to type in value.
- C. Press .



8. Vehicle Name:

- A. Press the button  to change the vehicle name, if necessary.
- B. Press  to confirm selection.



9. Antenna Settings:

Press the  button to change the antenna settings for the Selected Vehicle in the drop down menu.



10. Enter Distance from Antenna location to Rear Axle:

- A. Choose "In Front" or "Behind" from the Rear axle.
- B. Press  to type in the measured value for the GPS Front/Back Offset from the vehicle.



11. Enter Distance from Antenna location to Center line:

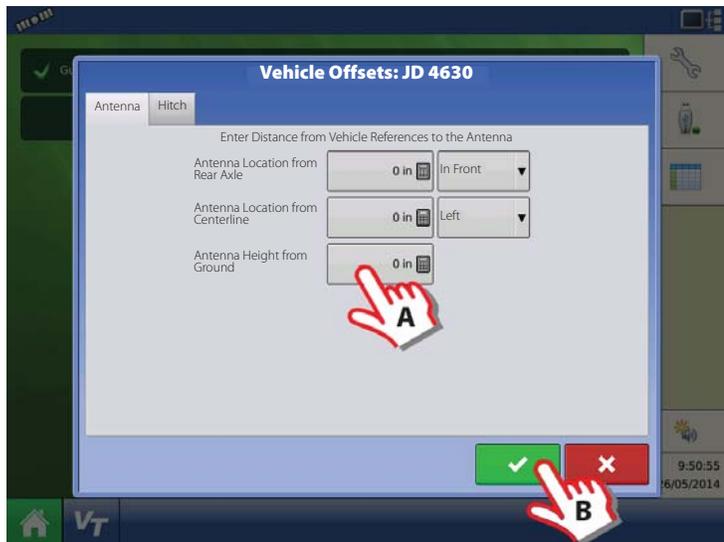
- A. Choose "Left" or "Right" from the Center line.
- B. Press  to type in value.



4 - System setup

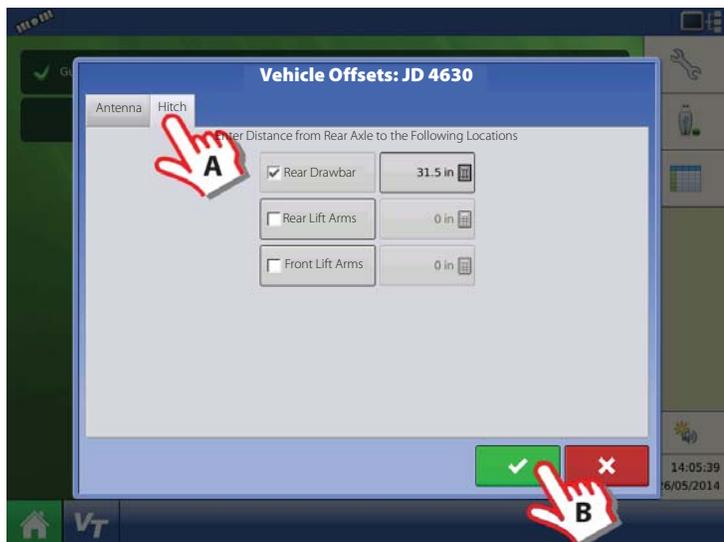
12. Enter Distance from Antenna Height to Ground:

- A. Press  to type in value.
B. Press  to confirm selection.



13. Hitch Settings:

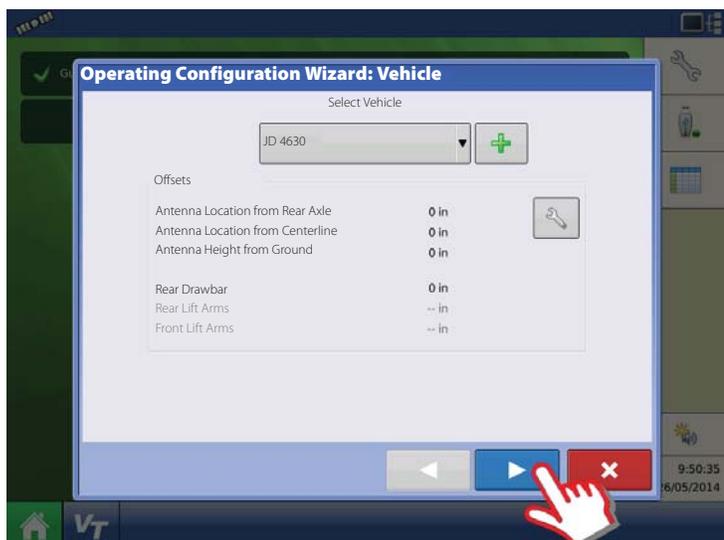
- A. Press Hitch to view data already typed in step 7.
B. Press  to confirm selection.



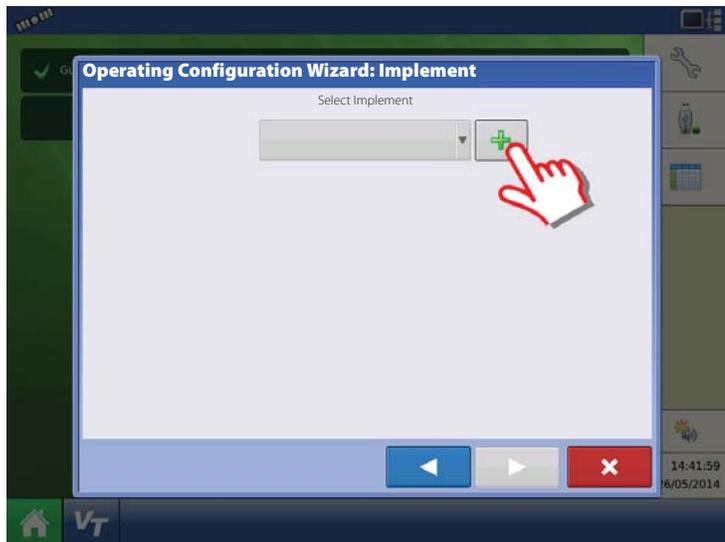
14. Check the data in the overview.

Press  to confirm selection.

 **ATTENTION!** If Offsets need to be corrected, then press the  button to change the antenna settings for the Selected Vehicle in the drop down menu, before confirming selection.

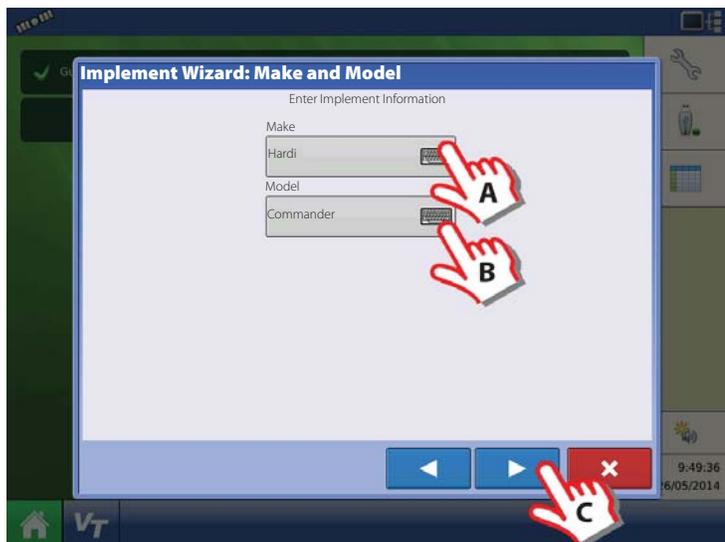


15. Create Implement by pressing the  button.



16. Implement Information:

- A. Press the "Make"  to type in the implement name.
- B. Press the "Model"  to type in the implement model.
- C. Press  to confirm.

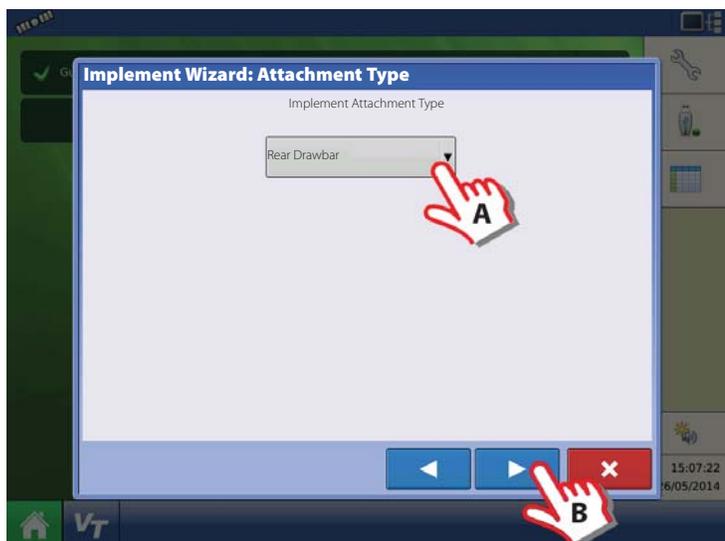


17. Attachment Type:

- A. Select Implement Attachment Type:
- "Rear Drawbar" for a trailer sprayer.
 - "Rear Lift Arms" for a lift sprayer.

 ATTENTION! The option "Front Lift Arms" is not used for HARDI® sprayers.

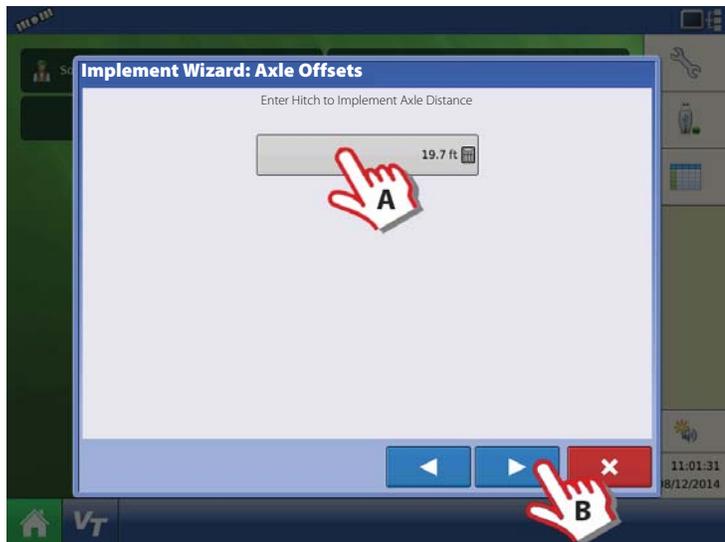
- B. Press  to confirm selection.



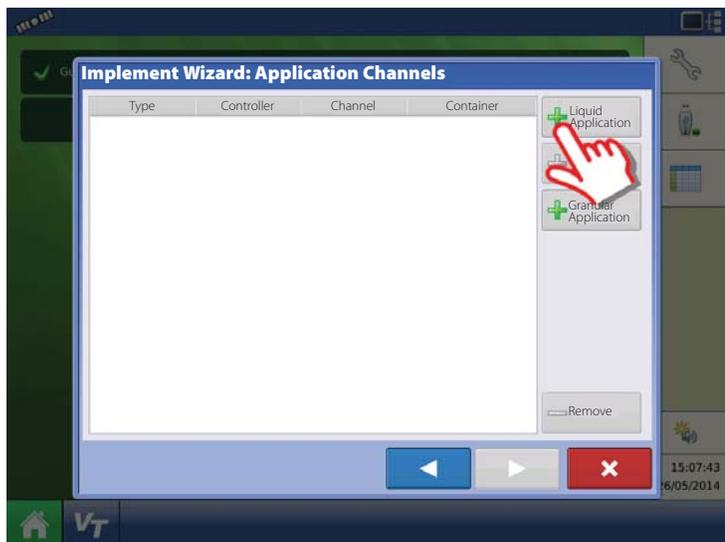
4 - System setup

18. Trailer sprayer only:

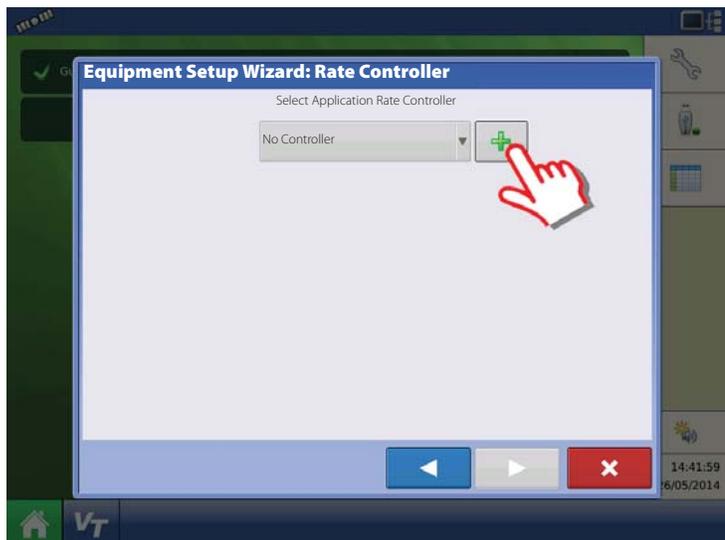
- A. Select to Enter Hitch to Implement Distance:
- B. Press  to confirm selection.



19. Press  Liquid Application to create an Application Channel.

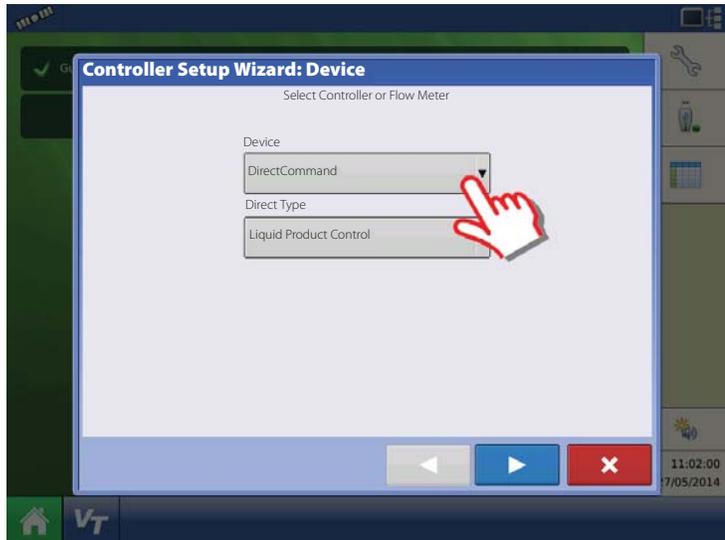


20. Press  to add an Application Rate Controller.



4 - System setup

21. Press "Device" drop down menu to select "ISOBUS" for a HARDI® sprayer.



22. Device drop down menu will change to ISOBUS.

Press  to confirm selection.



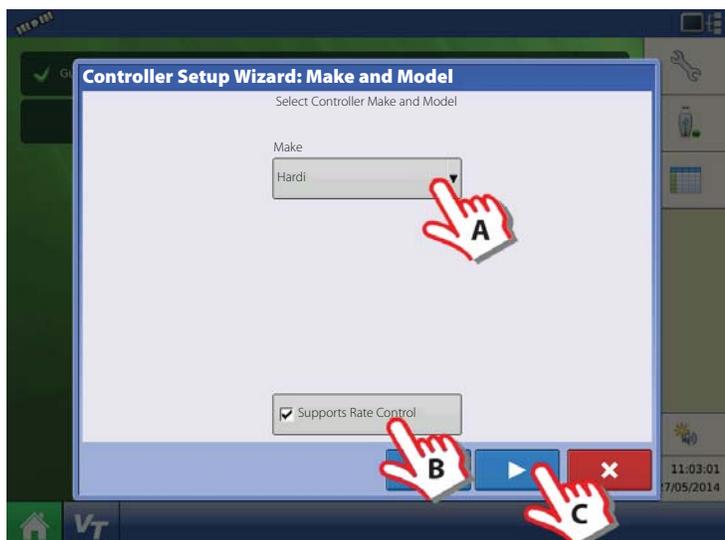
23. Select Controller Make:

- A. Select "Hardi" in the "Make" drop down menu.

After selection, the "Model" drop down menu will disappear.

- B. Check the "Supports Rate Control" box to enable the HARDI® VT rate control function.

- C. Press  to confirm selection.



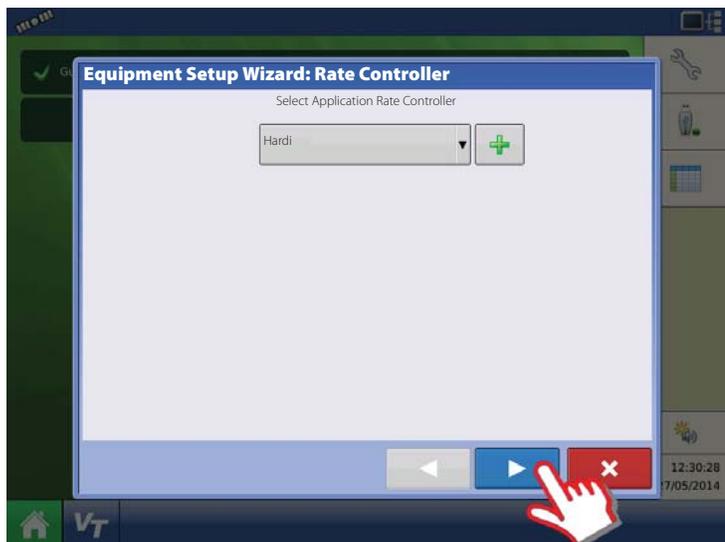
4 - System setup

24. Controller Name:

- A. Press the  to change the name.
- B. Press  to save the name.



25. Press  to confirm selection.



26. Container (Main Tank) setup:

- A. Press  to change name.
- B. Press  to enter true container capacity.
- C. Press drop down menu to change units.
- D. Press  to confirm.



27. Enter Number of Boom Sections:

- A. Press the arrows to set number of sections on the sprayer.

 **ATTENTION!** This value must be the same as typed in the HARDI® VT menu 3.3.3

- B. Press  to confirm selection.



28. Enter Full Swath (Boom) Width:

- A. Press  to type in the value.

 **ATTENTION!** If the value is not the same as in the HARDI® VT menu 3.3.1 an ISOBUS warning will appear.

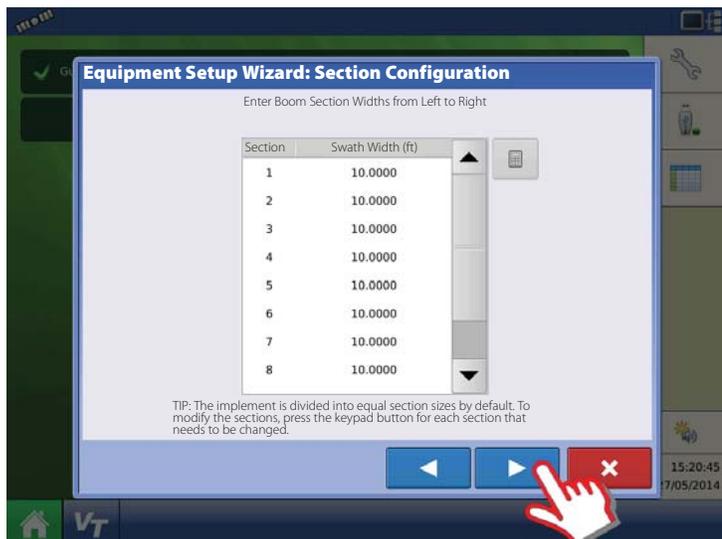
- B. Press  to confirm selection.



29. Edit Boom Section Widths from Left to Right:

 **NOTE!** If number of sections and boom widths (swath widths) are already correct, then press  to confirm selection. Then continue this guide from step 32.

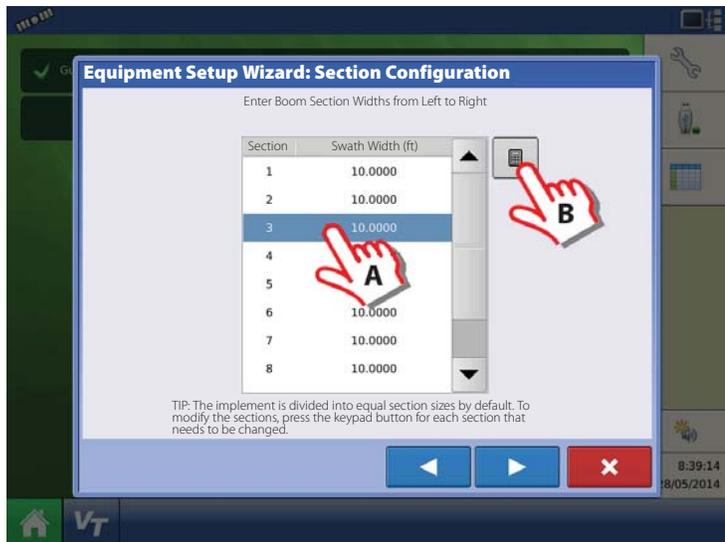
 **ATTENTION!** These values must be the same as typed in the HARDI® VT menu 3.3.3.1 to 3.3.3.x



4 - System setup

30. Edit Boom Section Widths from Left to Right.

- A. Press on the Section you wish to edit to highlight it.
- B. Press the  button to change to the right section width.



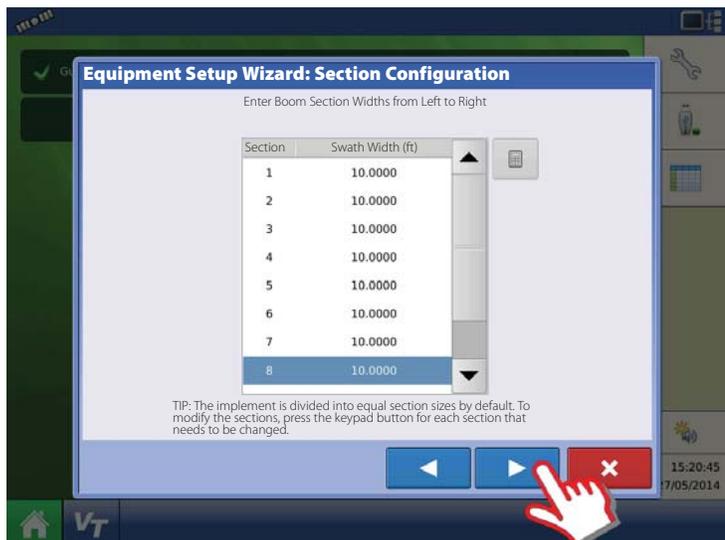
31. Type in the section width.

Press  to confirm the value.



32. When all Sections are changed:

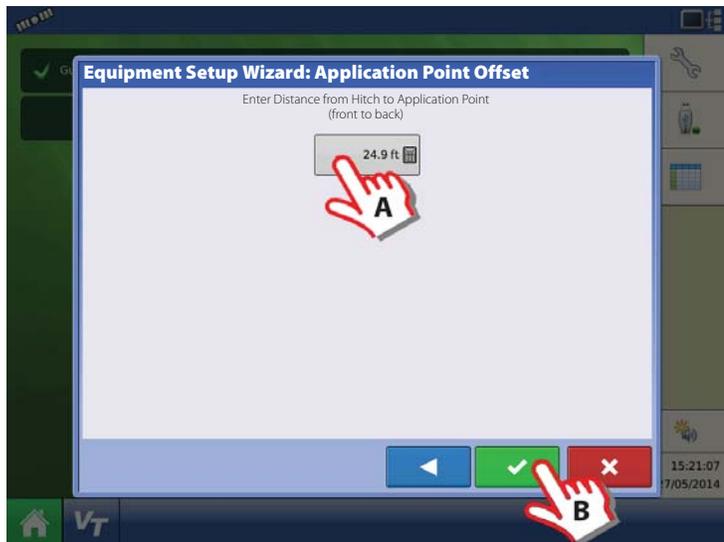
Press  to confirm selection.



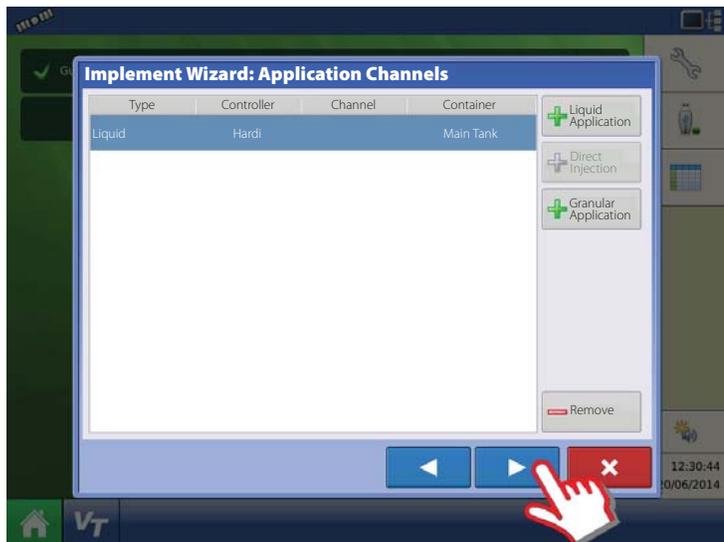
33. Application Point Offset:

- A. Press  to enter the distance from the tractor hitch to the nozzles on the sprayer.
- B. Press  to confirm value.

 ATTENTION! For offsets see "Sprayer Offsets" on page 8.1.



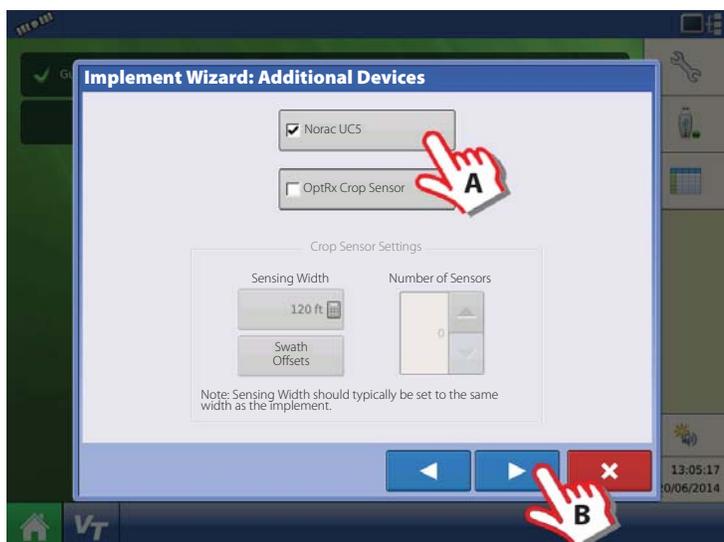
34. Press to confirm selection.



35. Additional devices:

- A. Press "Norac UC5" button to enable the use of AutoTerrain/AutoHeight/AutoSlant.
- B. Press  to continue.

 ATTENTION! If the "Norac UC5" is not enabled, the AutoTerrain/AutoHeight/AutoSlant will not be shown in the working screen.

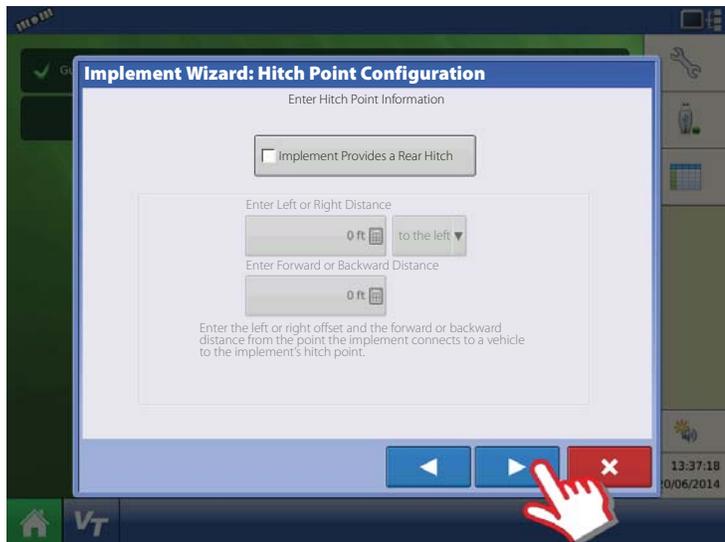


4 - System setup

36. Press  to continue.

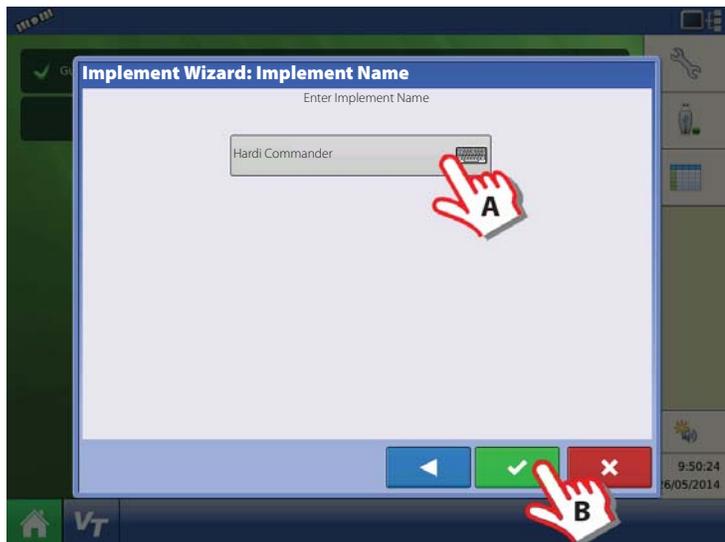


ATTENTION! Settings here not relevant for HARDI® Trailer and Lift sprayers!



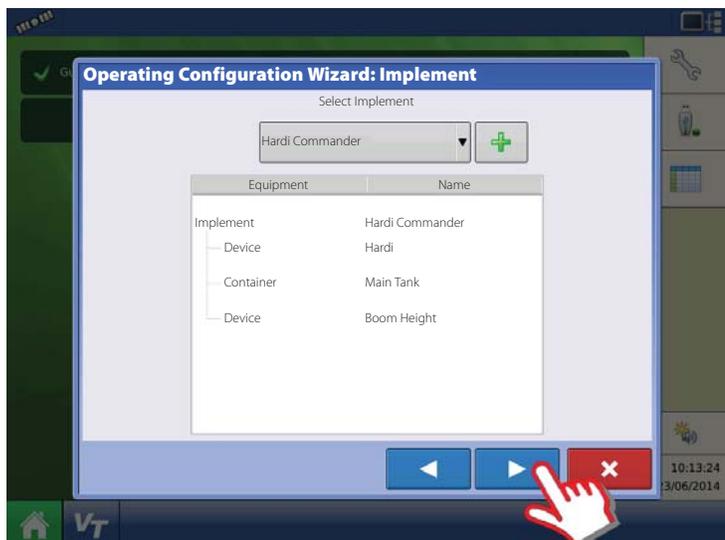
37. Enter Implement Name:

- A. Press  button to change name.
- B. Press  to confirm name.



38. Select the specific implement to be setup in the pull down menu.

Press  to confirm the selection.



4 - System setup

39. Select Primary Speed Source.

- Trailer sprayer with SafeTrack/IntelliTrack:
Must always use "Hardi" as speed source as the steering system cannot use GPS as speed source.
- Lift mounted sprayer:
Can select between "Display GPS" or "Auxiliary Device" as speed source.

 NOTE! If "Display GPS" is selected, the "Hardi" option must be selected as backup source.

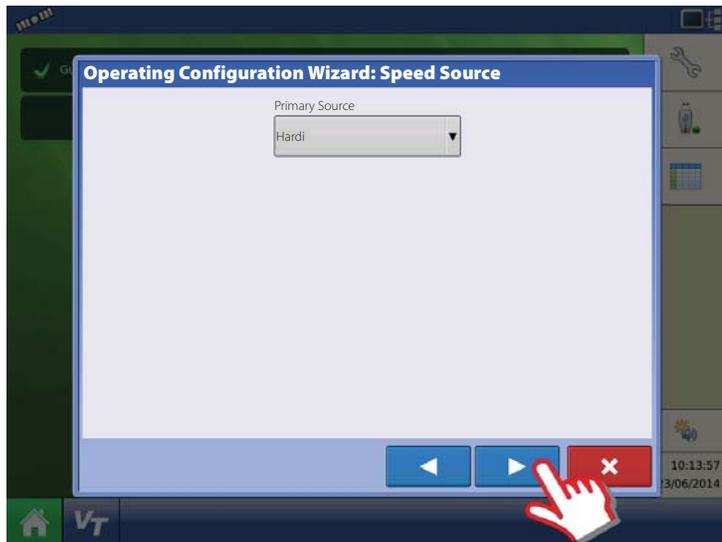
 ATTENTION! For additional information see "Speed Input Settings" on page 4.70.



40. "Hardi" is now selected as Primary Source.

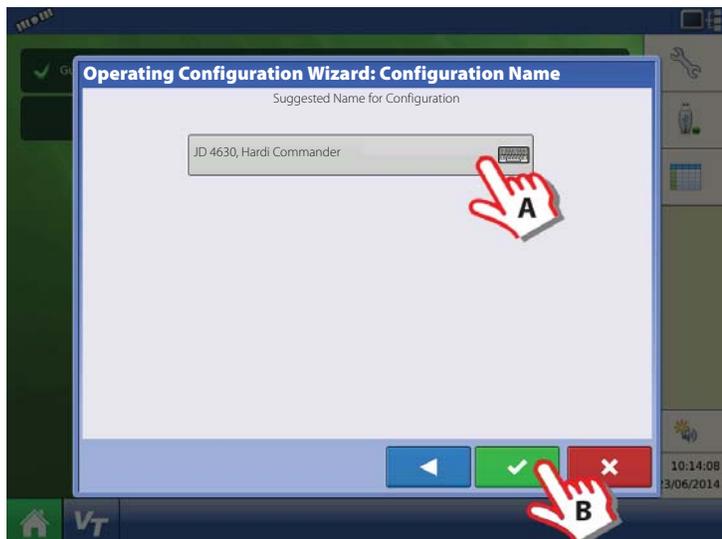
 ATTENTION! No other source can be selected when "Hardi" is selected as primary source.

Press  to confirm the selection.



41. Suggested Name for Configuration:

- Press  button to change name.
- Press  to confirm selection.



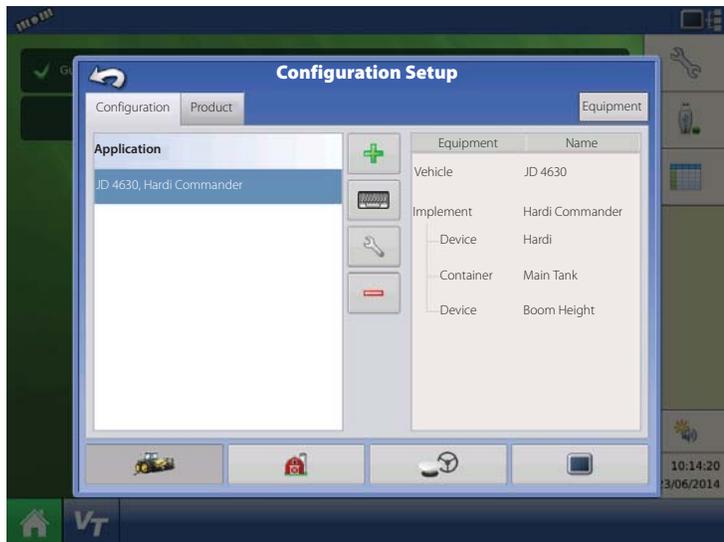
4 - System setup

42. Overview of Configuration Setup with a Trailed sprayer as example:

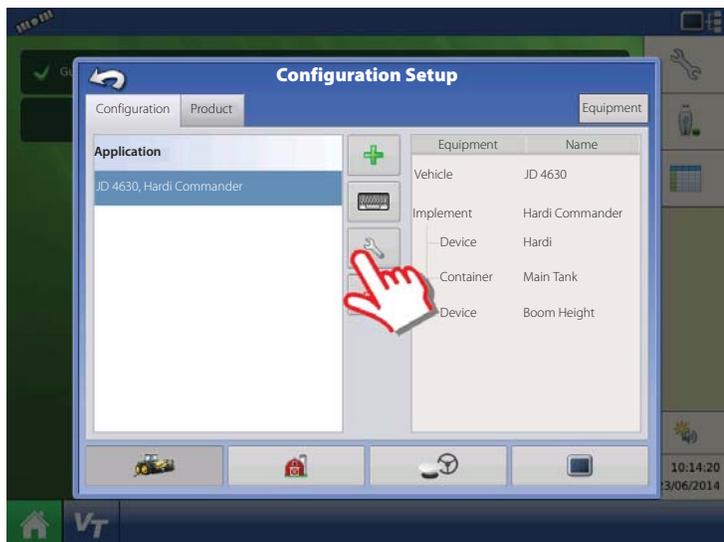
Vehicle: JD 4630.

Implement: Hardi Commander.

- Device: Hardi
- Container: Main Tank
- Device: Boom Height

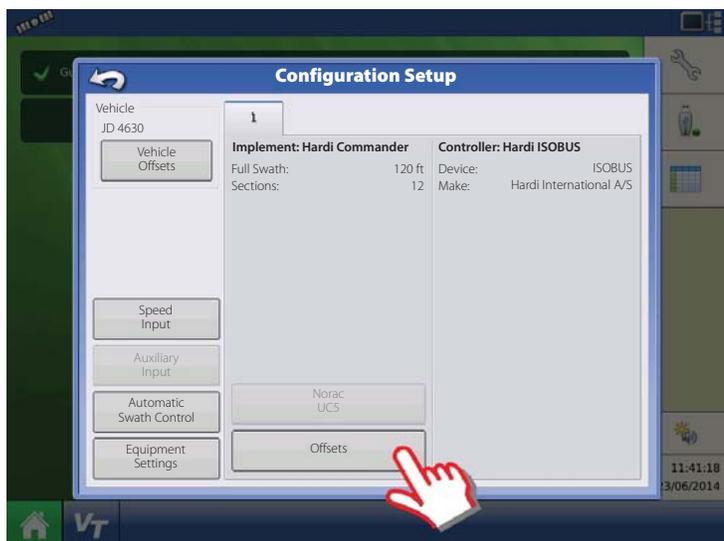


43. Press  to edit the configuration.



44. Trailer sprayers only:

Press "Offsets" to edit the configuration.



4 - System setup

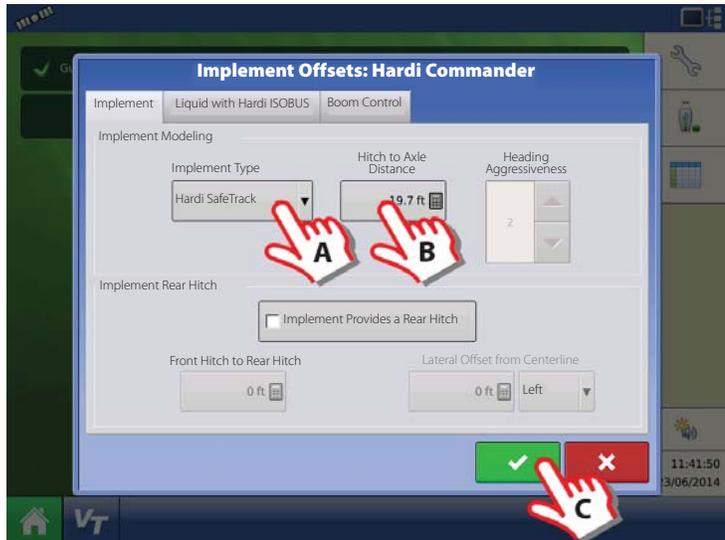
45. Trailer sprayers only:

- A. If applicable, select "Hardi SafeTrack" as implement Type.

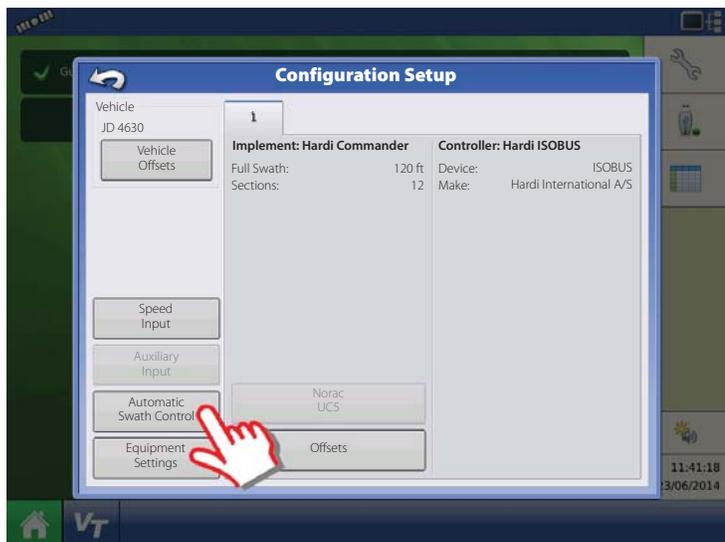


ATTENTION! For IntelliTrack sprayers, select the "Hardi SafeTrack" option.

- B. Press  to type in the measured distance from Hitch to the axle of the sprayer.
- C. Press  to confirm.



50. Press "Automatic Swath Control" to edit the configuration.



4 - System setup

51. Automatic Swath Control options:

- Outside Boundary Option

Select one of the two options to determine system behavior when a section exits a field boundary.

- Coverage Option

In the Coverage Option area, you must choose between three options:

- Minimize Skip

Turns off the implement section after the entire section is fully inside your coverage area.

This prevents the possibility of skips.

- Minimize Overlap

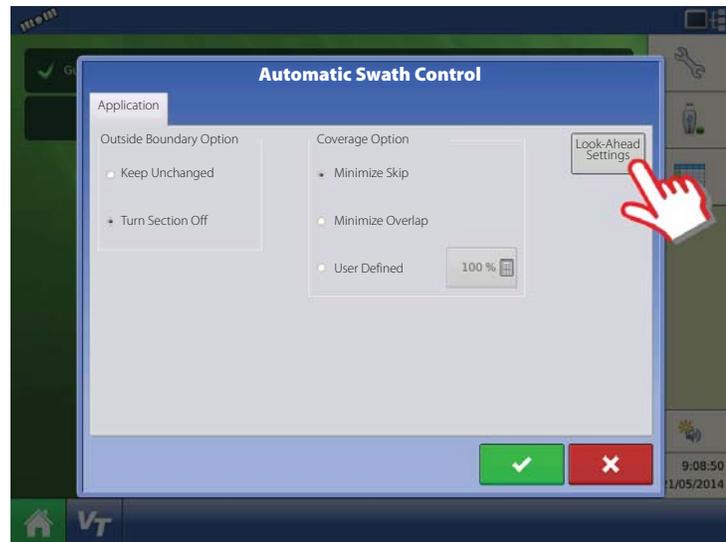
Turns off the implement section when that section first enters your coverage area.

This prevents the possibility of overlaps.

- User Defined

Allows you to choose what percentage of the implement section is within the coverage area before that section turns off. For example, if you choose 50%, then the section will switch off when half of it is within your coverage area.

- Press "Look Ahead Settings" to edit settings.



52. Look Ahead settings:

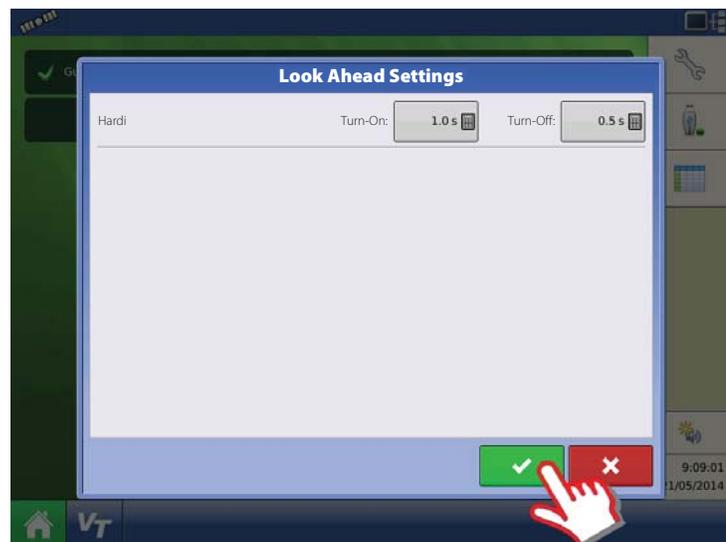
- Turn-On Look Ahead

Determines how far ahead the system looks to turn the sections back on. This compensates for delay in the system when the sprayer sections are turned on.

- Turn-Off Look Ahead

Determines how far ahead the system looks to turn the sections off. This compensates for delay in the system when the sections are turned off.

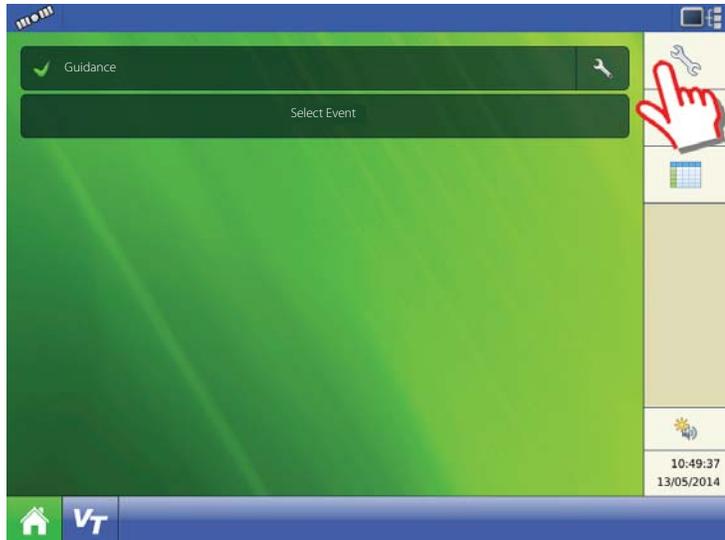
Press  to confirm.



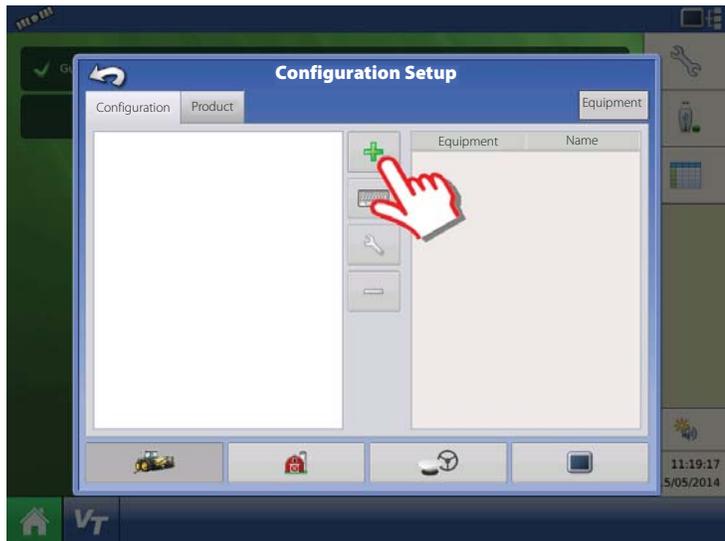
- 53. When returned to Configuration Setup screen, then press  in order to continue with "Product setup" on page 4.46.

Configuration for Self-Propelled sprayers

1. At the HC9500 Home Screen, press  to enter the Configuration Setup.



2. Press  to add a Configuration.

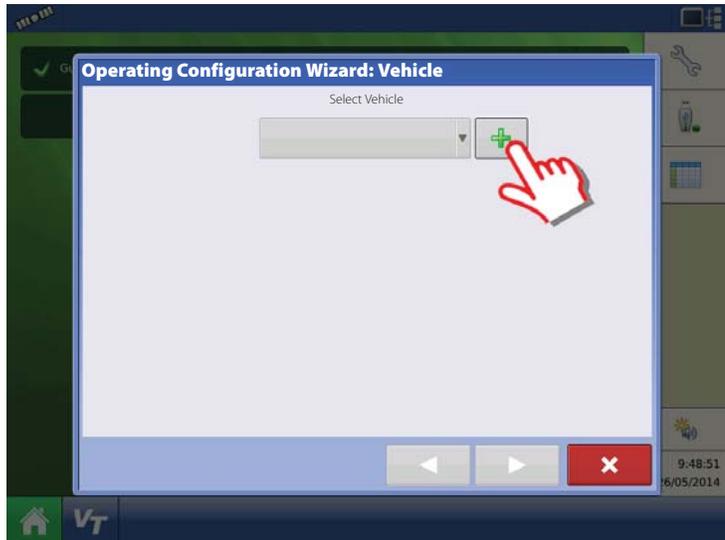


3. Press "Application" to create an application setup.

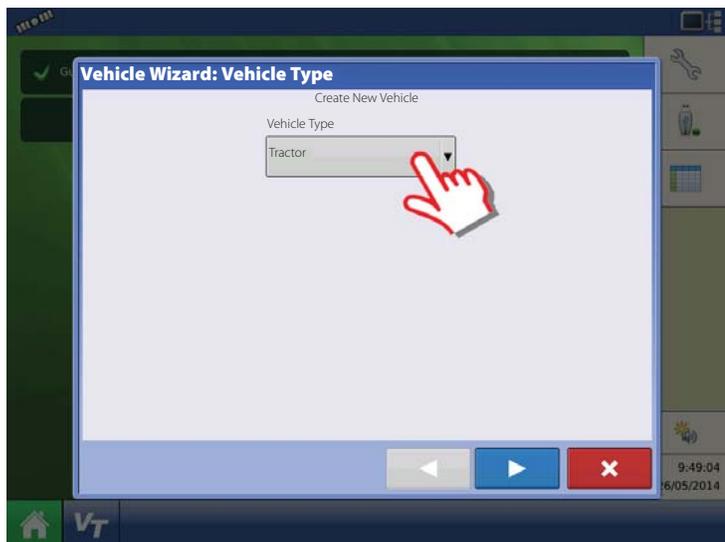


4 - System setup

4. Press  to select a vehicle.



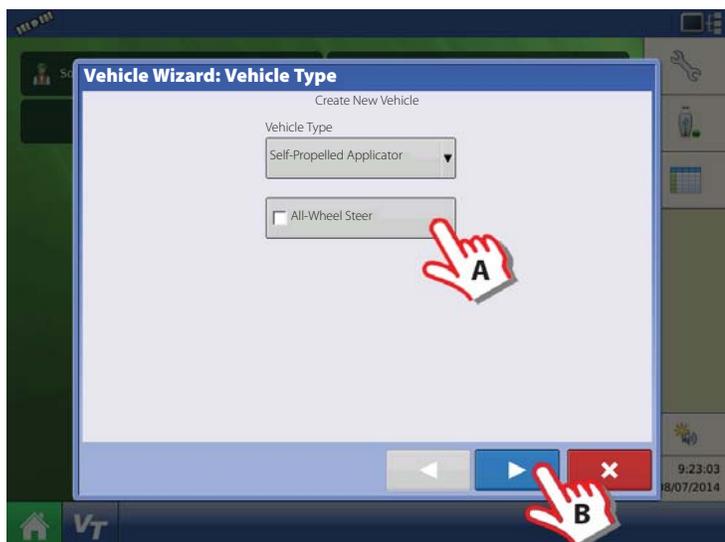
5. Select "Self-Propelled Applicator".



6. When Self-Propelled Applicator is selected:

- A. Check this box if All-Wheel Steer is applicable and will be used when spraying.
- B. Press  to confirm.

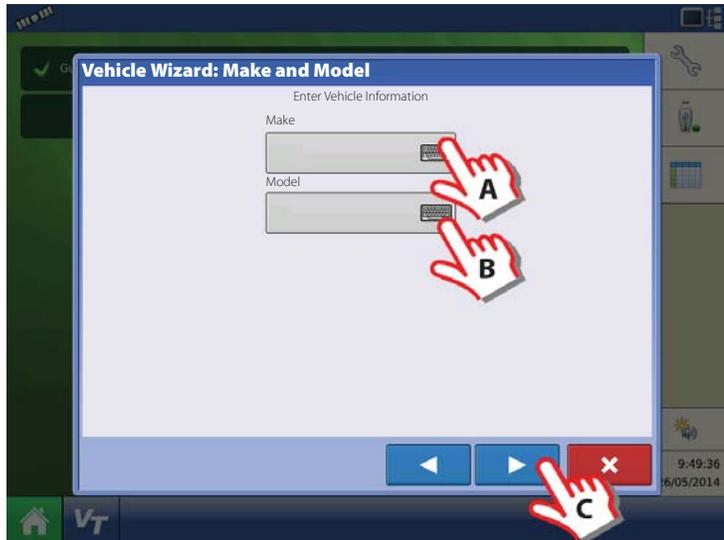
 **ATTENTION!** Checking the "All-Wheel Steer" option activates logging of 4 wheel steering for AutoSectionControl.



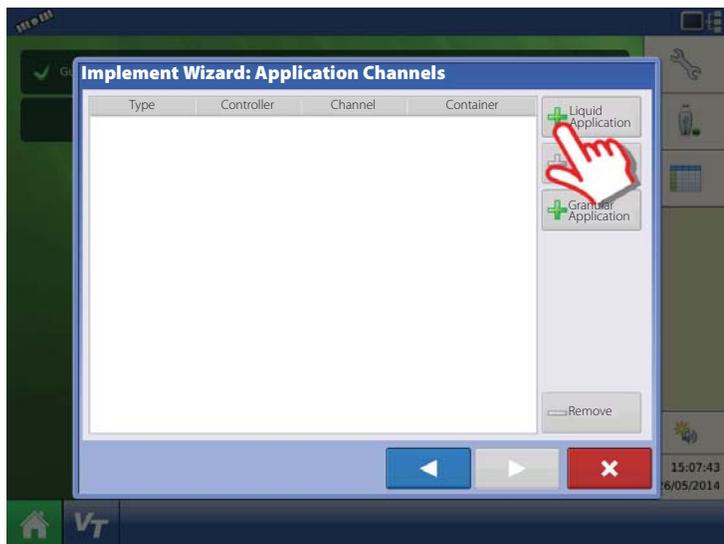
4 - System setup

7. Enter Vehicle Information:

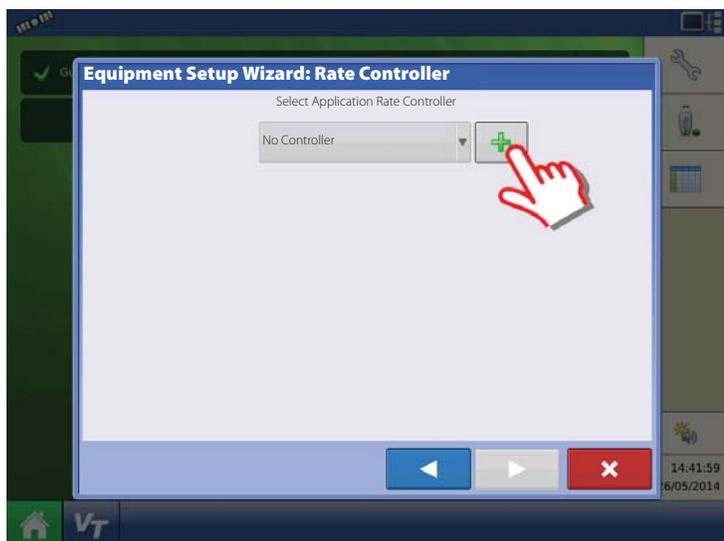
- A. Press the "Make"  to type in the vehicle name.
- B. Press the "Model"  to type in the vehicle model.
- C. Press  to confirm.



8. Press  Liquid Application to create an Application Channel.

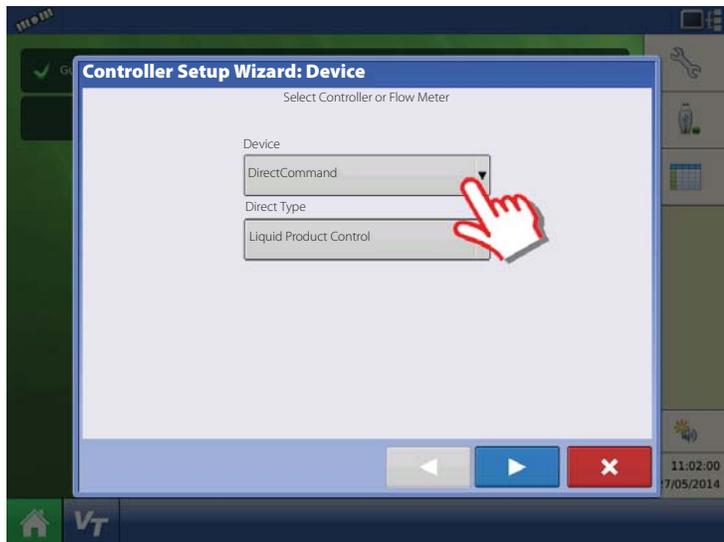


9. Press  to add a Application Rate Controller.



4 - System setup

10. Press "Device" drop down menu to select "ISOBUS" for a HARDI® sprayer.



11. Direct Type drop down menu will change to ISOBUS.

Press  to confirm selection.



12. Select Controller Make:

- A. Select "Hardi" in the "Make" drop down menu.
By selection the "Model" drop down menu will disappear.
- B. Check the "Supports Rate Control" box to enable the HARDI® VT rate control function.
- C. Press  to confirm selection.



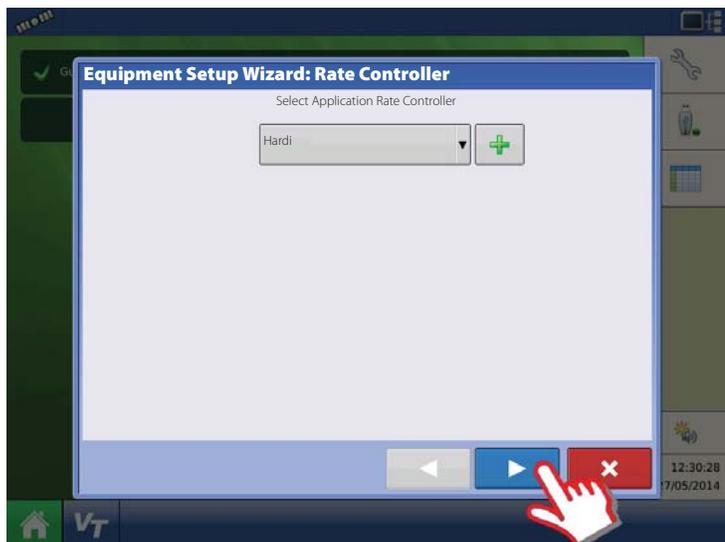
4 - System setup

13. Controller Name:

- A. Press the  to change the name.
- B. Press  to save the name.



14. Press  to confirm selection.



15. Container (Main Tank) setup:

- A. Press  to change name.
- B. Press  to enter true container capacity.
- C. Press drop down menu to change units.
- D. Press  to confirm.



4 - System setup

16. Enter Number of Boom Sections:

- A. Press the arrows to set number of sections on the sprayer.

 ATTENTION! This value must be the same as typed in the HARDI® VT menu 3.3.3

- B. Press  to confirm selection.

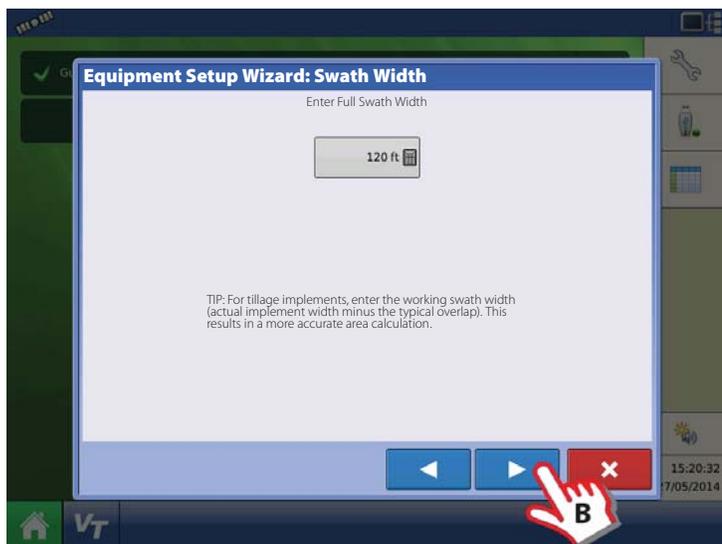


17. Enter Full Swath (Boom) Width:

- A. Press  to type in the value.

 ATTENTION! If the value is not the same as in the HARDI® VT menu 3.3.1 an ISOBUS warning will appear.

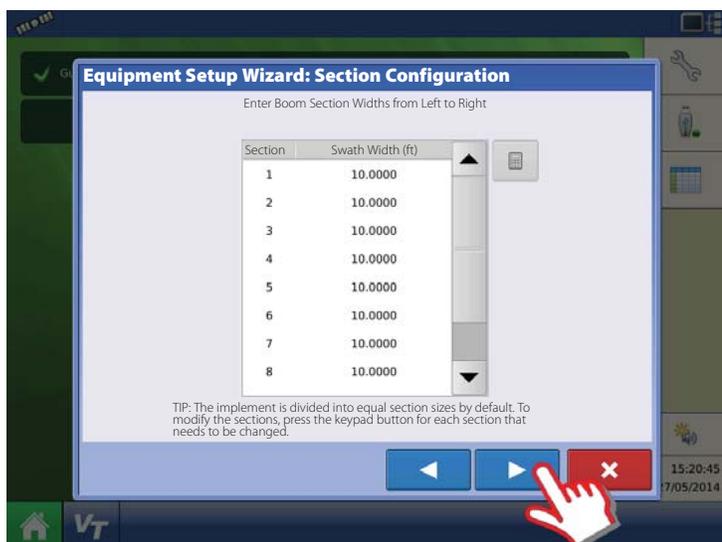
- B. Press  to confirm selection.



18. Edit Boom Section Widths from Left to Right:

 NOTE! If number of sections and boom widths (swath widths) are already correct, press  to confirm selection. Then skip to step 22.

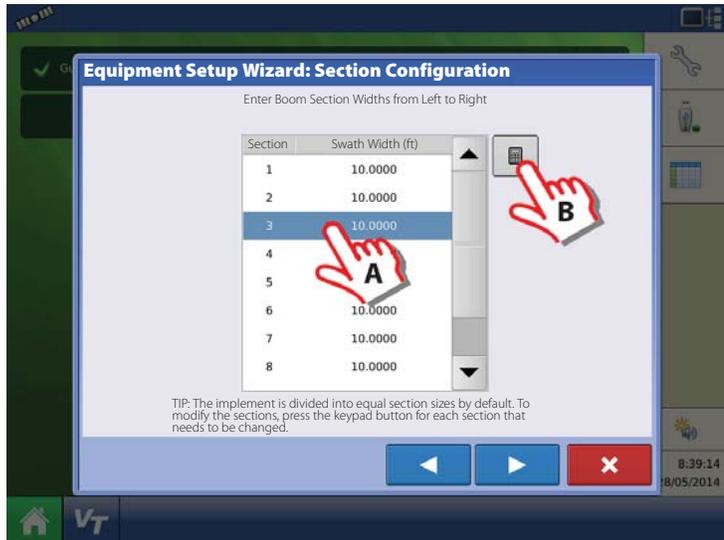
 ATTENTION! These values must be the same as typed in the HARDI® VT menu 3.3.3.1 to 3.3.3.x



4 - System setup

19. Edit Boom Section Widths from Left to Right.

- A. Press on the Section you wish to edit to highlight it.
- B. Press the  button to change to the right section width.



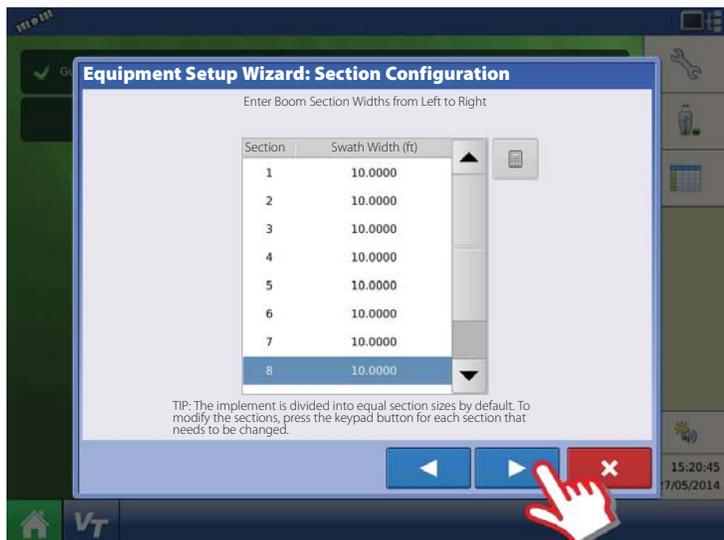
20. Type in the section width.

Press  to confirm the value.



21. When all Sections are changed:

Press  to confirm selection.

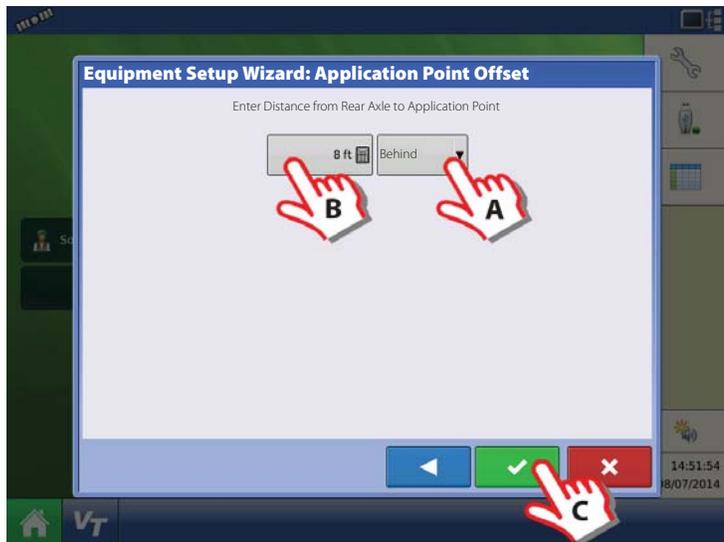


4 - System setup

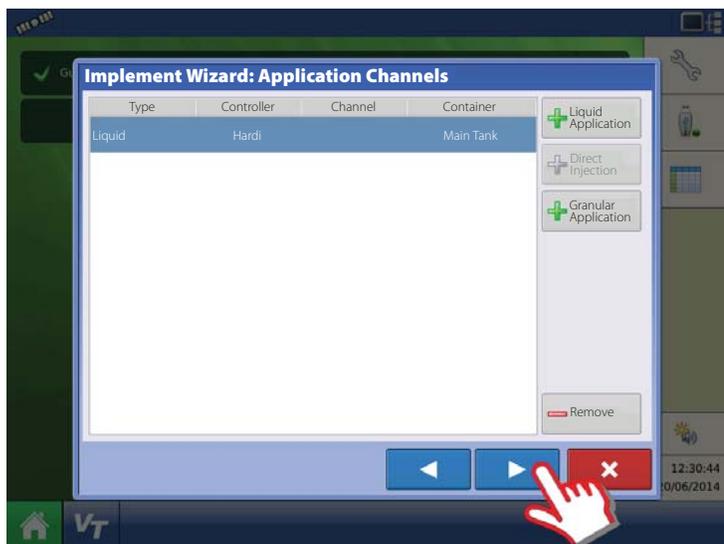
22. Application Point Offset:

- A. Press to select "Behind".
- B. Press  to enter the distance from the rear axle of the vehicle to the nozzles on the sprayer.
- C. Press  to confirm.

 ATTENTION! For offsets see "Sprayer Offsets" on page 8.1.



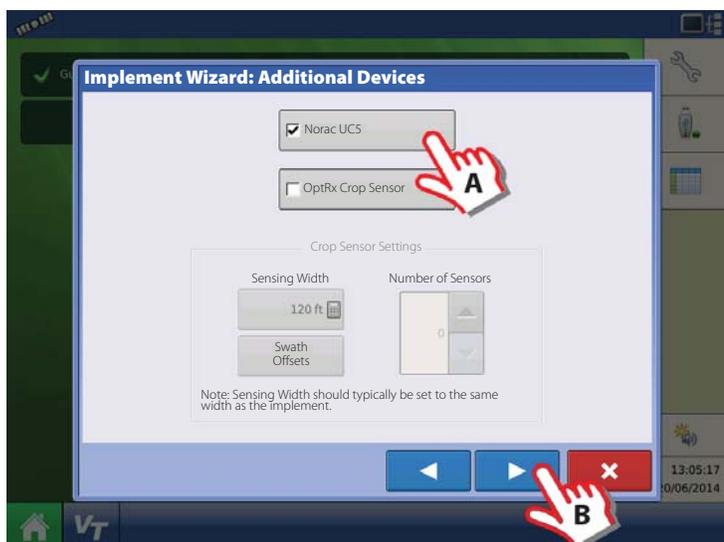
23. Press  to confirm selection.



24. Additional devices:

- A. Press "Norac UC5" button to enable the use of AutoTerrain/AutoHeight/AutoSlant.
- B. Press  to continue.

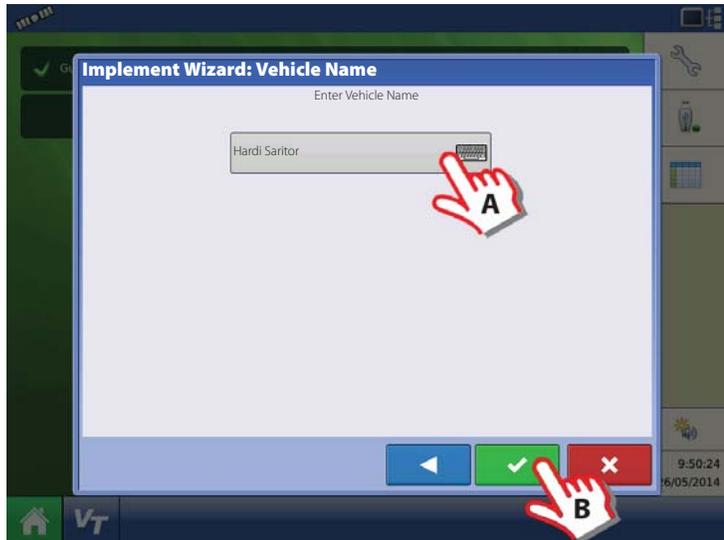
 ATTENTION! If the "Norac UC5" is not enabled, the AutoTerrain/AutoHeight/AutoSlant will not be shown in the working screen.



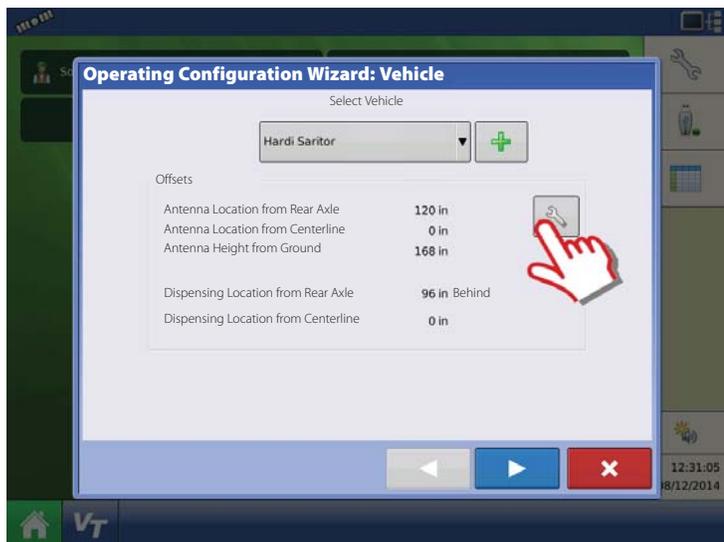
4 - System setup

25. Enter Vehicle Name:

- A. Press  button to change name.
- B. Press  to confirm name.



26. Press  to enter values for Antenna Offsets.



27. Vehicle Offsets:

- A. Press to enter Antenna Location from Rear Axle.
- B. Select if the Antenna is In Front or Behind the Rear Axle.
- C. Press to enter Antenna Location from the sprayers center line.
- D. Select if the Antenna is to the Left or Right of the sprayers center line.
- E. Press to enter Antenna Height from Ground.
- F. Press "Steering" to continue with Steering Type selection.



4 - System setup

28. Press  to confirm the settings and continue.

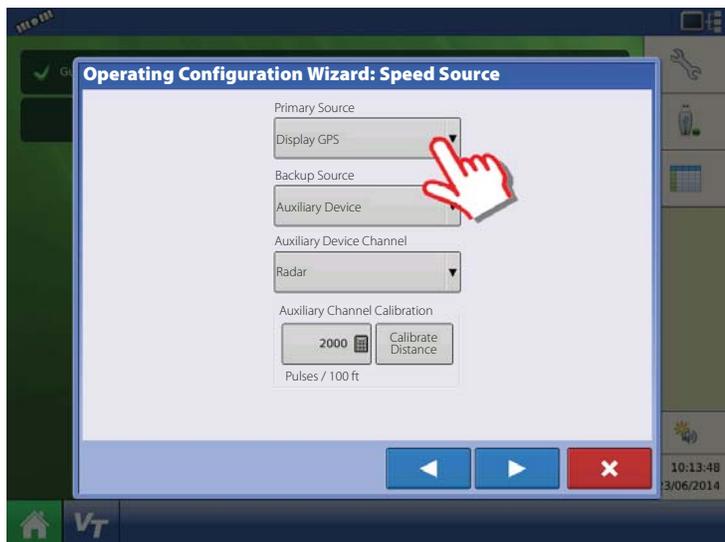


29. Select Primary Speed Source.

- Self-Propelled sprayer:
Can select between "Hardi" or "Display GPS" as speed source.
- SARITOR sprayer only:
Always select "Display GPS" as speed source.

 **NOTE!** If "Display GPS" is selected, the "Hardi" option must be selected as backup source.

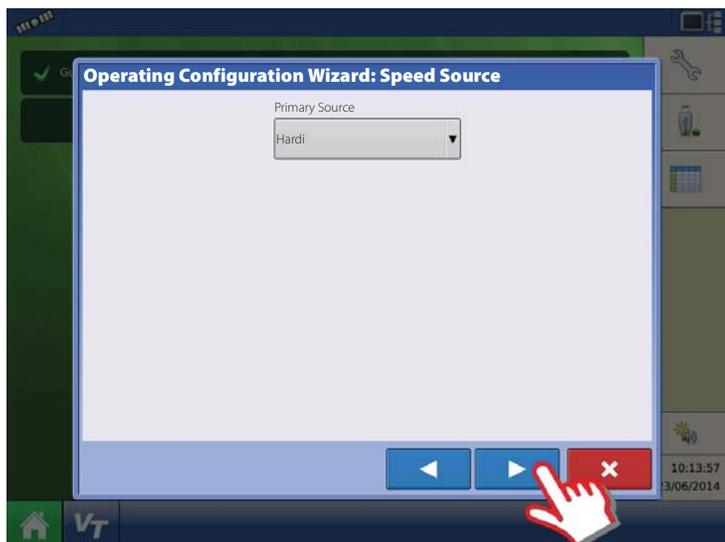
 **ATTENTION!** For additional information see "Speed Input Settings" on page 4.70.



30. "Hardi" is now selected as Primary Source.

 **ATTENTION!** No other source can be selected when "Hardi" is selected as primary source.

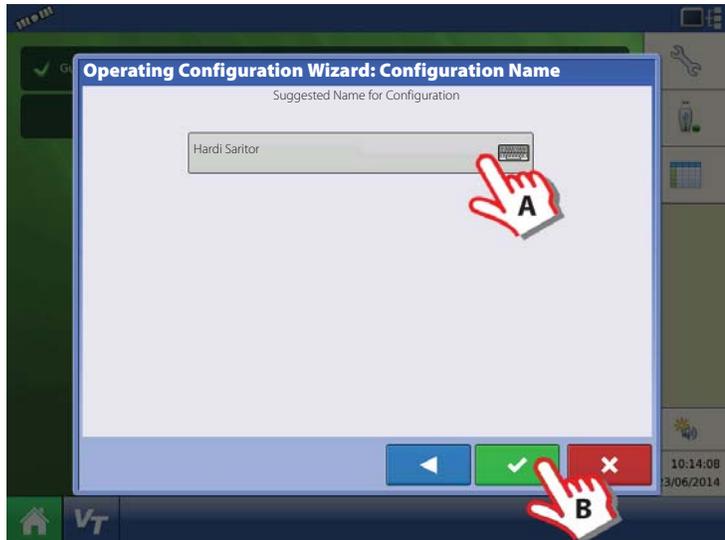
Press  to confirm the selection.



4 - System setup

31. Suggested Name for Configuration:

- A. Press  button to change name.
- B. Press  to confirm selection.



32. Overview of Configuration Setup:

Vehicle: Hardi Saritor

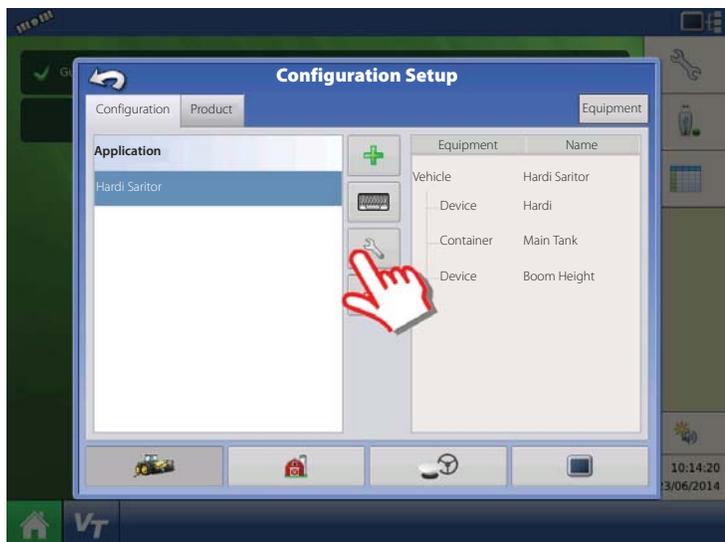
- Device: Hardi
- Container: Main Tank
- Device: Boom Height



ATTENTION! A Self-Propelled sprayer will have no implement information.

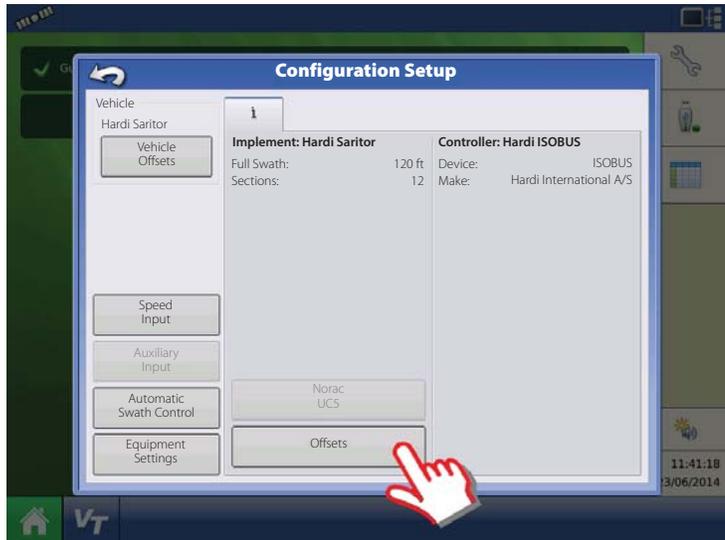


33. Press  to edit the configuration.



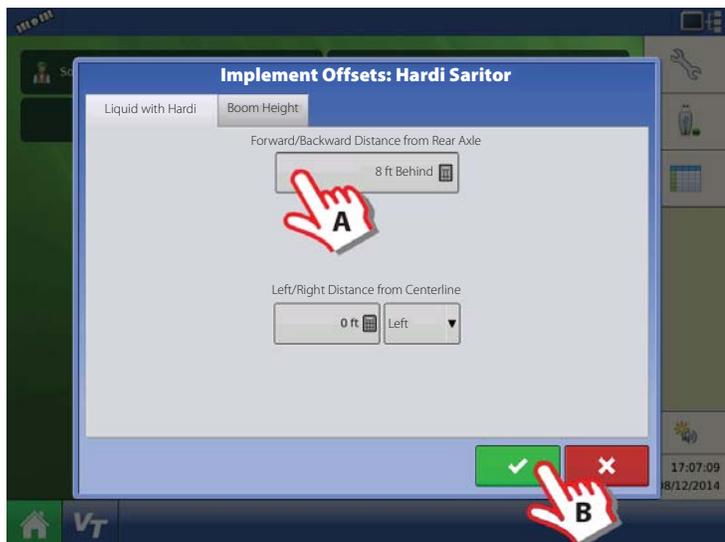
4 - System setup

34. Press "Offsets" to edit the configuration.

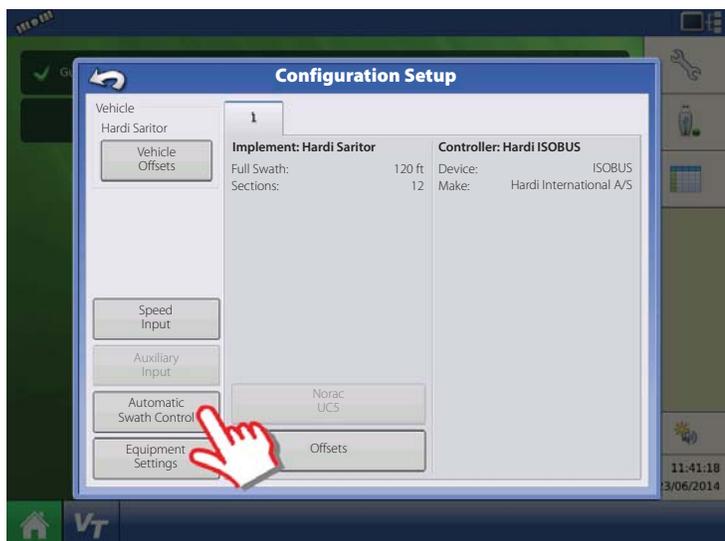


35. Implement Offsets:

- A. Press to change value.
- B. Press  to confirm.



36. Press "Automatic Swath Control" to edit the configuration.



37. Automatic Swath Control options:

- Outside Boundary Option

Select one of the two options to determine system behavior when a section exits a field boundary.

- Coverage Option

In the Coverage Option area, you must choose between three options:

- Minimize Skip

Turns off the implement section after the entire section is fully inside your coverage area.

This prevents the possibility of skips.

- Minimize Overlap

Turns off the implement section when that section first enters your coverage area.

This prevents the possibility of overlaps.

- User Defined

Allows you to choose what percentage of the implement section is within the coverage area before that section turns off. For example, if you choose 50%, then the section will switch off when half of it is within your coverage area.

- Press "Look Ahead Settings" to edit settings.

38. Look Ahead settings:

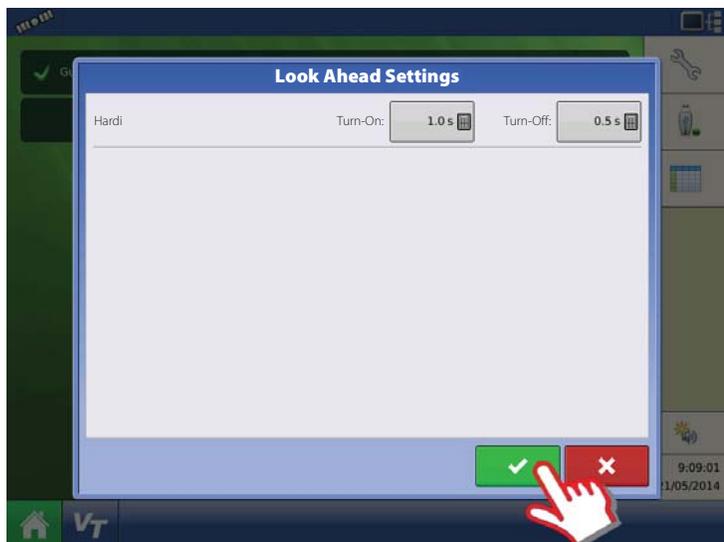
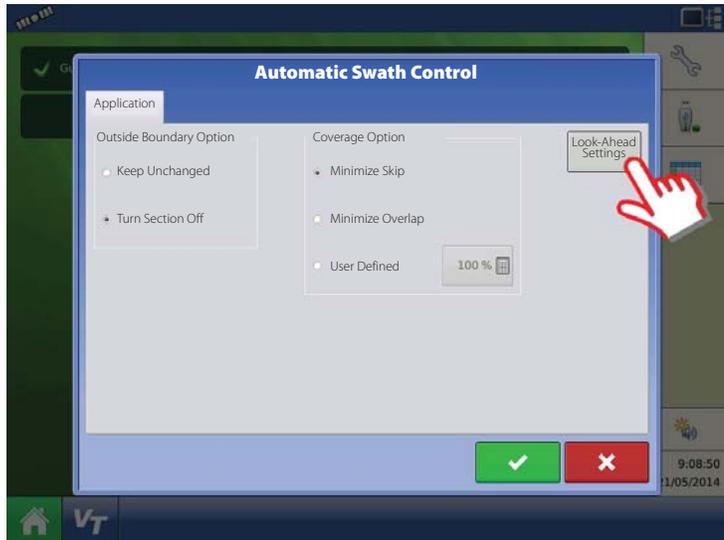
- Turn-On Look Ahead

Determines how far ahead the system looks to turn the sections back on. This compensates for delay in the system when the sprayer sections are turned on.

- Turn-Off Look Ahead

Determines how far ahead the system looks to turn the sections off. This compensates for delay in the system when the sections are turned off.

Press  to confirm.

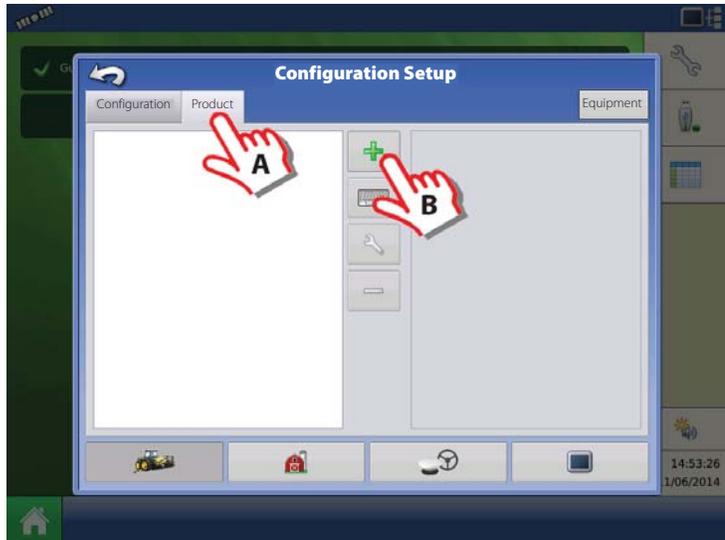


39. When returned to Configuration Setup screen, then press  in order to continue with "Product setup" on page 4.46.

4 - System setup

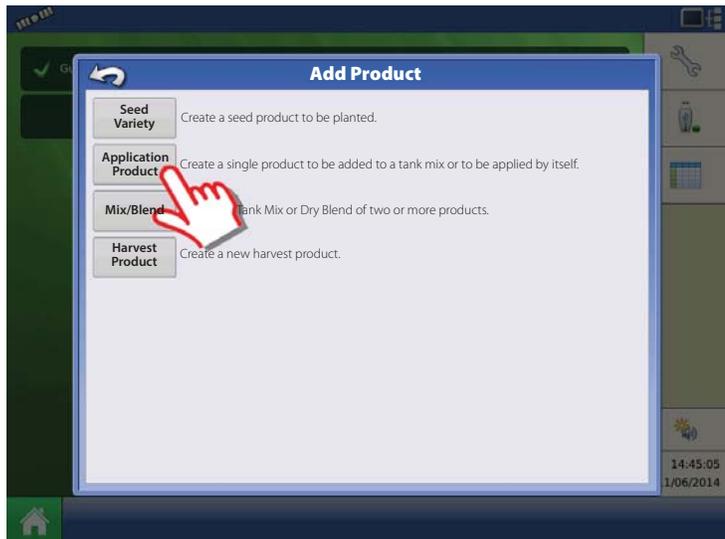
Product setup

1. At "Configuration Setup" screen:
 - A. Select the Product tap to create a product.
 - B. Press  to add a product.

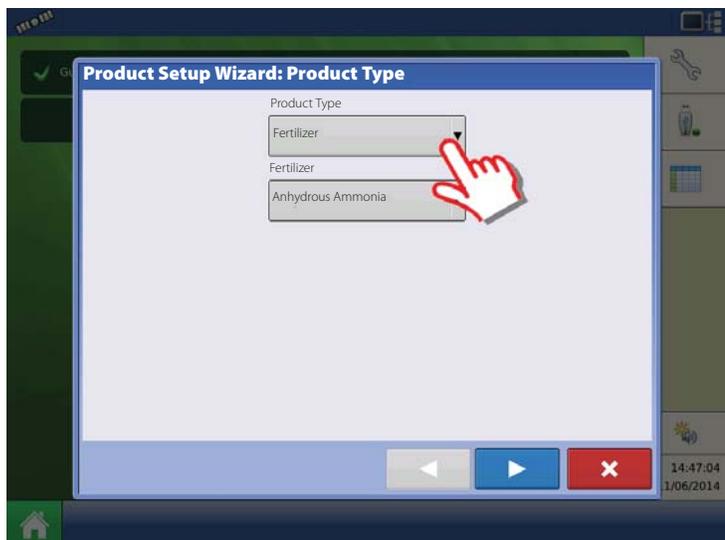


2. Select "Application Product" to create a single product or a carrier.

 ATTENTION! This example will show setup with Water as Carrier.

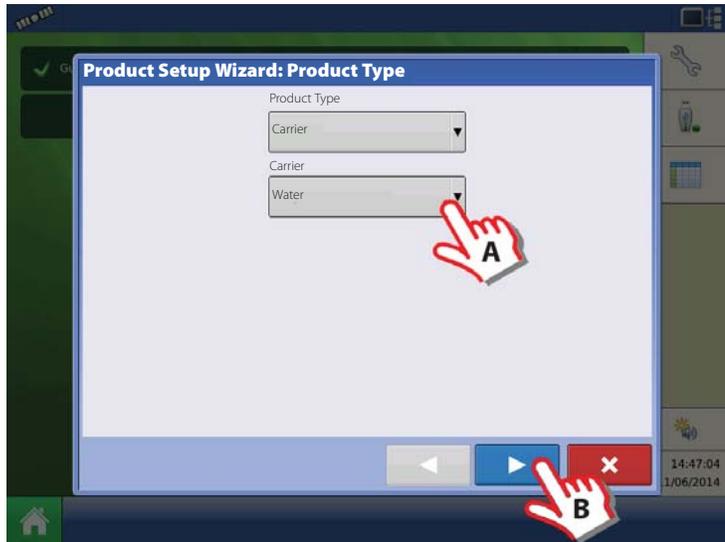


3. Press the drop down menu to select Carrier as Product Type.

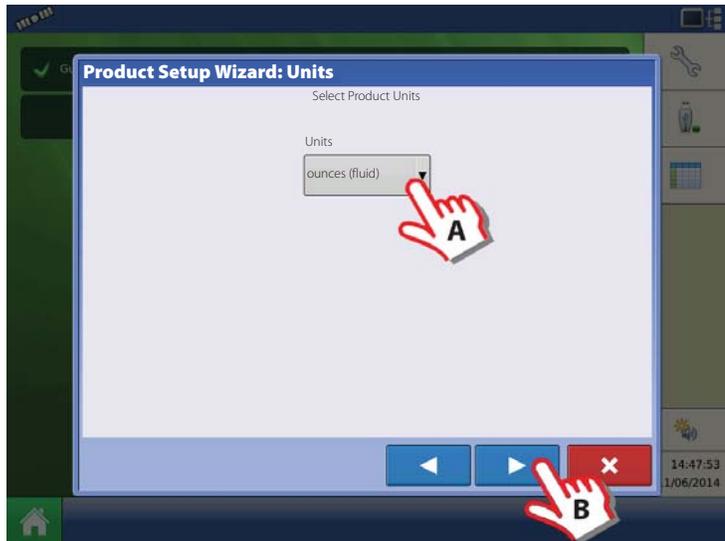


4 - System setup

4. Carrier drop down menu:
 - A. Select Water as Carrier.
 - B. Press  to confirm the selection.

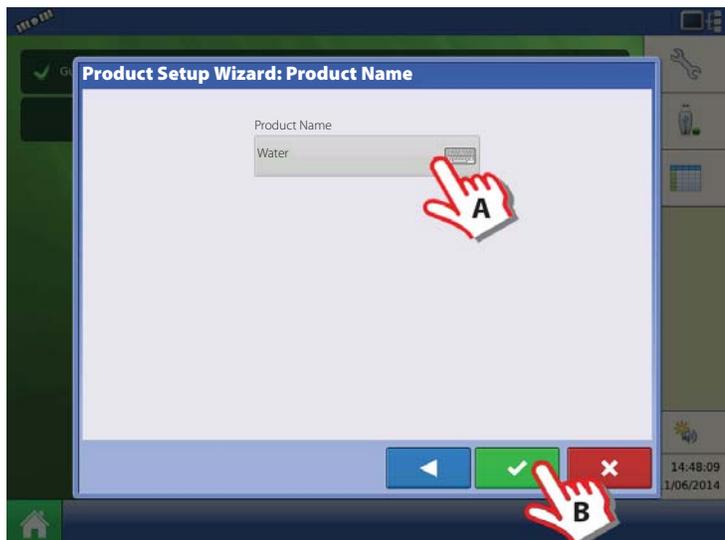


5. Select Product Units:
 - A. Select ounces as units.
 - B. Press  to confirm the selection.



6. Product Name:
 - A. Press  to change Product Name.
 - B. Press  to confirm Product Name.

 NOTE! This step is not possible when setting up water as Carrier.

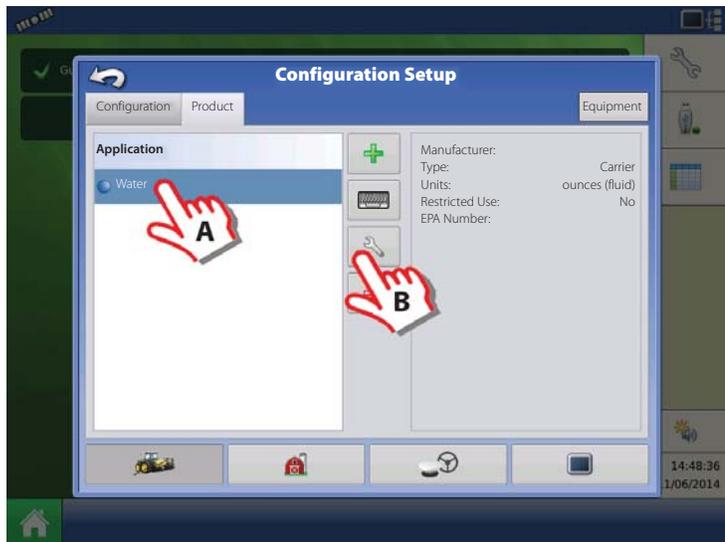


4 - System setup

7. Application Water is now created.

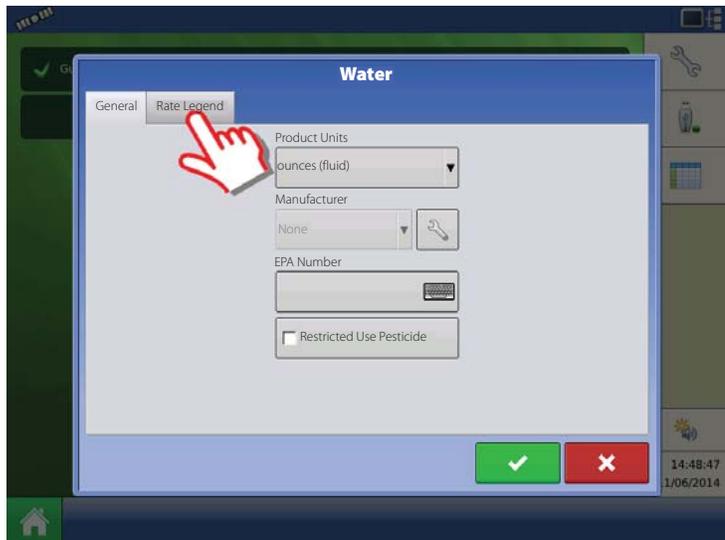
To edit the Legend Settings:

- A. Mark the product.
- B. Press .



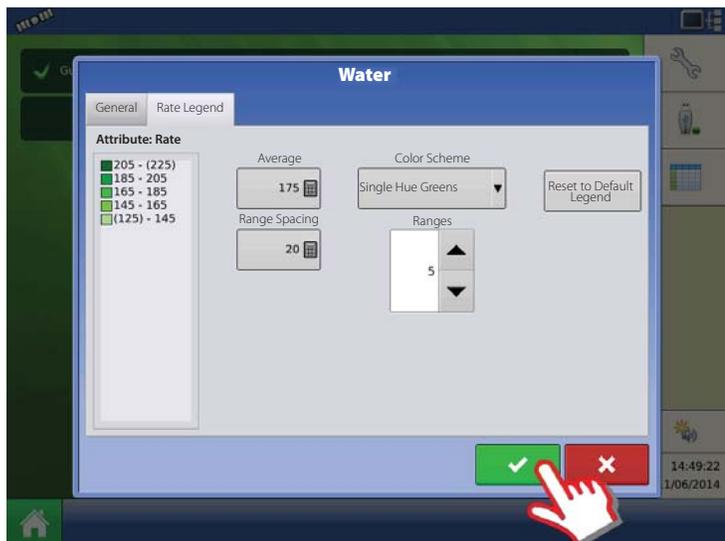
8. Configuration Setup window opens at "General" tab.

Press "Rate Legend" tab to setup Legends.



9. The Legend Settings can be edited as necessary.

Press  to confirm and continue.



SETUP COMPLETED



ATTENTION! When the complete Quick Setup Guide has been completed, the controller is ready for use in the field. Refer to "Setup Event" on page 5.5 for instructions on how to begin a field operation.

Configuration

Setup buttons



The Setup buttons shown at the bottom of the Setup screens, are where you can toggle between screens that adjust settings for Configuration, Management, GPS and display.

-  Configuration button.
 Press to adjust the configuration settings particular to your vehicle and equipment; as well as enter and edit product information. For more information, see "Product tab" on page 4.50, as well as "Configuration Setup Screen" on page 5.1.
-  Management button.
 Press to access and edit Grower, Farm, Field and Operator information. For more information, see "Management button" on page 4.51.
-  GPS button.
 Press to adjust Guidance settings, GPS settings, and lightbar settings (if applicable). For more information, see "General info" on page 6.1.
-  Display button.
 Press to adjust settings for Time and Date, brightness and volume settings, operating units, language, enable video, view features, and also create and restore backups.

Configuration button

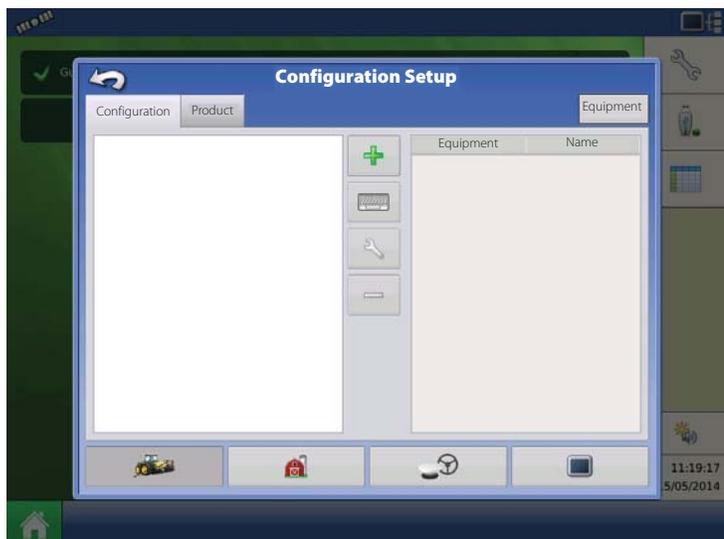
Configuration tab



The Configuration tab is where you can create, view and change configuration settings.

An operating configuration is a task-specific association of vehicle, implement, controller, and speed source that is saved for use over different seasons and on different displays.

-  Add button.
 Press to add an operating configuration. A wizard takes you through the process of creating a configuration.
- When finished, the new configuration appears in the list on the left side of the screen.



4 - System setup

- When you highlight the configuration, the equipment in the configuration are listed in the box on the right side of the screen.
- Information regarding configurations for specific operations is given in each operations chapter.

-  Rename button.

Press to rename the configuration.

-  Setup button.

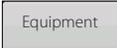
Press to adjust configuration settings.

-  Remove button.

Press to remove a configuration.



WARNING! When you remove a configuration all data logged with that configuration will also be removed! However, all log files will remain in memory until exported to the USB drive.

-  Equipment button.

Press to add, edit, or remove information for a specific vehicle, implement or controller.

Product tab



The Product tab is where you can add, edit or remove product information.

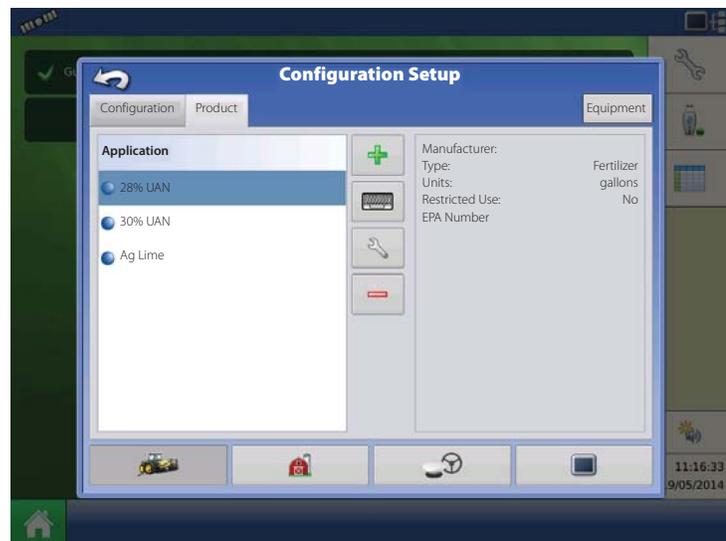
The Product tab is where you can perform the following tasks:

- Add or import Planting products.
- Add or import Application products.
- Add Application Product mixes (such as a tank mix, or a dry blend of multiple products).
- Add or import Harvest products.

-  Add button.

Press to add or import a Product. At the following screen, choose a Product Option: Add Product, Import Product, or Add Product Mix (if in Application). From here, an on-screen wizard continues you through each step of the setup process.

- When finished, the new product appears in Product Tab.
- When you highlight the product, information about the product appears on the right side of the screen.
- Specific planting and application product information can be viewed in those respective chapters.





Rename button.

Press to rename the product.



Remove button

Press to remove a product.



NOTE! When you remove a product all regions using that product will also be removed!

Application Settings

Edit Info button

Press to edit the following information for the highlighted product in the Product List.

- Product Units
- Manufacturer
- EPA Number
- Check box for restricted use pesticides

Edit Legend button

Press to change the legend settings listed below.

- Average
- Range Spacing
- Color Scheme
- Ranges
- Reset to Default Legend

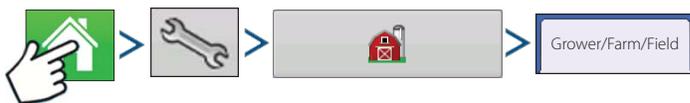
For more information, see “Legend Settings” on page 5.1.

Management button

The Management tabs, which are accessible from the Management button on the Setup screen, include Grower/Farm/Field, Season, and Operator.



Grower/Farm/Field tab



Grower

The Grower refers to the business or person that the system is in operation for. Contact information can also be entered for each Grower. The Grower information will be passed into mapping software for automatic Grower setup within desktop software.



Add button. Press to add a Grower.



Rename button. Edit an existing name of a Grower by highlighting that name and pressing button.

4 - System setup



Setup button. Press to enter information for the Grower's Name, Tax ID and Memo.



Remove button. Press to remove a Grower.



NOTE! Personal Information entered at this screen can be added or edited at any time.

Farm and Field

In the display, farms are subdivided into fields. You can associate Field names with a particular Grower. If the display will be used for multiple Growers, enter each Grower business name and associate the field names with the correct grower when the fields are set up within the system.

In the Field Tab, select a Grower underneath the drop-down menu at the top. Each farm of that particular grower is shown in a list, with the fields within that farm as sub components within that list.

-  Add button

Press to add a Field.

-  Rename button

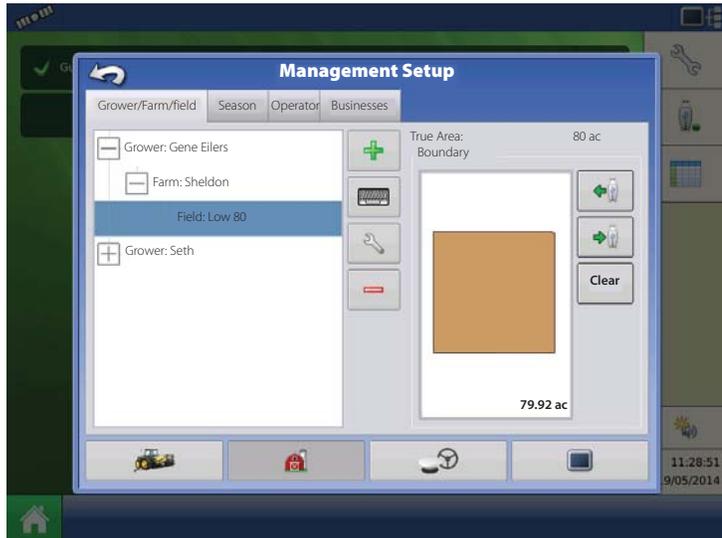
Edit an existing name of a Field by highlighting that name and pressing button.

-  Setup button

Edit the Farm and Field information by highlighting that name and pressing button. The Field Information screen appears.

-  Remove button

Press to remove a Field.



The Field Information screen opens, showing the name of that field in the "Field" title bar.

Field Name information that can be added or edited by pressing 

Possible to edit:

- County
- Township
- Range
- Section Number
- Legal Description

Shown in the total acres (hectares) of the field.

- FSA Number

Refers to the U.S. Farm Service Agency's four-digit number assigned to every field.

- FSA Area

Refers to tillable acres as established by the FSA.

- Clear Bounds button

Press to center the map on the current GPS position.



NOTE! The Clear Bounds feature is particularly useful if you have flyer points or have logged a point outside the mappable range of your current location.

4 - System setup

Importing and Exporting Field Boundaries

Boundaries can be created with the display or imported from desktop GIS software. Any boundary files present in the display can also be exported for use in desktop mapping software.

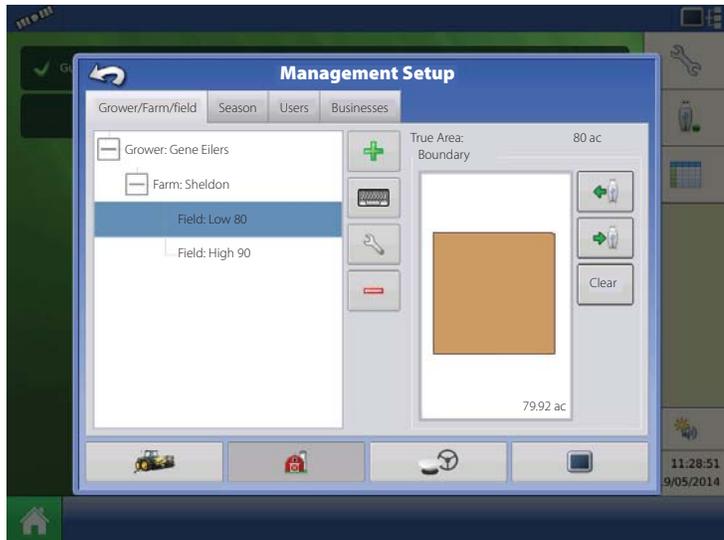
 NOTE! For more information on creating boundaries, see “Create Boundary” on page 5.3.

-  USB Import button

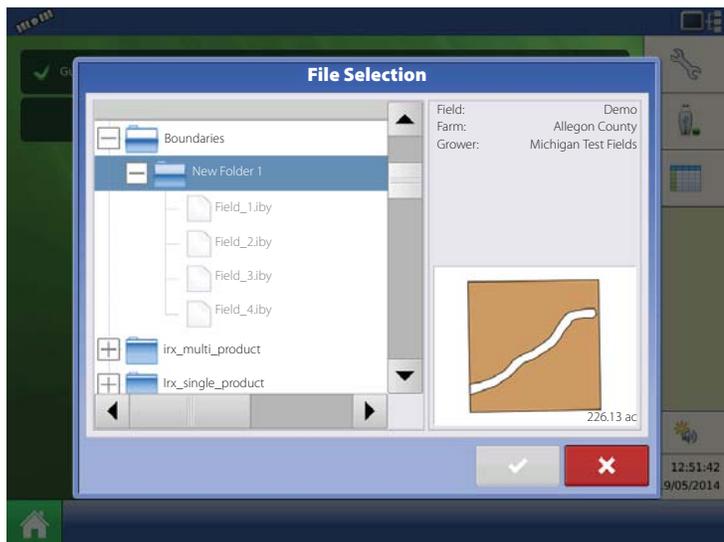
To import a boundary from the USB drive, first go to the Setup Field tab, highlight the correct field in the Farm/Field list and press the USB Import button.

The File Selection screen appears. Highlight the desired file to import.

Operator can import/export all fields and boundaries at once with an .AGSETUP file. For more information on .AGSETUP files see “.AGSETUP” on page 8.2.



Press  to complete the import process.



-  USB Export button

To export a boundary to the USB drive, highlight the correct field in the Farm/Field list and press the USB Export button. At the File Selection screen, highlight the desired field to export.

A screen will appear telling you that the boundary was exported successfully. Press  return to the field setup screen.

Season tab



A season is defined as the calendar year that the crop will be harvested. A season has a start and an end date. Creating a season and setting it to active is required prior to the system logging any data.

The seasons are displayed in lists, with the Active season displayed in bold face type. All new data is logged to the active season; therefore a season must be set as Active before you can log any new data to it.

-  Add button.
Press to add a Season.
-  Edit button.
Edit an existing name of a Season by highlighting that name and pressing button.
- Set Active button.
Press to set the season selected in the Summary list box to the active season.
- Season Reminder button.
Press to set the date that the system will prompt the operator to create a new season.
-  Remove button.
Press to remove a season.

Operator



Management Setup screen - User tab allows user to add, modify, or delete users from the display.

Add a user



1. Enter first name and/or last name (have to enter a first or last name, recommend entering both)
2. Enter applicator license (optional). Press to continue.
3. Select Operator or Manager (can select either, none, or both). For more information on selecting Operator/Manager and setting up permissions, see "Permissions" on page 4.57. Press to continue.
4. Enter and verify password (optional)
 - Locks the displays ability to load/change operating configurations, access setup and USB, if Manager has a password set.
 - Leaves display unsecure unless each manger sets a password.
 - Warning message appears if passwords do not match.
 - No restriction for password format (can be any combination of letters, numbers, and special characters).
 - Case sensitive.
5. Press  to accept.

4 - System setup



Setup button.

Press to edit operator information by highlighting that name and pressing button. Setup button allows user to edit information originally entered when profile was added. Edit button also allows access to more phone, email, and address information.



Remove button.

Press to remove an operator.

User Setup button (Edit User)



General tab

- First and Last Name
- Set and Clear Password
- Applicator License
- Memo

Phone/Email tab

- Home Phone
- Mobile Phone
- Business Phone
- Home Email
- Business Email

Address tab

- Address
- Extended Address
- City/Locality
- State/Province
- Country
- Postal Code

Permissions

This is an optional function that defines what access the user will have in the display. Users are defined as Operator or Manager (can select either, none, or both).

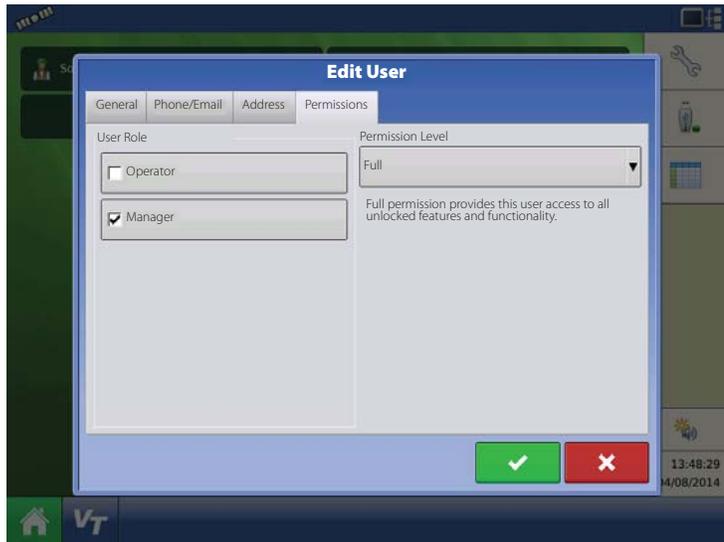
Operators

- Have full or limited access
- No access to USB or Setup options, unless also set as a Manager
- Can import from USB from Map Screen (RX, patterns, boundaries)
- Manager sets up privileges

Managers

- Full access to the display settings and functions
- Only user that can change the selected configuration
- Ability to log out of the display

System can be set up with operators only. Passwords are not used when set up this way.



Permission Level for Operators

Full Permission

Provides full access to features and functionality on the map and home screen. A user, set only as an Operator, cannot select a different configuration and cannot access USB or Setup, when a manager is setup in the display.

Basic Permission

No access to:

- Summary screen
- Legend Tab on Map screen
- Marks Tab on Map screen
- Boundary Tab on Map screen

Limits Guidance options to:

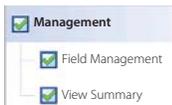
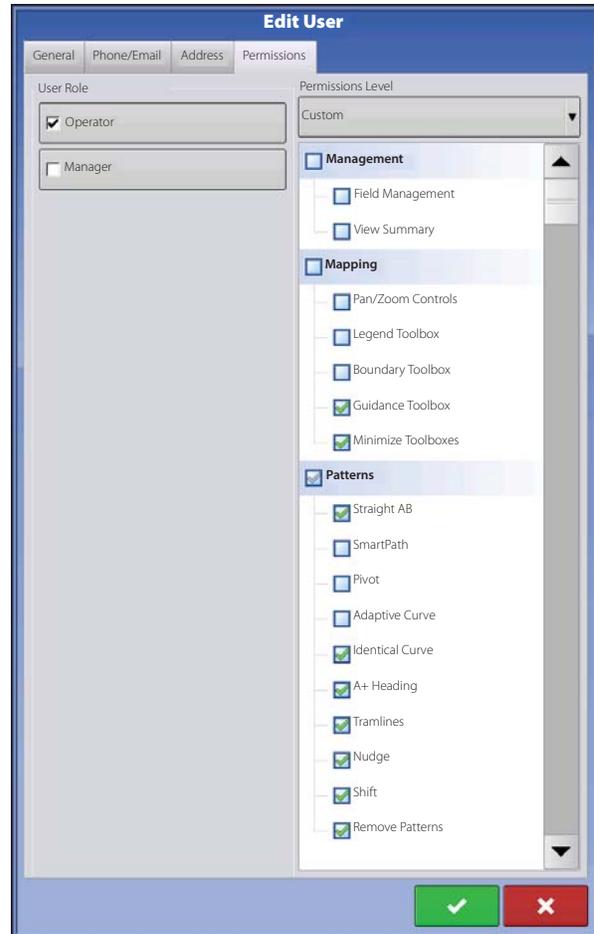
- Creating & loading Straight AB or SmartPath patterns
- Nudge
- Remark A
- Save or reset guidance line

4 - System setup

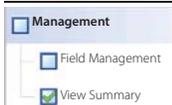
Custom Permission

Can allow or deny the following options:

- Management screen
- Pan/Zoom controls
- Legend Toolbox
- Marks Toolbox
- Boundary Toolbox
- Guidance Toolbox
- Minimize Toolbox
- Each individual guidance pattern
- Ability to remove guidance patterns



Display uses Traditional mode when Field Management is checked. Events using the Traditional mode are tied to the Grower/Farm/Field structure.



Display uses Events Only mode when Field management is unchecked.



Management, GPS/Guidance, Console Setup, and External Storage Buttons are locked for Operators.



A User can be setup as an Operator and Manager to have the same access as a Manager.



USB buttons are locked for Operators if a Manager is present in the system. A Manager can access USB menu by pressing button and inputting their password.



Setup buttons are locked for Operators if a Manager is present in the system. A Manager can access setup menu by pressing button and inputting their password.



A User can be setup as an Operator and Manager to have the same access as a Manager.

The Home and Map screen will appear different depending on how you assigned user permissions. For setting up users with permissions see “User Setup button (Edit User)” on page 4.56.

Basic Permissions - Home screen

- No Summary screen.
- Setup and USB buttons are locked (as indicated by a padlock icon on those buttons).
- Brightness and volume are on home screen - settings saved per operator.
- Operator Change - Option to continue or start new operation when operators change.

Full Permissions - Home Screen

- Summary screen button is present.
- Setup and USB are locked.
- Management, GPS/Guidance, Console Setup, and External Storage Buttons are locked for Operators.
- A manager can access these buttons by pressing the button and inputting their password.

A user, set only as an Operator, cannot select a different configuration, when a manager is setup in the display. When a manager is setup in the display, only a managers can unlock and change the configuration so the manager should make sure to select a configuration upon setup.

Map screen appearance of an operator with Basic permission. Only the Guidance toolbox is present.

Operator can

- Create guidance lines
 - Straight AB
 - SmartPath
- Nudge
- Guidance setup



Accessing Setup Menus

1. Press  button.
2. Select Manager from drop-down menu. Press .
3. Enter password. Press .

Now have complete access to the setup menus:

- Configurations Settings
- Grower management
- GPS settings
- Display settings

Do not have to be a Manager to create certain objects:

- Grower
- Farm
- Field
- Product (can't change units)

4 - System setup

Accessing USB

1. Press  button.
2. Select Manager from drop-down menu. Press .
3. Enter password. Press .

Now have complete access to the USB functions:

- Import/export
- AgSetup files
- Export data
- Upgrade firmware
- Advanced options

Advanced Options with USB

- Ability to create/restore backups from USB
- Options for exporting log files
 - Export by grower
 - Export data at shutdown
 - Export all log files

Forgotten Passwords

When a Manager forgets his password he won't be able to access Setup.

Tech Support will be able to generate a password based on the serial number and firmware of the monitor.

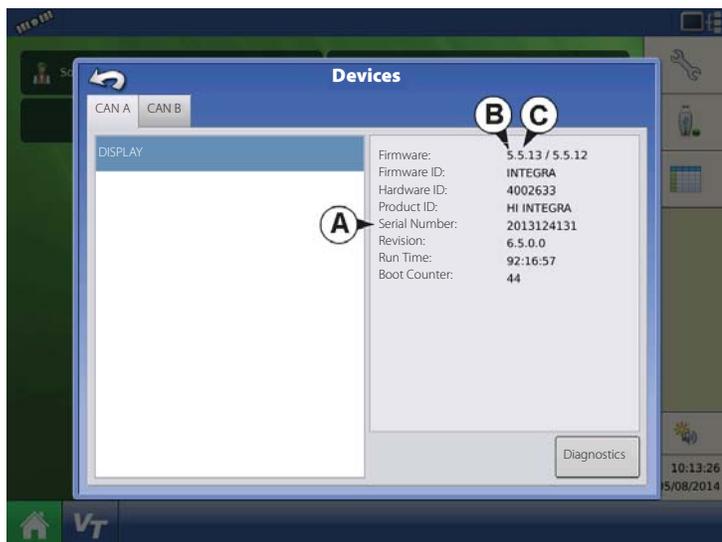
Password generator will require the following information:

- A. Display serial number
- B. Major revision
 - First digit of firmware version
- C. Minor revision
 - First digit of firmware version after decimal.

Example

- A. Version 5.4
- B. Major = 5
- C. Minor = 4

Only needed when a Manager forgets their password and works within the display until firmware is upgraded.



How will Tech Support identify if the person calling in is a Manager or not?

They will ask the caller, "Are you a Manager in the display?" If the customer answers yes, Tech Support will generate the password. If the customer answers no, Tech Support will require a Manager to authorize the display to be unlocked.

What if a customer doesn't want to risk forgetting passwords and generating new ones?

A display does not need to be locked with a password. The display can be operated as it has been in the past without passwords. Operators can also be setup with limited or customized access without passwords.

Tips

- Managers, keep a record of all passwords set in the display.
- Operators, write down your personal password.

- To avoid Operators obtaining unwanted access to a display, instruct them to call a Manager for help with passwords before Tech Support.

Businesses Tab

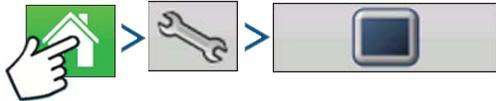


The businesses are displayed in lists, with the Active business displayed in bold face type. All new data is logged to the active business; therefore a business must be set as Active before you can log any new data to it.

-  Add button.
Press to add a business
-  Edit button.
Edit an existing business by highlighting that name and pressing button.
-  Remove button.
Press to remove a business.

4 - System setup

Display Button



The Display screen contains the following tabs:

- General tab
Displays settings related to Time, Date, display screen settings, operating units, video and display owner information.
- Owner tab
Contains functionality for setting up a Display Owner and making any needed edits to the owner personal information.
- Features tab
Lists unlocks for a particular display.
- Advanced tab
Includes information related to log files and system backups.

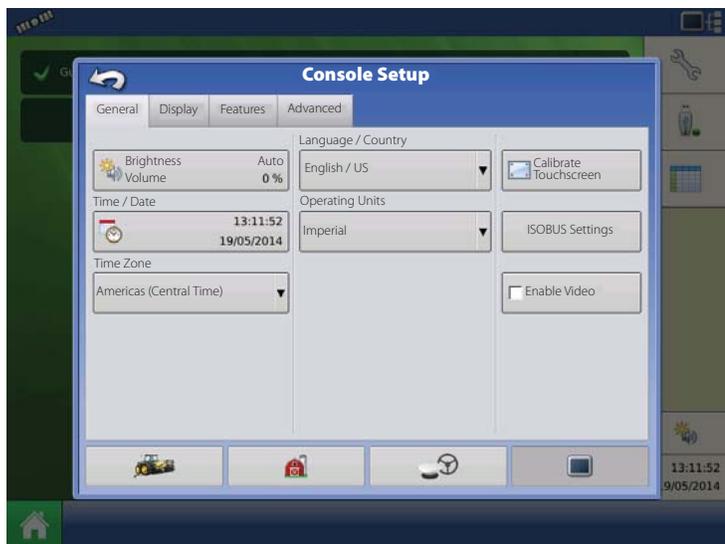
General tab



The Setup General Tab is consists of the following items:

- Time/Date button
Press button and use  /  to adjust the hours, minutes, A.M./P.M. settings, month, date and year. To make these changes effective, press .

i NOTE! The display will then shut down immediately. If you do not want to shut the display down, press the Close (Red X) button; however the time/date changes will not be accepted until the display is shut down and restarted.



- Brightness and volume percentages.
To change these, press the Brightness/Volume button and use  /  to change the percentage of the Display Brightness and Speaker Volume.

i NOTE! Pressing the Automatic box will display the Display Brightness - Trim setting, which makes adjustments to the display's brightness according to the available or ambient light.

- Calibrate Touchscreen.
Press this to launch the Touch screen Calibration wizard. Calibrate the touch screen by following the on-screen instructions.



WARNING! Do not use any sharp objects to operate the touch screen or the display may be damaged.

- Time Zone
Use the drop-down menu to select your time zone.

- Language/Country Selection

Use the drop-down menu to select the language.



NOTE! The HC 8500/9500 display decides the language in the Virtual Terminal (JobCom). If the selected language in the HC 8500/9500 display is not available in the sprayers JobCom, the language in the VT/JobCom will remain English or the language linked to selected display language.

It is not possible to select specific language for the VT/JobCom when used in HC 8500/9500.

- Operating Units

Select either Imperial or Metric.

- Enable Video

Enables input from up to four video cameras.

- ISOBUS Settings

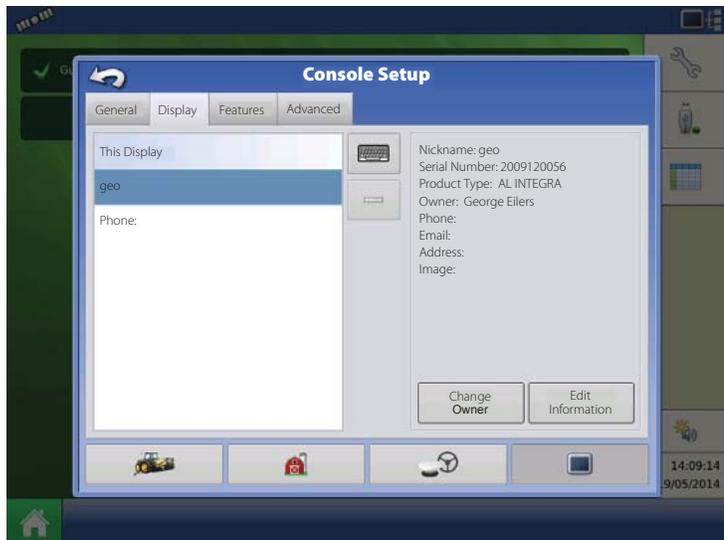
Enables Virtual Terminal and Task Controller. See "ISOBUS Settings" on page 4.67 for explanation of settings.

Display tab



The Display tab contains functionality for setting up a Display Owner and making any needed edits to the owner personal information. The Display Owner information is used in the product application report feature of application rate control.

- Nickname
- Serial Number
- Product Type
- Owner
- Phone
- Email
- Address
- Image
- Change Owner
- Edit Information



4 - System setup

Features tab



Unlocking Features

The Features Tab is where you can enter unlock codes. Unlock codes are unique to the serial number of each display and the feature registration number. You must supply these numbers to your dealer when purchasing any unlock codes.

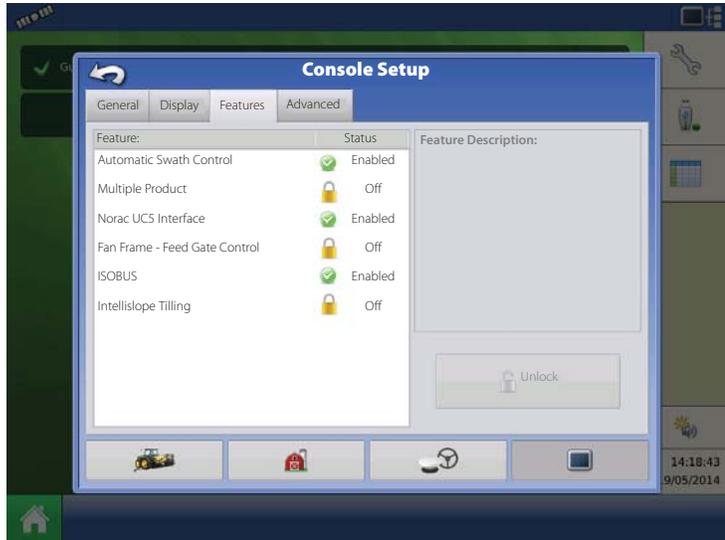
Press  to enter the unlock code and press  to enable the feature.



NOTE! Once a feature is unlocked, that feature remains with that display and cannot be transferred to another.



ATTENTION! Features used with HARDI® sprayers are always enabled.



Advanced tab



The tab allows to specify:

- Settings for copying log files.
- Specify Key Switch Standby settings.
- View and manually upgrade module firmware.
- Create and restore backup files.



WARNING! The Export Diagnostic Files, Advanced Parameters, Copy Debug Files, Clear Debug Files and Service Mode functionality on the Advanced Tab is reserved for use by the manufacturer. DO NOT change any of these settings without specific instruction from the manufacturer.



Key Switch Standby

This setting allows the display to remain powered up after the vehicle power has been shut down. Instead, the display will switch into standby mode and will appear to be shut off; however the power light will change to an amber color. Pressing the touchscreen while it is in standby mode will immediately turn the screen back on again.

Use  /  to specify a length of time that you wish the display to remain powered up in standby mode after the vehicle power has been shut down.



NOTE! When the time you specified in Key Switch Standby is nearly expired, then the amber-colored power light will flash on and off immediately preceding shutdown. If you wish the display to remain powered up for a longer period of time, touch the display to restart the Key Switch Standby countdown.

About button

Displays product licensing information and copyright information.

Log Files

These settings allow you to copy your data in the display.

- Export by Grower.
Press of export log files by growers.
- Export Data Files.
Press to copy all logged data in the display to the USB drive.
- Export Data Files on Shutdown.
Checking this check box will copy all log files to the USB drive when the display is powering down.

See "Export Files" on page 4.108 for more information.

4 - System setup

Memory	<p>Adjusts information stored in the display's internal memory.</p> <ul style="list-style-type: none">• Create Backup. Press to create a backup file of all configuration settings, products, and Grower-Farm-Field Management data structure on the USB drive. Backup files are stored using the .ibk2 file format.• Restore Backup. Press to restore a backup file from the external data drive to the internal memory of the display.• Clear Internal Memory. Press this button to clear the internal memory of the display. The system will present a warning dialogue box and ask if you would like to create a backup file prior to clearing the memory. <p> WARNING! Once you clear the system's internal memory, this information is deleted and cannot be restored unless a backup has been made.</p>
View Module Firmware	<p>Displays the Module Firmware Management screen, which is a list of all firmware modules and firmware versions that are available for the display.</p> <p> NOTE! The Module Firmware Management list includes module firmware that you may not be running.</p> <ul style="list-style-type: none">• Import Imports any firmware stored on the USB drive into the display memory.• Direct Upgrade Upgrades an individual module directly from the USB.• Remove Removes unwanted module firmware from the Module Firmware Management list. <p> NOTE! Pressing the Remove button does not remove firmware from the module itself. It merely removes the upgrade file from the display.</p>
Remove Patterns	<p>Pressing this button permanently erases all guidance patterns from the display's memory.</p>

Virtual Terminal

Virtual Terminal together with HC 8500/HC 9500

The following has to be set up in both the HC 8500/HC 9500 software and into the VT-software:

- Boom width (VT menu 3.3.1).
- Number of sections (VT menu 3.3.2).
- Number of nozzles per section (VT menu 3.3.3).

General info about Virtual Terminal

The display is compatible with the ISO 11783 (ISOBUS) Virtual Terminal Standard. This enables support of many ISOBUS compliant implements on the display. Virtual Terminal functionality enables the compliant implement's user interface to be viewed and controlled on the display.

Common Terminology

ISOBUS Working Set One or more ISOBUS modules that control an implement's functionality.

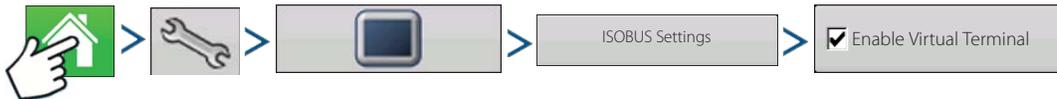
Working Set Master (WSM) Main module responsible for coordinating all communication between the VT and the Working Set including loading of the Object Pool to the VT screen.

Object Pool Defines graphical components that ISOBUS modules present on a compatible display.

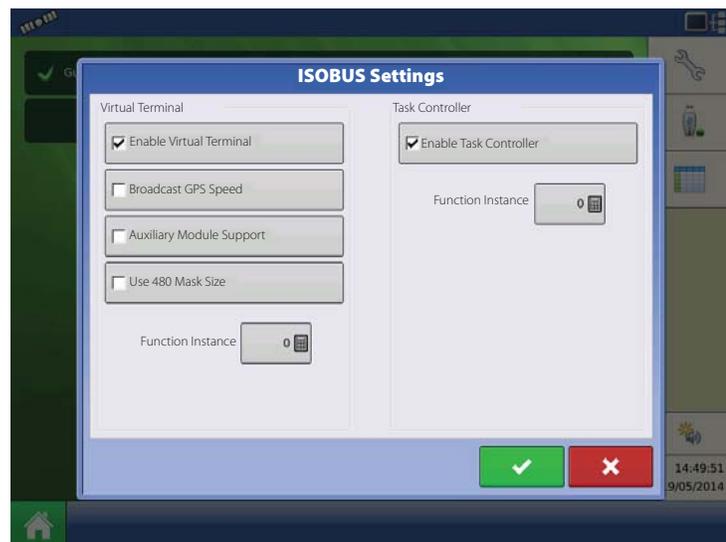


WARNING! Before operating an ISOBUS implement with the display, read the operator's manual provided by the implement's manufacturer, e.g. HARDI® and follow all safety information provided in the manual. When this display is used with an ISOBUS implement, the information and functions on the display are provided by the implement ECU and are the responsibility of the implement manufacturer.

To enable the Virtual Terminal:



ISOBUS Settings



4 - System setup

Enable Virtual Terminal	Assign Virtual Terminal functions to ISO compatible inputs. Once a Virtual Terminal has been enabled  will appear in the task bar. Toggle between the Virtual Terminal run screen and other display functions by pressing the VT button.
	 NOTE! Always enable this when connected to a HARDI® ISOBUS system.
Broadcast GPS Speed	Checking this box allows the implement to use GPS ground speed that has been gathered by the display. Do not check this when using the sprayer speed sensor - see also “Speed Input Settings” on page 4.70.
Auxiliary Module Support	Allows non-HARDI® Auxiliary Module to be used as an ISO device. Not used for normally setup HARDI® sprayers.
Use 480 Mask Size	Not used for normally setup HARDI® sprayers.
Virtual Terminal Functional Instance	Always set to 0 except when there are multiple VT's on the ISO Bus. Use  to change instance. Reboot Display.
Enable Task Controller	Checking this box allows the HC 8500/HC 9500 to communicate with the sprayer's JobCom computer and thereby use its functions, e.g. Automatic Swath Control. If having more than one screen, Automatic Swath Control can only run on one of these screens. This screen is selected by setting the Task Controller Function Instance value.
	 NOTE! Always enable this when connected to a HARDI® ISOBUS system. Otherwise it will give an error message when starting a spray job in the working screen on the HC 8500/9500.
Task Controller Function Instance	Always set to 0 except when there are multiple screens on the ISOBUS. Use  to change instance. Reboot Display.

When an ISOBUS compliant implement is connected to the display for the first time, the implement WSM sends its graphic interface, called the Object Pool, to the display.

Status bar (A) appears while Object Pools are being loaded. This process might take several minutes depending on the number of Object Pools being loaded.

Once loaded, object pools are stored in the display memory.



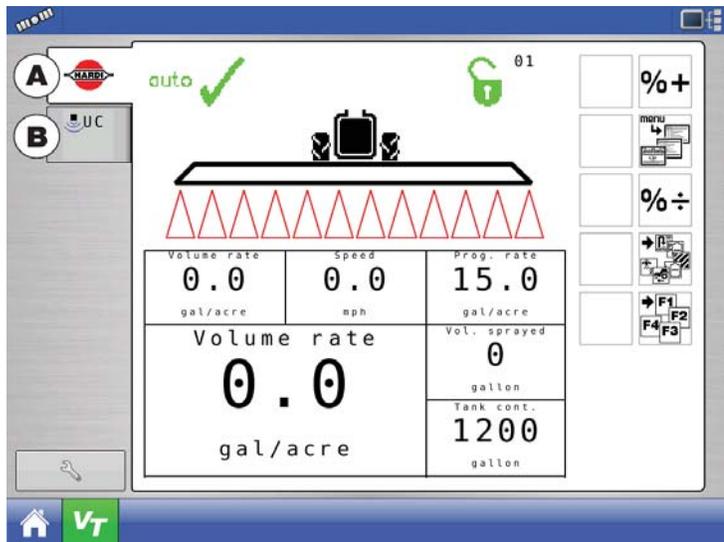
4 - System setup

If there are multiple ISO implements connected, press the VT button  to toggle between Working Sets.

The Working Sets can also be accessed by pressing tabs (A) or (B) individually.



ATTENTION! If the HARDI® VT displays the default 4 boom section (4 red lines below the boom), then there is no communication with the JobCom. Make sure to power On the JobCom on at the SetBox before proceeding.



Advance through multiple screens of soft keys. This button remains hidden unless more than 10 soft keys are present.



Opens the Virtual Terminal Settings screen.

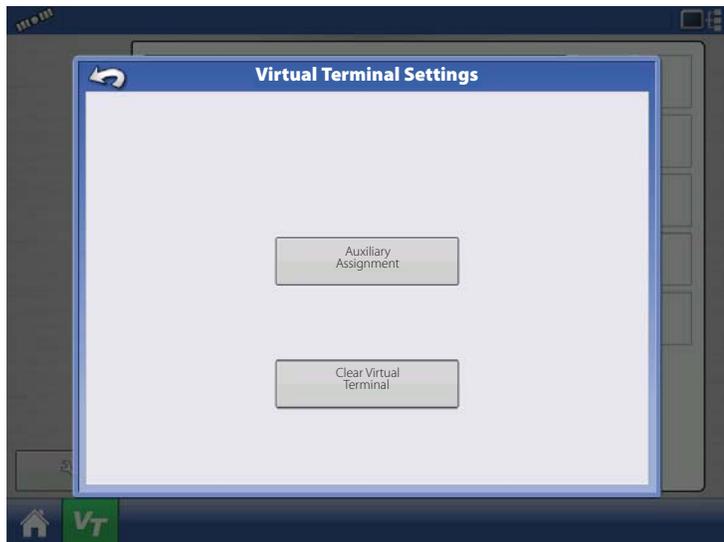
- Auxiliary

Assign implement functions to ISO compatible inputs.

- Clear Virtual Terminal

Allows operator to clear the Object Pools sent to the display from the implement WSM. After the object pools have been cleared, the next time the implement is connected the object pools will be transferred from the implements WSM to the display again. When this button is pressed, a warning dialogue box appears with the following message:

“Are you sure you want to clear the saved interface files from all virtual terminal devices Each device will resend its interface the next time it is connected.”



ATTENTION! No data will be lost while clearing the Virtual Terminal. All data will be reloaded to the display next time the HARDI® JobCom is connected.

4 - System setup

Settings

Speed Input Settings



This will show sprayer speed in the upper blue bar of the working screen, when spraying.



ATTENTION!

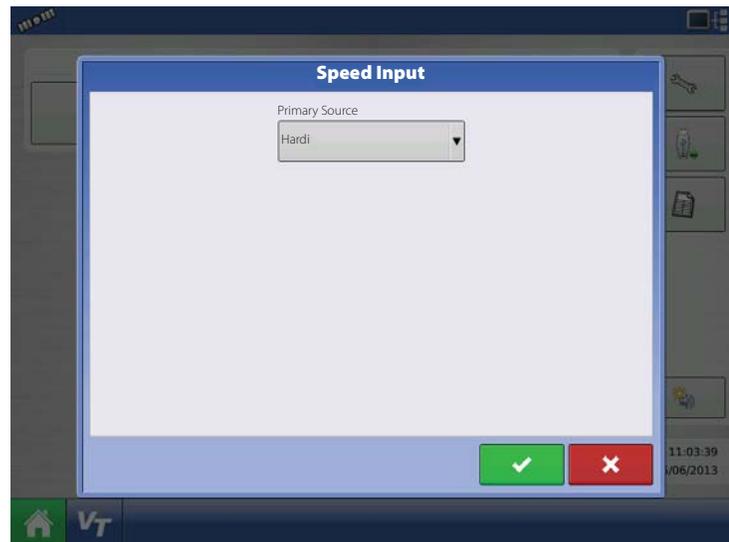
- The Virtual Terminal has to be setup to “Tractor Alpha speed” or “Radar speed” (Menu 3.1).
- The Display has to be setup to “Broadcast GPS Speed” in the Console Setup ISOBUS Settings menu.

Choices for Primary Source include:

- Hardi
- Display GPS
- Auxiliary Device

Other Possible Options (not used for HARDI® sprayers):

- Manual Speed



Primary Source selections to use:

	Hardi	Display GPS	Auxiliary Device	Manual Speed
Trailer sprayer with SafeTrack/IntelliTrack	Must always use “Hardi” as speed source as the steering system cannot use GPS as speed source.	Not used.	Not used.	Not used.
Self-Propelled sprayer	Can be used.	Can be used.	Not used.	Not used.
SARITOR sprayer	Not used.	Always select “Display GPS” as speed source.	Not used.	Not used.
Lift mounted sprayer	Not used.	Can be used.	Can use speed input from the tractor*	Not used.

*Choices for Auxiliary Device Channel include:

- Wheels
 - Radar
- If you are using a backup radar speed source it is recommended that you calibrate it before the season begins.
- Filtered
- This setting is used only as a backup speed source for low pulse ground speed sensors.

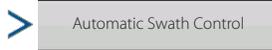
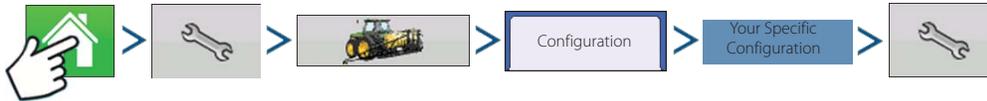


ATTENTION! When “Hardi” option is selected as Primary Source, you may use the VT speed calibration (menu 3.1).



NOTE! If “Display GPS” is selected, the “Hardi” option must be selected as backup source.

Automatic Swath Control (AutoSectionControl)



The Automatic Swath Control feature turns sections off and on automatically based upon the following conditions:

- Entering and exiting internal and outer field boundaries.
- Entering and exiting previously-applied areas within a field.

At the Configuration Setup screen, press the Automatic Swath Control button. At the screen that appears, options are:

- Outside Boundary Option

Select one of the two options to determine system behavior when a section exits a field boundary.

- Coverage Option

In the Coverage Option area, you must choose between three options:

- Minimize Skip

Turns off the implement section after the entire section is fully inside your coverage area. This prevents the possibility of skips.

- Minimize Overlap

Turns off the implement section when that section first enters your coverage area. This prevents the possibility of overlaps.

- User Defined

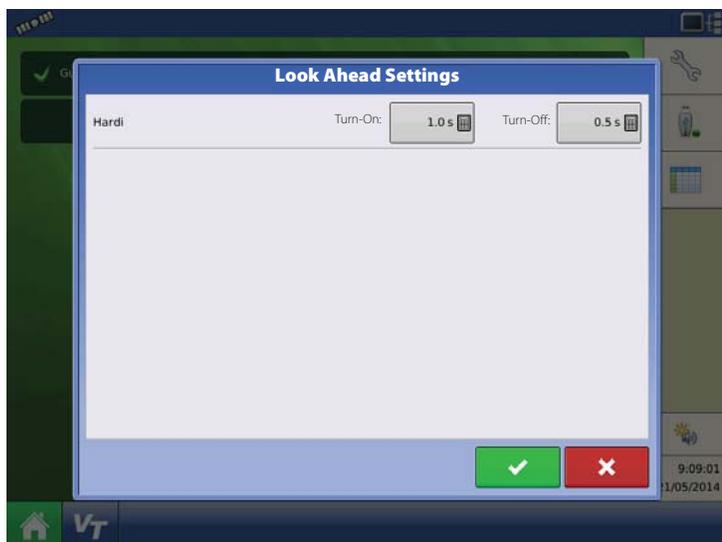
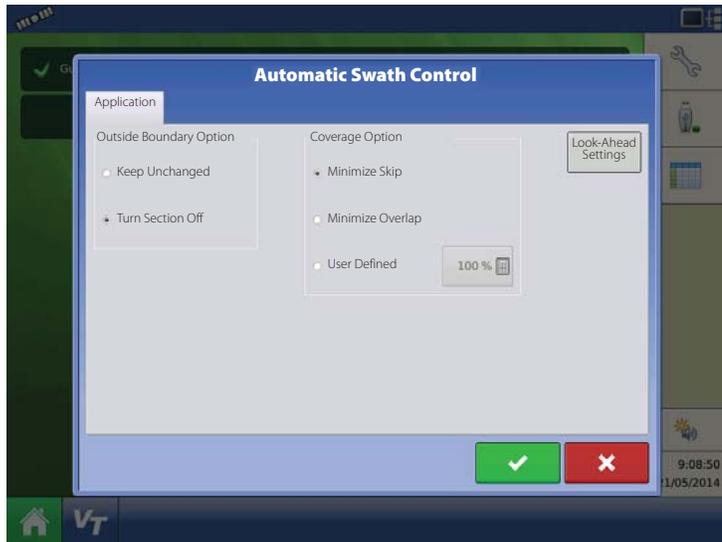
Allows you to choose what percentage of the implement section is within the coverage area before that section turns off. For example, if you choose 50%, then the section will switch off when half of it is within your coverage area.

- Turn-On Look Ahead

Determines how far ahead the system looks to turn the sections back on. This compensates for delay in the system when the sprayer sections are turned on.

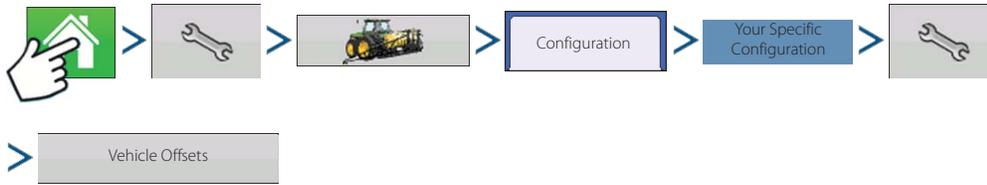
- Turn-Off Look Ahead

Determines how far ahead the system looks to turn the sections off. This compensates for delay in the system when the sections are turned off.



4 - System setup

Vehicle Offsets



When the process of setting up a Vehicle is completed by using step-by-step procedure in “Installation” on page 4.1, you can later re-configure vehicle offsets.

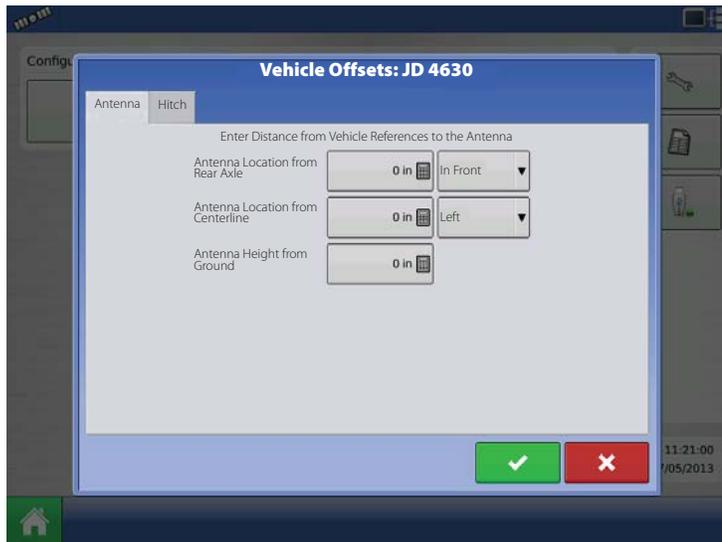
These offsets define where the machine’s rear axle and hitch is in relation to the GPS antenna. These settings are used by mapping.

The GPS Offsets settings consist of two tabs: the Antenna Tab and the Hitch Tab.

Antenna Offsets tab

At the Antenna Tab, enter the distance from locations on the vehicle to the antenna.

- Measure and enter the horizontal distance from the rear axle to the position of the GPS antenna.
Select IN FRONT or BEHIND to indicate the position of the antenna in relation to the rear axle.
- Measure and enter the horizontal distance from the center line of the vehicle to the position of the GPS antenna.
Select LEFT or RIGHT to indicate the position from the vehicle center line.
- Measure and enter the vertical height of the antenna above the ground.



NOTE! Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

Hitch Settings tab

The Hitch Tab allows you to enter in the distance from four different mounting positions on the tractor to the rear axle.

Press  to enter these values in if using the hitch point.



NOTE! Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

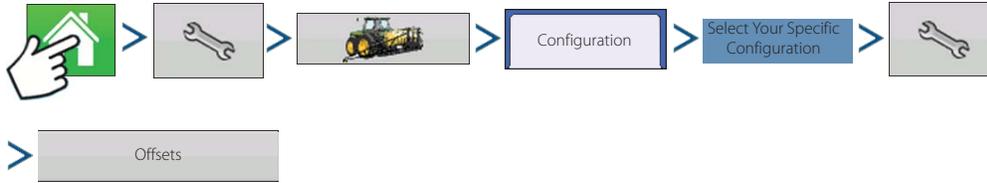
Mount Tab Settings

The Mount Tab will only be available when using a Self-Propelled sprayer.

This allows you to enter in the application location from the rear axle. Press  to enter in the distance and the drop-down box to select if it is in front or behind of the axle.



Swath Section Offsets



The Implement Offsets screen opens. On a typical HARDI® configuration, this screen may consist of up to three tabs:

- Implement tab.
- Liquid with Hardi tab.
- Boom Control tab.

Implement tab

Implement Modelling:

Implement Type:

- Standard
- Hardi SafeTrack



ATTENTION! For IntelliTrack sprayers, select the “Hardi SafeTrack” option.

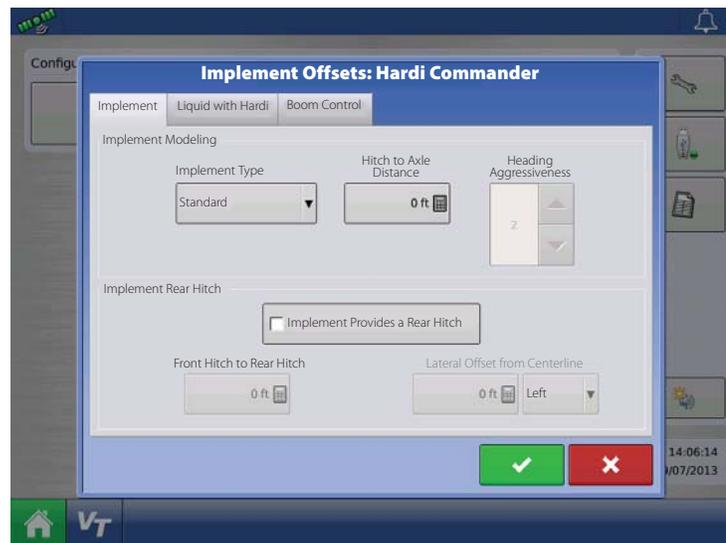
Hitch to Axle Distance:

Press  to type in value.

Type in the measured value from Hitch of the sprayer to the axle.

Implement Rear Hitch:

Here is no relevant settings for HARDI® sprayers.



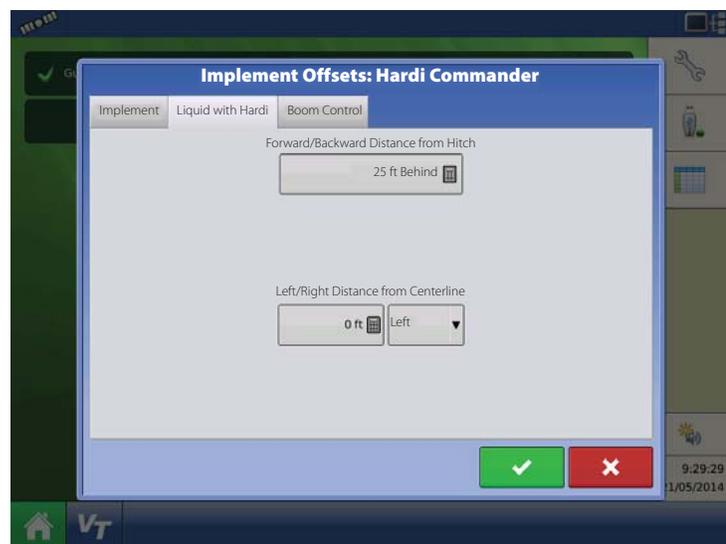
Liquid with Hardi tab

Forward/Backward Distance from Hitch:

- Set distance between the hitch eye and the nozzles.

Left/Right Distance from center line:

- For asymmetric booms. As HARDI® booms are never asymmetric, this option must be set to 0 cm. Left or Right selection does not matter.



Boom Control tab

Forward/Backward Distance from Hitch:

- Set distance between the hitch eye and the nozzles.

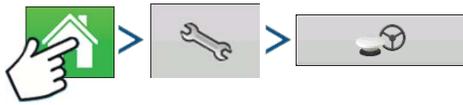
Left/Right Distance from center line:

- For asymmetric booms. As HARDI® booms are never asymmetric, this option must be set to 0 cm. Left or Right selection does not matter.

4 - System setup

GPS Guidance/Steering Control

Setup



- Steering

- Manual Guidance

- Select this to perform guidance by lightbar while manually steering the vehicle.

- OnTrac2+ (CAN A)/OnTrac2 (CAN B)

- Is mounted at the tractor's steering wheel.

- ParaDyme/GeoSteer

- Can be used with Self-Propelled sprayers and as optional equipment for tractors.

- OnTrac3

- Is mounted at the tractor's steering wheel.

- SteerCommand

- Can be used with Self-Propelled sprayers and as optional equipment for tractors.

- Receiver

- Set type of GPS interface protocol to Autodetect, Serial, CAN or TSIP.

- Operator Presence Alarm

- The Operator Presence Alarm disengages guidance control if the operator does not have any interaction with the display for a specified period of time. Use the drop down menu to specify the period of time before guidance is automatically disengaged.

- Lightbar Settings

- For more information, see "Lightbar Settings" on page 4.80.

- Required Differential Correction for Guidance

- When unchecked allows guidance to operate without differential correction.



Pressing the Setup (wrench) button on the Guidance Tab opens the guidance system settings for the selected guidance system.



NOTE! In order to use guidance with the display, you must have a GPS receiver capable of a GPS output rate of 5 Hz or more.



GPS Settings

- Differential Source

Select choice of WAAS/EGNOS, Satellite (OmniSTAR®) or Beacon (Coast Guard) differential sources.

- Wrench button

Pressing the Wrench button opens different settings screens, depending on whether you are using OmniSTAR® or Beacon.

- Ignore NMEA Checksum

Check this to ignore intermittent GPS message errors.

- GPS Rate (Hz)

The GPS Position Rate drop-down menu represents the cycles per second that the display receives guidance information from viewable satellites. Select one of the available Hz rates from the drop-down menu.

- Age of Differential

Displays the elapsed time since reception of last differential correction signal. The Age of Differential button is only functional when GPS is connected.

- Port Settings

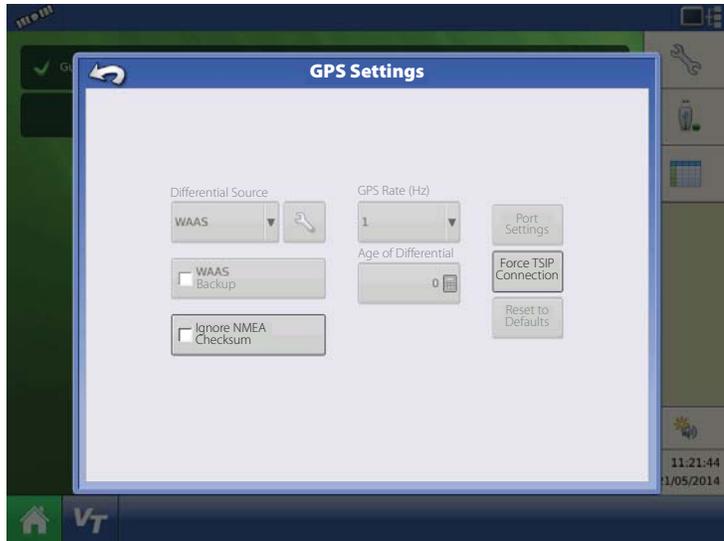
Displays the Serial Port Settings screen, where you can adjust GPS output. For more information, see “Serial Port Settings” on page 4.78.

- Force TSIP Connection

Forcibly connects to TSIP GPS receiver. Pressing this button will force the port to TSIP communication.

- Reset to Defaults

Press the Reset to Defaults button to restore receiver settings to the factory default. This will remove all custom settings.



4 - System setup

OmniSTAR Settings



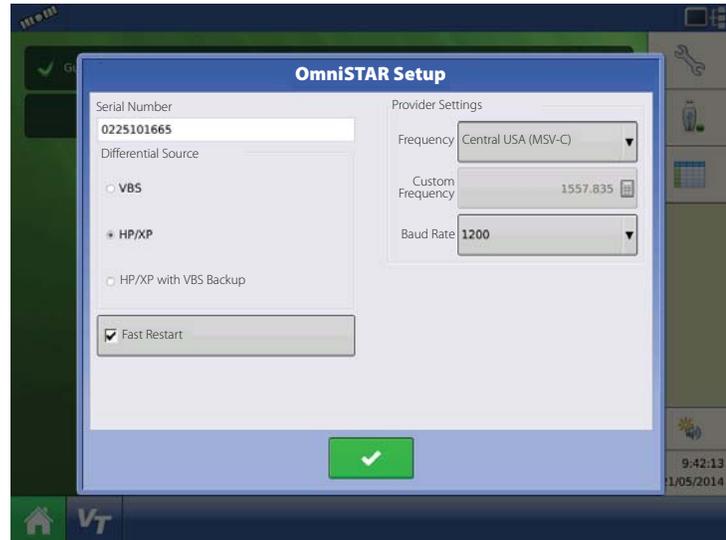
i NOTE! If using the GPS 2500 receiver, see “OmniSTAR Settings — GPS 2500” on page 4.77.

i NOTE! The use of OmniSTAR® differential requires purchase of a subscription from OmniSTAR. Settings related to using satellite differential correction vary based upon your geographic location. Setup details are explained on the following pages. More specific information can be obtained by contacting OmniSTAR.

- Serial Number/OmniSTAR User ID

This box shows the serial number of your receiver. It may also display your OmniSTAR User ID.

i NOTE! You will need to know this number when contacting OmniSTAR in order to set up the receiver.



- Differential Source

The choices include VBS, HP/XP, and HP/XP with VBS backup. These three options are described below.

- VBS

OmniSTAR VBS is a "sub-meter" level of service.

- HP/XP

The OmniSTAR XP service is more accurate than VBS, but slightly less accurate than HP. The OmniSTAR HP (High Performance) service is the most accurate of the three options.

- HP/XP with VBS backup

If this option is chosen, and you lose your HP/XP signal, your receiver will automatically switch to VBS.

- Frequency

In the Frequency drop-down list box, select the geographic region where you are located. If you wish to enter a Custom Frequency, select Custom. Then enter the frequency number in the text box below.

i NOTE! The display does not come with custom frequency numbers. Enter a number only if directed to by OmniSTAR.

- Baud Rate

The baud rate represents the speed at which your receiver obtains information from the satellite.

i NOTE! You should always keep the baud rate set at 1200 unless directed by OmniSTAR or Technical Support.

- AutoSeed Fast Restart

Checking this box before the vehicle is shut down allows the receiver to utilize shutdown time to acquire the appropriate satellites in order to ensure a quick and efficient startup. This reduces the time taken for satellite convergence after startup, and thus increases accuracy in the field.

i NOTE! To get the most benefit from AutoSeed technology, you should shut down the vehicle in a place where the receiver has a clear view of the sky. Do not move the vehicle before powering up again.

OmniSTAR Settings — GPS 2500



i NOTE! The use of OmniSTAR® differential requires purchase of a subscription from OmniSTAR. Settings related to using satellite differential correction vary based upon your geographic location. Setup details are explained on the following pages. More specific information can be obtained by contacting OmniSTAR.

- Serial Number/OmniSTAR User ID

This box shows the serial number of your receiver. It may also display your OmniSTAR User ID.

i NOTE! You will need to know this number when contacting OmniSTAR in order to set up the receiver.



- Differential Source

- VBS

OmniSTAR VBS is a "sub-meter" level of service.

- HP/XP

The OmniSTAR XP service is more accurate than VBS, but slightly less accurate than HP. The OmniSTAR HP (High Performance) service is the most accurate of the three options.

- Fast Restart

Checking this box before the vehicle is shut down allows the receiver to utilize shutdown time to acquire the appropriate satellites in order to ensure a quick and efficient startup. This reduces the time taken for satellite convergence after startup, and thus increases accuracy in the field.

i NOTE! To get the most benefit from Fast Restart, you should shut down the vehicle in a place where the receiver has a clear view of the sky. Do not move the vehicle before powering up again.

- GGA (GLONASS)

Checking this box allows the additional GLONASS satellites to be displayed in the GGA message.

- AutoTune Frequency check box

Receiver will automatically select the strongest frequency.

- Frequency

In the Frequency drop-down list box, select the geographic region where you are located. If you wish to enter a Custom Frequency, select Custom. Then enter the frequency number in the text box below.

i NOTE! The display does not come with custom frequency numbers. Enter a number only if directed to by OmniSTAR.

- Baud Rate

The baud rate represents the speed at which your receiver obtains information from the satellite.

i NOTE! You should always keep the baud rate set at 1200 unless directed by OmniSTAR or Technical Support.

- Convergence Threshold

4 - System setup

Serial Port Settings



The Serial Port Settings screen is the place where you can adjust GPS output. The appearance of the Serial Port Settings screen varies depending upon your model of GPS receiver. Shown to the left is the Serial Port Settings screen as it would appear for an operator of a GPS 1500 or 2500 antenna.



The appearance of this TSIP receiver GPS Port Setup screen is the same for both Ports A and B.



- Output Type
Displays what type of protocol the receiver is using. (NMEA or TSIP).
- Output Baud Rate
Displays the speed at which the receiver communicates with the display. For optimal performance, the GPS baud rate should be set to 19,200 or higher.
- Output Parity
Displays either Odd or None.
 - If using TSIP, this setting should be Odd.
 - If using NMEA, this setting should be None.



NOTE! Parity refers to a technique for checking data integrity after transmission.

- GPS Pos. Rate (Hz)

Represents the cycles per second (shown in Hz) that the display receives position information from viewable satellites. (This is the same number as shown on GPS Rate (Hz) drop-down list menu located on the General Tab).

- Output Rate (Hz)

Represents the cyclical rate (in Hz) at which the receiver sends information to the display. This field shows a value of either 1 or ASAP.

- The default rate is 1 Hz.
- ASAP represents a Hz value of more than 1.

- NMEA Messages

These check boxes represent various communication protocols or formats that have been set by the National Marine Electronics Association (NMEA), and used in information "strings" or sentences output by the GPS Receiver. At present, the display only requires two NMEA Message formats: GGA and VTG.

- GGA: position in longitude and latitude.
- VTG: ground speed
- GSV, GSA: required to view the Satellite Plot, but are not required for GPS information.
- GLL, ZDA, RMC, MSS: Leave these other NMEA message formats unchecked, unless you are connected to a third-party monitor and have been directed to do so.

4 - System setup

Lightbar Settings

Setup



- LED Spacing

Enter the distance represented by each square of the lightbar (3-182 cm).

- Mode

- Chase

Center the vehicle by following the indicator lights.

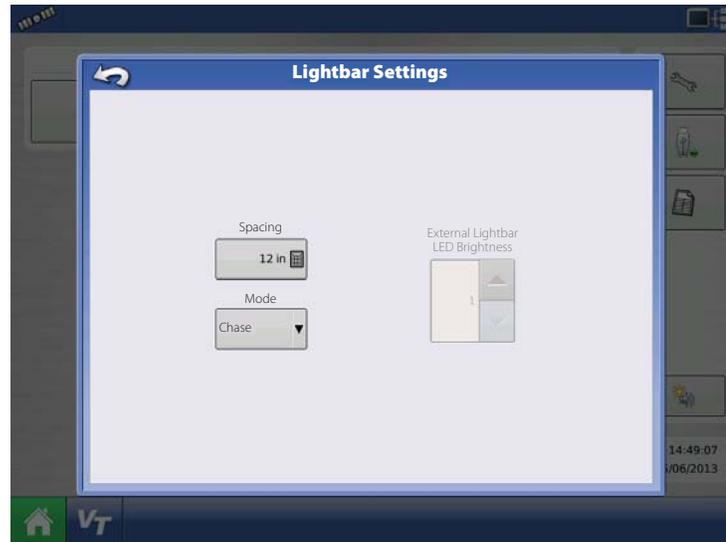
- Pull

Center the vehicle by turning in the opposite direction of the indicator lights on the lightbar.

- External Lightbar LED Brightness

If applicable, press  /  to enter in a number specifying the brightness of the LED lights on the optional L160

external lightbar. The number 1 is the dimmest setting and 10 is the brightest. Default setting is 5.



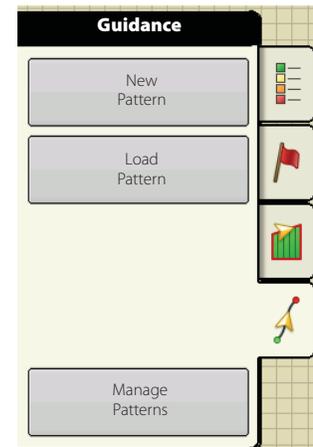
Guidance Tab on Mapping Toolbox

The Guidance Tab on the Mapping Toolbox allows you to you can create a new pattern, load an existing pattern, or adjust Guidance Options and Guidance Settings. This tab changes its appearance after you create or load a pattern.

Before you create any patterns, the map screen's Guidance Tab appears as shown.



NOTE! Guidance pattern will default to the one last used. Guidance patterns can be set to widths up to 2000 ft (609 m).



New Pattern - Straight

Select Pattern

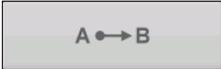
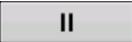
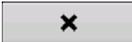
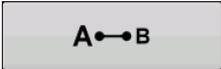


System defaults pattern type to last used. Press the pattern icon to select a different pattern.

- Implement Width (from Implement Setup)
- Guidance Width input box
- Enable Tramlines check box

Press . You will automatically return to the Map screen.

Create AB line using 2 points

-  Press to mark point A. A green ball appears on the map screen where point was placed.
-  Button is greyed out until you drive a minimum of 100 feet (30 meters).
 - Pause - Press  to pause path during path creation
 - Resume - Press  to resume path during path creation
 - Cancel - Press  to cancel path during path creation
-  Press to mark point B. The AB line appears on the map screen and point B is marked with a red ball.

Create AB line using Current Location and Heading

-  uses current location and heading, line extends 1 mile (1.6 km) before and after the A point (recommend vehicle having forward motion to get a good heading).

Create AB line using Current Location and Inputting Heading

-  uses current location and input heading, line extends 1 mile (1.6 km) before and after the A point

Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 4.89.

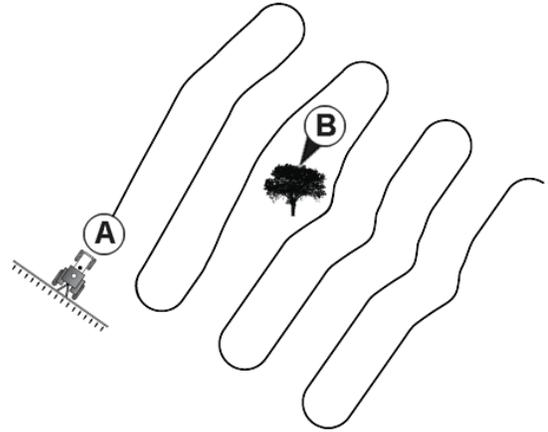


NOTE! On straight AB lines, if you complete a swath that is longer than the previous one, the display automatically extends the guidance path for the following swaths.

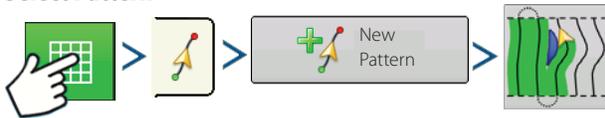
4 - System setup

New Pattern - Adaptive Curve

Use the Adaptive Curve pattern to follow gentle contours in the field, or when you need to avoid obstacles (B). This pattern provides guidance based on the last curve driven.



Select Pattern

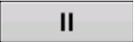


System defaults pattern type to last used. Press the pattern icon to select a different pattern.

- Implement Width (from Implement Setup)
- Guidance Width input box

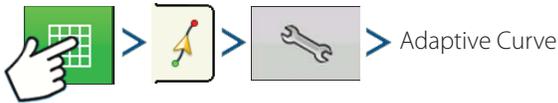
Press . You will automatically return to the Map screen.

Create AB line using 2 points

-  Press to mark point A. A green ball appears on the map screen where point was placed.
-  Button is greyed out until you drive a minimum of 100 feet (30 meters).
 - Pause - Press  to pause path during path creation
 - Resume - Press  to resume path during path creation
 - Cancel - Press  to cancel path during path creation
-  Press to mark point B. The AB line appears on the map screen and point B is marked with a red ball.



NOTE! Guidance extends beyond the end of curved swaths. This makes it possible to get LED guidance back onto the swath if the vehicle drives past the end of a swath. The extended swath lines do not appear on screen.



You can adjust the degree heading at which the system generates the next pass by doing the following:

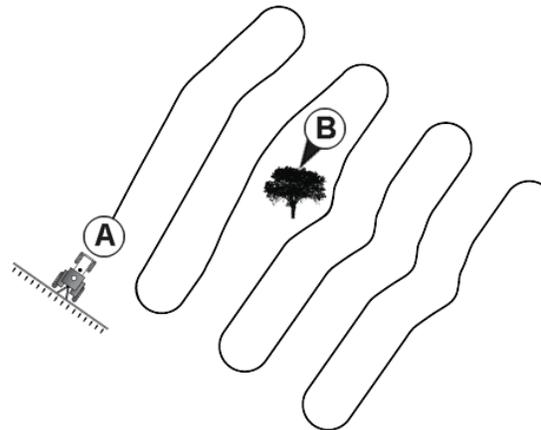
1. Go to the Guidance screen
2. Press the Options button.
3. The Guidance Options screen appears; press the Adaptive Curve button.
4. At the New Pass drop-down menu, select Heading Change
5. Use  to enter in the degree number of your Heading Threshold.

Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 4.89.

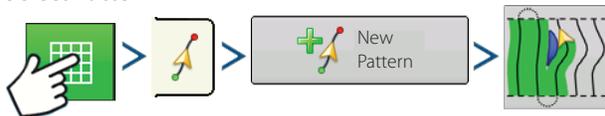


New Pattern - Identical Curve

Use the Identical Curve pattern to follow gentle contours in the field. This pattern provides guidance based on the original curve driven.



Select Pattern



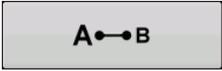
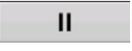
System defaults pattern type to last used. Press the pattern icon to select a different pattern.

- Implement Width (from Implement Setup)
- Guidance Width input box
- Enable Tramlines check box

Press . You will automatically return to the Map screen.

4 - System setup

Create AB line using 2 points

-  Press to mark point A. A green ball appears on the map screen where point was placed.
-  Button is greyed out until you drive a minimum of 100 feet (30 meters).
 - Pause - Press  to pause path during path creation
 - Resume - Press  to resume path during path creation
 - Cancel - Press  to cancel path during path creation
-  Press to mark point B. The AB line appears on the map screen and point B is marked with a red ball.

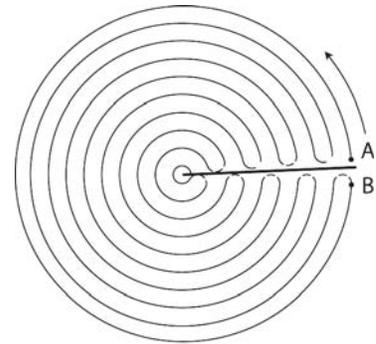
Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 4.89.



NOTE! Guidance extends beyond the end of curved swaths. This makes it possible to get LED guidance back onto the swath if the vehicle drives past the end of a swath. The extended swath lines do not appear on screen.

New Pattern - Pivot

Use the Center-pivot pattern for a field that is irrigated using a center-pivot. With this pattern, you can drive concentric circles around the center-pivot. The display will calculate the center point based on where you have driven. Otherwise, you can enter in the latitude and longitude of the center point, if known.



Select Pattern



System defaults pattern type to last used. Press the pattern icon to select a different pattern.

- Implement Width (from Implement Setup)
- Guidance Width input box
- Manual Entry check box and Latitude and Longitude input boxes

Press . You will automatically return to the Map screen.

Create AB line using driven path

- Position one wheel of the vehicle in a pivot wheel rut, with the rear of the vehicle to the pivot arm.
-  Press to mark point A. A green ball appears on the map screen where point was placed.
- Drive around the field. Keep the vehicle wheel in the rut.
-  Button is greyed out until you drive a minimum of 160 feet (49 meters).
 - Pause - Press  to pause path during path creation
 - Resume - Press  to resume path during path creation
 - Cancel - Press  to cancel path during path creation
-  When you are almost back to the pivot arm or the edge of the field, press to mark point B, the AB line appears on the map screen and point B is marked with a red ball.

- Next, you must set the Field Edge. You may do this when the Pivot Field Edge window appears on your display.

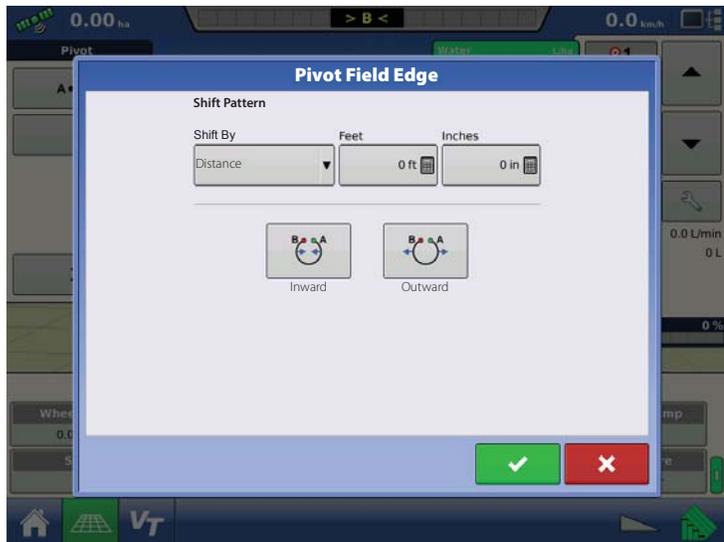
From here, you may choose one of three options:

- Shift By Distance

This sets the field edge as the distance and direction in relation to the AB Line created. In the Pivot Field Edge Distance portion of the window, enter the distance in feet and inches.
- Shift By Rows

This sets the field edge as the number of crop rows multiplied by the number of spacing. In the Pivot Field Edge Distance portion of the window, enter the Number of Rows and Row Spacing.
- Cancel

The vehicle uses the driven pass as the AB Line.



- If you chose Shift by Rows in the previous step, use  to enter the Number of Rows and Row Spacing. Choose the direction relative to the AB Line (either Outward or Inward), and press  to continue.
- Steer the vehicle so that you center the green lights in the lightbar as you drive forward along the path.

 NOTE! To work from the center of the field outwards, the initial pivot must have:

- A radius of at least two swath widths.
- An arc length of at least two swath widths.

Cycle between Loaded Paths



Press  to cycle through the paths loaded in SmartPath.

If you drive your vehicle onto the Projected Path, the system guidance uses this as the Followed Path.



Once the AB line is created, you can switch between the AB line and SmartPath patterns by pressing the AB/SmartPath toggle.

After the Guidance System has switched over to a different path, the name of the currently-followed pattern is shown within a black box on the Map screen.

The Map screen changes its appearance to Perspective View, and SmartPath settings are shown in the mapping toolbox. Drive along the path that you wish to create.

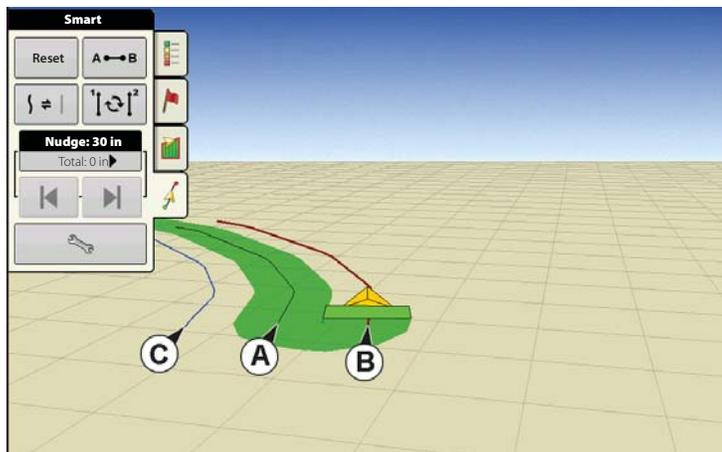


NOTE! The display will not create an A point with SmartPath, unless you are mapping a Straight AB line within it. Once the AB line is created, you can switch between the AB line and SmartPath patterns by pressing the AB/SmartPath toggle (shown above).

After you turn around on your first pass, the system guidance will follow a maroon-colored line parallel to your previously-driven pass.

As you continue using the SmartPath, the map screen will display three lines:

- (A) The Base Path
Appears as a black line, is the initial SmartPath that you created on the first pass.
- (B) The Followed Path
Appears as a maroon-colored line, is the path that your vehicle is currently using.
- (C) The projected Path
Appears as a blue-colored line on the opposite side of the Base Path, is an alternate path parallel to the Base Path. The system guidance created this path when you created the Base Path.



This is the path that your vehicle would have taken if you had turned it in the opposite direction.



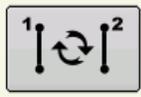
NOTE!

- The Projected Path and Base Path both remain in display memory, unless you press the Reset button without saving the SmartPath pattern.
- Pressing the Save button saves all the SmartPath passes within the display's memory for future use.

4 - System setup

Select a Previous SmartPath Pass

If you have specified SmartPath as your desired pattern, but you are not following an active guidance pattern, the Guidance System automatically begins searching for SmartPath patterns for your use.



If you wish to use a previously-created SmartPath pattern, you can do so by pressing on the Active Line Cycle button. This button allows you to cycle between available SmartPath patterns.



NOTE!

- When the guidance system looks for other available SmartPath patterns, it first displays the nearest-available pass.
- You can adjust the available area in which the Guidance System searches for previously-created SmartPath passes. To do this, adjust the Heading Threshold settings on the Smart Tab of the Guidance Option screen.

SmartPath Guidance Options



SmartPath only creates a SmartPath pass when you are logging data in the field. However, you have the option of using it to create SmartPath passes continually during all field operations.

To adjust this setting, press the Guidance Options button on the Guidance Tab. The Guidance Options screen appears. Press the Smart Tab.

- The default setting is Logged Area. This setting only creates passes while you are logging field data.
- By selecting All Area Covered, you can create SmartPath passes even when not logging field data.
- The Heading Threshold setting is the available area that the Guidance System uses to search for previously-created SmartPath passes. The default setting is 20 degrees.

If you chose Adaptive Curve as your pattern option at the New Pattern screen, the Adaptive Curve button appears on the Guidance Options screen. This button opens the Adaptive Pattern Options screen. At this screen, you can choose pattern options that tell the system where to log a new pass. These options include:

- New Pass

This sets the conditions for the display to log a new pass. Select either Area Count or Heading Change.

- Area Count

Generates the next pass, based on coverage area of the previous pass. The display must be logging coverage data in order to generate the next pass.

- Heading Change

Logs the next pass when the vehicle turns past the heading threshold.

- Heading Threshold

Enter in the degree of turning angle that your vehicle will need to make before creating another pass.



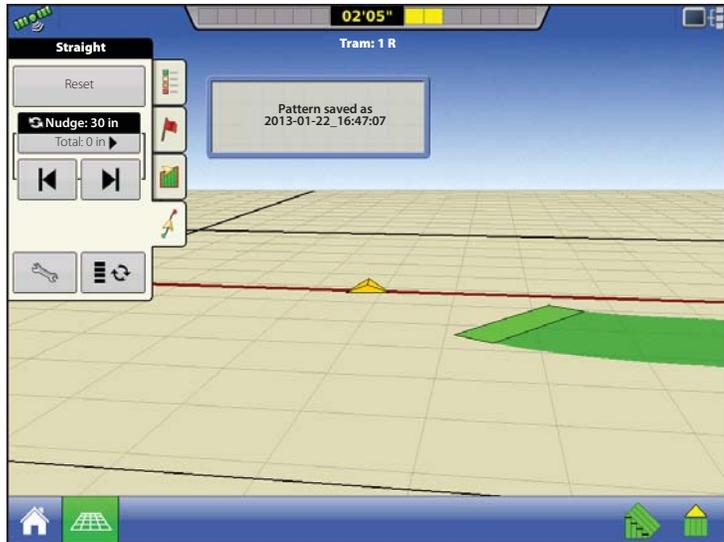
NOTE! You should always set the Heading Threshold number past 90 degrees. The default number is 110 degrees.



AutoSave

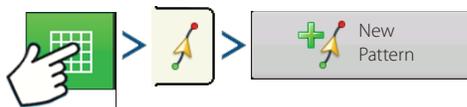
Patterns are automatically saved when the vehicle turns for the first time.

- A screen will notify user that the patterns is being saved with a default name using the date and time.
- Patterns can be renamed or deleted.



Manage Patterns

Spatial Sort

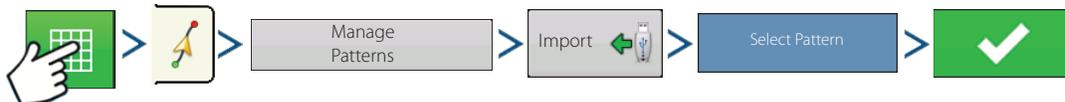


Spatial Sort allows the user to select any guidance pattern in the display, sorted by distance from the GPS location.

Pattern at the top of the list will be the closest to current GPS location.

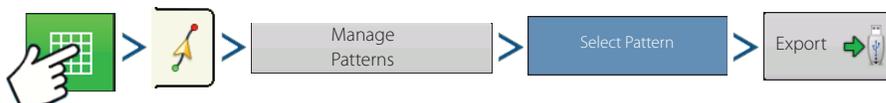


Import Pattern



Display informs you when file has been successfully copied.

Export Pattern



Display informs you when file has been successfully copied.

4 - System setup

Edit Pattern

If you wish to rename a pattern, first press the Manage Patterns button on the Guidance Tab of the Mapping Toolbox. Press  to enter a name for the pattern. The new pattern name now appears in the pattern list of the Manage Patterns screen.

Remove Pattern/Remove All Patterns

To remove a pattern from the display memory, first press the Manage Patterns button on the Guidance Tab of the Mapping Toolbox. At the Manage Patterns screen, press either:

- Remove button if you wish to delete one pattern file; or
- Remove All button if you wish to delete all of them for the current field.

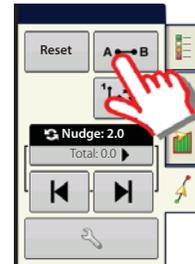
Reset Pattern

If you have been using an already-saved pattern, and wish to switch over to a different pattern in the same field, you can use the Reset Pattern feature by following the steps below.

1. Press Reset
Press the Reset button on the Guidance screen.
2. Confirm Reset
The Guidance screen appears, asking you to reset the current guidance pattern. Press  to continue.
3. Create new pattern (optional)
The pattern is now reset. You may now create a new pattern, if desired.

Pattern Groups

Pattern Groups allow the user to group up to 20 patterns per field, using the Group Manager.

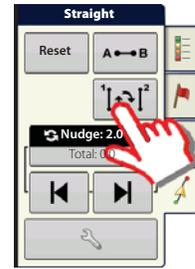


The Group Manager allows the user to add a new pattern or load an existing pattern to a Group. Once a Group is created, it can be saved and reloaded.



4 - System setup

The Pattern Cycle Button allows the user to easily cycle between patterns with a single button press. Patterns will cycle in the order they were created or added, starting back at the beginning of the list, once the last patterns is reached.



When loading a Pattern Group, the Group Pattern Setting dialog appears and allows the user to select the Guidance Width and any Shift that needs to be applied to each Pattern within the Pattern Group. User will also have the option to load Curve Patterns as Adaptive or Identical.

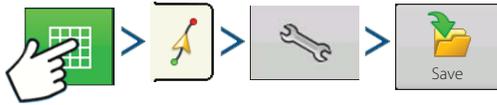
Straight AB, Identical Curve, Adaptive Curve and Pivot Patterns can be grouped. SmartPath cannot be grouped.



4 - System setup

Guidance Options

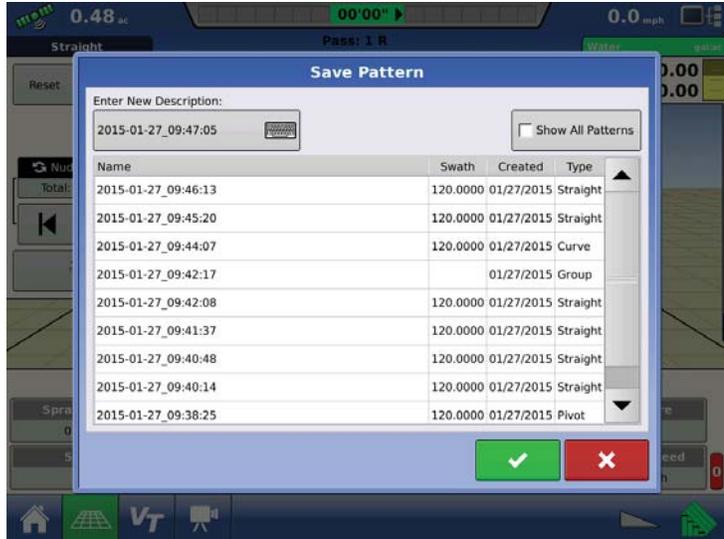
Save



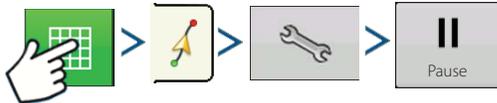
This allows you can save a pattern (.AGSETUP file) to the display's internal memory to the current field.

Press  and enter a unique pattern name.

When finished, press .

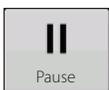


Pause



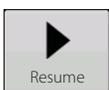
The Pause button allows your display to stop logging points along an AB Line. Once this button is pressed, a Resume button will take its place until you press this button and Pause reappears.

i NOTE! If you are using the display to follow a set AB Line and wish to temporarily deviate from this line, you can use the Pause button to pause the display's guidance logging activity. This feature could be used, for example, by a vehicle operator who must refill a sprayer. When paused, the display will continue to give the distance back to the original pause point position.

- Press  button.

Press the Pause button on the Guidance screen. When you do so, the place where you paused appears on the Map screen as a yellow ball.

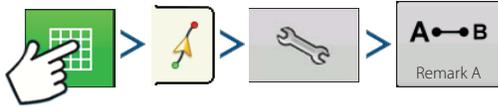
i NOTE! You can pause a pattern even if you have not set the "B" point yet. If you do so, the message in the lightbar will read "Need B." If you pause the pattern after you have set your AB Line, then the lightbar will indicate the distance your vehicle must travel to return to the pause point.

- Press  button.

To resume your pattern, press the Resume button to resume logging on your AB Line.

i NOTE! If you press the Resume button before you have returned to the original AB Line, your display will select the closest AB Line to your vehicle.

Remark A



If you chose Straight pattern, the Remark A button appears on the Guidance Options screen. The Remark A button "remarks" the A point by moving it to the current position while maintaining the same heading. A brief message appears in the on-screen lightbar, stating "Point A Remarked."

Nudge

i NOTE! Only Straight patterns offer two Nudge settings. All other patterns have a single nudge setting.

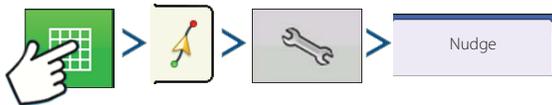
Nudge allows you to adjust the swaths by a specified distance.

Small Nudge (single arrow) shown on left.

Large Nudge setting (double arrow) shown on right (Straight Patterns Only).

Use Nudge toggle button to switch between Small and Large Nudge setting.

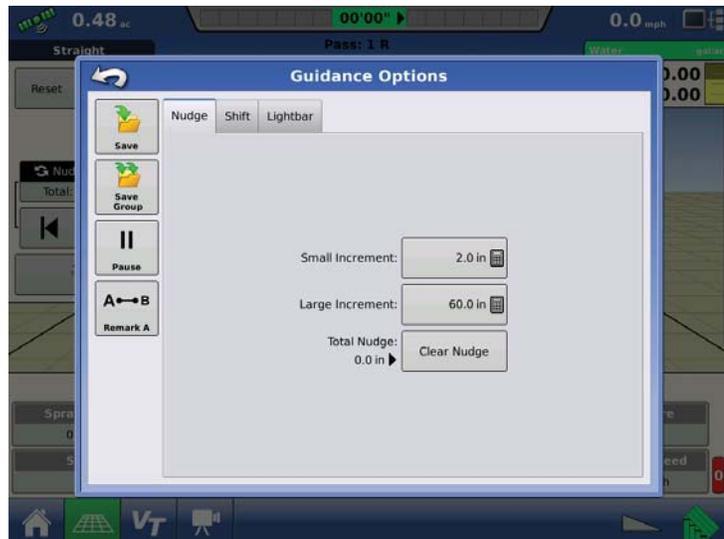
Use Mapping Toolbox toggle button to switch the menu between Tramline and Nudge on the Mapping Toolbox, if Tramlines are enabled.



Press button then the Nudge tab to make adjustments to Nudge settings.

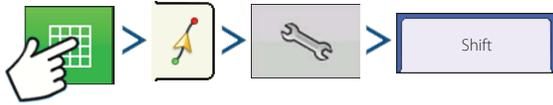
- Press to enter a distance for increment that the swaths will move with each successive press of the left or right arrows buttons on the Guidance Tab.
- To clear out the adjustment and go to the original position, press Clear Nudge.

Screen shows Small and Large increment settings for Straight path. Other Patterns will only show the small increment setting.



4 - System setup

Shift



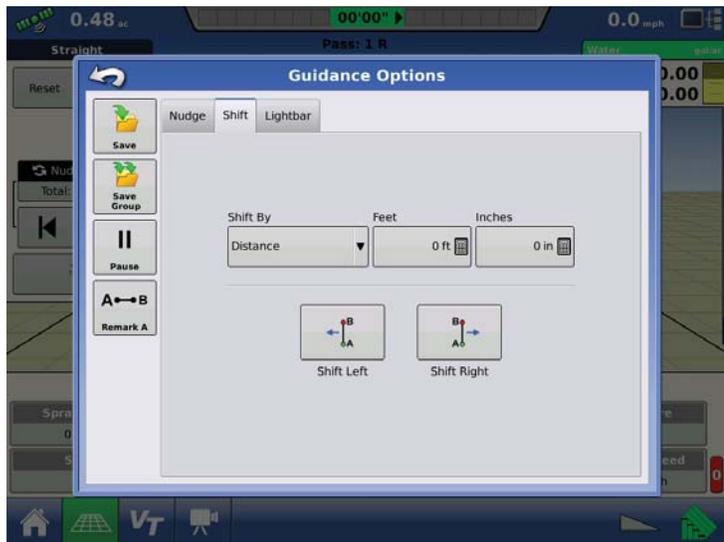
Shift moves all of the swaths by a specified distance to the left or right, (including the AB line). The swaths can be shifted by a distance or number of rows.

- Shift by Distance

Use  to enter the distance that you wish to shift the pattern. Use the bottom drop-down menu to enter the direction, (either left or right). Press Apply button to accept change.

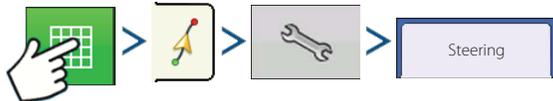
- Shift by Rows

Use  to enter the number of rows you wish to shift the pattern. Use the second  to select the row spacing. Use the drop-down menu to enter the direction to shift the pattern. Press Apply button to accept the change.



NOTE! The Shift setting is not available with the SmartPath patterns.

Steering



- Line Acquisition

Determines how aggressively the system steers onto the desired steering path. The ideal setting allows the system to take the shortest route without excessively sharp or sudden movements of the vehicle.

- Steering Response

Controls the oscillations of the vehicle when it is on the desired path.

- Reverse Response (ParaDyme Only)

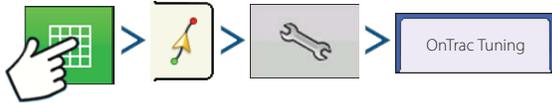
Controls the oscillations of the vehicle when it is on the desired path in reverse.

- Log coverage while AutoSteer is engaged check box

Coverage while engaged is available when an AutoSteering system (OnTrac2+, GeoSteer, ParaDyme) is connected. User can still manually control coverage logging with the on-screen coverage button. AutoSwath is unaffected by this selection.



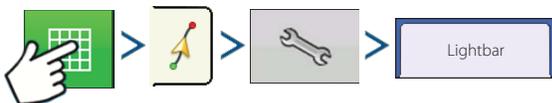
OnTrac Tuning



- Motor Aggressiveness
Determines how aggressively the motor engages.
- Heading Aggressiveness
Determines how aggressively the system reacts to achieve the correct heading.
- Cross-Track Error
Adjusts how aggressively the vehicle reacts to changes in cross-track error.



Lightbar



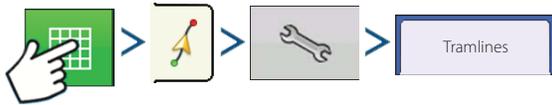
- LED Spacing
Enter the distance represented by each square of the lightbar (6-72 in.).
- Mode
 - Chase
Center the vehicle by following the indicator lights.
 - Pull
Center the vehicle by turning in the opposite direction of the indicator lights on the lightbar.
- External Lightbar LED Brightness
If applicable, press  /  to enter in a number specifying the brightness of the LED lights on the optional L160 external lightbar. The number 1 is the dimmest and 10 is the brightest. Default is 5.



4 - System setup

Tramlines

(if enabled on Straight and Identical Curve Pattern types)



Tramlines only available with Straight AB and Identical Curve Pattern Types

- Paths Between Tramlines
Use  to enter the number of passes between tramlines.
- Paths to Start Field
Use  to enter the number of passes at the beginning of the field before the first tramline.
- Guide To
Use drop-down menu to choose between Paths and Tramlines.

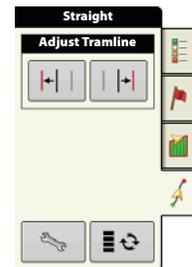


  Adjust Tramline - move the placement of the tramline by one pass left or right.

 Use the toggle button to switch menu between Tramline and Nudge on the Mapping Toolbox.

An audible warning is sounded to alert the operator a Tramline is reached when the vehicle is ½ a swath width away.

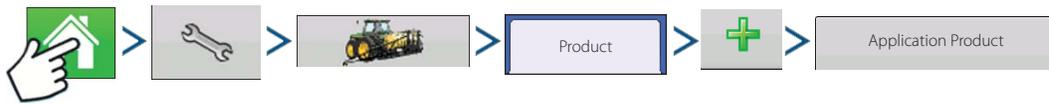
Tramlines are also numbered under the Pass Number. This number will flash multiple times when the Tramline is reached for a visual warning.



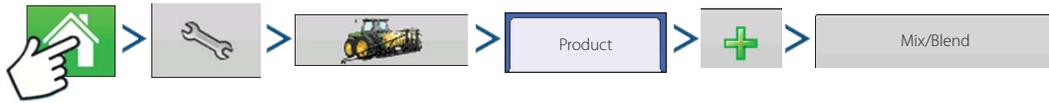
Liquid Rate Control

Setup

Add a Product



Add a Mix



Tank Mix Setup

A tank mix can contain up to seven individual components.

1. Select "Tank Mix" from the list box and press to continue.
2. Enter a Base Amount and Units.

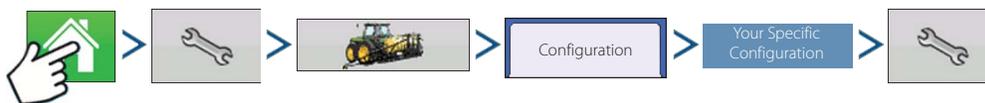


NOTE! The Base Amount is the total volume of all the components of the tank mix. The Base Amount does not need to match the actual volume of product that will be sprayed, but is used only to establish the ratio of all products to the total volume.

3. Press to start the process of adding components to the tank mix. Select a desired mix component from the list box (or press to set up the product). Enter the Amount of the mix component.
4. Repeat this process for the second mix component, if necessary.
5. Add a product carrier and an amount for that carrier by following the steps shown in the wizard.
6. Last, enter a unique name for the tank mix. The new mix will appear in the Product List. The mix name will appear next to a blue and cream-colored "Tao" symbol (a circle with a curved line through it).



Configuration Setup



The Configuration Setup screen appears. Screen will vary depending on configuration. Process may include the following tasks:

Configuration Settings:

- Equipment Settings

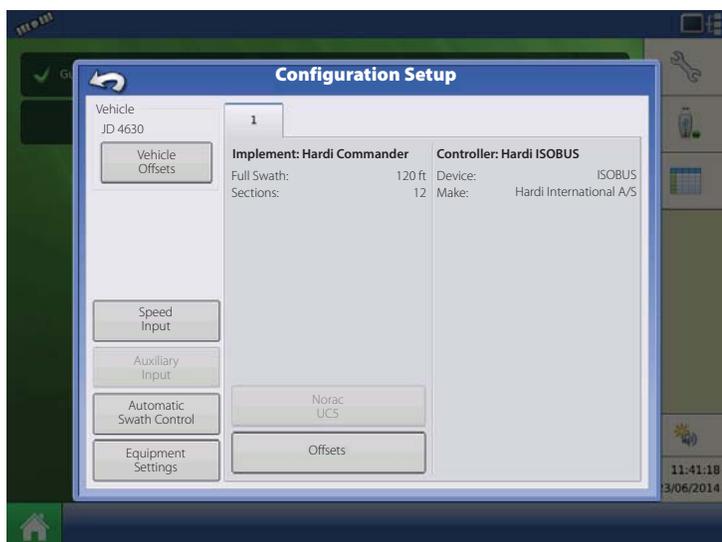
Equipment configurations should adjust settings at the Equipment Configuration Settings screen.

- Speed Input

For more information, see "Speed Input Settings" on page 4.70.

- Automatic Swath Control (if using AutoSwath)

For more information, see "Automatic Swath Control (AutoSectionControl)" on page 4.71.



4 - System setup

- Vehicle Offsets

Adjust GPS offsets for the Antenna Tab and the Hitch Tab. For more information, see “Vehicle Offsets” on page 4.72.

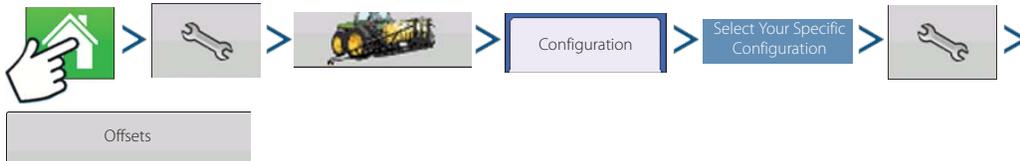
- Offsets

For more information, see “Swath Section Offsets” on page 4.73.

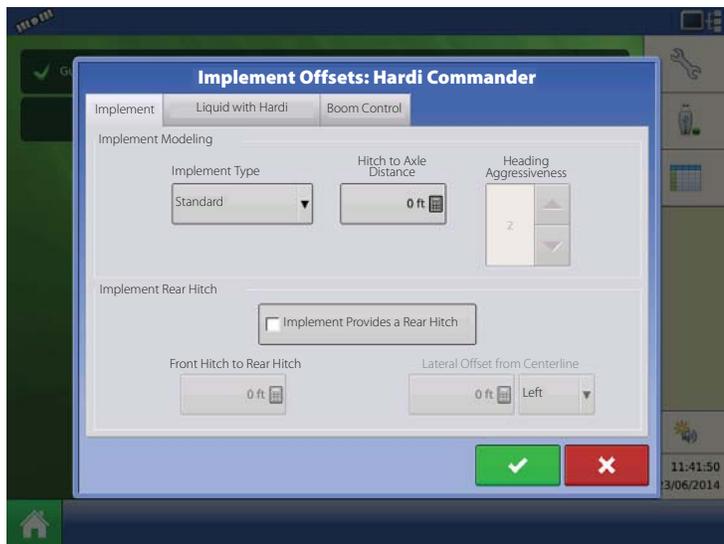
- Norac UC5

Adjust AutoTerrain/AutoHeight/AutoSlant settings - see also “SafeTrack/IntelliTrack” on page 4.98. For further information, please refer to the AutoTerrain/AutoHeight/AutoSlant UC5 instruction books.

SafeTrack/IntelliTrack



For ISOBUS the Implement Modelling can be selected. This allows display to accurately calculate path of a sprayer equipped with steering.

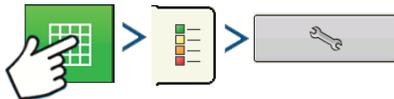


Application Map Screen - Zoom to Detail

- A. GPS Status
- B. Ground Covered
- C. Ground Speed
- D. Diagnostics button
- E. Display Legend
- F. Manual Fluid Control
- G. Home button
- H. Map View button
- I. AutoTerrain/AutoHeight/AutoSlant button
- J. AutoSwath button
- K. AutoSteer button
- L. Main ON/OFF switch status



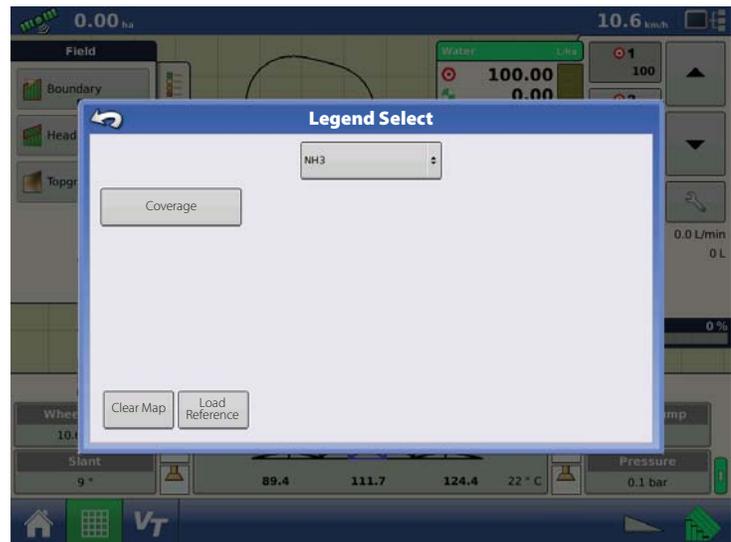
Legend Select



During Area Logging Application operations, the Map screen displays coverage in the Legend.

Use the drop-down menu at the top to select your product. Other items at this screen include:

- Coverage
 - Shows the area where you have already applied a product.
- Clear Map
 - Permanently removes all map data from the active field operation.
- Load Reference
 - Load a map from a previous operation performed in that field to view as a background map.



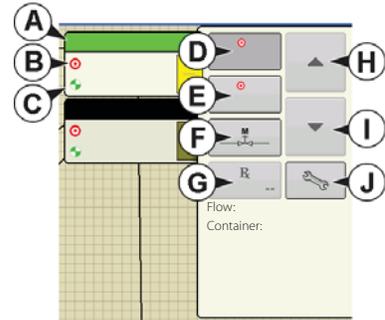
4 - System setup

Rate Control: Product Control Toolbox

During Run Time operations, the Product Tabs are shown in the upper right-hand side of the Map screen.

Press the Product Tabs, and an extended view shows following, all of which are described below.

- A. Product
- B. Target Rate
- C. Actual Rate
- D. Rate 1 button
- E. Rate 2 button
- F. Manual Valve Control
- G. Prescription button
- H. Rate Increase 
- I. Rate Decrease 
- J. Rate Setup button



- Target Rate
The Target Rate is desired application rate.

 NOTE! In some conditions, the Target Rate may increment more quickly than the Actual Rate.

- Actual Rate
The Flow Sensor returns the actual rate being applied.

 NOTE! In some conditions, the Actual Rate may increment slower than the Target Rate, or its numeric values may vary before matching the Target Rate.

- Container Level
The Container Level shows the amount of product in the main tank. For more information, see “Rate Control: Container Level” on page 4.102.

-  Rate 1 and Rate 2 buttons

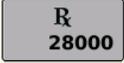
The Rate 1 and Rate 2 settings represent preset application rates that allow operators to quickly change between desired target rates for each individual product.

-  Manual Valve Control button

The Manual Valve Control button allows operators to specify the position of the control valve. Operators use this option to prime the system before application or clean out the equipment at the end of the day.

- Rate Increase and Decrease Arrows

 allow Product Application Rate to be changed according to the Target Rate Increment. In using manual valve control, the increase and decrease buttons allow the position of the control valve to be defined by the operator.

-  Prescription button

For more information, see “Loading Prescriptions” on page 4.104.

-  Rate Setup button

For more information, see “Rate Control Settings” on page 4.101.

Rate Control Settings



Adjust the Rate 1 and Rate 2 settings shown at the Product Control Toolbox on the Map screen, as well as import application product prescriptions. To access the Rate Control Settings screen, press the Rate Setup button on the Product Control Toolbox. The Rate Control Settings screen appears.

- Available Products

The top drop-down menu allows you to select one of the available products to be applied for your rate control field operation. This menu shows all of the application products entered in Product Setup.

- Rate 1 and Rate 2

The Rate 1 and Rate 2 settings represent preset application rates that allow operators to quickly change between desired target rates for each individual product.

Press  to enter the desired amount.

- Increment

The Increment button allows operators to specify the increase or decrease amounts for a specified rate by using  /  on the Product Control Toolbox.

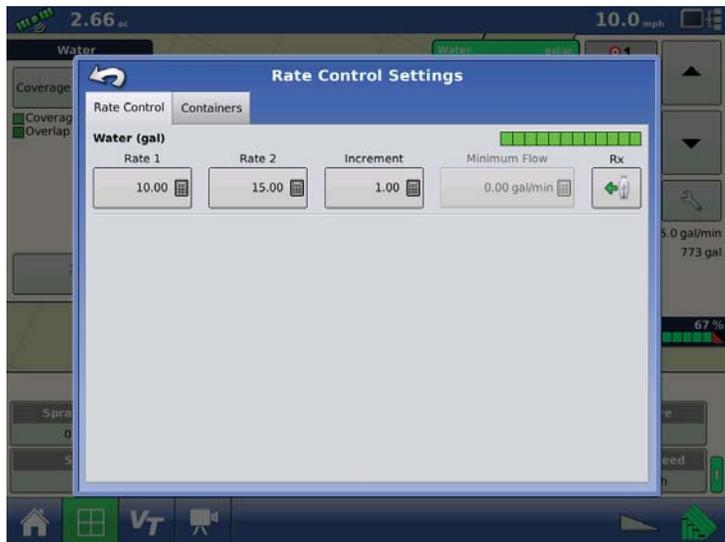
Press  to enter the desired increment.

- Prescription

To load a map-based prescription file, press the Prescription button. For more information, see “Loading Prescriptions” on page 4.104.

- Minimum Flow

Not relevant for HARDI® sprayers (Used for DirectCommand Liquid Applications only).



4 - System setup

Rate Control: Container Level

Container Level screen - (Partially Full)



ATTENTION! The container level is transferred from the HARDI® Virtual Terminal screen automatically.

When filling or emptying main tank, use the following three Tank buttons to update the amount of product in the main tank.



ATTENTION! When having an electric Tank Level, these buttons will not be selectable.



Tank Fill



The Tank Fill button increases the main tank level logged in the display to the user-defined maximum volume (specified in the Container Setup Wizard).

Tank Empty



The Tank Empty button decreases the main tank level logged in the display to zero.

Tank Partial Fill



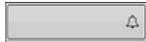
The Tank Partial Fill button increases the main tank level logged in the display to specific amount that you specify by pressing . Pressing the Partial Fill button summons the Adjust Container Amount screen.

Adjust Container Amount

- Add
Adds product to the main tank. Press  to enter the amount.
- Remove
Removes product from the main tank. Press  to enter the amount.
- Set
Sets the product level in the main tank. This button summons the , where you can set a certain amount. Choose an amount that is below your maximum main tank level.



Tank Alarms



The Container Alarm button, which appears at the bottom of the Container Level portion of the Rate screen, displays the capacity of your main tank as well as the percentage at which the Low Tank Level warning will sound. To adjust these settings, press the button and the Container Alarm screen appears.

If you wish to adjust your main tank level warnings, use the following buttons on the right-hand side of the Container Alarm screen to make these adjustments.

- Percentage (%) button

Sets the warning threshold according to the percentage of solution left in the tank. In the example above, the threshold is set at 10 percent.

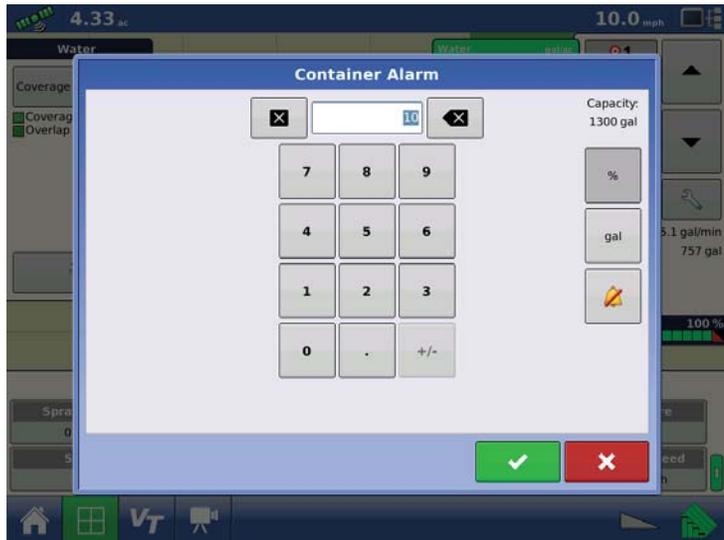
- Units of measurement icon

Sets the warning threshold according to the amount of solution left in the tank. This icon is named according to the tank's units of measurement you specified during the Controller configuration procedure.



- Disable Low Tank Level button

Disables the Low Tank Level warning.



4 - System setup

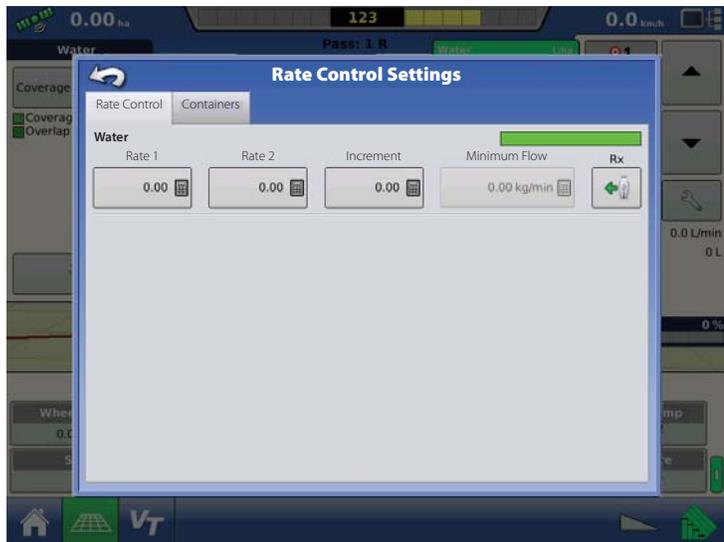
Loading Prescriptions



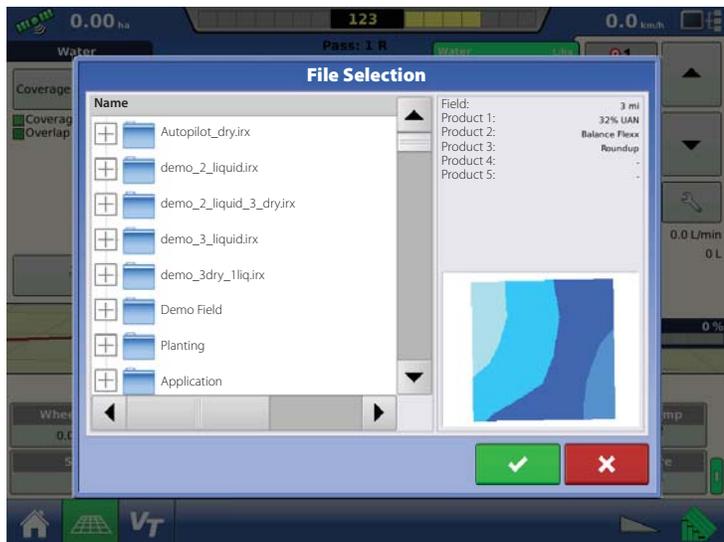
To load a map-based prescription file, press the Rate Setup button on the Product Control Toolbox.

The Rate Control Settings screen appears.

1.  Press the Load Prescription button.



2. The File Selection screen appears.
3. Highlight the correct .AGSETUP (prescription) or .shp (shape) file and press .
4. When you return to the Rate Control Settings screen, the prescription rate is now shown on the screen. The Load Prescription button has disappeared and in its place is the Remove Prescription button, which resembles a minus sign. Press the Remove Prescription button if you wish to remove the prescription from the field.
5. When you return to the Map screen, the prescription is now shown on the map.



Showing Prescriptions on the Map Screen



On the Map screen's Mapping Toolbox, press the Legend Setup (wrench) tool and the Legend Select screen appears. Notice that the "Rx" (prescription) button appears at this screen.

1. Press the "Rx" button to show a legend of the prescription rate.



2. After pressing the "Rx" button, when you return to the Map screen, the prescription rate appears on the "Prescription Rate Legend" (A). This legend is not editable.



Shape File Conversion

What is commonly called a shape file is actually a collection of three different files. All three of the files are required and must be present on the USB drive for the system to use shape file groups for variable rate product application. A single "shape file" can contain recommendation rates for multiple products.



To begin, press the Rate Setup button on the Product Control Toolbox.

4 - System setup

The Rate Control Settings screen appears.

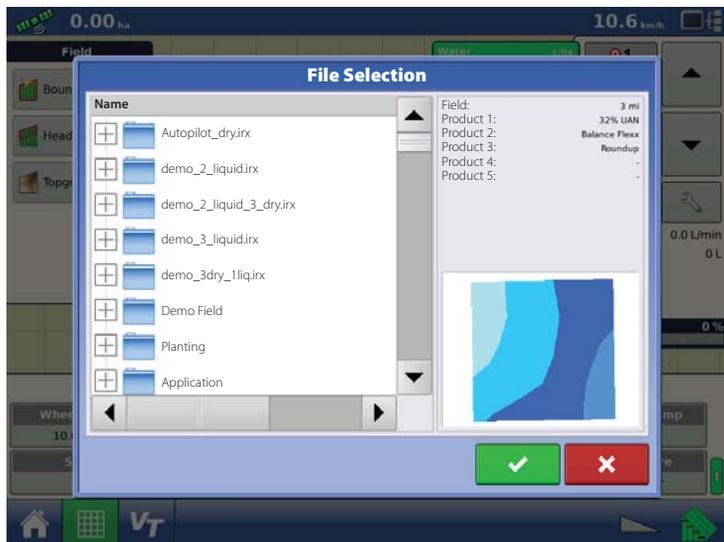
1. Press  to open File Selection screen.



2. The File Selection screen appears. Highlight your desired .shp file and press .



NOTE! Select the product and units that the shape file prescription was made for.



3. Select Data From Shape File

Select the column that contains the product recommendation rate. The list on the right side of the dialog shows sample data from the selected column.

4. Select Units

Select the controlling units for product application.

5. Default Rate Setting

The system assigns a default rate. Use the on-screen keypad to edit the value if desired.



WARNING! Selection of the wrong data column or unit will result in misapplication of product.



NOTE! The only time the default rate is used by the system during product application is if the Rate Outside of Field selection is set to "Rx default". This setting is located in the equipment configuration settings portion of configuration setup. If the Rate Outside of Field selection is set to "Rx default", the default target rate will be used when the vehicle exits the area covered in the prescription map.

External Drive

External Storage Operations



The External Storage Operations button is where you can copy your field data; upgrade display firmware; as well as import, export and manage files.



NOTE! The display can only read and write to USB drives format as FAT32.

Upgrade Firmware



Pressing the Upgrade Firmware button allows you to upgrade the display firmware from the .fw2 file stored on the USB drive. At the File Selection screen, scroll through the list of files on the USB drive until you find the .fw2 firmware file. Highlight the .fw2 file and the box at the upper right-hand side of the File Selection screen shows the version of this file.

Press  to continue, and the Upgrade screen informs you that the upgrade is beginning. At the Upgrade Ready screen, press .



WARNING! Do not disconnect display power when the upgrade is taking place.

Import Files



The File Selection screen opens. Use the scroll bar to find the file you wish to import. File formats that you can import:

.AGSETUP

Use to transfer setup information from display to display or from SMS and display

- Replaces MSF, IBY, PAT, IRX, REF
- Allows full synchronization of the following file formats:
 - Management Data (Growers, Farms, Fields, Seasons, Operators)
 - Products and Product Mixes
 - Boundaries
 - Guidance Patterns
- Marker Sets and Markers



NOTE! Do not use the IBK to “clone” a display. Use AGSETUP.

.AGDATA

- Includes all the necessary data to fully archive in SMS
- Includes recorded operation data
- Equipment Used
- Products Used
- Marks Logged
- Boundaries
- Guidance Patterns
- Flexible export options
- Will be able to export by Grower

4 - System setup

Export Files

.AGSETUP



Use to transfer setup information from display to display or from SMS and display.

- Replaces MSF, IBY, PAT, IRX, REF
- Allows full synchronization of the following items:
 - Management Data (Growers, Farms, Fields, Seasons, Operators)
 - Products and Product Mixes
 - Boundaries
 - Guidance Patterns
 - Marker Sets and Markers



NOTE! Do not use the IBK to “clone” a display. Use AGSETUP.

.AGDATA



- Includes all the necessary data to fully archive in SMS
- Includes recorded operation data
- Equipment Used
- Products Used
- Marks Logged
- Boundaries
- Guidance Patterns
- Flexible export options
- Will be able to export by Grower

Export Reports



Exports Reports saved on internal memory. See “Smart Reports™ (HC 9500 only)” on page 5.25 for more information.

Manage Files

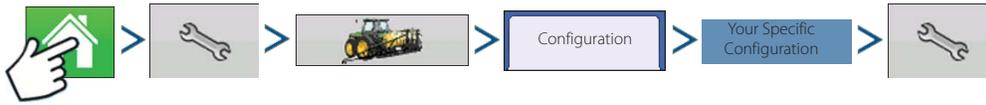


Use the scroll bar to view a list of all files and folders. A bar at the bottom of the window shows how much memory is available on the USB drive.

To delete files, highlight specific file and press . The Memory Management screen warns that the selected files will be permanently deleted. Press  to permanently delete file.

Map Screen

Configuration Setup Screen



The Configuration Setup screen is where you can make settings adjustments for your equipment, ground speed, GPS, and controllers.

The appearance of this Configuration Setup screen varies, based on your particular configuration. Most Configuration Settings screens will include the following buttons.

- Vehicle Offsets. For more information, see “Vehicle Offsets” on page 4.72.
- Speed Input. For more information, see “Speed Input Settings” on page 4.70.
- Automatic Swath Control. For more information, see “Automatic Swath Control (AutoSectionControl)” on page 4.71.
- Swath Section Offsets. For more information, see “Swath Section Offsets” on page 4.73.
- Equipment Settings. Not relevant for HARDI® sprayers.

Mapping Toolbox

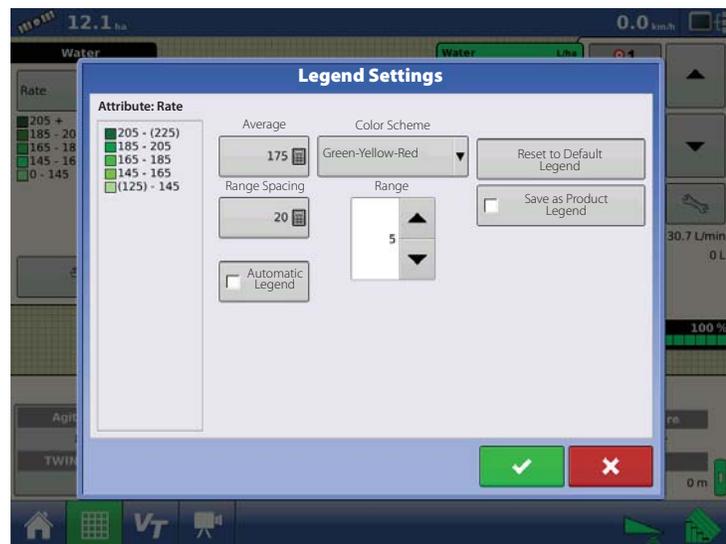
Legend Settings

On the Legend Select screen, press the Setup (wrench) button next to the Rate button, and the Legend Settings screen appears. The Legend Settings screen allows you to change the default legend.



NOTE!

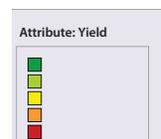
- The Legend Settings screen can also be accessed by pressing the Edit Legend button on the Setup screen’s Product Tab.
- Legend settings changes that are made at the Legend Settings screen will affect all regions.



The Legend Settings screen includes the following items:

- Attribute

Appears at the top left of the Legend Settings screen. Attributes shown for Harvest include Yield and Moisture. The Rate attribute is shown for Planting and Application operations. You can adjust the color scheme, spacing and ranges as they appear on the map screen, by using the buttons described below.



- Average

The Average button changes the average rate for the legend. Press  to specify the average of the ranges shown on the map legend.

- Range Spacing

The Range Spacing button changes the difference between the rates in one color range. Press  to edit the legend range spacing value, which is the total number of units represented by a particular color.

5 - Operation

- Ranges
The Ranges  /  change the number of range increments displayed in the legend.
- Color Scheme
The Color Scheme can be modified by using the drop-down list. Choices include the following:
 - Green-Yellow-Red
 - Single Hue (blues or greens)
 - Rainbow
- Reset to Default Legend
Resets the legend to the default settings.
- Automatic Legend
If the Automatic Legend check box is selected, the average automatically sets itself to the field average and updates as the field average changes.
- Reset to Default Legend
Press the reset legend to the system default.
- Save as Product Legend
Select the Save as Product Legend check box if you wish to set the current legend as the default legend for all regions of the same product.

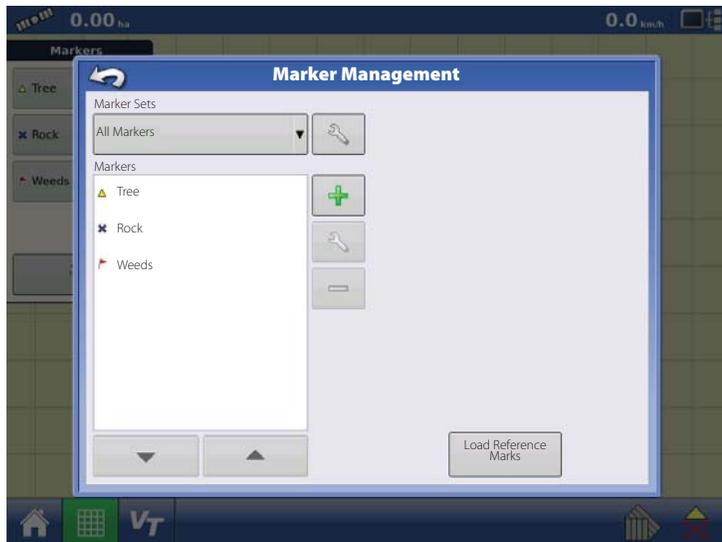
Edit Markers

Marker Sets:

Pressing  allows operator to create, name, and delete marker sets.

Markers:

- Press  to add a marker.
- Press  to edit a marker.
- Press  to remove a marker.
- If you have numerous map icons, you can cycle through them by pressing  / .
- When creating or editing a marker, check the Georeferenced Note button if you wish to add a Field Note that is referenced to the current GPS position when that marker is used.



Boundary Settings

Pressing the Start button opens the Boundary Settings screen.

Underneath the Boundary Type area, you have the choice of creating either an Outer Boundary or an Inner Boundary.

- Outer boundaries delineate the borders of an entire field.
- Inner boundaries mark specific features within that field, such as waterways or buildings.



Create Boundary

1. Choose whether to create either an Outer boundary or Inner boundary by pressing one of the two Boundary Type buttons.
2. If you chose to create an Inner Boundary, use the Region Type drop-down menu to choose the type of boundary. Choices include:
 - Roadway.
 - Body of Water.
 - Waterway.
 - Buildings.
 - Undefined.
3. The Boundary Offset feature enables mapping a boundary at a user-defined distance to the left or right of the GPS antenna center line. If desired, specify a Boundary Offset distance by choosing a direction and distance from the GPS antenna center line.
4. Press  to start the boundary.
5. During the creation of a boundary, the Pause/Resume button and Stop button appear at the top of the Field tab.
6. Press the Stop button to complete the boundary. At the Boundary screen, choose whether to Save, Resume or Discard the boundary.



Pause Boundary

When creating a boundary, you can use the Pause Boundary button to create a straight line between two points. To do this, drive the vehicle to a point, press the Pause Boundary button, then drive to the second point. When you press the Resume Boundary button, a straight line is created between your current point and your pause location.

5 - Operation

Editing Boundaries

Press the Edit button on the Boundary Tab, and the Field Boundary Options screen opens. Here you can Import Boundaries, Export Boundaries, and Clear All Boundaries.

- Importing and Exporting Boundaries.

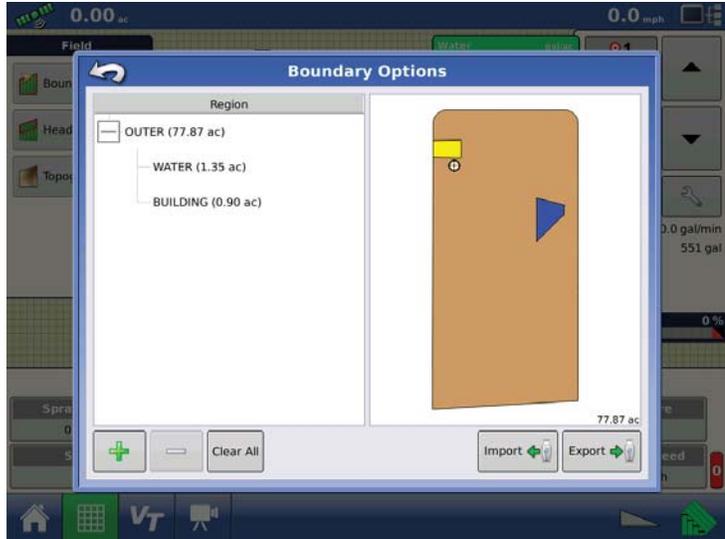
For a description of Importing and Exporting Boundaries, see "Importing and Exporting Field Boundaries" on page 4.54.

- Clear All Boundaries.

Press Clear All to permanently delete all Boundary information for that field.



WARNING! Once you clear this information, it cannot be retrieved.



Field Operations

Operator Selection



1. Press Select Operator button.

Allows you to select a machine operator from the drop-down list. Machine operator information is logged with all field operations. Operator information may be entered in Management Setup at "Management button" on page 4.51.

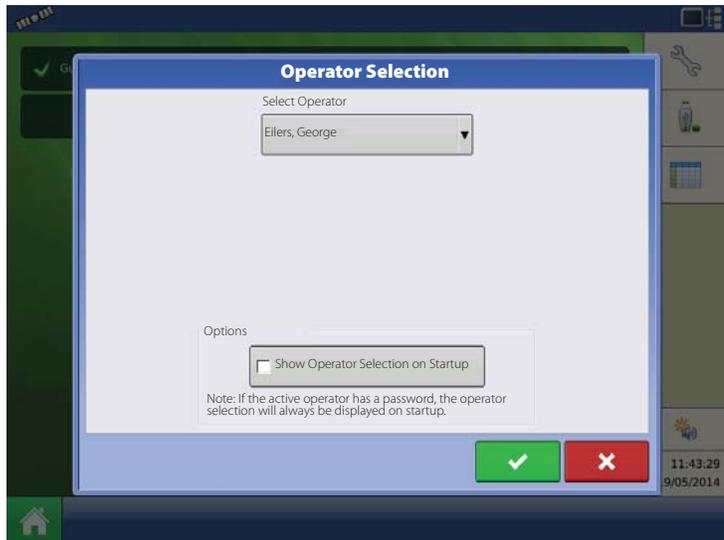
2. Choose the operator from drop-down menu.

i NOTE! Check box will require a password to be entered upon start up of the display.

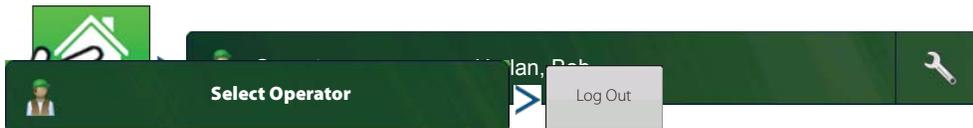
Press .

3. Enter password. Press .

The operator will now be selected and permissions active.



Operator Log Out



Users that are both a Manager and Operator can logout which locks Setup and USB access and an operator must log in before an operation can be performed.

Setup Event

You must have already created the following:

- Completed the "Quick Setup Guide" on page 4.16.

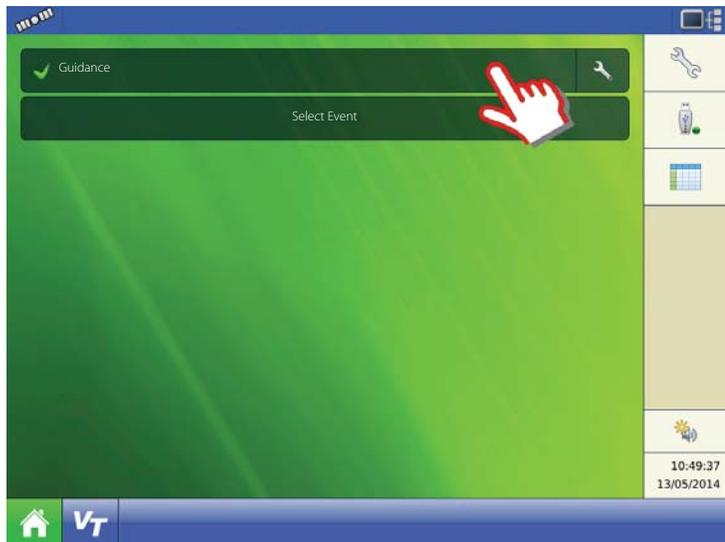
or

- A Season, Grower, Farm and Field in Setup Management. For more information, see "Management button" on page 4.51.
- A Product (if you are creating an Application or Planting Field Operation) at the Setup Product Tab. For more information, see "Product tab" on page 4.50.
- An Operating Configuration at the Setup screen's Configuration Tab. This Operating Configuration consists of Equipment, Vehicle, Implement, Controller (optional), Tank (in Application), and Ground Speed Source.

All of these are referenced by the Field Operation Wizard during the Field Operation setup process.

5 - Operation

Press the "Guidance" button to select Operation Configuration.



Press the "Guidance" button to select Application Configuration for creating a spray job.

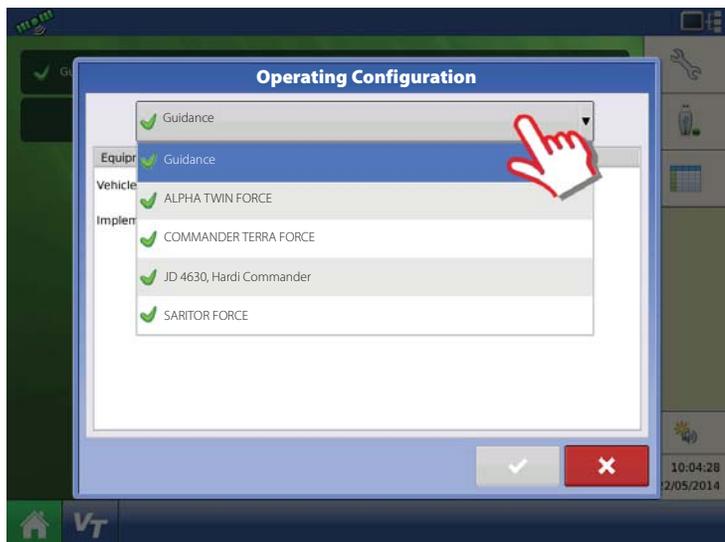
Select sprayer configuration in the drop down menu.

Only configurations with  will work properly:

The configuration can be loaded and is detecting all modules setup in the configuration.

 ATTENTION! Options are all configurations previously created for the current display.

 ATTENTION! Select "Guidance" for Guidance only.

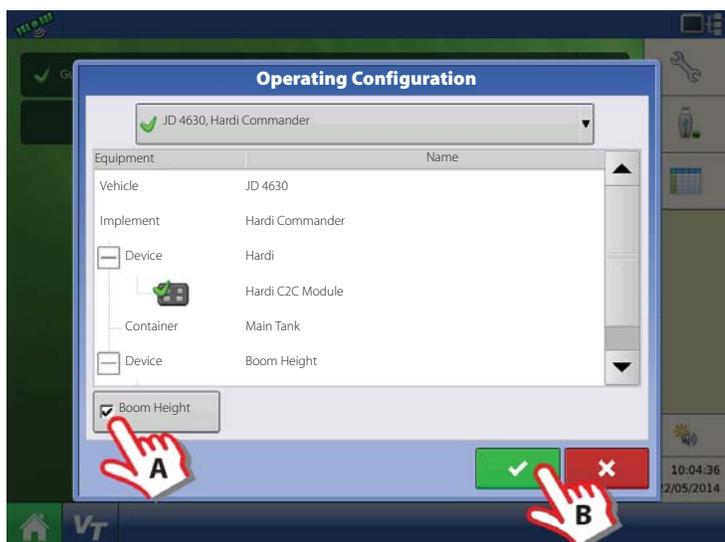


A. Check the "Boom Height" option if AutoTerrain/AutoHeight/AutoSlant is applicable.

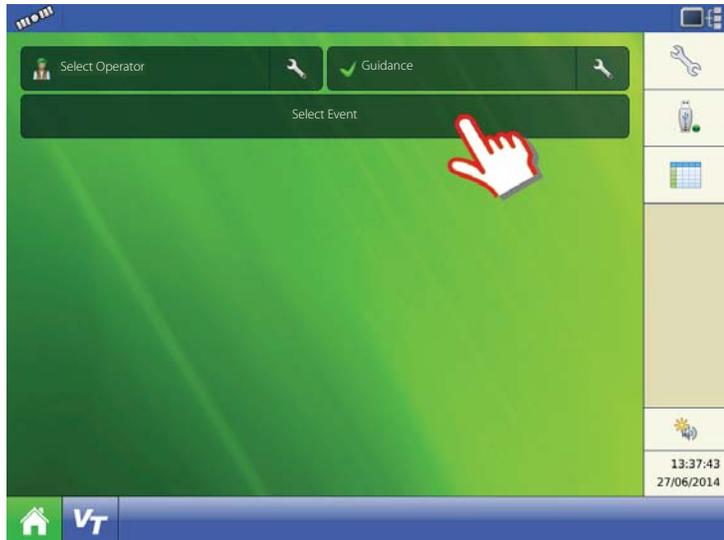
This will enable manage of the AutoHeight/AutoSlant from the Work Screen.

B. Press  to confirm.

 ATTENTION! All Modules Detected:
 Display is detecting the module.



Press the "Select Event" button to start a spray job.

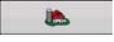


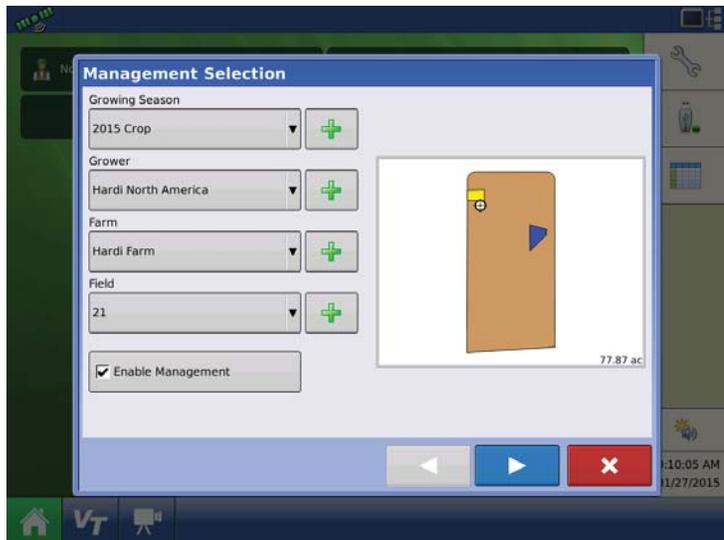
1. Management Selection:

Press  to create a new Growing Season, Grower, Farm and Field. Or select existing ones in the pull down menus.

 **ATTENTION!** The "Enable Management" button is checked by default and requires a Grower, Farm and Field to be entered before proceeding.

Un-checking this button will allow the operator to continue to next screen without entering additional information on this screen.

 **ATTENTION!** Grower, Farm and Field can also be created in  (Management Setup).



Press  to proceed to the next step.

2. "Hardi, Sprayer Interface (0)" should be selected "Active".

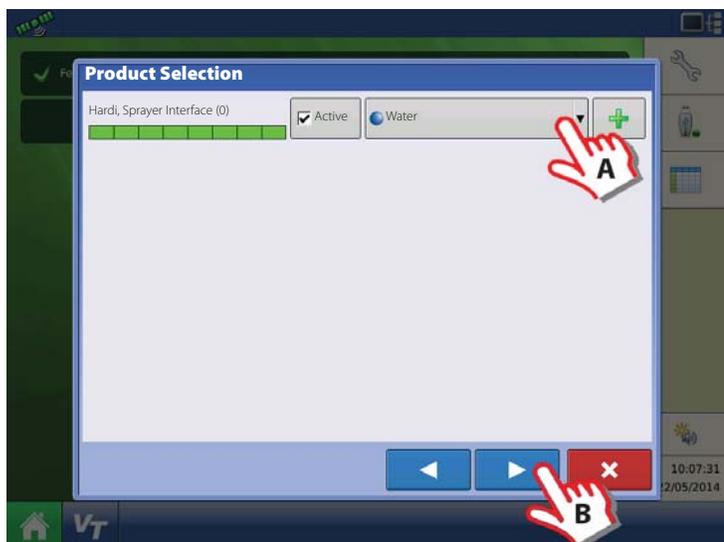
Product Selection:

A planting or application configuration must include a product.

A. Select product from the drop-down menu.

Press  to create a Application Product or Mix/Blend.

B. Press  to continue.



5 - Operation

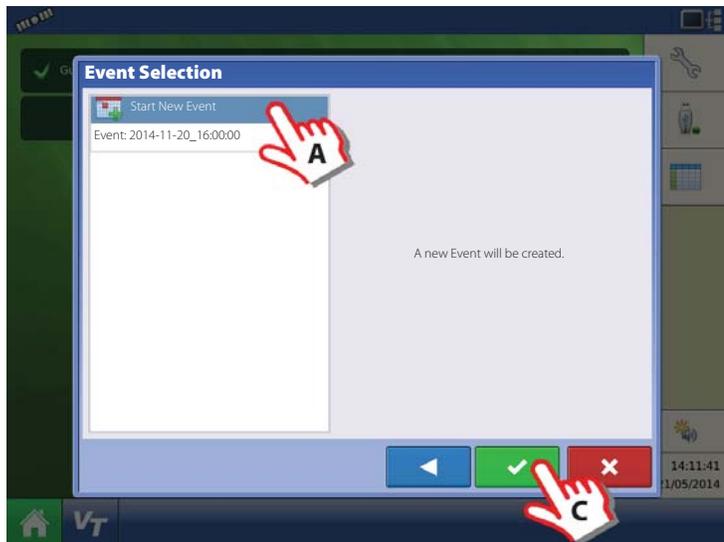
3. Event Selection:



ATTENTION! This step is not visible if previous events has been closed. For more information see "Ending an Event".

New Event:

- A. Select "New Event".
- C. Press  to continue.



Or select:

- A. One of the previous events to add application to a previous event.
- B. Press the drop down menu to change the application product.
- C. Press  to continue.



4. Options:

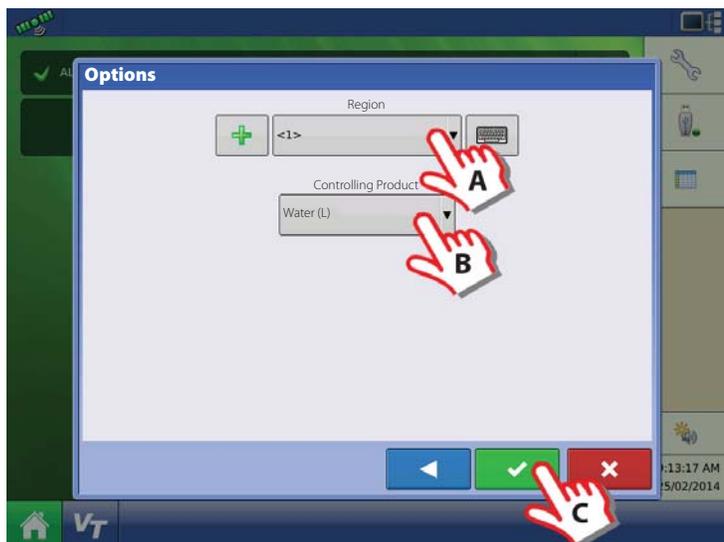
- A. Press  to edit or change the region name from the system default if desired.

If resuming a previous event, other possible options are:

Press the "Region" button to change to a previous setup Region.

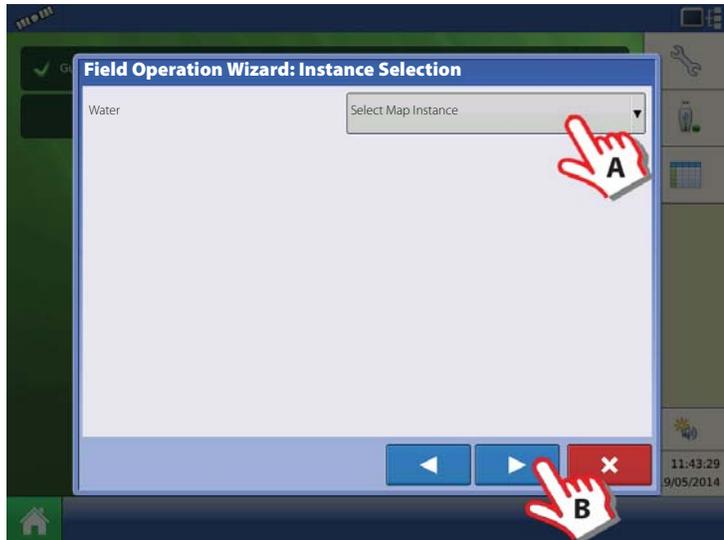
Or press  to create a new region or change the controlling product.

- B. Press the "Controlling Product" drop down menu to change application product.
- C. Press  to confirm.



5. Instance Selection

- A. Press the “Select Map Instance” drop down menu to select a New Map or add to an existing instance.
- B. Press  to continue.



7. Return to Home screen.

Field Finder

When the steps in the Setup Event Wizard are completed, you are now returned to the Home screen.

If you have an existing field boundary, and your current GPS position is within that field boundary, the display will automatically pick the correct Grower, Farm and Field combination when you start a Field Operation.



Region button:

A region is used to subdivide a field into smaller sections. The region in which data is currently being logged is listed on the Region button. A new region can be created at any time as you are performing a field operation.

To change between or add a new region to a field, press the Region button and follow the on-screen instructions.



Field Notes button:

Edit any of the report items that are listed in Smart Report™. For more information, see “Smart Reports™ (HC 9500 only)” on page 5.25.

5 - Operation

Home Screen After Configuration

The Home screen will appear when:

- Equipment Operating Configuration is created.
- Grower, Farm and Field are selected for that configuration.

Status for current Event is shown on the Home screen. Currently used Products information is shown. Press the buttons listed below to get additional information:

- Operator Selection, see “Headlands” on page 5.14.
- Edit Operator, see “User Setup button (Edit User)” on page 4.56.
- Operating Configuration.
- Configuration Setup, see “Configuration Setup Screen” on page 5.1.
- Event Setup, see “Setup Event” on page 5.5.
- Event Options.
- Products Tab. Selects detail of products, rates and area covered to show below.
- Product Selection. Shortcut to change products.
- Rate Control Settings. Shortcut to change rates.
- Productivity Tab. Selects detail of speed, time, area covered, and distance travelled to show below.
- Region Options. Shortcut to change Region, see “Region button:” on page 5.9.
- Field Notes. Press to enter details regarding current spray job, see “Field Notes button:” on page 5.9.
- Container info. Shortcut to change content.



Work Screen Operations



ATTENTION! For detailed information on Work Screen operations, see "Work Screen" on page 3.5.

Press  to get to the Work Screen:

- Press to expand/collapse "Rate Control" menu, see "Rate Control Settings" on page 5.11.
- Press to enter "Display Item Selection", see "Display Item Selection" on page 5.12.
- Press to enter "Boom Height Control Options", see "Boom Height Control Options" on page 5.13.
- Press to activate AutoTerrain/AutoHeight/AutoSlant, see "AutoTerrain/AutoHeight/AutoSlant button" on page 3.6.
- Press to activate AutoSectionControl, see "AutoSwath Button" on page 3.6.
- Press to activate AutoSteer, see "AutoSteer Button" on page 3.6.
- Main ON/OFF status, see "Master Switch Status" on page 3.6.



Rate Control Settings

Press  to enter the menu:

Rate Control tab

- Press to change Application Rates.
- Press to change the Target Rate Increment.
- Press to import a Prescription.



ATTENTION! Setting the Application Rates in this menu will automatically change the Volume Rate at the VT screen. But changing the Volume Rate in the VT will not affect this menu.



5 - Operation

Containers tab

- D. Press to adjust Container Content.
- E. Press to set Container Alarm Content.



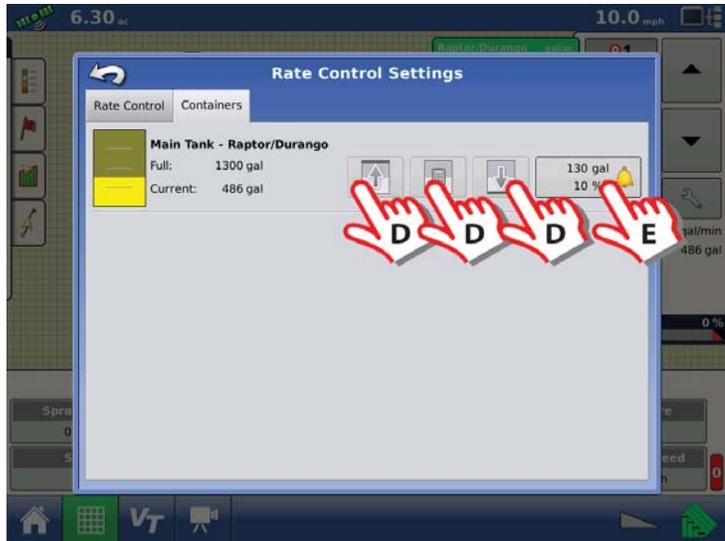
ATTENTION!

Tank Gauge fitted:

It is not possible to change the content as all tank/container data are transferred between the Work Screen and the VT.

No Tank Gauge:

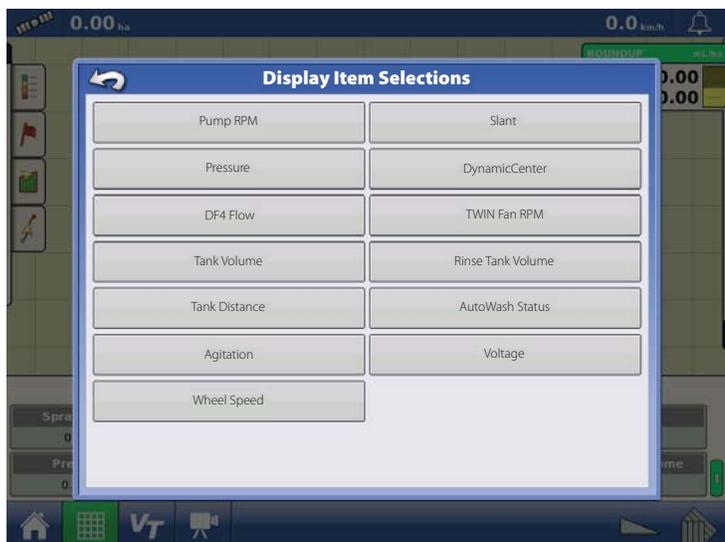
The content can be entered here or in the VT menus.



Display Item Selection

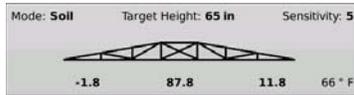
Press one of the four  buttons on the Work Screen to enter the menu:

- Press your Display Item Selection to change the Work Screen view.



Boom Height Control Options

Press



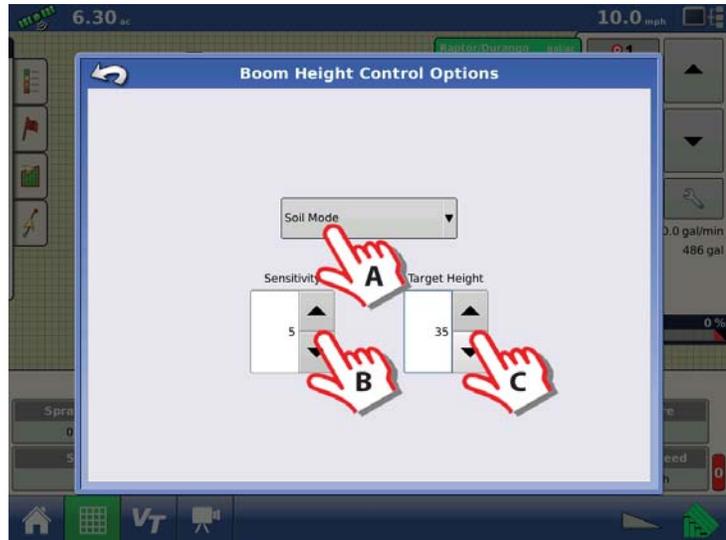
to enter the menu:

A. Select AutoTerrain/AutoHeight/AutoSlant mode:

- Crop Mode
- Hybrid Mode
- Soil Mode

B. Set the Sensitivity by pressing ▲ or ▼.

C. Set the Target Height by pressing ▲ or ▼.



5 - Operation

Headlands

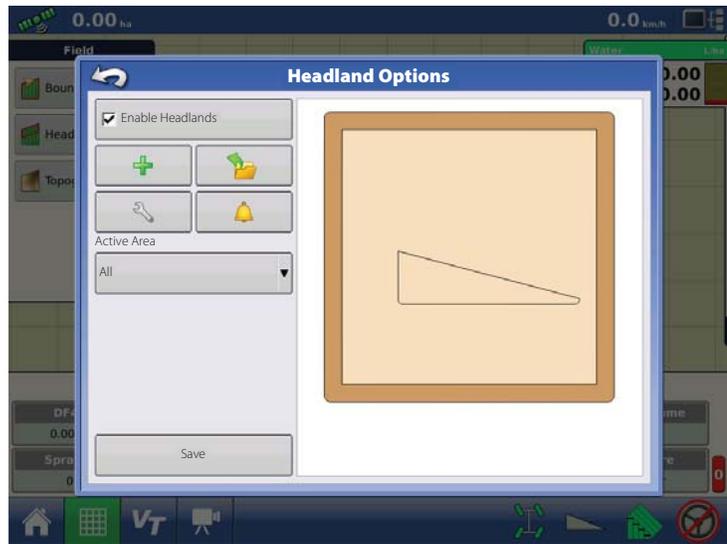
Press the Headlands button on the Field tab to access the Headland Options screen.

 ATTENTION! A Field Boundary is required to create a headland.



Enable Headlands: Use check box to turn Headlands functionality on and off.

-  Add Headland
-  Load a Headland
-  Edit Headland
-  Alarm Settings



Active Area



Work Area



Headlands



All

Add a Headland

Press  on Headlands Options screen.

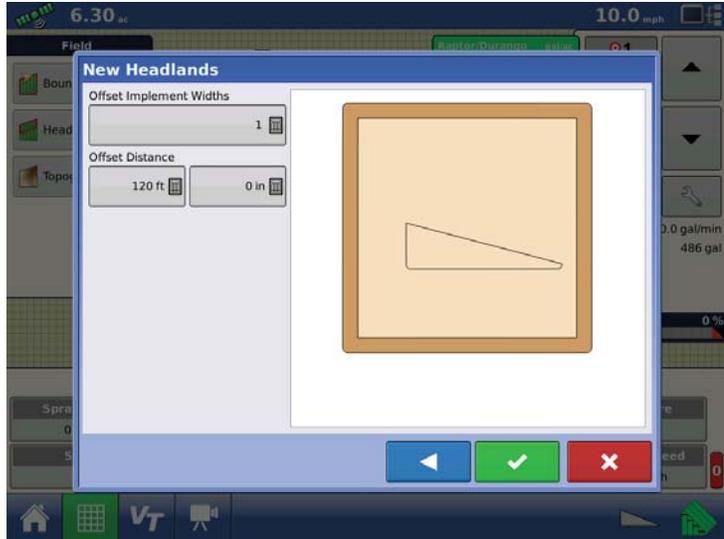
Select Headland Type from drop-down box.

Headland Types

All-Around

- Offset Implement Width
Number of implement widths used to set the headland width.
- Offset Distance
Distance used to set headland width.

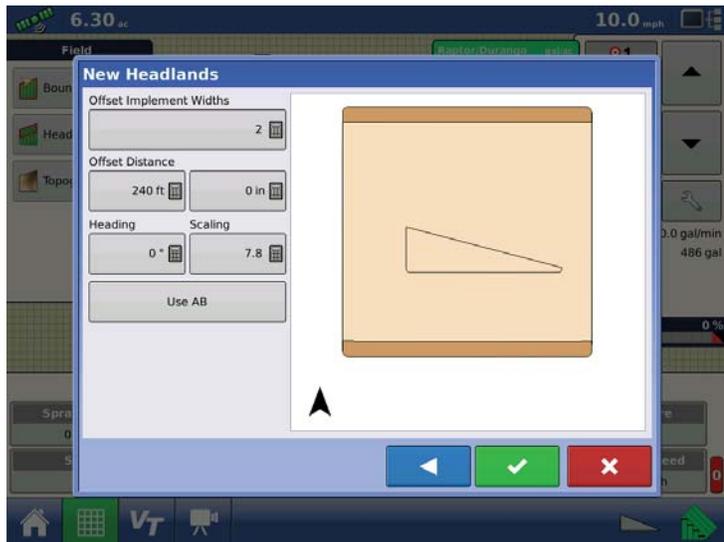
Press  to accept.



Top Bottom

- Offset Implement Width
Number of implement widths used to set the headland width.
- Offset Distance
Distance used to set headland width.
- Heading
Used to generate boundary, headlands are created perpendicular to heading
- Scaling
Sets the amount of variation that is allowed (from perpendicular) to include part of field boundary in the headlands.
- Use AB
Select AB line to set heading for determining headlands.
- The  shows the heading used for Headland creation.

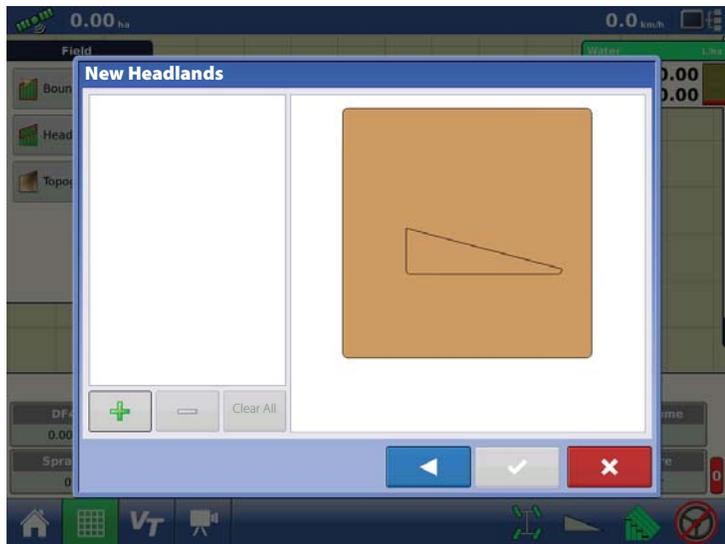
Press  to accept.



5 - Operation

Driven

1. Select Driven from drop-down menu and press  to continue.
2. Press  on New Headlands screen.
3. Input Headland Offset Distance and Direction (Left or Right). Press  to accept.
4. Drive Boundary:
 -  pause.
 -  resume recording after pausing.
 -  stop recording.
5. Save, Resume, or Discard
 - Save
 - A. Press Save button.
 - B. Default name is time and date. Press  to change name.
 - C. Press  to accept or  to discard boundary.
 - Resume - resume creating boundary.
 - Discard - discards boundary and returns display to map screen.

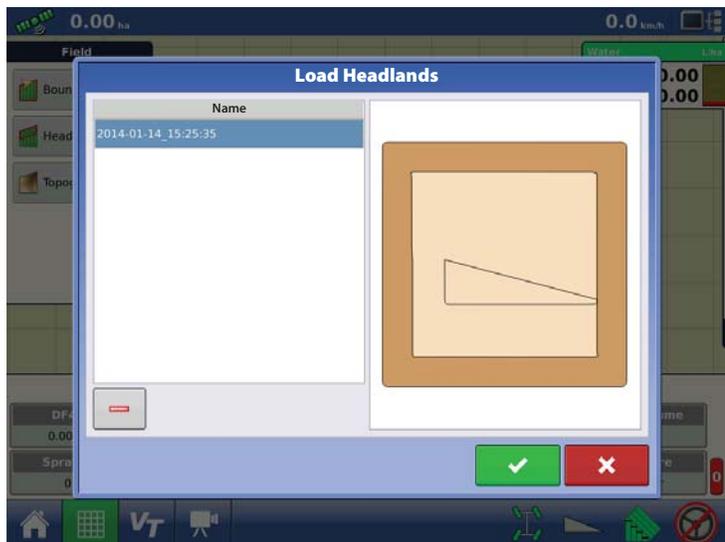


Load Headlands

Press  button.

Select a headland from list.

- Press  to delete selected headland.
- Press  to return to Headland Options screen.
- Press  to load selected headland.



Edit Headlands

Press Edit Headlands button.

Select a headland from list.

- Press  to add a driven headland.
- Press  to delete selected headland.
- Press  to delete all driven headlands.
- Press  to return to Headland Options screen.
- Press  to load selected headland.

This screen will vary depending on type of headland.



Headland Alarm Settings

Press  button.

- Alert Distance
Distance from approaching headland at which display will warn user of upcoming headland.
- Alert Duration
Time length from approaching headland at which display will warn user of upcoming headland.
- Audible Alarms
 - Approaching Headland.
 - Crossing Headland Boundary.



Map Screen with Headlands.



5 - Operation

Topography

Press "Topography" button to enter the Topography screen which allows user to setup Topography functionality.

The display allows you to record points that can be used to make a reference layer that is relative to the elevation throughout the field. This can provide you with valuable information in regards to the highs and lows of a field when you may not be able to visually tell with the naked eye. Surveying and Tiling operations will probably benefit the most with respect of where to place the mains and laterals in a field.



 **ATTENTION!** Requires RTK GPS signal to collect the accurate elevation data.

You can also import data from mapping software such as SMS Advanced via .agsetup files.

Topography screen

You are allowed to have multiple topographical elevation surveys for the same field. This can be useful for different applications, for example:

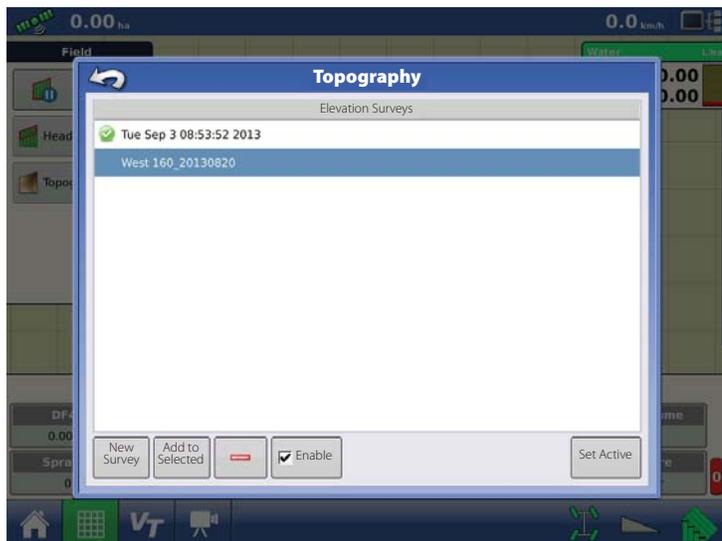
- One topographical survey that is for the entire field. This will give you a greater perspective of the whole field.
- An additional topographical survey, driven at very dedicated portion of the field. This would allow you to have greater elevation detail in certain areas if you need it.

By default the naming that is generated in the display will be Date/Time based. You can export surface elevation data from software packages like SMS Advanced into the display, and those will be tagged with the field name and the date exported (both examples are in the screen shot).

You can also add points to existing topographical surveys and save them.

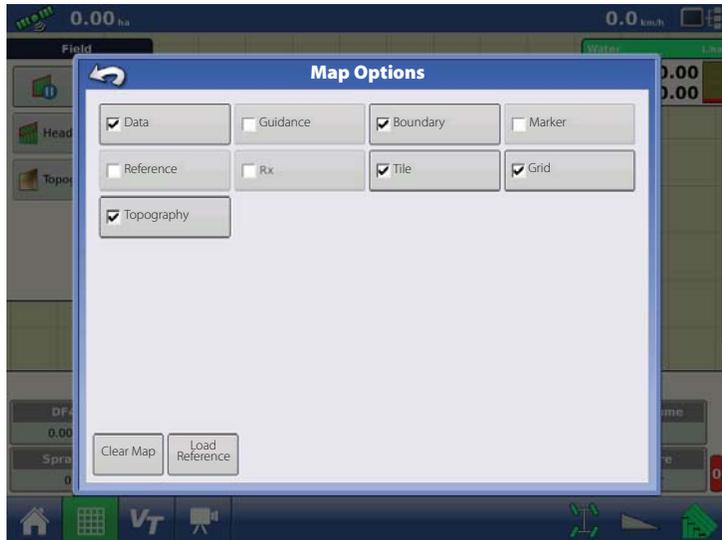
Only one topographical survey can be active at a time. When exported as an .agsetup or .agdata file, this will be the survey that is exported. Non-active surveys will stay in the display. At any time you can remove an topographical survey, and collect a new one.

- New Survey button
Press to create a new topographical survey
- Add to Selected button
Press to add to an topographical survey
- Minus (-) button
Press to delete a topographical survey
- Enable check box
Press to turn topographical reference layer on/off (Enable check box functions the same as Topography check box in Map Options screen - shown below.)
- Set Active
Select the desired topographical survey from list and use button to set as active.



The topography layer can be turned on/off as a reference layer during any operation using:

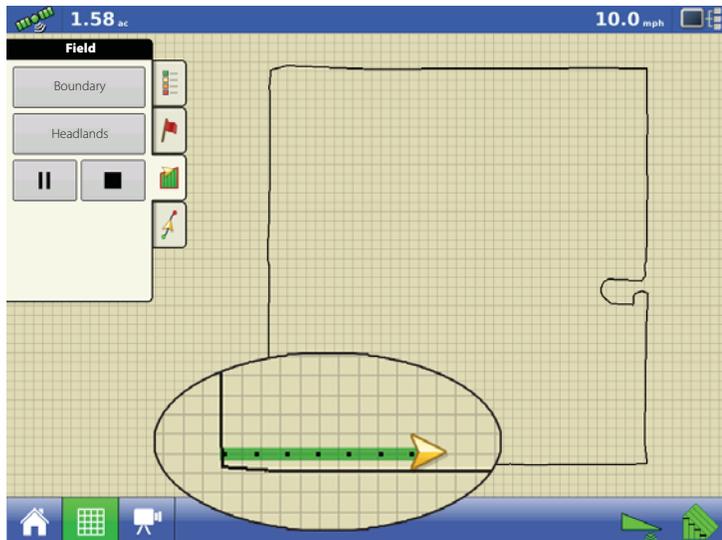
- Enable check box on Topography screen (shown above).
- Using the Topography check box on the Map Options screen (see “Map Legend tab” on page 3.8).



If you have RTK GPS reception, you are allowed to collect an elevation survey. This will allow you to collect the Latitude/Longitude and elevation values as you traverse the field.

A point will be dropped every 10 feet (3 meters) as you drive regardless of speed, or direction. If you are collecting during operations like planting or application using autoswath, it will also log points outside the boundary of the field (i.e. through a grassed waterway) to get the most information throughout the field.

During collection of an elevation survey, points will be logged to the file every 10 feet (3 meters). An on-screen visual will appear in the form of a single black dot every 100 feet (30 meters).



ATTENTION! It is critical that the GPS Antenna to ground measurement is correct in your configuration, any error in this measurement, will add to the error in the data logged.

The following are suggestions to get the best possible elevation survey for a given field. Following these recommendations will provide the best results for your field.

- Keep swaths in the field to 60 ft (19 m) or less, the closer the better.
- Driving a dedicated route at the lowest or highest points in a field (i.e. lengthwise of a grassed waterway, or at the top of a ridge) then traversing the field in regular swaths will provide the best detail of the field.
- If surveying with the tile plow antenna, ensure that the plow is in the fully raised position.
- Driving too fast with mounted plows, can cause bouncing and affect quality.
- Surveying with harvesting equipment can provide streaked maps as the hopper filling and unloading can affect the height of the vehicle, and therefore antenna.

5 - Operation

After the survey points have been collected, they will be converted into a surface layer in which you can define the color scheme Red, White, Blue, or Brown-Tan. See "Map Legend tab" on page 3.8.

You can select the number of legend ranges for your field that will show the areas desired. This theme will be used for each field until changed.

Hues will represent:

Red, white, blue scheme

Darker blue = Lower elevation.

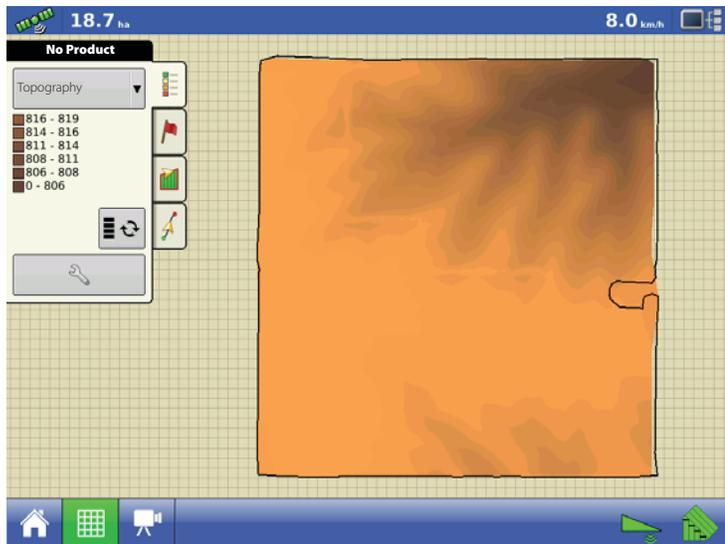
Darker red = Higher elevations.

White will be a transition color between.

Brown-Tan scheme

Dark brown = Lower elevations.

Tan = Higher elevations.

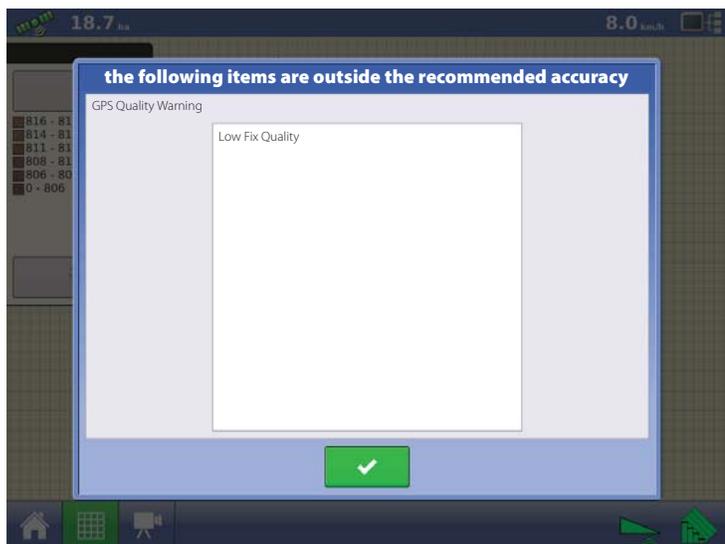


If at any point during collection your GPS correction status changes out of RTK fixed, logging will be suspended.

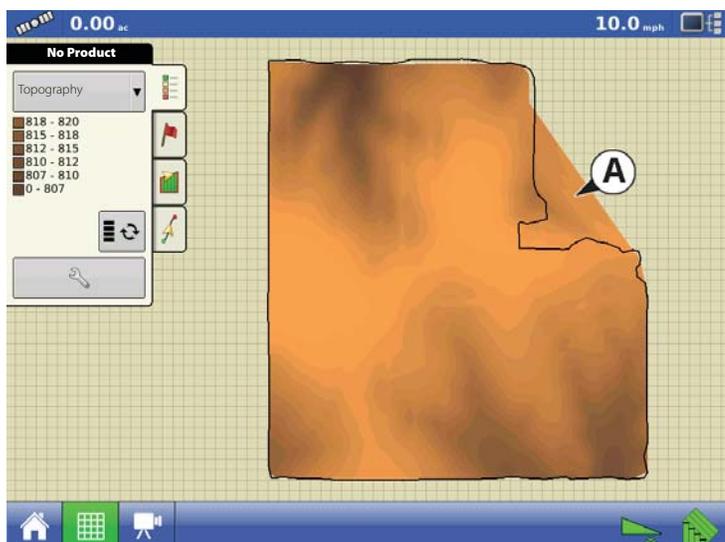
If you re-acquire the RTK signal, logging will automatically resume.

At any point you can  (pause) or  (stop) collection of the elevation survey, and then  (resume) as needed.

If you forget to stop logging as you leave the field, you will be prompted with the message that data collection is still active, and be given the option to continue logging, or end operation.



In Odd-shaped fields, the surface rendering of the elevation will connect areas (A) even if you haven't driven through that area.



Finalize Event

During a field operation, you can suspend or close the event by pressing on the wrench at the end of the Grower Farm Field (Select Event) button.



This opens the Events Options screen.

The Event Options screen allows operator to change:

- Event Name.
Select the event to be edited in the drop down menu. An active event will be preselected when the Event Options screen is opened.

- Suspend Event.
Pressing this button suspends the current field operation. The Home screen then appears as before the creation of a field operation, as shown on "Home Screen" on page 4.15.

- Clear Map Bounds.
Press to clear map bounds for the selected event.

- Close Event.
Pressing this button ends the current field operation. The Home screen then appears as before the creation of a field operation, as shown on "Home Screen" on page 4.15.

A closed event cannot be re-opened and will not show up in the Event Selection screen. A user can manually close Events or be prompted to close events.

- Prompt to Close Events.
Check this to be prompted before an event is accidentally closed.



5 - Operation

Reports

Summary Report



This screen shows you field totals and averages. Use the drop-down menus at the top to specify the information you would like to view. Specific information is shown in the list below for each:

- Season
- Grower
- Farm
- Field
- Operation
- Product

The list displays information for each Region and Instance.

There are four viewing modes:

- Agronomic
- Event
- Operator
- Configuration

The Agronomic View shows data of a specific field.

Region	Avg Rate (gal/ac)	Total (gal)	Area (ac)	Date Created	View Mode
Instance 1	10.3	64.8	6.30		Agronomic
<1>	10.3	64.8	6.30	01/27/2015	Create Report
Field Total (All)	10.3	64.8	6.30		View Report
					View Map

Region	Avg Rate (gal/ac)	Total (gal)	Area (ac)	Date Created	View Mode
Instance 1	11.9	106.2	8.93		Agronomic
<1>	11.9	106.2	8.93	01/27/2015	Create Report
Instance 2	19.2	67.6	3.52		View Report
<1>	19.2	67.6	3.52	01/27/2015	View Map
Instance 3	10.2	159.1	15.59		
<1>	10.2	159.1	15.59	01/27/2015	
Field Total (All)	11.9	332.8	28.04		

The Event View shows data of a specific Event.

Region	Avg Rate (gal/ac)	Total (gal)	Area (ac)	Date Created
Instance 1	10.3	64.8	6.30	
<-1>	10.3	64.8	6.30	01/27/2015
Field Total (All)	10.3	64.8	6.30	

Operator View

- Shows data of a specific Operator
- Filters data by each configuration used by the selected operator.
- Area Only
- Daily Subtotals
- Configuration Total
- Operator Total

Config	Date Created	Grower	Farm	Field	Area (ac)
HARDI SARITOR					
2015-01-27_09:55:31	01/27/2015	Hardi North America	Hardi Farm	21	13.15
2015-01-27_10:09:57				21	6.30
2015-01-27_09:31:43				10	2.07
2015-01-27_09:39:12				10	15.59
Subtotal:					37.11
Config Total:					37.11
Total Area:					37.11

Configuration View

- Shows data of a specific configuration
- Area Only
- Daily Breakdown
- Daily Subtotals
- Configuration Total

Date Created	Grower	Farm	Field	Area (ac)
01/27/2015				
2015-01-27_09:55:31	Hardi North America	Hardi Farm	21	13.15
2015-01-27_08:51:30			10	8.93
2015-01-27_10:09:57			21	6.30
2015-01-27_09:31:43			10	3.52
2015-01-27_09:39:12			10	15.59
Subtotal:				47.49
Total Area:				47.49

5 - Operation

Date Range

Start Date:	End Date:
June 10, 2014 	June 12, 2014 

- View data in a certain date range.
- Only used in Operator or Configuration view.
- Defaults to first and last day of logged data in the season.
 - Can only select days within that date range.
- Create Report button will create all Smart Reports within the defined date ranges.

Field Notes

The Field Notes button is where you can enter information such as the following:

- Crop information
- Application timing
- Weather information
- Soil condition



- Sky Condition
- Wind Direction
- Wind Speed
- Air Temperature
- Humidity



- Tillage Type
- Crop Residue Level
- Soil Condition
- Soil Moisture
- Soil Temperature



Press  to input, edit, or delete Field Notes.



Change settings that affect the creation of application reports.

- Auto Generate Application Report
Check this option to have the display automatically generate an application report each time you start a new field operation.
- Copy Notes from Previous Region
Check this option if you wish to have the display copy all values already specified in Report Details for the previous region over to a new region.
- Prompt for Field Notes
Check this option to have the display automatically launch the region summary data collection dialogue box each time a new region is created at the Work Screen during application rate control.
- Report Map Appearance
 - Multi-Color Rate
Select this option to have application reports display the application maps using rate legend as displayed on the Work Screen.
 - Single Color Coverage
Select this option to have the application reports display single color product coverage maps.

Smart Reports™ (HC 9500 only)

Smart Report™ creates documentation of all in-field product application events. This documentation is saved in a Portable Display Format (PDF) on your USB drive. This PDF either can be viewed on the display screen, or printed later. Smart Reports provide information relating to location, product information, applied totals, field areas, as-applied maps and field boundaries.



NOTE! It is recommended that you enter any necessary information in Report Details before creating a Smart Report.

Create Reports



To begin creating a Smart Report™, first highlight an item in the list on the Summary Report screen, then press the Create Report button.

1. The Create Report screen appears, which lists at top:

- Grower
- Field
- Product

Two drop-down menus list:

- Operating Configuration
- Product Group

Use the drop-down menus to change these, if desired. Press  when finished.

2. A scroll bar informs you of the progress made when the display compiles the Smart Report.
3. At the conclusion of the Smart Report creation process, a screen states "Report Creation Complete."
Press  or if you wish to view the report press the View Report button. A built-in PDF viewer displays your Smart Report. An example is shown at "Control Channel Report Content" on page 5.27.



NOTE! You can view subsequent pages in the Smart Report by pressing the blue right and left arrows at top right. Also, you can zoom in and out of the Smart Report by pressing on the magnifying glass icons at top left.

5 - Operation

- Product application reports are automatically stored on the external data card at the time of report creation. Reports are created and stored inside folders that are created with the following sequential information provided by the display:
 - Ten-digit serial number of the display. Example: 2007250001.
 - Grower
 - Farm
 - Field Name
 - Configuration Name
 - Unique ID #
 - Date of most recent product application. The files date information is listed according to Year, Month, Day.
Example: East 91_Post Sprayer_DirectLiquid_0000177a_060506.pdf.

Smart Report Auto-Generation



This screen allows the user to change the settings that affect the creation of application reports.

- Automatically Create Application Report check box

Check this option to have the display automatically generate an application report each perform the action in the Creation Trigger drop-down menu.

- Creation Trigger drop-down menu

User can select to generate reports upon Event Change or Event Closed.

If changing products through the field, it is recommended to set the Prompts to Close Event check box in Event Options. See "Field Operation Options" on page 58 for more information on setting Prompts to Close Event.

- Export Location

User can select to export the reports to a USB storage device or AgFiniti. This prevents accidentally exporting to the wrong destination.

Auto-generated reports are stored locally within the display and are manually exported to a connected USB media device or AgFiniti. User is warned if connected media device doesn't match the selected export location.

See "Export Reports" on page 4.108 for more information on exporting to USB storage.



Control Channel Report Content

The content of all product application reports is divided into two distinct groups.

The first page(s) of the report represent field and product control channel specific information.

In cases of multiple product application, multiple pages will be generated, one for each channel of product control.

Hardi North America



APPLICATION REPORT

Grower Hardi North America		Field Field: 10 Farm: Hardi Farm County: Description: Township: Range: Section:			
Equipment Configuration Vehicle: HARDI SARITOR Implement: HARDI SARITOR Boom Height: 30 in		Application Timing: Pre Plant Placement: Surface Broadcast Nozzle PN: 372126 - Brown MiniDrift Boom Pressure: 45 PSI		Application Date/Time Start Time: 01/27/2015 8:51 AM End Time: 01/27/2015 9:21 AM	
Product: Water Applied Area: 8.93 ac					
Rate (gal): ■ 14.2 + ■ 13.7 - 14.2 ■ 13.2 - 13.7 ■ 12.7 - 13.2 ■ 12.2 - 12.7 ■ 0 - 12.2					
Total Field Area: 36.98 ac					
Crop Crop: Corn Growth Stage:		Restrictions Crop Rotation Restrictions: No Restricted Entry Interval (REI):		Target Pests	
Product Summary					
Name Water	Manufacturer	EPA #	RUP No	Amount 106.19 gal	Average Rate 11.89 gal/ac
Operator/Supervisor Information					
Operator: License:			Signature _____		
Operator: License:			_____		
Supervisor: License:			_____		

5 - Operation

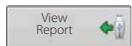
Control Channel Content includes the following:

- Service Provider Information
- Grower Information
- Field Information
- Farm Name and Description
- Equipment Configuration Information
- Application Information
- Date/Time Information
- Crop Information
- Rotation Restrictions and REI
- Multiple Target Pests
- Applied Product Information
- Operator and Supervisor Information

REGION SUMMARY		
Item	Region 1	Region 2
Region Name		
Operator Name		
Application Details		
Area		
Map Amount		
Pell Lime Amount		
Application Start Time		
Application End Time		
Soil Conditions		
Soil Temperature		
Soil Moisture Level		Wet
Soil Condition		Medium
Crop Residue Level		High
Tillage Type		Strip Till
Environmental		
Air Temperature		
Wind Speed		
Wind Direction (From)		NE
Sky Condition		Partly Cloudy
Humidity		
Additional Information		
Memo		

2_ID 8440_CM 7000_111731_2013_07_09.pdf Page 2 of 2

View Reports

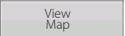


To view Smart Reports that have been saved on your USB drive, go to the Summary screen and press the View Reports button. At the File Selection screen, scroll down the list and select the PDF file of your Smart Report.

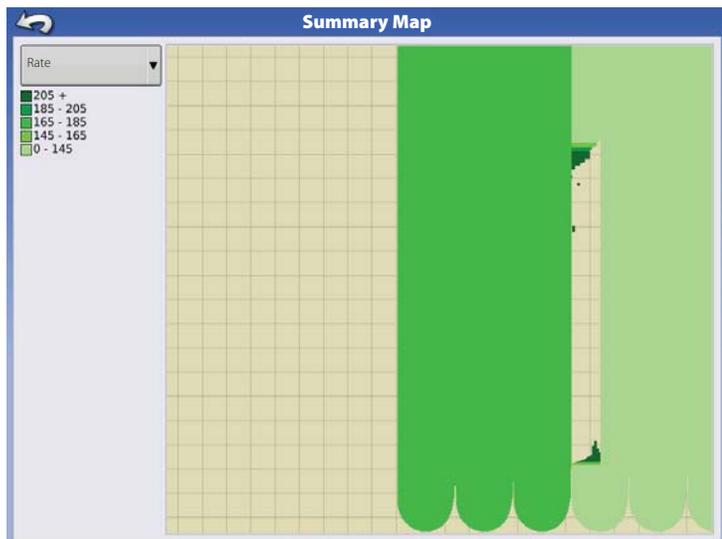
Press  and the Smart Report will appear in the PDF viewer.

View Map

To view a Summary Map of a particular Field Total, Region or Instance shown in the Summary Report:

- Press the  button.

A Summary Map appears. This map shows the rate applied for Application operations and varieties for Planting operations.



General info

Service

There are no user-serviceable parts inside the display. Contact the HARDI® dealer for a Return Material Authorization (RMA).



DANGER! This display has an internal lithium coin cell battery that is good for the life of the product and does not need to be replaced. There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the battery manufacturer's instructions.

Fuse Installation and Replacement

Fuse Type: Blade Style (ATO/ATC)

Rating:

Fuse Holder (orange wire) 5A, 250 VAC

Fuse Holder (pink wire) 15A, 250 VAC



DANGER! The fuse is to be placed in the fuse holder in-line with the battery power cable and used with display only.

System and Upgrades

Contact your HARDI® dealer for technical support.

Automated Module Firmware Upgrade

In the display, all display and module firmware upgrades are packaged in a single .fw2 file. The module firmware files are stored internally in the display. A warning alerts you when a module upgrade is required. You can upgrade all files in a single batch by using an upgrade screen. For more information, see "Advanced tab" on page 4.65.

Devices

Device Information



Pressing on the Device Information button, located in the upper right corner of the display, opens the Devices screens. Technical support may request that you look at these screens for help in diagnosing a problem.

Devices

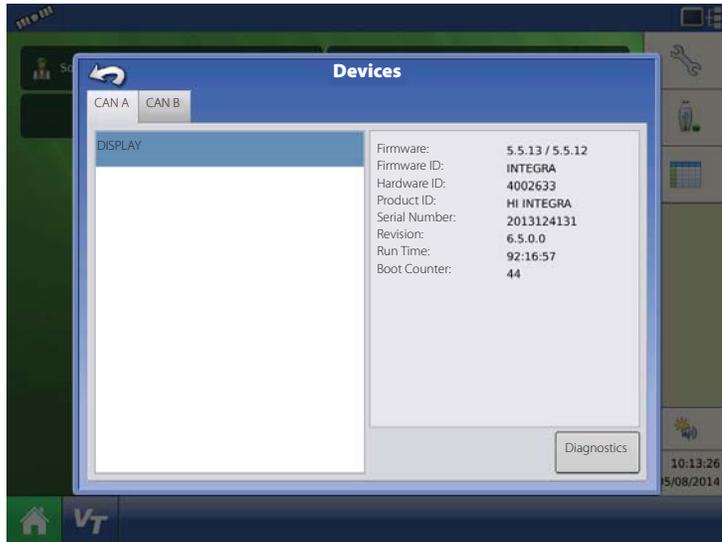
The Devices screen displays the modules that are connected to the CAN A and CAN B bus (CAN B is for ISOBUS). Select a device to display its particular firmware and hardware information.

Device Information includes:

- Firmware Version
- Firmware ID
- Hardware ID
- Serial Number
- Revision
- Run Time shown in hours:minutes:seconds
- Display Boot Counter.



NOTE! Check the CAN device list to ensure that all hardware modules appear there.



Display Diagnostics

Press Display on the CAN Device list, then press the "Diagnostics" button on the Devices screen to open the Display Diagnostics screen. This screen includes information about the system memory usage and available memory.



NOTE! For information on Auxiliary Input Settings Diagnostics, see "Automatic Swath Control (AutoSectionControl)" on page 4.71.



7 - Fault finding

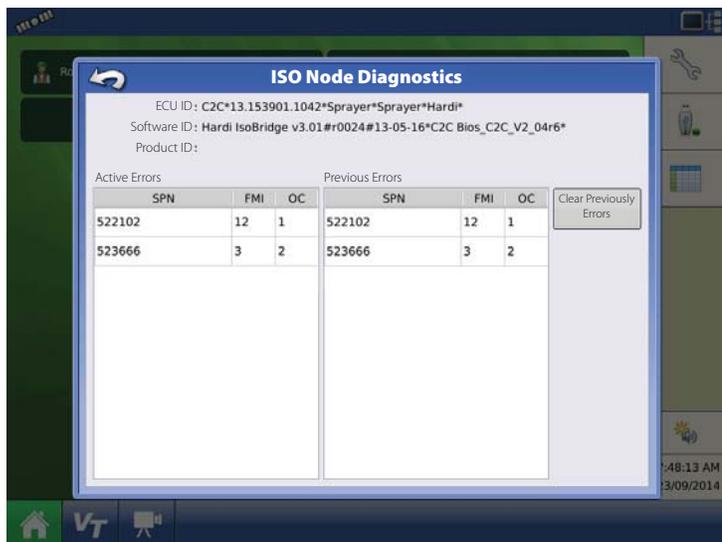
The Devices screen displays the following information:

- A. Selected ISO device
- B. Equipment Type
- C. ECU Serial Number
- D. VT Manufacturer, name and code



Pressing the Diagnostics button on the Devices screen brings up the ISO Node Diagnostics screen which shows the following information.

- SPN "Suspect Parameter Number" = Error Number.
- FMI "Fault Mode Indicator" = Error State.
- OC "Occurrence Count".
- DTC Diagnostic Trouble Code.
This is a combination of the SPN and the FMI (for example 522102.12).
Cross-reference DTC in equipment manufacturer's operator manual for description of error.

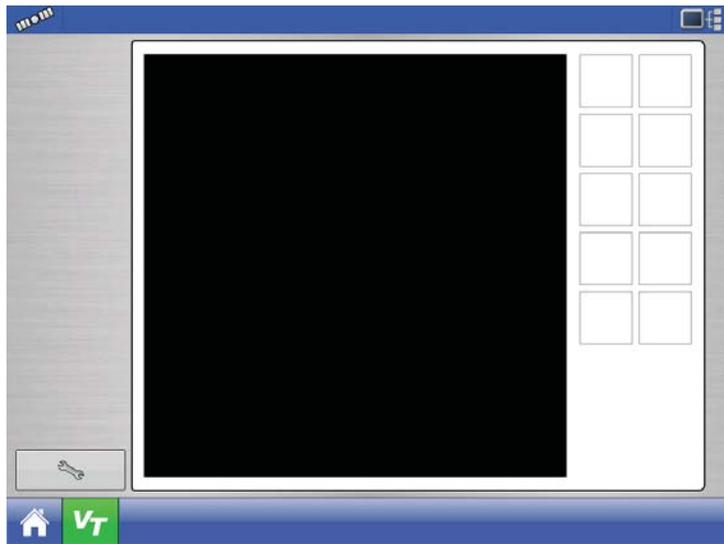


ISOBUS

ISOBUS VT

ISOBUS VT enabled, no object pool loaded from the connected implement.

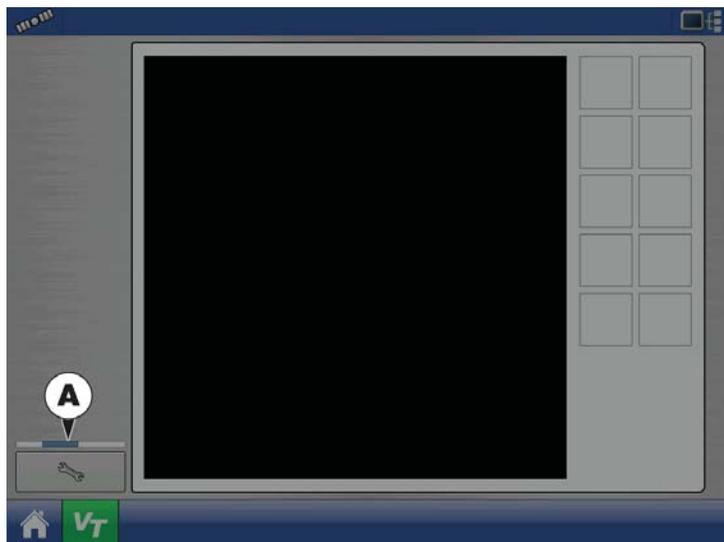
Implement C2C is not connected or has no power. The implement C2C is powered direct from the tractor ISO ECU power supply.



When an ISOBUS compliant implement is connected to the display for the first time, or the software in the ISOBUS device has been updated the implement WSM sends its graphic interface, called the Object Pool, to the display.

Status bar (A) appears while Object Pools are being loaded. This process might take several minutes depending on the number of Object Pools being loaded.

Once loaded, object pools are stored in the display memory.



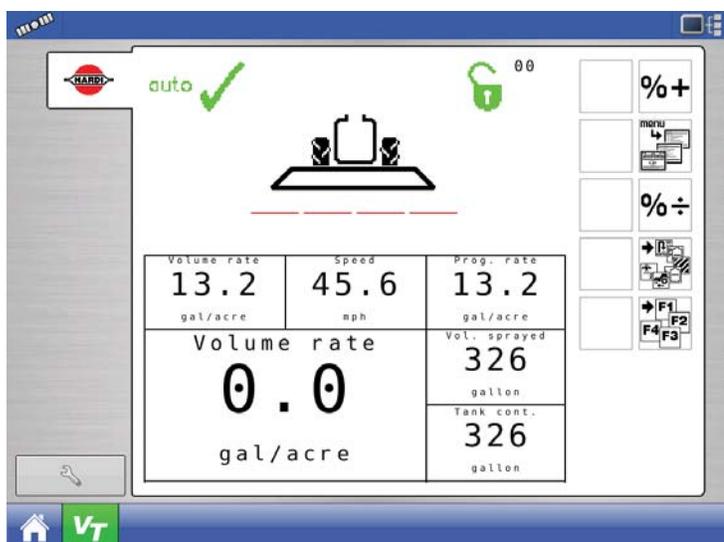
The object pool loaded from the implement C2C to the display and the C2C is powered On.

The default 4 boom sections (4 red lines below the boom) indicate that the JobCom is powered Off.

Power On the system with the power button on the HARDI® SetBox.

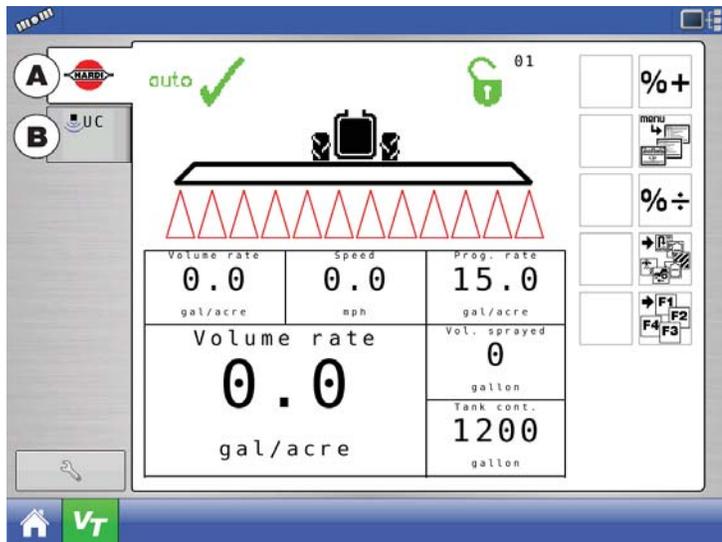
Depending on specific wiring harness, AutoTerrain/AutoHeight/AutoSlant is powered from:

- Trailer/Lift: Powered when JobCom is connected to an ISOBUS tractor.
- Self-Propelled: Powered when ignition key is On.
- Retrofit Kit: Powered On while the display is On.



7 - Fault finding

HARDI® C2C and JobCom is powered On (A), AutoTerrain/AutoHeight/AutoSlant UC5 is loaded (B); the system should be healthy and be fully operational.



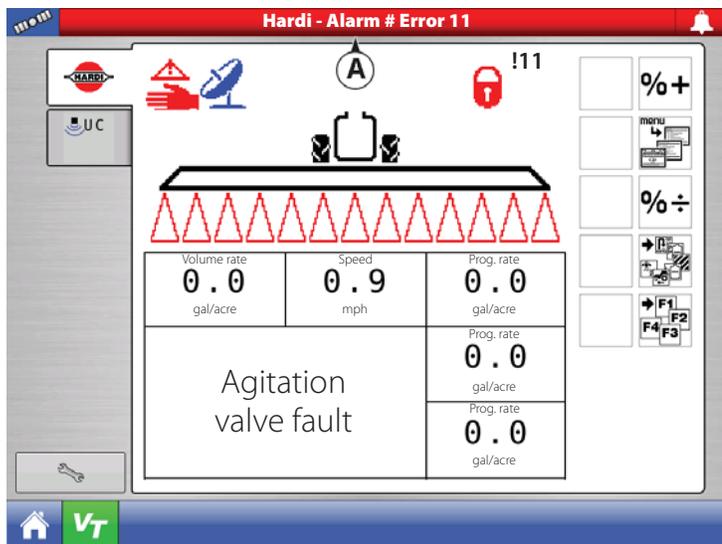
VT Alarms and Trouble Codes

If the display receives an active trouble code, the "Virtual Terminal Alarm" (A) will appear in the Status bar at the top of the screen.

Press the **VT** to see the fault description in the VT run screen.



A detailed description of the fault can be found in the Fault finding chapter in the HARDI® Controller HC 6500/ISOBUS VT Instruction book.



ISOBUS Modules

Modules not found

 Configuration cannot be loaded due to the missing HARDI® C2C Module.

 Display is not detecting module.

Check that:

- Implement is connected to the tractor or that the JobCom has power and is powered On.
- Check that the “Enable Task Controller” is enabled in the ISOBUS Settings menu. Refer to “ISOBUS Settings” on page 4.67.



Some Modules Not found:

 Configuration can be loaded but is not detecting all the modules associated with the configuration. When loaded, it will not perform the functions of the missing modules.

 Display is detecting module.

 Display is not detecting module.

An example of an application configuration is shown. The HARDI® C2C Module is detected by the display but the Norac UC5 Module are not.

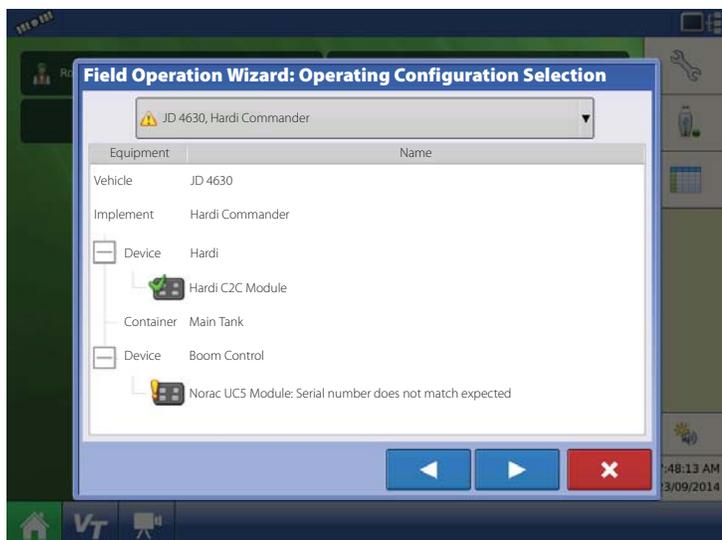
It is possible to start a “Field Operation” but the AutoTerrain/AutoHeight/AutoSlant will not be functional.



All Modules Detected - Not all Modules are the same as previously used

 Configuration has a module that was not used previously.

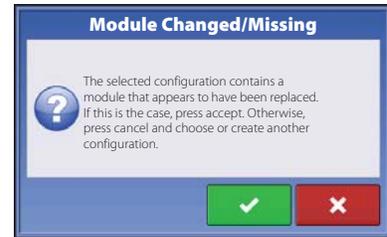
 Module is not the one that was previously used.



7 - Fault finding

⚠ If an operator selects a configuration that has a , the Module Changed/Missing window will appear, verifying that you want to load the configuration.

If you press , the configuration will be updated with the modules currently being used.



ISOBUS Configuration Mismatch

If the HARDI® C2C Module is found but the data in the Module and the selected configuration does not match it will not be possible to proceed with the operation selection.

This fault appears when the boom width and/or the number of sections does not match in the setup in the JobCom and the display.

Select another matching configuration or create a new one with the same data in the JobCom and display.

After changing the data in the JobCom the power of the JobCom and ISOBUS C2C should be powered On/Off to reload the new settings.

It might also be necessary to clear the virtual terminal in the VT menu.



GPS

GPS Information



To access diagnostic information about the GPS signal, press the GPS (satellite) button that appears in the upper left-hand side of the Status Bar. GPS Information then appears on General, Receiver, and OmniSTAR tabs. Information on these GPS Information screens is described on the following pages.

GPS Button

During your field operation, the GPS (satellite) button in the upper left-hand side of the Status Bar should appear as green, which means you are receiving a differential GPS signal.



If this icon appears in other color as follows you should in either case check your GPS settings:

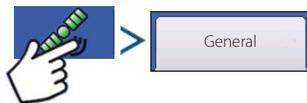


Yellow if you are receiving GPS, but no differential signal.



Grey if you are receiving no GPS signal.

GPS Information - General Tab



- Latitude, Longitude, Elevation

Displays current position (in longitude and latitude) and elevation.

- Heading

Displays degree heading of travel.

- Number of Satellites

- Differential

If a TSIP receiver is being used, the differential status will display the differential source, (i.e. WAAS, Beacon or OmniSTAR). This message field will display either Diff On or Diff Off.

- Diff On

Indicates the receiver is receiving a differential GPS signal.

- Diff Off

Indicates the receiver is not receiving a differential GPS signal.

Otherwise, if RTK or NTRIP is being used, the differential status will display one of the following status messages:

- RTK Fixed

The ParaDyme roof module is receiving a Valid RTK differential source.

- RTK Float



7 - Fault finding

The ParaDyme roof module is receiving information from the Base Station, but the signal is not strong enough for an RTK fix.

- GPS Speed
- Position Rate

The frequency that the receiver is sending the display your position in longitude and latitude (GGA). For example, at 5 Hz the display would be receiving a position message 5 times every second.

- Speed/Heading Rate

The frequency that the receiver is sending the display your ground speed and heading (VTG)



NOTE! Position Rate and Speed/Heading Rate should both be set at a minimum of 5 Hz for guidance or steering.

-  Change Longitude/Latitude Format

Pressing this button changes the Longitude/Latitude format. These can either be shown in Degrees, Minutes and Seconds; or Decimal Degrees.

- View Messages

To view the NMEA or TSIP messages coming from the receiver, press the View Messages button.

- UTC Time

UTC is an acronym for Coordinated Universal Time, a high-precision atomic time standard that defines local time throughout the world. Different versions of universal time use atomic clocks to correct for irregularities in the Earth's rotation and orbit. UTC is used in navigation, astronomy, aviation, Internet broadcasts, and amateur radio. If you are receiving information from the satellite, then the UTC Time should automatically update.

- UTC Date

If you are receiving information from the satellite, then the UTC date should automatically update.

- HDOP

Horizontal Dilution of Precision (HDOP) indicates the quality of the horizontal GPS position. Lower HDOP numbers are optimal, higher numbers are undesirable.

- PDOP

Position Dilution of Precision (PDOP) is a unitless measure indicating when the satellite geometry can provide the most accurate results. When satellites are spread around the sky, the PDOP value is low and the computed position is more accurate. When satellites are grouped close together, the PDOP is high and the positions are less accurate. Lower PDOP numbers are optimal, higher numbers are undesirable.

- Port

The connection between the display and the GPS as established at a message format and baud rate.

- Frequency

The Correction Frequency indicates the GPS satellite frequency used by the receiver.



NOTE! The Correction Frequency diagnostic does not show for WAAS connections.

- SNR

If your receiver is using Beacon differential corrections, the frequency and signal to noise ratio (SNR) will be displayed. Signal-to- Noise Ratio (SNR) indicates the strength of the differential correction signal in relation to the amount of background noise that can interfere with signal reception.

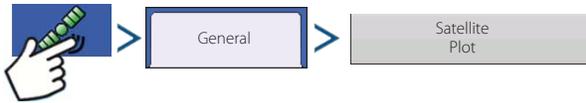
- Correction Age

The length of time since the GPS receiver has obtained its last update.



NOTE! The age of the DGPS corrections (as delivered to the GPS receiver) will vary from one second to several seconds, depending on the characteristics of the individual satellite signals.

Satellite Plot



The Satellite Plot feature can display either as a plot or a graph. The information on these screens is used as an advanced diagnostic tool for GPS satellite availability. In the event of GPS availability issues, technical support may request you to view these screens.



Satellite Plot - Graph

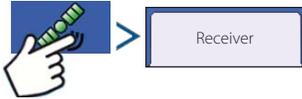


NOTE! In order to use Differential GPS, you must have at least four available satellites. In order to use RTK differential sources, you must have at least five available satellites.

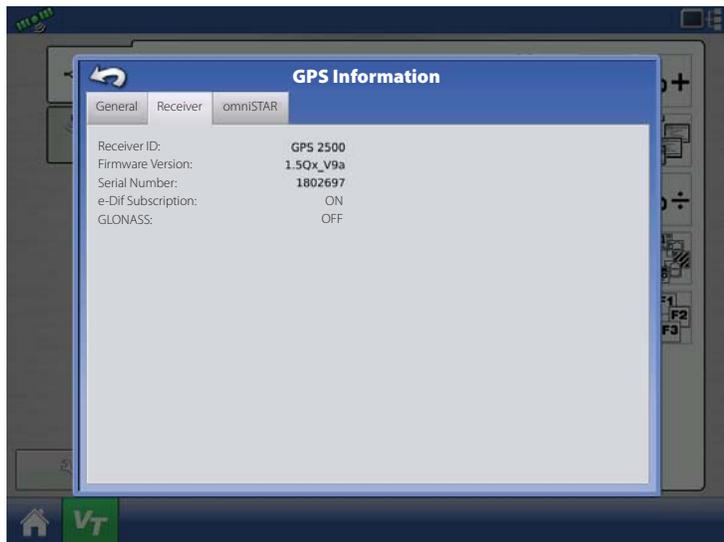


7 - Fault finding

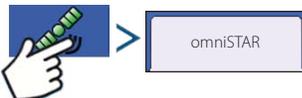
GPS Information - Receiver Tab



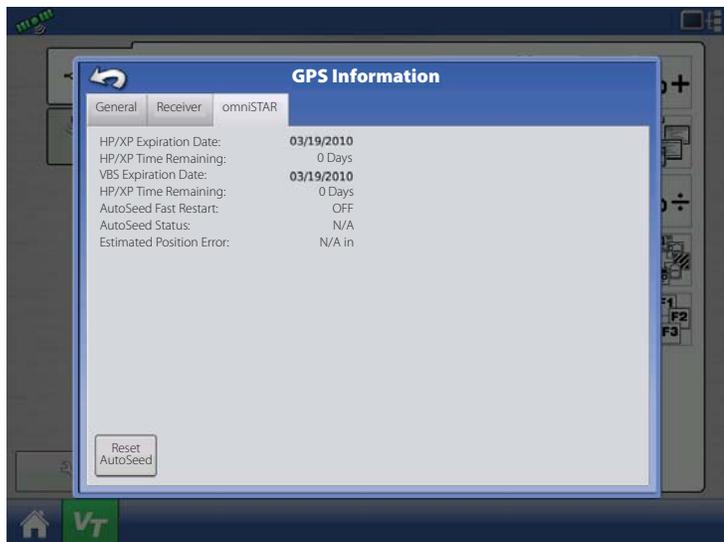
- Receiver ID
- Firmware Version
- Serial Number
- e-Dif Subscription
- GLONASS



GPS Information - OmniSTAR Tab



- HP/XP Expiration Date
- HP/XP Time Remaining
- VBS Expiration Date
- VBS Time Remaining
- AutoSeed Fast Restart
- AutoSeed Status
- Estimated Position Error



RTK/NTRIP Information

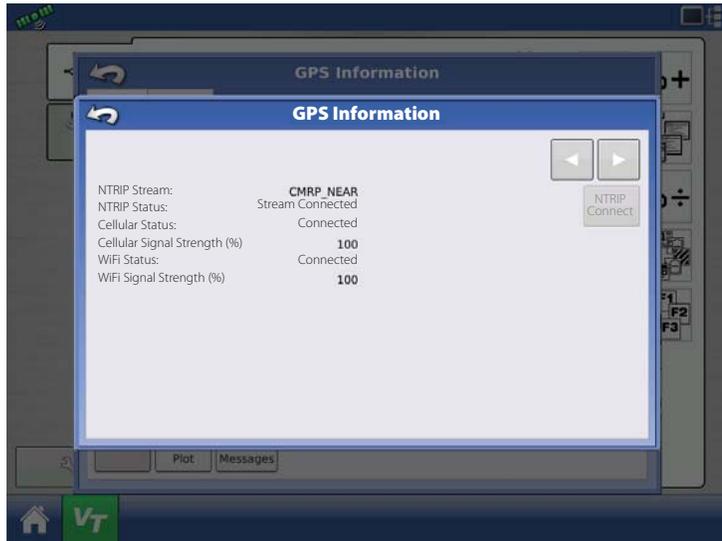
The following information appears on the second GPS Information screen for RTK or NTRIP.

- Convergence (%). Successful communication between Base Station and ParaDyme Roof Module.
- Radio Throughput. Displays percentage of data received from Base Station.
- Distance to Base. Shows distance to Base Station in kilometers (miles).
- Base Channel. Displays Channel ID of Base Station.
- NTRIP. (NTRIP users only) Shows either Connected or Disconnected.

GPS Information - NTRIP

Users of the NTRIP guidance system can also view the NTRIP Information screen below, in addition to the GPS Information screens discussed previously.

- NTRIP Connect. Connects the display to the NTRIP correction source.
- NTRIP Stream. Network mount point.
- NTRIP Status. Displays NTRIP connection; either Connected or Disconnected.
- Cellular Status. Displays status of ParaDyme cellular modem; either Connected or Disconnected.
- Cellular Signal Strength (%). Displays a number between 0 and 100%.
- WiFi Status. Displays status of WiFi router; either Connected or Disconnected.
- WiFi Signal Strength. Displays a number between 0 and 100%.



7 - Fault finding

Specifications

Technical Specifications

Do not exceed the specifications below:

- Storage Temperature: -4°F to +176°F (-20°C to +80°C)
- Operating Temperature: 14°F to +158°F (-10°C to +70°C)
- Operating Input Voltage: 9 –16 V DC
- Max Current Rating: 4.0 amp
- Environmental Protection Rating: IP64
- No Protective Grounding required
- Use 150V insulation rating for external circuits



WARNING! Exceeding these specifications may result in degraded operation and/or damage to the display.

Sprayer Offsets

Standard offsets for common HARDI® sprayers:

	Rear axle to Application point	Left/Right from Center line
PRESIDIO 2700	84 in	0.00 in
ALPHA 4100	89 in	0.00 in
SARITOR 4000	84 in	0.00 in
SARITOR 5000	84 in	0.00 in

	Hitch to Axle	Hitch to Application Point (Forward/Backward from Hitch)	Left/Right from Center line
RANGER 2000	150 in	204 in	0.00 in
COMMANDER 4500	209 in	307 in	0.00 in
COMMANDER 5500	238 in	339 in	0.00 in
COMMANDER 7000	238 in	339 in	0.00 in
NAVIGATOR 3000	180 in	266 in	0.00 in
NAVIGATOR 3500	180 in	266 in	0.00 in
NAVIGATOR 4000	180 in	266 in	0.00 in
NAVIGATOR 4000 (120' SPC)	208 in	284 in	0.00 in
NAVIGATOR 6000	215 in	289 in	0.00 in



ATTENTION! For exact measurements, it is recommended to measure the specific sprayer/boom combination used.

8 - Technical specifications

Appendix

Current File Formats

.AGSETUP

Use to transfer setup information from display to display or from SMS and display

- Replaces MSF, IBY, PAT, IRX, REF
- Allows full synchronization of the following items:
- Management Data (Growers, Farms, Fields, Seasons, Operators)
- Products and Product Mixes
- Boundaries
- Guidance Patterns
- Marker Sets and Markers



NOTE! Do not use the IBK to “clone” a display anymore. Use AGSETUP.

.AGDATA

- Includes all the necessary data to fully archive in SMS
- Includes recorded operation data
- Equipment Used
- Products Used
- Marks Logged
- Boundaries
- Guidance Patterns
- Flexible export options
- Will be able to export by Grower

Legacy File Formats

Prescription Map File Types

- .irx

The .irx file supports multiple product recommendations in a single file.

- .shp, .shx, .dbf (shape file group)

What is commonly called a shape file is actually a collection of three different files. All three of the files are required and must be present on the USB drive for the system to use shape file groups for variable rate product application. A single “shape file” can contain recommendation rates for multiple products.



NOTE! Legacy Prescription file (.irx) is supported and enhanced. Shape file (.shp, .shx, .dbf) continues to be supported for prescription control.

Boundary and Guideline File Types

- .iby

Boundary file format. Boundary files are created at the Boundary tab, found on the Mapping Toolbox of the Map screen; or imported to the system from the Import Files button at the External Storage Operations screen. The External Storage Operations screen can be accessed by pressing the External Storage Operations button on the Home screen.

- .pat

Pattern guideline file. Pattern files are created at the Guidance tab, found on the Mapping Toolbox of the Map screen; or imported to the system from the External Storage Operations button on the Home screen. The External Storage Operations screen can be accessed by pressing the External Storage Operations button on the Home screen.

Image File Types

- .png and .bmp

Supported file formats for the Display Owner Image. File size is limited to a maximum of 200 pixels wide by 100 pixels tall. Import the file from the Import Image button on the Display screen's General tab.

System File Types

- .ibk

System backup file. Backup files are written to the USB drive by pressing the Create Backup button on the Display Setup screen's Advanced tab.

- .ilf

System log file. Created with the Copy Data button on the External Storage Operations screen or pressing the Export Data Files button of the Display screen's Advanced tab.

- .fw2

Firmware upgrade file for the display and control modules. Install firmware updates from the USB drive by pressing the Upgrade Firmware button on the External Storage Operations screen. The External Storage Operations screen can be accessed by pressing the External Storage Operations button on the Home screen.

- .msf

The .msf (Management Setup File) file format allows the display to import Grower and Field information from SMS software via the USB drive.

- .ref

Variety reference map file. SMS software uses planting data to create a variety reference map which is saved as a .ref file. This .ref file can then be exported to the display for use with the Automatic Variety Tracking and Automatic Region Changing features.



NOTE! Legacy Reference files (.ref) will not be supported in 3.0.



NOTE! IBK, MSF are not supported in 3.0. Use the new .IBK2 format for backups in 3.0. IBK2 will continue to be specific to a particular display model. Version 3.0 will not restore from an "IBK" from previous releases.

8 - Technical specifications

Warranty policy and conditions

HARDI® NORTH AMERICA INC. , 1500 West 76th Street, Davenport, Iowa, USA hereinafter called "HARDI®", offers the following limited warranty in accordance with the provisions below to each original retail purchaser of its own manufacturer, from an authorized HARDI® dealer that such equipment is at the time of delivery to such purchaser, free from defects in material and workmanship and that such equipment will be warranted for a period of one year from the time of delivery to the end user, providing the machine is used and serviced in accordance with the recommendations in the Operator's Manual and is operated under normal farm conditions.

1. This limited warranty is subject to the following exceptions:
 - a) This warranty will be withdrawn if any equipment has been used for purposes other than for which it was intended or if it has been misused, neglected, or damaged by accident, let out on hire or furnished by a rental agency. Nor can claims be accepted if parts other than those manufactured by HARDI® have been incorporated in any of our equipment. Further, HARDI® shall not be responsible for damage in transit or handling by any common carrier and under no circumstances within or without the warranty period will HARDI® be liable for damages of loss of use, or damages resulting from delay or any consequential damage.
2. We cannot be held responsible for loss of livestock, loss of crops, loss because of delays in harvesting or any other expense or loss incurred for labor, supplies, substitute machinery, rental for any other reason, or for injuries either to the owner or to a third party, nor can we be called upon to be responsible for labor charges, other than originally agreed, incurred in the removal or replacement of components.
3. The customer will be responsible for and bear the costs of:
 - a) Normal maintenance such as greasing, maintenance of oil levels, minor adjustments including the boom.
 - b) Transportation of any HARDI® product to and from where the warranty work is to be performed.
 - c) Dealer travel time to and from the machine or to deliver and return the machine from the service workshop for repair unless otherwise dictated by state law.
 - d) Dealer traveling costs.
4. This warranty will not apply to any product which is altered or modified without the express written permission of the HARDI® Service and Engineering Departments and/or repaired by anyone other than an Authorized HARDI® Dealer.
5. Warranty is dependent upon the strict observance by the purchaser of the following provisions:
 - a) That this warranty may not be assigned or transferred to anyone.
 - b) That the Warranty Registration Certificate has been correctly completed by dealer and purchaser with their names and addresses, dated, signed and returned to the appropriate address as given on the Warranty Registration Certificate within 30 days of delivery to the purchaser.
 - c) That all safety instructions in the operator's manual shall be followed and all safety guards regularly inspected and replaced where necessary.
6. No warranty is given on second-hand products and none is implied.
7. HARDI® reserves the right to incorporate any change in design in its products without obligation to make such changes on units previously manufactured.
8. The judgement of the HARDI® Service Department in all cases of claims under this warranty shall be final and conclusive and the purchaser agrees to accept its decisions on all questions as to defect and the repair or exchange of any part or parts.
9. No employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by the CEO in the Davenport office. Approval of warranty is the responsibility of the HARDI® Service Department.

9 - Warranty

10. Any warranty work performed which will exceed \$1000.00 MUST be approved IN ADVANCE by the Service Department. Warranty claims filed without prior approval will be returned.
11. Claims under this policy MUST be filed with the HARDI® Service Department within thirty (30) days of when the work is performed or warranty shall be void unless prior arrangements are made.
12. Parts which are requested for return by the HARDI® Service Department must be returned prepaid within thirty (30) days for warranty settlement.
13. Warranty claims must be COMPLETELY filled out including part numbers and quantities or claims will be returned to the submitting dealer.

DISCLAIMER OF FURTHER WARRANTY

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, EXCEPT AS SET FORTH ABOVE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT CONTAINED HEREIN. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES (SUCH AS LOSS OF ANTICIPATED PROFITS) IN CONNECTION WITH THE RETAIL PURCHASER'S USE OF THE PRODUCT.



HARDI® North America Inc.

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