CONTROLLER
HC 8600/9600

Original

Instruction book - SW 1.x

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www.hardi-international.com

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HC 8600 and HC 9600

About this Instruction Book

This instruction book is written for the use with the Hardi HC 8600 and HC 9600 controllers respectively. As most menus are close to identical, we have chosen to illustrate this book with HC 9600 illustrations. On the HC 9600 many menu screens will appear at a part of the screen (pop-up dialogue boxes), but will appear as full screen on the HC 8600 controller.

Because of the physical size of controllers, some dialogue boxes will appear with a bit different layout on HC 8600, but with same contents as the HC 9600 screen.

Differences between the Controllers

The controllers differ in the following:

- Display sizes
- Menu layouts
- Features available:

Display Features	**HC 8600**	**HC 9600**
Display Size	21.3 cm	30.7 cm
Swipe Gesture	Yes	Yes
Coverage Mapping	Yes	Yes
Split Screen	Not Available	Yes
Data Logging	Yes	Yes
AutoSectionControl (AutoSwath)	Yes	Yes
Headlands	Yes	Yes
Multiple Product Control	Yes	Yes
Camera Support	4	4
AgFiniti Mobile	Yes	Yes
USB Port	1	2
Guidance & Steering		
Lightbar Guidance	Yes	Yes
Mechanical Assisted Steering	Yes	Yes
Hydraulic Assisted Steering	Yes	Yes
GLIDE, SBAS (WAAS/EGNOS), TerraStar, RTK	Yes	Yes
SmartPath	Yes	Yes
Tramlines	Yes	Yes
StableLoc	Yes	Yes
Application Control		
Liquid Product Application Control	10 sections	10 sections
ISOBUS Liquid Control Module	36 sections	36 sections
Variable Rate Application	Yes	Yes
Chemical Injection	Yes	Yes
Boom Height Control	Yes	Yes
Smart Report™	Not Available	Yes
AutoSectionControl (AutoSwath) based on Previously Applied Maps	Yes	Yes
Container Sequencing	Not Available	Yes
Dry Product Application Control	Yes	Yes
Closed Loop Spinner Speed Control	Yes	Yes
Strip-Till	Yes	Yes
Air Seeder Support	Yes	Yes
OptRx® Crop Sensors	Not Available	Yes
Multiple Product Application (Liquid or Granular)	up to 3	up to 8
ISOXML Data Export	Yes	Yes
ISOBUS		
ISOBUS Universal Terminal	Yes	Yes
Task Controller	Yes	Yes

1 - About

Operator Safety

Symbols

These symbols are used thorough the book to designate where some sort of extra attention has to paid for the reader. The four symbols have following meaning.

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 more safe 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 drivers 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 inflammable or explosive material from the area.

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

Display

General info

The display is a full-featured, year-round hub of any precision farming operation. A full-colour, 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 user guide 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
- Hydraulic 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

A. Speaker

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

B. WiFi

802.11 communication.

C. Mounting bracket

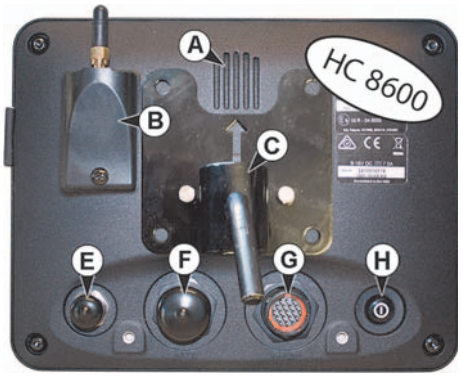
D. HDMI OUT (HC 9600 only)

E. Ethernet Connection

4-pin connection used for communication with ParaDyme, GeoSteer, SteerCommand, OnTrac3.

F. 19-pin auxiliary connection

Used for camera input.



G. 19-pin plug

The 19-Pin round display connector contains CAN, RS-232 serial, and system power and ground connections. It is compatible with some certain other displays.

H. 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.

Front and Side

I. Built in lightbar

For guidance.

J. Light sensitivity sensor

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

K. Power light

The power light displays one of three states:

Green = ON
Pulses amber = Standby Mode
Solid amber = Running on battery power

L. Side mount USB media slots

- 2 slots for HC 9600
- 1 slot for HC 8600

Used for data transfer in and out of the display.

Used to charge mobile devices up to 1.2 amps.

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.

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.

Colour Touch Screen

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 display uses a capacitive screen that is heat sensitive. It requires only a brief, gentle touch to operate correctly. A common mistake is to try to navigate too quickly through the system using firm taps instead of gentle presses.

3 - Description

Gestures

As with any smart phone or pad you can use gestures. These gestures will allow you to navigate around the map screens, select items and make various changes. The most common gestures are outlined below.

Pinch In and Out

Using two fingers touch the screen and pinch in and out to adjust the zoom level of your map. If zoomed out enough field coins will begin to appear and allow you to view other maps. If zooming in far enough you should begin to see row by row data on applicable fields.

Tap to Zoom

By tapping on the map you can quickly control the zoom level of your map. Quickly double tap with one finger to zoom in and tap with two fingers together to zoom out.

Tap

Tap items to select them. You can also tap on your map to set a manual location within the field and view its specific data in the stat cards.

Swipe

Swipe your finger to see additional menus on certain items.

Pan

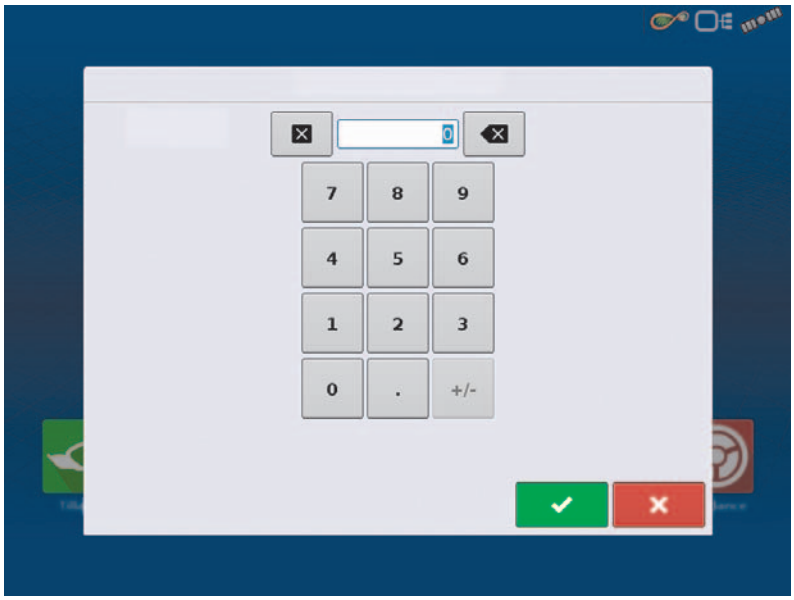
Tap and hold your finger on the screen to pan around your mapped data while maintaining the same zoom level.

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.



3 - Description

Initial Start-up

General info

An Initial Setup wizard is presented on start-up. The wizard is presented if the display is brand new out-of-the-box.

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.

Initial Setup Wizard

The Initial Setup wizard will take you through the following setup items:

Time\Date, Time Zone, Unit System, Language

- Advanced Options. See "Advanced Options" on page 35.
    - Restore Backup.
    - Upgrade Firmware.
    - Unlock Display Features.

Single or Multiple Display Setup

- Single

  Use single display if this is the only display that is getting setup.

- Multiple Display

  Use multiple display if there is more than one display in the operation and the plan is to share management data between displays. After initial setup is complete, enter management information and create an .agsetup file.

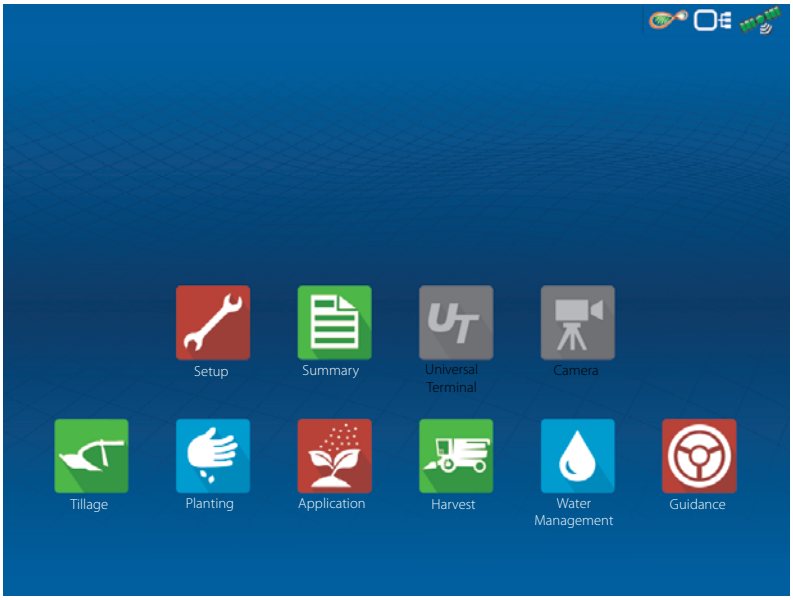
NOTE! Using the Restore backup option is not the proper method to get multiple displays set up to be the same. Use the .agsetup file.

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.

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

Home Screen Layout



	Setup	Access display's setup items.
	Summary	Used to access previously logged data, maps, reports.
	Universal Terminal	Used to interact with UT based ECU's. It must be enabled in setup.
	Camera	View cameras attached to the display. It must be enabled in setup.
	Tillage	Create configuration or start operation specific to tillage.
	Planting	Create configuration or start operation specific to planting.
	Application	Create configuration or start operation specific to application.
	Harvest	Create configuration or start operation specific to harvest.
	Water Management	Create configuration or start operation specific to water management.
	Guidance	Used to start guidance steering only operation.
	AgFiniti Status Indicator	
	Devices Status Indicator	
	Satellites Status Indicator	

3 - Description

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

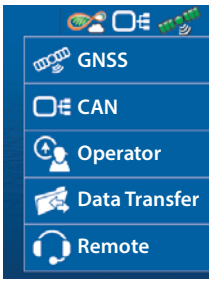
You must complete these initial configuration steps for the Run Time Environment to be active:

- Equipment Operating Configuration.

  You can access Configuration Setup by pressing or pressing an app specific to a field operation.
- Product setup.
- Start Field Operation.

Status Indicators

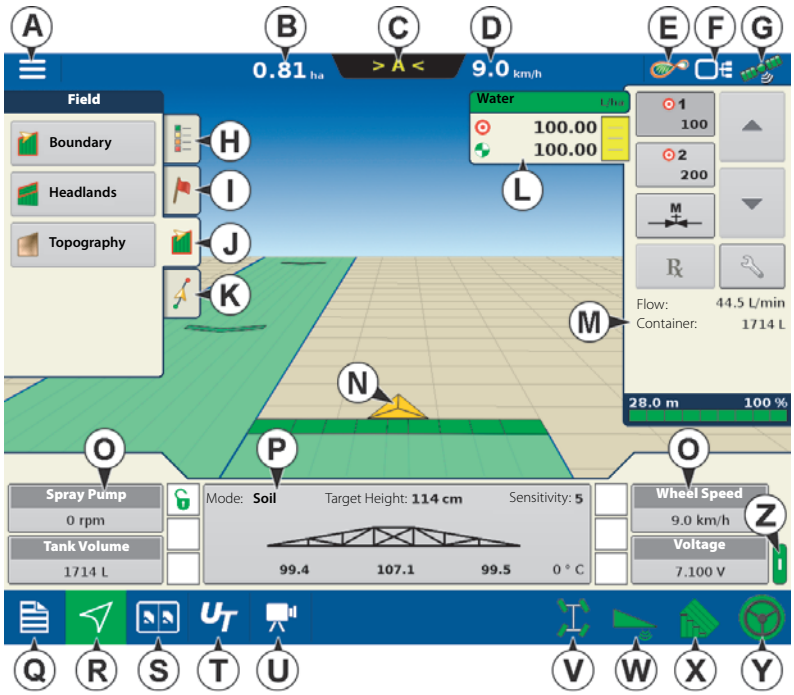
Status Indicators are used to show different states of external equipment connected to the display (for example: , , and) and provides easy access to data transfer and diagnostic features of the display.



Map Screen

Work Screen

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



A. Menu
B. Area Covered
C. Path Indicator
D. Speed
E. AgFiniti Status Indicator
F. Diagnostics Status Indicator
G. GNSS Satellite Status Indicator
H. Legends Tab
I. Markers Tab
J. Field Operations Tab
K. Guidance Tab
L. Product Tab
M. Product Control Toolbox
N. Vehicle Icon
O. Equipment Tab
P. AutoTerrain/AutoHeight/AutoSlant Settings
Q. Summary Screen
R. Map Views
S. Split-Screen (HC 9600 only)
T. Universal Terminal
U. Video Button
V. 4-Wheel Steer Logging Button
W. AutoTerrain/AutoHeight/AutoSlant ON/OFF
X. AutoSectionControl (Autoswath)
Y. AutoSteer Button
Z. Main ON/OFF Switch Status

The task bar displays function buttons to the left (Q to U), and status indicators to the right (V to Y) relating to various functions of the display. These buttons are shown in front of a green background when function is enabled or you are at that screen; otherwise they are shown in front of a blue background.

Buttons and indicators are explained in the following:

Equipment Tabs

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

Summary Screen

Pressing the Summary screen button takes you to the Summary Report screen. See “Summary Report” on page 171.

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 27.

4-wheel Steer Button (Self-Propelled only)

Activates logging of 4-wheel steering for AutoSectionControl.

AutoSwath Button

Pressing this button turns the AutoSwath (AutoSectionControl) 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 181.

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 right-hand corner of the Map screen, displays the following colours:

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.

Device Information button

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

NOTE! For more information, See "CAN Diagnostics" on page 183.

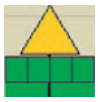
Vehicle Icons

Vehicle Icon - When Zoomed Out

This gold coloured triangle indicates the display is in zoom to extent mode. When in zoom to extent mode the vehicle implement does not appear but logged data will still populate on the map.

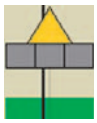
Vehicle Icon - logging

If the vehicle is logging, the implement icon appears as a green bar behind it.



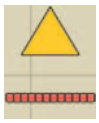
Vehicle Icon - logging (with all sections ON)

If the vehicle is logging data from an implement split into sections, (for instance during a planting or application operation), then these sections appear in the implement icon.



Vehicle Icon - not logging

If the vehicle is not logging data, then the implement icon appears as a grey bar.



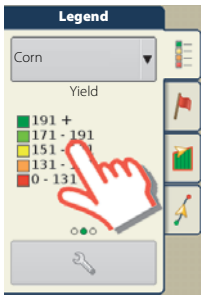
Vehicle Icon - Master Switch Off

When the master switch is off the vehicle will show a thinner red bar.

Map Toolbox

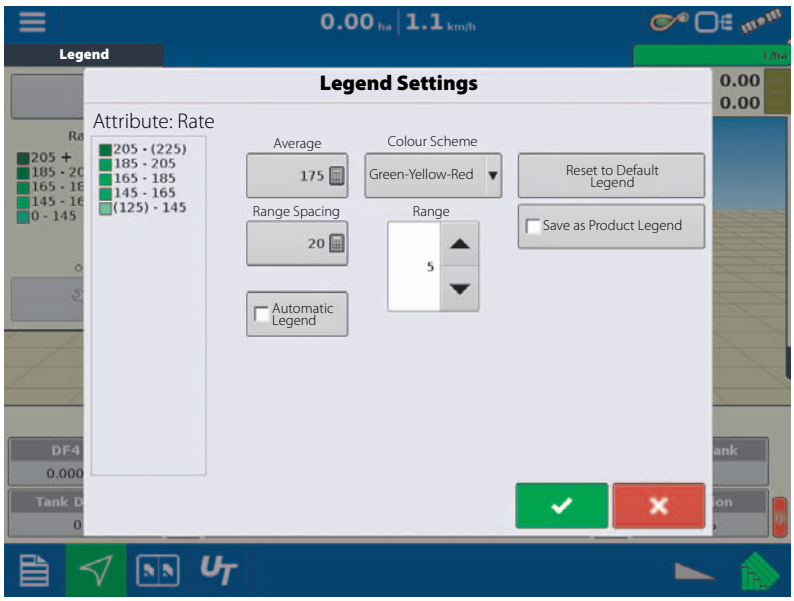
Legend Settings

The Legend Settings screen allows you to change the default legend. On the map legend tab, press anywhere on the legend and the legend settings screen appears.



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 colour 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 colour range. Press to edit the legend range spacing value, which is the total number of units represented by a particular colour.

- Ranges

  The Ranges / change the number of range increments displayed in the legend.

- Colour Scheme

  The Colour 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

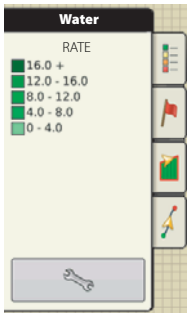
  Press the reset legend to the system default.

- 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.

Map Options

Here you can toggle mappable items, load references, or clear map. Press the Legend Setup and the Map Options screen appears.



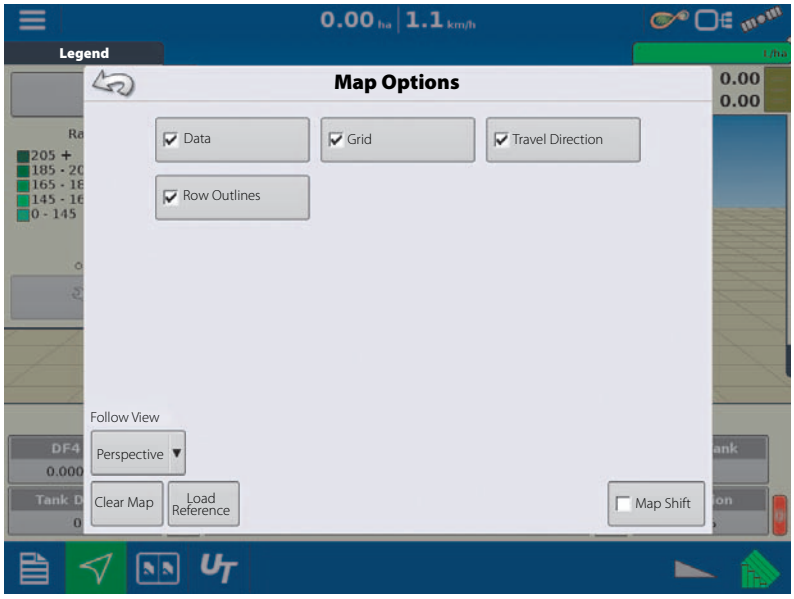
- Clear Map

  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.



Map Shift

Map Shift is used to shift the onscreen map and account for time base inaccuracies with lower accuracy GPS receivers. This is done by doing a quick survey and creating a reference point. Any time the user would like to adjust the map to fix GPS drift inaccuracies they will go back to the reference point and perform a survey to shift to the current position.

Map Shift General Guideline

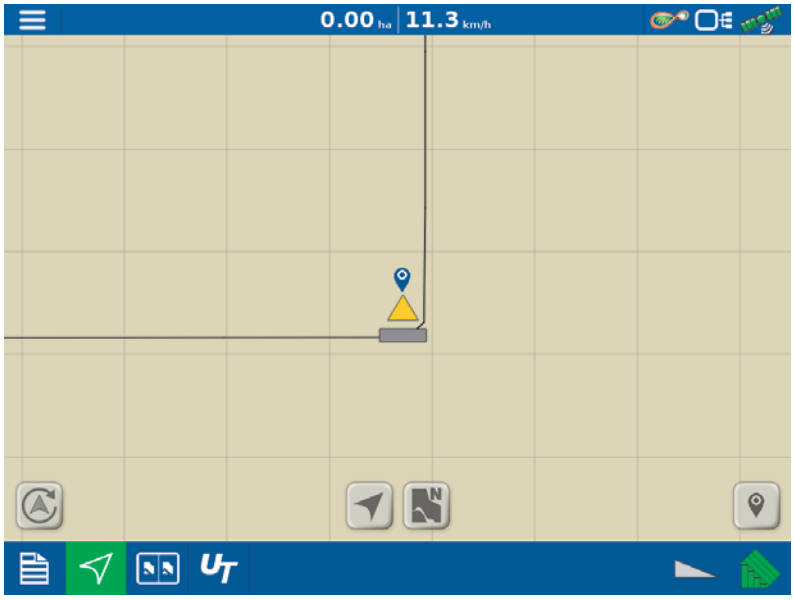
For Map Shift to be successful it is suggested that a reference point be set before beginning a field operation. That way any time the vehicle leaves the field or is shut down for an extended period of time the reference point can be used upon returning to the field operation.

Enable Map Shift

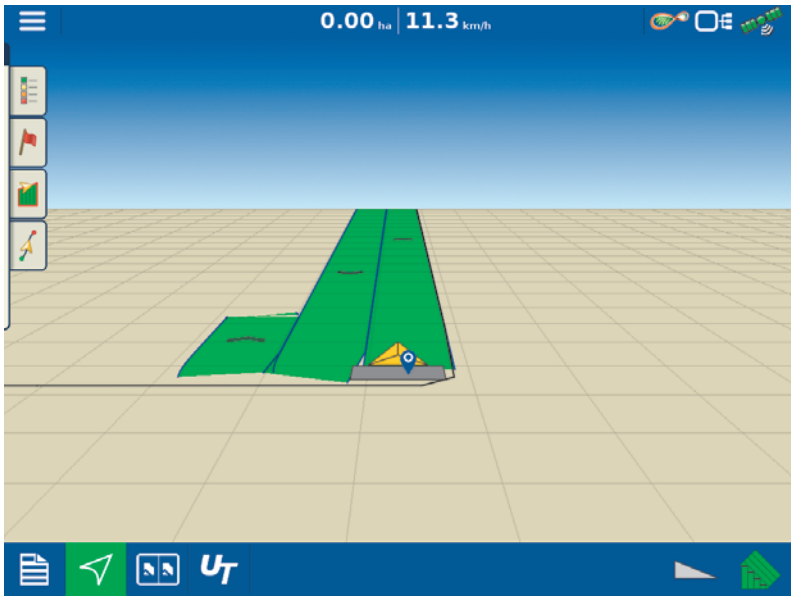
With the map shift option checked, the map shift icon will become available when in full screen view on the mapping screen.

Shifting the Map

1. Press the map shift icon to access Map Shift Options.
2. Determine a good location to create a reference point. For Map shift to work properly it is vital that the GPS receiver be able to get back to the exact same point each time a shift is required.
3. Once a spot is located press "Set" on the Map Shift options page to begin the 10 second survey
4. One the survey is complete the reference point will be set. On the Mapping Screen the reference point is show by the blue pin drop.

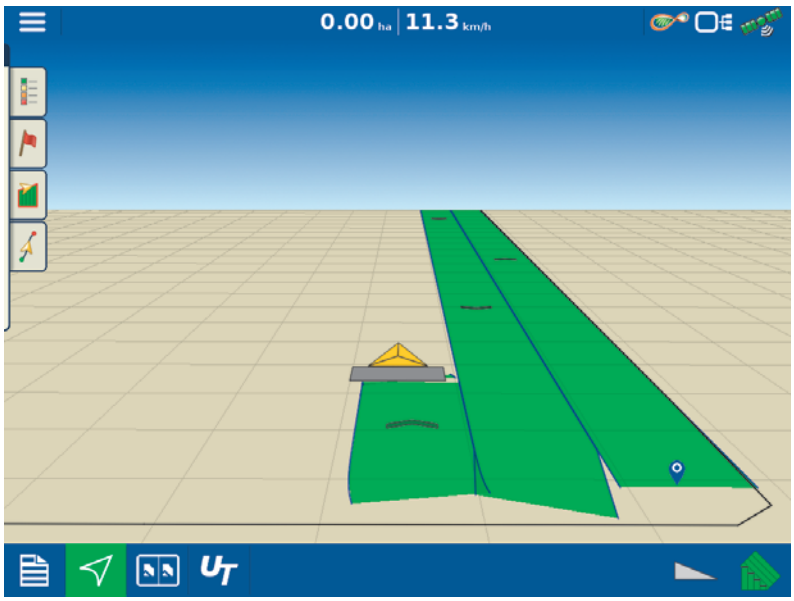


Reference Point Set



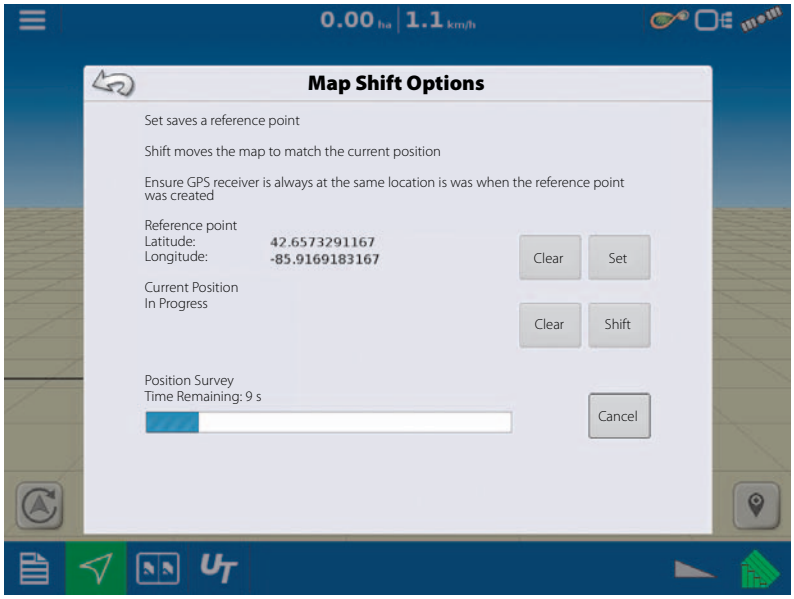
Going Back to Reference Point

5. When a map shift is required go back to the set reference point and make sure the GPS antenna is back in the original location.



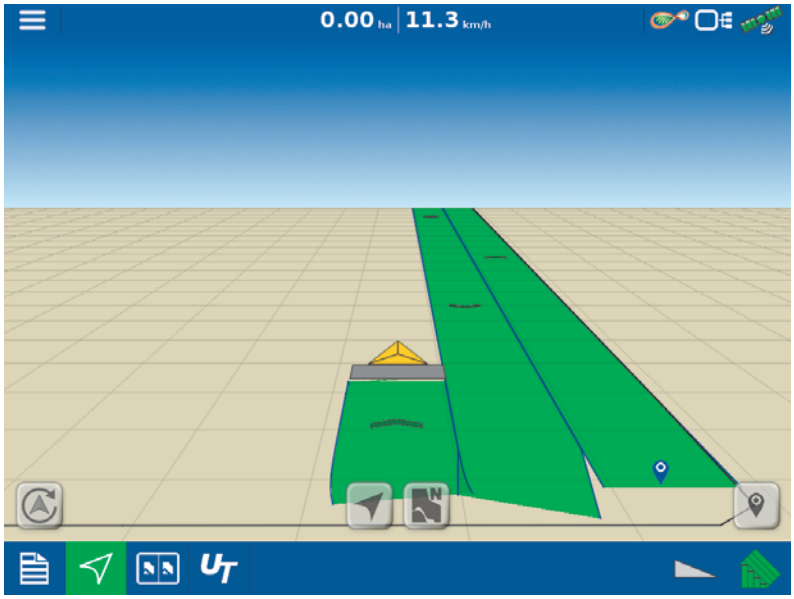
Map Shift Needed

6. Access the Map Shift Options menu and press the "Shift" button.



Shifting Map

7. "Shift" will start a 10second survey and update the map with the new current position
8. Any time a reference point or shift needs cleared it can be accomplished via Map Shift Options.

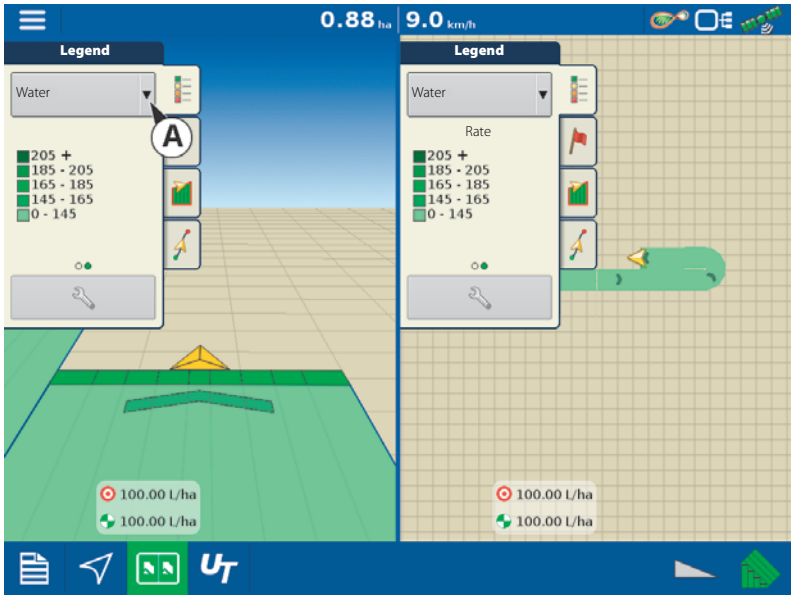


After Map Shift

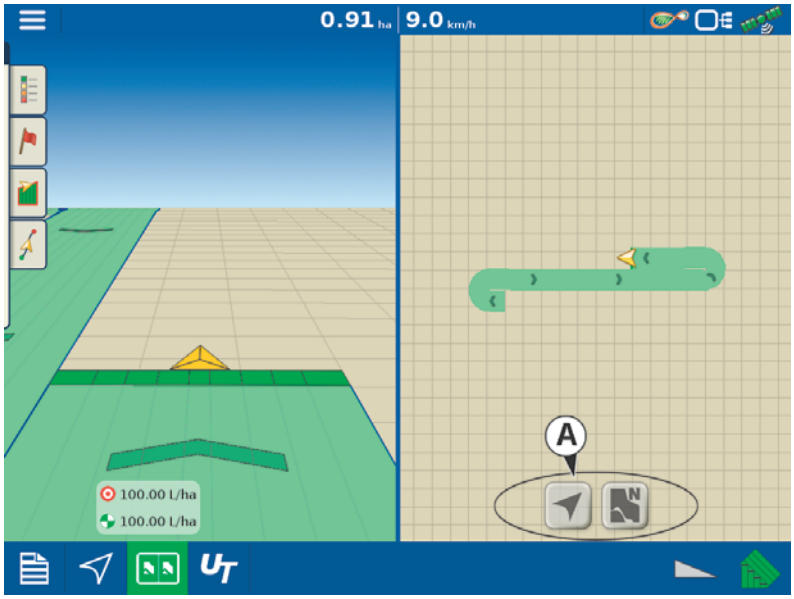
Split-Screen Map

The HC 9600 has the capability of showing multiple views at the same time from the map screen. This has multiple uses like showing guidance in perspective view and zoom extents view at the same time, splitting the screen between guidance and Universal Terminal, or watching two products at the same time like planting and liquid application.

Maps can be selected individually from the legend drop-down.



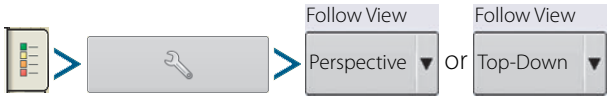
Map views can be changed by tapping anywhere in the centre of the left/right side map then choosing from one of the views buttons (A).



Follow View

Sets the map to follow the vehicle icon. The default Follow View can be set to either Perspective view or Top-Down view.

Setting the Follow View mode:

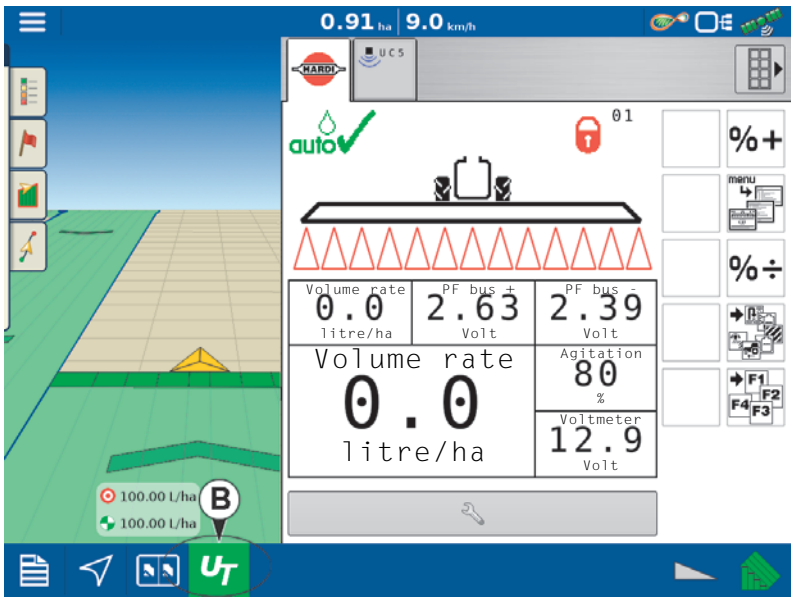


North Oriented View

Zooms the map out to the full extends of the field boundary or mapped area and orients the map north regardless of the vehicles direction of travel.

By pressing the UT button (B) from the map screen the display will split the screen between Map screen and Universal Terminal.

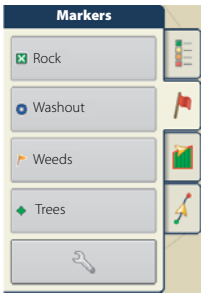
In same manner with Cameras attached, pressing the video button will split the screen between the active map and the video page.



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, swipe the tab to view more that you created.



Video

NOTE! Video is only available when enabled in the Console Setup menu - see “Display Button” on page 84.

Video button. Camera is available from the Home or Map screen. Press video button and the Video screen appears.

- Brightness

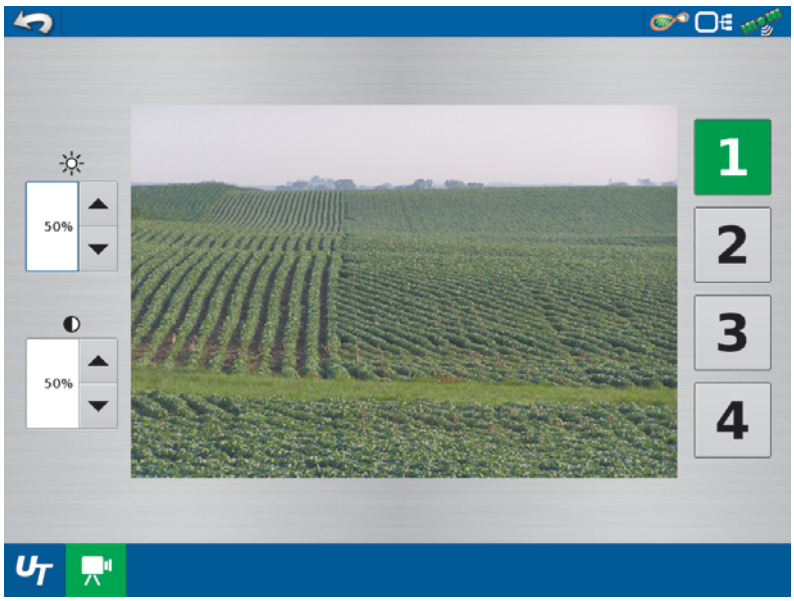
  Press ▲ / ▼ to increase or decrease the brightness of the video input.

- 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

AgFiniti

General Info

AgFiniti is a platform to provide users with the ability to quickly and easily transfer data, view their display remotely, and take logged data with you when you leave the cab.

AgFiniti Mobile

AgFiniti Mobile is Ag Leader's native iOS app. It provides the ability to take maps and summary information from the cab instantly and access it on an iPad anywhere. The app allows for a direct connection to the display, reducing the need for a modem or Wi-Fi hotspot in the cab and providing a simple, direct connection to access data. AgFiniti Mobile also allows for multiple display connections, allowing for operations with multiple displays to have their logged data all in one iPad. Lastly, it is a permanent storage solution; data imported into Mobile will remain there until removed by the user or the app is uninstalled. See "AgFiniti Mobile" on page 135.

File Transfer

AgFiniti File Transfer is a wireless file transfer solution. It allows the user the ability to both access and export data to and from the cloud. This results in data being accessible anywhere without requiring a USB drive. You can export prescriptions and management information from SMS and have them be instantly accessible in your tractor by using AgFiniti File Transfer. File Transfer also allows for the sharing of data with other users and trusted advisors, again, without having to hand them a physical drive. File Transfer requires an annual license. See "File Transfer" on page 140.

Remote Support

AgFiniti Remote Support grants the ability to remotely view a display from the AgFiniti website on supported browsers. This allows for faster, more effective troubleshooting due to the user being able to view the display and not relying on second-hand descriptions. This can result in less downtime and fewer frustrations when issues do occur. This can also help when setting up displays for the first time and provides an avenue for getting help in a more efficient manner. Remote Support requires an annual license. See "Remote Support" on page 141.

AgFiniti Mobile Connection Types

Display Access Point Mode

This connection type turns your HC 8600/9600 display into a wireless access point that all compatible iPads can connect to. When using this connection type, every time an iPad is within range of your HC 8600/9600 display, AgFiniti Mobile will automatically download new data while the app is running.

See "Display Access Point connection type" on page 132 for step by step instructions to make this connection type.

WI-FI Network

Connection scenarios:

- Transferring information when both devices are connected to the same home/office Wi-Fi network
- A hotspot (i.e. Jetpack) device is used in the cab to provide internet

When both the HC 8600/9600 display and your iPad are connected to the same network, for example your home Wi-Fi network, they will be able to recognize one another and transfer data in the same fashion as the other two connection types. If you already have a Wi-Fi network present in the cab of your vehicle, this connection can be utilized. To use this connection type, the HC 8600/9600 display and AgFiniti Mobile need to be on the same wireless network.

See "Shared Wi-Fi Network Connection" on page 145 for step by step instructions to make this connection type.

Cellular iPad as Personal Hotspot

Connection scenarios

- Only Cellular iPads when HC 8600/9600 is accessing AgFiniti Cloud

Cellular based iPads have the ability to act as a personal hotspot. This allows HC 8600/9600 to both access the AgFiniti cloud and directly transfer information from the HC 8600/9600 display to AgFiniti Mobile, both through the iPad's cellular connection and Wi-Fi hotspot. This connection type would be used when needing to use AgFiniti cloud. For example you may need to download an .agsetup file (for prescriptions) from AgFiniti cloud or to use remote support.

See "Cellular iPad as Personal Hotspot" on page 28 for step by step instructions to make this connection type

NOTE! Using this connection type to transfer data directly from the HC 8600/9600 display to your iPad will not utilize your cellular data. The connection is over Wi-Fi and therefore not using cellular data. If you, when applicable, use your iPad to connect to AgFiniti Cloud to download data, cellular data will then be used.

Miscellaneous

About AutoTerrain/AutoHeight/AutoSlant

For the use of AutoTerrain/AutoHeight/AutoSlant together with HC 8600/9600, 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.

  - Zero stops product application.
  - Last Good uses the previous rate before exiting the boundary.
  - Rx Default uses the default rate written in the prescription file loaded.

- Rate Change Look-Ahead

  Compensates for any delay in the control system when changing between different product flow rates during variable rate application. This setting can be thought of as a "look ahead" value when using a variable rate prescription.

  The display will send the signal to change rates before hitting a transition line so that the applied rate is correct when crossing into the new management zone.

  - The typical setting range for this is 0-1 seconds.

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 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 behaviour of the sections when exiting the field boundary or prescription-mapped area.

- Coverage Option

  Based on the coverage option selected, this setting determines the behaviour of the swath section when entering/exiting an already applied area or field boundary.

  Options available include:

  - Minimize Skip
  - Minimize Overlap
  - User Defined Percentage.

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.

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.

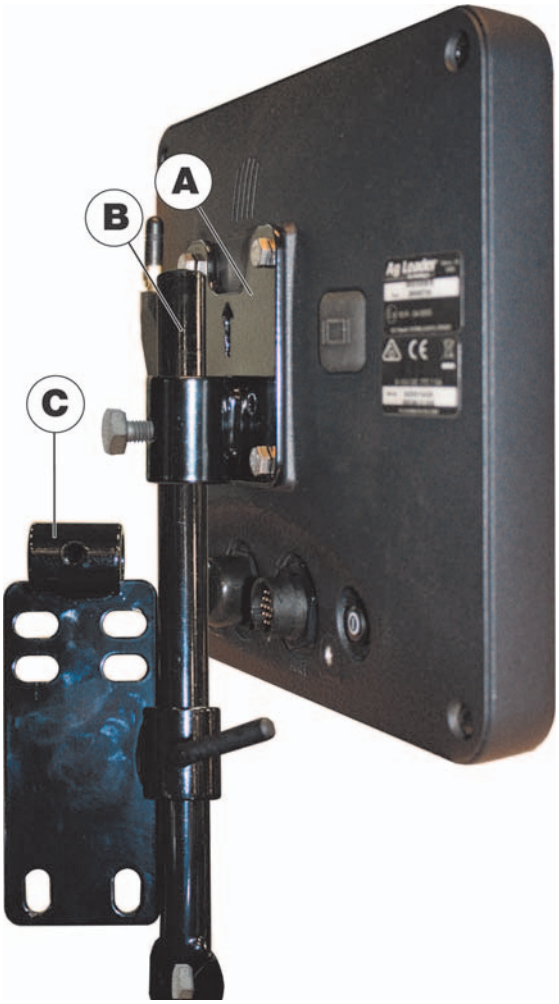
WARNING! If drilling holes is required during the mounting process, care must be taken to ensure that damage is not done to existing vehicle wiring, mechanical, or cab structure. Refer to vehicle manufacturer documentation for specific details on your equipment. Follow all OEM instructions, cautions,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

A. HARDI mounting bracket (part no. 61074500)

B. Tube

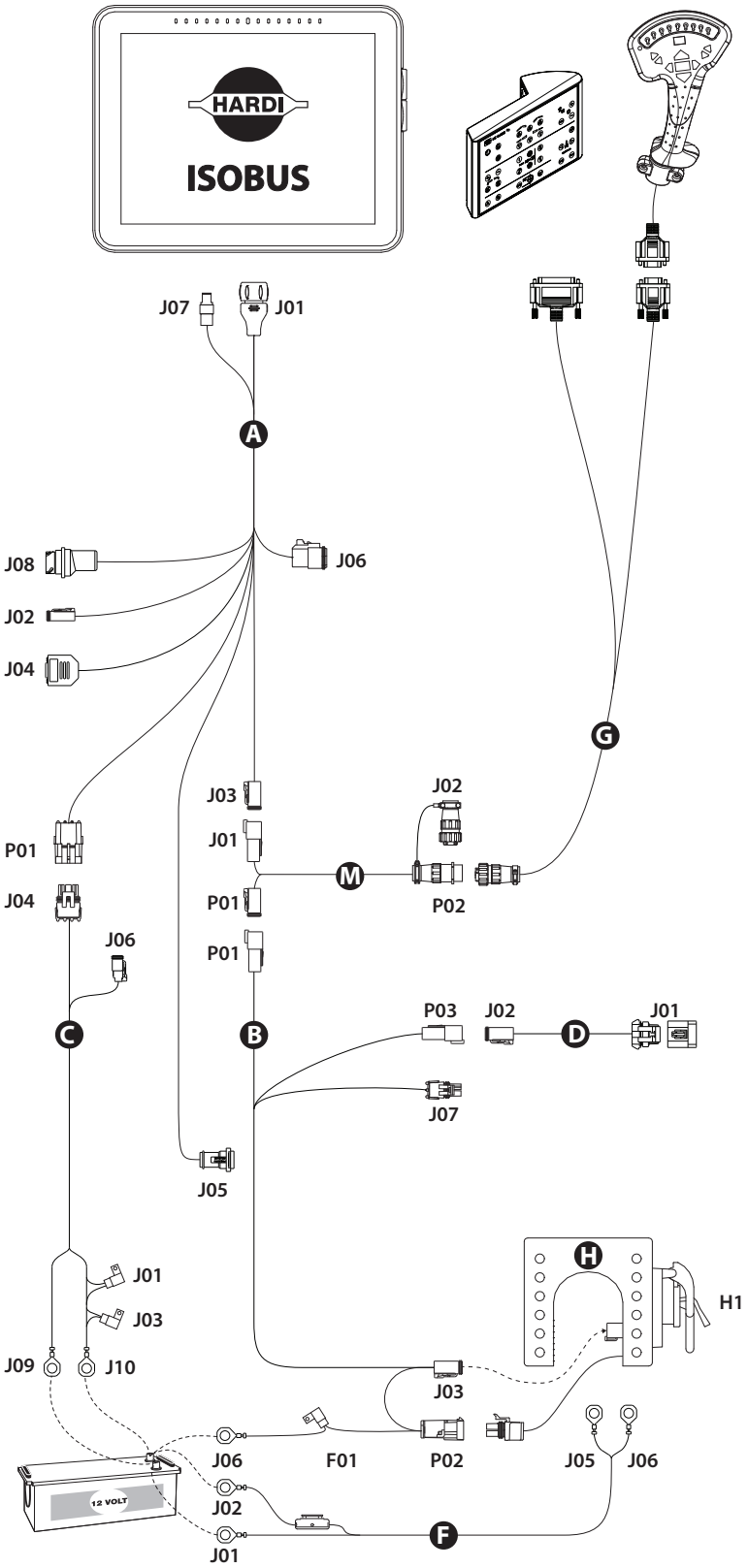
C. Base

B and C bracket set for tractor pillar, 2 tube has part no. 72236500



Cable connections

Non ISOBUS Tractor



A1. 26068900/4004662-1

Display cable, No Ethernet - 2m

***A2. 26069200/4004664-1**

Display cable, Guidance activation - 3,8m

- J01 - Display Main
- J06 - Guidance Activation
- P01 - Power IN
- J05 - CAN A
- J04 - GPS
- J03 - ISOBUS
- J02 - Digital I/O
- **J07 - Display Ethernet**
- **J08 - Ethernet Out**

Connector J07 and J08 are only present on the 3,8m cable.

C. 26040900/ 4002820-1

Power, display/guidance

- J04 - Power 5A
- J06 - Power 15A
- J09 - Battery ground
- J10 - Battery power
- J01 - Fuse, 5A blade style
- J03 - Fuse, 15A blade style

B. 26069400/ 4004666-1

ISOBUS Retrofit cable

- P01 - Display cable
- P03 - ISOBUS out
- J07 - ECU Power
- J03 - IBBC Relay Module
- P02 - IBBC Relay Module
- F01 - Fuse, 5A Blade style
- J06 - Battery power

D. 26040500/ 4002825

ISOBUS Termination Assembly

- J02 - ISOBUS
- J01 - Active terminator

F. 26040600/ 4002827-16

ISOBUS Power Cable

H. 26040300/ 4002826

ISOBUS IBBC

M. 26069900/ 4004668-1

ISOBUS Joystick Tee cable

- J01 - ISO CAN Out
- P01 - ISO CAN IN
- P02 - Grip Connector
- J02 - Jumper

G. 26031500

Hardi Grip and SetBox cable

Display cable kit P/N 73162400 include cables: A1, C.

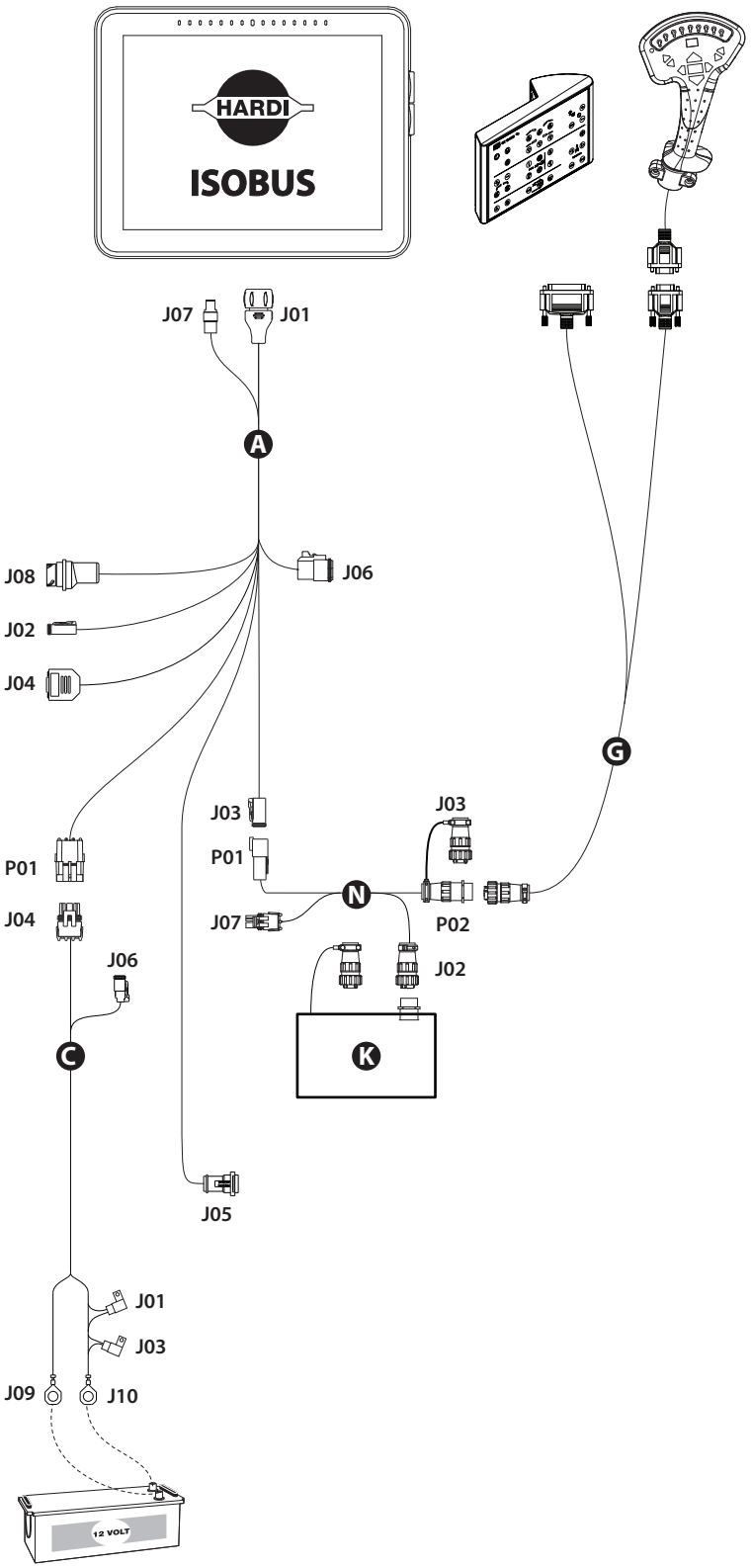
RetroFit Kit P/N 73156700 include cables: B, D, F, H and M.

Grip and SetBox kit include the cable G.

*** The A2 cable has to be ordered separate.**

ISOBUS Tractor with cabin connector

Display, SetBox and Grip connected to cabin connector.



A1. 26068900/4004662-1

Display cable, No Ethernet - 2m

***A2. 26069200/4004664-1**

Display cable, Guidance activation - 3,8m

- J01 - Display Main
- J06 - Guidance Activation
- P01 - Power IN
- J05 - CAN A
- J04 - GPS
- J03 - ISOBUS
- J02 - Digital I/O
- **J07 - Display Ethernet**
- **J08 - Ethernet Out**

Connector J07 and J08 are only present on the 3,8m cable.

C. 26040900/ 4002820-1

Power, display/guidance

- J04 - Power 5A
- J06 - Power 15A
- J09 - Battery ground
- J10 - Battery power
- J01 - Fuse, 5A blade style
- J03 - Fuse, 15A blade style

N. 26069400/ 4004666-1

ISOBUS Adapter

- P01 - Display cable
- J07 - ECU power
- J03 - Jumper
- P02 - Cab Post Extension
- J02 - Cab Post Connection

G. 26031500

Hardi Grip and SetBox cable

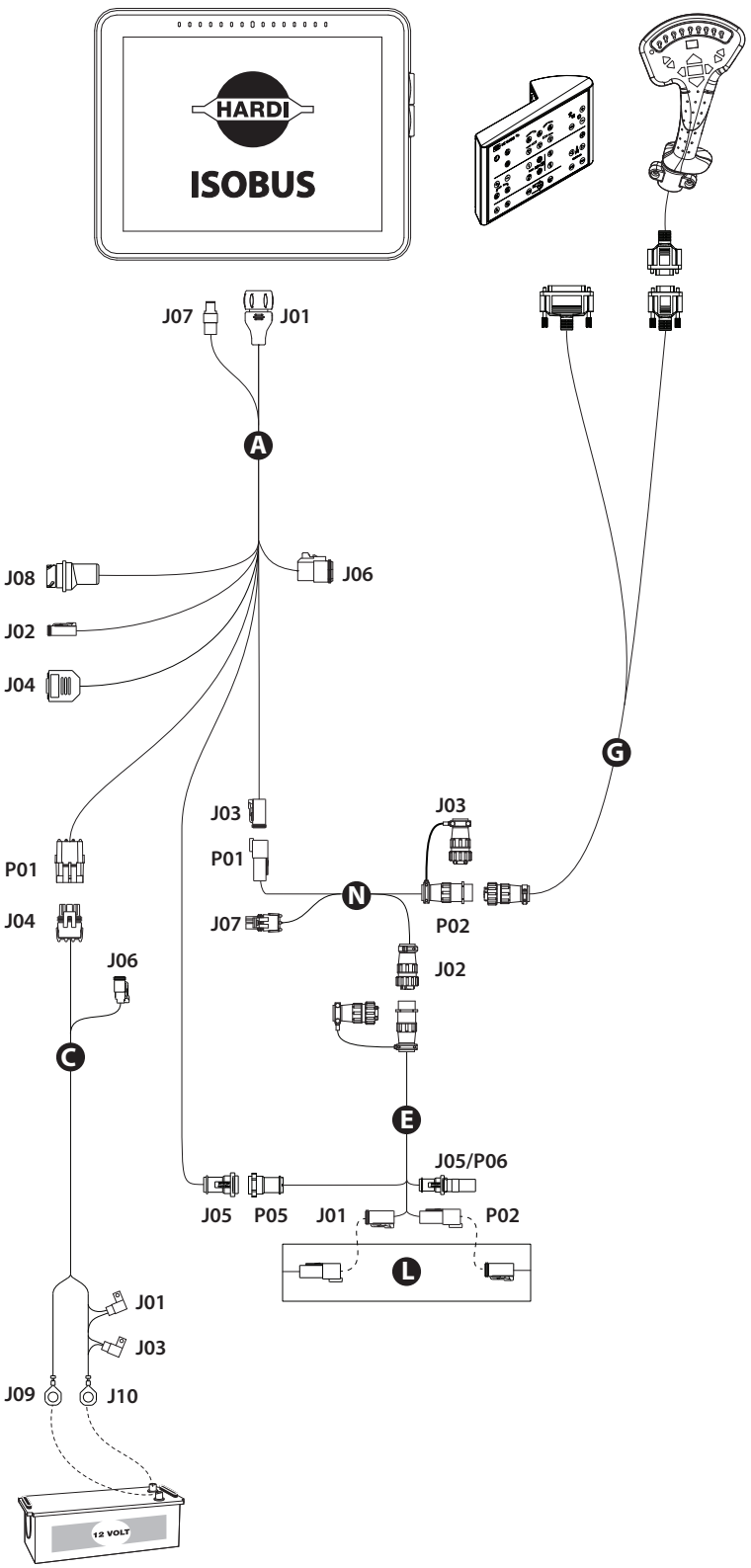
K. Cabin connector - tractor ISOBUS

Display cable kit P/N 73162400 include cables: A1, C and N.

Grip and SetBox kit include the cable G.

*** The A2 cable has to be ordered separate.**

ISOBUS Tractor without cabin connector



A1. 26068900/4004662-1

Display cable, No Ethernet - 2m

***A2. 26069200/4004664-1**

Display cable, Guidance activation - 3,8m

- J01 - Display Main
- J06 - Guidance Activation
- P01 - Power IN
- J05 - CAN A
- J04 - GPS
- J03 - ISOBUS
- J02 - Digital I/O
- **J07 - Display Ethernet**
- **J08 - Ethernet Out**

Connector J07 and J08 are only present on the 3,8m cable.

C. 26040900/ 4002820-1

Power, display/guidance

- J04 - Power 5A
- J06 - Power 15A
- J09 - Battery ground
- J10 - Battery power
- J01 - Fuse, 5A blade style
- J03 - Fuse, 15A blade style

N. 26069400/ 4004666-1

ISOBUS Adapter

- P01 - Display cable
- J07 - ECU power
- J03 - Jumper
- P02 - Cab Post Extension
- J02 - Cab Post Connection

***E. 26040800/4002819-1**

- P04 - Cab Post Connection
- J02 - Jumper
- P05 - CAN A In - Grip/SetBox Power
- J05/P06 - CAN A Out/Terminator
- J01 - ISO CAN B Out
- P02 - ISO CAN B In

G. 26031500

Hardi Grip and SetBox cable

L. Tractor ISOBUS

Display cable kit P/N 73162400 include cables: A1, C and N.

Grip and SetBox kit include the cable G.

*** The A2 and E cables has to be ordered separate.**

Initial Start-up

General info

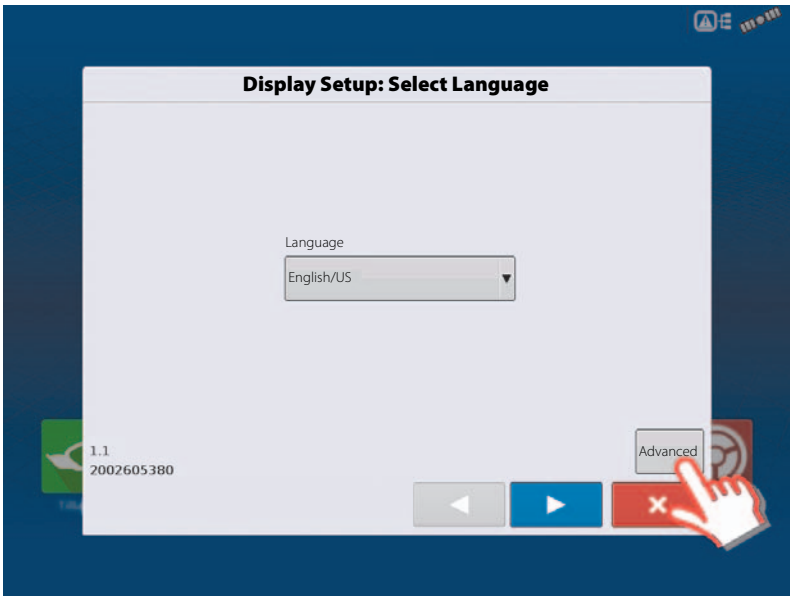
An Initial Setup wizard is presented on start-up. The wizard is presented if the display is brand new out-of-the-box with 1.1 software or following the 1.x upgrade.

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

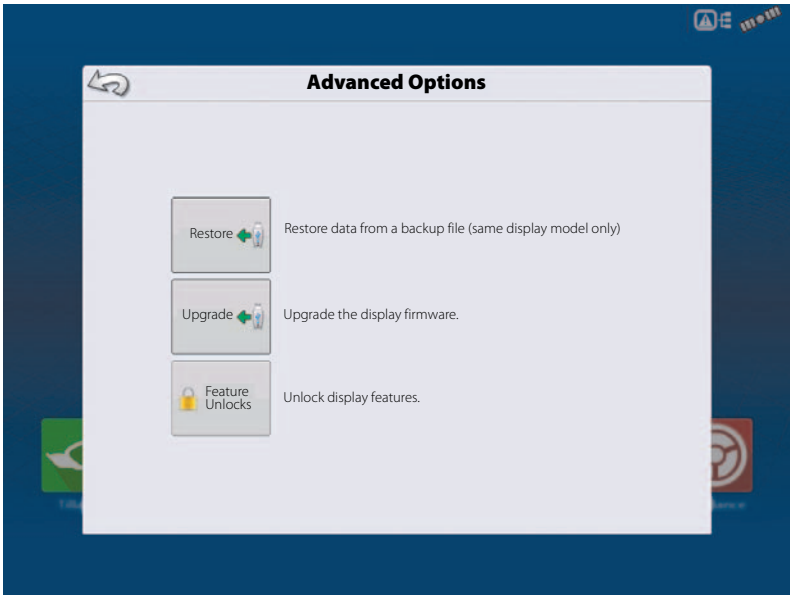
Press "Advanced" button on Language Selection screen (first screen to appear on initial start-up).



Select:

- Restore Backup
- Upgrade Firmware
- Unlock Display Features

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.

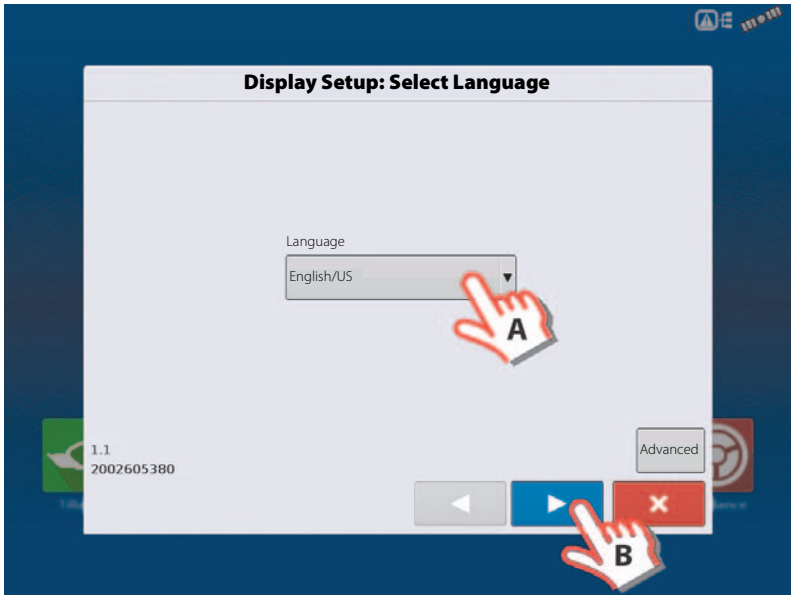
- On a "clean" display going out for service, to stand in for a failed display, the customer should use the Restore backup option in the initial setup wizard.

Location Specific Setup

1. Language

   A. Select your language.

   B. Press ▶ to confirm.

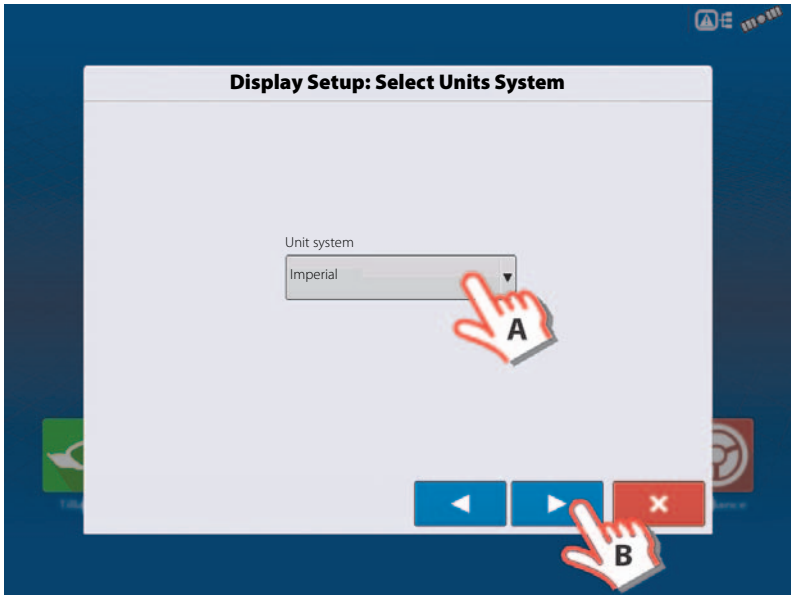


2. Unit System

   A. Press to select Metric units.

ATTENTION! Imperial units can also be selected, but this book covers Metric units.

   B. Press ▶ to confirm.

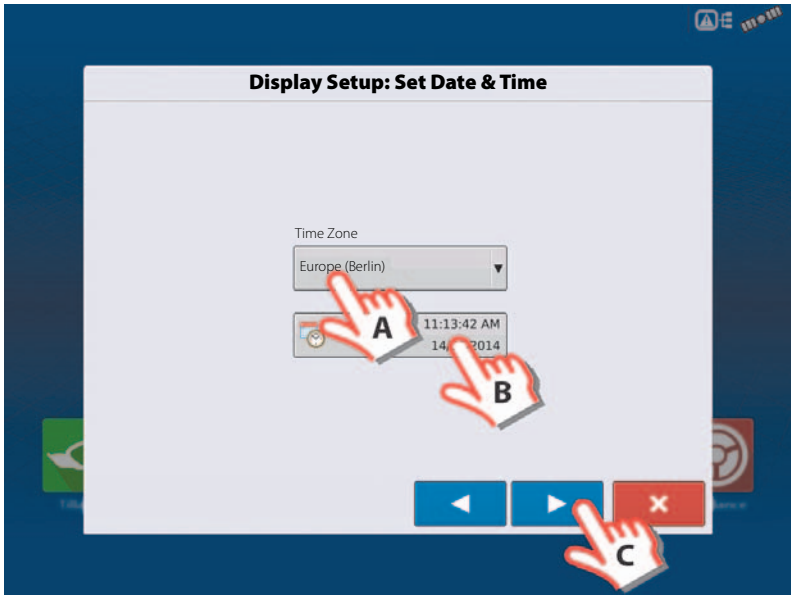


3. Set Time and Date:

   A. Press to select Time Zone.

   B. Press to set Time and Date.

   C. Press ▶ to confirm.



Single Display

Used if you have only one display to setup.

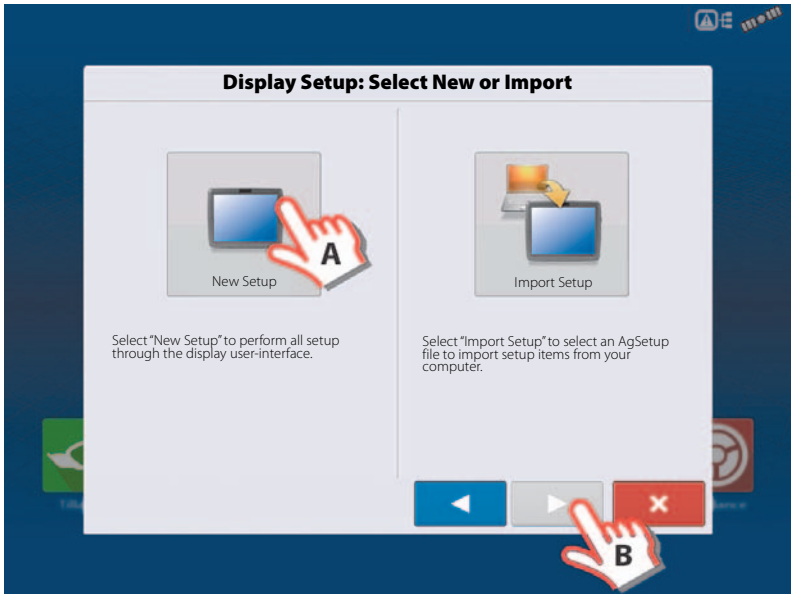
A. Press "Single Display" button.

B. Press to continue.

New setup

A. Press "New Setup" button.

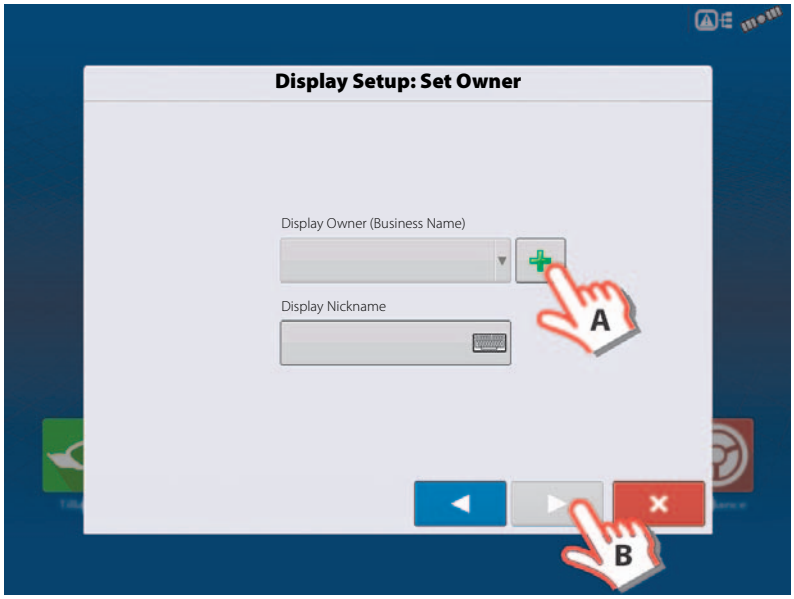
B. Press to continue.



A. Press to enter a Display Owner (Business Name).

B. Press to enter a display nickname.

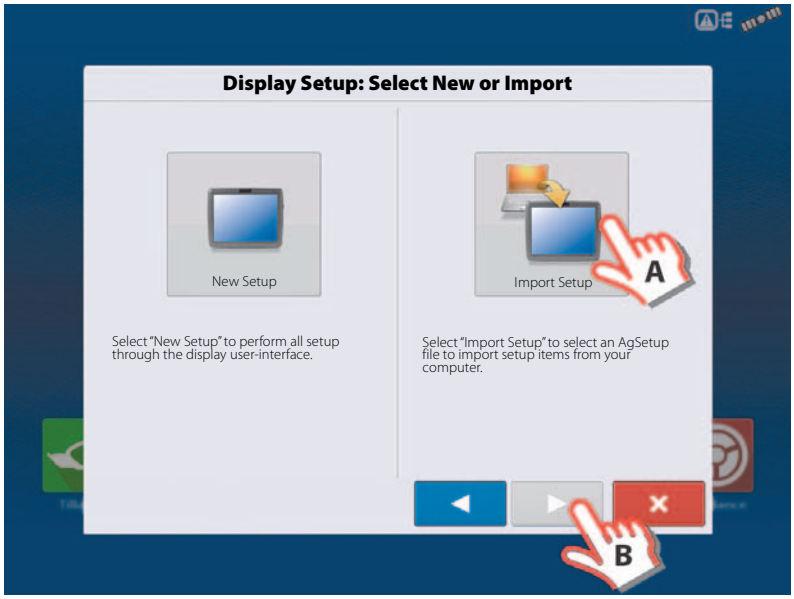
C. Press to continue.



Import setup

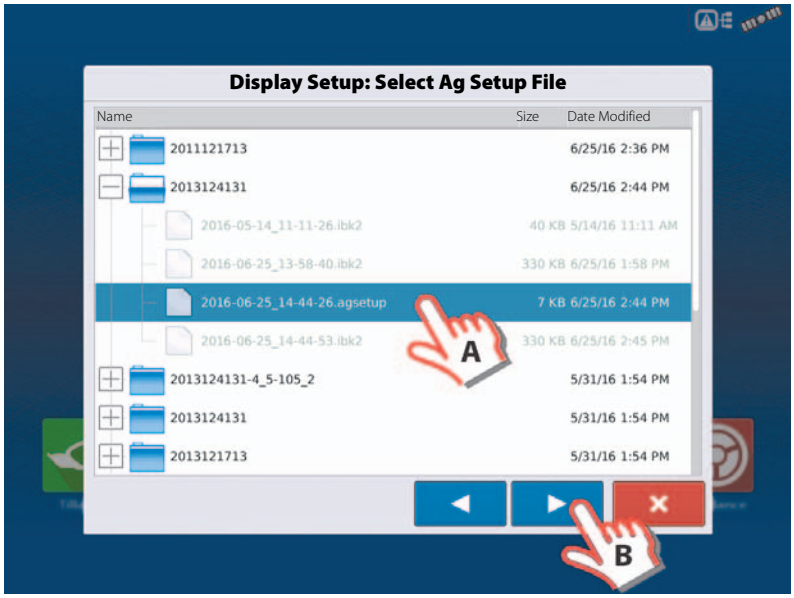
A. Press "Import Setup" button.

B. Press ▶ to continue.

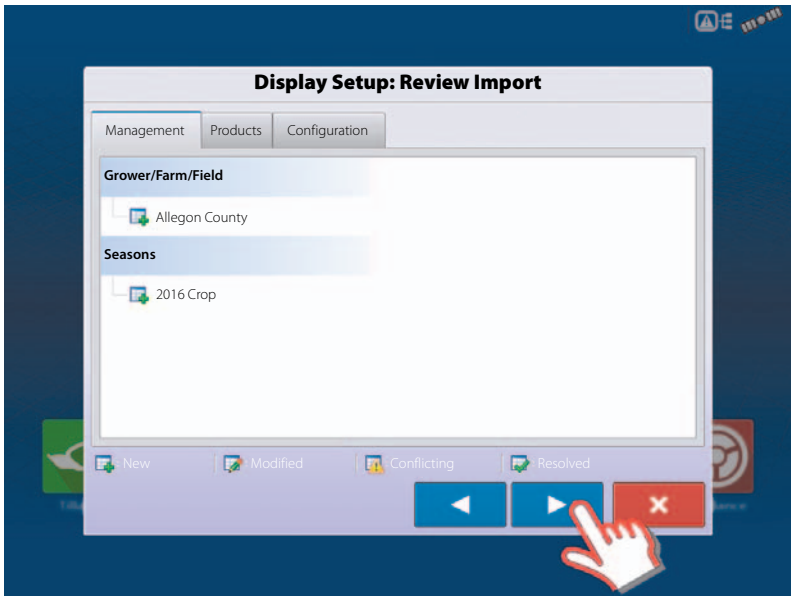


A. Select desired setup file from directory.

B. Press ▶ to accept the setup and return to Home screen.



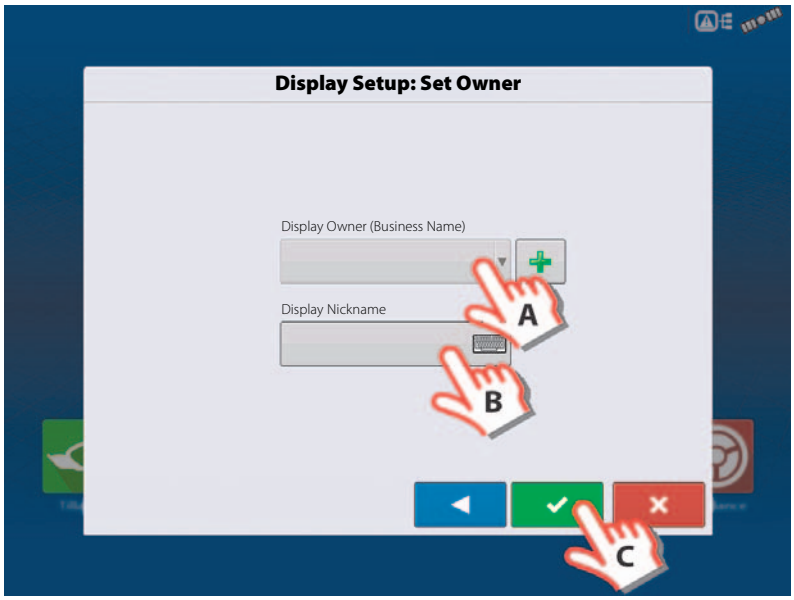
Press to accept and import setup file.



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.

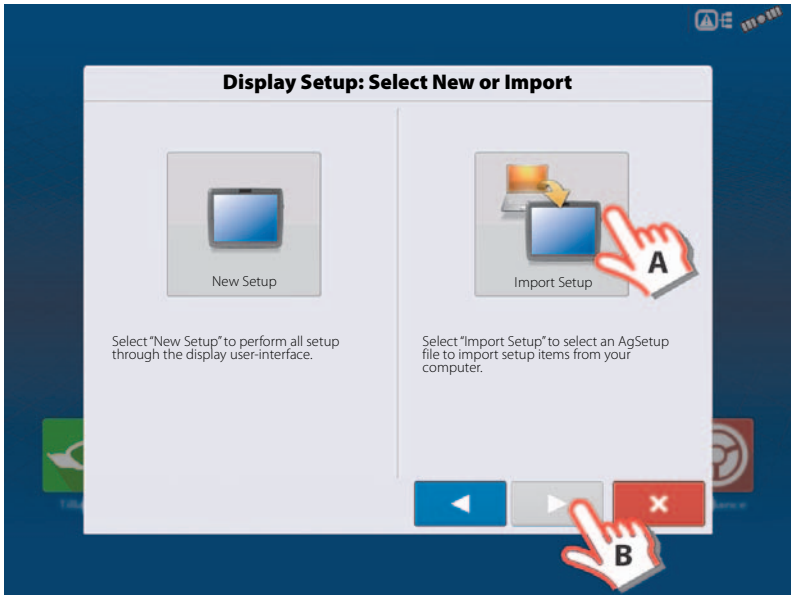


Multiple Displays

Setup First Display

A. Press "Multiple Display" button.

B. Press to continue.



A. Press "First Display" button.

B. Press ▶ to continue.

New setup

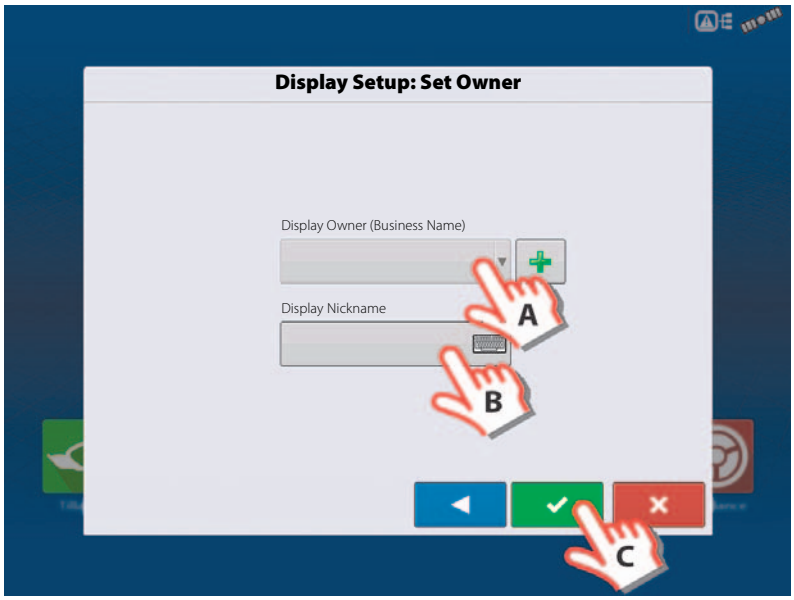
A. Press "New Setup" button.

B. Press ▶ to continue.

A. Press ✚ to enter a Display Owner (Business Name).

B. Press ⌨ to enter a display nickname.

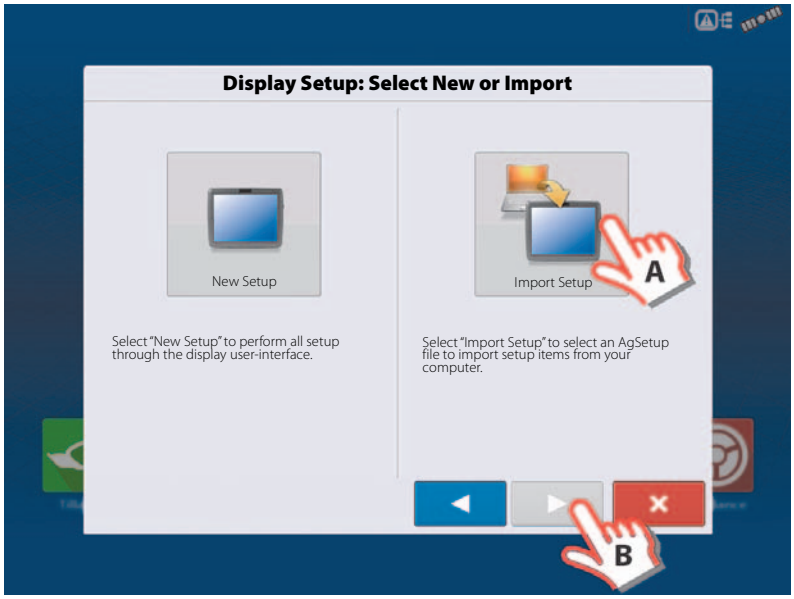
C. Press ✓ to accept the setup and return to Home screen.



Import setup

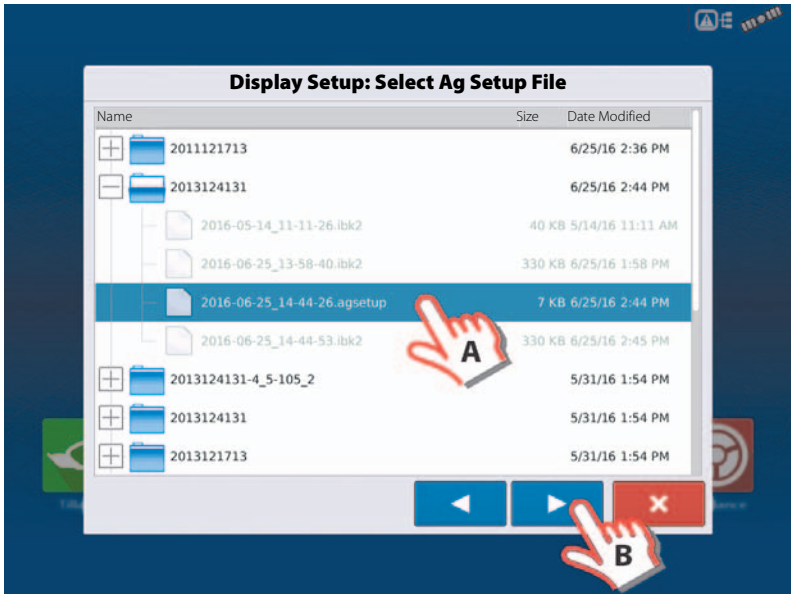
A. Press "Import Setup" button.

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.

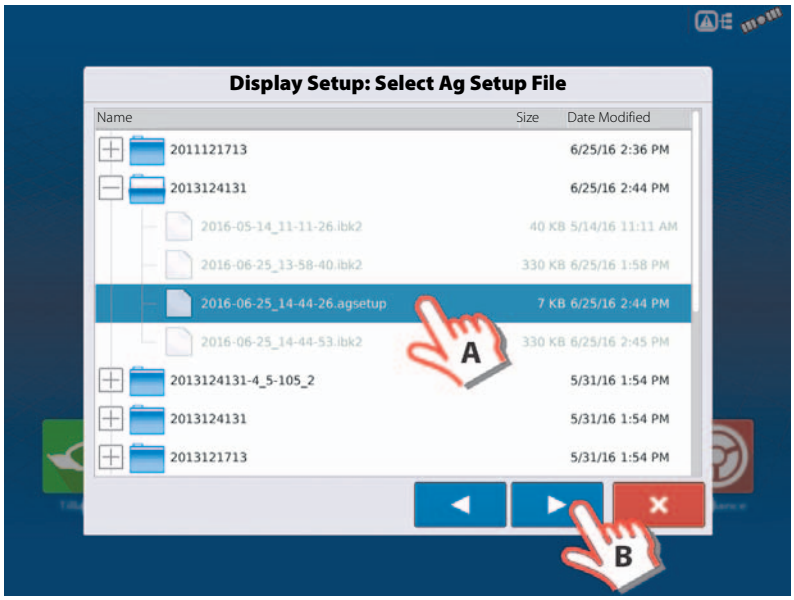
A. Press "Additional Display" button.

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.



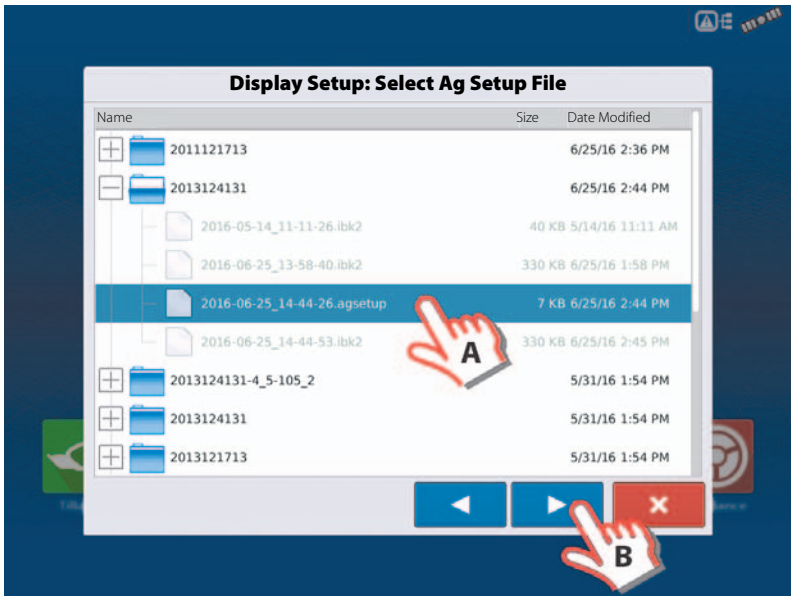
Import Setup Data

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.

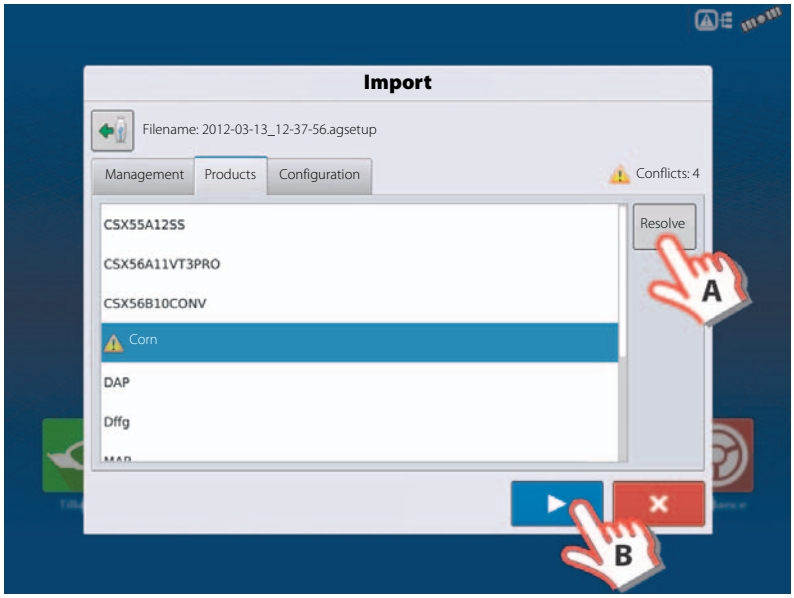
A. Select desired setup file from directory.

B. Press ▶ to continue.



Highlight item with conflict ⚠.

Press Resolve.



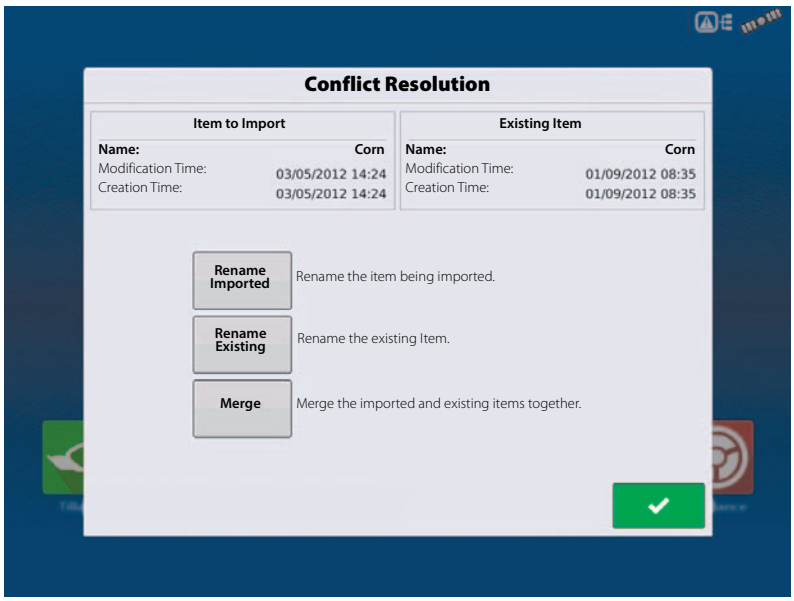
Conflicts can be resolved by:

- 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

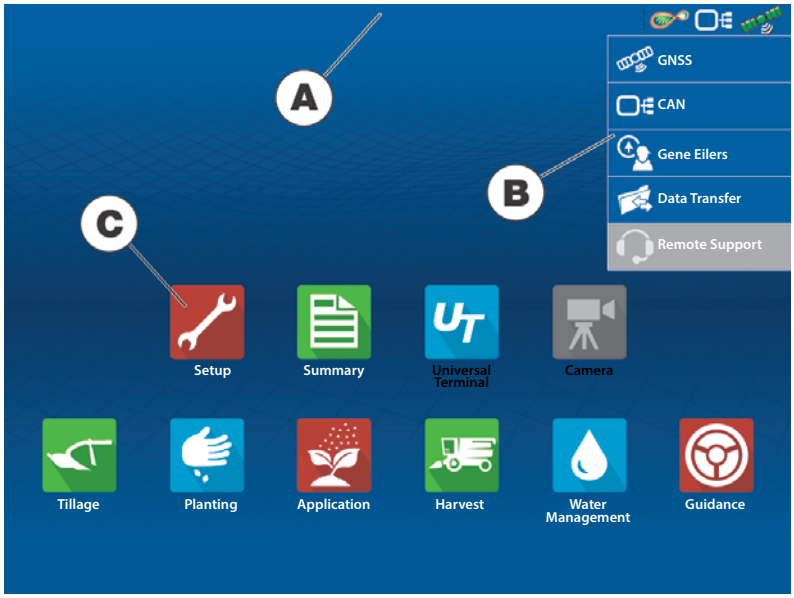
Most of the functionality of the display is not available until the basic setup process is completed.

A. Status bar.

B. Status Indicators pull-down menu.

C. Setup button.

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 "Universal Terminal" on page 45.

- Grower, Farm, and Field management.

  For more information, See "Management button" on page 74.

- Equipment Operating Configuration.

  You can access Configuration Setup by pressing the Setup (wrench) button (B) on the Home screen. For more information, see "Equipment Setup" on page 72.

- Product setup.

  For more information, see "Product tab" on page 72, as well as the additional configuration information described in each Operations chapter.

- Start Field Operation.

  For more information, "Configuration Setup Screen" on page 151.

Universal Terminal

Universal Terminal together with HC 8600/HC 9600

The following has to be set up in the UT-software:

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

General info about Universal Terminal

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

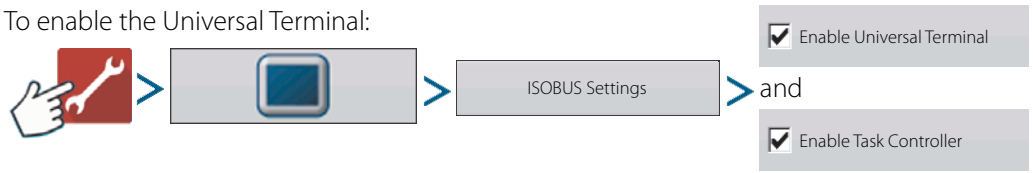
Common Terminology

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 UT and the Working Set including loading of the Object Pool to the UT screen.
Object Pool	The graphic image presented to the user on the UT display. The Object Pool is sent to the UT by the ISOBUS module.

ATTENTION! Before operating an ISOBUS implement with the display, read the operator's manual provided with the implement by 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.

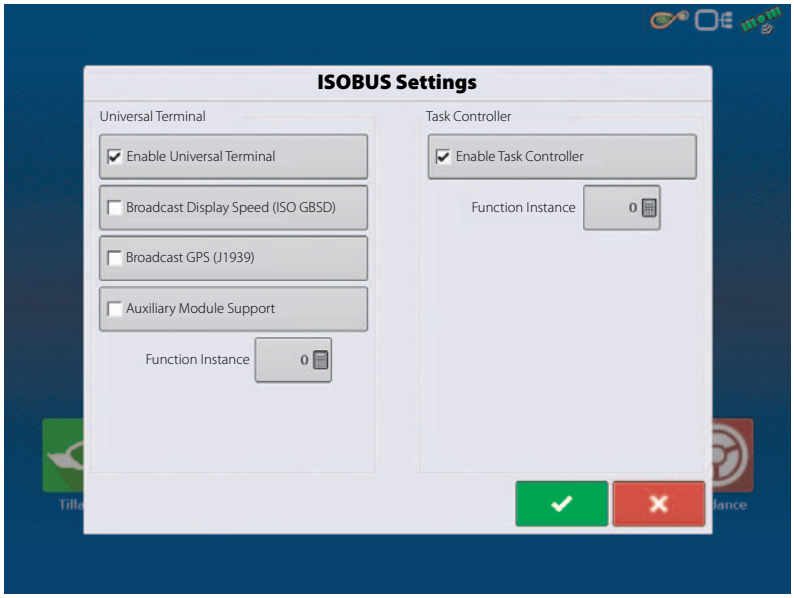
Enable Universal Terminal and Task Controller

To enable the Universal Terminal:



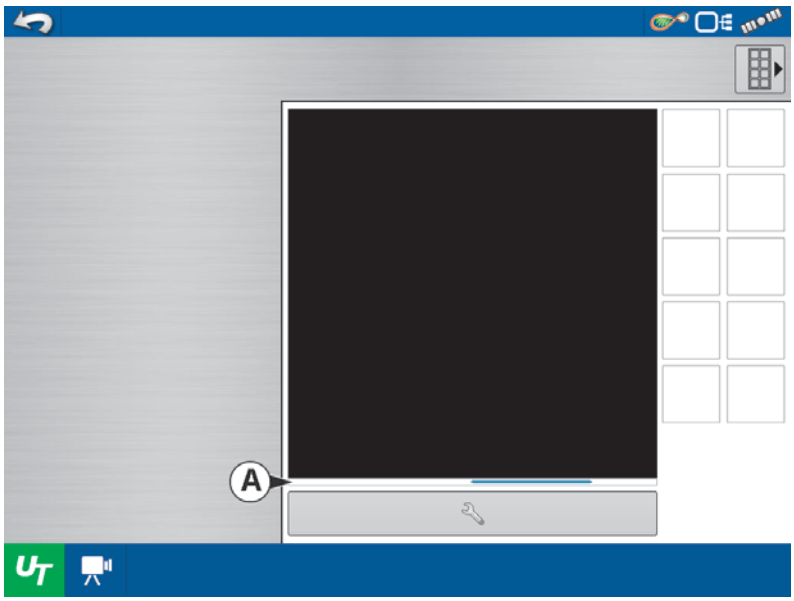
Once a Universal Terminal has been enabled will appear in the task bar.

Toggle between the Universal Terminal run screen and other display functions by pressing the UT button.



When an ISOBUS compliant implement is connected to the display for the first time, Status Bar (A) appears while Object Pool is in the process of loading.

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



ISOBUS Settings Screen

Other options to be set are:

Enable Universal Terminal (Mandatory setting)

Assign Universal Terminal functions to ISO compatible inputs.

Once a Universal Terminal has been enabled UT will appear in the task bar. Toggle between the Universal Terminal run screen and other display functions by pressing the UT button.

NOTE! Always enable this when connected to a HARDI ISOBUS system.

Broadcast Display Speed (ISO GBSD)

Checking this box allows speed source currently being utilized by the display to be broadcast over the ISOBUS to the implement ECU.

Broadcast GPS (J1939)

Checking this box allows GPS data being supplied by the GPS receiver to be broadcast over the ISOBUS to the implement ECU.

Do not check this when using the sprayer speed sensor - see also “Speed Input Settings” on page 89.

Auxiliary Module Support

Allows non-HARDI Auxiliary Module to be used with ISOBUS ECU’s that support AUX-N auxiliary functions.

Not used for normally setup HARDI sprayers.

Universal Terminal Functional Instance

Always set to 0 except when there are multiple UT’s on the ISOBUS. Use to change instance. Reboot Display.

Enable Task Controller (Mandatory setting)

Checking this box allows the HC 8600/HC 9600 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 8600/9600.

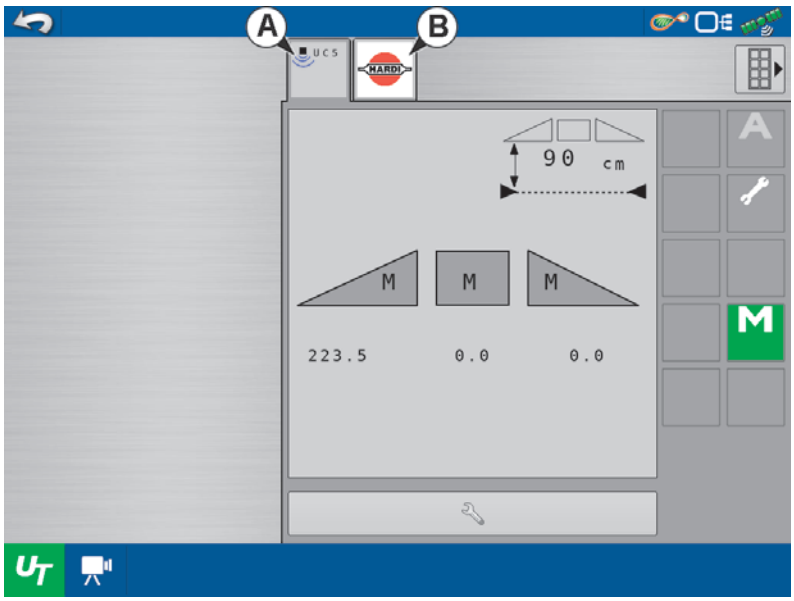
Task Controller Function Instance

Always set to 0 except when there are multiple screens on the ISOBUS. Use to change instance. Reboot Display.

Multiple Universal Terminals

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

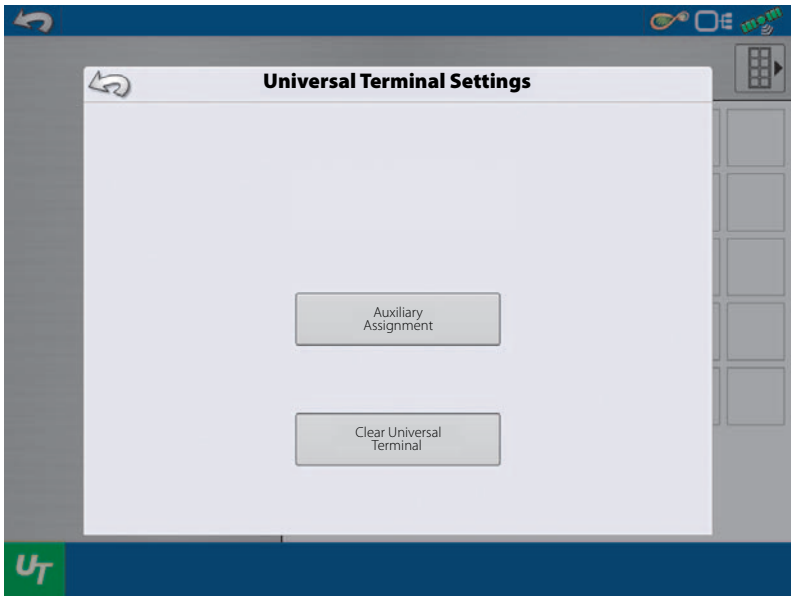
The Working Sets can also be accessed by pressing tabs (A) or (B) individually.



ATTENTION! If the HARDI UT displays 123.4, then there is no communication with the JobCom. Make sure to power On the JobCom 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 Universal Terminal Settings screen.



- Auxiliary Assignment

  Assign implement functions to ISO compatible inputs.

- Clear Universal 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:

  "All Universal Terminal interfaces saved in the display will be cleared. Do you want to continue?"

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

Quick Setup Guide

General Info

For an ease and quick start with your new HC 8600/9600 controller, it is strongly recommended to set up the controller by using this quick setup guide.

For later changes of settings, or more in-depth explanation of settings please refer to thereafter following parts of this chapter.

Before Setup

Before commencing the setup the following steps must be done:

- Enable Universal Terminal. See "Universal Terminal" on page 45.
- Setup Hardi ISOBUS with all sprayer details as Tank Size, Boom Length, etc. Please refer to the instruction book "HC 6500/ISOBUS VT" for details.
- Restart the HC 8600 or HC 9600 controller and JobCom/C2C module for the changes to take effect. Cycle power to do this.
- Begin Configuration for your sprayer type.

Sprayer Types

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

- Trailer and Lift sprayers. See "Configuration for Trailer and Lift sprayers" on page 48 (below).

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

- Self-Propelled sprayer. See "Configuration for Self-Propelled sprayers" on page 60.

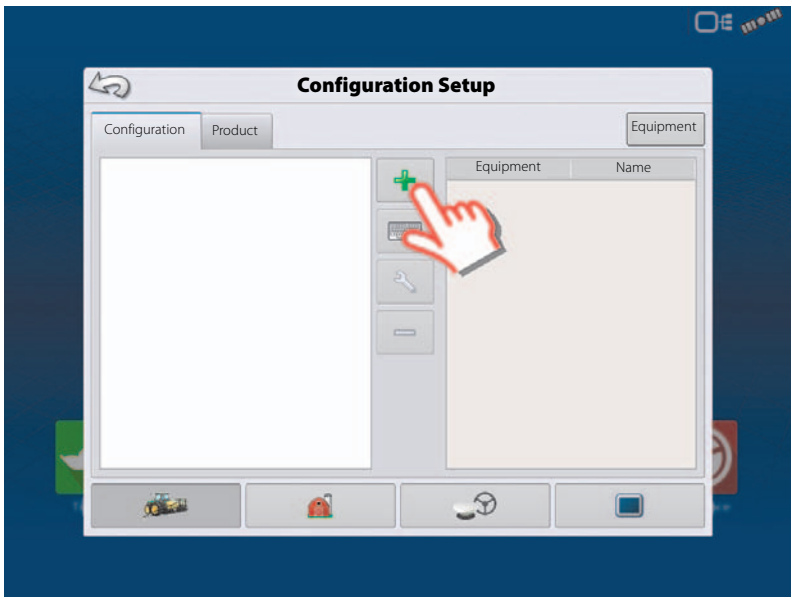
Sprayer Offsets

Standard offsets for HARDI sprayers can be viewed in "Sprayer Offsets" on page 197.

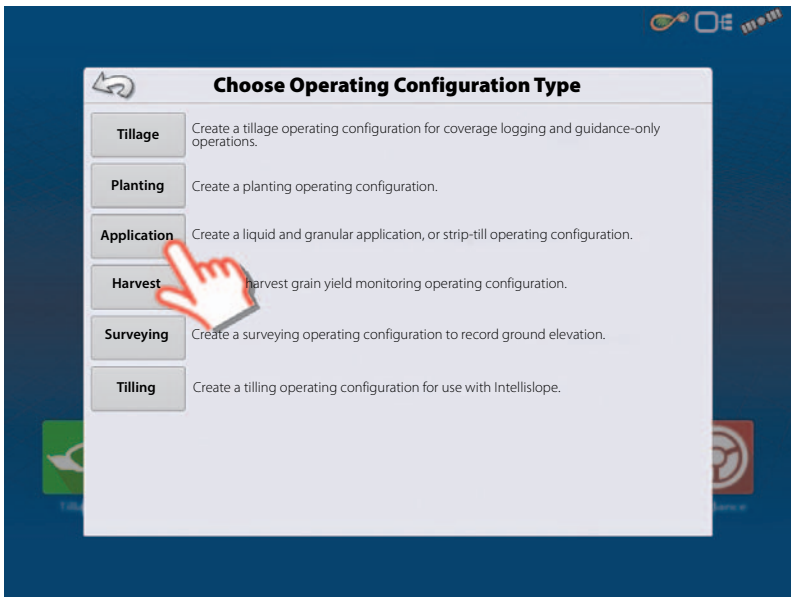
Configuration for Trailer and Lift sprayers

1. At the HC 9600 Home Screen, press to enter the Configuration Setup.

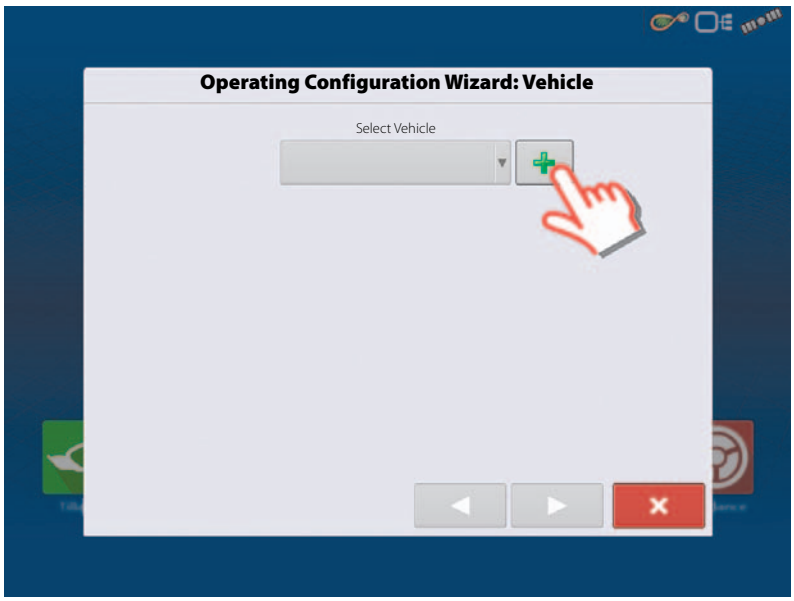
2. Press to add a Configuration.



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



4. Press to select a vehicle.

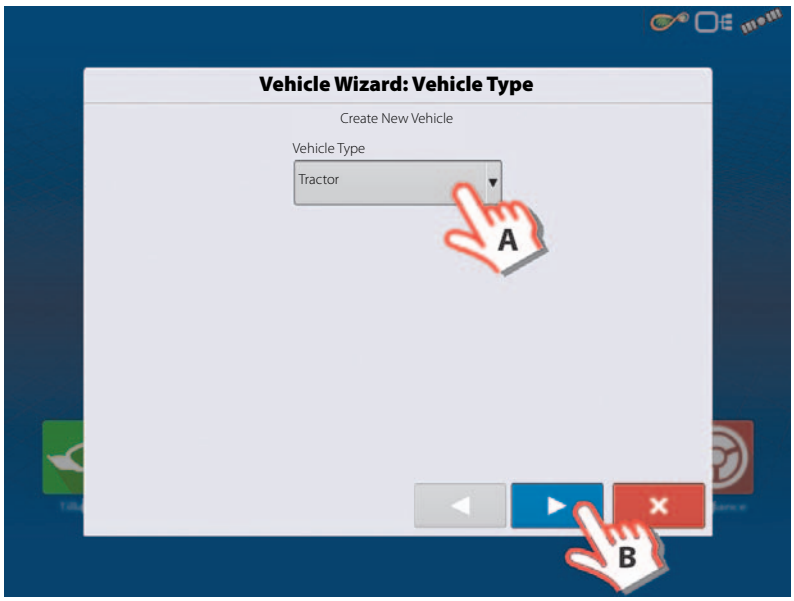


5. Vehicle Type:

   A. Select "Tractor".

ATTENTION! Lift sprayers must also select "Tractor".

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

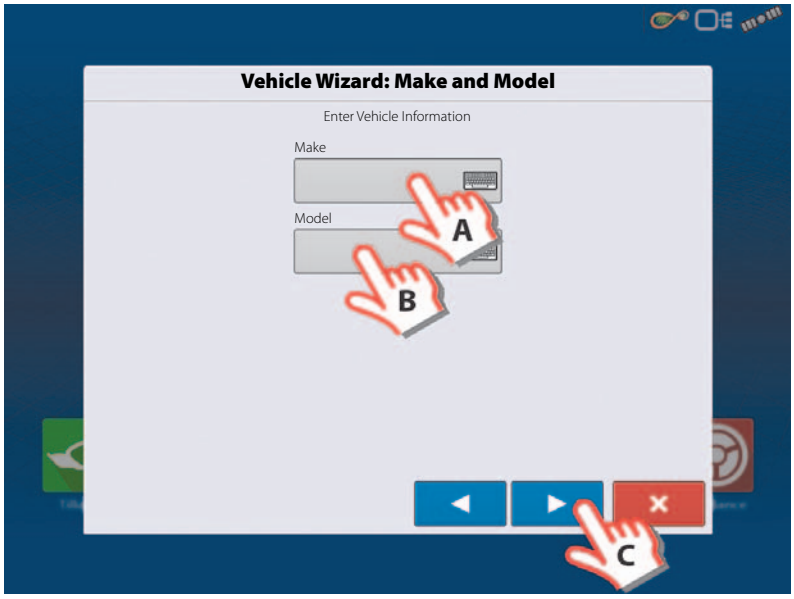


6. Enter Vehicle Information:

   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.

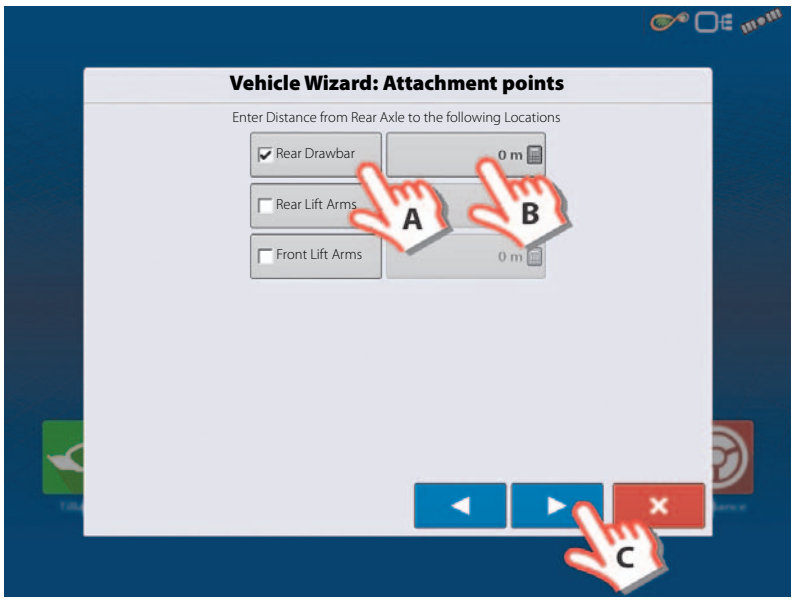
ATTENTION! The option "Front Lift Arms" is not used for Hardi sprayers.

Trailer as example:

   A. Chose "Rear drawbar".

   B. Press 🖩 to type in value.

   C. Press ▶.



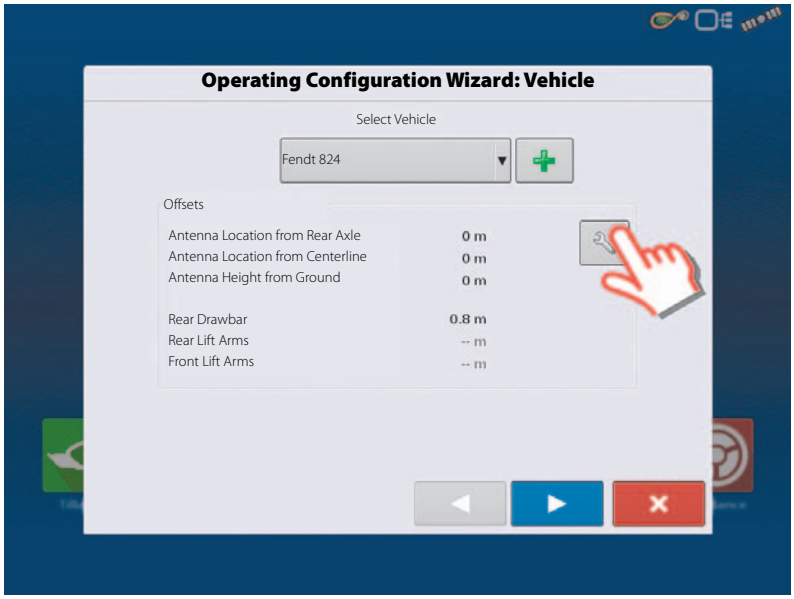
8. Vehicle Name:

   A. Press the button to change the vehicle name, if necessary.

   B. Press to confirm selection.

9. Antenna Settings:

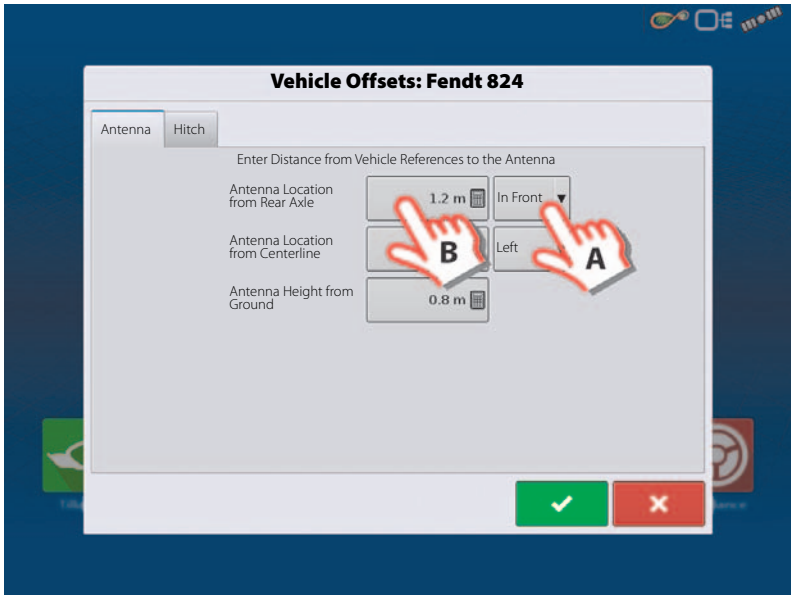
   Press the button to change the antenna settings for the Selected Vehicle in the drop down menu.



10. Enter Distance from Antenna location to Rear Axle:

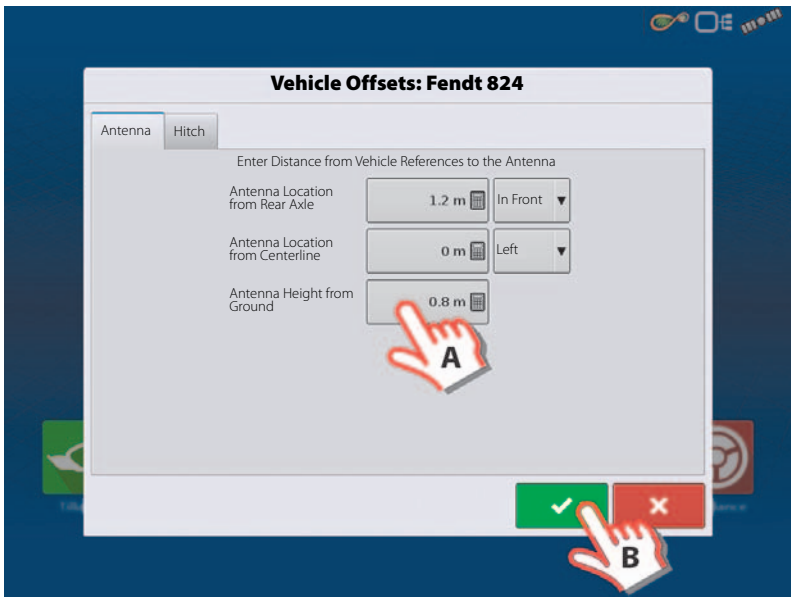
    A. Choose "In Front" or "Behind" from the Rear axle.

    B. Press to type in the measured value for the GPS Front/Back Offset from the vehicle.

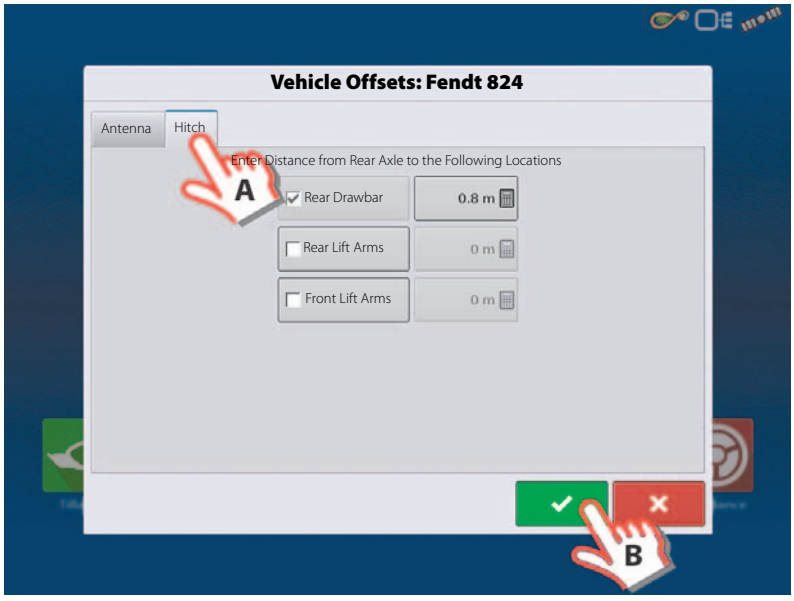


11. Enter Distance from Antenna location to Centre line:
    A. Choose "Left" or "Right" from the Centre line.
    B. Press to type in value.

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.

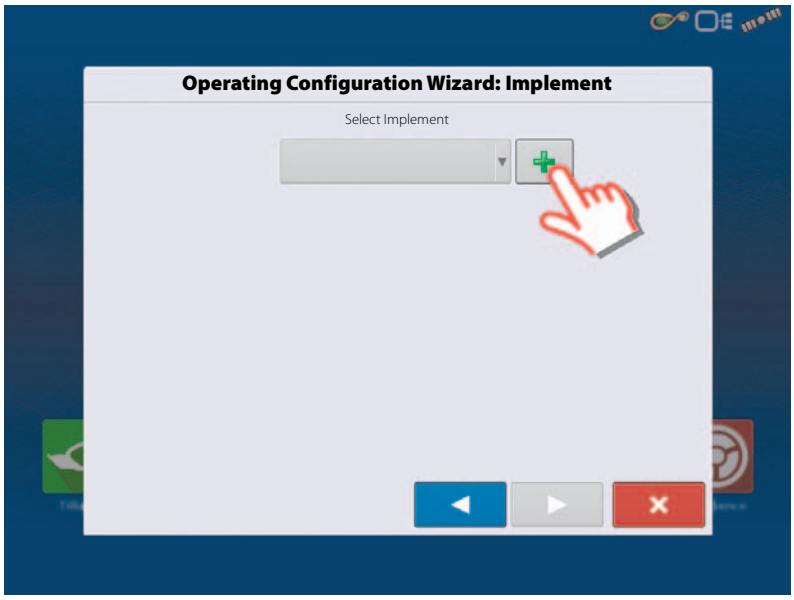


14. Check the data in the overview.

    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.

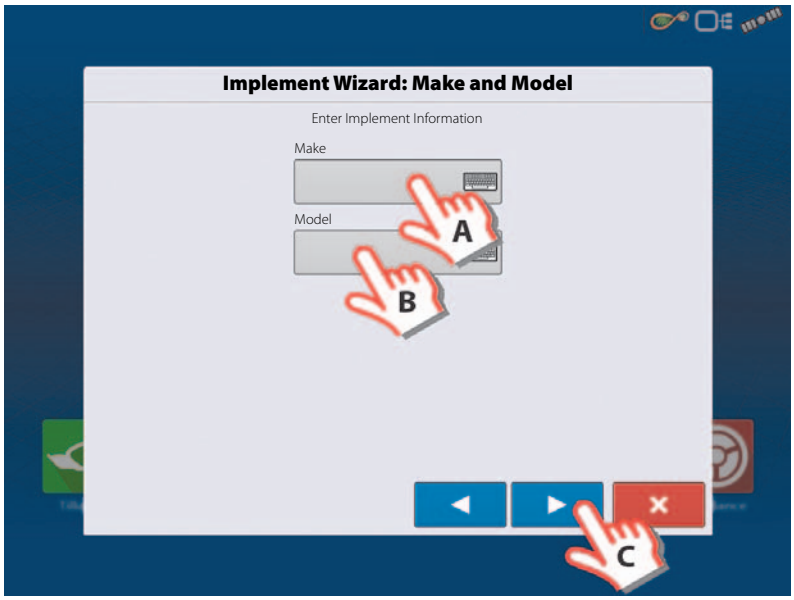


16. Implement Information:

    A. Press the "Make" ⌨ to type in the implement name.

    B. Press the "Model" ⌨ to type in the implement model.

    C. Press ▶ to confirm.



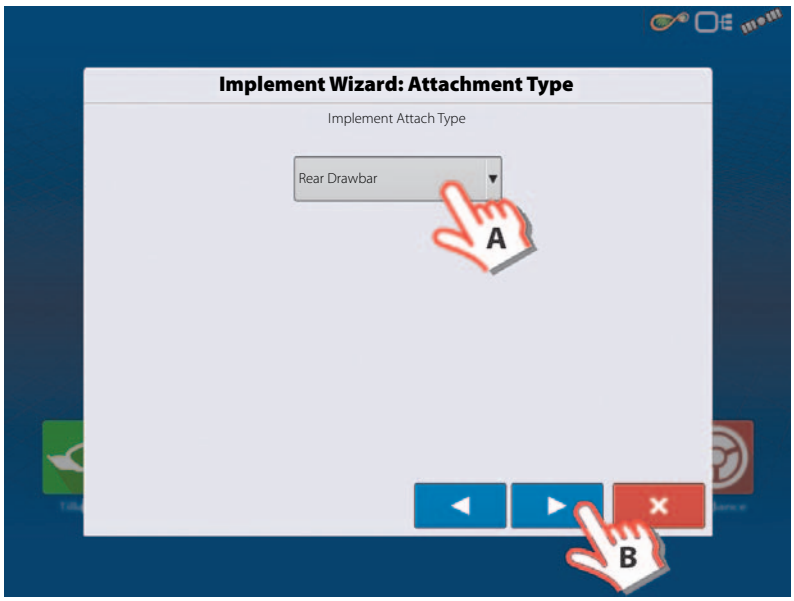
17. Attachment Type:

    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.

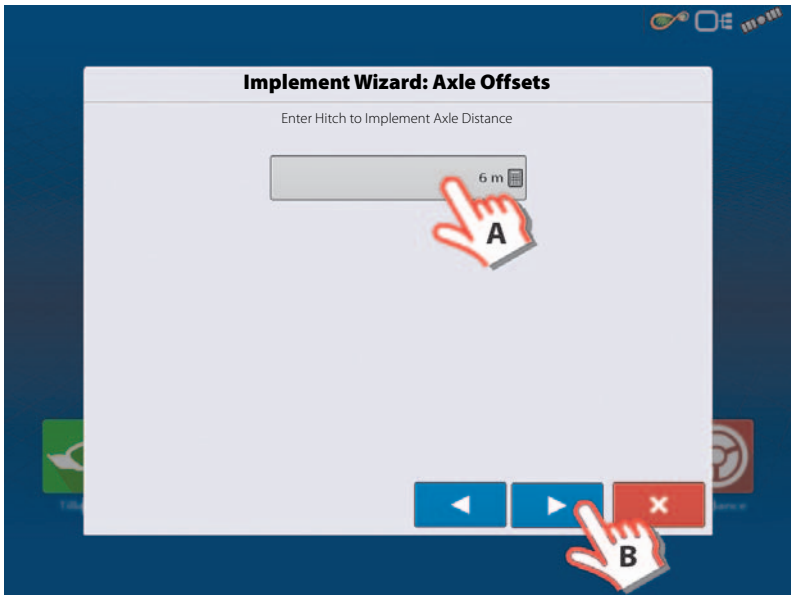
    B. Press ▶ to confirm selection.



18. Trailer sprayer only:

    A. Select to Enter Hitch to Implement Distance:

    B. Press ▶ to confirm selection.



19. Sprayer data are auto populated from the JobCom/C2C module.

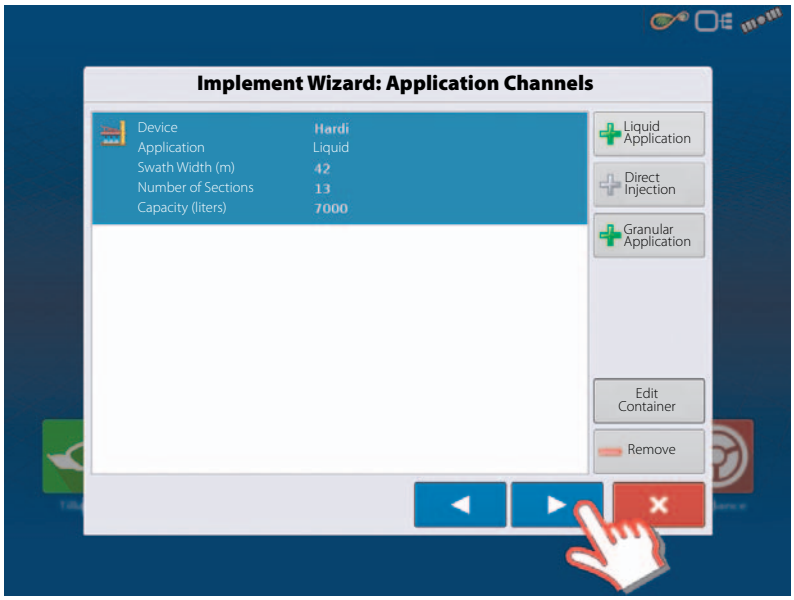
    Check that Swath Width (Boom Width), Number of Sections and Tank Capacity are correct.

NOTE! If this screen appear blank (no text highlighted with blue) no data could be obtained.

If the JobCom is not powered ON, then press ✕ to cancel the setup. Power On the JobCom and continue from step 15.

ATTENTION! The JobCom/C2C module has to be set up prior to doing this wizard. See "Before Setup" on page 48.

Press ▶ to confirm selection.

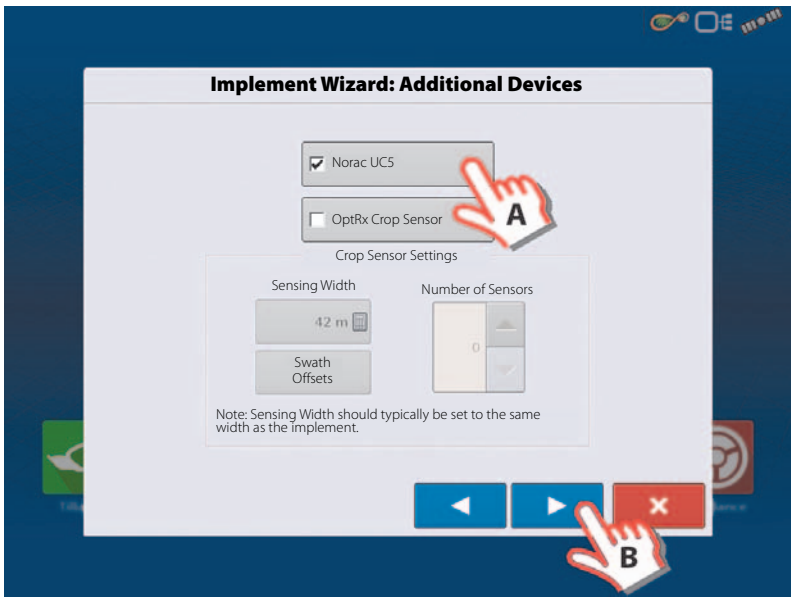


20. Additional devices:

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

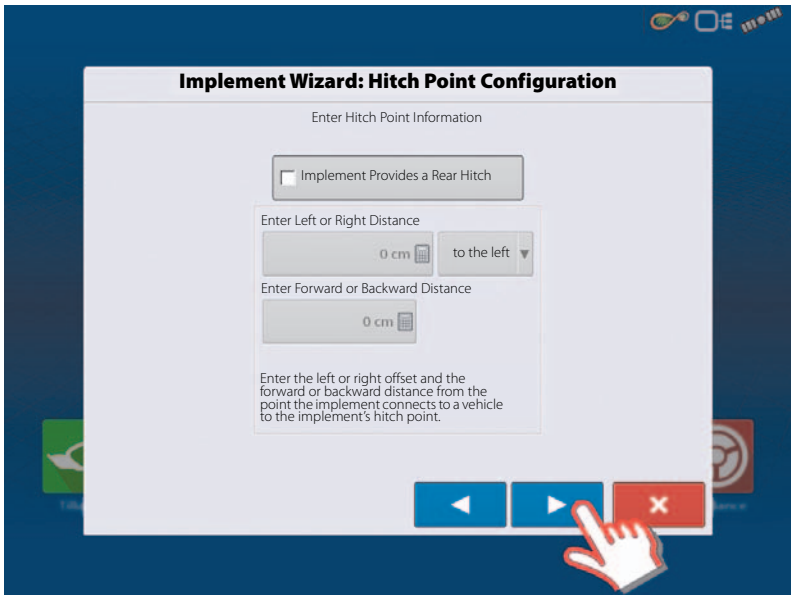
    B. Press ▶ to continue.

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



21. Press ▶ to continue.

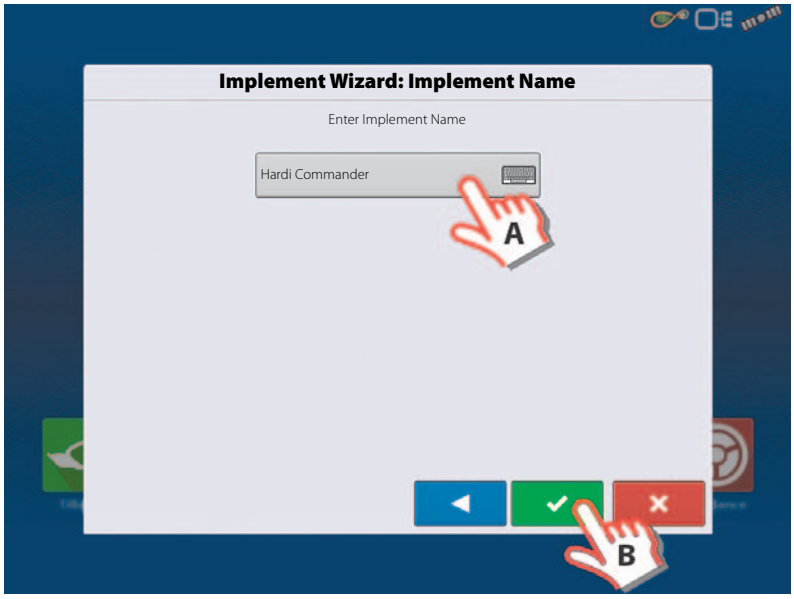
ATTENTION! Settings here not relevant for Hardi Trailer and Lift sprayers!



22. Enter Implement Name:

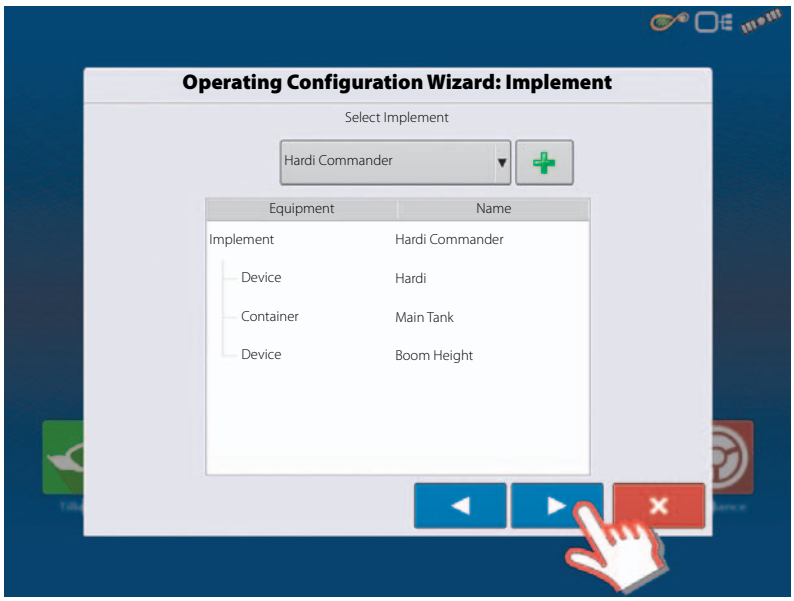
    A. Press ⌨ button to change name.

    B. Press ✔ to confirm name.



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

    Press ▶ to confirm the selection.



24. 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.

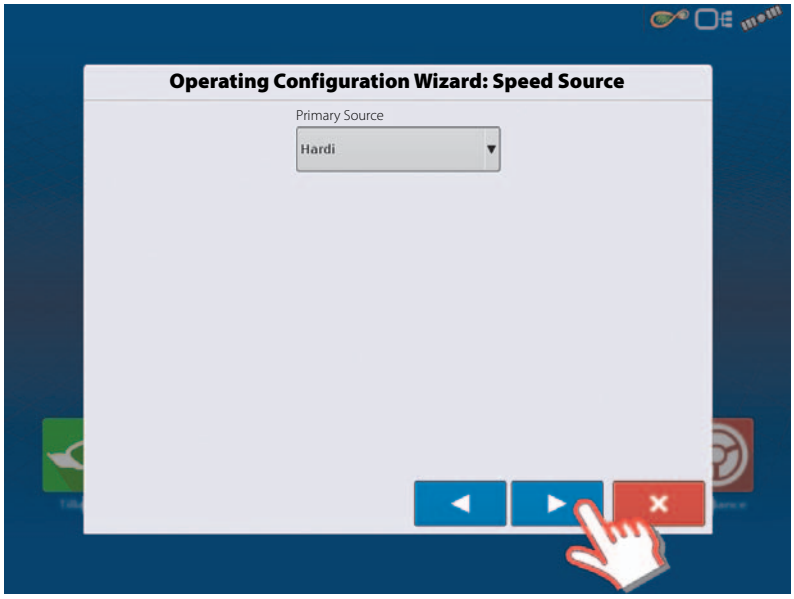
NOTE! If "Display GPS" is selected, the Hardi option must be selected as backup source.

ATTENTION! For additional information see "Speed Input Settings" on page 89.

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

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

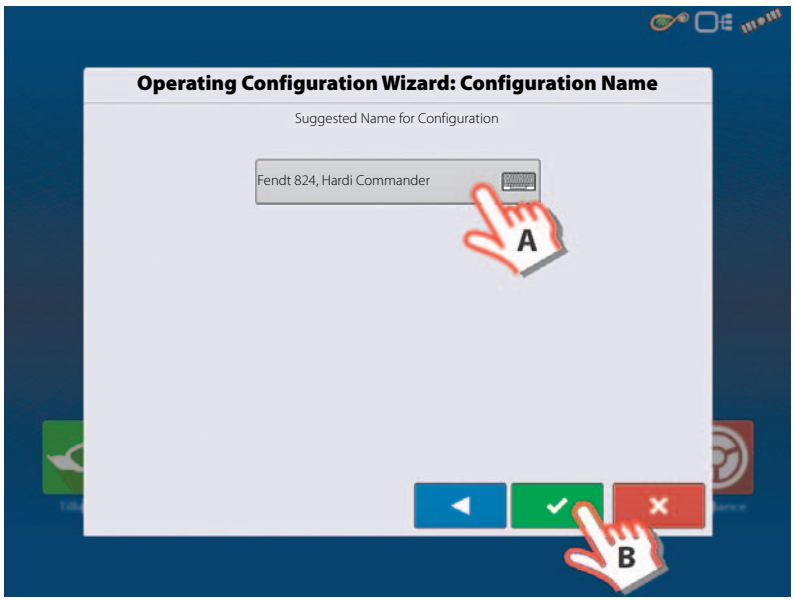
Press ▶ to confirm the selection.



26. Suggested Name for Configuration:

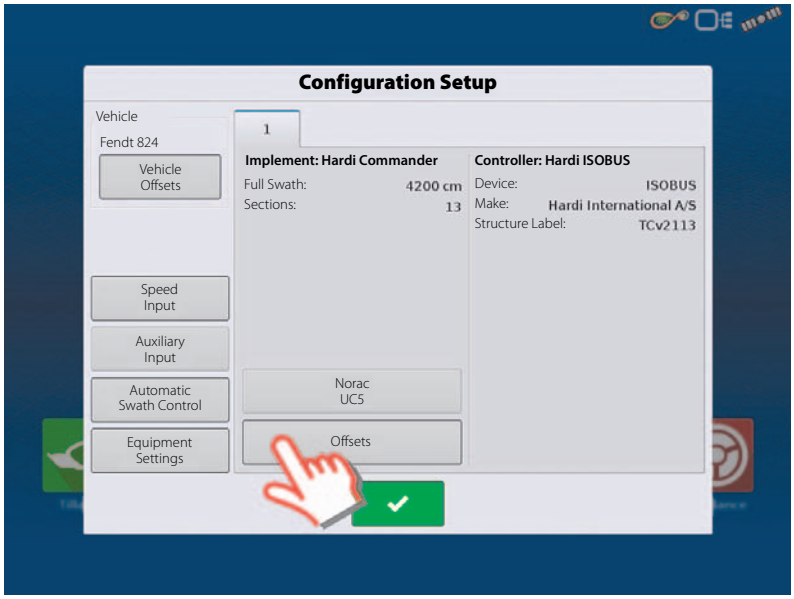
    A. Press button to change name.

    B. Press to confirm selection.



27. Trailer sprayers only:

    Press "Offsets" to edit the configuration.



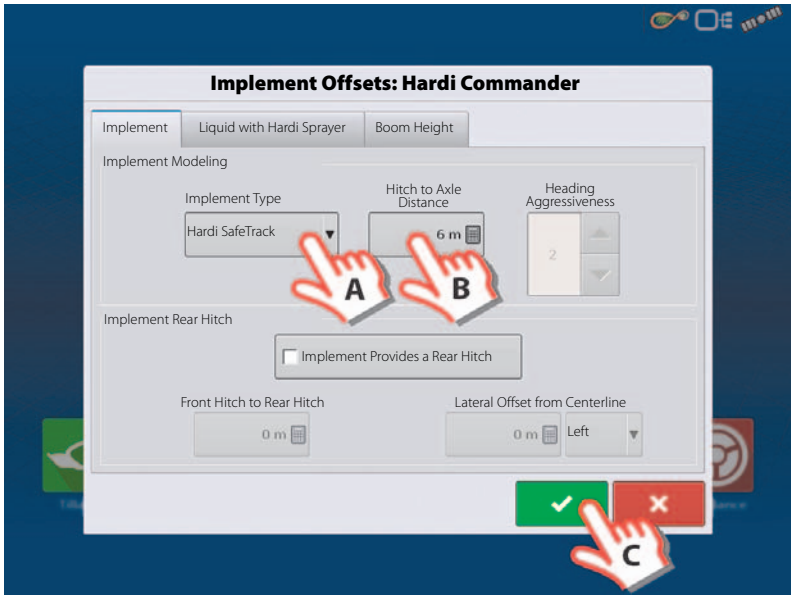
28. Trailer sprayers only:

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

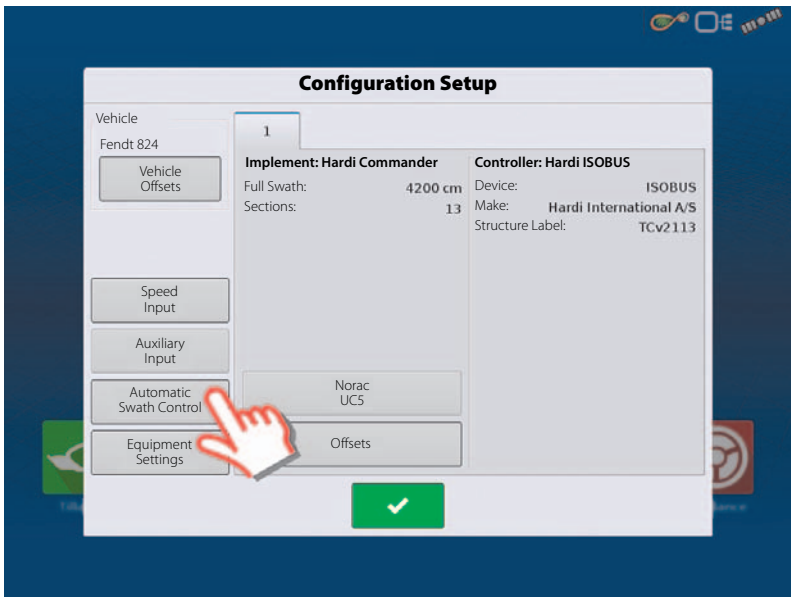
ATTENTION! For IntelliTrack sprayers, select the "Hardi SafeTrack" option.

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

    C. Press to confirm.



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



30. Automatic Swath Control options:

- Outside Boundary Option

  Select one of the two options to determine system behaviour 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

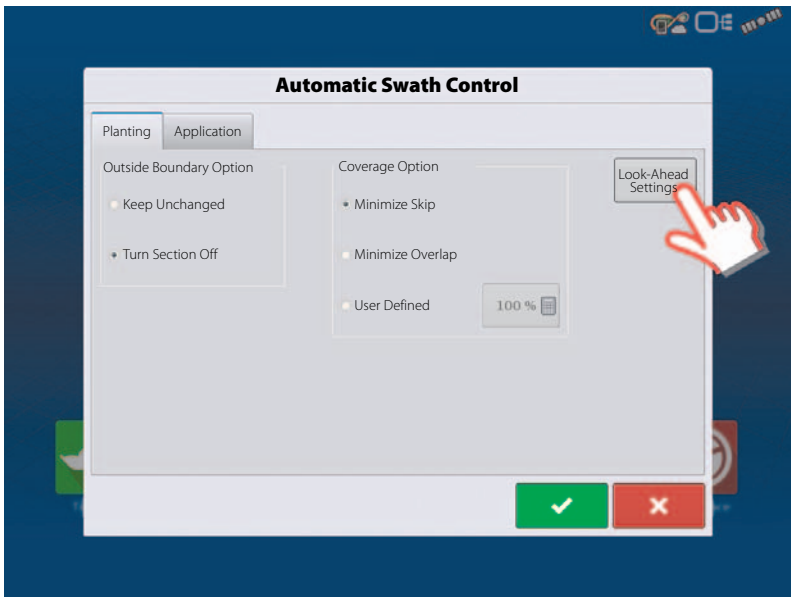
    Turns off the implement section when that section first enters your coverage area.

    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.



31. 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.

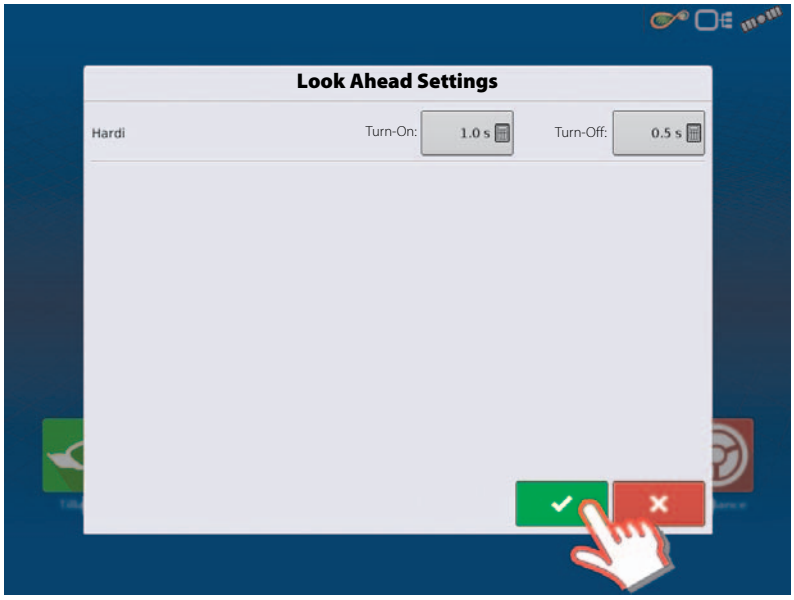
  Hardi default value: 1.0 second.

- 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.

  Hardi default value: 0.5 second.

  Press to confirm.

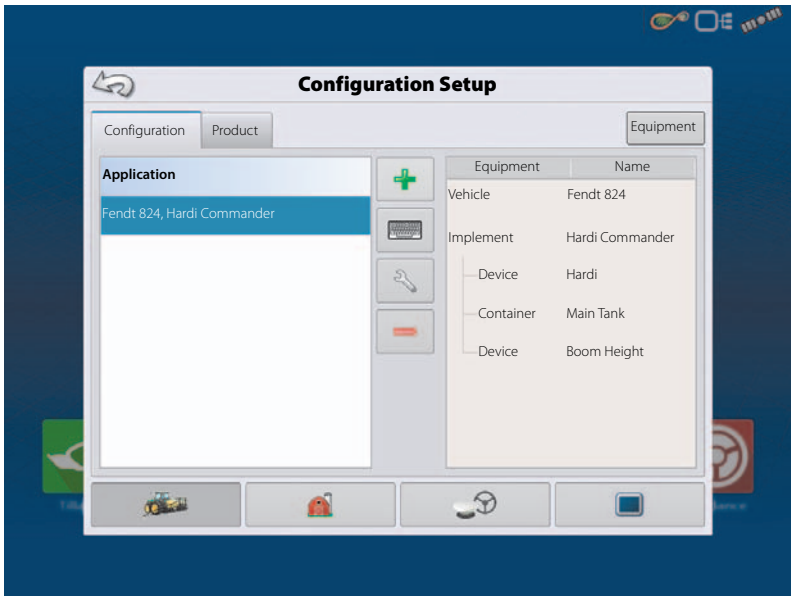


32. Overview of Configuration Setup with a Trailed sprayer as example:

    Vehicle: Fendt 824.

    Implement: Hardi Commander.

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

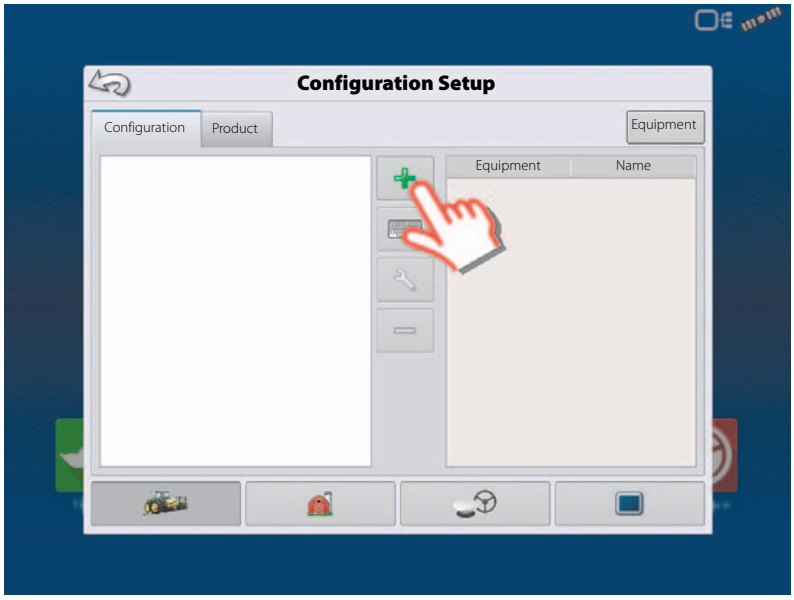


33. When returned to Configuration Setup screen, then press in order to continue with "Product setup" on page 68.

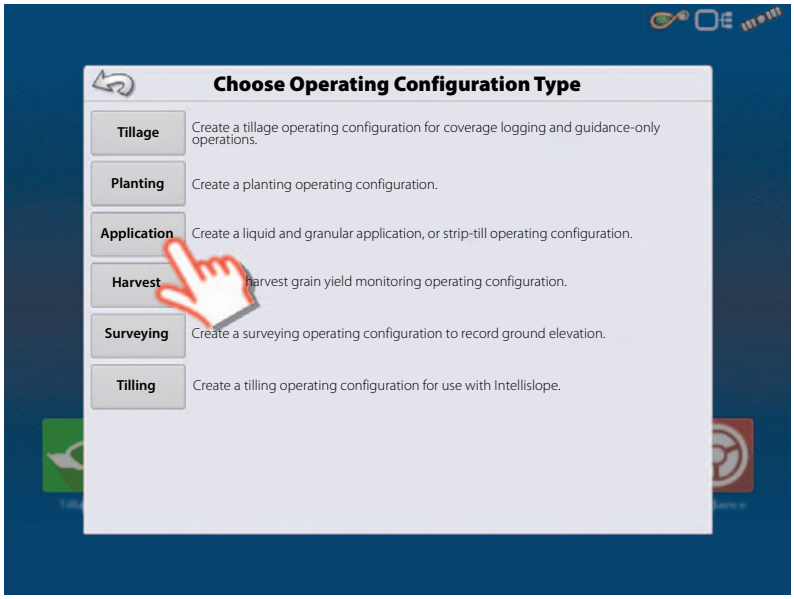
Configuration for Self-Propelled sprayers

1. At the HC 9600 Home Screen, press to enter the Configuration Setup.

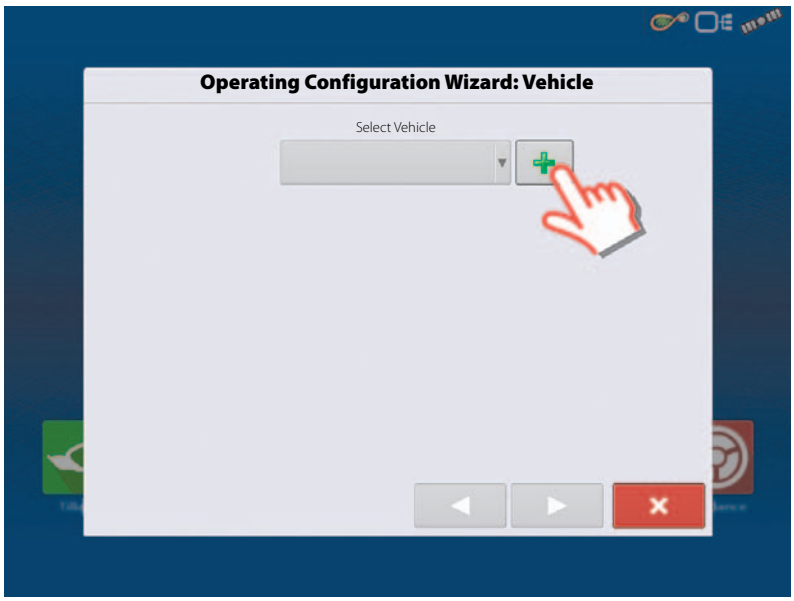
2. Press to add a Configuration.



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



4. Press to select a vehicle.

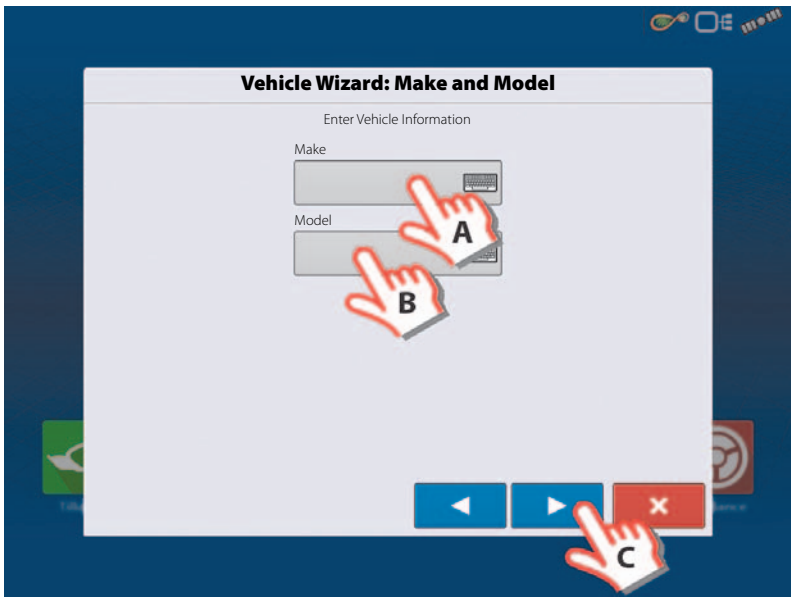


5. Select "Self-Propelled Applicator".

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.

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. Sprayer data are auto populated from the JobCom/C2C module.

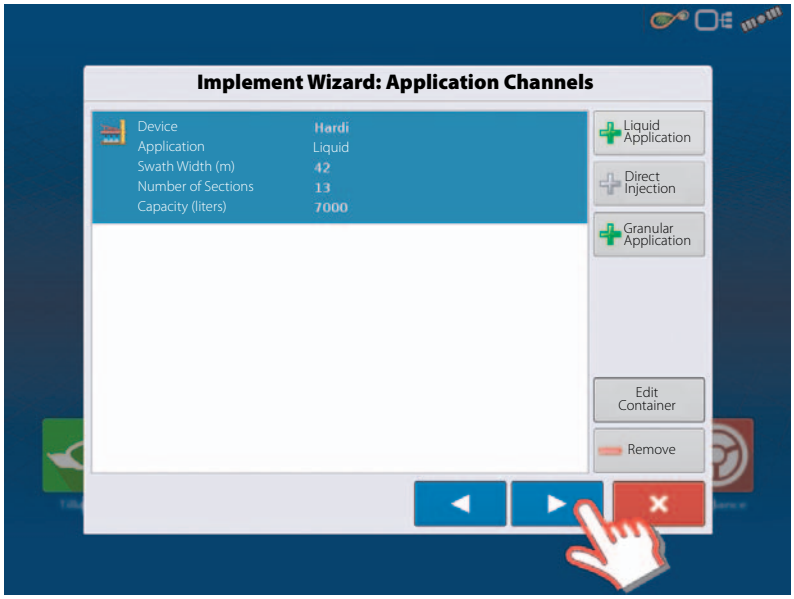
   Check that Swath Width (Boom Width), Number of Sections and Tank Capacity are correct.

NOTE! If this screen appear blank (no text highlighted with blue) no data could be obtained.

If the JobCom is not powered ON, then press ✖ to cancel the setup. Power On the JobCom and continue from step 15.

ATTENTION! The JobCom/C2C module has to be set up prior to doing this wizard. See "Before Setup" on page 48.

Press ▶ to confirm selection.

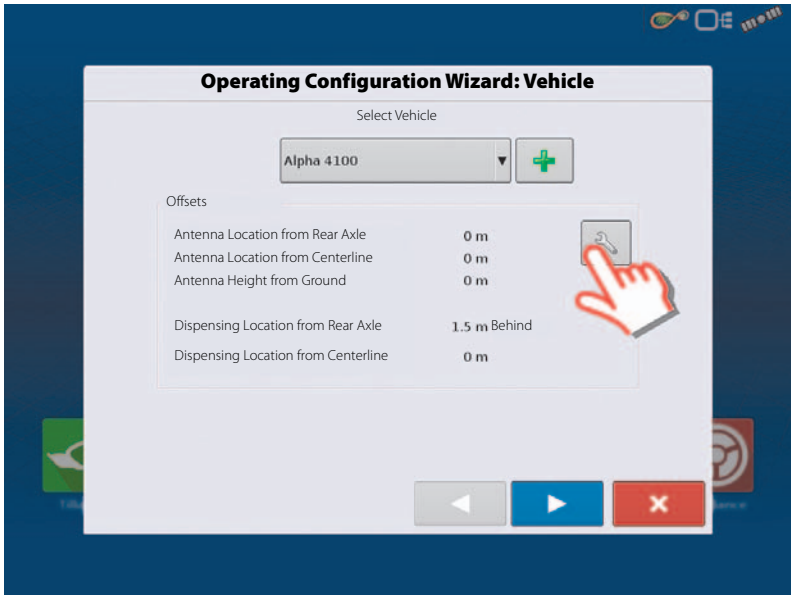


9. Additional devices:
   A. Press "Norac UC5" button to enable the use of AutoTerrain/AutoHeight/AutoSlant.
   B. Press ▶ to continue.

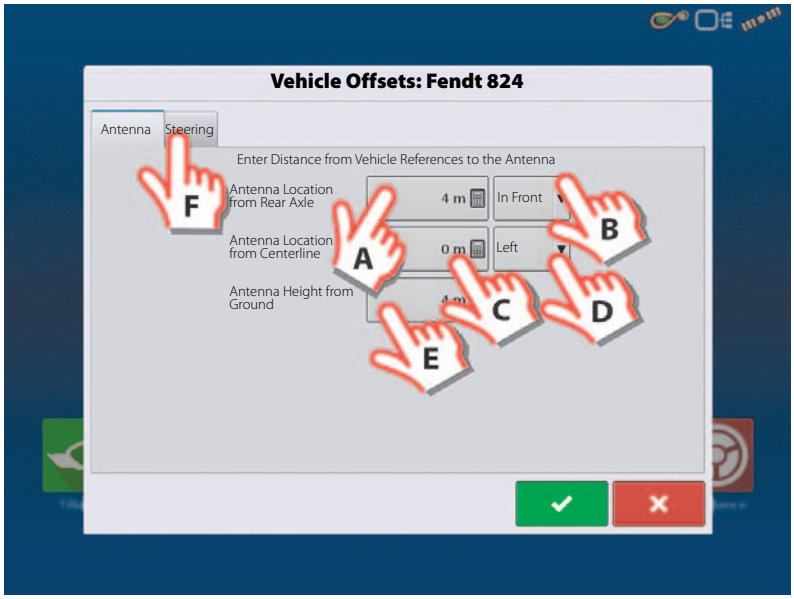
ATTENTION! If the "Norac UC5" is not enabled, the AutoTerrain/AutoHeight/AutoSlant will not be shown in the working screen.

10. Enter Vehicle Name:
    A. Press button to change name.
    B. Press to confirm name.

11. Press to enter values for Antenna Offsets.



12. 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 centre line.
    D. Select if the Antenna is to the Left or Right of the sprayers centre line.
    E. Press to enter Antenna Height from Ground.
    F. Press "Steering" to continue with Steering Type selection.



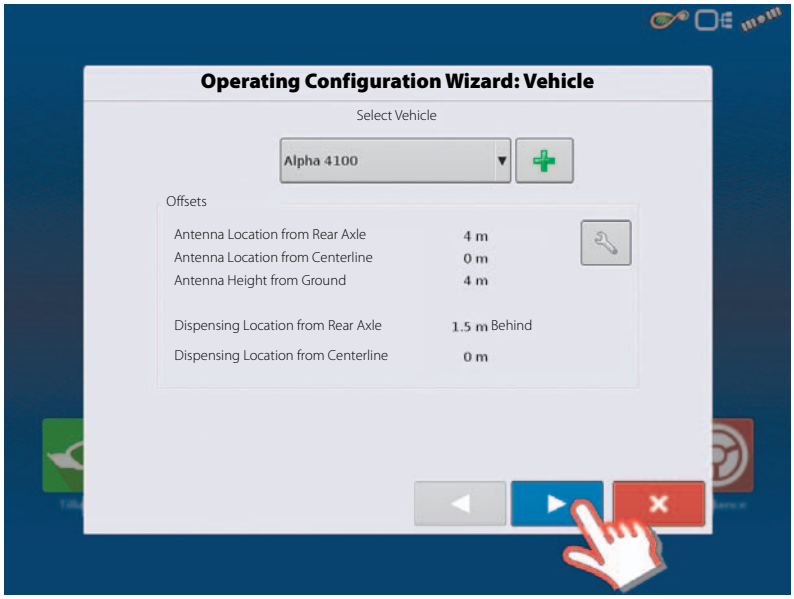
13. Steering Type:

    A. Press to select steering method to be used when spraying:

    "All Wheels" or "Front Wheels".

    B. Press ✓ to confirm selections.

14. Press ▶ to confirm the settings and continue.



15. 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 89.

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

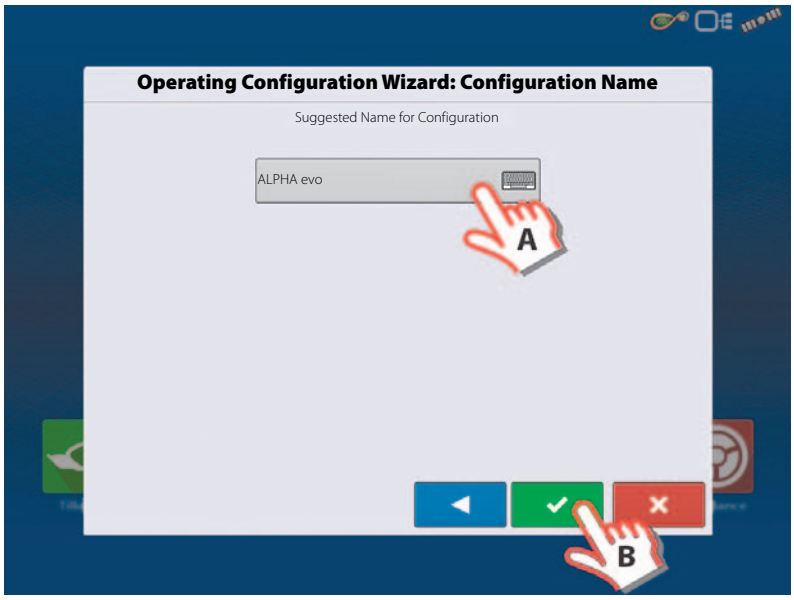
ATTENTION! No other source can be selected when Hardi is selected as primary source.

Press ▶ to confirm the selection.

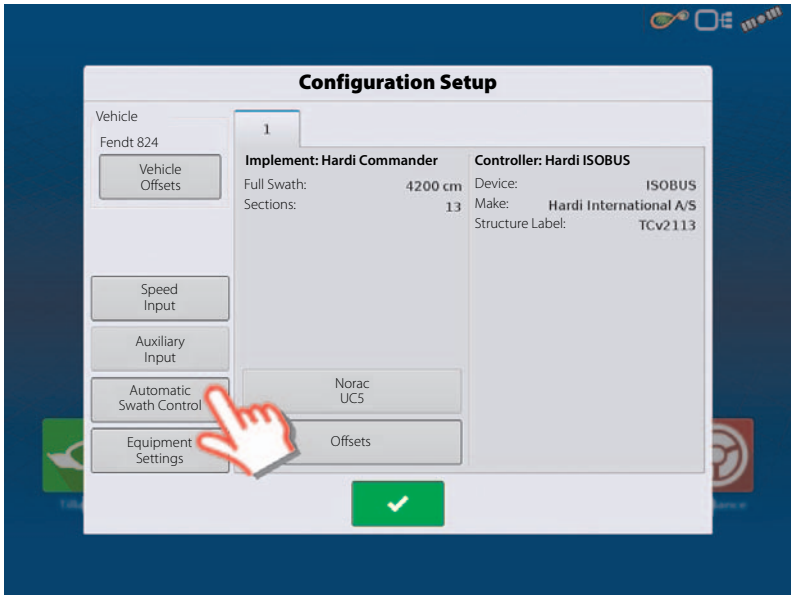
17. Suggested Name for Configuration:

A. Press ⌨ button to change name.

B. Press ✓ to confirm selection.



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



19. Automatic Swath Control options:
    - Outside Boundary Option

      Select one of the two options to determine system behaviour when a section exits a field boundary.
    - Coverage Option

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

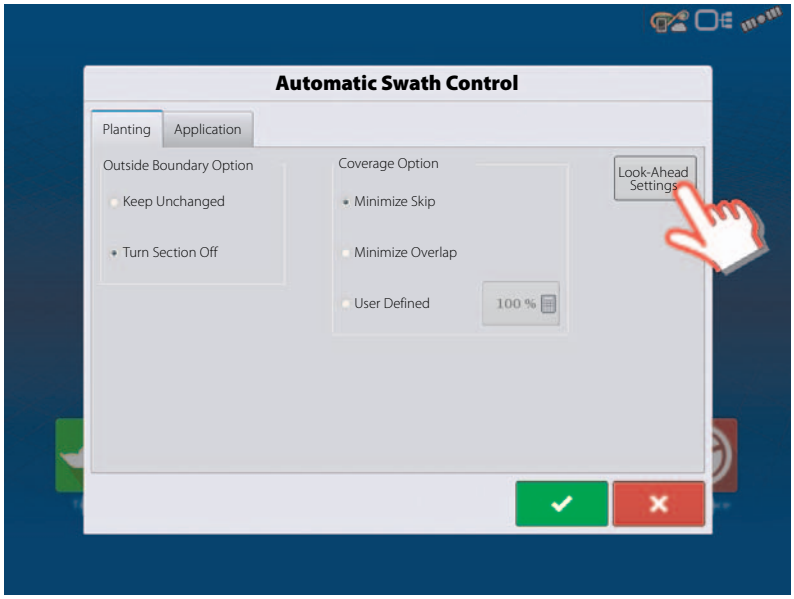
          Turns off the implement section after the entire section is fully inside your coverage area.

          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.



20. Look Ahead settings:

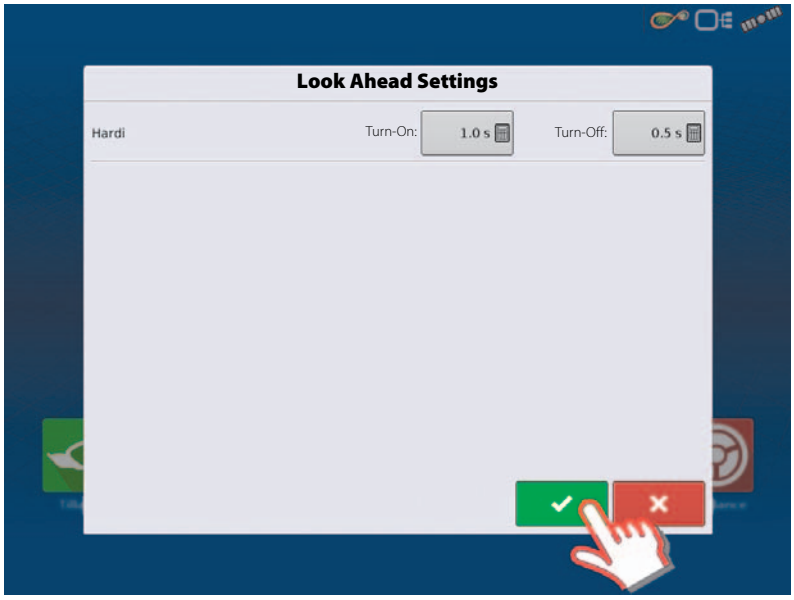
- Turn-On Look Ahead

  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.

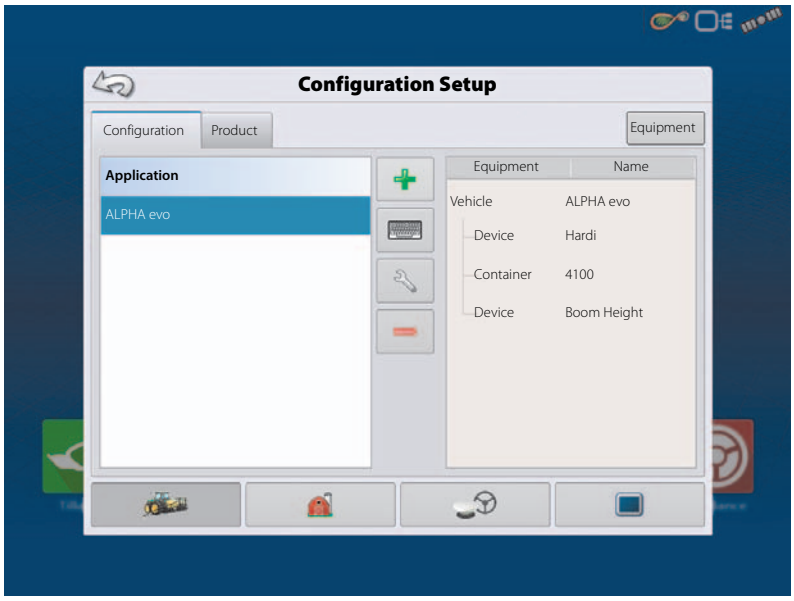


21. Overview of Configuration Setup:

  Vehicle: ALPHA evo

  - Device: Hardi
  - Container: 4100
  - Device: Boom Height

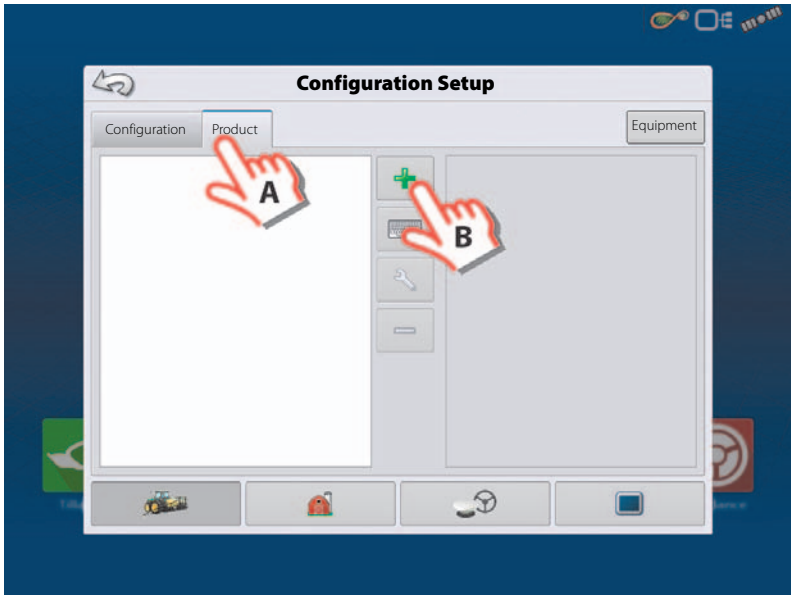
ATTENTION! A Self-Propelled sprayer will have no implement information.



22. When returned to Configuration Setup screen, then press in order to continue with "Product setup" on page 68.

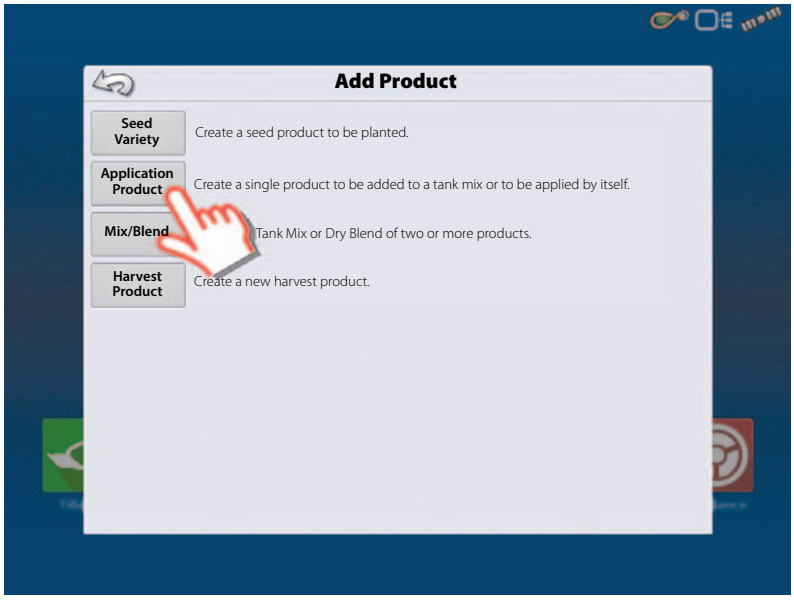
Product setup

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

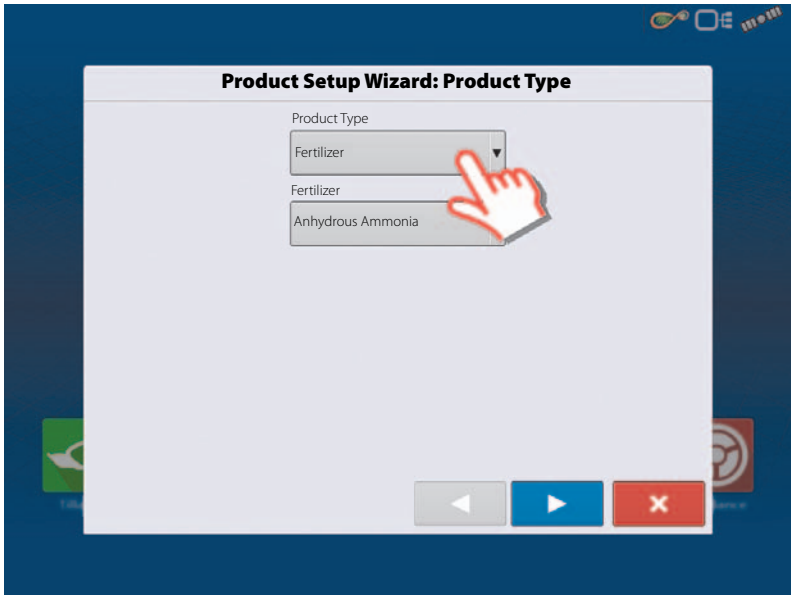


2. Select "Application Product" to create a single product or a carrier.

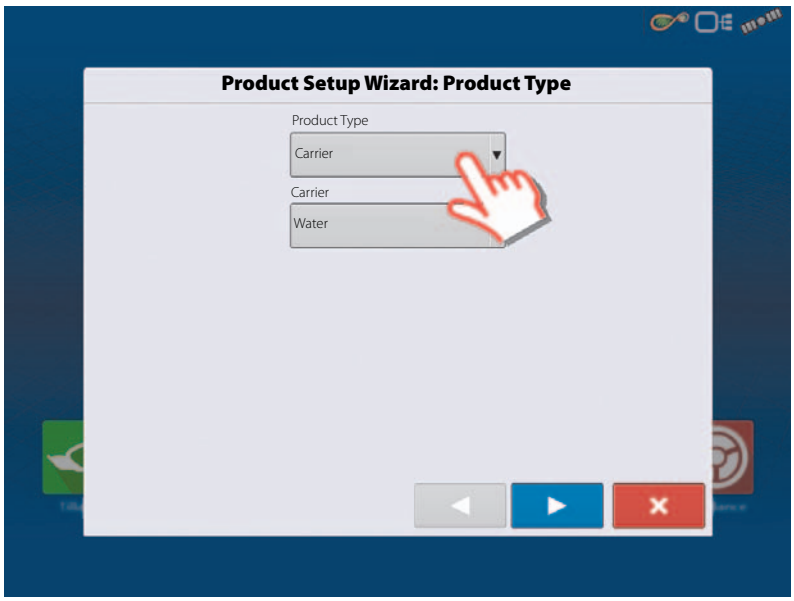
ATTENTION! This example will show setup with Water as Carrier.



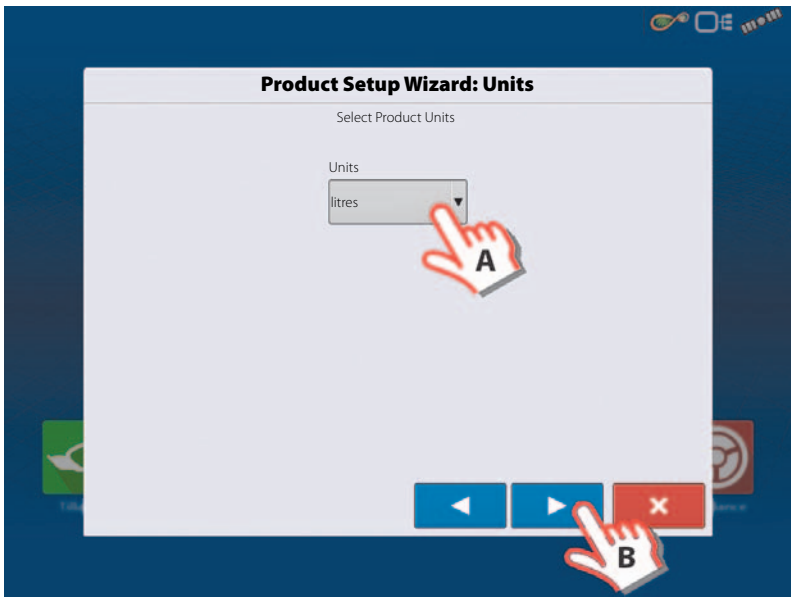
3. Press the drop down menu to select Carrier as Product Type.



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

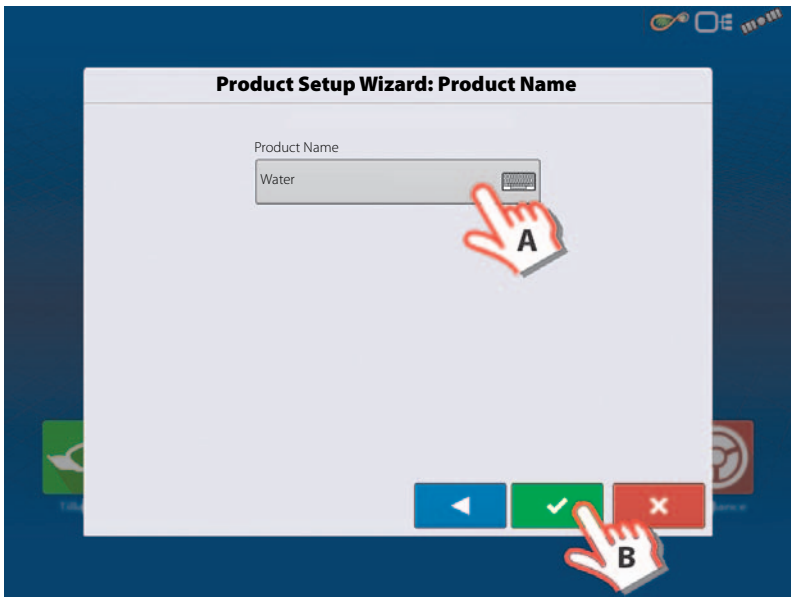


5. Select Product Units:
   A. Select litres as units!
   B. Press ▶ to confirm the selection.



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.

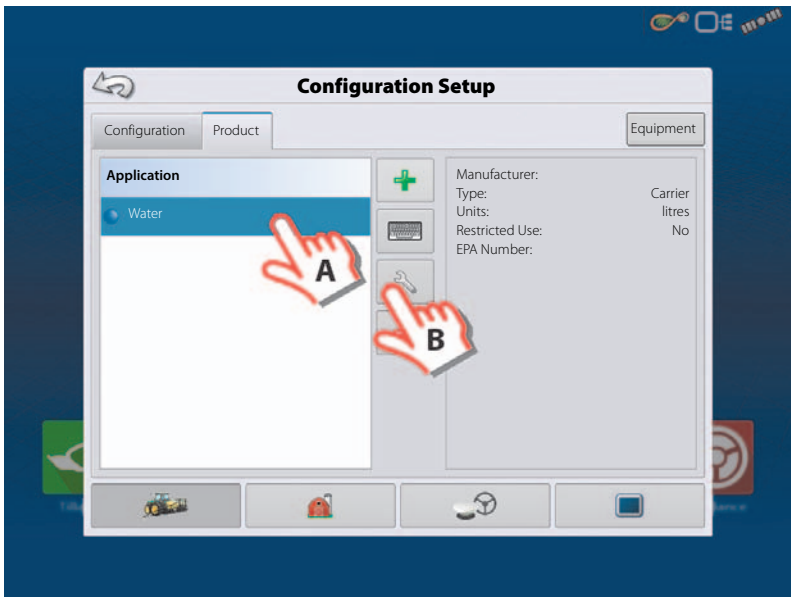


7. Application Water is now created.

   To edit the Legend Settings:

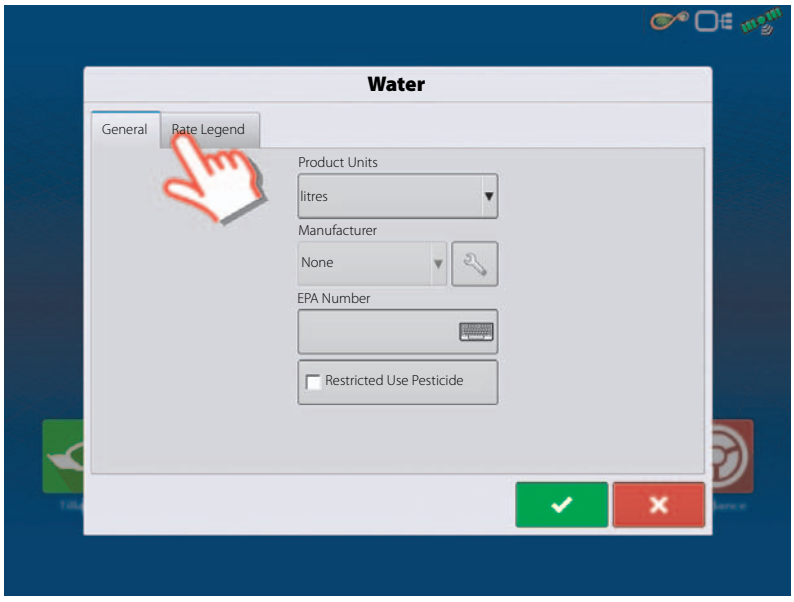
   A. Mark the product.

   B. Press .



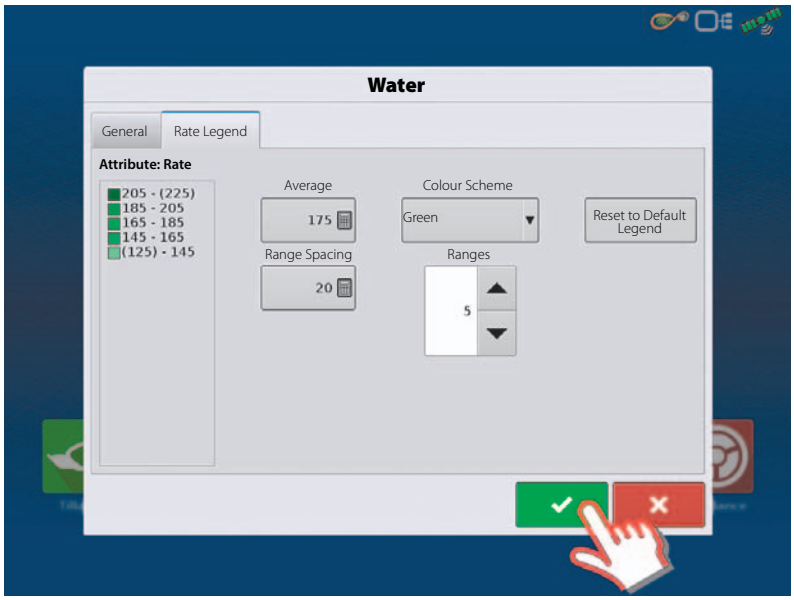
8. Configuration Setup window opens at "General" tab.

   Press "Rate Legend" tab to setup Legends.



9. The Legend Settings can be edited as necessary.

   Press to confirm and continue.



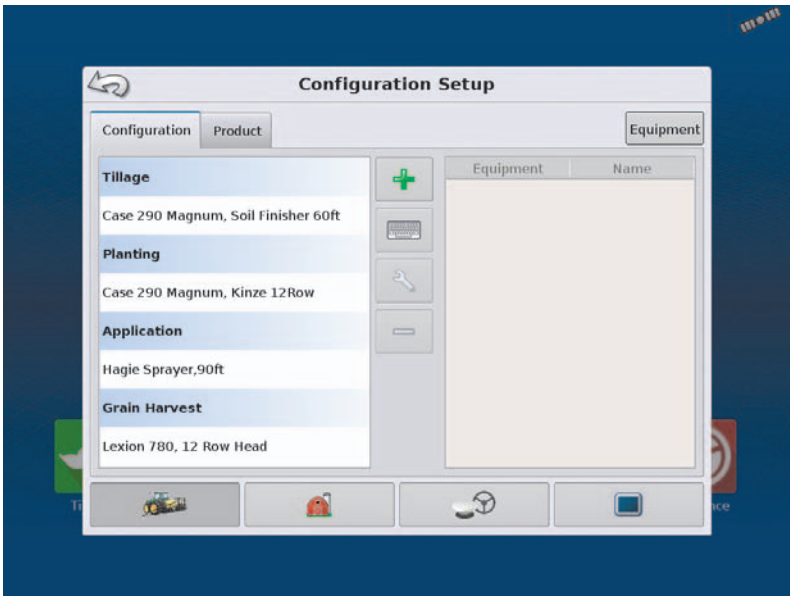
SETUP COMPLETED

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 156 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 72, as well as "Configuration Setup Screen" on page 151.

Management button.

Press to access and edit Grower, Farm, Field and Operator information. For more information, see "Management button" on page 74.

GPS button.

Press to adjust Guidance settings, GPS settings, and lightbar settings. For more information, see "General info" on page 181.

Display button.

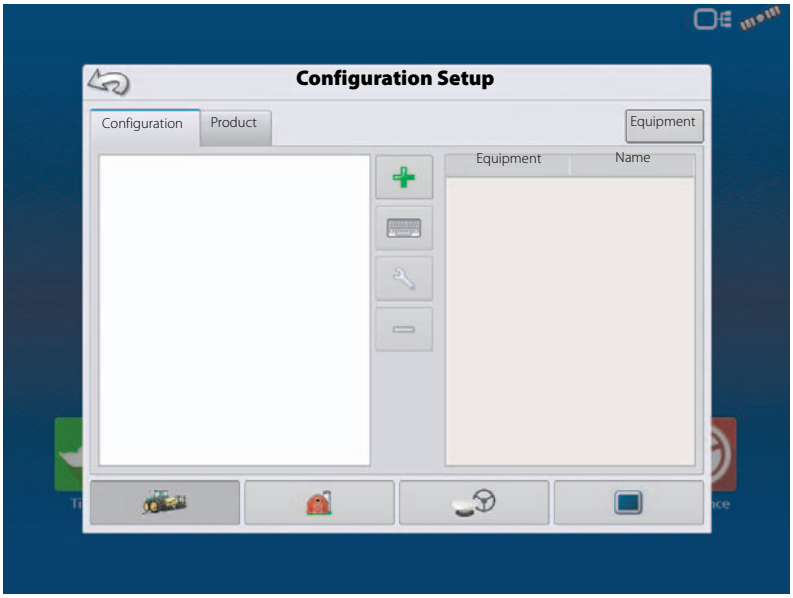
Press to adjust settings for Time and Date, brightness and volume settings, operating units, language, enable video, view features, and also create and restore backups.

Equipment Setup

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.



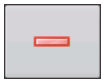
Press to add an operating configuration. A wizard takes you through the process of creating a configuration.

- When finished, the new configuration appears in the list on the left side of the screen.
- When you highlight the configuration, the equipment in the configuration are listed in the box on the right side of the screen.

NOTE! Information regarding configurations for specific operations is given in each operations feature user guide.

Press to rename the configuration.

Press to adjust configuration settings.



Press to remove a configuration.

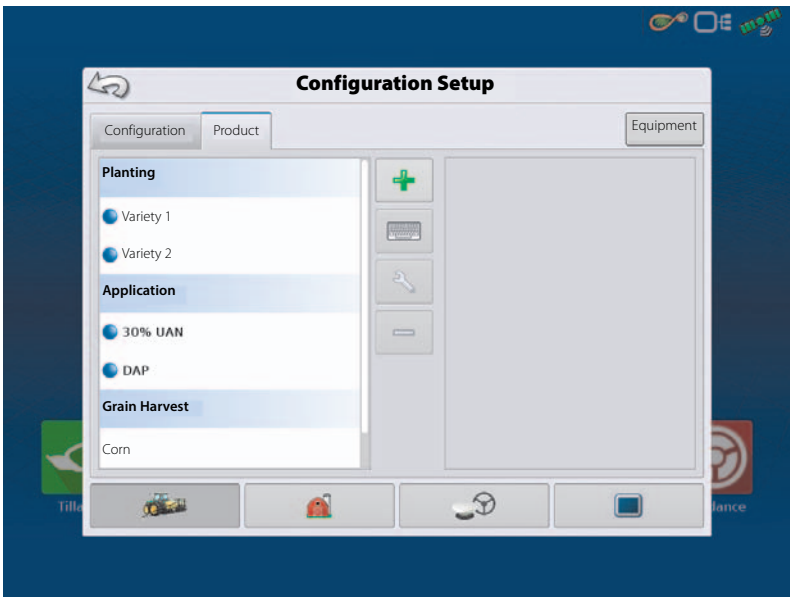
WARNING! When you remove a configuration all data logged with that configuration will also be removed! However, all log files will remain in memory until exported to the USB drive.

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

Product tab

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.

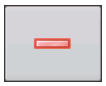


Add button

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.

Press to rename the product.



Press to remove a product.

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

Application Settings

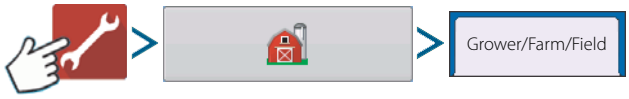
Edit Info button	Press to edit the following information for the highlighted product in the Product List. • Product Units • Manufacturer • EPA Number • Check box for restricted use pesticides
Edit Legend button	Press to change the legend settings listed below. • Average • Range Spacing • Colour Scheme • Ranges • Reset to Default Legend

For more information, see “Legend Settings” on page 151.

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



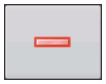
Grower

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.

Press to add a Grower.

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

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

 Press to remove a Grower.

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

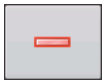
Farm and Field

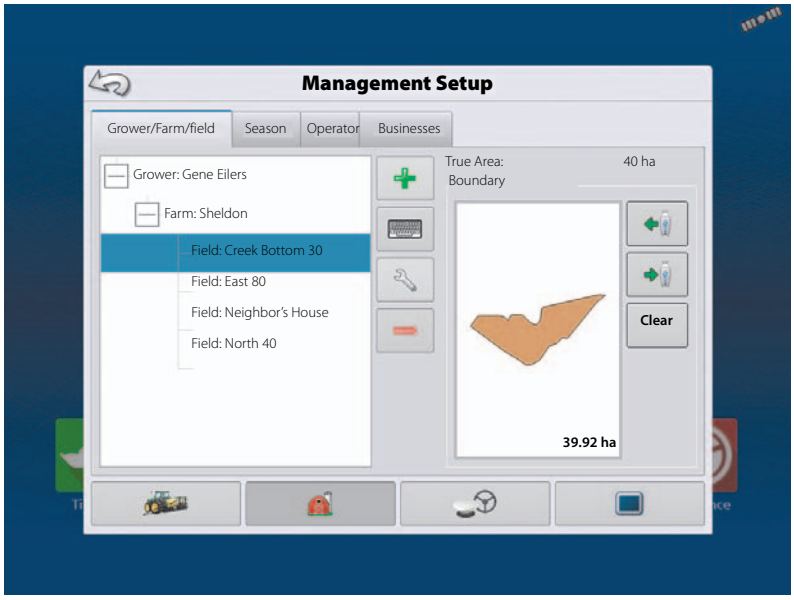
In the display, farms are subdivided into fields. You can associate Field names with a particular Grower. If the display will be used for multiple Growers, enter each Grower business name and associate the field names with the correct grower when the fields are set up within the system.

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.

Press to add a Field.

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

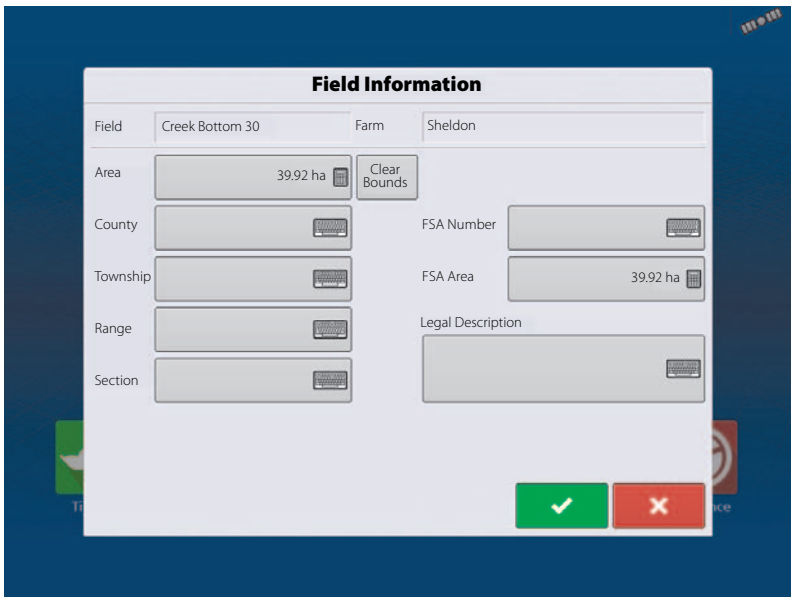
 Press to remove a Field.



Edit the Farm and Field information by highlighting that name and pressing button.

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
- Area

  Shown in the total hectares (acres) of the field. Used to calculate area remaining in 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 centre 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.

Importing and Exporting Field Boundaries

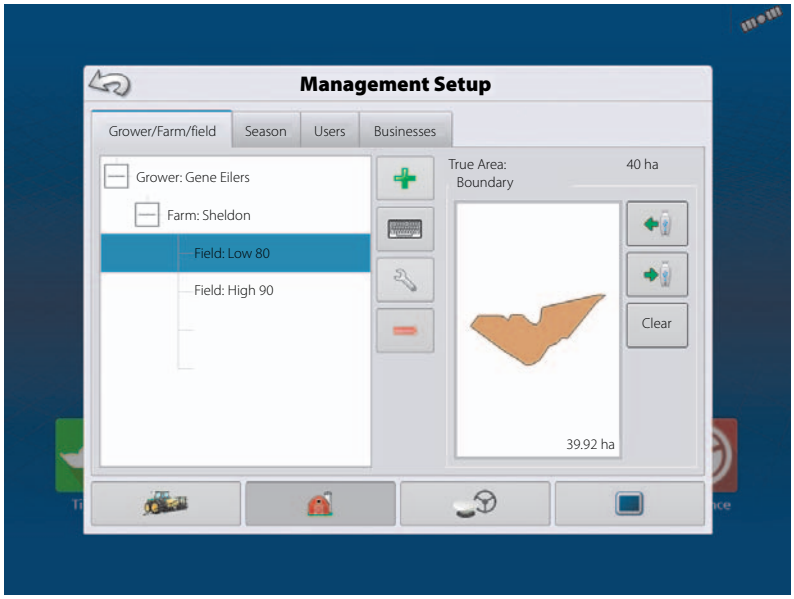
Boundaries can be created with the display or imported from desktop GIS software. Any boundary files present in the display can also be exported for use in desktop mapping software.

NOTE! For more information on creating boundaries, see "Create Boundary" on page 154.

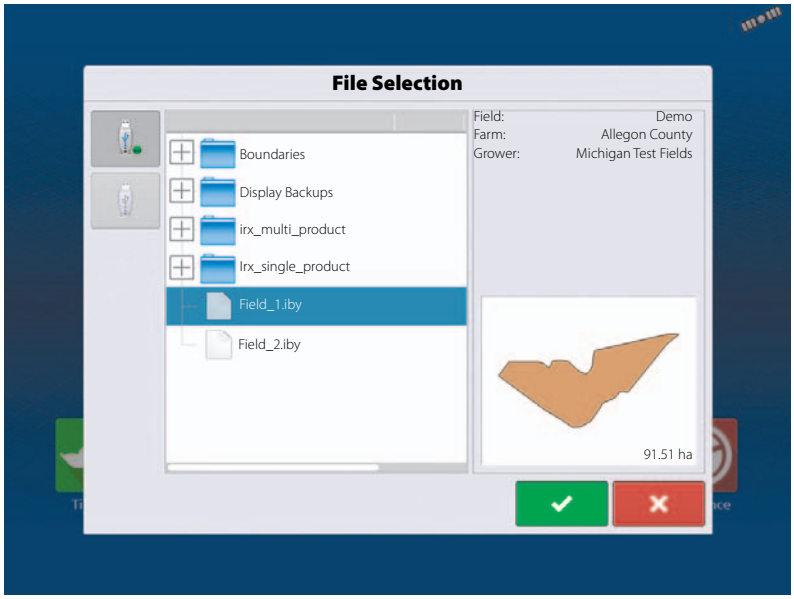
To import a boundary from the USB drive, first go to the Setup Field tab, highlight the correct field in the Farm/Field list and press the USB Import button.

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 198.



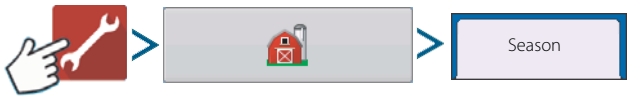
Press to complete the import process.



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



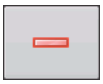
A season is defined as the calendar year that the crop will be harvested. A season has a start and an end date. Creating a season and setting it to active is required prior to the system logging any data.

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.

If a user would like to remove logged data from the display they can delete a season from the display. Before deleting a Season make sure that all logged data has been properly archived within management software or AgFiniti Mobile.

- Press to add a Season.
- 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.
-  Press to remove a season.

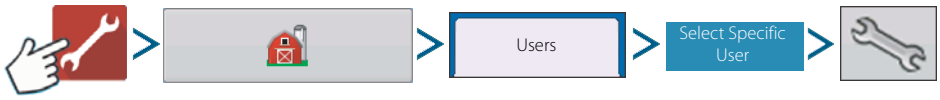
Users tab

User tab allows user to add, modify, or delete users from the display.

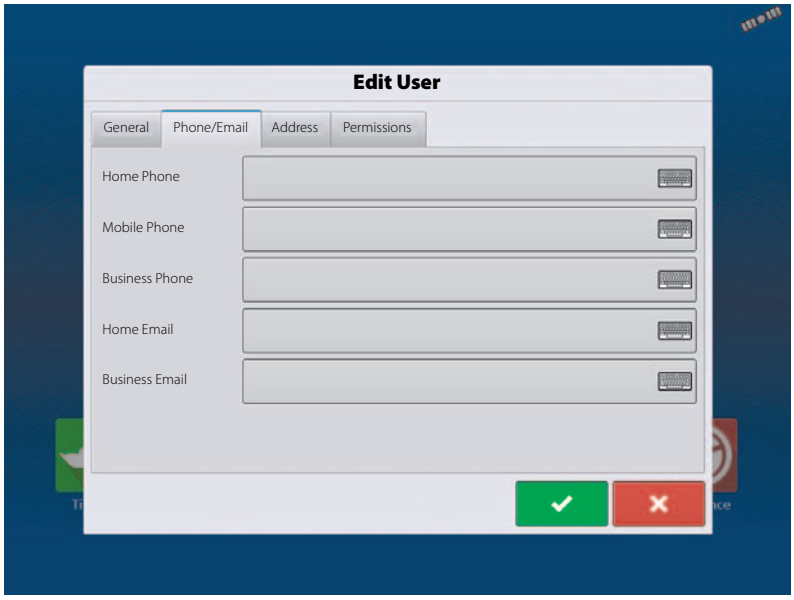
Add a user

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 39. 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 unsecured unless each manager 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. 5. Press to accept.

Edit User Profile



"Edit User" screen allows user to edit information originally entered when profile was added. Edit button also allows access to more phone, email, and address information.



General tab

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

Phone/Email tab

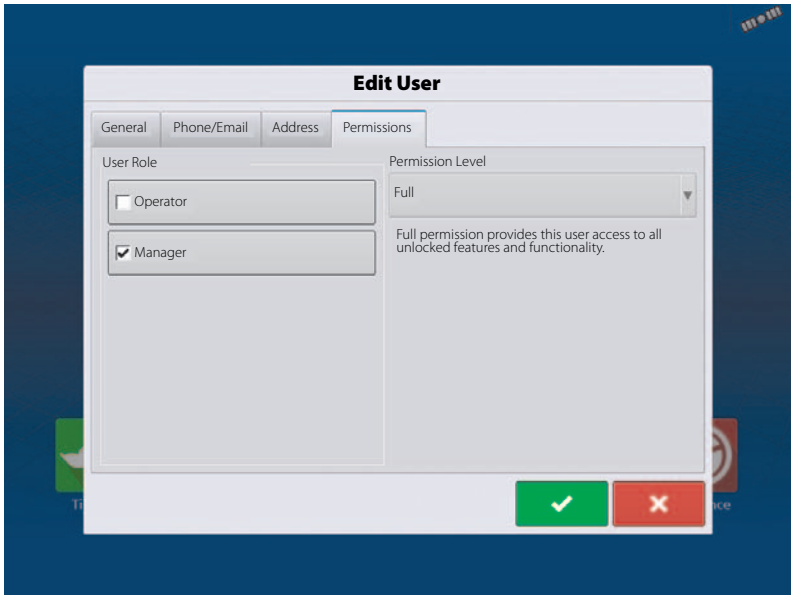
- Home Phone
- Mobile Phone
- Business Phone
- Home Email
- Business Email

Address tab

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

Permissions tab

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 data transfer 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

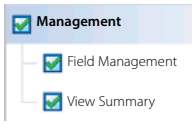
  Limits Guidance options to:

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

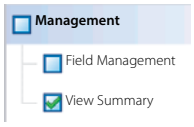
Custom Permission

Can allow or deny the following options:

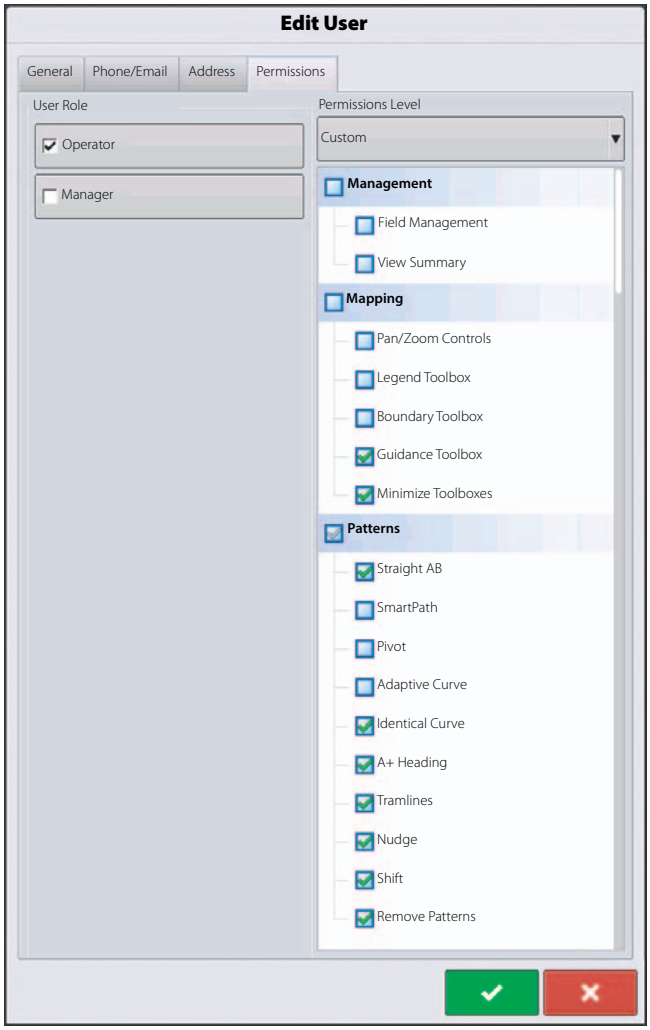
- Management screen
- Pan/Zoom controls
- Legend Toolbox
- Marks Toolbox
- Boundary Toolbox
- Guidance Toolbox
- Minimize Toolbox
- Each individual guidance pattern
- Ability to remove guidance patterns



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.



The Home and Map screen will appear different depending on how you assigned user permissions. For setting up users with permissions see "Users tab" on page 38.

Basic Permissions - Home screen

- Summary screen locked.
- Setup and Data Transfer 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.

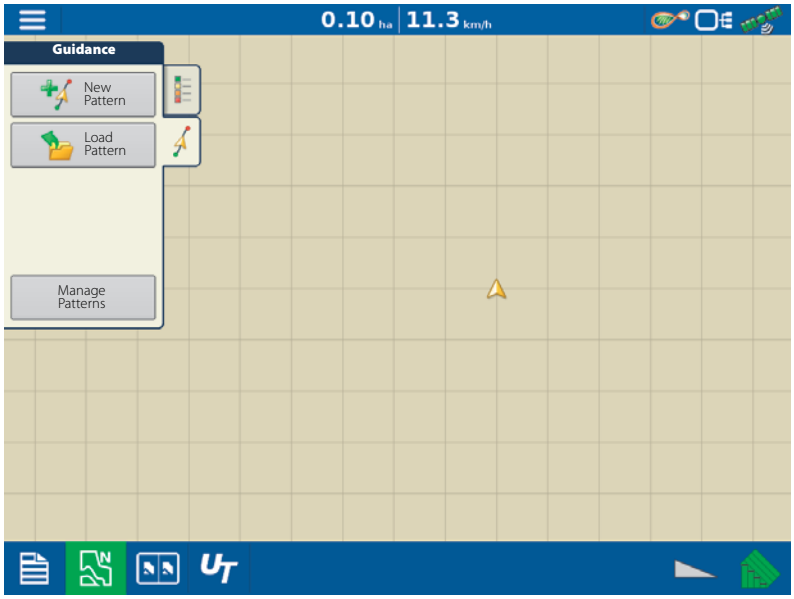
Full Permissions - Home Screen

- Summary screen button is accessible.
- Setup and Data Transfer are locked.
- A manager can access these buttons by pressing the button and inputting their password.
- Configuration is locked when field operation is started.

Basic permission - Map screen

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)

Accessing Data Transfer

Data Transfer

A. Select Manager from drop-down menu. Press ✓.

B. Enter password. Press ✓.

Now have complete access to the USB functions:

- Networking
- AgFiniti Login
- 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:

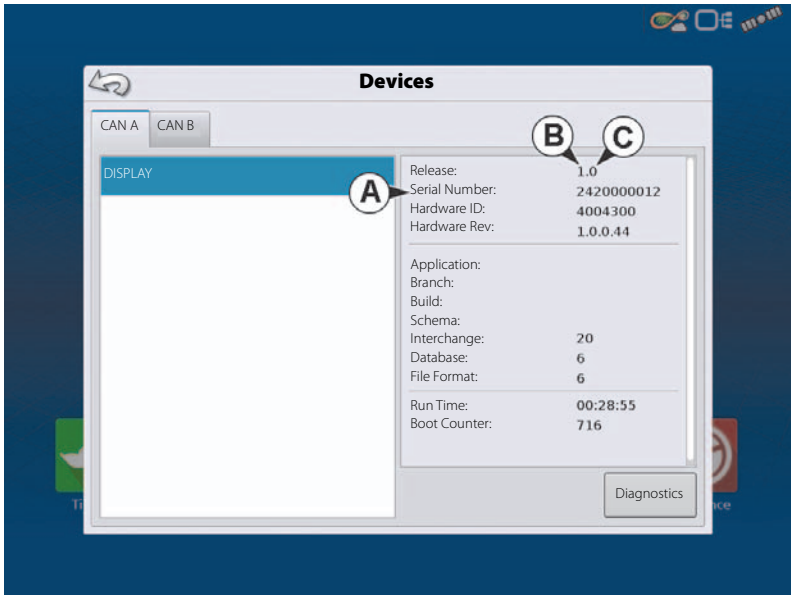
A. Display serial number

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?

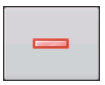
A display does not need to be locked with a password. The display can be operated without passwords. Operators can also be setup with limited or customized access without passwords.

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.

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

Display Button

The Display screen contains the following tabs:

- General tab

  Displays settings related to time, date, display screen settings, operating units, enabling video input, and ISOBUS settings. For ISOUBUS settings "Enable Universal Terminal and Task Controller" on page 45.

- Display tab

  Setting up and make any needed edits to the owner personal information.

- Features tab

  Lists unlocks for display.

- AgFiniti tab

  Access AgFiniti account settings and options. See "AgFiniti" on page 39.

- Advanced tab

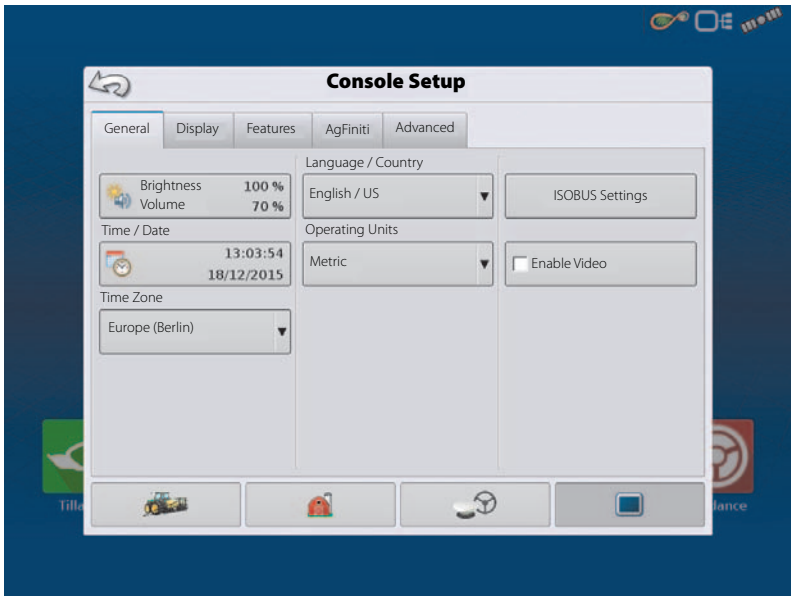
  Includes information related to log files and system backups. See "Display Backups" on page 38.

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 ✓.



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.

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

- 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 8600/9600 display decides the language in the Universal Terminal (JobCom). If the selected language in the HC 8600/9600 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 8600/9600.

- Operating Units

  Select either Imperial or Metric.

- Enable Video

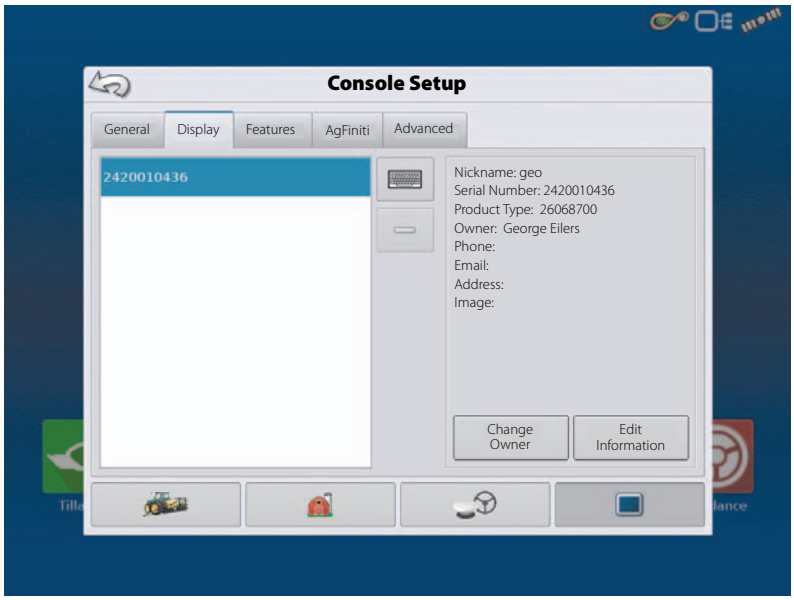
  Enables input from up to four video cameras.

- ISOBUS Settings

  Enables Universal Terminal and Task Controller. See "Once a Universal Terminal has been enabled will appear in the task bar." on page 45 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.



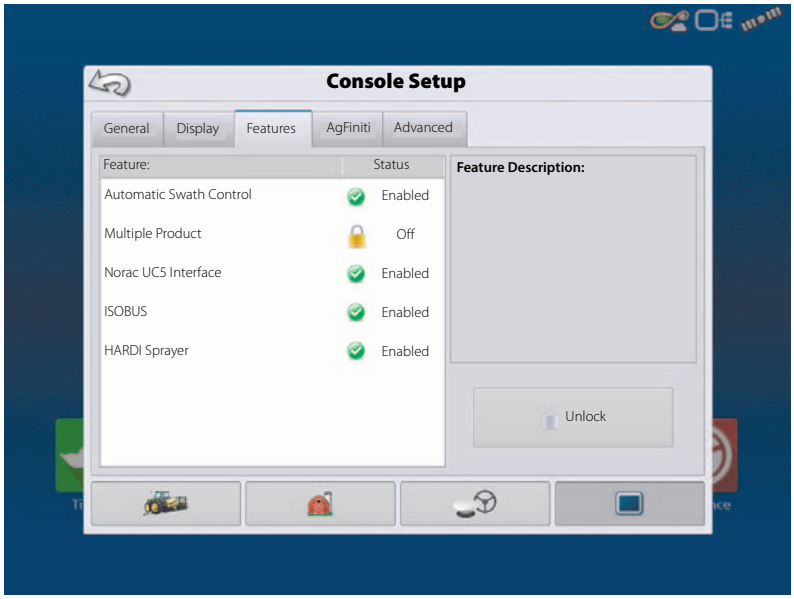
- Nickname
- Serial Number
- Product Type
- Owner
- Phone
- Email
- Address
- Image
- Change Owner
- Edit Information

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.

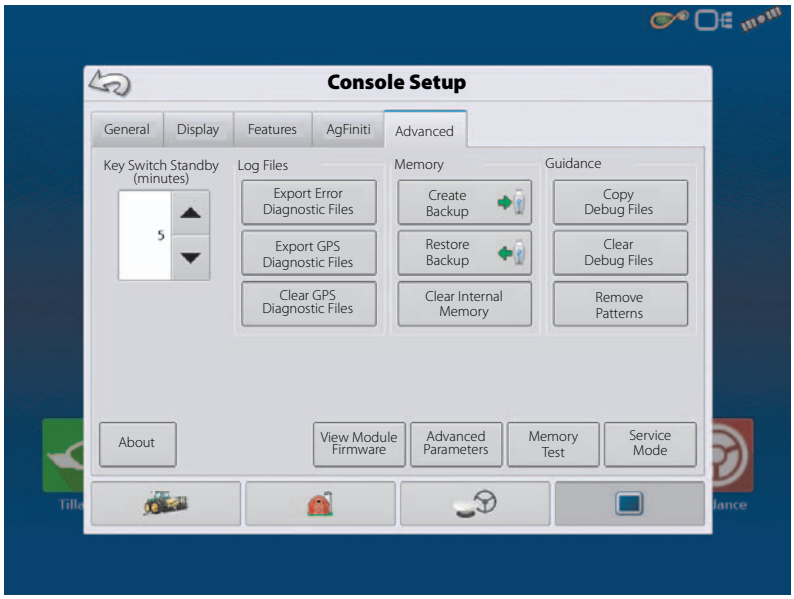
ATTENTION! Features used with HARDI sprayers are always enabled.

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. The display will switch into standby mode and will appear to be shut off; however the power light will change to an amber colour.

Pressing the touch-screen while it is in standby mode will immediately turn the screen back on again. For this feature to work, the display must be connected to switched power.

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-coloured 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.

Memory

Adjusts information stored in the display's internal memory.

- 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 .ibk3 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.

WARNING! Once you clear the system's internal memory, this information is deleted and cannot be restored unless a backup has been made.

View Module Firmware

Displays the Module Firmware Management screen, which is a list of all firmware modules and firmware versions that are available for the display.

NOTE! The Module Firmware Management list includes module firmware that you may not be running.

- Import

  Imports any firmware stored on the USB drive into the display memory.

- Direct Upgrade

  Upgrades an individual module directly from the USB.

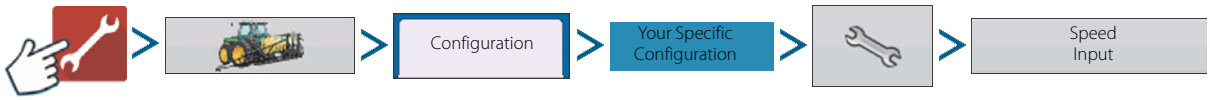
NOTE! Pressing the Remove button does not remove firmware from the module itself. It merely removes the upgrade file from the display.

Remove Patterns

NOTE! Pressing this button permanently erases all guidance patterns from the display's memory.

Settings

Speed Input Settings



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

ATTENTION!

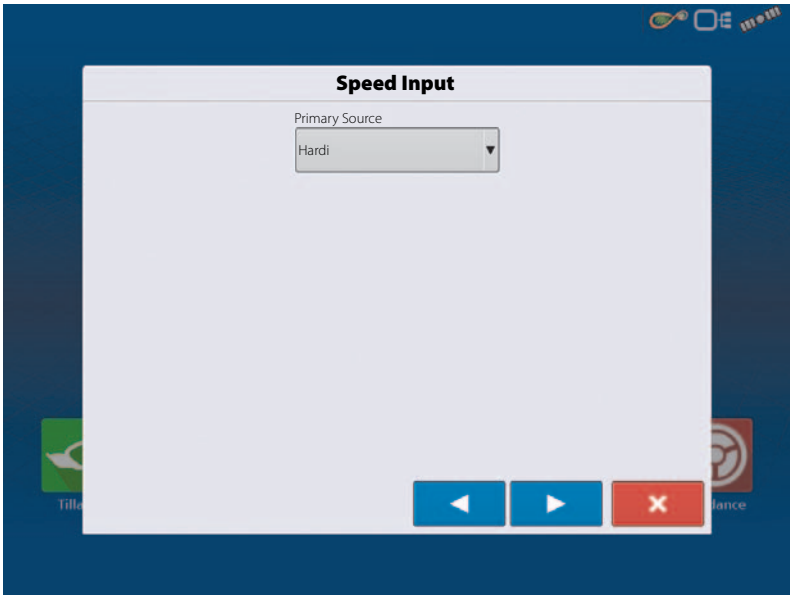
- The Universal Terminal has to be setup to "Sprayer speed". See "HC 6500/ISOBUS VT" instruction book.

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.

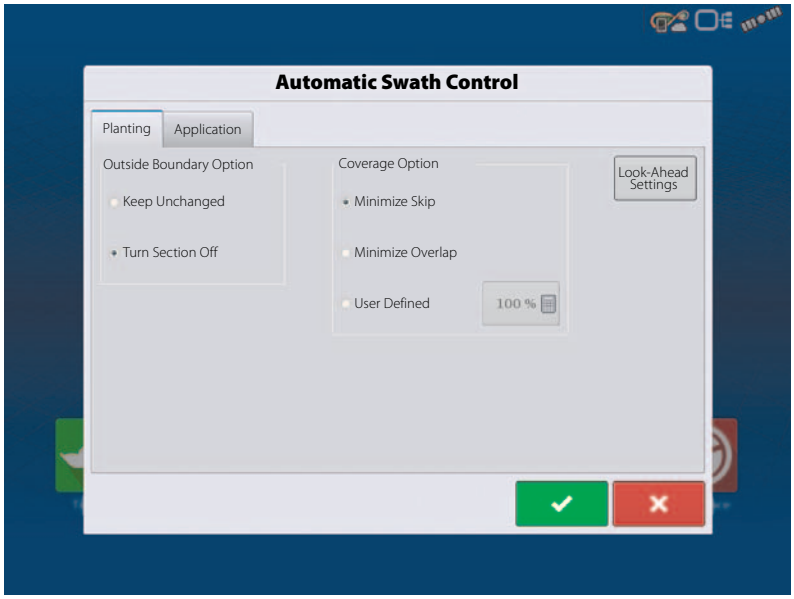
ATTENTION! When Hardi option is selected as Primary Source, you may use the VT speed calibration (menu 3.1).

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

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.



Automatic Swath Control can be toggled on/off by the AutoSwath button on the lower right-hand side of the Map screen.

To adjust AutoSwath settings, go to the Configuration Settings 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 behaviour 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

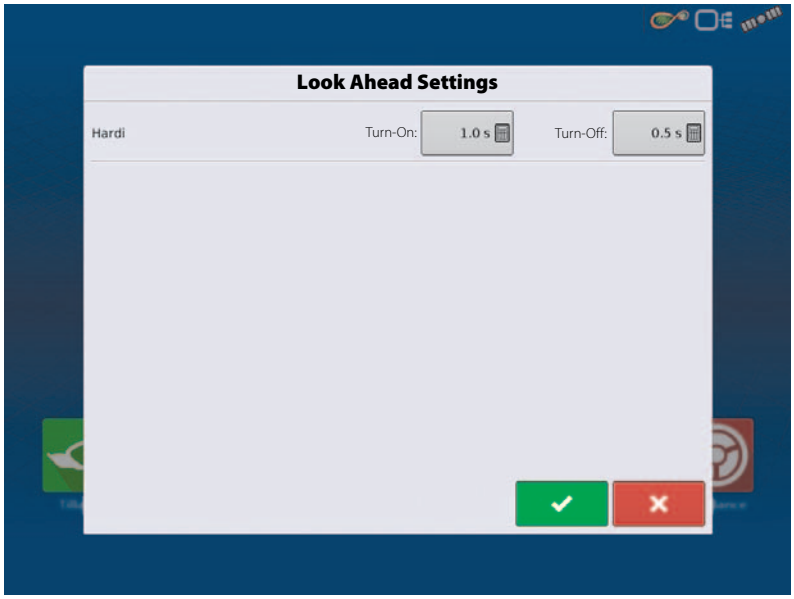
    Allows you to choose what percentage of the implement section is within the coverage area before that section turns off. For example, if you choose 50%, then the section will switch off when half of it is within your coverage area.

- Turn-On Look Ahead

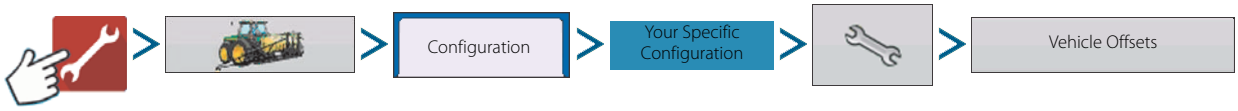
  Determines how far ahead the system looks to turn the sections back on. This compensates for delay in the system when the sprayer sections are turned on.

- 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.



Vehicle Offsets



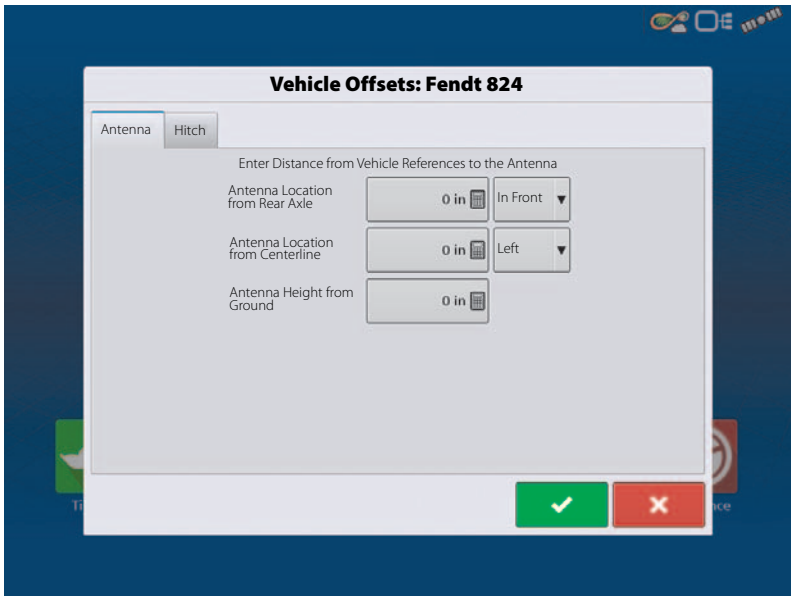
When the process of setting up a Vehicle is completed by using step-by-step procedure in "Installation" on page 31, you can later re-configure vehicle offsets.

Vehicle offsets define where the machine's rear axle and hitch is in relation to the GPS antenna. These settings are used for accurate mapping and AutoSwath.

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 centre line of the vehicle to the position of the GPS antenna.

  Select LEFT or RIGHT to indicate the position from the vehicle centre line.

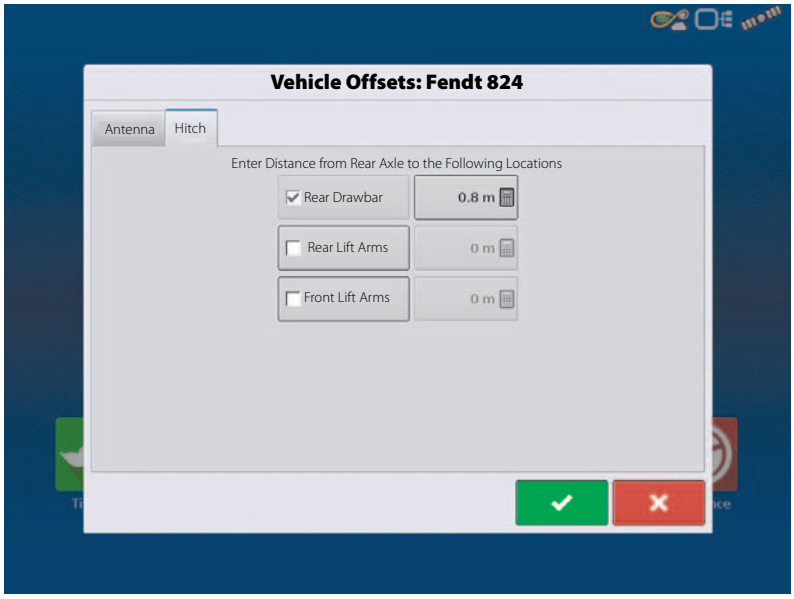
- Measure and enter the vertical height of the antenna above the ground.

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.

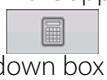
Press to enter these values in if using the hitch point.



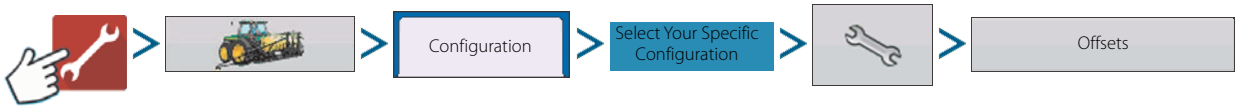
NOTE! Accuracy when measuring for a specific setting is essential to ensure proper machine performance.

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.

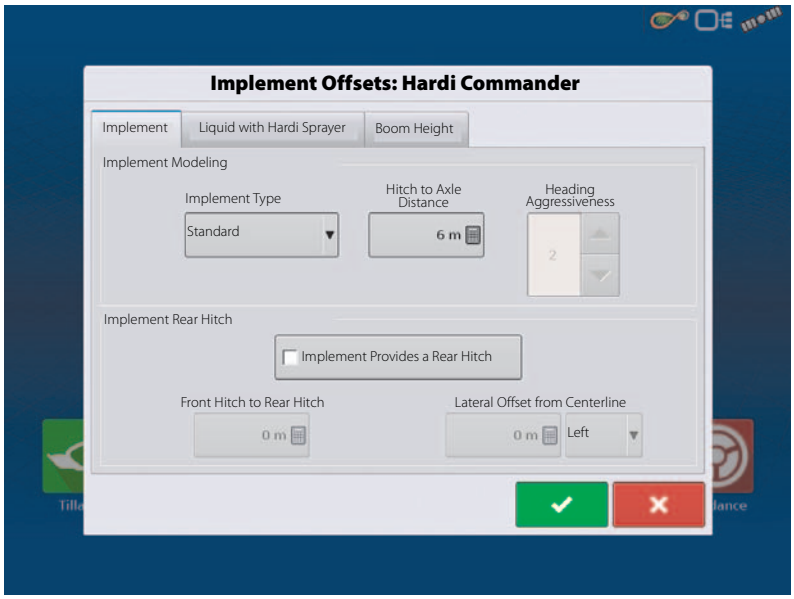
Swath Section Offsets



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

- Implement tab.
- Liquid with Hardi Sprayer tab.
- Boom Height tab.

Implement tab



Implement Modelling:

Implement Type:

- Standard
- Hardi SafeTrack

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

Hitch to Axle Distance:

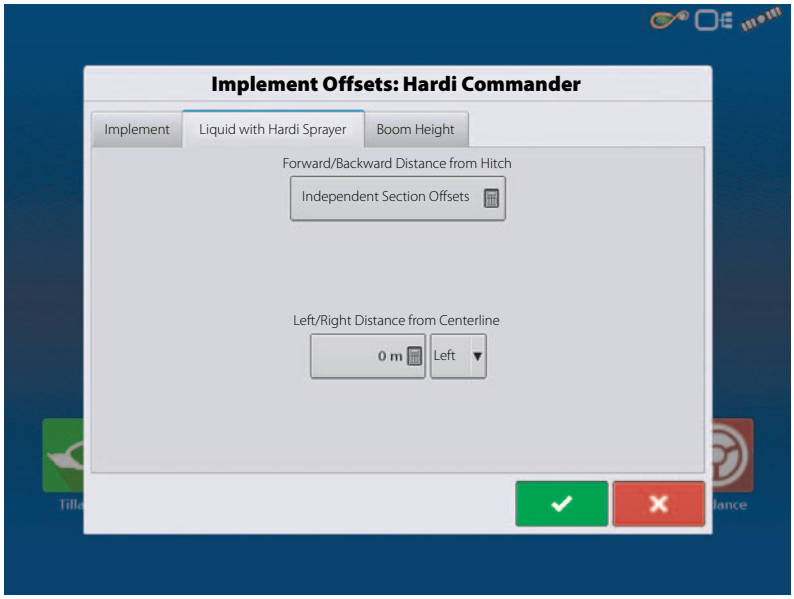
Press to type in value.

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

Implement Rear Hitch:

Here is no relevant settings for HARDI sprayers. Option should remain unchecked.

Liquid with Hardi tab



Forward/Backward Distance from Hitch:

- Set distance between the hitch eye and the nozzles.

Left/Right Distance from centre 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 Height tab

Forward/Backward Distance from Hitch:

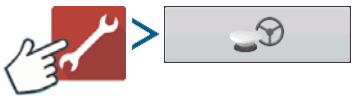
- Set distance between the hitch eye and the nozzles.

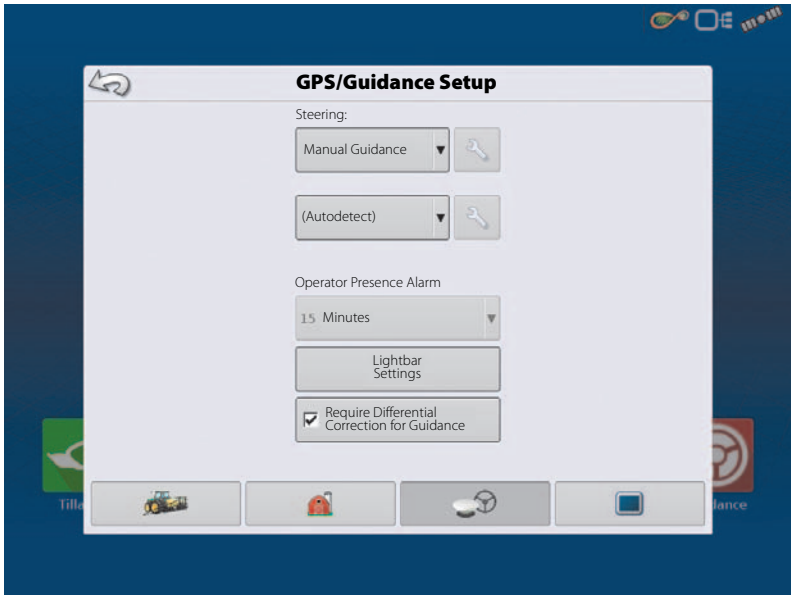
Left/Right Distance from centre line:

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

GPS Guidance/Steering Control

Setup





- Steering
  - Manual Guidance

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

    Integrated steering system that can be used with Self-Propelled sprayers and as optional equipment for tractors.
  - OnTrac3

    Assisted steering that is mounted on a machines steering wheel.
  - SteerCommand

    Integrated steering system that can be used with Self-Propelled sprayers and as optional equipment for tractors.

ATTENTION! Pressing the next to the Steering options opens the guidance system settings for the selected guidance system.

- Receiver

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

ATTENTION! Pressing next to the Receiver options opens the selected receiver's specific settings. Populated settings vary from one receiver model to the next.

- Operator Presence Alarm

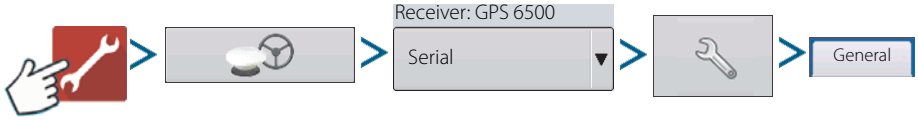
  The Operator Presence Alarm disengages guidance control if the operator does not have any interaction with the display for a specified period of time. Use the dropdown menu to specify the period of time before guidance is automatically disengaged.
- Lightbar Settings

  For more information, see "Lightbar Settings" on page 118.
- Required Differential Correction for Guidance

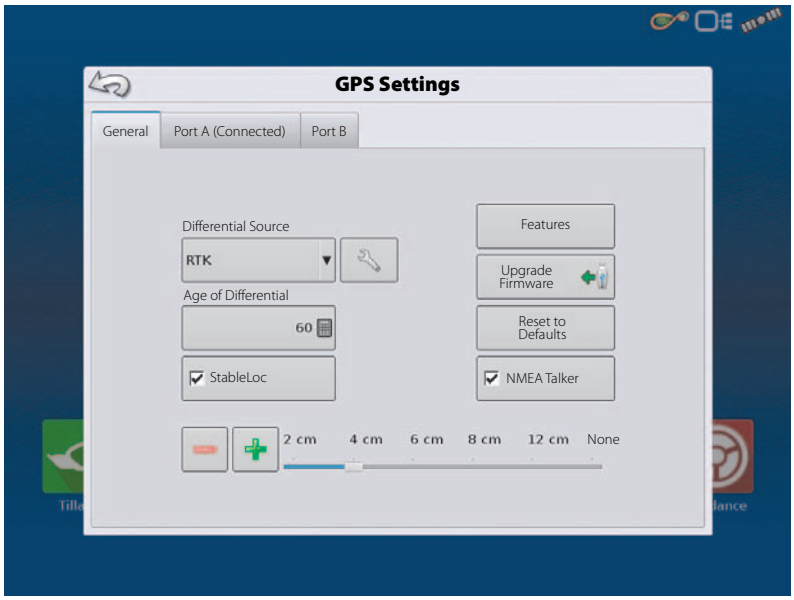
  When unchecked allows guidance to operate without differential correction.

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.

Serial GPS Settings



NOTE! Default settings for the 6000/6500 receivers should not need to be adjusted from factory settings.



- Differential Source

  Select choice of:

  - GLIDE
  - WAAS/EGNOS
  - TerraStar®
  - RTK External
  - RTK.

  Options available are based on receiver type and unlocks.

- Wrench icon

  Pressing the Differential Source Wrench button opens different settings screens, depending on the differential source selected.

- 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.

- StableLoc checkbox

  StableLoc maintains accurate steering – even when your correction signal is temporarily lost – by seamlessly transitioning to the next available signal source. When the signal is restored, the system will then transition back to the higher accuracy source, eliminating position jumps.

  Press to enable.

- StableLoc Error Limit (RTK & TerraStar only)

  When using StableLoc, select the error limit at which the system will no longer allow steering.

  - Select + or – button to adjust the limit.

  If your error limit is "10 cm" and the system accuracy reaches that limit, steering will no longer be allowed until the error decreases. If set to "none" accuracy of the differential source will not affect the ability to autosteer.

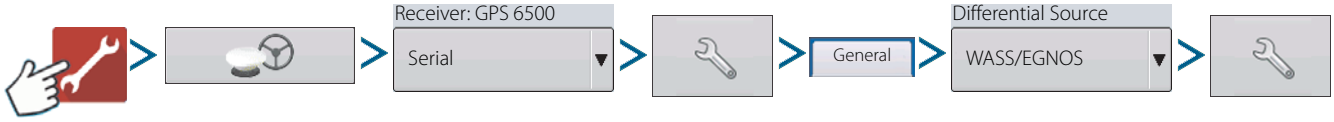
- Reset to Defaults

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

- NMEA Talker

  This button disables the GLONASS prefix in the NMEA messages. If using the GPS receiver with legacy displays or a device that does not support GLONASS messages, uncheck the box.

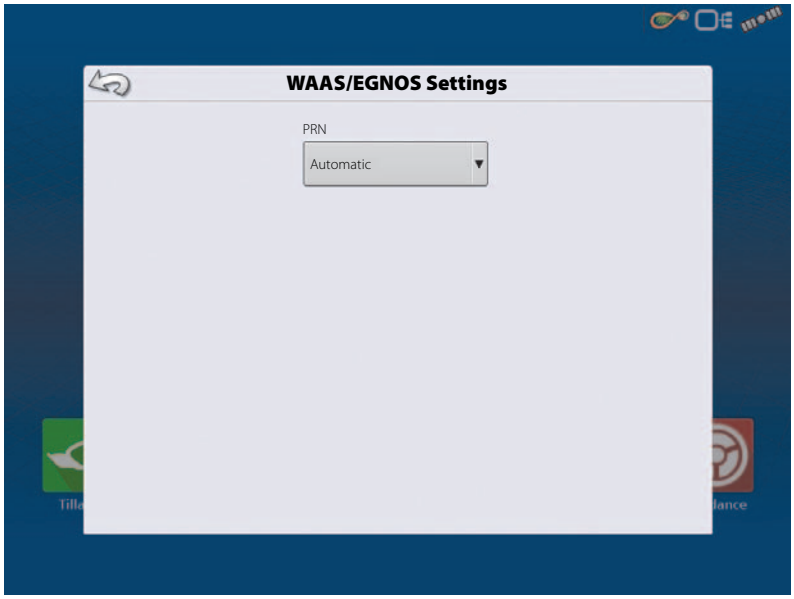
WAAS/EGNOS Settings



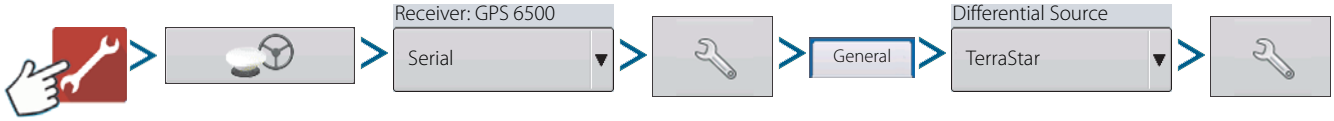
PRN

- Automatic
- WAAS
- EGNOS
- Custom

ATTENTION! Should be let on Automatic unless otherwise told by support.



TerraStar Settings



- Serial Number

  This box shows the serial number of your receiver - used to purchase TerraStar subscription.

- Automatic Tuning check box

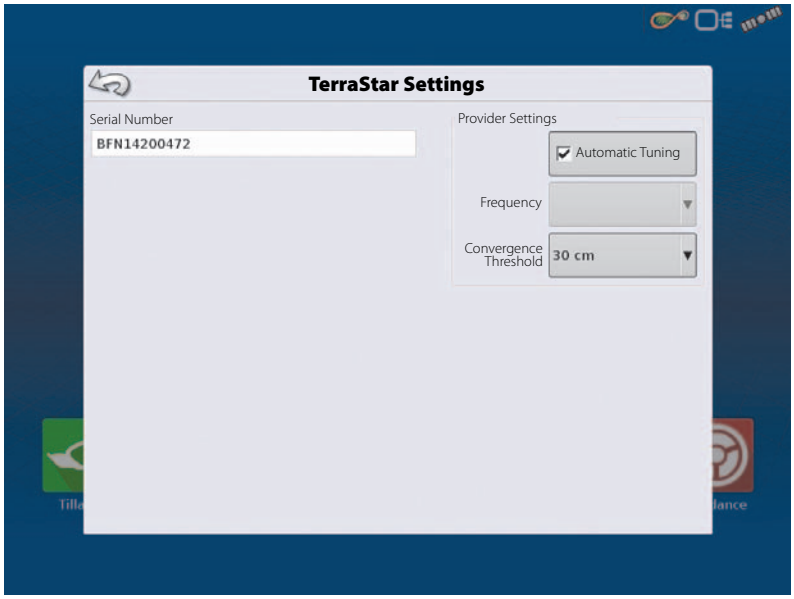
  Receiver will automatically select the strongest frequency. Frequency drop-down box will be greyed out when this is selected.

- Frequency

  In the Frequency drop-down list box, select the geographic region where you are located. Only uncheck automatic tuning when directed to by support (used to adjust tuning).

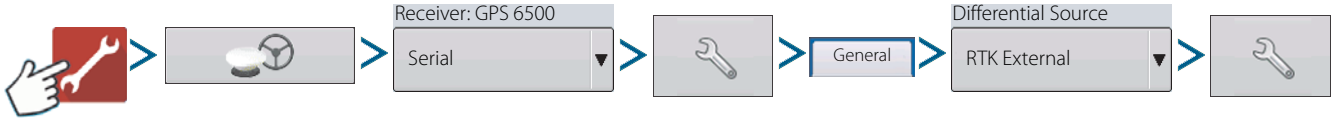
- Convergence Threshold

  The receiver uses the standard deviation of the solution to determine when the TerraStar position has converged. The receiver will label the TerraStar solution as "converged" when the horizontal standard deviation reaches the Convergence Threshold setting. Relaxing the convergence threshold shortens the time before a TerraStar solution is reported as converged. However, it does not alter the absolute behaviour of the solution.



NOTE! The use of TerraStar® differential requires purchase of a subscription from your Hardi dealer. 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 through your Hardi dealer. You will need to know serial number when contacting Hardi to set up the receiver.

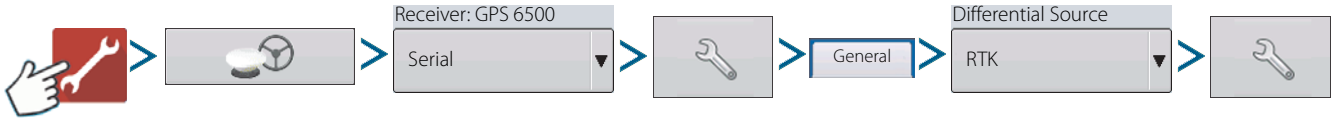
RTK External Settings



Setting the differential source to RTK External enables GGA NMEA message output on Port B at 1 Hz.

Change the Radio Baud Rate to match the External Radio connected to Port B.

RTK Settings - NTRIP

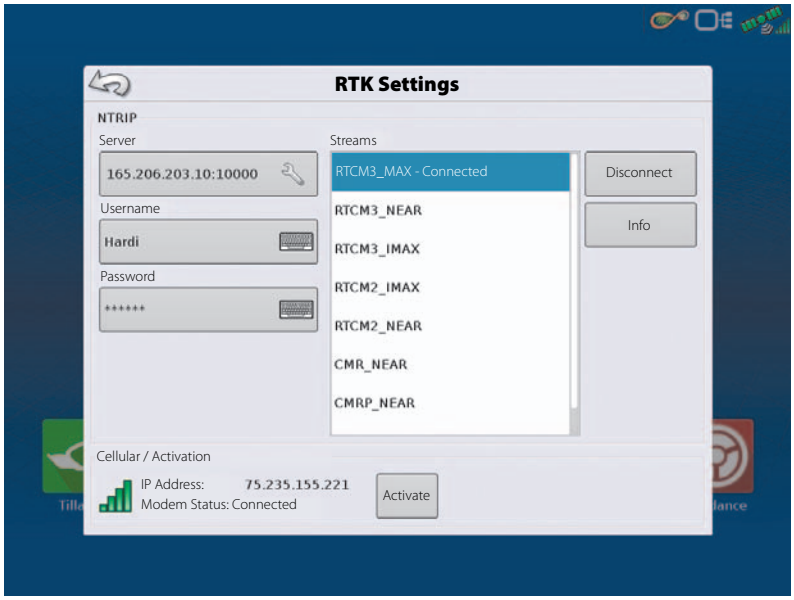


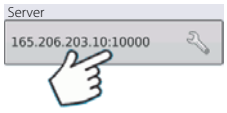
NTRIP

- Server
- Username
- Password
- Streams
- Disconnect/Connect - to the NTRIP Network
- Info - see "Info button" on page 65

Cellular

- IP Address - indicates a connection to the Internet
- Modem Status

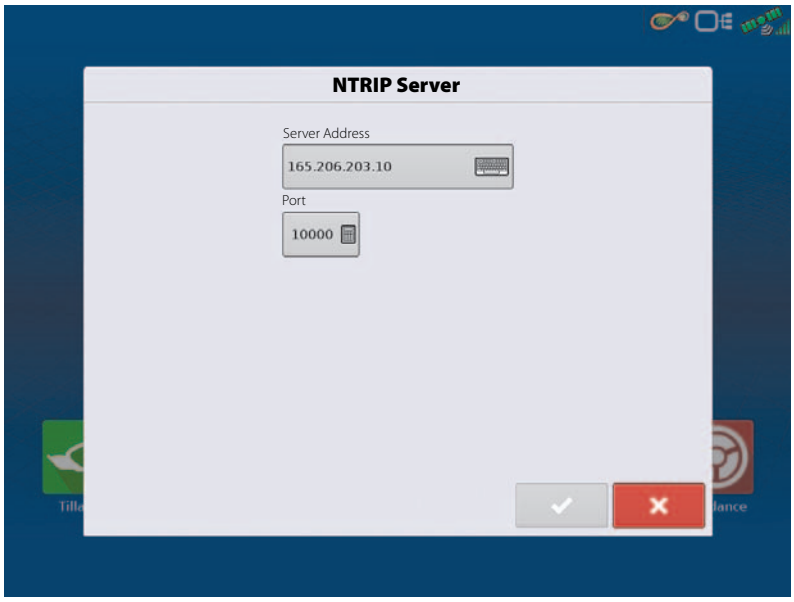


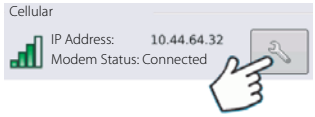


NTRIP Server

- Server Address
- Port

Server Address and Port are provided by the NTRIP Network.

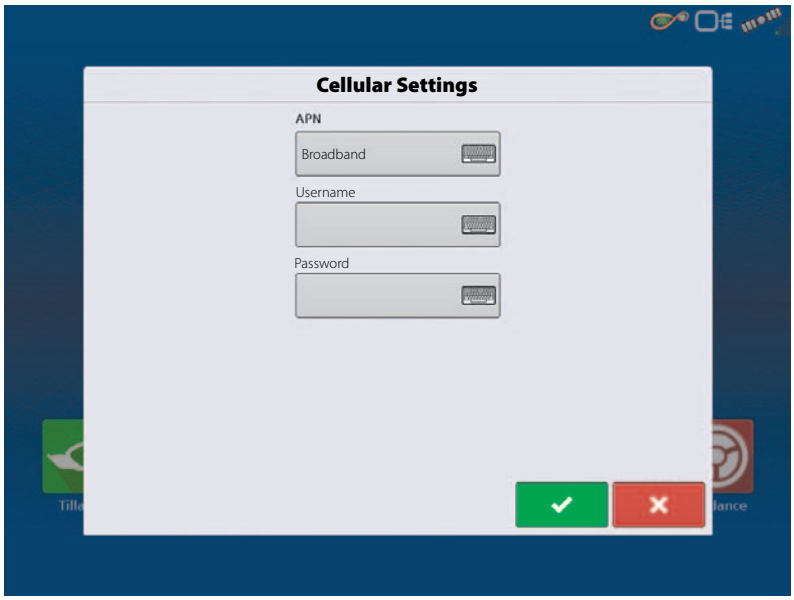




Cellular Settings

- APN
- Username
- Password

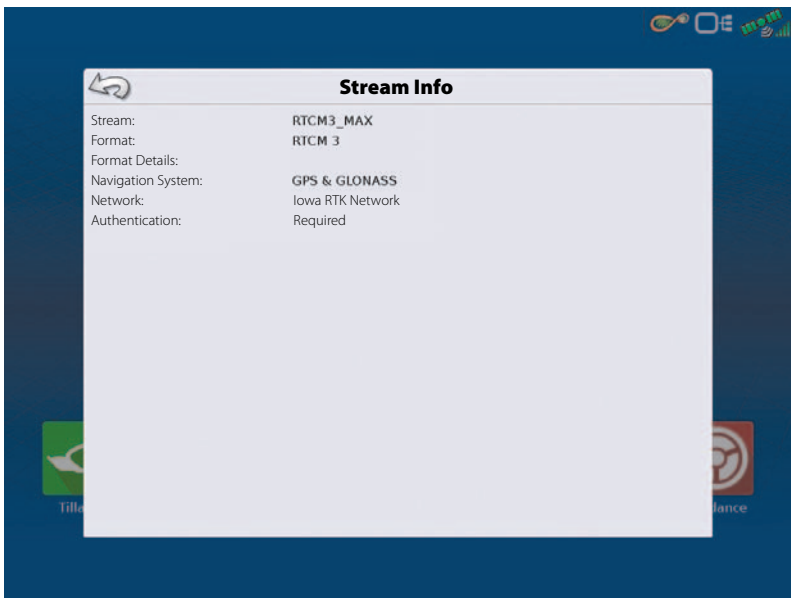
APN, Username and Password are Network provided settings. Contact the Cellular provider for this information.



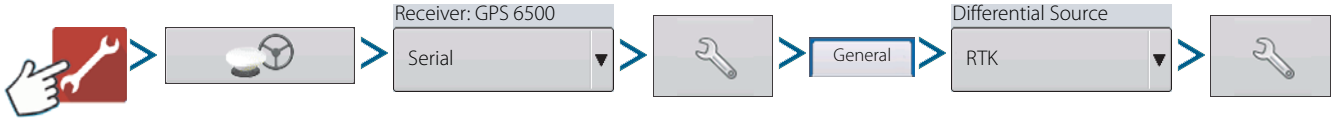
Info button

- Stream
- Format
- Format Details
- Navigation System
- Network
- Authentication

The information shown on this screen is provided by the NTRIP Network.



RTK Settings - 400 MHz

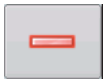


- Channel Spacing

  Use drop-down menu to select Channel Spacing.

- Frequency

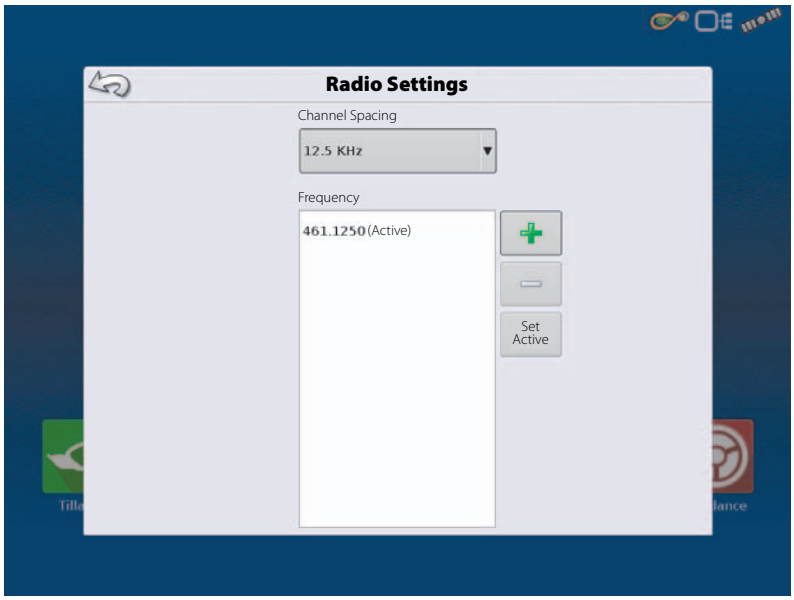
Press button to add a Frequency.



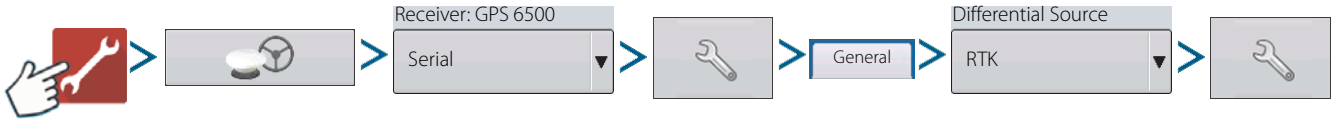
Select frequency and press button to delete selected frequency.

Set Active

Select frequency and press button to make selected frequency active.

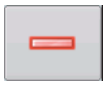


RTK Settings - 900 MHz



Frequency

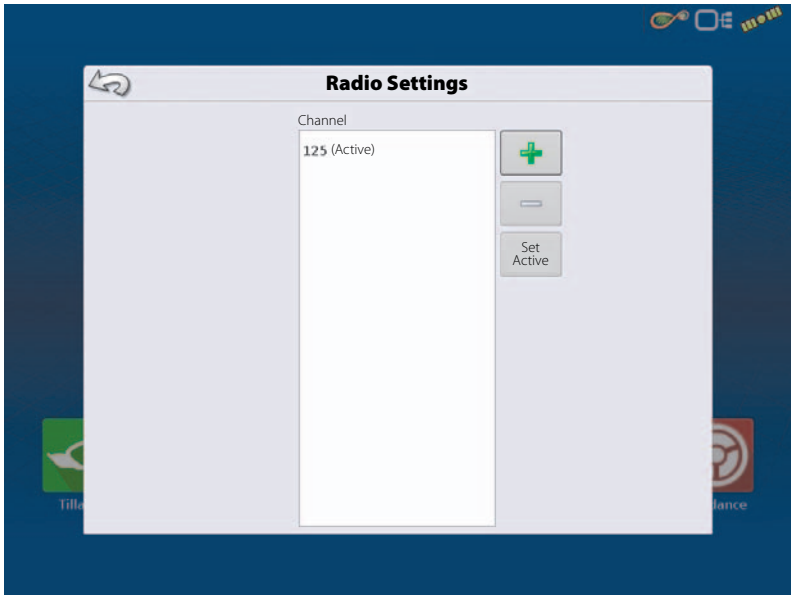
Press button to add a Channel.



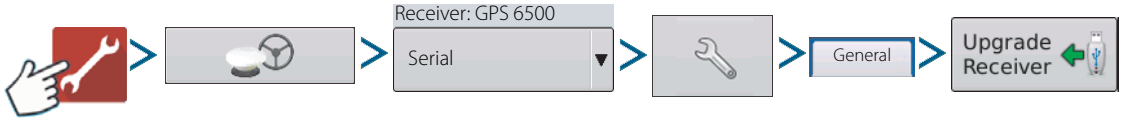
Select channel and press button to delete selected channel.

Set Active

Select channel and press button to make selected channel active.



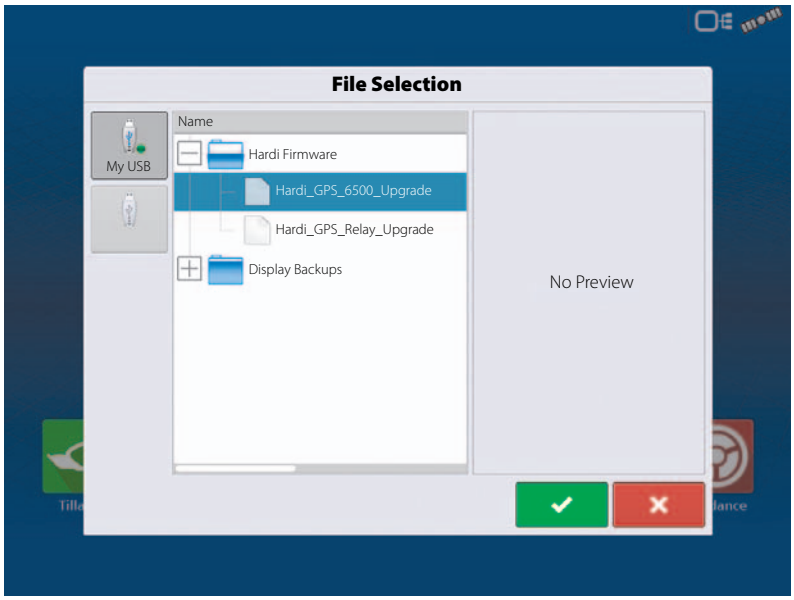
Upgrade Receiver



1. Select file from Hardi.
2. Select .fw3 file from USB drive.
3. Press ✓ to accept.

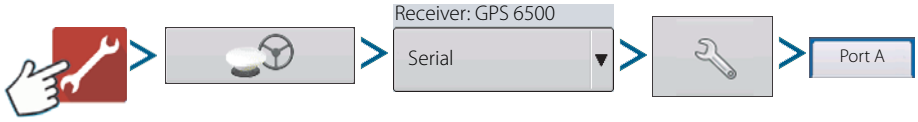
   Display will upgrade receiver.

ATTENTION! Press ✗ to return to previous screen without updating receiver.

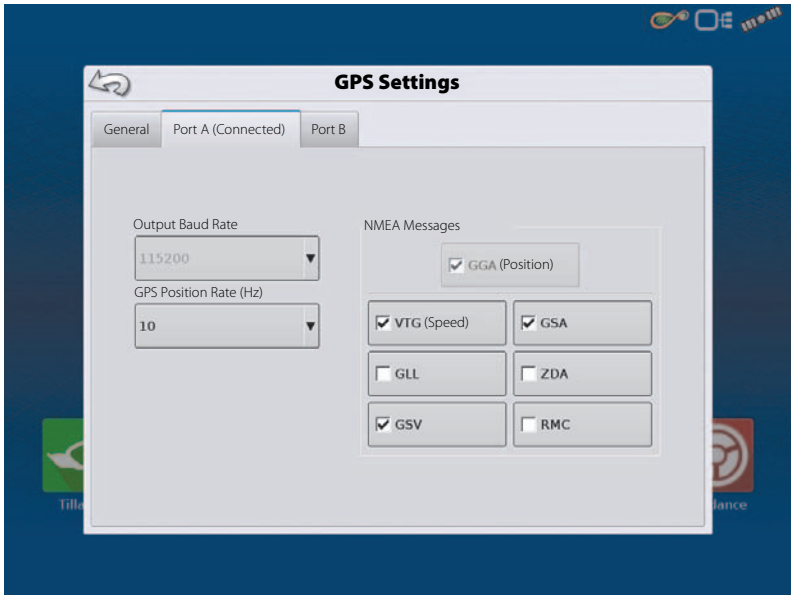


Serial Port Settings

Port A tab



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.



- Output Baud Rate

  Displays the speed at which the receiver communicates with the display. For optimal performance, the GPS baud rate is set at 115200.

- GPS Position Rate (Hz)

  Represents the cycles per second (shown in Hz) that the display receives position information from viewable satellites (10 Hz minimum).

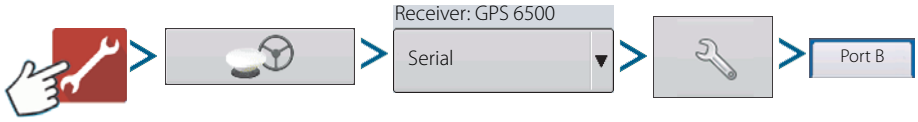
- NMEA Messages

  These checkboxes 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.

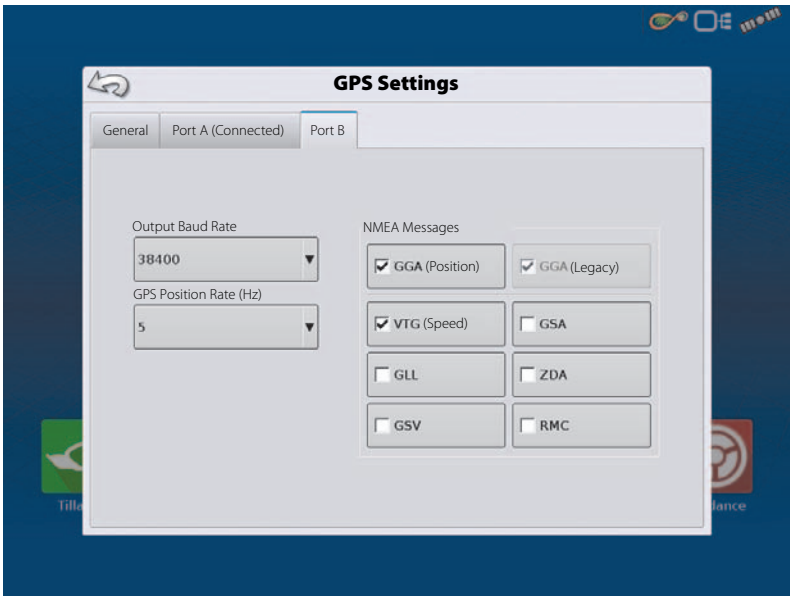
  - GGA: position in longitude and latitude.
  - VTG: ground speed.
  - GSV, GSA: required to view the Satellite Plot, but are not required for GPS information.

- 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.

Port B tab



The appearance of the Port B tab is similar to Port A.



- GGA(Legacy)

  Shortens the decimal precision of the GGA message for connection to legacy equipment.

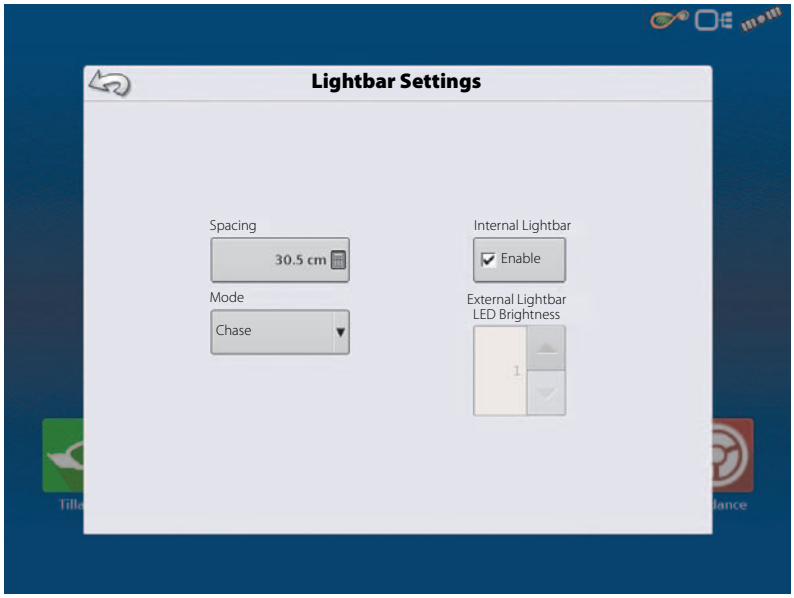
- GGA(Position)

  Gives increased precision to the GGA message. Most new displays require this turned on.

Lightbar Settings

Setup

or



- Spacing

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

- Mode
  - Chase

    Centre the vehicle by following the indicator lights.

  - Pull

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

- Internal Lightbar

  Check Enable to utilize the internal lightbar.

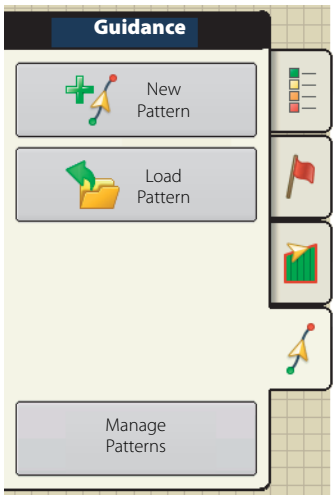
- External Lightbar LED Brightness

  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.

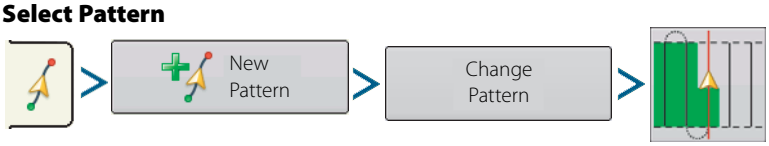
Before you create any patterns, the map screen's Guidance Tab appears as shown.



NOTE! Guidance pattern will default to the one last used. Guidance patterns can be set to widths up to 609 metres.

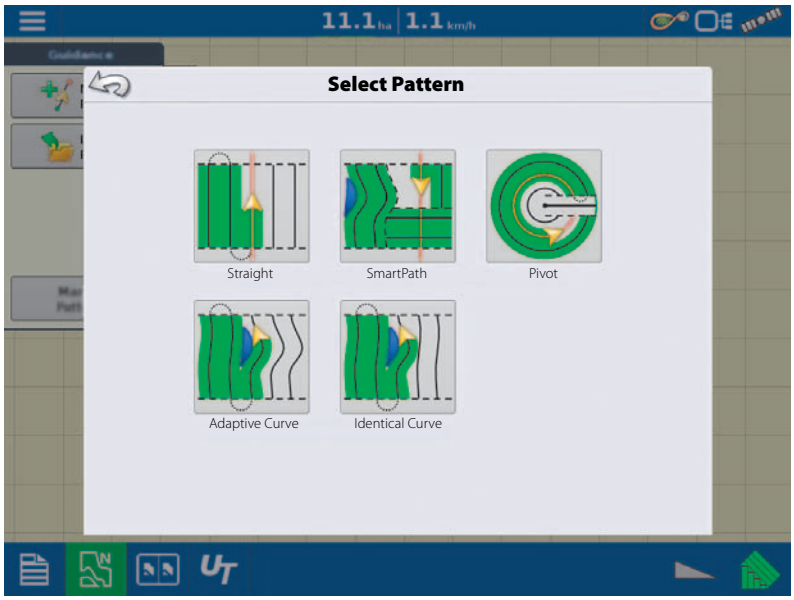
New Pattern - Straight

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 checkbox. See "Tramlines" on page 117.
- Change Pattern.



Press ✓ to accept. You will automatically return to the Map screen.

Create AB line using 2 points

- A→B Press to mark point A.
  A green ball appears on the map screen where point was placed.
- A→B Button is greyed out until you drive a minimum of 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.
- A→B 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

- 90.0 ° uses current location and heading, line extends 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

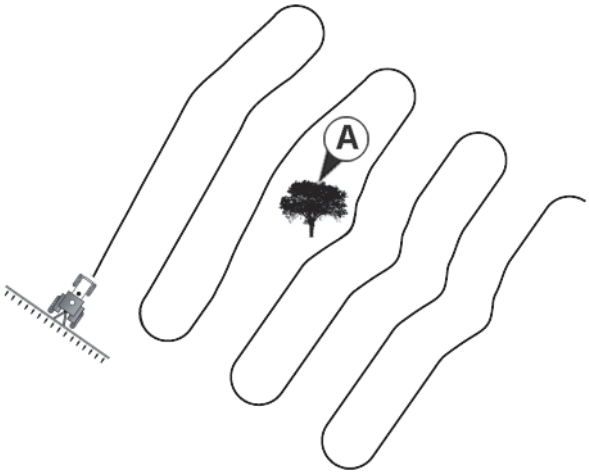
- 0.0 ° uses current location and input heading, line extends 1.6 km before and after the A point

Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 110.

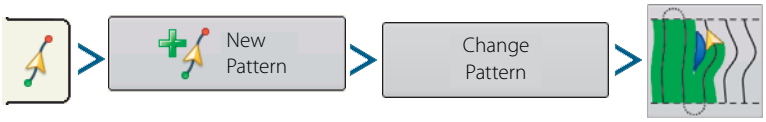
NOTE! On straight AB lines, if you complete a swath that is longer than the previous one, the display automatically extends the guidance path for the following swaths.

New Pattern - Adaptive Curve

Use the Adaptive Curve pattern to follow gentle contours in the field, or when you need to avoid obstacles (A). 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 ✓ to accept. You will automatically return to the Map screen.

Create AB line using 2 points

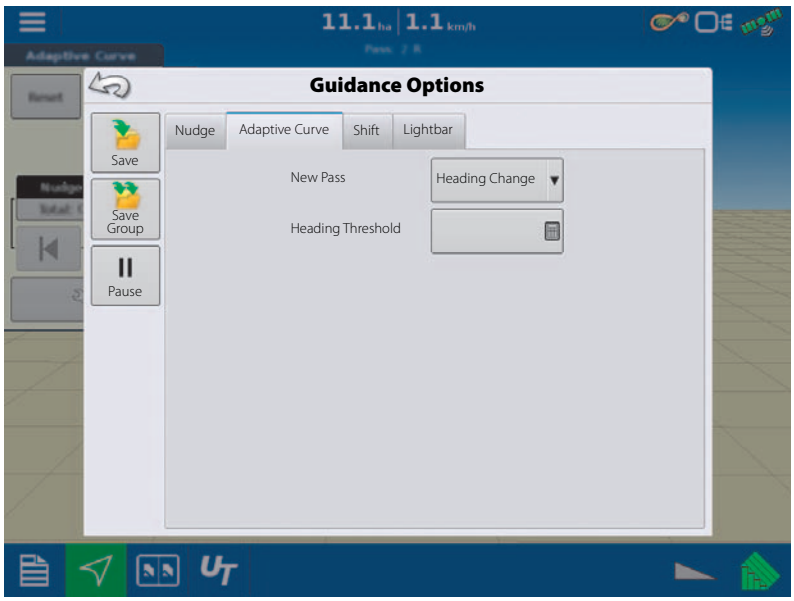
- A→B Press to mark point A.
  A green ball appears on the map screen where point was placed.
- A→B Button is greyed out until you drive a minimum of 30 meters.
  - Pause - Press ⏸ to pause path during path creation.
  - Resume - Press ▶ to resume path during path creation.
  - Cancel - Press ✕ to cancel path during path creation.
- A→B 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:

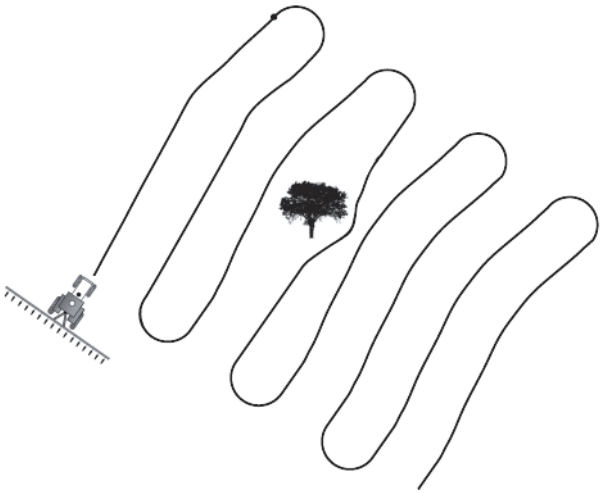
1. Go to the Guidance screen.
2. Press the Options button.
3. The Guidance Options screen appears; press the Adaptive Curve button.
4. At the New Pass drop-down menu, select Heading Change.
5. Use to enter in the degree number of your Heading Threshold.

Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 110.

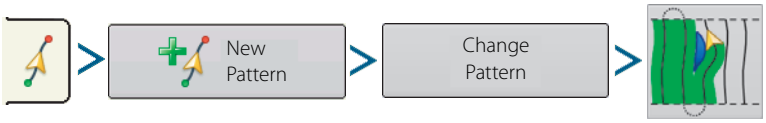


New Pattern - Identical Curve

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 checkbox

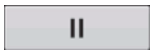
Press to accept. You will automatically return to the Map screen.

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 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.

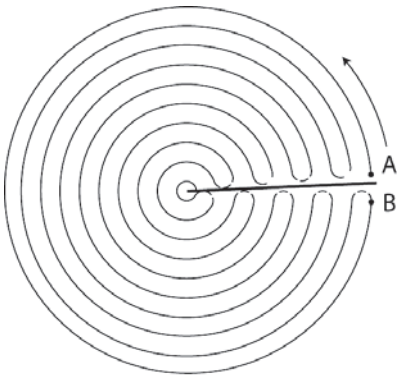
- Press to mark point B. The AB line appears on the map screen and point B is marked with a red ball.

Patterns are automatically saved when the vehicle turns for the first time. For more information see "AutoSave" on page 110.

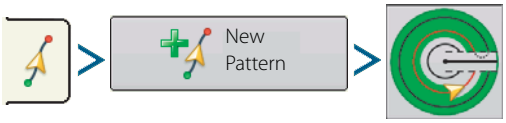
NOTE! Guidance extends beyond the end of curved swaths. This makes it possible to get LED guidance back onto the swath if the vehicle drives past the end of a swath. The extended swath lines do not appear on screen.

New Pattern - Pivot

Use the Centre-pivot pattern for a field that is irrigated using a centre-pivot. With this pattern, you can drive concentric circles around the centre-pivot. The display will calculate the centre point based on where you have driven. Otherwise, you can enter in the latitude and longitude of the centre 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 checkbox and Latitude and Longitude input boxes

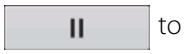
Press to accept. You will automatically return to the Map screen.

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 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.

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

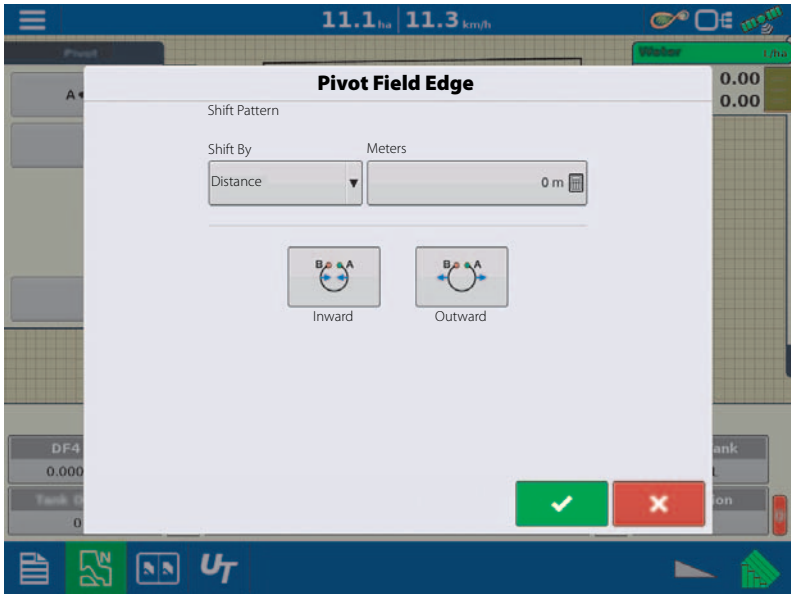
   From here, you may choose one of three options:

   - 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 meters.
   - 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.



2. 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.
3. Steer the vehicle so that you centre the green lights in the lightbar as you drive forward along the path.

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

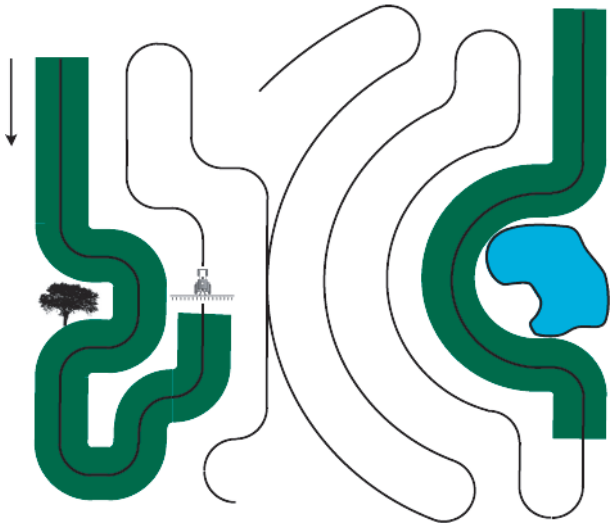
- A radius of at least two swath widths.
- An arc length of at least two swath widths.

New Pattern - SmartPath

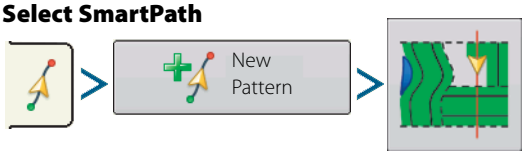
The SmartPath™ pattern is designed to give guidance from any previously-driven pass. This is used in irregular-shaped and terraced fields where you cannot run all passes parallel to the previous pass.

Instead, the SmartPath guidance allows you to move to a different area of the field, and then resume a previous guidance pattern later.

Moreover, you can use SmartPath to create straight AB patterns within the SmartPath pattern and cycle between any available pattern within SmartPath to choose the appropriate one.



Select SmartPath

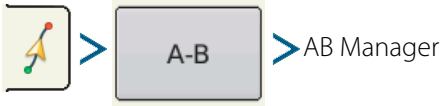


System defaults pattern type to last used. Press the pattern icon to select a different pattern.

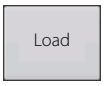
- Implement Width (from Implement Setup)
- Guidance Width input box

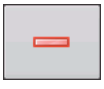
Press to accept. You will automatically return to the Map screen.

Inputting Paths into SmartPath



The AB Manager screen allow user to create, edit, remove, and load paths into SmartPath.

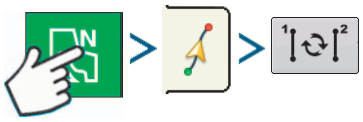
- Press to create an AB line.
- 

Press to load an AB line.
- Press to edit the name of an AB line.
-  Press to delete an AB line.

You can create up to 10 different AB lines within SmartPath.

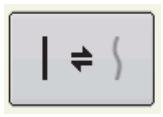
- Press the Back button to close the screen.

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.

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.

After you turn around on your first pass, the system guidance will follow a maroon-Coloured 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.

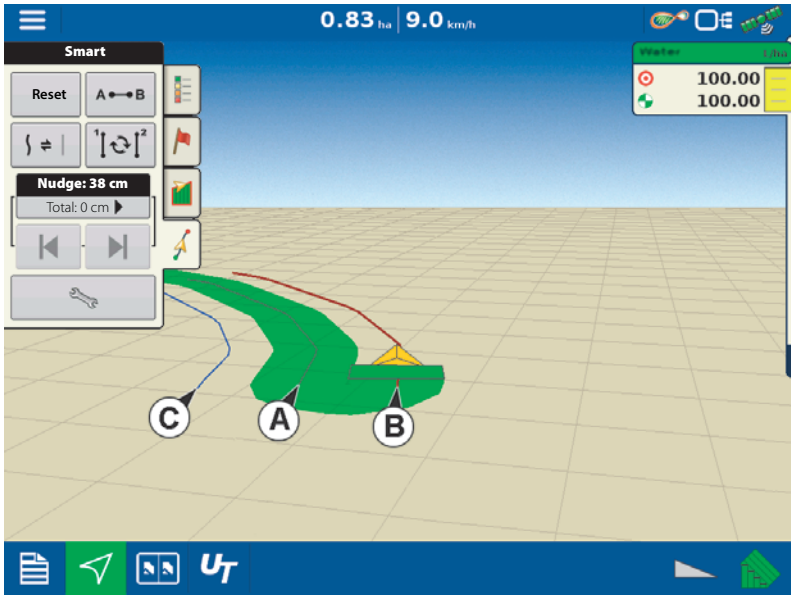
B. The Followed Path

   Appears as a maroon-Coloured line, is the path that your vehicle is currently using.

C. The Projected Path

   Appears as a blue-Coloured 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.

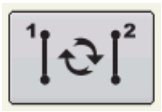


NOTE!

- 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 displays memory for future use.

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.

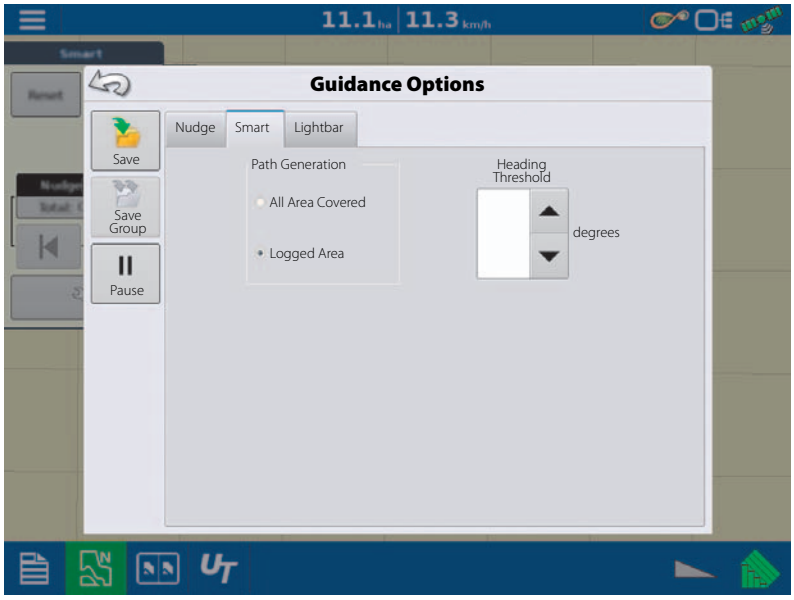
SmartPath Guidance Options

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.

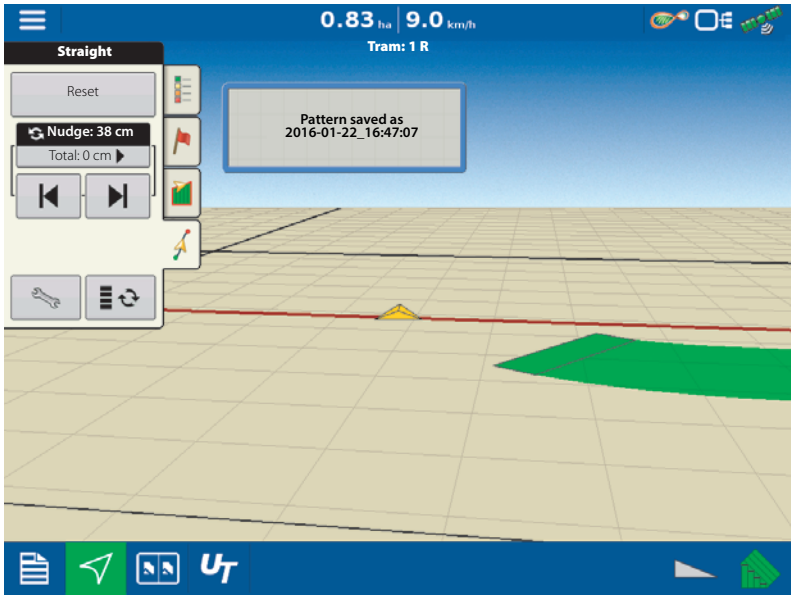
- The default setting is Logged Area. This setting only creates passes while you are logging field data.
- By selecting All Area Covered, you can create SmartPath passes even when not logging field data.
- The Heading Threshold setting is the available area that the Guidance System uses to search for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



AutoSave

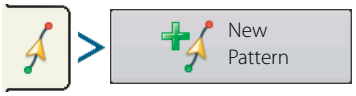
Patterns are automatically saved when a guidance pattern is complete.

- 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

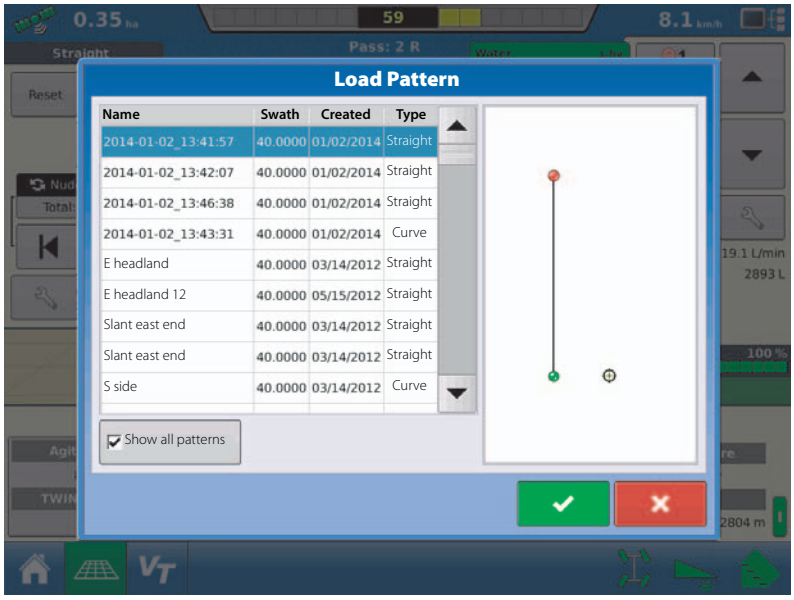
Spatial Sort



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.

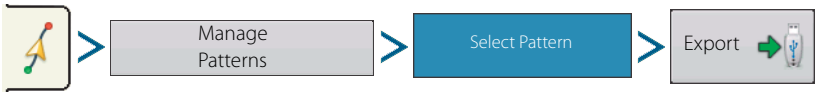
Check the box to show all patterns.



Import Pattern

Display informs you when file has been successfully copied.

Export Pattern



Display informs you when file has been successfully copied.

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

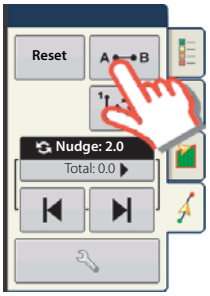
   The Guidance screen appears, asking you to reset the current guidance pattern. Press to continue.

3. Create new pattern (optional)

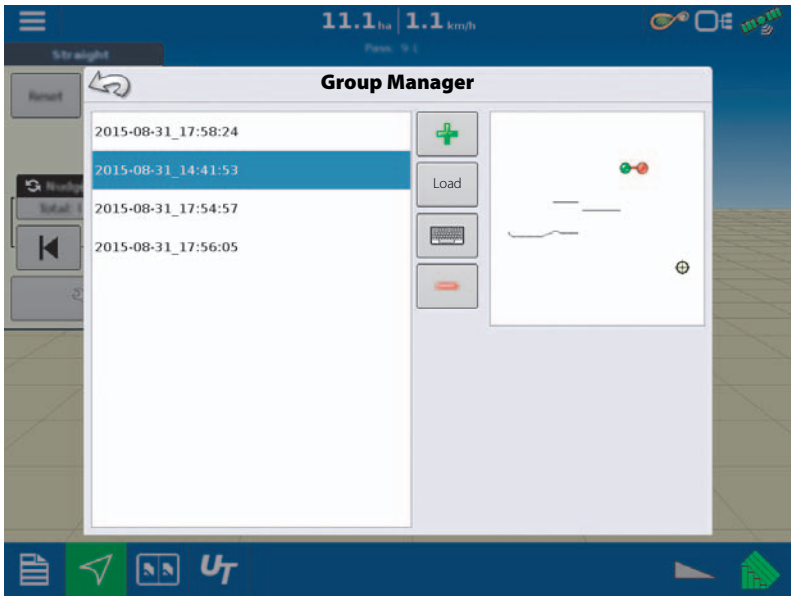
   The pattern is now reset. You may now create a new pattern, if desired.

Pattern Groups

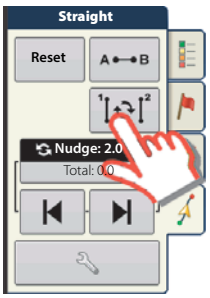
Pattern Groups allow the user to group up to 20 patterns per field, using the Group Manager.



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.



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 dialogue 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.

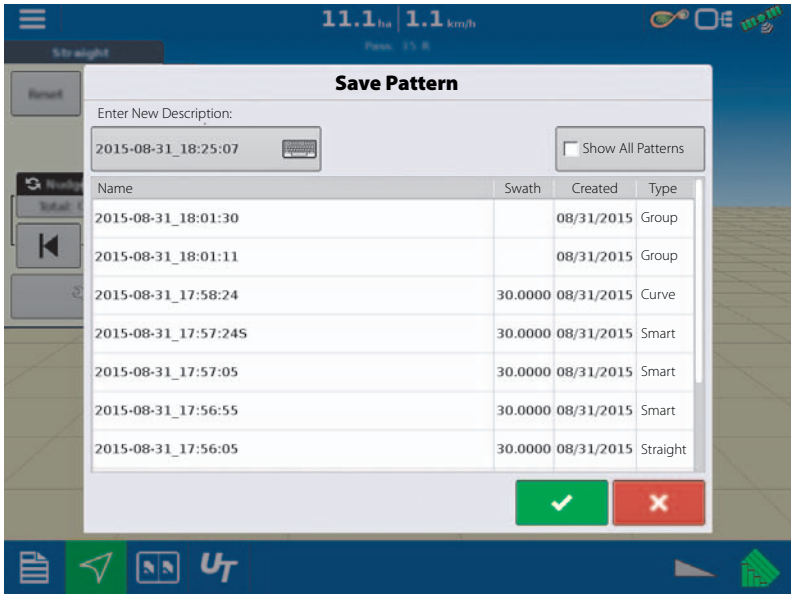
Guidance Options

Save

This allows you can save a pattern (.AGSETUP file) to the displays internal memory.

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.

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 displays 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 on the Guidance screen.

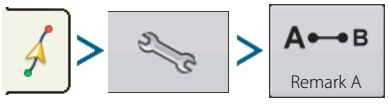
  When you do so, the place where you paused appears on the Map screen as a yellow ball.

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 and logging on your AB Line.

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

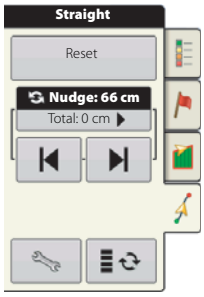


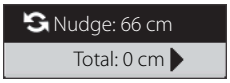
If you chose Straight patten, the Remark A button appears on the Guidance Options screen. The Remark A button "re-marks" the A point by moving it to the current position while maintaining the same heading. A brief message appears in the on-screen lightbar, stating "Point A Remarked."

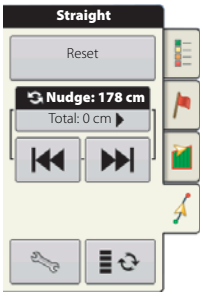
Nudge

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 for the direction of travel.



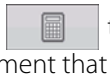
- Small Nudge (single arrow) shown on left.
- Large Nudge setting (double arrow) shown on right (Straight Patterns Only).
- Use Nudge toggle button  to switch between Small and Large Nudge setting.



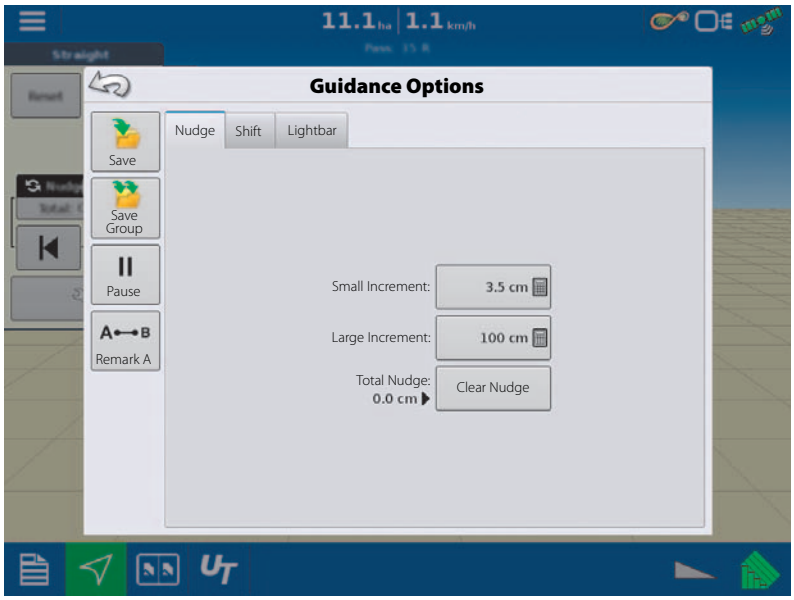
Use Mapping Toolbox toggle button to switch the menu between Tramline and Nudge on the Mapping Toolbox, if Tramlines are enabled.

To make adjustments to Nudge settings:

When at the Nudge tab:

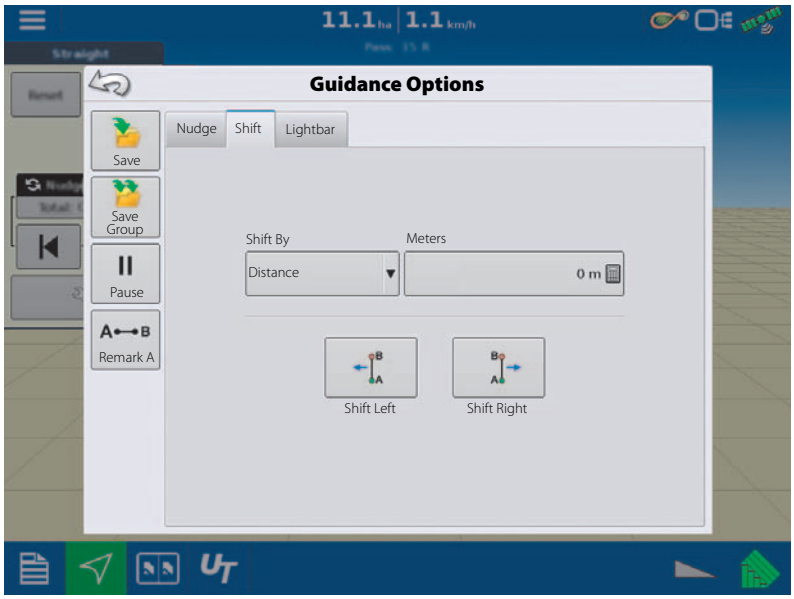
- Press  to enter a distance for increment that the swaths will move with each successive press of the left or right arrows buttons on the Guidance Tab.
- To clear out the adjustment and go to the original position, press Clear Nudge.

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



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

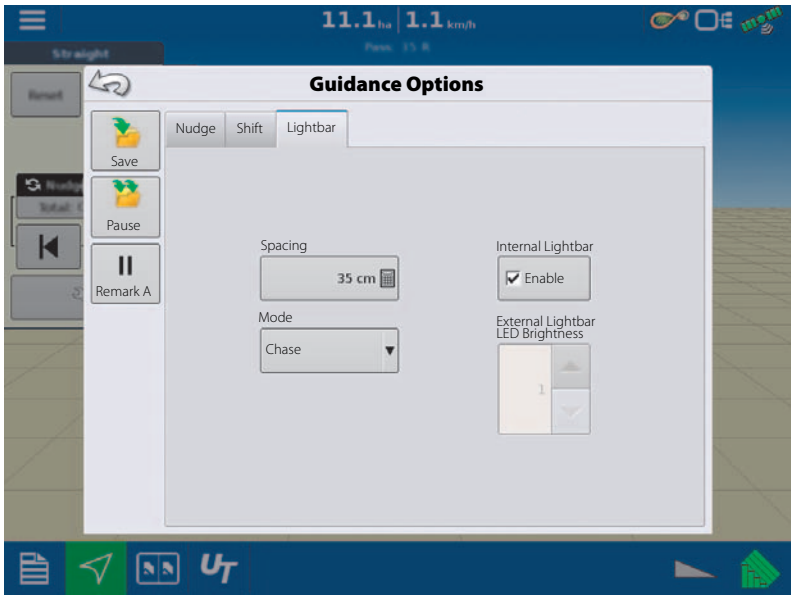
  Controls the oscillations of the vehicle when it is on the desired path in reverse.

- Log coverage while AutoSteer is engaged

  Coverage while engaged is available when an AutoSteering system (SteerCommand, GeoSteer, ParaDyme) is connected.

  User can still manually control coverage logging with the on-screen coverage button. AutoSwath is unaffected by this selection.

Lightbar



- LED Spacing

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

- Mode
  - Chase

    Centre the vehicle by following the indicator lights.

  - Pull

    Centre 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.

Tramlines

Tramlines only available with Straight AB and Identical Curve Pattern Types

- Paths Between Tramlines

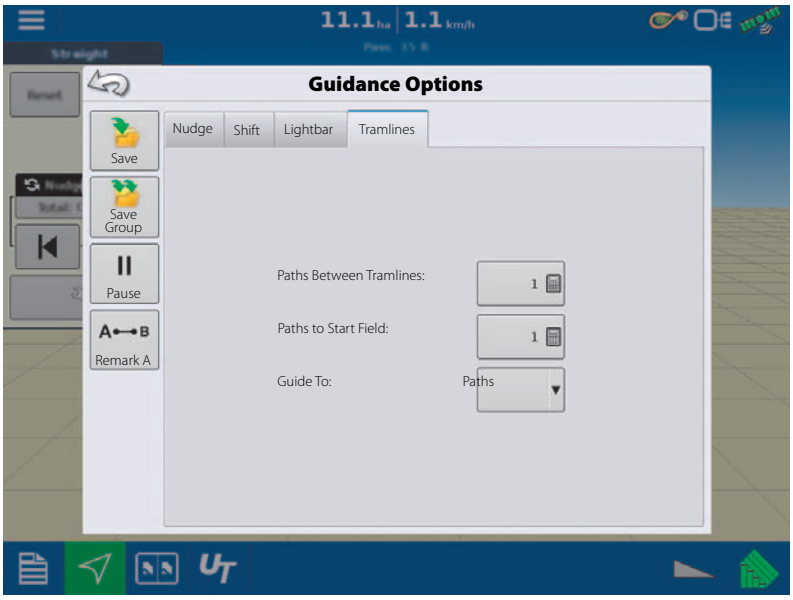
  Use to enter the number of passes between tramlines.

- Paths to Start Field

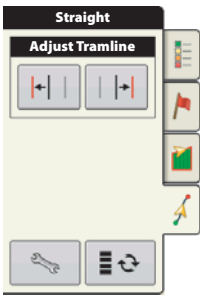
  Use to enter the number of passes at the beginning of the field before the first tramline.

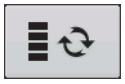
- Guide To

  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

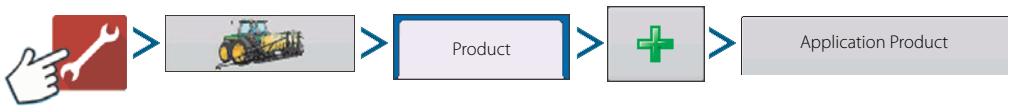
Creating Products

Creating application products and product templates can be completed during initial setup or from the Product Selection screen of the Field Operation Wizard when starting a field operation.

NOTE! Creating products for your operation may differ than was it documented in this section. It will depend if your serial controlled application is liquid or granular.

Creating Single Products

To create a single product, to be added to a product template or to be applied by itself, use the on-screen wizard described in the following steps.



Select:

1. Product Type.
2. Product Units.
3. EPA Product Number (Optional).

   Check box if product is a Restricted Use Pesticide.
4. Manufacturer name if applicable.

   Manufacturer name can be added to the drop-down menu by pressing .
5. Press to enter a unique name for the product.

Created product should appear under the Application heading located on the Product tab of the Configuration Setup screen.

NOTE! Some Fertilizer and Carrier product types are predetermined in the display. These product names cannot be edited. Their Manufacturer and EPA Numbers can be edited after the product is created.

Examples are: Fertilizer>DAP or Carrier>30% UAN.

Creating Product Templates

Product Templates are set up by using the on-screen wizard.

NOTE! Prior to making a new product template, it is recommended to add the individual products to the list in the units recommended by the chemical label.

It is recommended to create product templates that contain the products applied for a crop type or time of the season.

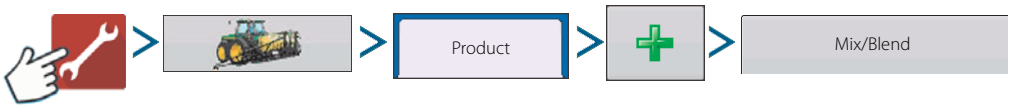
Examples are:

- Pre-Emerge Burndown
- Post-Emerge Corn
- Post-Emerge Beans
- Insecticide
- Fungicide

In each template the products can be checked on/off for the mix when loaded at the run screen.

Tank Mix Setup

A tank mix can contain up to seven individual components.

1. Select 

2. Select "Tank Mix" from the list box and press ▶ to continue.

   Define By

   - Total amounts.

     Mix/blend defined by amounts added to the tank (total of each product in tank).
   - Rate/ha.

     Mix/blend defined by the amounts applied per hectare (rate of each product applied/area).
3. Enter a Base Amount and Units.
   - Total Amounts.

     Tank/Bin Size.
   - Rate/hectare.

     For Rate Applied per hectare.
4. Select Carrier.
   - Press ✚ to create a new carrier.

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.

5. Press ✚ by the Add Mix/Blend Contents box to start the process of adding components to the mix.
6. Select a desired mix component from the drop-down menu.

NOTE! More than 7 products can be part of a template, but only 7 or fewer can be active at the same time.

- A new product can be set up at this time by pressing ✚ and following the Product Setup Wizard.
- Press ✔ to add selected product, or press ✖ to return to Add Mix/Blend screen without adding a product.

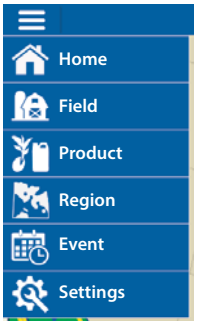
7. Press ✚ to add an additional product.
8. When all components have been added press ▶.
9. Enter Manufacturer name is applicable.
   - Manufacturer name can be added to the drop-down menu by pressing 🔧.
10. Press ⌨ to enter a unique name for the mix/blend.
    - Press ✔ to complete the process of setting up the mix/blend, or press ✖ to return to the Configuration Setup screen without adding a mix.

The product mix/blend appears under the Application heading located on the Product tab of the Configuration Setup screen.

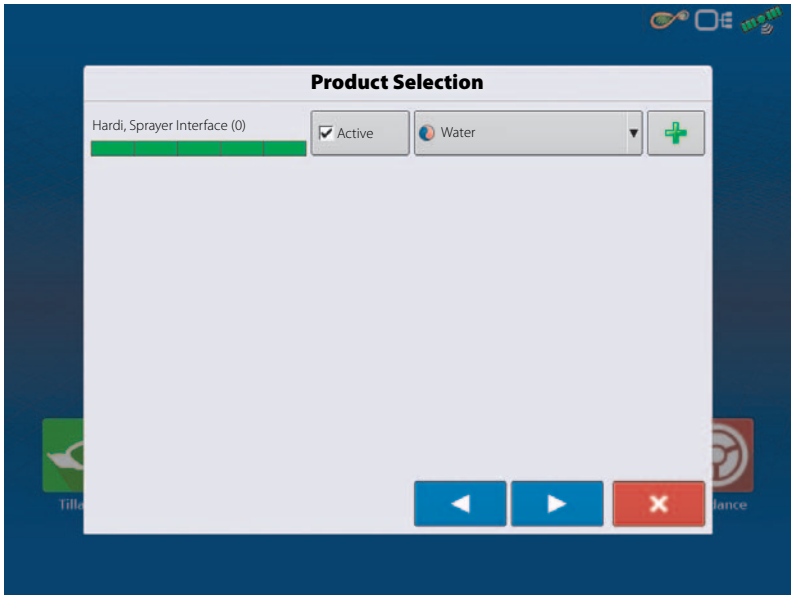
Represents Product Templates

Configure Product Mix

When using a product template, the mix contents and amounts are defined in the Configure Product Mix screen available in the Event Setup Wizard, or Product button in the main menu.



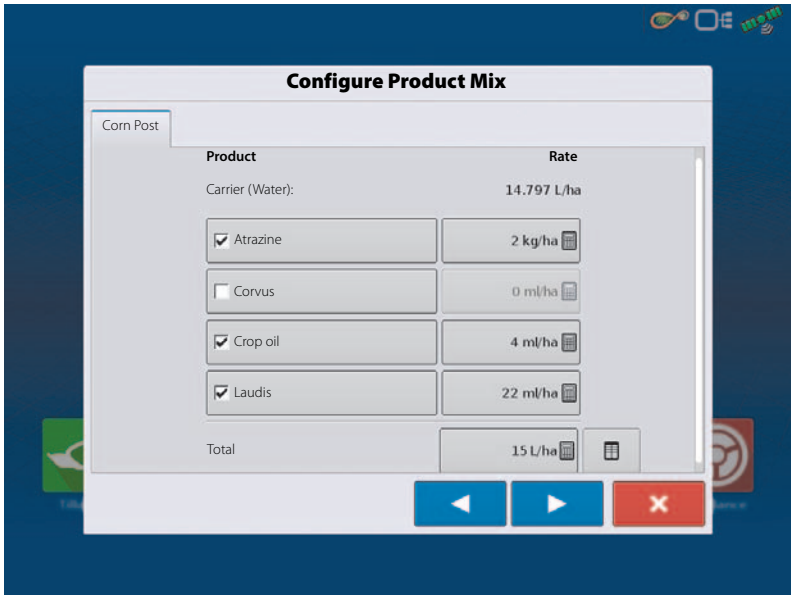
1. Select your mix/blend from the drop-down list or press to create and new mix/blend.



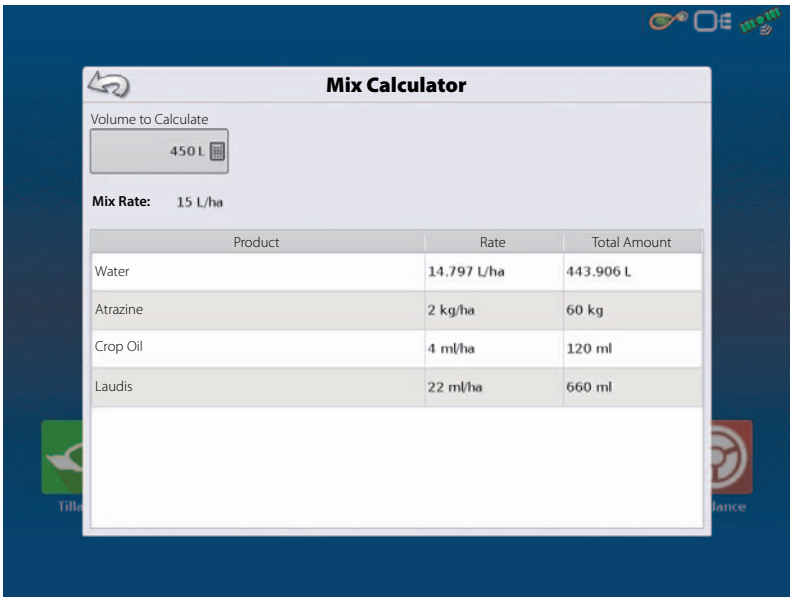
2. The product template mix contents and amounts are defined by:
   - A. activating or de-activating products.
   - B. changing rate or total amount of product.
   - C. changing total amount of the product or overall rate of product application.

   A product can not be active with a rate of zero. Press to access the Mix Calculator.

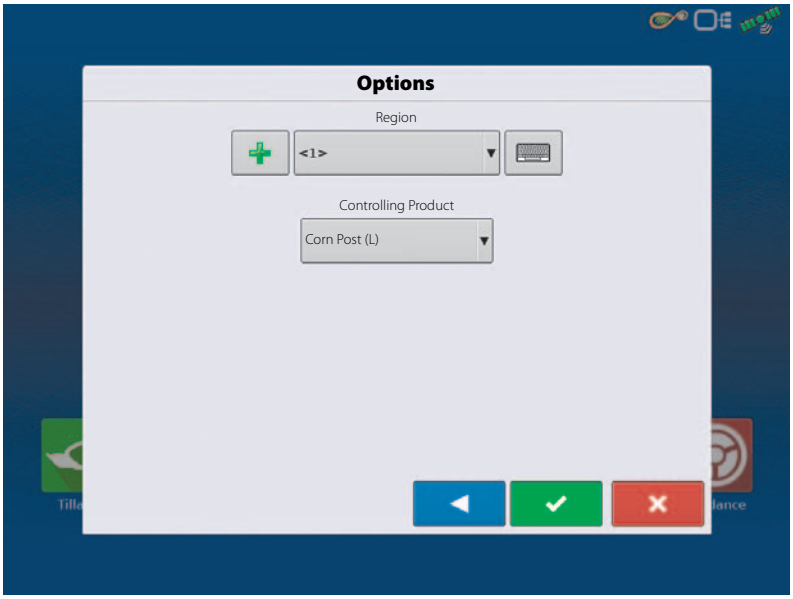
3. When a product template is setup using rate/area, the Mix Calculator can be used to show how much of each product to put in the tank when the user enters the desired amount to fill.



4. Press the Volume to Calculate button and input the total volume. Table will give the user the amount of each product to put in the tank.



5. Select Region from the drop-down menu or press to name Region



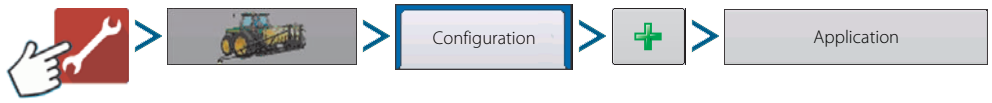
Verify the Controlling Product for the Mix/Blend.

Press to load the Event to the Map Screen, or press to return to Home screen without setting up an Event.

Create Configuration

To create a configuration, make the following button presses to start the Configuration Wizard and then follow the instructions given on the display. The configuration can be started in two places:

OR



WARNING! When setting up a Configuration for the Serial Application Rate module, on the Application Channels step of the Implement Wizard, a controller may default in this screen based on the displays Load-and-Go feature. DO NOT accept this controller for the configuration. Delete this controller by highlighting it and pressing Remove. Then create a new Liquid/Granular Application controller manually.

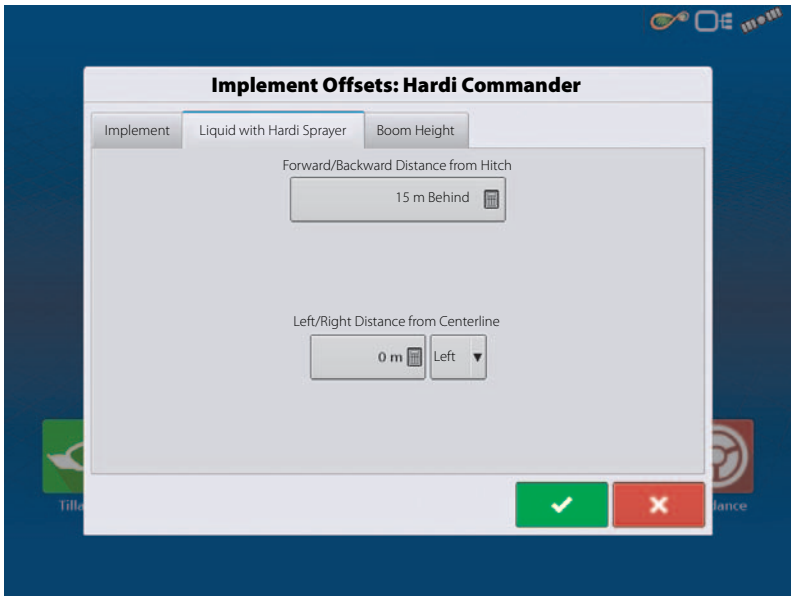
Load Configuration

Press the Application operations button from the home screen. This will take you through the steps needed to load a configuration.

Implement Offsets

Implement Offsets screen.

NOTE! This screen is not relevant for HARDI sprayers.

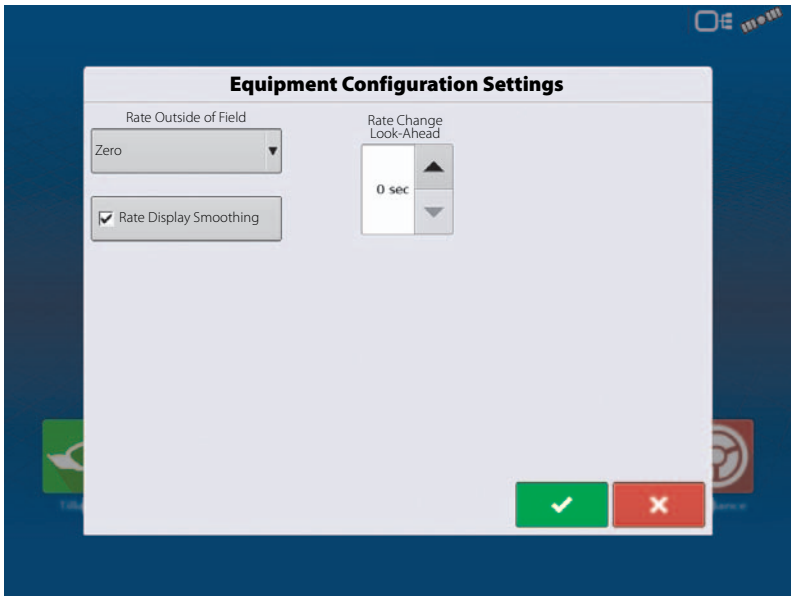


Equipment Settings

OR

Rate Outside of Field

This setting will define how product will be controlled when leaving a field boundary.



- Zero

  This will stop application.

- Last Good

  This will continue application at the last known rate.

- Rx Default

  When using a prescription, this will apply at the Default Rate (or outside of boundary rate) as defined by the prescription file.

Rate Display Smoothing

Determines how the feedback from the control channel rate sensor will be displayed on the map screen.

- De-selected

  The system will display raw feedback from the rate sensor.

- Checked

  The system will display target rate when the application rate is within 10% of the target rate setting.

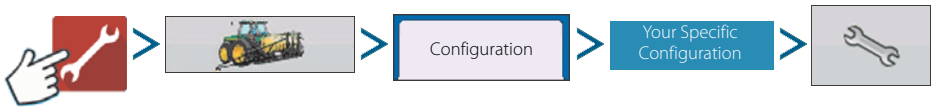
Rate Change Look-Ahead

This setting compensates for any latency in the control system when changing between different product flow rates during variable rate application.

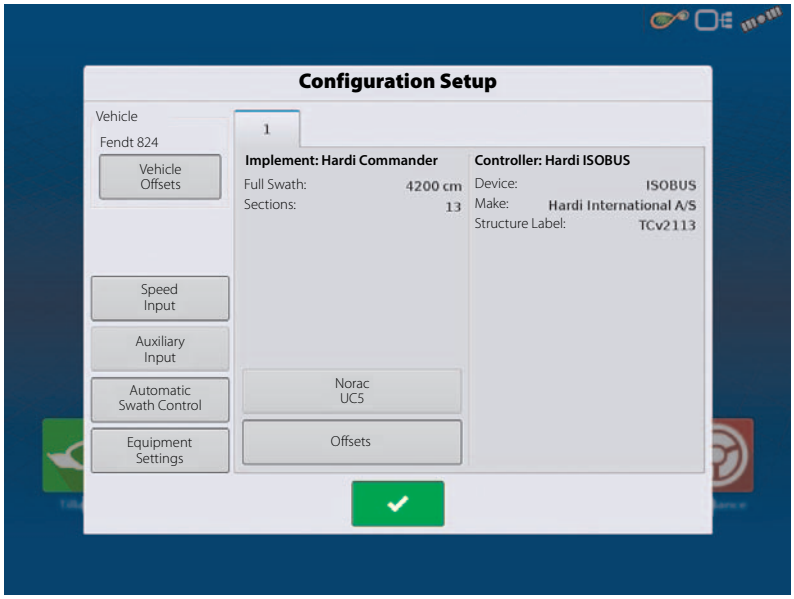
The typical setting range for this is 0-1 seconds.

This setting can be thought of as a "look ahead" value when using a variable rate prescription. The display will send the signal to change rates before hitting a transition line so that the applied rate is correct when crossing into the new management zone.

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 89.

- Automatic Swath Control (if using AutoSwath)

  For more information, see "Automatic Swath Control (AutoSectionControl)" on page 90.

- Vehicle Offsets

  Adjust GPS offsets for the Antenna Tab and the Hitch Tab. For more information, see "Vehicle Offsets" on page 91.

- Offsets

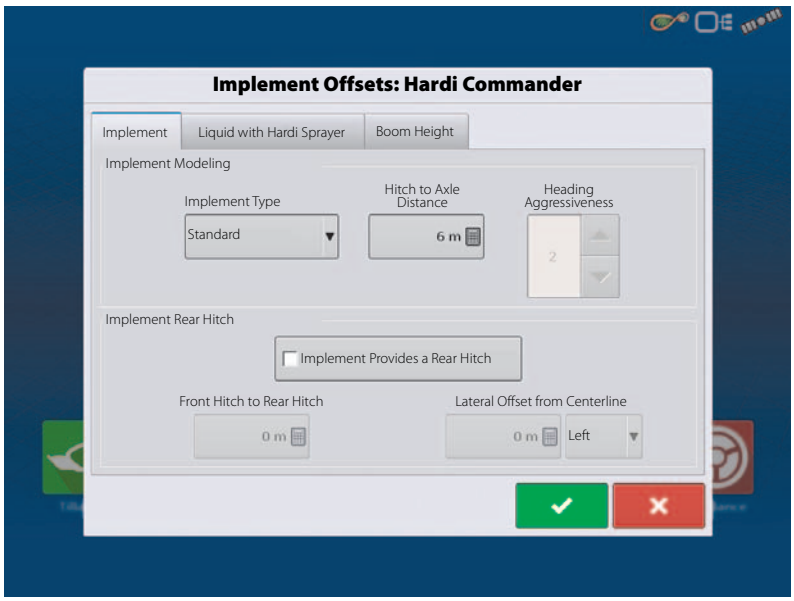
  For more information, see "Swath Section Offsets" on page 92.

- Norac UC5

  Adjust AutoTerrain/AutoHeight/AutoSlant settings - see also "SafeTrack/IntelliTrack" on page 124. For further information, please refer to the AutoTerrain/AutoHeight/AutoSlant UC5 instruction books.

SafeTrack/IntelliTrack

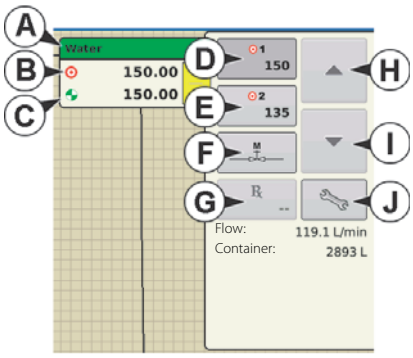
For ISOBUS the Implement Modelling can be selected. This allows display to accurately calculate path of a sprayer equipped with steering.



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.

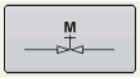
- Container Level

  The Container Level shows the amount of product in the main tank. For more information, see "Rate Control: Container Level" on page 127.

  -

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.

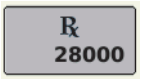
  - 

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

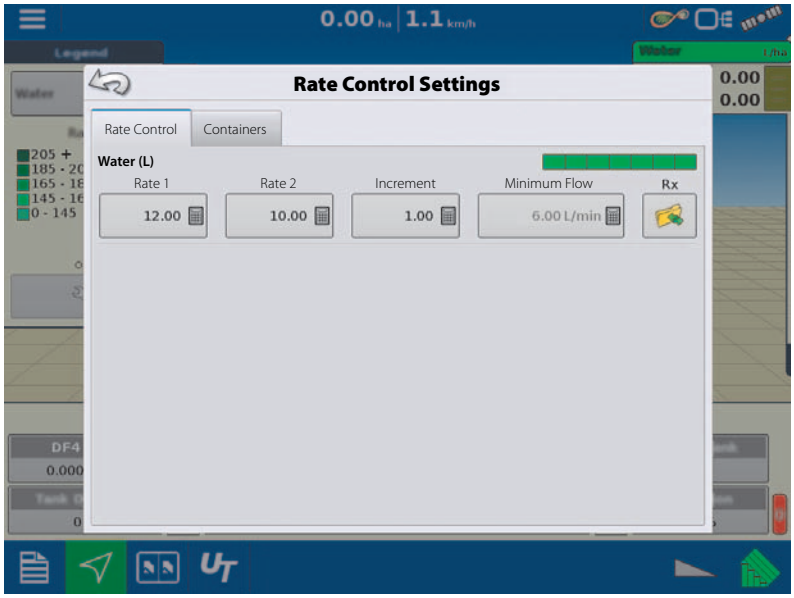
    For more information, see "Loading Prescriptions" on page 129.

- Rate Setup button

  For more information, see "Rate Control Settings" on page 126.

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.



- 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

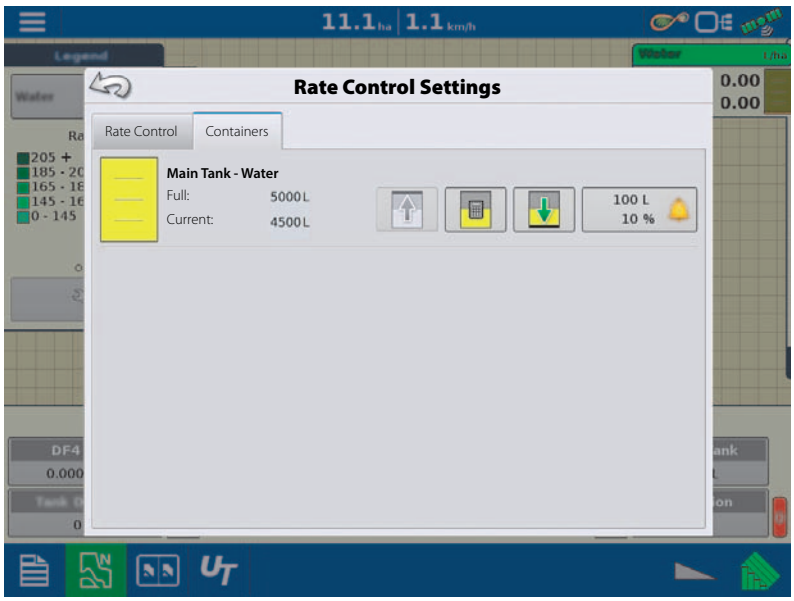
  To load a map-based prescription file, press the Prescription button. For more information, see "Loading Prescriptions" on page 129.

- Minimum Flow

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

Rate Control: Container Level

When filling or emptying container, use the Container Level portion of the Rate Control Settings screen to update the amount of product in the containers.



ATTENTION! The container level is transferred from the Hardi Universal Terminal screen automatically.

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

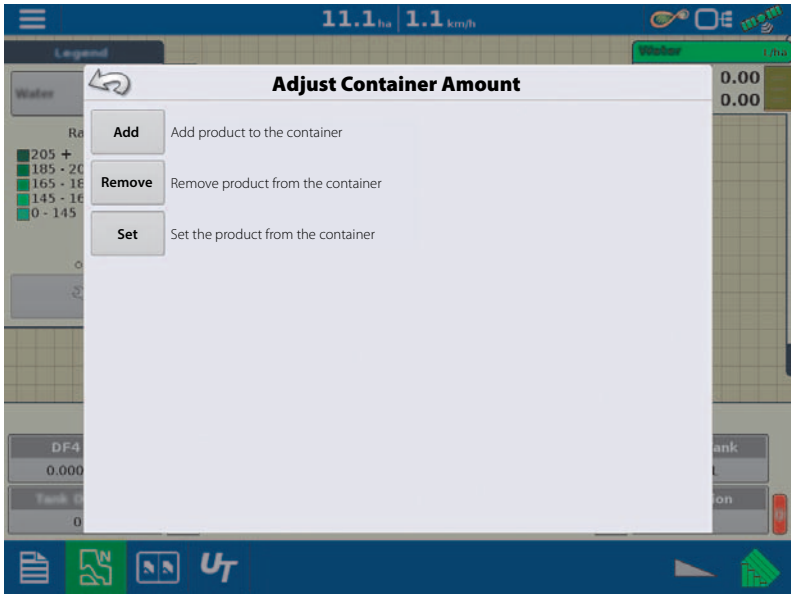
  Adds product to the main tank.

- Remove

  Removes product from the main tank.

- Set

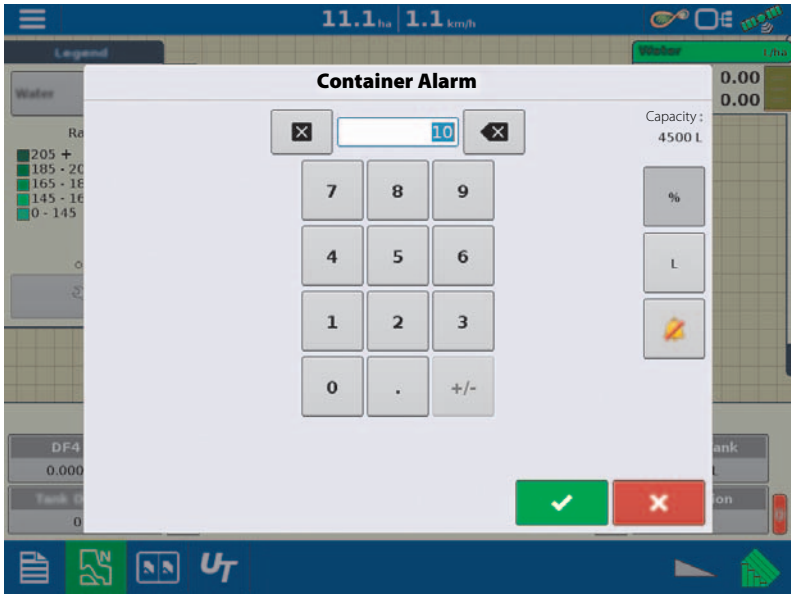
  Sets the product level in the main tank.



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 tanks units of measurement you specified during the Controller configuration procedure.

- Disable Low Tank Level button

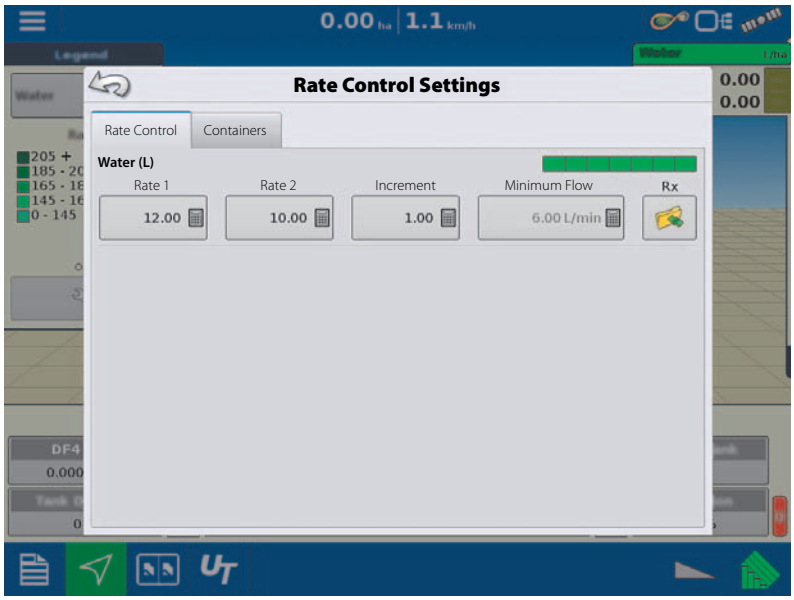
  Disables the Low Tank Level warning.

Loading Prescriptions

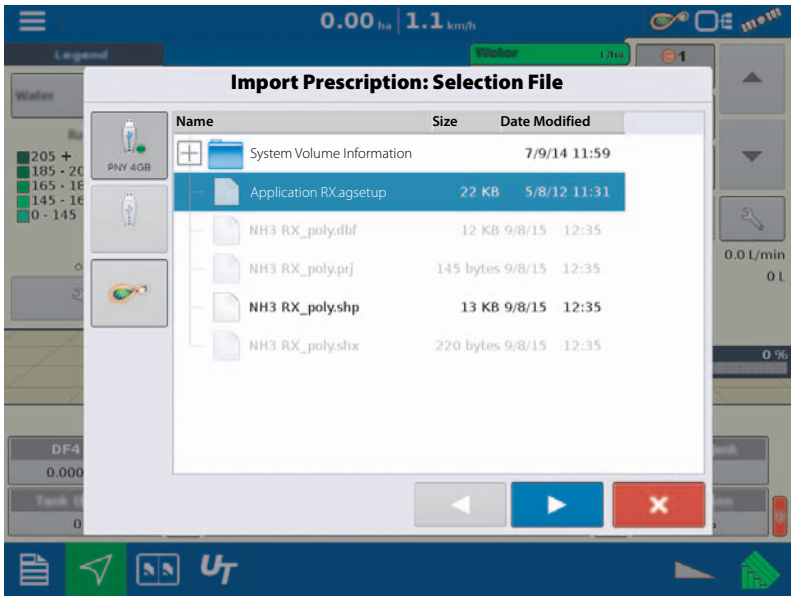
To load a map-based prescription file, press the button on the Product Control Toolbox.

The Rate Control Settings screen appears.

1. Press the button.



2. The Select File screen appears.
3. Highlight the correct .AGSETUP (prescription) or .shp (shape) file and press .



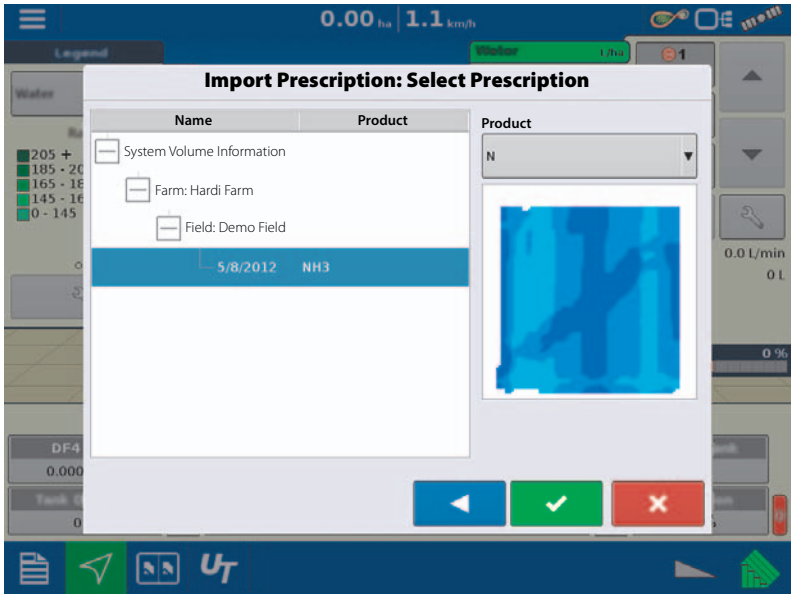
4. Next select your prescription in the Select Prescription screen, and select the correct controlling product from the Product drop-down box. A preview prescription map is displayed.

   Press the .

5. 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.

6. When you return to the Map screen, the prescription is now shown on the map.



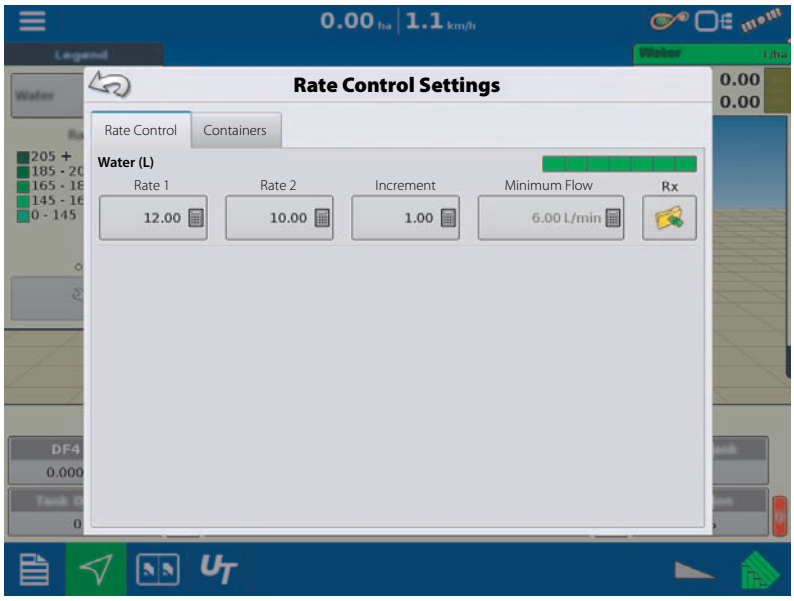
Shape File Conversion

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.

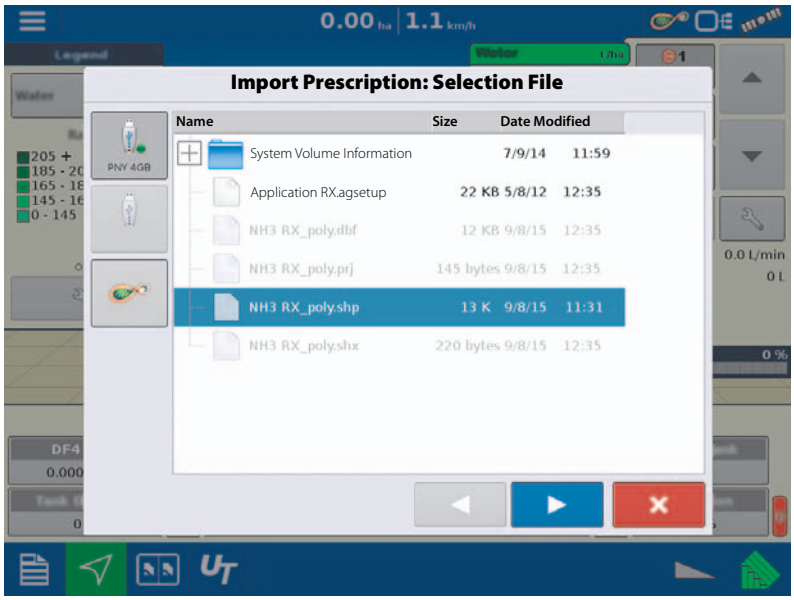
To begin, press the button on the Product Control Toolbox.

The Rate Control Settings screen appears.

1. Press the button.



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



3. Select Column From Shape File

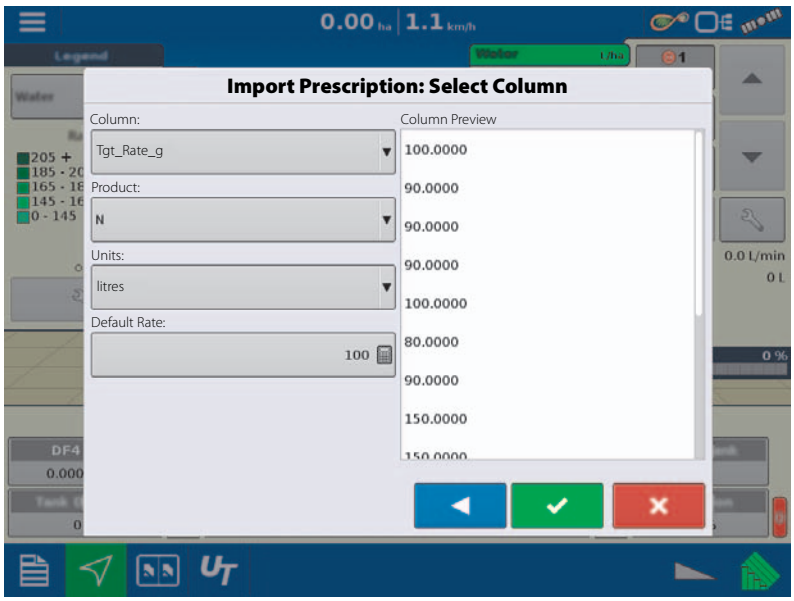
   Select the column that contains the product recommendation rate. The list on the right side of the dialogue shows sample data from the selected column.

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! Select the product and units that the shape file prescription was made for. Selection of the wrong data column or unit will result in misapplication of product.

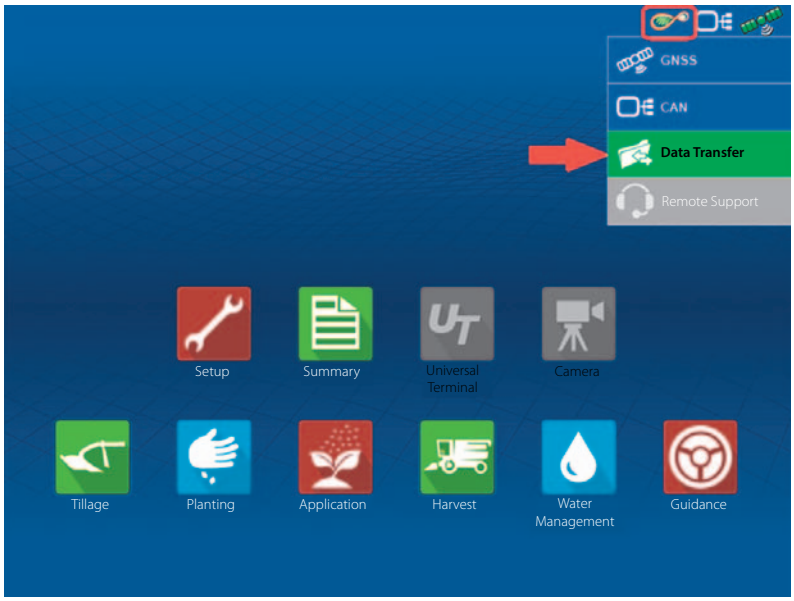
ATTENTION! The only time the default rate is used by the system during product application is if the Rate Outside of Field selection is set to "Rx default". This setting is located in the equipment configuration settings portion of configuration setup.

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.

AgFiniti

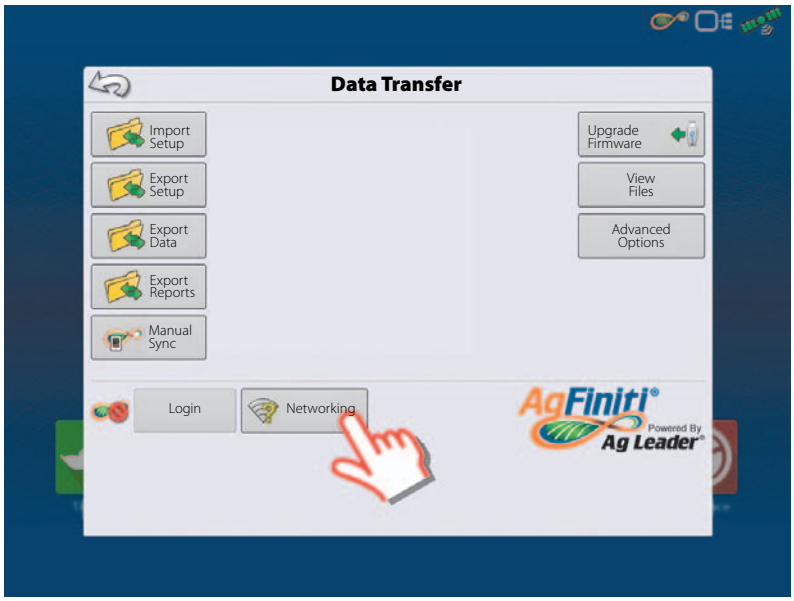
Display Access Point connection type

1. With the Wi-Fi adaptor installed in the display, the AgFiniti symbol will show a status indicator in the top right corner of the display. Press the Status Indicator button followed by pressing the Data Transfer button.

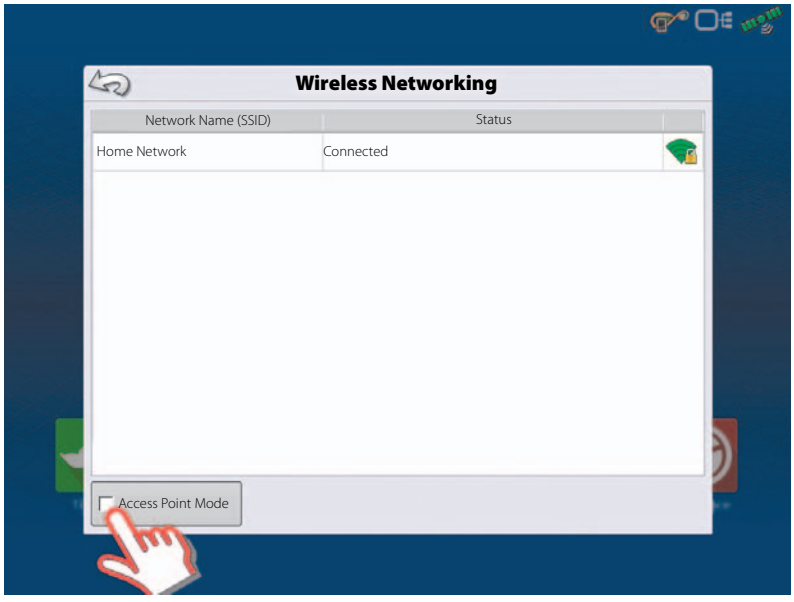


2. Press the Networking button

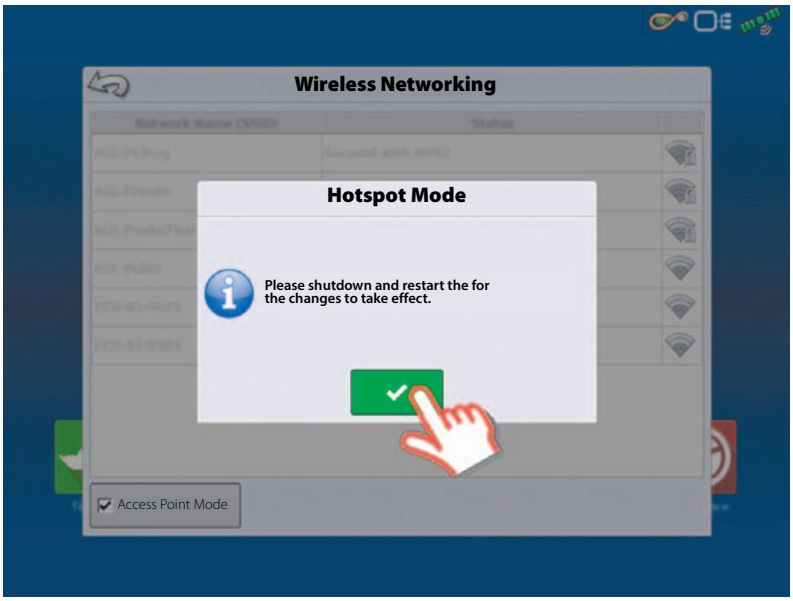
NOTE! If the login button is active, you may utilize one of the connection types.



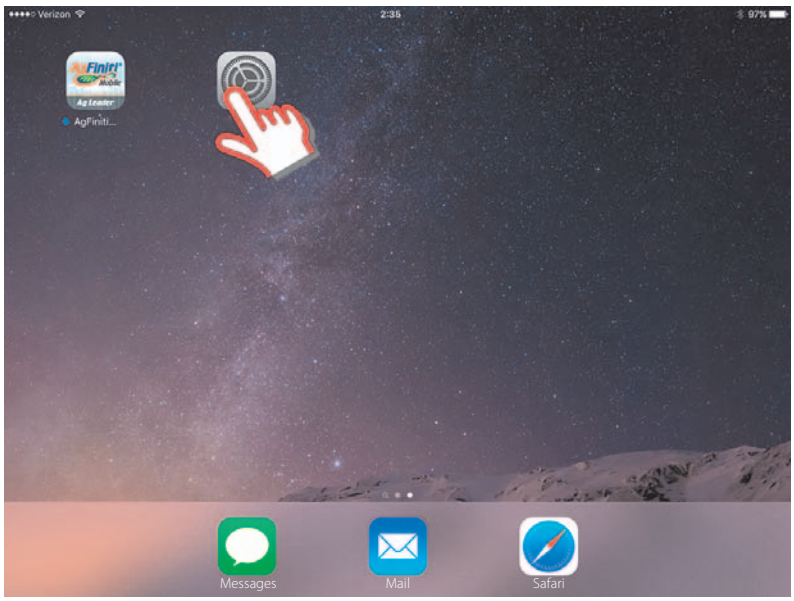
3. On the Wireless Networking page press the "Access Point Mode" button in the bottom left corner of the screen. This will turn on the Access Point mode and will allow your iPad to connect to this display.



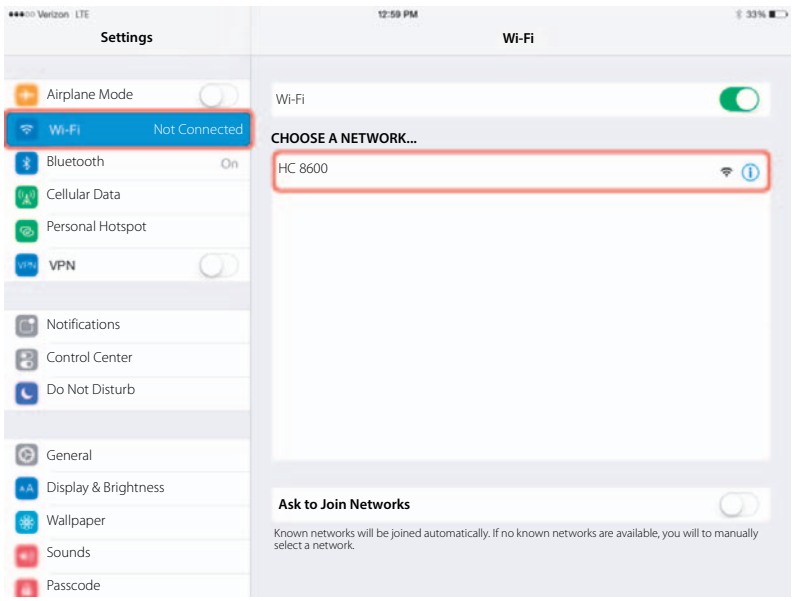
4. For Access Point mode to be enabled the display will prompt to be restarted. At this point restart the HC 8600/9600 display by manually depressing the power button to shut down and then repeat to restart the display
5. After the restart the display will be broadcasting a Wi-Fi signal and can now be selected on the iPad.



6. To connect to the display Wi-Fi signal via the iPad, first go to the settings button on the device.



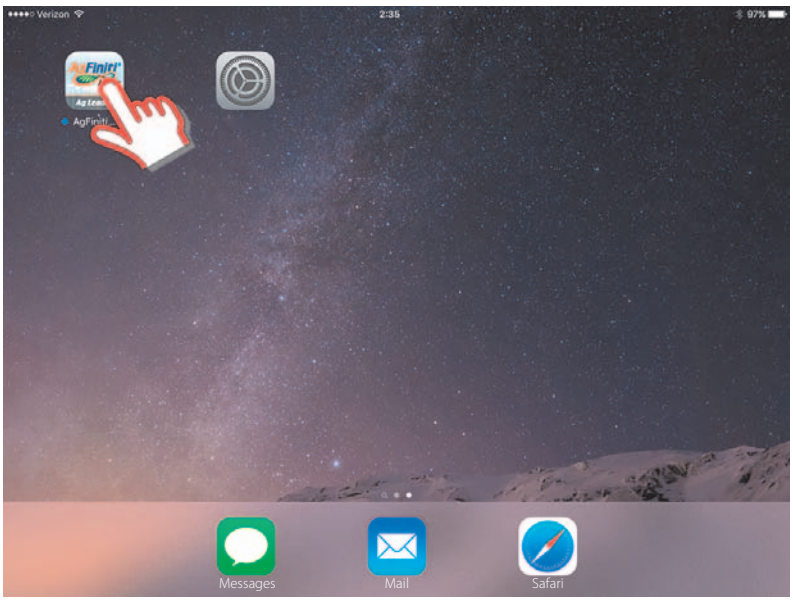
7. Select the "Wi-Fi" tab from the left side menu, ensure that "Wi-Fi" on the iPad has been enabled then highlight and connect to the "HC 8600/9600" wireless network. This will connect the iPad and HC 8600/9600 display together and ensure proper data transfer.



8. Once connected to "HC 8600/9600" proceed to open the AgFiniti Mobile app.

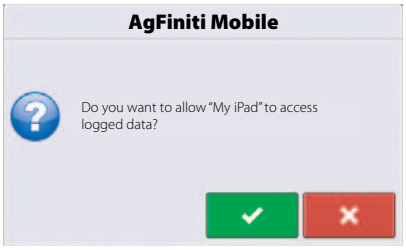
NOTE! Download AgFiniti Mobile from the Apple App store.

9. Once AgFiniti Mobile is open, it will automatically attempt to connect to the HC 8600/9600 display



10. Once the HC 8600/9600 display has been found the display will prompt user to allow connection to happen

NOTE! This should only happen once per device. Once a device has been recognized the device credentials are stored in the display (wait up to a minute after opening the app for this to occur)



11. After pressing the green check mark the mobile device will begin accepting data from the display as it becomes available. This is indicated by the device symbol within the AgFiniti status indicator on the top right corner of the screen.

At this point your HC 8600/9600 display and iPad are connected and ready for data transfer. If there are any closed or suspended events present on the HC 8600/9600 display, they will be transferred to the iPad once the app is opened.

AgFiniti Mobile

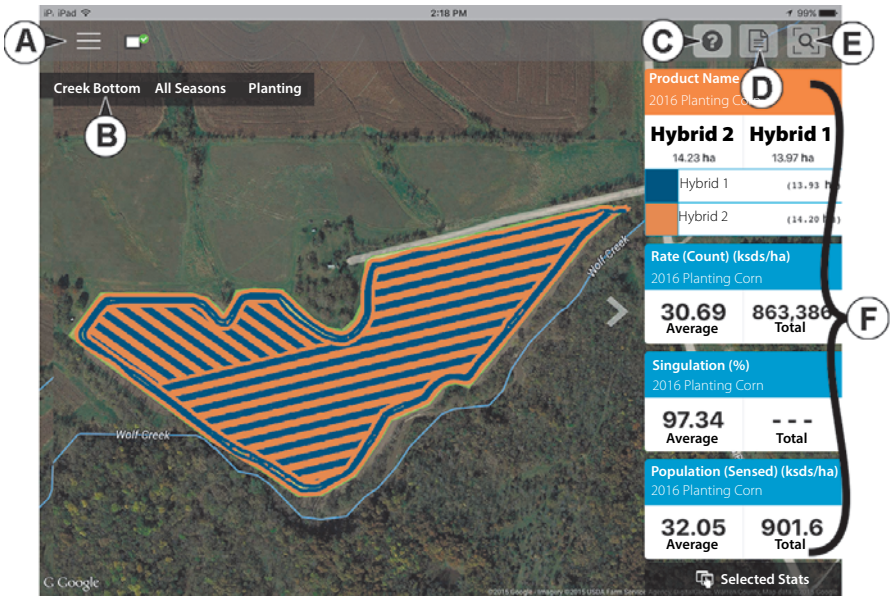
After connecting your HC 8600/9600 display and iPad, you are now ready to start transferring and viewing data.

Once your connection has been established and you have granted access to the display you should see the display connection indicator go from red (not connected) to blue (downloading) to green (connected).

You should see an additional icon that indicates your maps are being built from the downloaded data.

This process will occur automatically and nothing has to be done on your part for data to be imported, just keep the app open while your data processes. And once the process is complete, your data will automatically be mapped.

Once data is present you should see the layout shown:



A. Menus ("Menu button" on page 139).

B. Filters ("Filters" on page 136).

C. Help button.

D. Summary Reports ("Summary Reports" on page 138).

E. Zoom Options ("Zoom Options" on page 138).

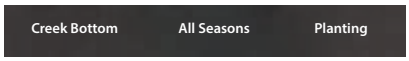
F. Stat Cards ("Stat Cards" on page 136).

NOTE! In order to have background images appear, the app will need access to an internet connection.

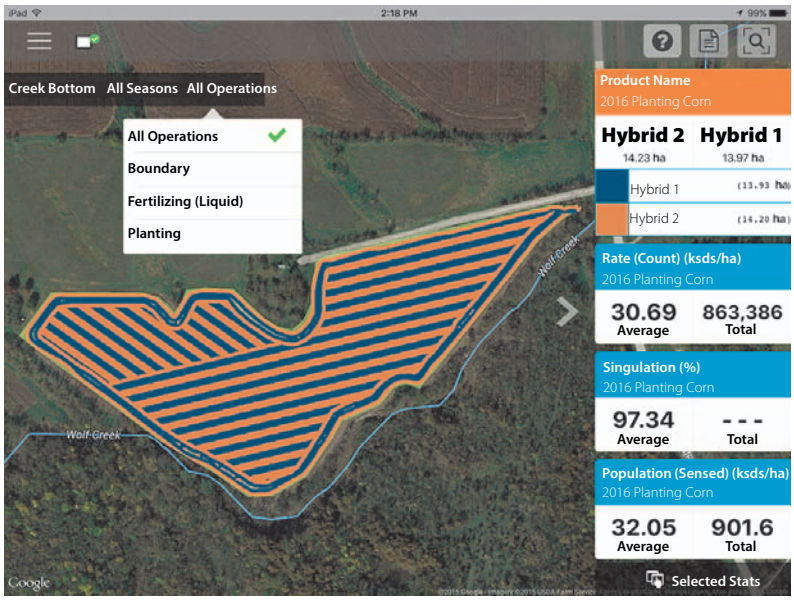
4 - System setup

Filters

To choose different fields, years, or operations you will use the Field/Operation Filters present in the upper left.



To choose different options, tap on the area you would like to filter by and choose from the various options present. You can choose All for both the season and operation filters if you would like to have access to all data present for a chosen field.

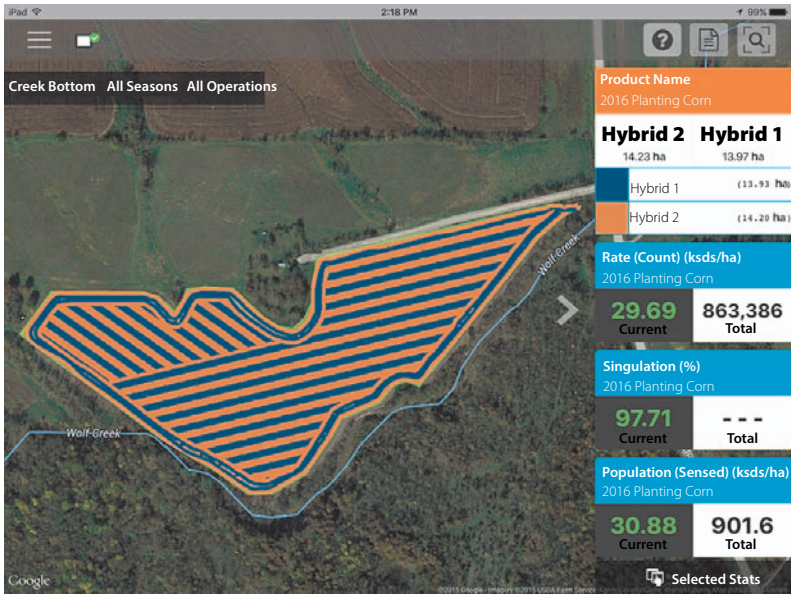


Use the pinch gesture to zoom your map in and out, and choose from other fields present in AgFiniti Mobile.

NOTE! If zoomed out far enough, field coins will appear, Tap a coin to see available fields.

Stat Cards

Along the right side of the app you will see Stat Cards. Stat Cards will contain information for data currently mapped. Tap on the stat card that you would like to view. The stat card that is currently mapped will appear orange in this list. The stat card will also indicate field average (if applicable), total and location specific values if a position is selected (as shown).

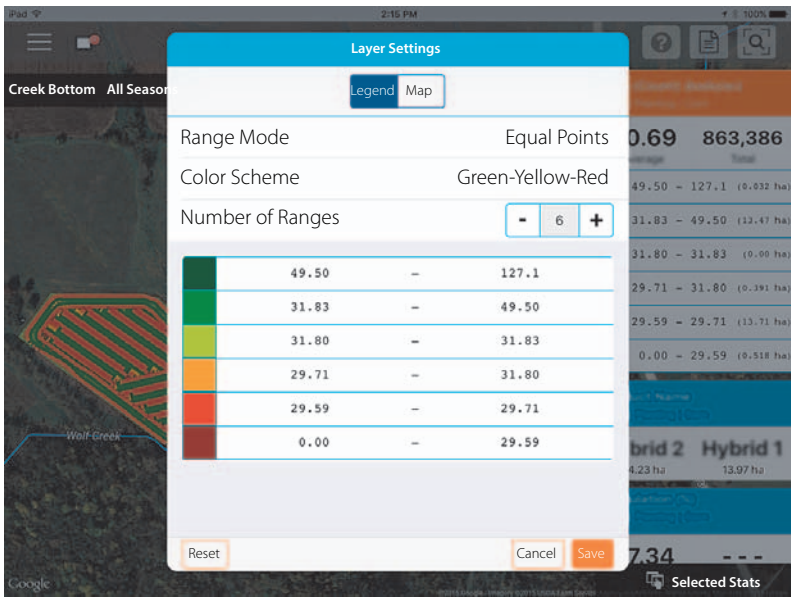


Use the tap gesture to select a location to view information on stat cards and select other card.

You can collapse the stat cards by tapping on the arrow present next to the stat cards and expand it out by tapping on the same arrow again.

NOTE! Tap on a Stat Card's average or current box to view additional details for that specific attribute.

If you wish to edit the legend or map present, you can access the stat options by swiping the stat card title. This will display two options, Edit Source and Edit Settings.



Edit Source will allow you to select multiple years, operations, or events—for example comparing two years of yield data.

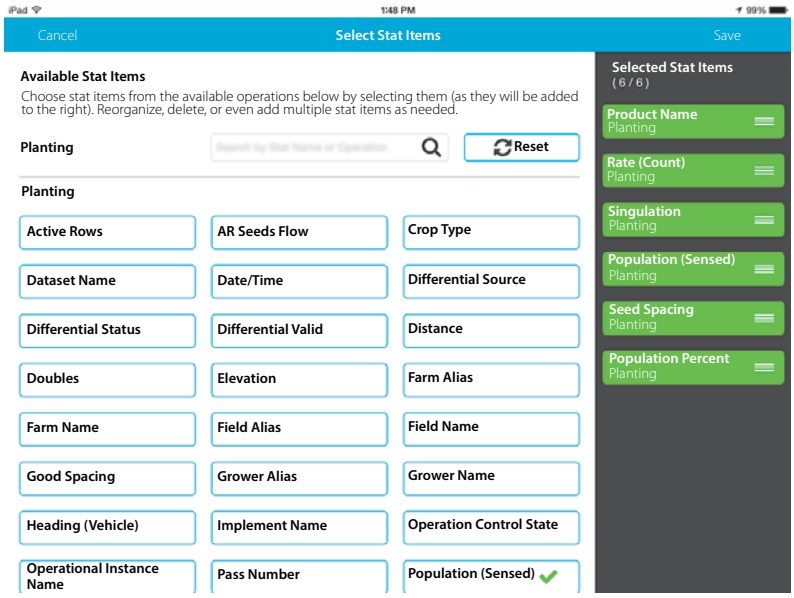
Edit Settings will allow you to change the map and legend settings. Mode, number of ranges and the colour scheme can all be adjusted here. You can also adjust various map settings such as the transparency, map type and drawing settings by tapping on the Map button present (shown).

By tapping on the Select Stats option

, you can choose which stat cards are displayed.

Tap on a stat card to add to the list on the right. To remove a stat card, swipe on the card and then tap the red trash can icon.

NOTE! When changing or resetting stat cards, AgFiniti Mobile will do so by mapped operations. So if Planting is selected and stats are changed, it will do so only for Planting.

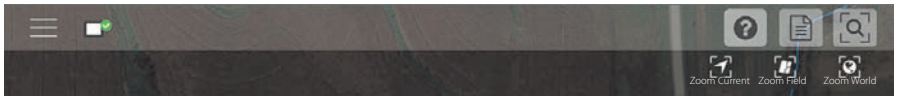


Use the tap gesture to make selections.

Use the swipe gesture to access the edit options.

Zoom Options

Use tap to make selection.



Access the various zoom options present in the app.

Zoom to Current Location

Sets the zoom level to the location the app currently sees. This will only work if you have granted the app access to your location.

Zoom to Currently Mapped Field

Sets the zoom level to the currently mapped field. Shown in the Field/Seasons/Operations selection drop-downs.

Zoom to World

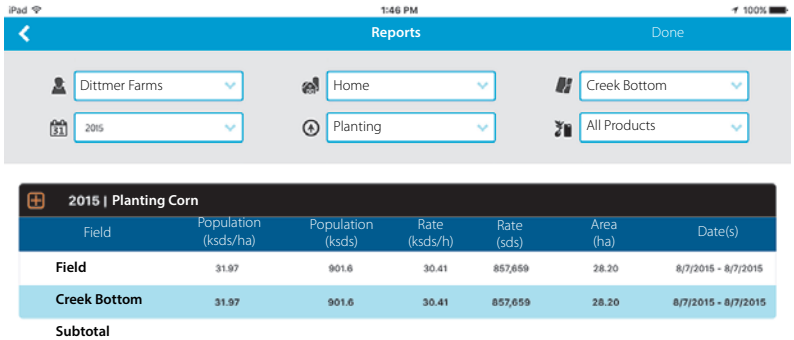
Sets the zoom level to show you ALL fields currently present in the system.

Summary Reports

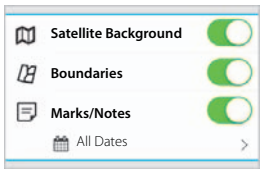
AgFiniti Mobile provides a quick and easy process to view one or more field(s) data in table form. This can allow you to quickly summarize important information as soon as it has been transferred to AgFiniti Mobile. To begin viewing reports, tap the Reports button located next to the Zoom Options along the top bar of AgFiniti Mobile.

Here you can begin choosing which data you would like to include in your report. The reports can be as specific or broad as you would like. You can view a single fields planting information or look at the grain harvest information for all of your fields currently imported into AgFiniti Mobile. To control this simply choose the desired management information in the filters and the report will automatically display information.

Depending on the chosen data, you can expand the 'plus' sign and view product specific information. For example, when viewing a report containing spray mixes applied, the expanded area will include information on the various mix components present in the mix.



Menu button



- Toggle backgrounds.

  Allows you to view the internet background or just the roads.
- Toggle boundaries on/off.

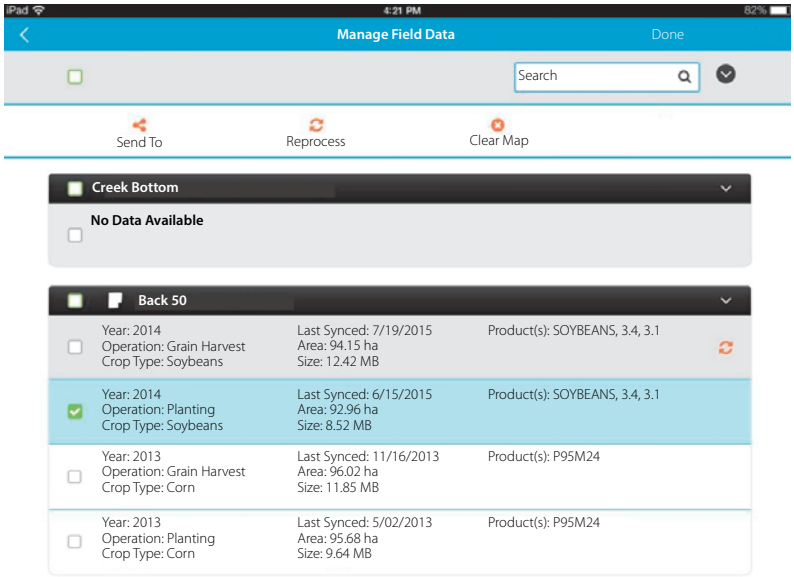
  Allows you to turn on or off the boundary indicators.
- Toggle marks/notes on/off.

  Allows you to turn on or off imported marks and notes.
- Adjust date filter

  Can adjust the date range from which you view marks/notes.
- Settings options

  Allows you to use imperial or metric units.
- Manage Data

  Choosing this option will allow you to free up space by clearing maps, reprocess data to view previously cleared maps and share data imported into AgFiniti Mobile.



Use the tap gesture to make selection.

Maps are automatically processed and displayed upon import so if you want to clear data, select specific layer you wish to clear and tap on the Clear Map button. Clearing maps will free up the size displayed.

If you wish to view a previously cleared map, you will choose the desired layer and tap Reprocess.

To send data via email or third party sharing app, click on the Send To button and choose the desired format you wish to send out to.

With Clear Maps and Reprocess, you can choose all layers, an entire field or specific operations by clicking on the various selection boxes shown here.

AgFiniti Display Settings

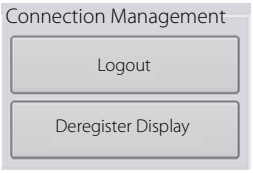
Logging into an AgFiniti Account

Press the login button and enter in the AgFiniti account user name and password. After entering proper credentials the display will be logged into AgFiniti Cloud and the user can access services available on the account. Once logged into an AgFiniti account the display, the display becomes registered to the users AgFiniti account and will automatically login on display startup if internet access is available.

Logout and De-register Display

Logout

This will log the display out of the current AgFiniti Account. If the user does not want to automatically connect AgFiniti Cloud on startup they must logout. Logging out of an AgFiniti account does not deregister the display from an AgFiniti Account.

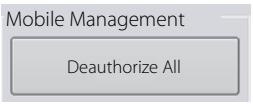


Deregister Display

When logged into AgFiniti Cloud the user can deregister the display from their Agfiniti account. This will unlink any AgFiniti licenses tied specifically to the display.

Mobile Management

The "Deauthorize All" button will deregister any mobile devices that have been authorized to access the display's logged data.



File Transfer

To use file transfer on the HC 8600/9600 display, the following requirements need met:

1. User account created at www.agfiniti.com.
2. Annual license purchased and active.
3. HC 8600/9600 display connected to internet source via WI-FI adaptor.
4. Be logged into AgFiniti account on HC 8600/9600 Display.
5. AgFiniti will become an available option when an import or export function is chosen from the data transfer page.
6. Press the AgFiniti Symbol to export to AgFiniti Cloud.

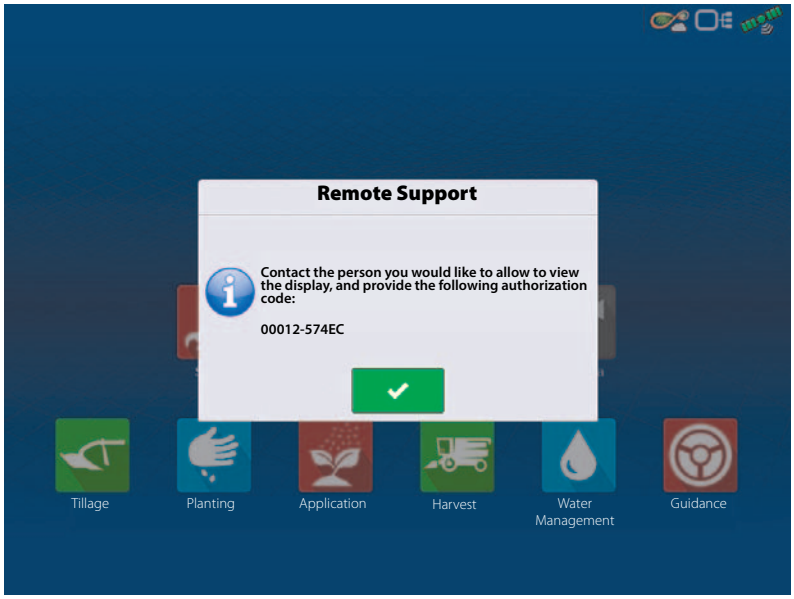
Remote Support

To use remote support on the HC 8600/9600 display, the following requirements need met:

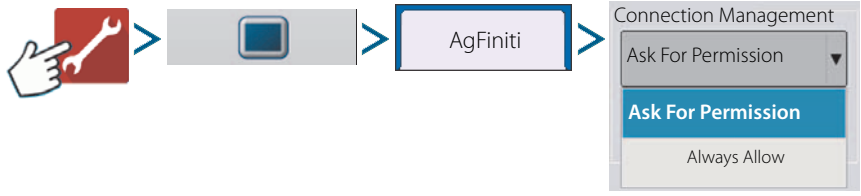
1. User account created at www.agfiniti.com.
2. Annual license purchased and active.
3. HC 8600/9600 display connected to internet source via WI-FI adaptor.
4. Be logged into AgFiniti account on HC 8600/9600 Display.
5. From www.agfiniti.com a user can remotely view the display.

Remote Support Pre-authorization

Pressing the remote support button will generate a 10 digit code that can be verbally communicated to remote viewer to initiate the viewing session.



Remote Support Permissions Options



- Ask for Permissions

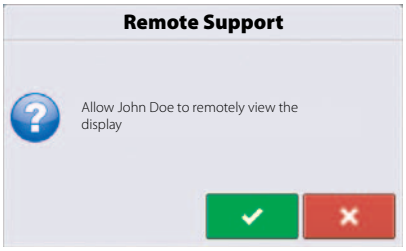
  This selection will require the display user to grant remote user permission to view the display.

- Always Allow

  Allows remote viewer to view display screens without display user having to give permissions.

Allow remote viewer access to view the display.

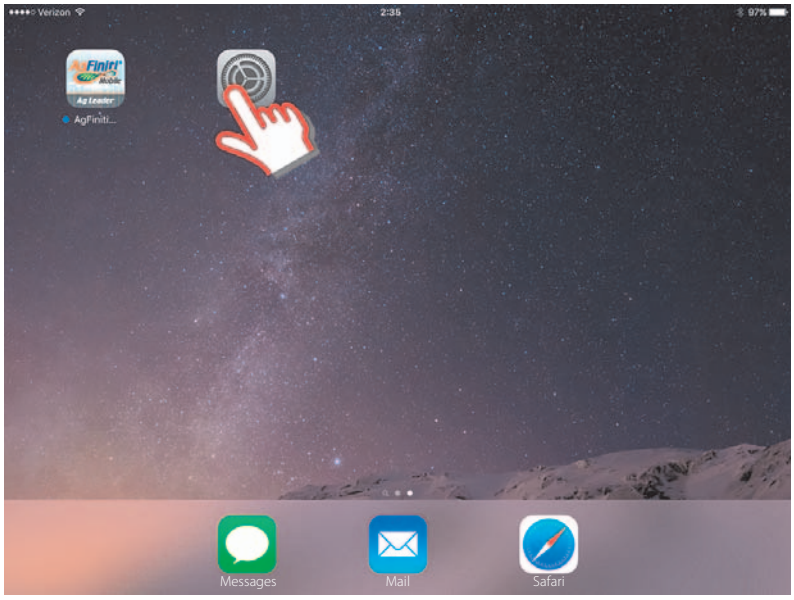
Deny remote viewer access to view the display.



When a remote view session has been initiated the status bar at the top of the screen will turn from blue to green.

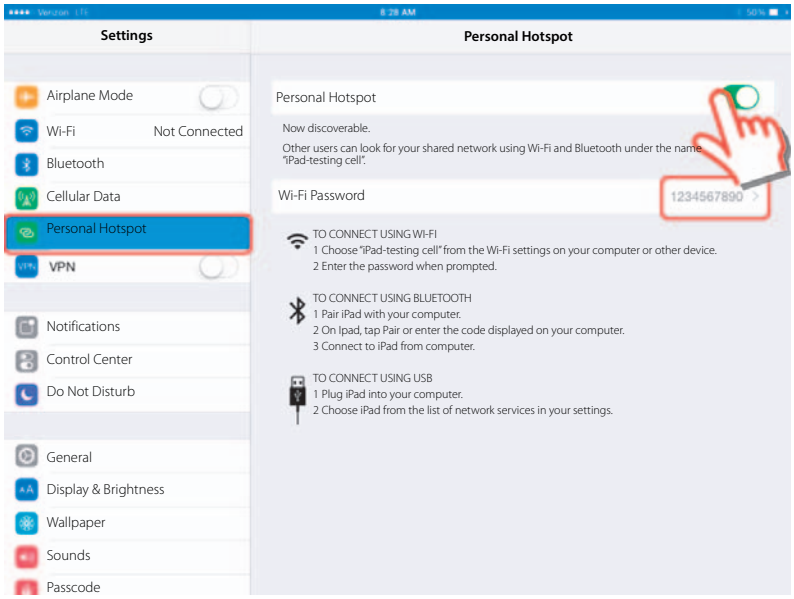
Cellular iPad as Personal Hotspot Connection

1. To enable Personal Hotspot mode on the iPad start by pressing the settings button.



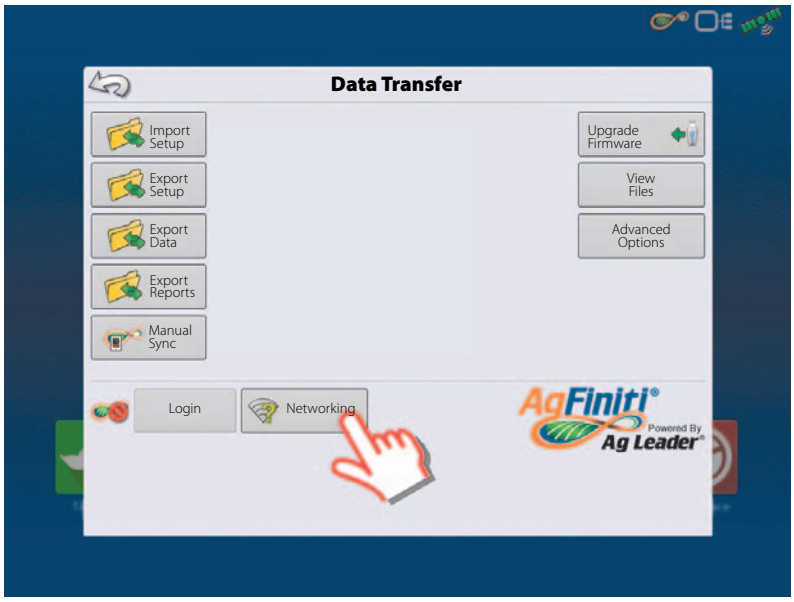
2. Select Personal Hotspot from the left side menu and enable by pressing the on/off switch from the top right side. Once enabled take note of the Wi-Fi password as it will be needed in the next step.

NOTE! This password can be changed if desired.

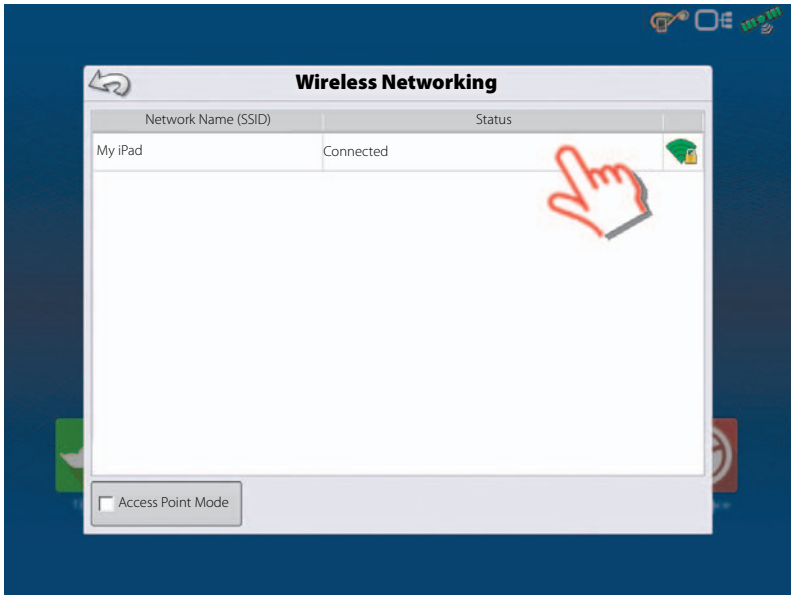


3. Within the HC 8600/9600 display, with the Wi-Fi adaptor installed, the AgFiniti symbol will show a status indicator in the top right corner of the home screen. Press the Status Indicator button followed by pressing the Data Transfer button.

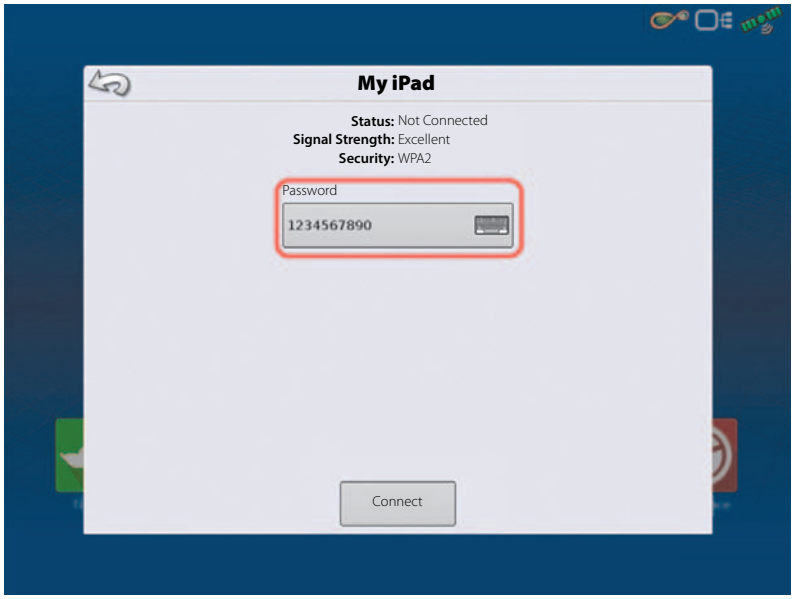
4. Press the Networking button.



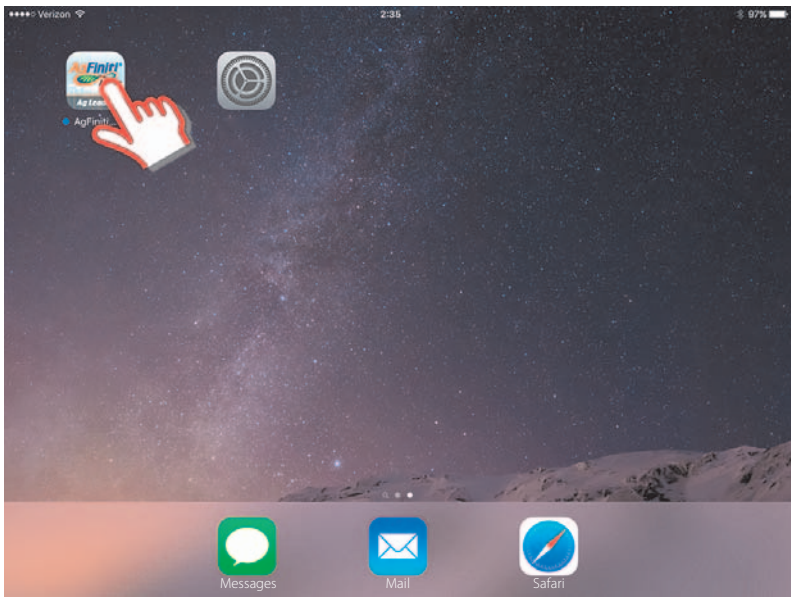
5. On the Wireless Networking page select the iPad from the list. If the iPad isn't available from the list try turning the personal hotspot mode on the iPad off and then back on.



6. At this point you will be prompted for the password from step 2. Enter the password and press the connect button.
7. The display is connected to the iPad.

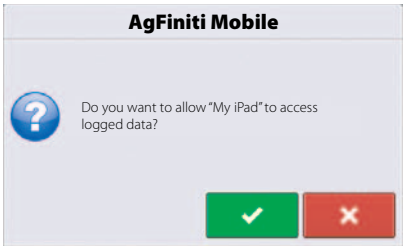


8. Go back to the iPad and open the AgFiniti Mobile app. Once the AgFiniti Mobile is open, it will automatically attempt to connect to the HC 8600/9600 display.



NOTE! Download AgFiniti Mobile from the Apple App store.

9. Once the HC 8600/9600 display has been found the display will prompt user to allow connection to happen.



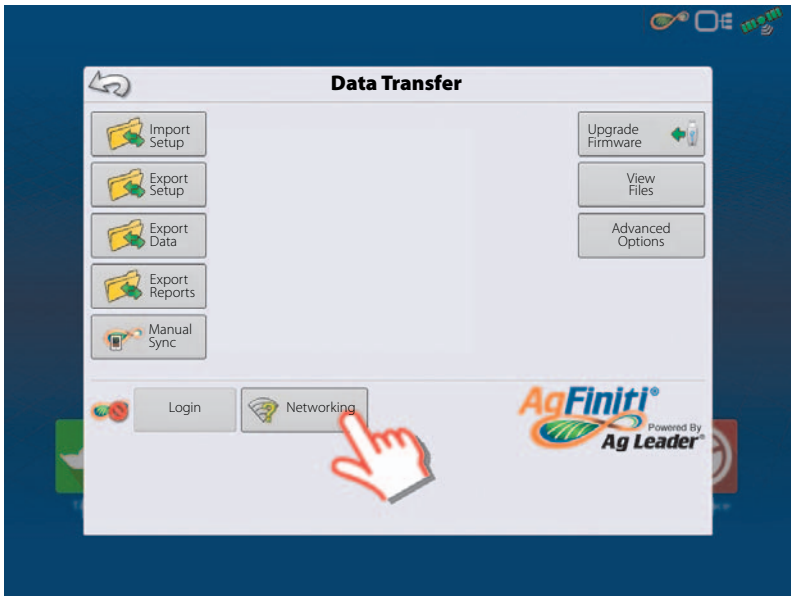
NOTE! This should only happen once per device. Once a device has been recognized the device credentials are stored in the display (wait up to a minute after opening the app for this to occur).

10. After pressing the green check mark the mobile device will begin accepting data from the display as it becomes available. The AgFiniti Status Indicator will show a device symbol within it on the top right corner of the screen. Note: If display is logged in to AgFiniti Cloud a cloud symbol will also appear in the AgFiniti Status Indicator.

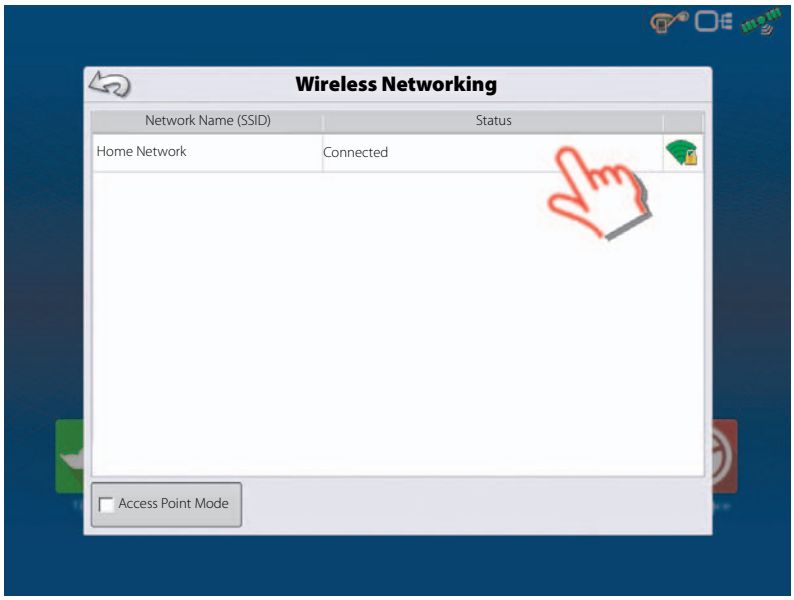
Shared Wi-Fi Network Connection

1. First connect the HC 8600/9600 display to the wireless network. With the Wi-Fi adaptor installed in the display the AgFiniti symbol will show a status indicator in the top right corner of the display. Press the Status Indicator button followed by pressing the Data Transfer button.

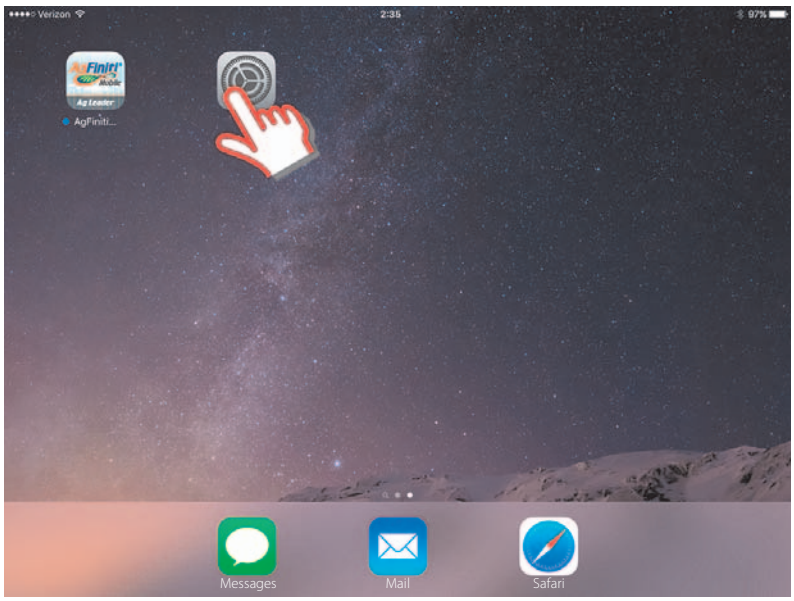
2. Press the Networking button.



3. On the Wireless Networking page, press to select the desired network. This will prompt for a password if needed then allow you to connect to the network.



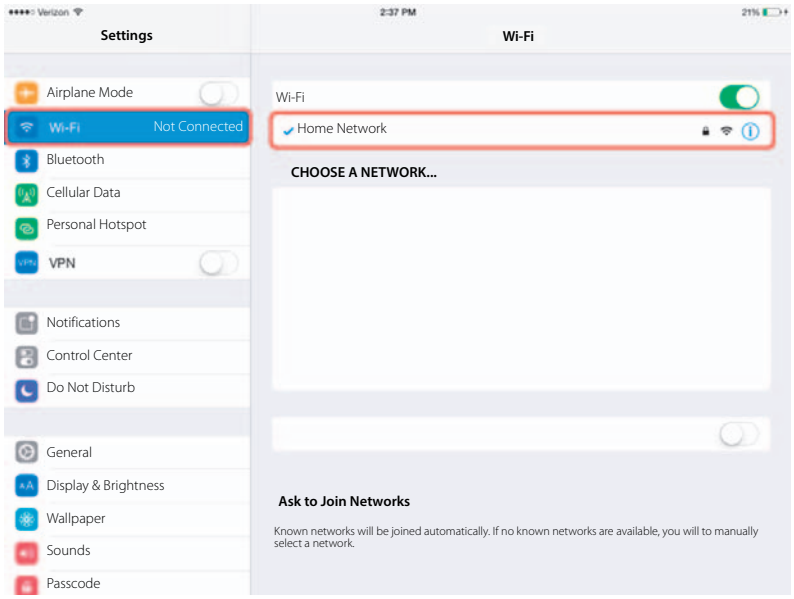
4. To connect to the display WiFi signal via the iPad first go to the settings button on the device.



5. Select the "Wi-Fi" tab from the left side menu followed by highlighting and connecting to the "Home Network" wireless network.

NOTE! A password may be required to connect to the network.

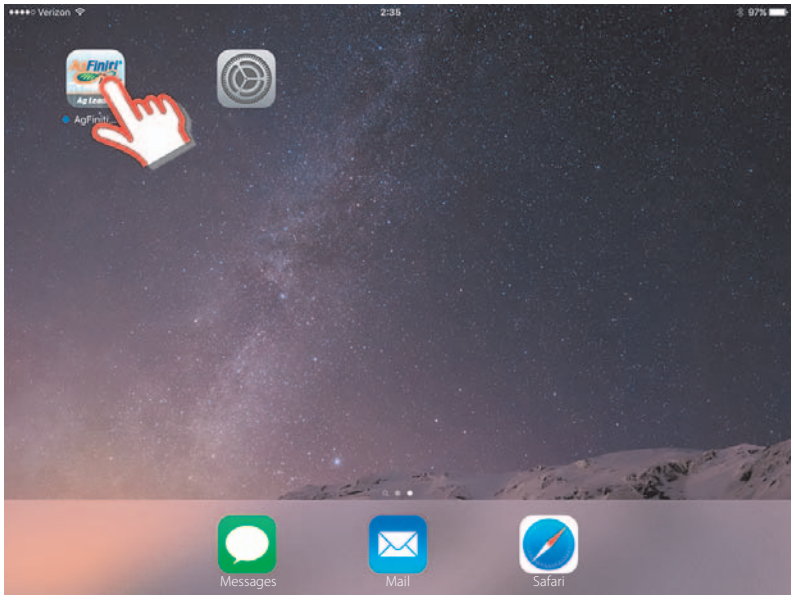
6. Both the display and the iPad should now be on the same network.



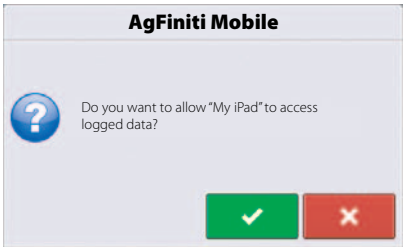
7. Open AgFiniti Mobile app on the iPad.

NOTE! Download AgFiniti Mobile from the Apple App store.

8. Once the AgFiniti Mobile is open, it will automatically attempt to connect to the HC 8600/9600 display.



9. Once the HC 8600/9600 display has been found the display will prompt user to allow connection to happen.



NOTE! This should only happen once per device. Once a device has been recognized the device credentials are stored in the display (wait up to a minute after opening the app for this to occur).

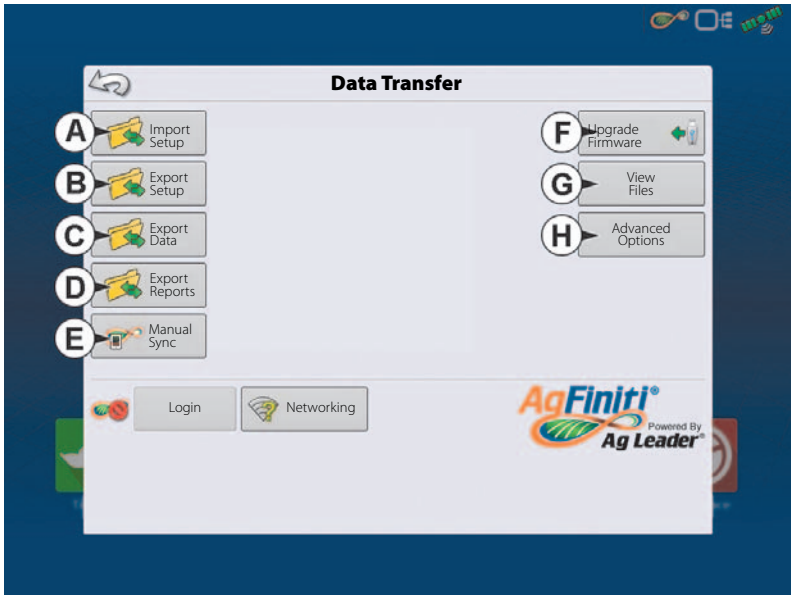
After pressing the green check mark the mobile device will begin accepting data from the display as it becomes available. The AgFiniti Status Indicator will show a device symbol in the top right corner of the screen. Note: If display is logged in to AgFiniti Cloud a cloud symbol will also appear in the AgFiniti Status Indicator.

Data Management

Data Transfer screen

The Data Transfer screen 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 formatted as FAT32.



A. Import Setup
B. Export Setup
C. Export Data
D. Export Reports
E. Manual Sync
F. Upgrade Firmware
G. View Files
H. Advanced Options
   - Create Backup
   - Restore Backup
   - Export by Grower
   - Export at Shutdown
   - Export all Logs

Display Backups

A display backup creates an exact clone of a display's current contents. This includes all management information, configurations, and logged data on the display.

Backups should be taken at regular intervals through an operating season to minimize any data loss in the event of a display failure. Display backups can only be used on a like display with the same or newer firmware than the backup was created on.

Example: A display backup from an HC 8600 cannot be installed on an HC 9600 display or vise versa.

When a display backup is restored onto a display it will overwrite all existing data on that display. Users moving data between multiple displays should use an .agsetup file instead of a backup file to accomplish this task.

.Agsetup files have the ability to merge and add data to a secondary display so there will be no risk of data loss.

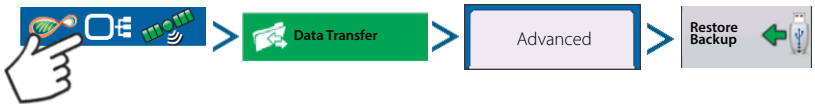
ATTENTION! The .ibk3 file is a system backup file. Backup files are written to USB drive.

Create Backup File (USB drive only)

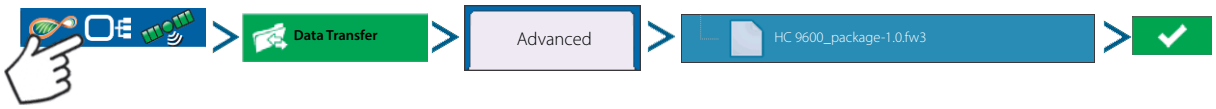
Use to create backup file.

NOTE! Hardi recommends backing up the display regularly to prevent/minimize data loss in the event of a display failure.

Restore Backup File



Upgrade Firmware



ATTENTION! The .fw3 is a firmware upgrade file for the display and control modules. Install firmware updates from USB drive.

Pressing the Upgrade Firmware button allows you to upgrade the display firmware from the .fw3 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 .fw3 firmware file. Highlight the .fw3 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.

Importing Logged Data

.AGSETUP

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

- 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
  - Configurations

NOTE! Do not use the IBK to "clone" a display. Use AGSETUP or make a new setup.

.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
- Able to export by Grower

Exporting Logged Data

After a field operation is completed, data can be exported to USB or AgFiniti. This can be accomplished by pressing the "Export Data" button within the Data Transfer screen ("Data Transfer screen" on page 148) and selecting the export location.

Under the advanced options menu within the Data Transfer screen users can also choose to export by grower and/or at display shut down.

- Pressing the "Export Data" button will trigger all data to be exported based on the last time the export button was pressed. After data has been exported to the external device, it is still retained within the displays memory.

- If previously exported data needs to be retrieved from the display it can be accomplished by pressing the "Export All Logs" button under advanced options within Data Transfer. Export all logs will export all logged data stored on the display.
- Data on the HC8600/HC 9600 displays is not automatically deleted after any export operation. Users have the ability to delete old seasons ("Season tab" on page 77), which includes the logged data, to free up memory on the display.

.AGSETUP

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

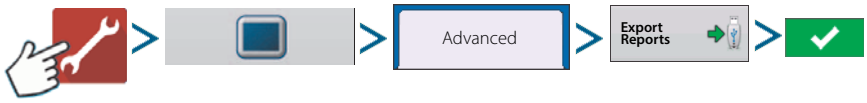
- Allows full synchronization of the following items:
  - Management Data (Growers, Farms, Fields, Seasons, Operators)
  - Products and Product Mixes
  - Boundaries
  - Guidance Patterns
  - Marker Sets and Markers
  - Configurations

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 9600 only)" on page 175 for more information.

Manual Sync

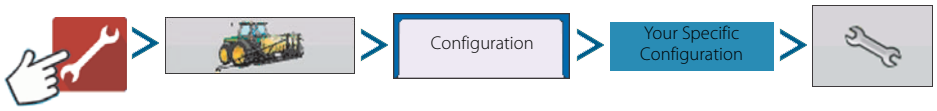
The Manual Sync button is used when logged data needs exported to AgFiniti Mobile when the display operator is still in the middle of the field operation.

Pressing the Manual sync button will prepare data from the active event to be sent to be AgFiniti Mobile. The display operator must disable logging on the Map screen to accomplish this.

When the AgFiniti Mobile app is opened, new data from closed or suspended events is automatically checked for and transfers at regular intervals. The Manual Sync button only needs to be used if the user needs data from the active event and does not want to suspend or close it.

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 91.
- Speed Input. For more information, see "Speed Input Settings" on page 89.
- Automatic Swath Control. For more information, see "Automatic Swath Control (AutoSectionControl)" on page 90.
- Swath Section Offsets. For more information, see "Swath Section Offsets" on page 92.
- Equipment Settings. Not relevant for Hardi sprayers.

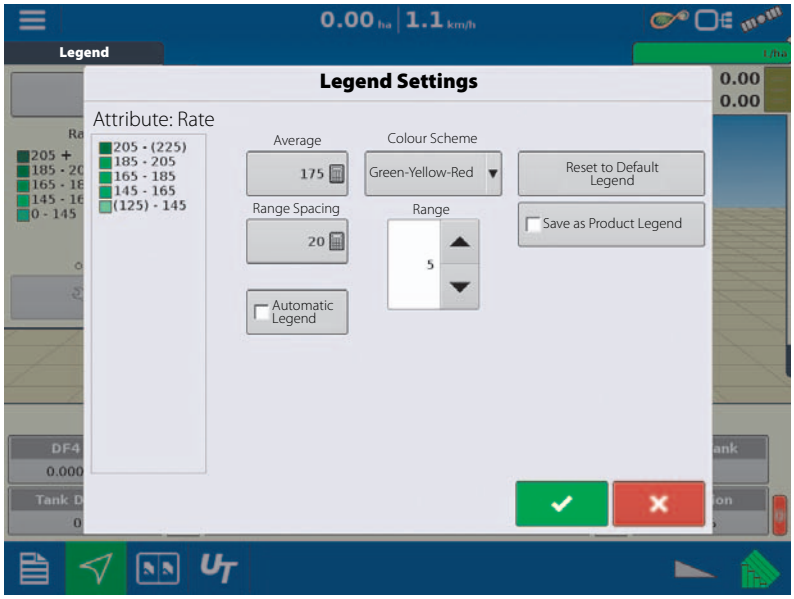
Mapping Toolbox

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!

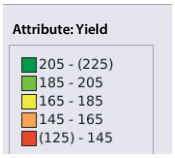
- The Legend Settings screen can also be accessed by pressing the Edit Legend button on the Setup screen's Product Tab.
- Legend settings changes that are made at the Legend Settings screen will affect all regions.



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 colour 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 colour range. Press to edit the legend range spacing value, which is the total number of units represented by a particular colour.

- Ranges

  The Ranges / change the number of range increments displayed in the legend.

- Colour Scheme

  The Colour 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.

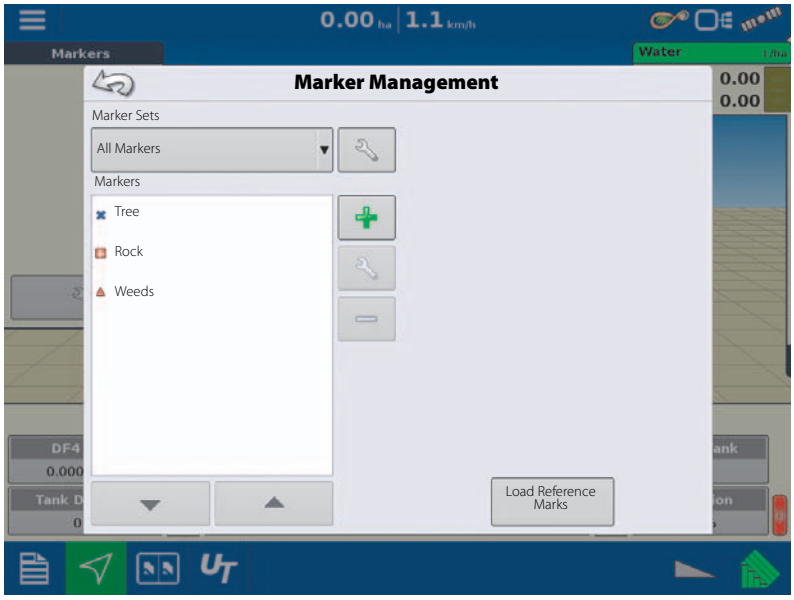
- Save as Product Legend

  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.

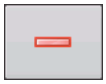
Edit Markers

Marker Sets:

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



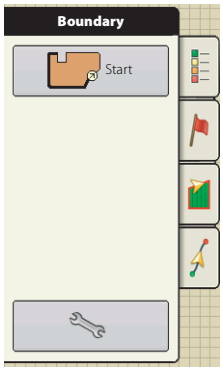
Markers:

- 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

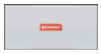
Boundary tab

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

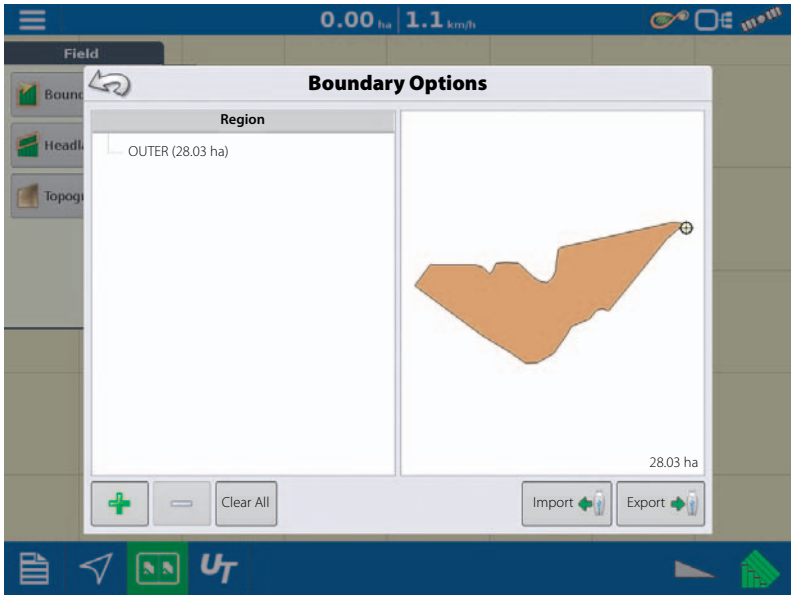


Editing Boundaries

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.

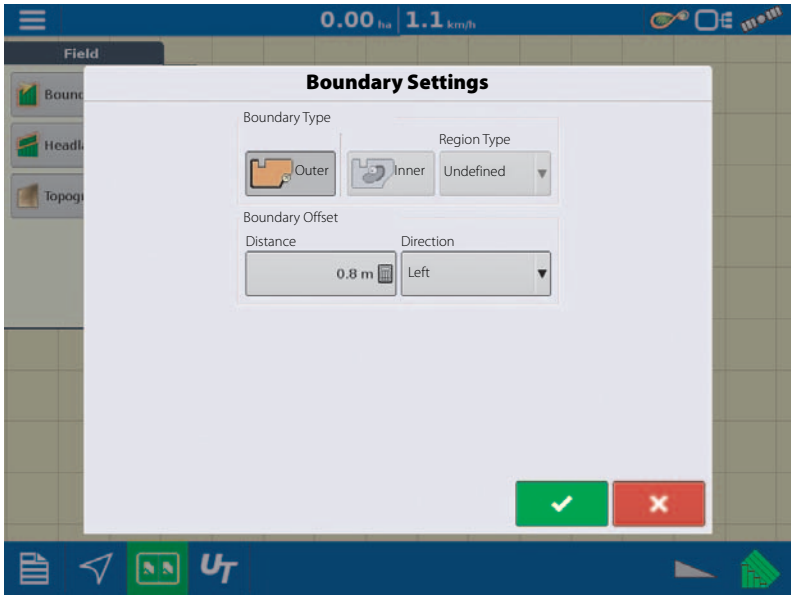


Boundary Settings

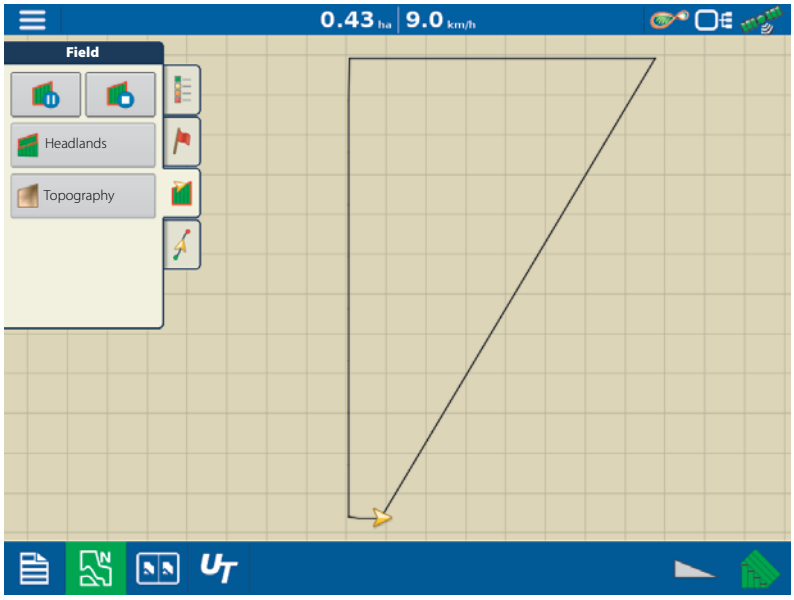
Pressing the Start button opens the Boundary Settings screen.

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.

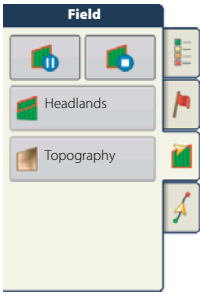


Create Boundary



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 centre line. If desired, specify a Boundary Offset distance by choosing a direction and distance from the GPS antenna centre 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.

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 74.

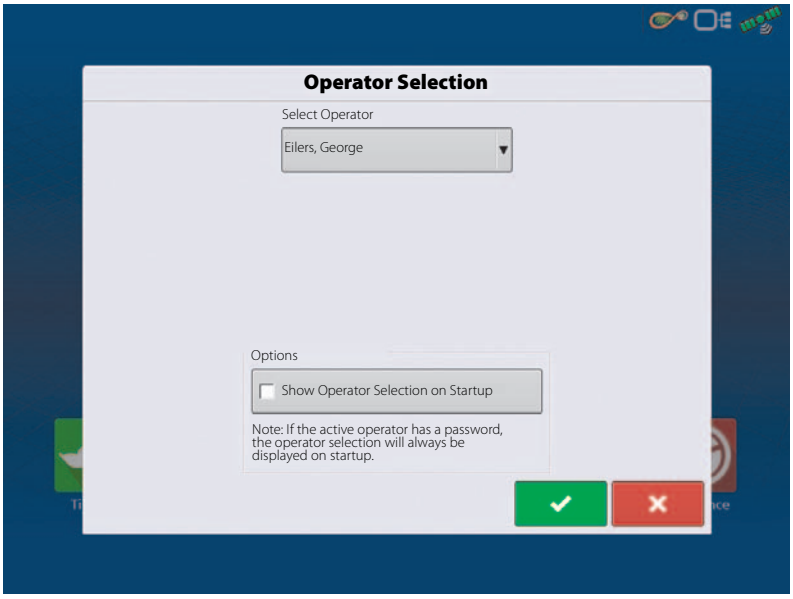
2. Choose the operator from drop-down menu.

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

Press ✓.

3. Enter password. Press ✓.

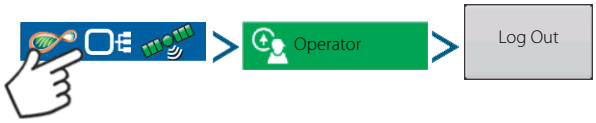
   The operator will now be selected and permissions active.



ATTENTION! If operator is changed in mid operation, the user will be prompted to continue or suspend event.

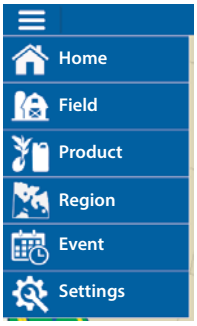
ATTENTION! Operator selection will show each time at start-up if the "Show Operator on Startup" button is check-marked.

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.

Menu Buttons



Menu	☰	Allows quick access the regularly used management and setup features without suspending an operation or leaving the map screen.
Home	Home	Suspends the current event and returns to the Home screen.
Field	Field	Used to change fields and events from the map screen. Takes user to the management selection portion of the Field Operation wizard.
Product	Product	Used to change products or hybrids in the middle of a field operation. Takes user to the product selection portion of the Field Operation wizard.
Region	Region	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.
Event	Event	Setup an Event. See "Setup Event" on page 156
Settings	Settings	Edit settings. See "Settings" on page 170

Events

Events are used to track field operations. New events can be created at anytime and therefore a physical field can be broken into many events or recorded under one. An event contains all coverage maps created while that event was active. Events are automatically named by date and time.

The display can be run in two different modes:

- Traditional mode

  Requires user to specify a Grower, Farm, and Field for the Event. The display associates this information with setup files and logged data. When these files are reviewed or utilized in the future, it provides the operator with a greater depth of information.

- Events Only mode

  Minimizes the setup process so that the display is ready to run in the field with the least amount of setup (just a few button presses).

Setup Event

To start a field operation, press the Application button to start the app from the home screen. The Field Operation wizard will walk through all the steps needed to begin a field operation.

You must have already created the following:

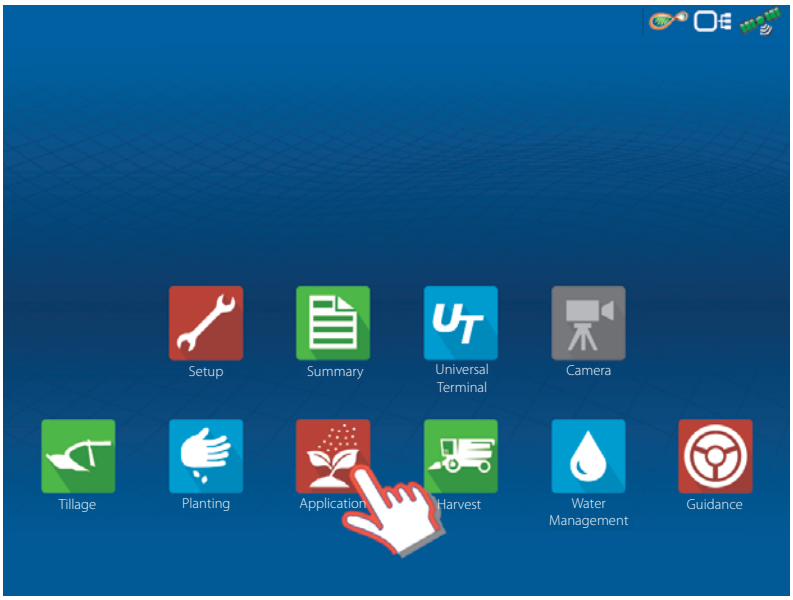
- Completed the "Universal Terminal" on page 45.

or

- Grower, Farm, and Field if "Enable Management" is checked, otherwise the display will track operations based only on events. For more information, see "Management button" on page 74.
- A Season Setup within Management tab.
- 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 72.
- 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.

Press the "Guidance" button to select Operation Configuration.

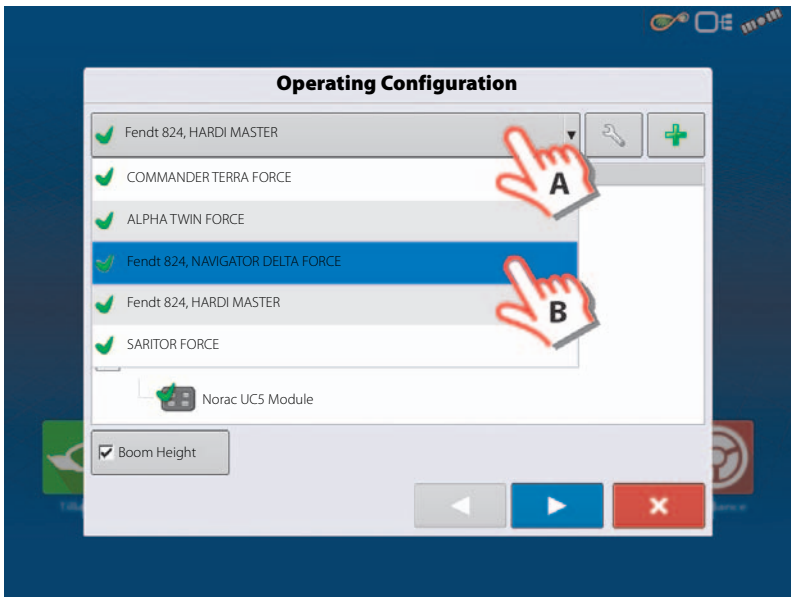


Press the selection box (A), showing the last used configuration, to select Application Configuration for creating a spray job.

Select sprayer configuration in the drop down menu (B).

Only configurations with ✔ will work properly:

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



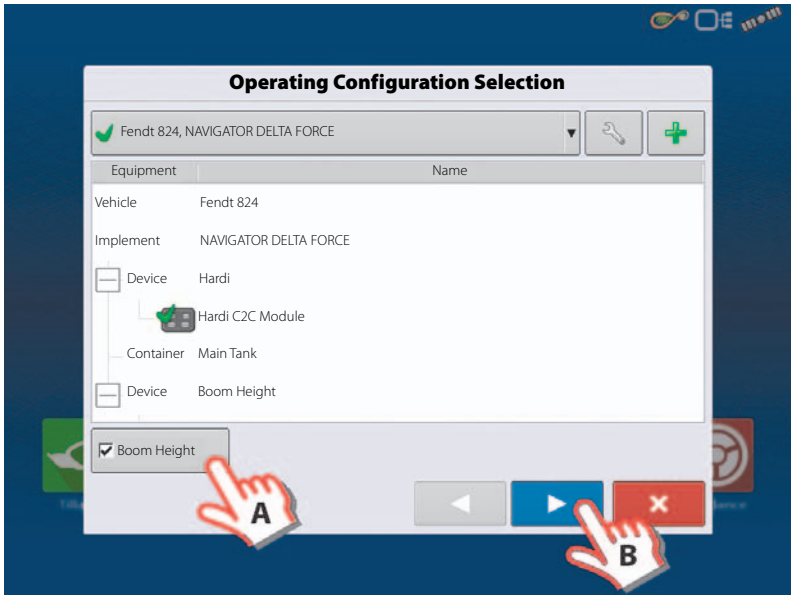
ATTENTION! Options are all configurations previously created for the current display.

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.

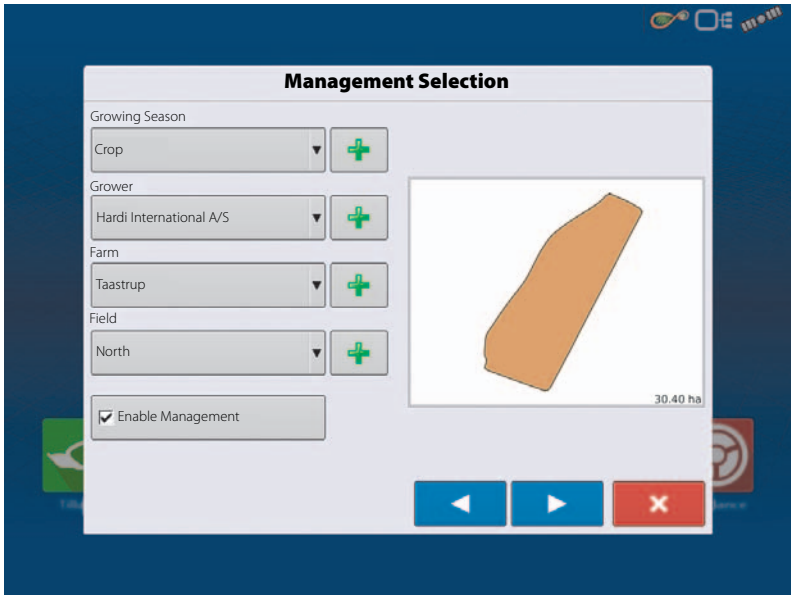


ATTENTION! All Modules Detected:

Display is detecting the module.

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.

Product Selection:

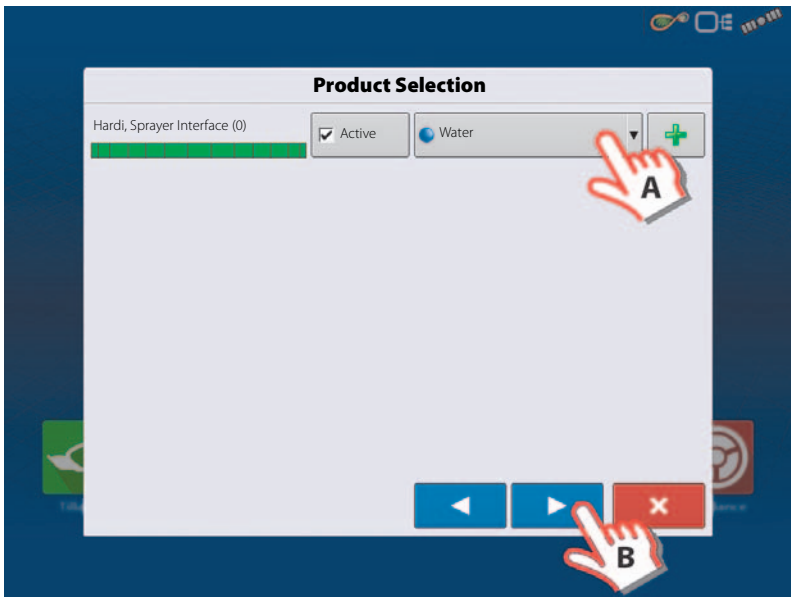
"Hardi, Sprayer Interface (0)" should be selected "Active".

A planting or application configuration must include a product.

A. Select product from the drop-down menu.

   Or press to create a Application Product or Mix/Blend.

B. Press to continue.



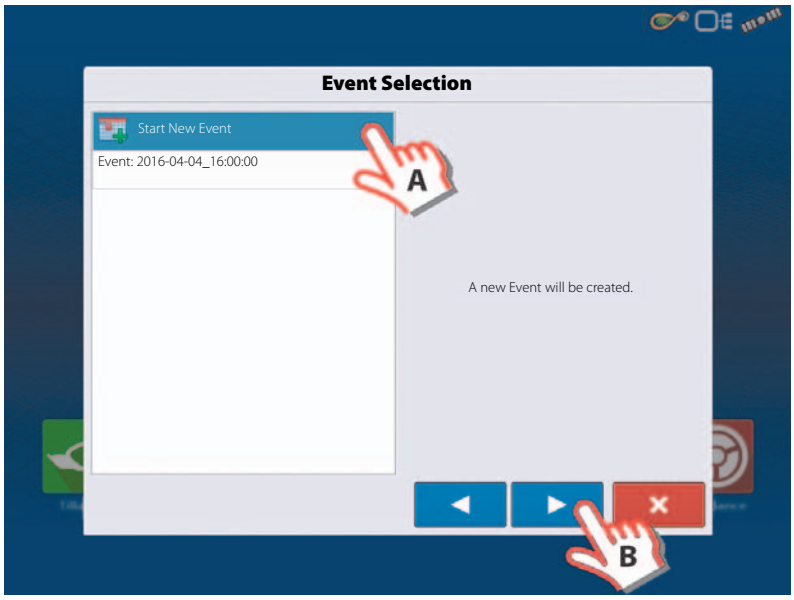
Event Selection:

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.

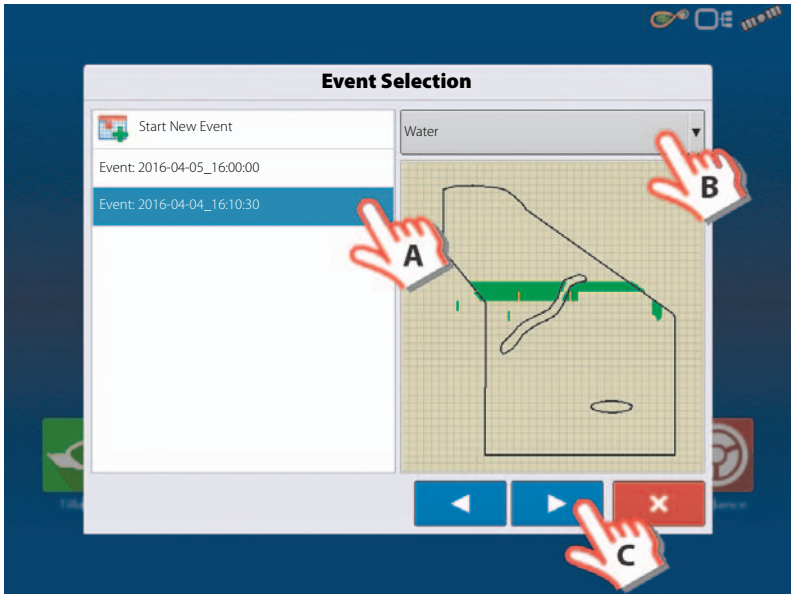


Or select:

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.



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.

Work Screen opens.

Ready to work or doing further settings in the work screen menus.

GPS Button

During your field operation, the GPS (satellite) button in the Status Bar should appear as green, which means you are receiving a differential GPS signal.

If this icon appears in other colour as follows you should in either case check your GPS settings:

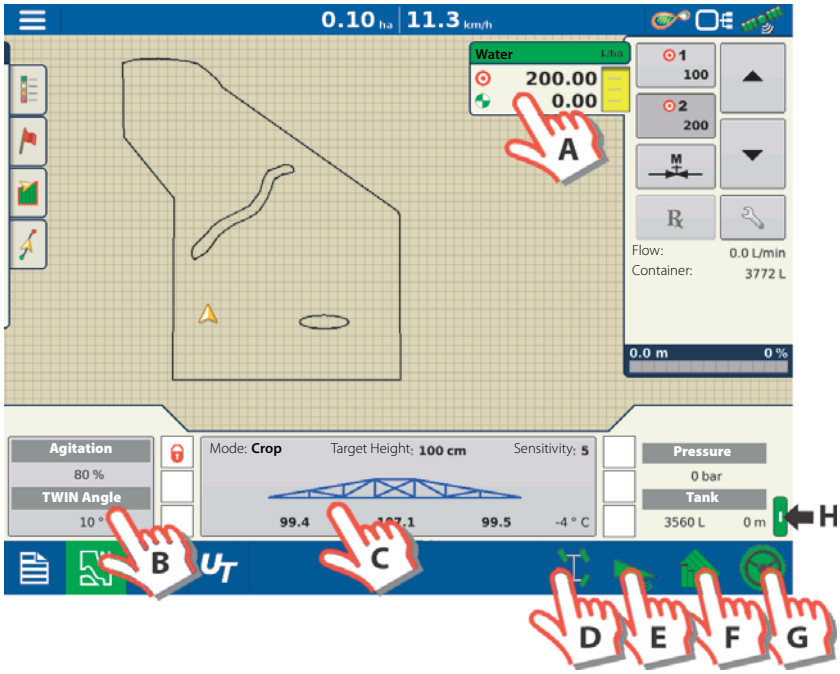
Yellow if you are receiving GPS, but no differential signal.

Grey if you are receiving no GPS signal.

Work Screen Operations

ATTENTION! For detailed information on Work Screen operations, see “Work Screen” on page 19.

Press to get to the Work Screen:



A. Press to expand/collapse “Rate Control” menu, see “Heading Change Button” on page 160.

B. Press to enter “Display Item Selection”, see “Display Item Selection” on page 162.

C. Press to enter “Boom Height Control Options”, see “Boom Height Control Options” on page 162.

D. Press to activate 4-wheel steer logging, see “4-wheel Steer Button (Self-Propelled only)” on page 20.

E. Press to activate AutoTerrain/AutoHeight/AutoSlant, see “AutoTerrain/AutoHeight/AutoSlant button” on page 20.

F. Press to activate AutoSectionControl, see “AutoSwath Button” on page 20.

G. Press to activate AutoSteer, see “AutoSteer Button” on page 20.

H. Main ON/OFF status, see “Master Switch Status” on page 20.

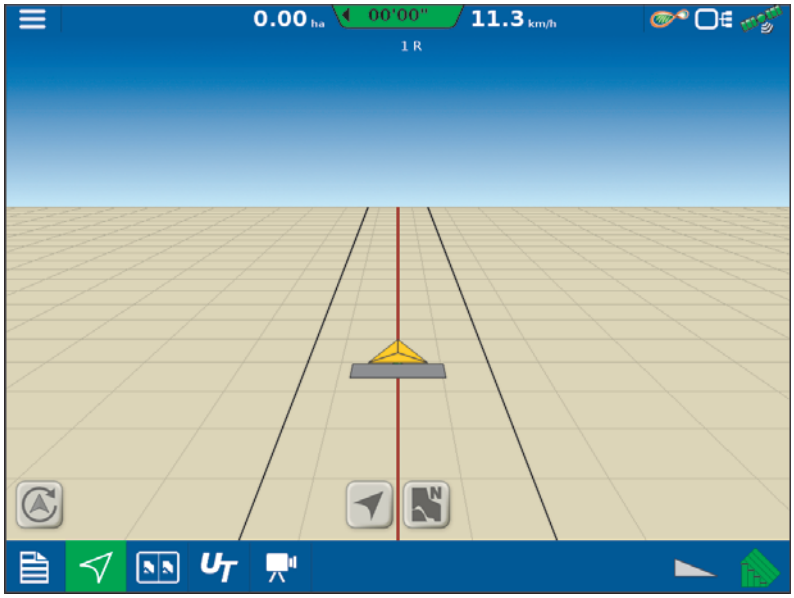
Heading Change Button

The display have built in functionality to establish and keep the correct direction of travel when using GPS receivers that do not have a trusted heading source from an internal compass or steering controller.

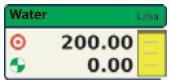
For this functionality to work the user must first establish a forward direction of travel. The direction of travel is set automatically in the background, after acquiring GPS, based on the vehicles first movement after starting an event.

In an instance in which the vehicle icon appears to be upside down or rotated 180 degrees it can be fixed with the Heading Change button.

The Heading Change button can be accessed by tapping anywhere on the centre of the mapping screen and pressing the icon on the lower left corner of the screen.



Rate Control Settings

Press 

to enter the menu:

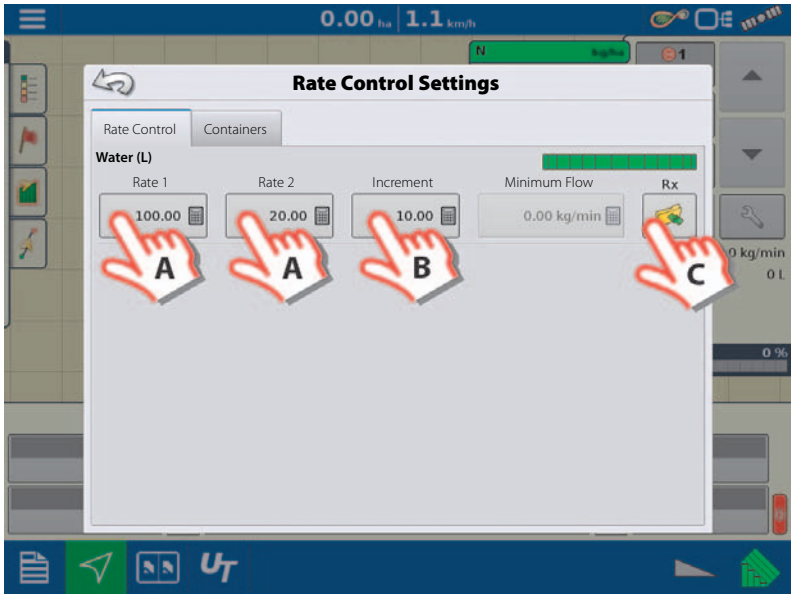
Rate Control tab

A. Press to change Application Rates.

B. Press to change the Target Rate Increment.

C. 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.



Containers tab

D. Press to adjust Container Content.

E. Press to set Container Alarm Content.

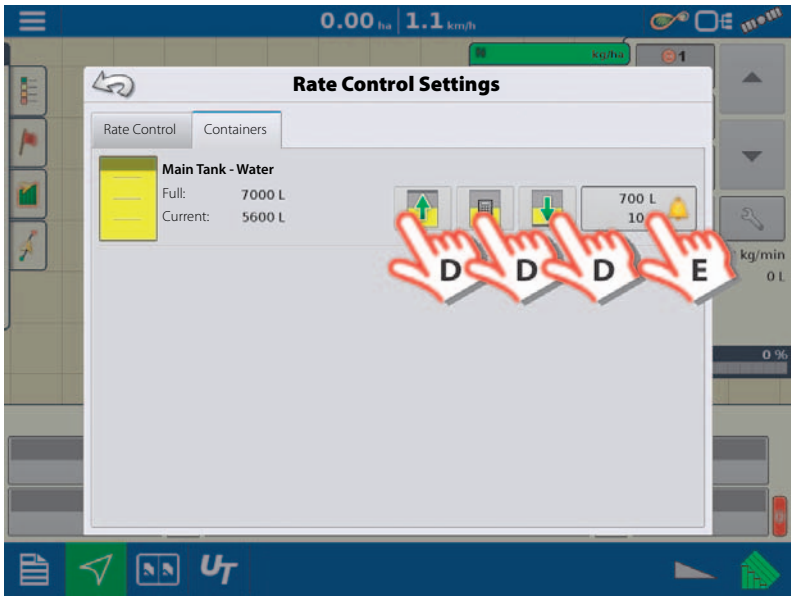
ATTENTION!

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.

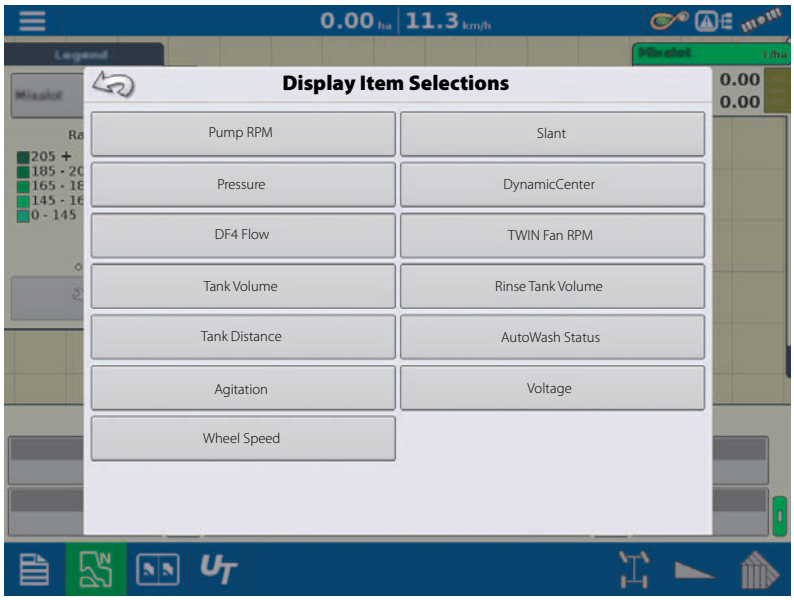


Display Item Selection

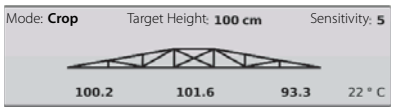
Press one of the four

buttons on the Work Screen to enter the menu:

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



Boom Height Control Options

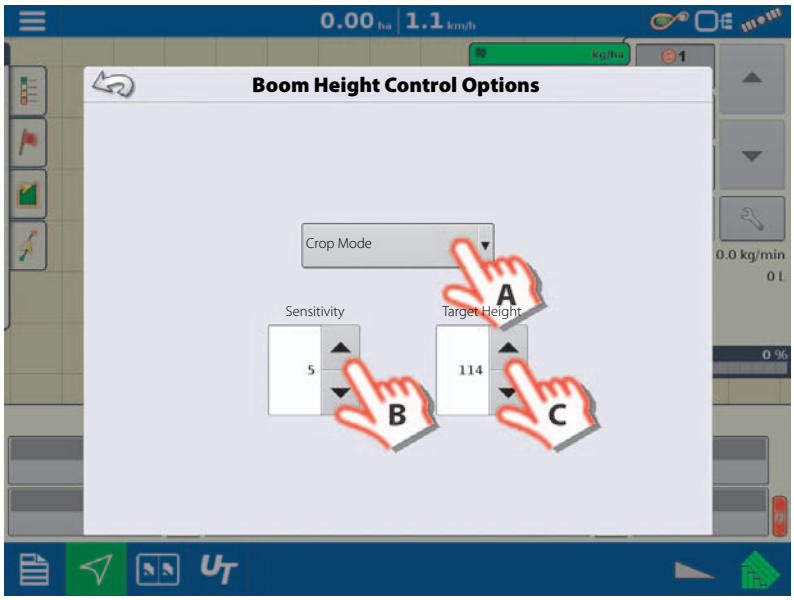
Press 

to enter the menu:

A. Select AutoTerrain/AutoHeight/AutoSlant mode:
   - Crop Mode
   - Hybrid Mode
   - Soil Mode

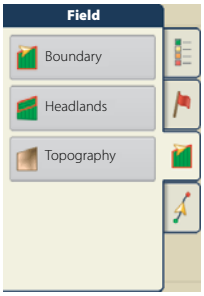
B. Set the Sensitivity by pressing ▲ or ▼.

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



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.

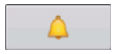
ATTENTION! For headland alarms to work, a guidance line must be loaded.

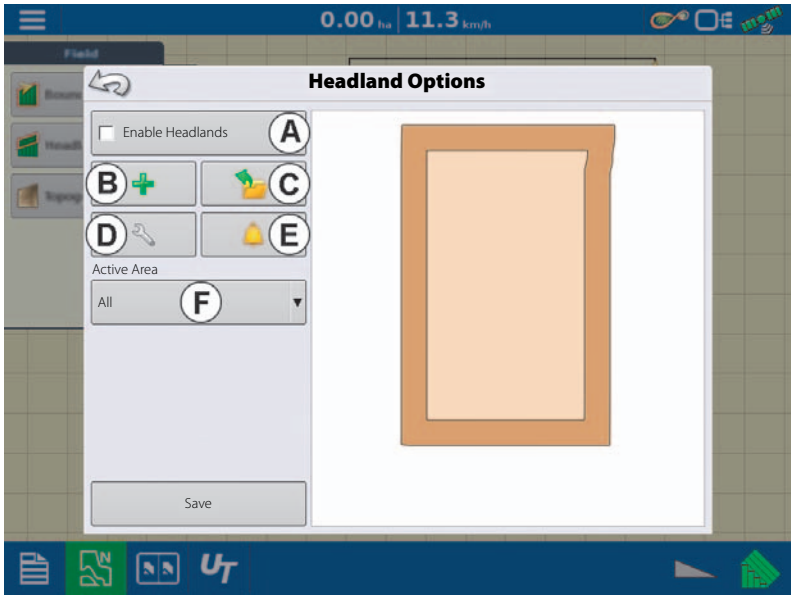
A. Enable Headlands: Use checkbox to turn Headlands functionality on and off.

B. Add Headland

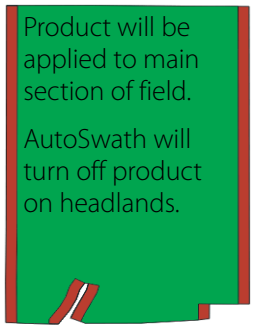
C. Load a Headland

D. Edit Headland

E.  Alarm Settings



Active Area (F)



Work Area

Headlands

All

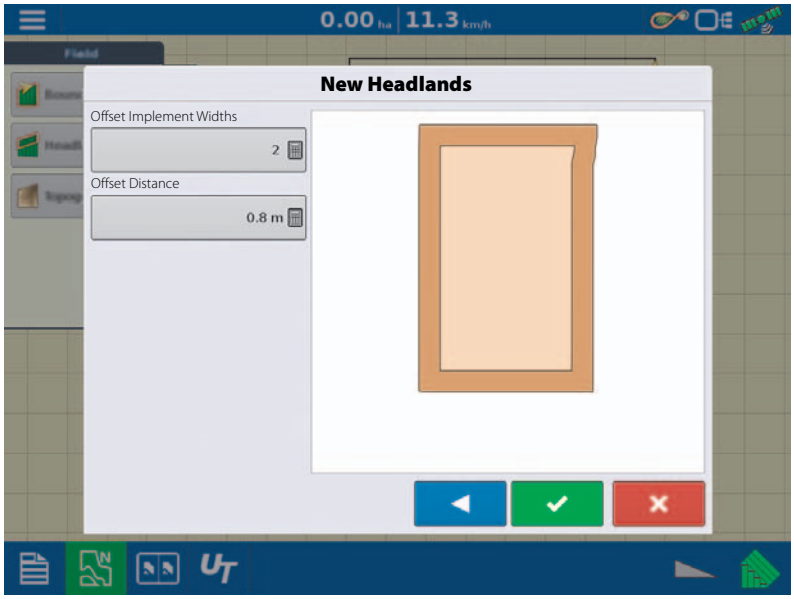
Add a Headland (B)

Press on Headlands Options screen.

Select Headland Type from drop-down box.

Headland Types

All-Around



- Offset Implement Width

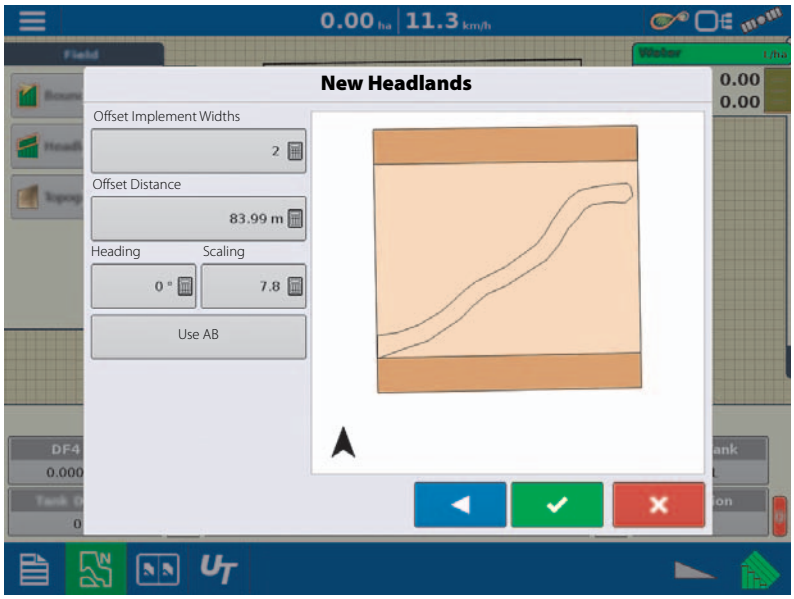
  Number of implement widths used to set the headland width.

- 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.

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 (C)

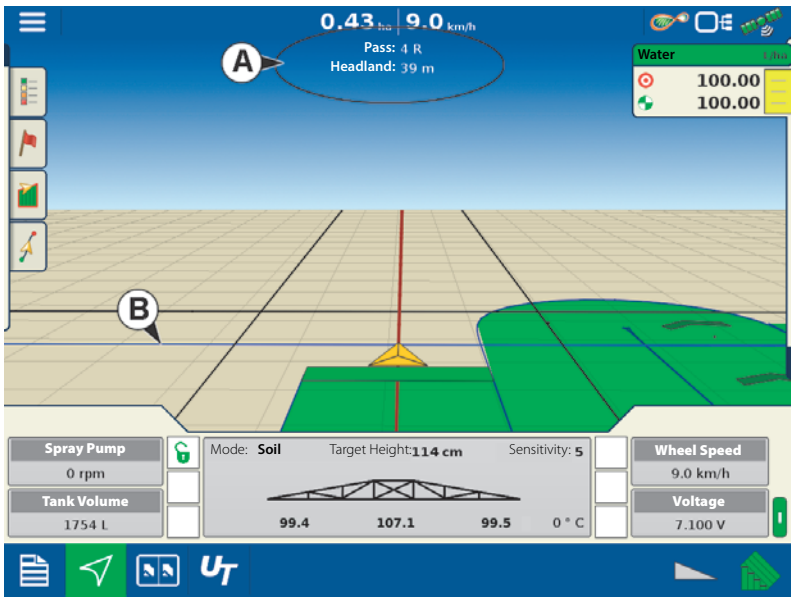
Press button.

Select a headland from list. and press to load selected headland.

When a headland is selected:

A. Distance to headland alarm

B. Headlands identified by blue line when active.

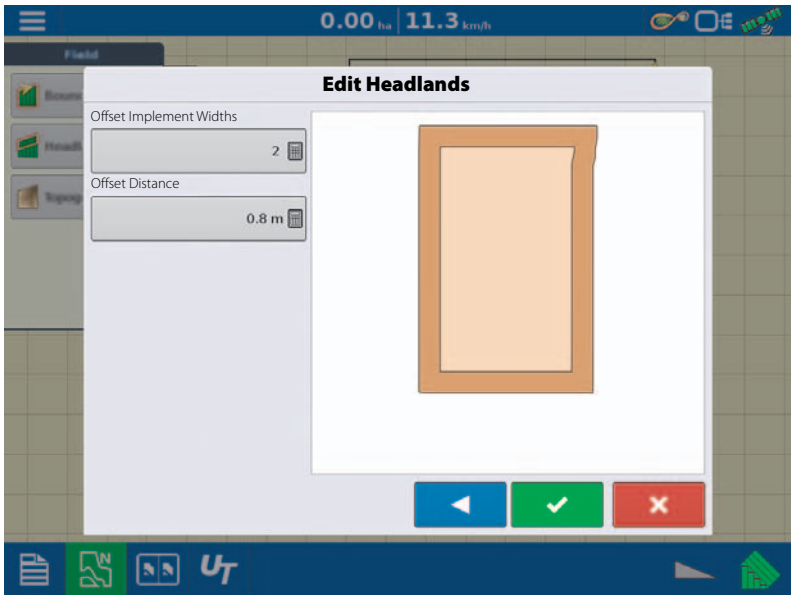


Edit Headlands (D)

Press Edit Headlands button.

Select a headland from list and press ✓ to load selected headland.

ATTENTION! This screen will vary depending on type of headland.



Headland Alarm Settings (E)

Press 🔔 button.

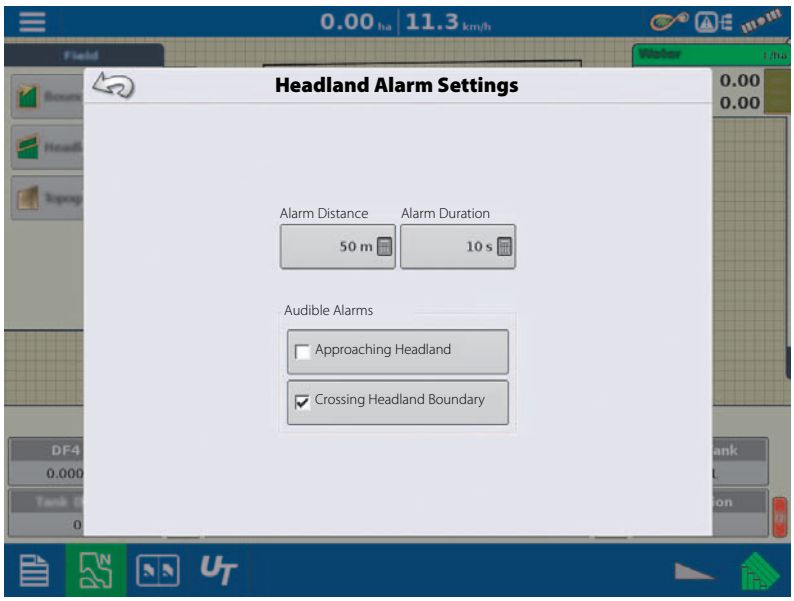
- Alert Distance

  Distance from approaching headland at which display will warn user of upcoming headland.

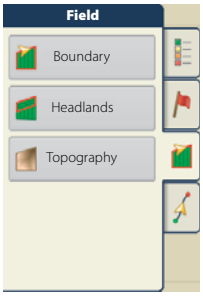
- Alert Duration

  Time length from approaching headland at which display will warn user of upcoming headland.

- Audible Alarms
  - Approaching Headland.
  - Crossing Headland Boundary.



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.

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

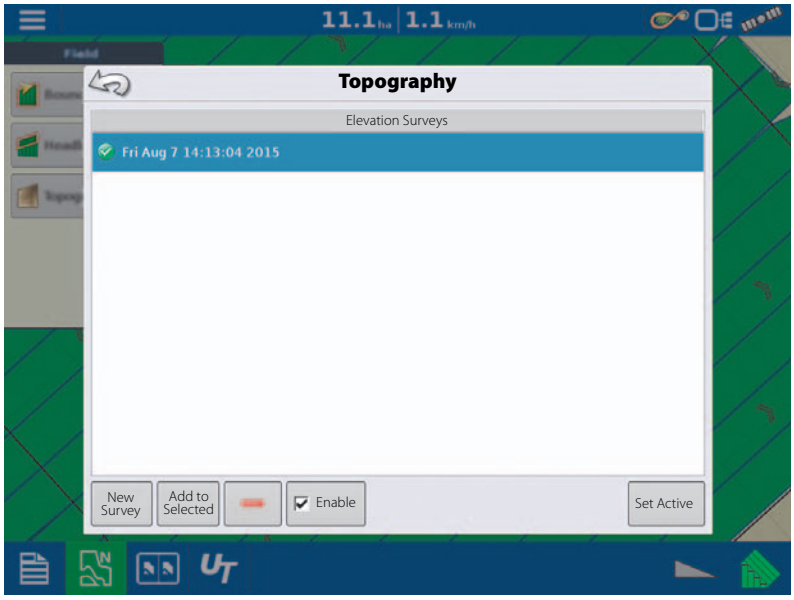
  Press to create a new topographical survey
- Add to Selected button

  Press to add to an topographical survey
- Minus (-) button

  Press to delete a topographical survey
- Enable checkbox

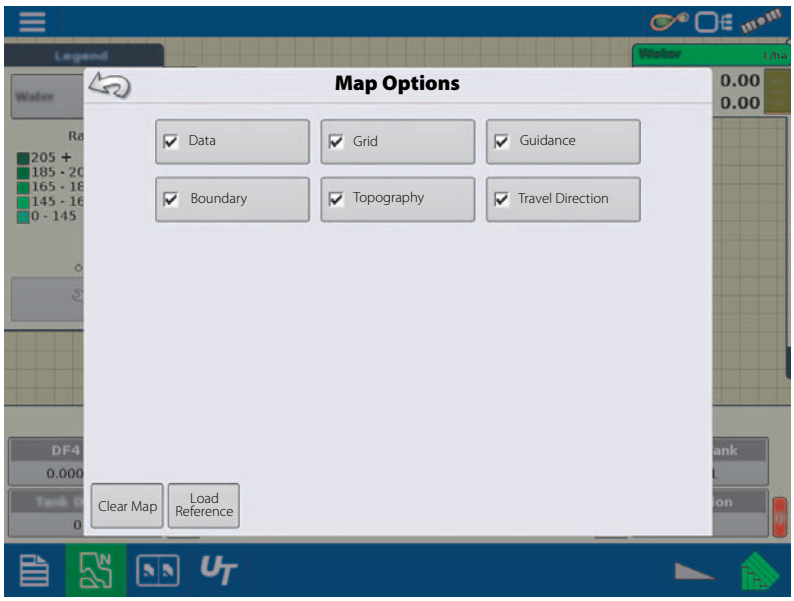
  Press to turn topographical reference layer on/off (Enable checkbox functions the same as Topography checkbox in Map Options screen - shown below.)
- Set Active

  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:

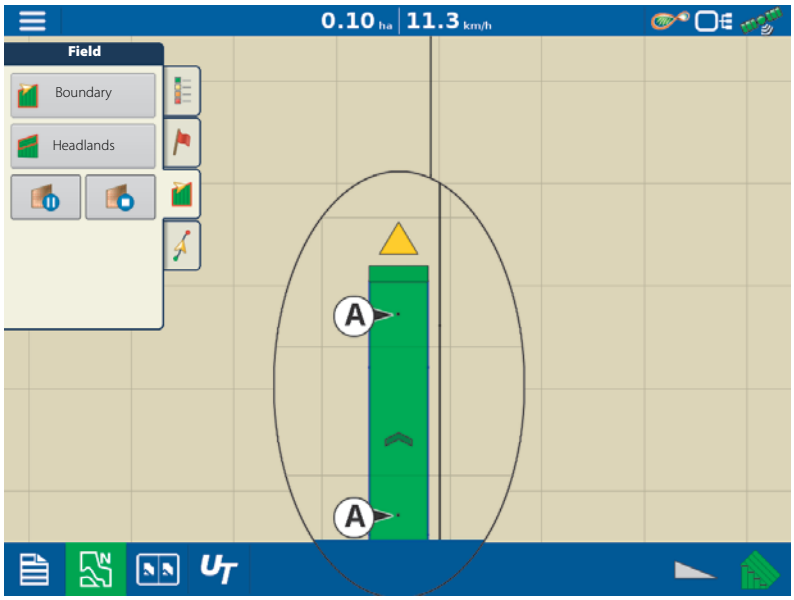
- Enable checkbox on Topography screen (shown above).
- Using the Topography checkbox on the Map Options screen (see "Legend Settings" on page 22).



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 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 3 meters. An on-screen visual will appear in the form of a single black dot every 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 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.

After the survey points have been collected, they will be converted into a surface layer in which you can define the colour scheme Red, White, Blue, or Brown-Tan. See "Legend Settings" on page 22.

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.

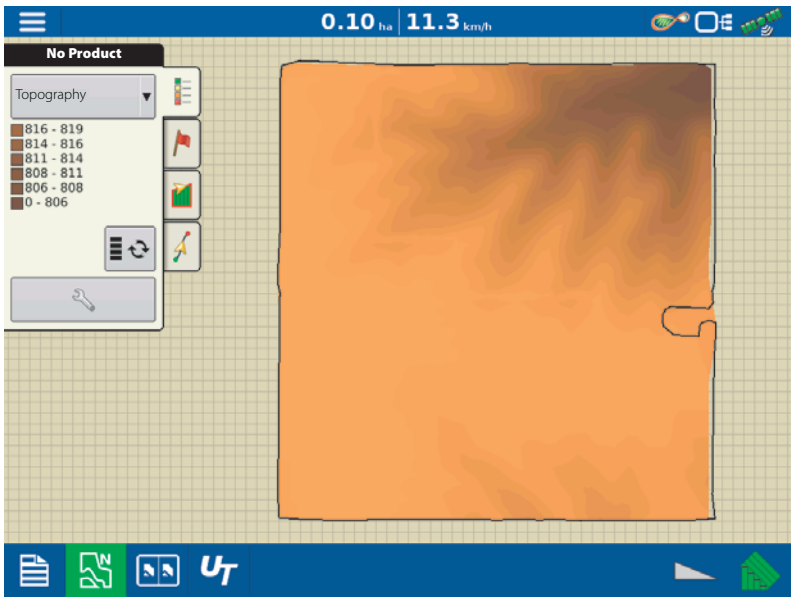
Darker red = Higher elevations.

White will be a transition colour 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.

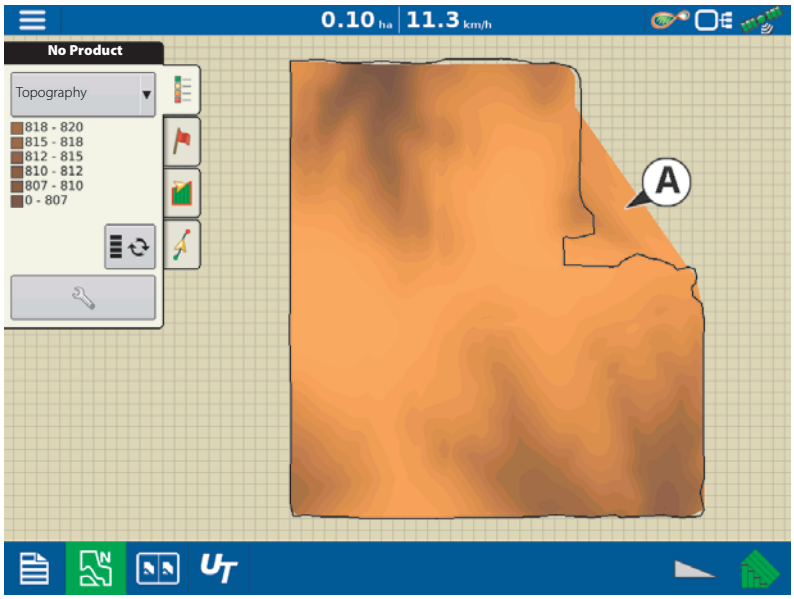
If you re-acquire the RTK signal, logging will automatically resume.

At any point you can:

- Pause.
- Stop collection of the elevation survey.
- 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.

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

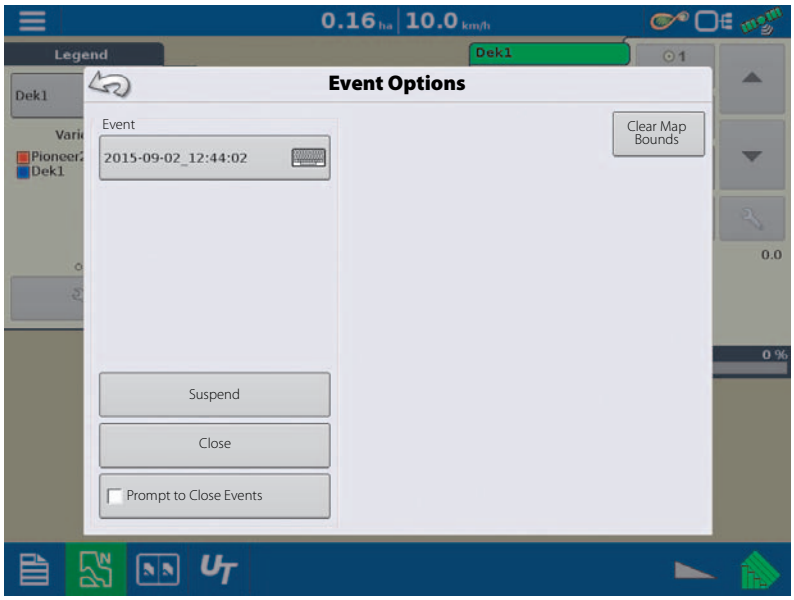


Finalize Event

During a field operation, you can suspend or close the event by pressing the menu button in upper left corner:

This opens the Events Options screen.

The Event Options screen allows operator to change:



- Event.

  Select the event to be edited in the dropdown menu. An active event will be preselected when the Event Options screen is opened.

- Suspend.

  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 44.

- Clear Map Bounds.

  Press to clear map bounds for the selected event.

- Close.

  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 44.

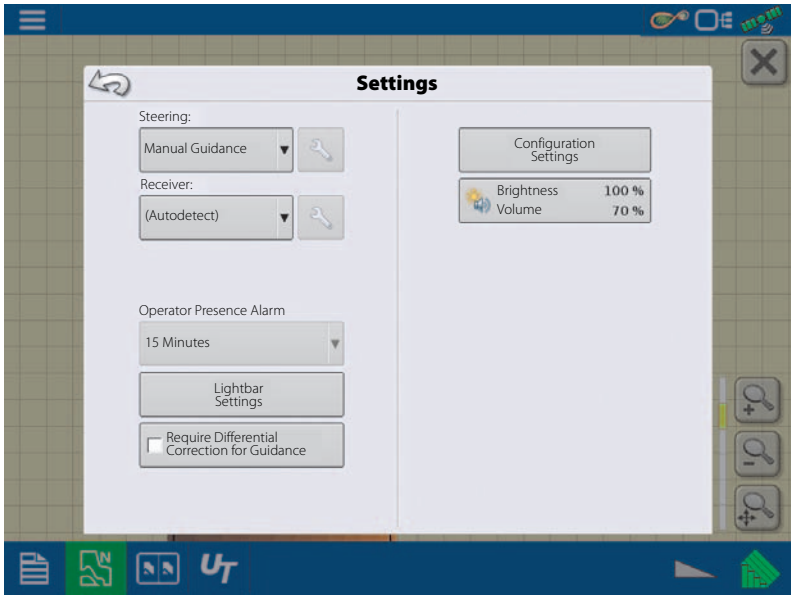
  A closed event cannot be re-opened and will not show up in the Event Selection screen. A user can manually close Events or be prompted to close events.

- Prompt to Close Events.

  Check this to be prompted before an event is accidentally closed.

Settings

Provides quick access to:



- GPS settings
- Steering settings
- Lightbar settings
- Configuration settings
- Brightness/Volume

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:

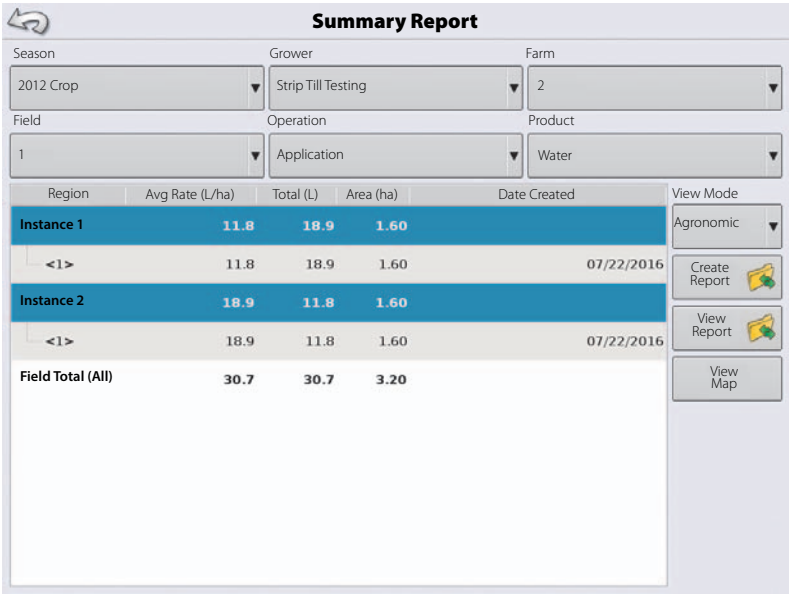
- Season
- Grower
- Farm
- Field
- Operation
- Product

The list displays information for each Region and Instance.

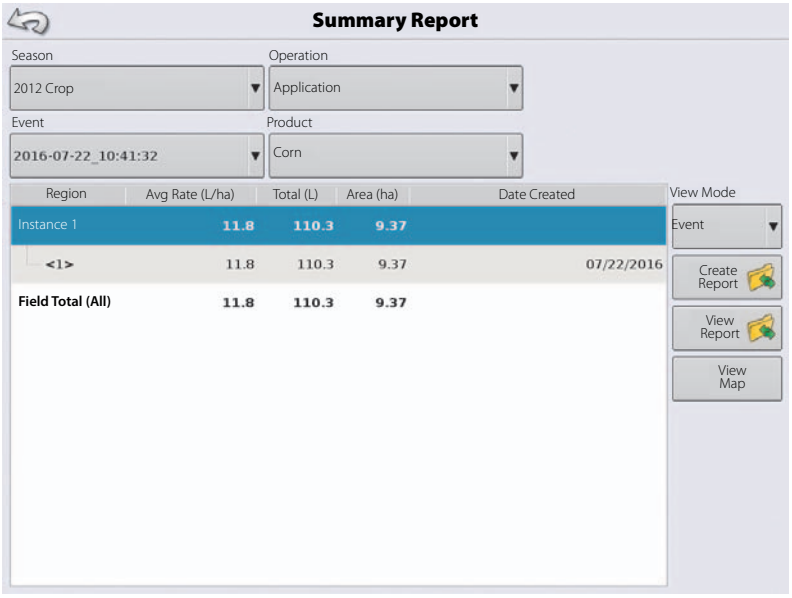
There are four viewing modes:

- Agronomic
- Event
- Operator
- Configuration

The Agronomic View shows data of a specific field.



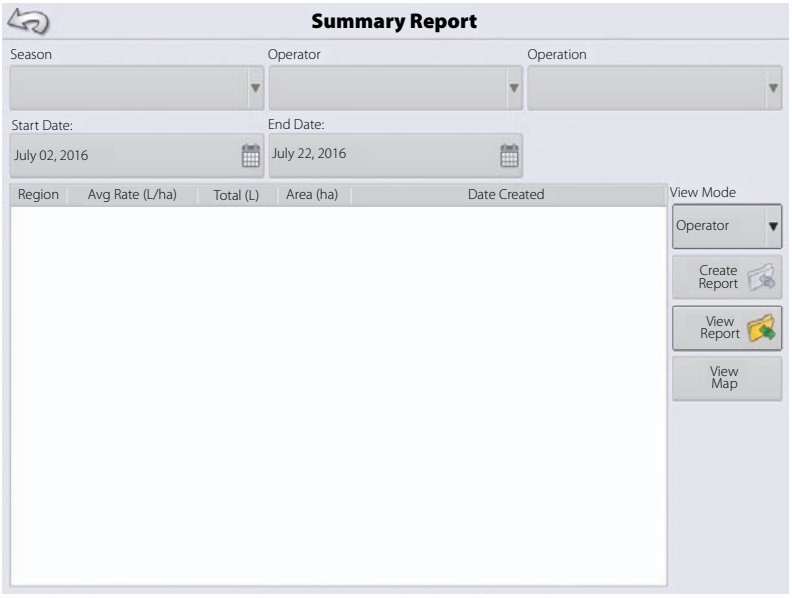
The Event View shows data of a specific Event.



Operator View

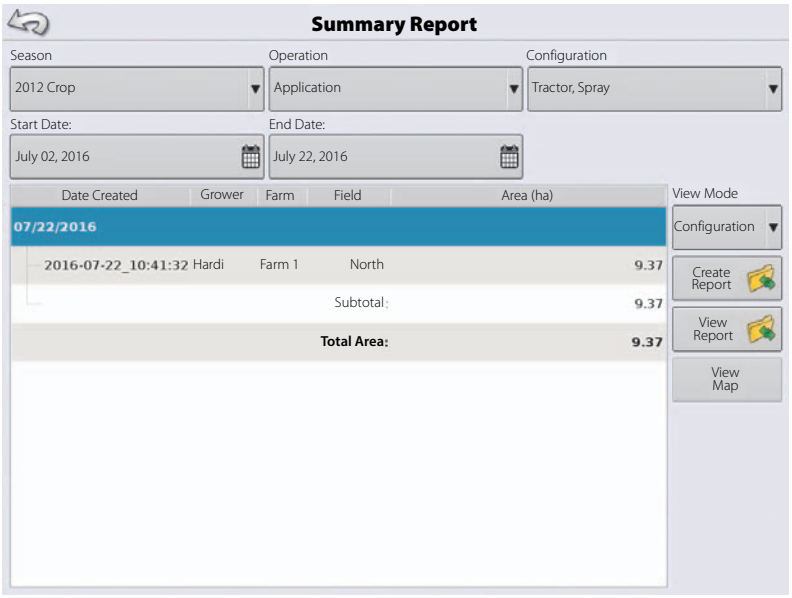
- Shows data of a specific Operator

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

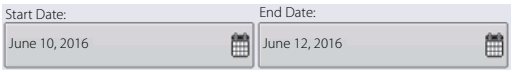


Configuration View

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



Date Range

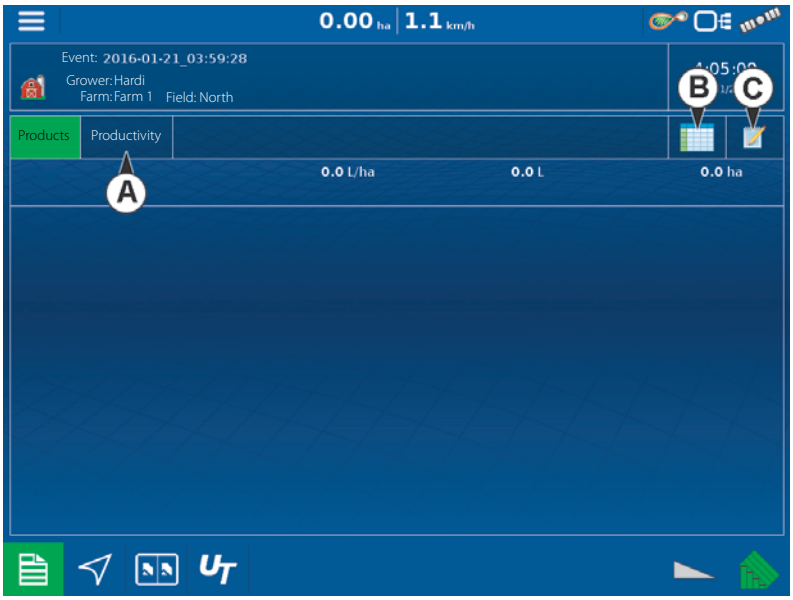


- View data in a certain date range.
- Only used in Operator or Configuration view.
- Defaults to first and last day of logged data in the season.
    - Can only select days within that date range.
- Create Report button will create all Smart Reports within the defined date ranges.

Event Summary

The event summary page allows the user to access productivity information specific to the current event as well as summary information, field notes, and Smart Reports.

The Event Summary page is available during any field operation.



A. Productivity Information

B. Summary Reports

C. Field Notes

Field Notes

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

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

Conditions

Weather	Soil Conditions	Crop Timing
Sky Condition	Tillage Type	Operation Timing
Wind Direction	Crop Residue Level	Target Crop Type
Wind Speed	Soil Condition	Growth Stage
Air Temperature	Soil Moisture	
Humidity	Soil Temperature	

Equipment

Equipment attributes specific to operation being performed:

Product

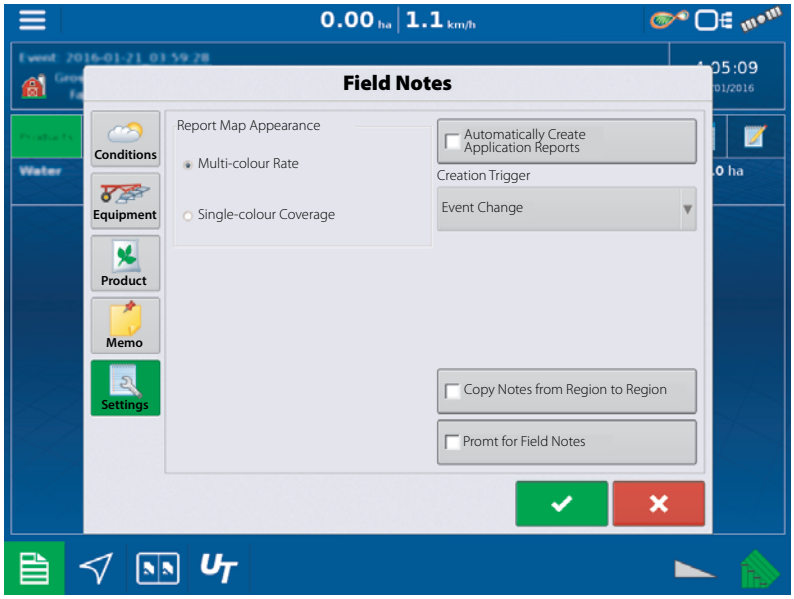
Product attributes specific to operation being performed:

Memo

Press to input, edit, or delete Field Notes:

Settings

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-Colour Rate

    Select this option to have application reports display the application maps using rate legend as displayed on the Work Screen.

  - Single Colour Coverage

    Select this option to have the application reports display single colour product coverage maps.

Smart Reports™ (HC 9600 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:

1. The Create Report screen appears, which lists at top:
   - Grower
   - Field
   - Product

   Two drop-down menus list:
   - Operating Configuration
   - Product Group

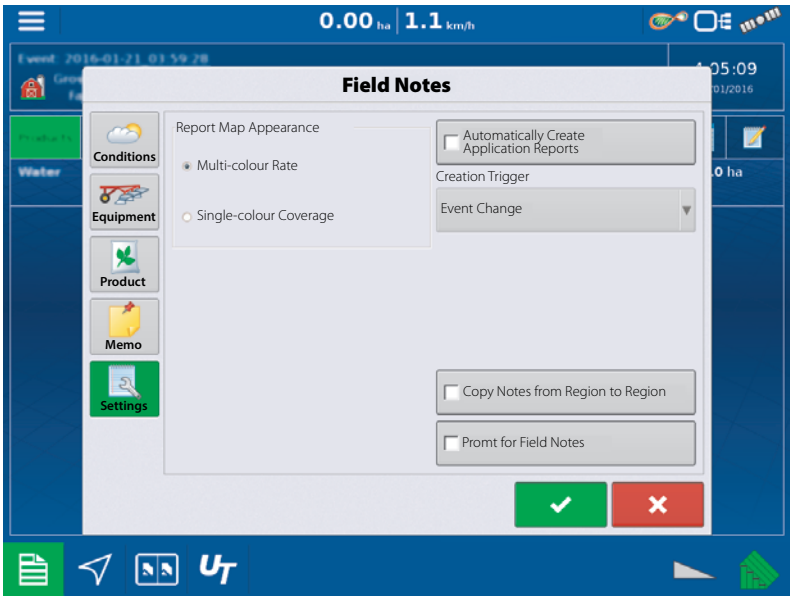
   Use the drop-down menus to change these, if desired. Press ✓ when finished.
2. A scroll bar informs you of the progress made when the display compiles the Smart Report.
3. At the conclusion of the Smart Report creation process, a screen states "Report Creation Complete."

   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 177.

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.

Smart Report Auto-Generation

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



- Automatically Create Application Report checkbox

  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 checkbox in Event Options. See "Field Operation Options" on page 58 for more information on setting Prompts to Close Event.

Export Reports

Reports are stored locally within the display and must be manually exported to a connected USB or AgFiniti. This can be done by pressing "Export Reports" on the Data Transfer page.

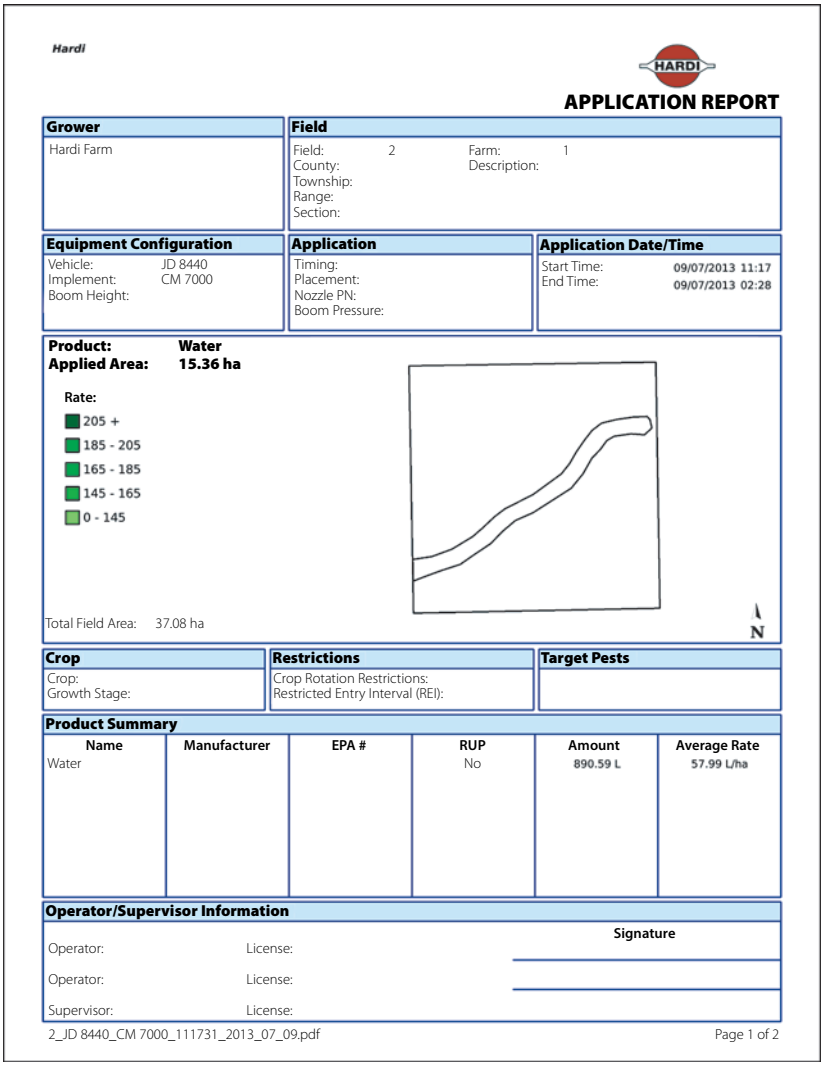
See "Export Reports" on page 150 for more information on exporting to USB storage.

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

APPLICATION REPORT

Grower	Field
Hardi Farm	Field: 2 Farm: 1 County: Description: Township: Range: Section:

Equipment Configuration	Application	Application Date/Time
Vehicle: JD 8440 Implement: CM 7000 Boom Height:	Timing: Placement: Nozzle PN: Boom Pressure:	Start Time: 09/07/2013 11:17 End Time: 09/07/2013 02:28

Product: **Water**
Applied Area: **15.36 ha**

Rate:
- 205 +
- 185 - 205
- 165 - 185
- 145 - 165
- 0 - 145

Total Field Area: 37.08 ha

N

Crop	Restrictions	Target Pests
Crop: Growth Stage:	Crop Rotation Restrictions: Restricted Entry Interval (REI):	

Product Summary

Name	Manufacturer	EPA #	RUP	Amount	Average Rate
Water			No	890.59 L	57.99 L/ha

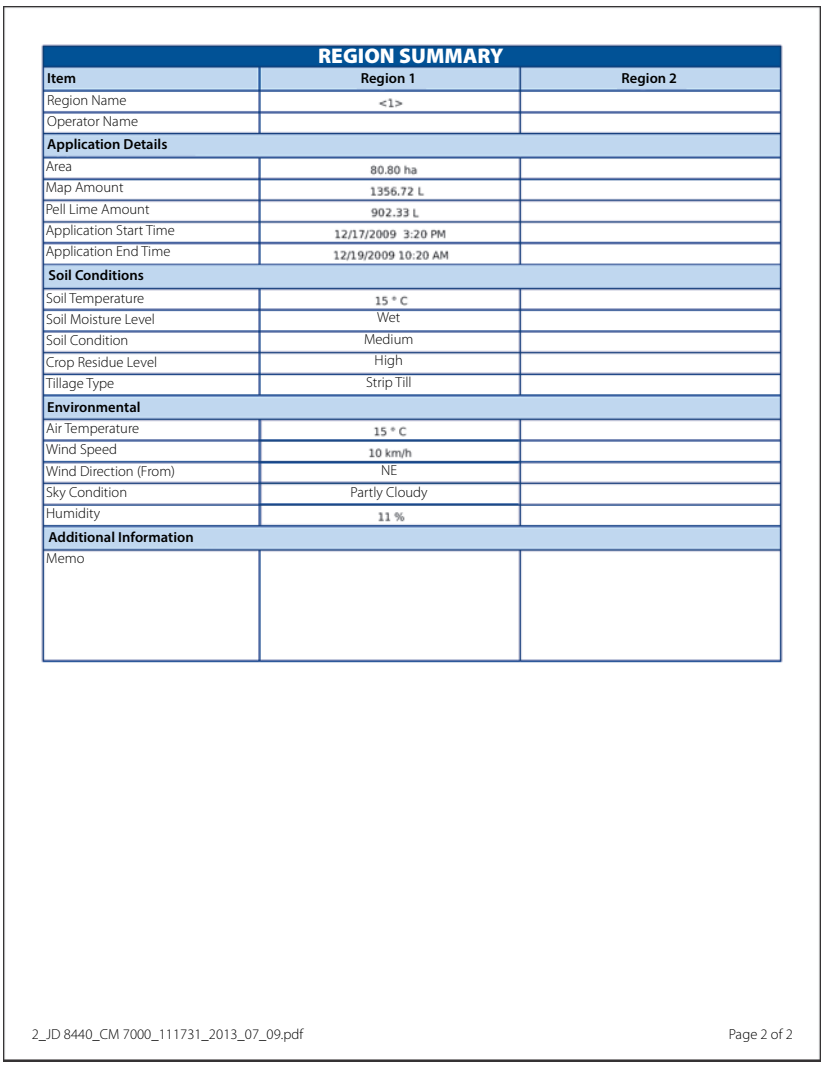
Operator/Supervisor Information

		Signature
Operator:	License:	
Operator:	License:	
Supervisor:	License:	

2_JD 8440_CM 7000_111731_2013_07_09.pdf Page 1 of 2

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	<1>	
Operator Name		
Application Details		
Area	80.80 ha	
Map Amount	1356.72 L	
Pell Lime Amount	902.33 L	
Application Start Time	12/17/2009 3:20 PM	
Application End Time	12/19/2009 10:20 AM	
Soil Conditions		
Soil Temperature	15 ° C	
Soil Moisture Level	Wet	
Soil Condition	Medium	
Crop Residue Level	High	
Tillage Type	Strip Till	
Environmental		
Air Temperature	15 ° C	
Wind Speed	10 km/h	
Wind Direction (From)	NE	
Sky Condition	Partly Cloudy	
Humidity	11 %	
Additional Information		
Memo		

2_JD 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, press:

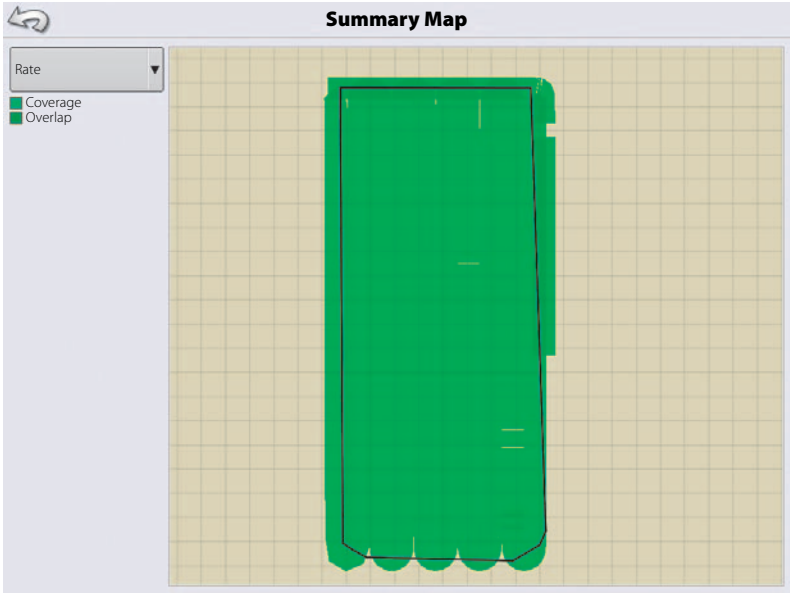
At the File Selection screen, scroll down the list and select the PDF file of your Smart Report.

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

View Map

Summary Map of a particular Field Total, Region or Instance shown in the Summary Report.

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 technical support or 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

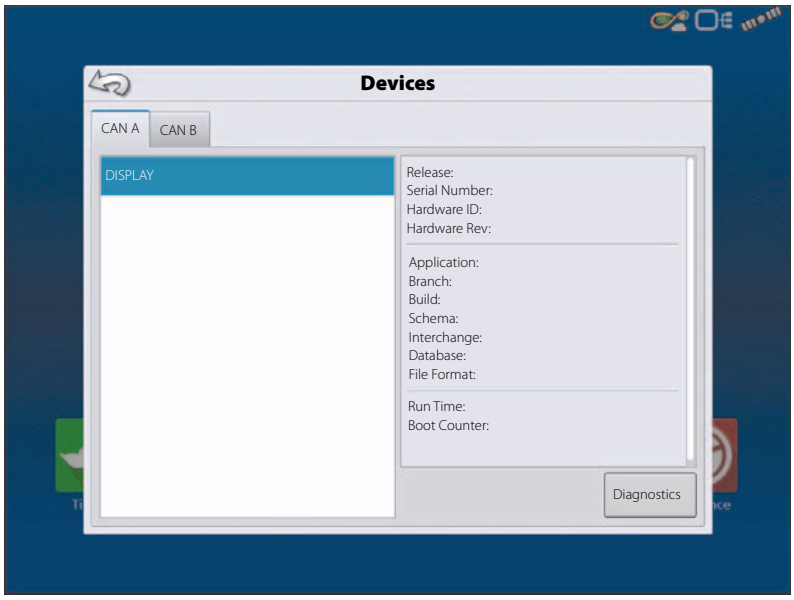
In the display, all display and module firmware upgrades are packaged in a single .fw3 file. The module firmware files are stored internally in the display. A warning alerts you when a module upgrade is required. You can upgrade all files in a single batch by using an upgrade screen. For more information, see "Advanced tab" on page 87.

Devices

CAN Diagnostics

Technical support may request that you look at these screens for help in diagnosing a problem.

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.



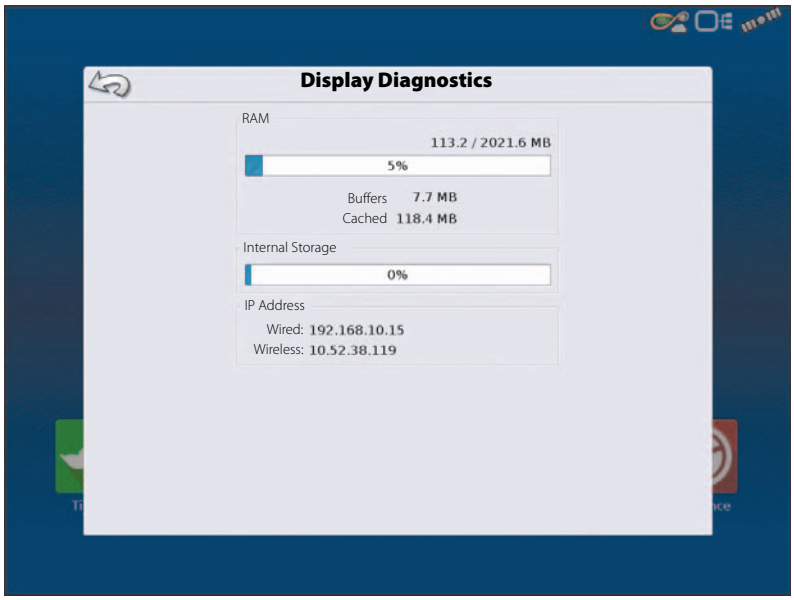
Device Information includes:

- 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.

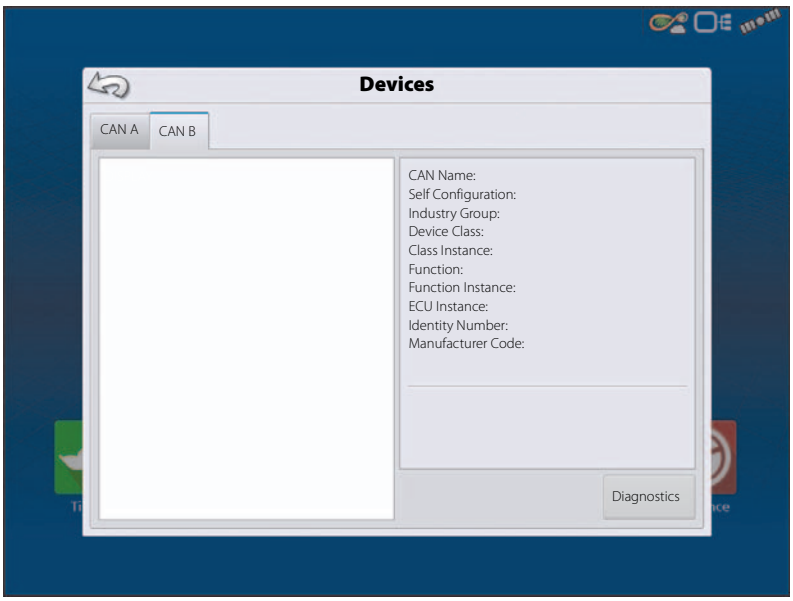
Diagnostics

Press "Diagnostics" button to open the Display Diagnostics screen. This screen includes information about the system memory usage and available memory.



CAN B

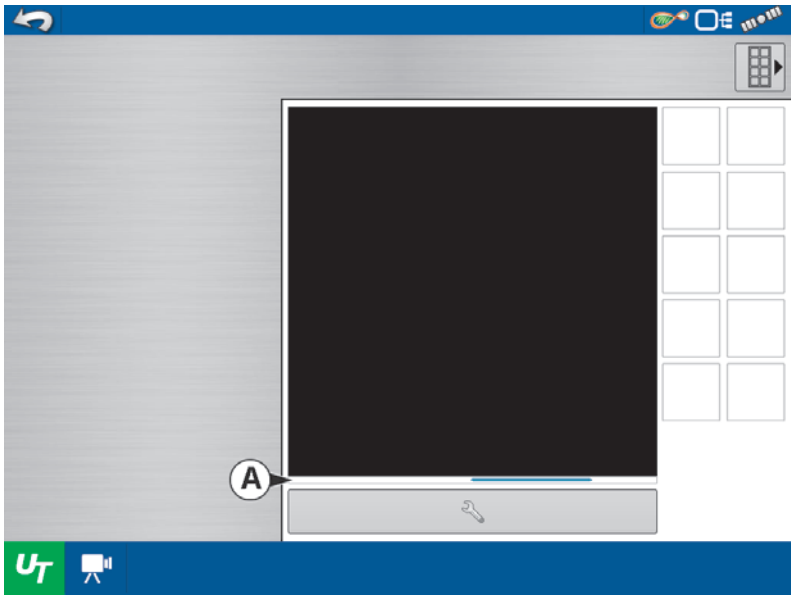
If an ISOBUS ECU is connected to the system, the ECU description will populate on the CAN B tab.



ISOBUS

ISOBUS Universal Terminal

ISOBUS UT enabled, no object pool loaded from the connected implement.



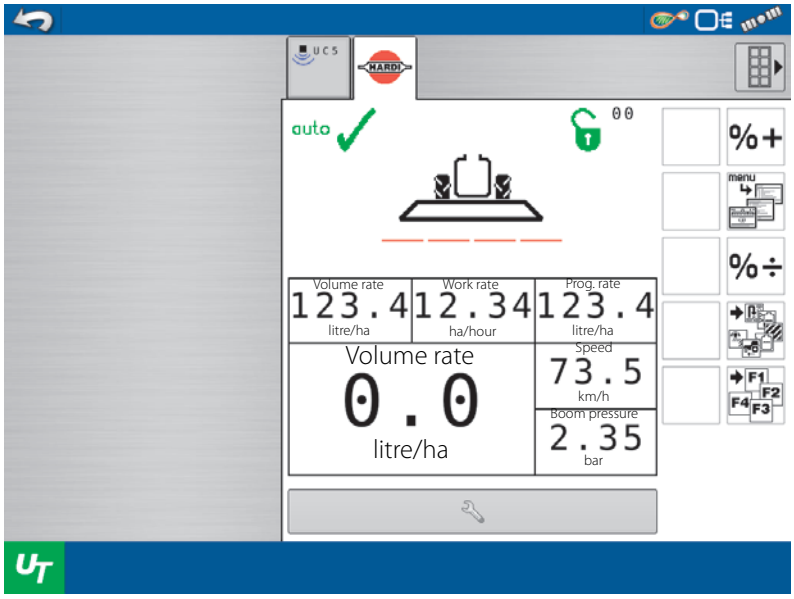
Implement C2C is not connected or has no power. The implement C2C is powered direct from the tractor ISO ECU power supply.

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 "123.4" digits and the default 4 boom sections indicate that the JobCom is powered Off.

Power On the system with the power button on the Hardi SetBox.

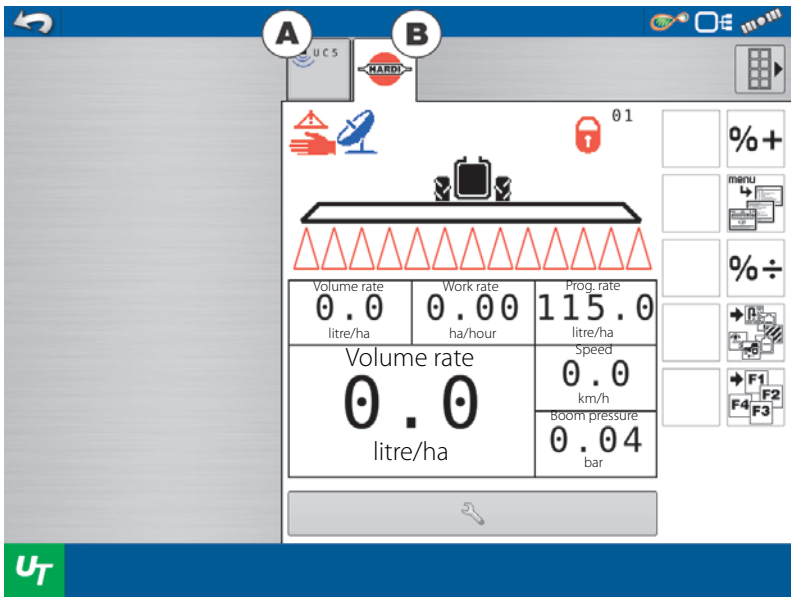
Depending on specific wiring harness, AutoTerrain/AutoHeight/AutoSlant is powered from:

- 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 (B), AutoTerrain/AutoHeight/AutoSlant UC5 is loaded (A).

The system should be healthy and be fully operational.

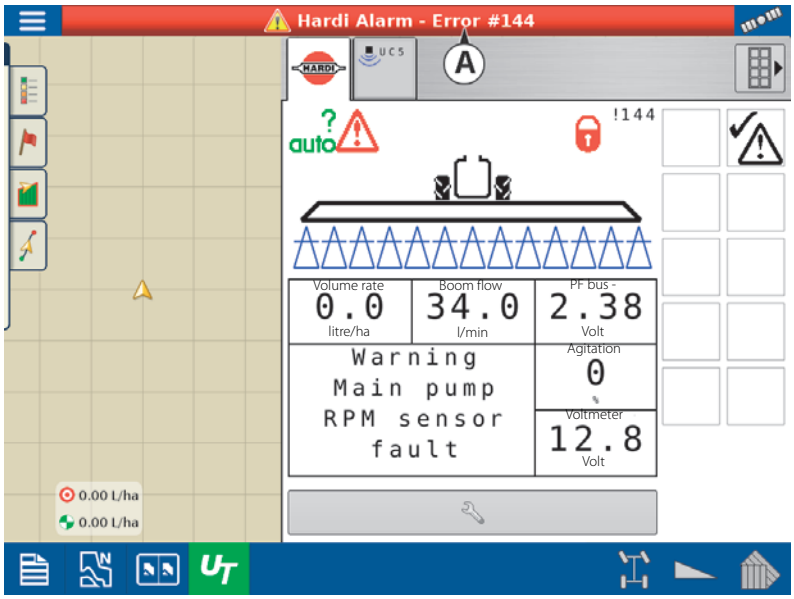


UT Alarms and Trouble Codes

If the display receives an active trouble code, the "Universal Terminal Alarm" (A) will appear in the Status bar at the top of the screen.

Press the UT to see the fault description in the UT 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

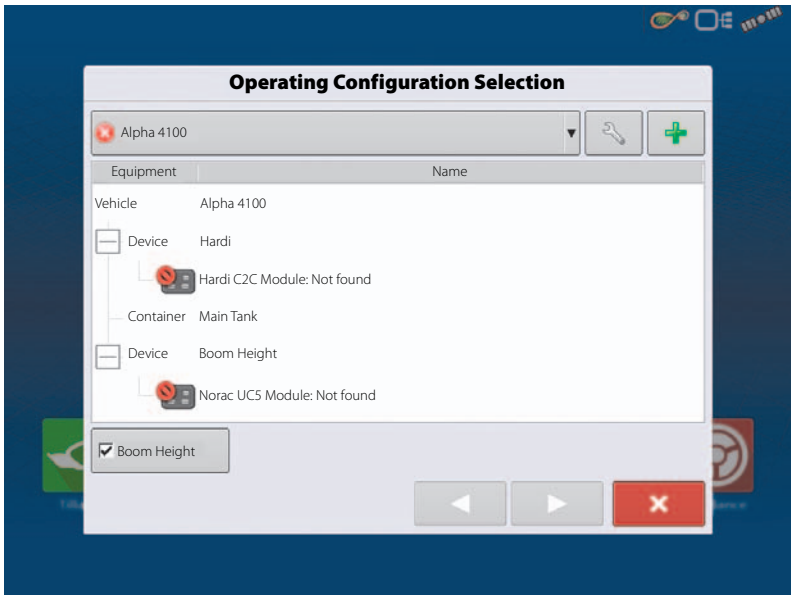
Modules not found

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 "Enable Universal Terminal and Task Controller" on page 45.



Some Modules Not found:

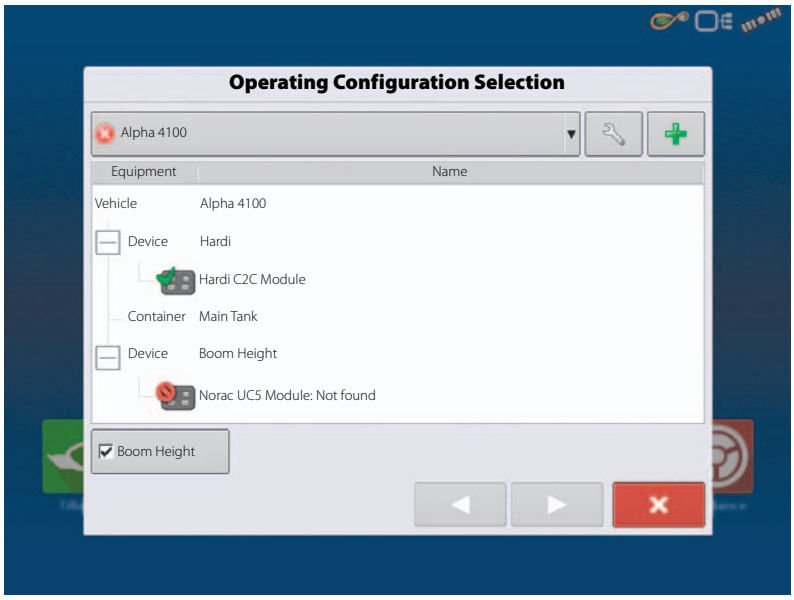
Configuration can be loaded but is not detecting all the modules associated with the configuration. When loaded, it will not perform the functions of the missing modules.

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.

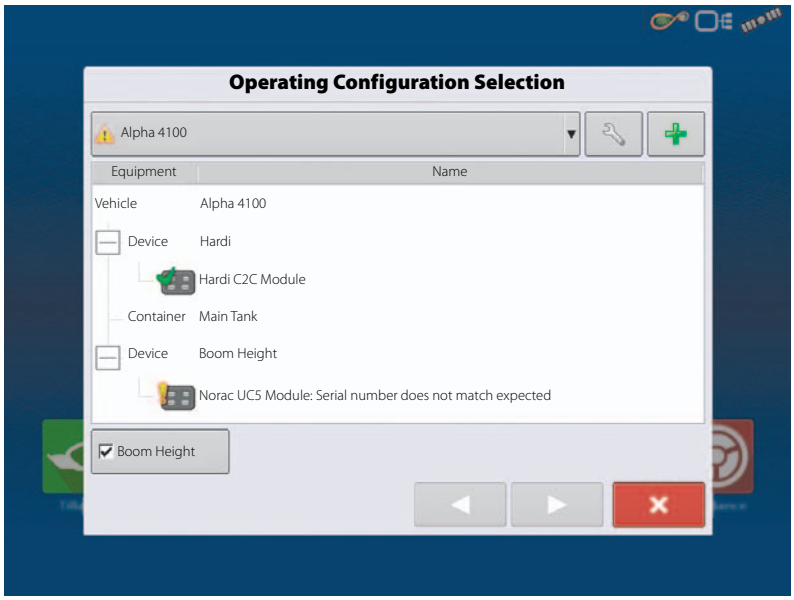
It is possible to start a "Field Operation" but the AutoTerrain/AutoHeight/AutoSlant will not be functional.



All Modules Detected - Not all Modules are the same as previously used

Configuration has a module that was not used previously.

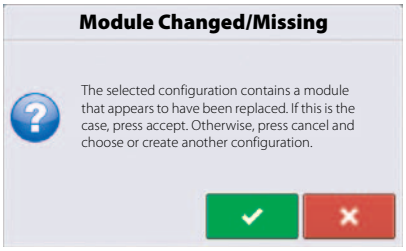
Module is not the one that was previously used.



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

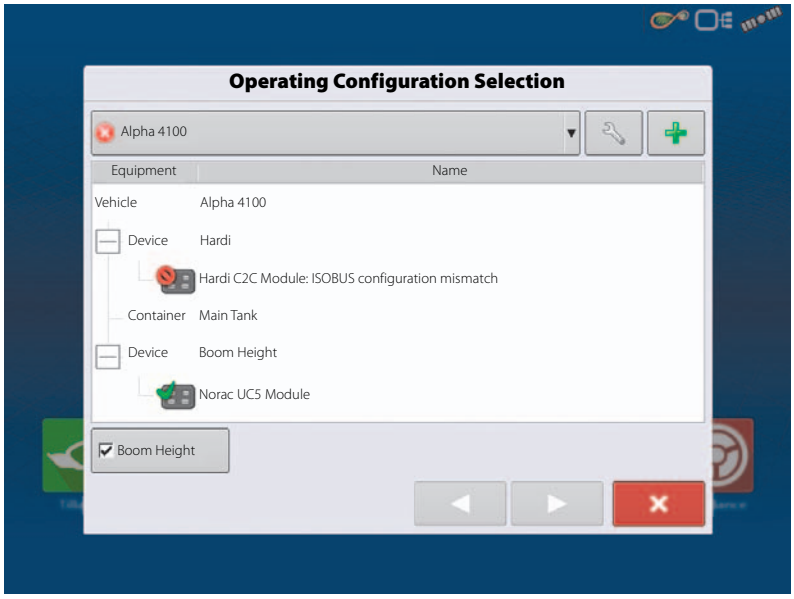
If the Hardi C2C Module is found but the data in the Module and the selected configuration does not match it will not be possible to proceed with the operation selection.

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 Universal Terminal in the VT menu.



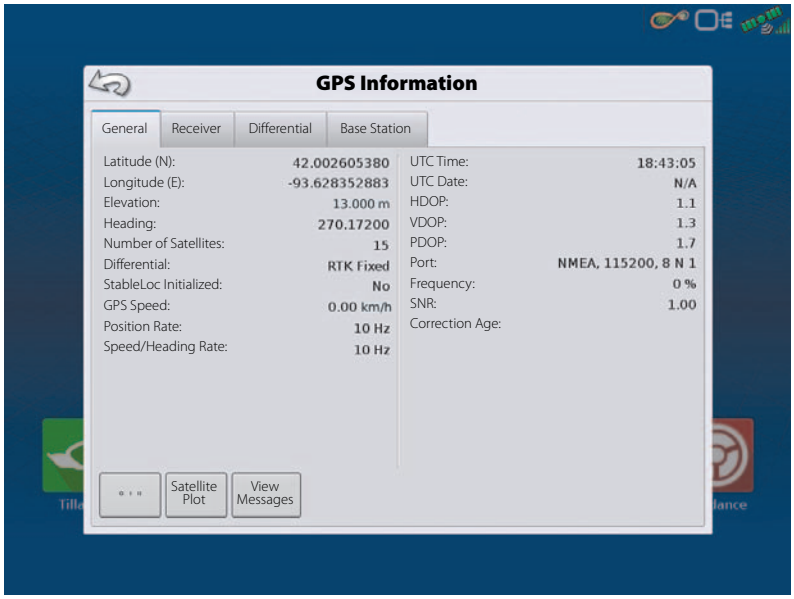
NOTE! This failure also appears if Task Controller has not been selected in the ISOBUS Settings menu. See “Enable Universal Terminal and Task Controller” on page 45.

GPS

GPS Information

To access diagnostic information about the GPS signal, press the GPS (satellite) button that appears in the in the upper right-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 Information - General Tab



- Latitude, Longitude

  Displays current position (in longitude and latitude) and elevation.

- Elevation

  Shows elevation of receiver.

- Heading

  Displays degree heading of travel.

- Number of Satellites

  Number of tracked satellites used in position fix.

- Differential

  - No Diff

    Indicates the receiver is not receiving a differential GPS signal.

  - Diff On

    Indicates the receiver is receiving a differential GPS signal.

  - GLIDE

    GPS 6000/GPS 6500 Only.

  - WAAS/EGNOS

  - TerraStar

    GPS 6500 Only.

  - RTK Fixed

    The receiver is receiving a valid RTK differential source.

  - RTK Float

    The receiver is receiving information from the Base Station, but the signal is not strong enough for an RTK fix.

- GPS Speed

  Real-time speed of travel.

- Position Rate

  The frequency that the receiver is sending the display your position in longitude and latitude (GGA). For example, at 10 Hz the display would be receiving a position message 10 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. See "GPS Messages" on page 191.

- UTC Time

  UTC is an acronym for Coordinated Universal Time, a high-precision atomic time standard that defines local time throughout the world. 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.

- RTK Throughput

  Indicates a percentage of information available from the RTK base station. Used for troubleshooting an RTK link between the base and rover.

- Frequency

  The Correction Frequency indicates the GPS satellite frequency used by the receiver.

NOTE! The Correction Frequency diagnostic does not show for WAAS connections.

- 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.

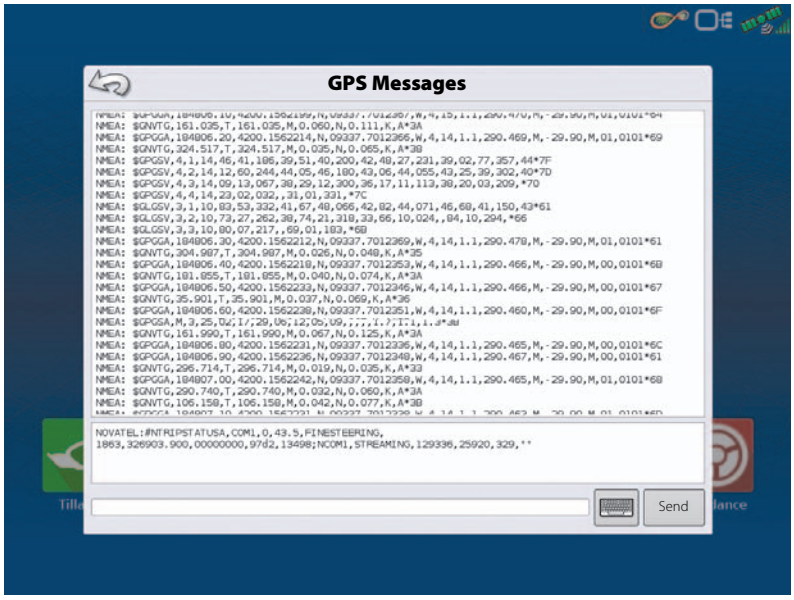
GPS Messages

View the NMEA messages coming from the receiver.

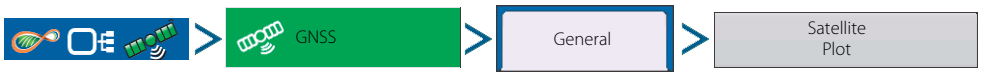
Press and use keyboard screen to write a command to the receiver. Only send commands to the receiver when directed to by technical support.

Press

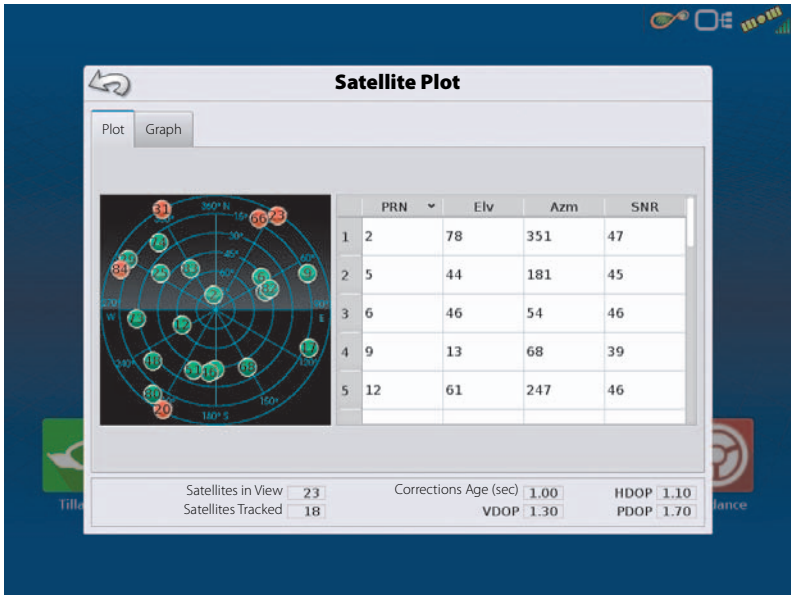
to send message to the receiver.



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

Satellite Plot requires GSV and GSA NMEA messages to be turned on from the GPS receiver.

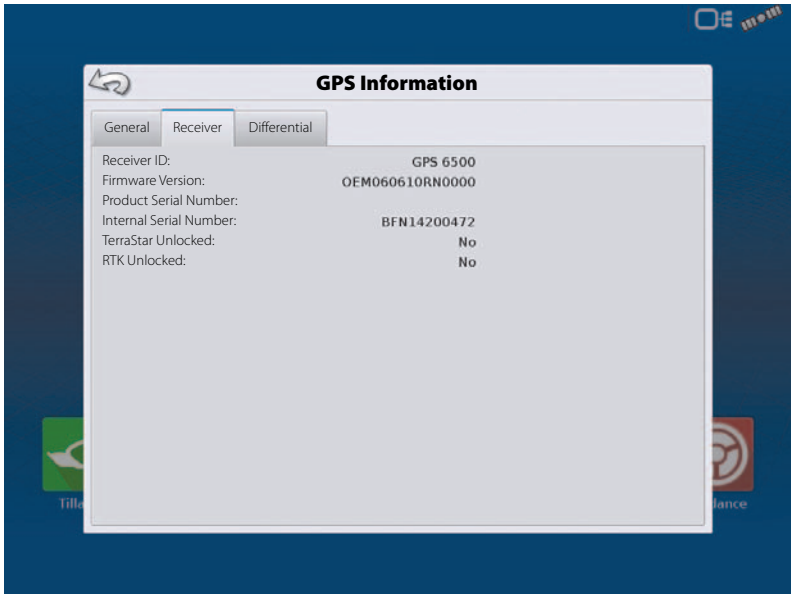
Graphically shows satellite PRN's and SNR.

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.

GPS Information

Receiver Tab

- Receiver ID
- Firmware Version
- Product Serial Number (enclosure)
- Internal Serial Number
- TerraStar Unlocked
- RTK Unlocked



Differential Tab

- Active Estimated Error

  Estimated error of the active differential source.
- Active Differential

  Indicates the active differential source and will vary depending on the current state of StableLoc.
- Selected Differential

  Indicates the selected differential source (the source selected in the GPS setup).
- StableLoc Error Limit

  Indicates the error limit selected in the GPS setup.
- Device Name

  Indicates the connected Relay Module.

- Software Version

  Software version of the radio/modem within the Relay Module.
- Manufacturer

  Manufacturer of the Relay Module.
- Serial Number

  Serial number of the Relay Module.
- Signal Strength

Shows cellular signal strength.

- Mobile Directory Number

  Relay CDMA/GSM Only, used for troubleshooting.

- Mobile Subscriber ID

  Relay CDMA/GSM Only, used for troubleshooting.

- NTRIP Connect/Disconnect

  Connect or Disconnect from NTRIP Source.

- RTK Convergence

  Three states to indicate the current convergence level.

- Red Arrows, pointing out.

  The device is not currently converging on RTK. This may indicate a RTK link problem.

- Green Arrows, pointing in.

  The device is currently converging, but not ready for RTK fix.

- Green Bull's-eye.

  The device is converged on RTK.

Base Station

Displays base station specific information

- Latitude

  Latitude of Base Position.

- Longitude

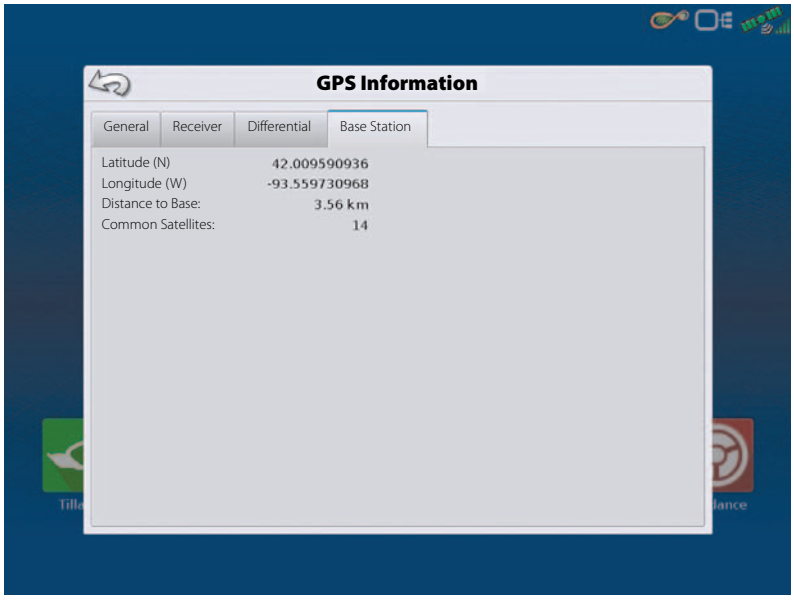
  Longitude of Base Position.

- Distance to Base

  Distance to Base Station.

- Common Satellites

  Shows the number of Satellites the receiver has in common with the base station.



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 kilometres (miles).

- Base Channel.

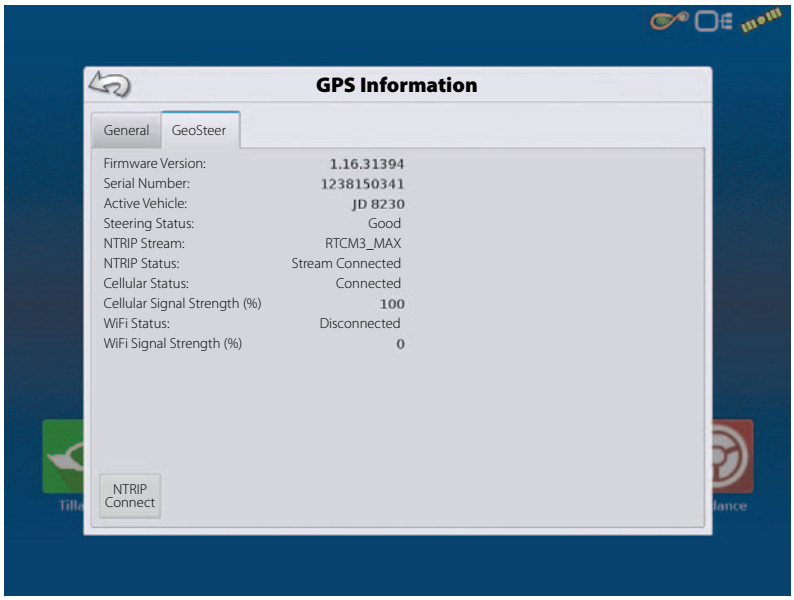
  Displays Channel ID of Base Station.

- 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%.

Specifications

Technical Specifications

Do not exceed the specifications below:

- Storage Temperature: -30°C to +80°C
- Operating Temperature: -20°C to +70°C
- Operating Input Voltage: 9 –16 V DC
- Max Current Rating: 7.5 amp
- Fuse: Blade style (ATO/ATC)
- 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 Centre line
ALPHA 3500	2.25 m	0.00 m
ALPHA 4100	2.25 m	0.00 m

	Hitch to Axle	Hitch to Application Point (Forward/Backward from Hitch)	Left/Right from Centre line
COMMANDER 3300	4.80 m	7.30 m	0.00 m
COMMANDER 4500	5.30 m	7.80 m	0.00 m
COMMANDER 5500	6.05 m	8.60 m	0.00 m
COMMANDER 5500 Long drawbar	6.45 m	9.00 m	0.00 m
COMMANDER 7000	6.05 m	8.60 m	0.00 m
COMMANDER 7000 Long drawbar	6.45 m	9.00 m	0.00 m
NAVIGATOR 3000	4.65 m	6.75 m	0.00 m
NAVIGATOR 4000	4.65 m	6.75 m	0.00 m
NAVIGATOR 5000	5.45 m	7.35 m	0.00 m
NAVIGATOR 6000	5.45 m	7.35 m	0.00 m
MASTER 1200	N/A	1.00 m	0.00 m
MASTER 1500	N/A	1.20 m	0.00 m
MASTER 1800	N/A	1.20 m	0.00 m

ATTENTION! For exact measures it is recommended to measure the specific sprayer/boom combination used.

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.

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Spare Parts

To see updated spare part information, the website www.agroparts.com can be visited. Here all parts information can be accessed, when free registration has been made.

HARDI INTERNATIONAL A/S

Helgeshøj Allé 38 - DK 2630 Taastrup - DENMARK