DISPLAY
User Guide

April 2020 Release

PN 875-0493-01 Rev A – w/ redline edits

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Chapter 1: Getting Started

Touchscreen Overview

Understanding the Parts of the Touchscreen

The DISPLAY touchscreen comprises the following:

- Map - a moving graphical representation of the field operation. You can use zoom features and steering indicators, as well as view the applied area total for quick reference.
- Buttons and indicators - these appear along the edges of the display and provide quick access to settings, enable you to zoom in and out on the field, and show current navigation values.

Screen Item	Description
1	Onscreen lightbar
	Provides visual cues to stay on a guideline. Each bar (section) on the lightbar represents a relative distance between your guideline and your vehicle.
	• Red bars left of center indicate the guideline is a certain distance left of your vehicle; thus, you need to steer to the left to get closer to your guideline. As you steer to the left, fewer bars are red (you are getting closer to your guideline).
	• Green bars right of center indicate the guideline is a certain distance right of your vehicle; thus, you need to steer to the right to get closer to your guideline. As you steer to the right, fewer bars are green (you are getting closer to your guideline).
2	Real-time status tab (see page 8)
	• Displays information in upper right of map.
	• By default, only the top row appears. Press the tab to expand it (as shown at left); press it again to contract it (only top row visible).
3	Vehicle indicator (representation of selected vehicle)
	The triangle on the vehicle center points in the direction of travel. If the vehicle on the map is moving opposite to your actual direction of travel double-tap the vehicle to flip the vehicle direction on the map. If the vehicle is not moving, the triangle changes to a square.
	See "Chapter 2: Working with Vehicles" for more information.
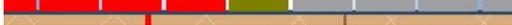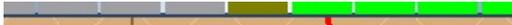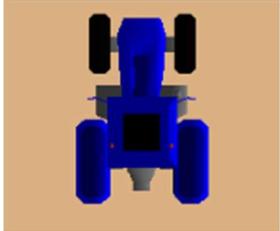
Screen Item		Description
4	 No offset 2 m offset	Implement indicator • Can be either a trailed ('regular' trailed or active trailed) or rigid (front or rear) implement. • Width of actual implement is indicated by width of implement indicator (for example, a wider implement will appear wider on the map than a narrower implement). • You can set front/back and left/right offsets (how far ahead/behind and left/right, respectively, the implement is located from the vehicle) and this is represented graphically on the map. The figures at left show a rear implement with no offset (top figure) and with an offset (bottom figure). See "Chapter 3: Working with Implements" for more information.
5		Current Guideline (red) Imaginary line (path) upon which DISPLAY guides your vehicle. See "Setting Paths Overview" on page 80 for more information.
6		Adjacent Guideline (brown) See "Map Settings" on page 72 for more information.
7		Boundary (blue) This line represents your field boundary. See "Setting a Boundary" on page 75 for more information.
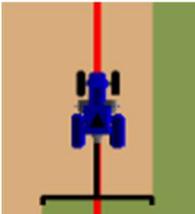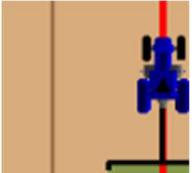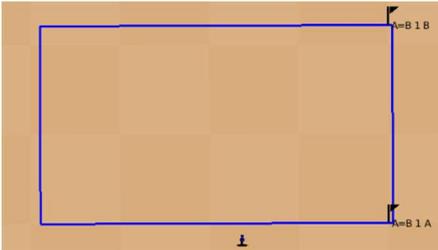
Screen Item	Description
8	Headland Line (cyan) This line represents the edge of your headland area. See "Headland Offset" on page 77 for more information.
9 Crosstrack indicator showing no crosstrack Crosstrack indicator with snap indicator	Crosstrack error Distance from your current driving position to your guideline with an arrow indicating the direction you need to drive to return to the line. For example, if you are driving an A=B line and you veer to the right and are off your line by 6 cm, your crosstrack error is 6 cm and the arrow is to the right of the value and pointing left (conversely, if you are 6 cm to the left of your line, your crosstrack error is 6 cm and the arrow is to the left of the value and pointing right). If you have no crosstrack (see left top, just after engaging on an A=B path) the crosstrack shows zero. When performing certain path adjustments, an additional indicator appears to the left or right of the crosstrack error indicator (see left bottom, just after snapping a guideline to your current position). See "Chapter 7: Path Planning" for information on path planning (including setting and adjusting paths).
10	Mapping Options button Displays the Mapping Options panel where you set the map view and perspective, set prescription map and applied map options, work with event markers (flags), and use 'return to point' guidance. See "Mapping Options" on page 64 for more information.
11	Path Planning button Displays the Path Planning panel, where you set or adjust paths, select a previous path, and configure/make eTurns. See "Chapter 7: Path Planning" for more information.

Screen Item	Description
12	Sidebar
	Area along the right edge of the touchscreen. See the subsequent rows in this table for descriptions of each button.
13	Engage (steering) button
Not ready to engage (no errors)	Use the engage button to engage on a guideline (that is, lock onto a guideline use autosteering) when all autosteering requirements have been met. The button has the following states:
Not ready to engage (errors)	• Not ready to engage (errors if exclamation flashes on the button). Press the exclamation symbol to display the ECU-S1 Status screen that indicates the errors. See "ECU-S1 Status" on page 118 for more information. • Ready to engage. All autosteering requirements have been met. Press the engage button to engage autosteering on the guideline. • Engaged. DISPLAY is automatically steering you along your guideline.
Ready to engage	*Note: If the engage Button missing from screen – ECU-S1 is no longer communicating with the terminal (such as ECU-S1 powered off).*
Engaged	
14	Apply button
	Turns implements on (green) or off (blue) to log application/coverage data.

Screen Item		Description
15	Straight / Contour	Shortcuts
		Provide one-press access to important functions. Straight and Contour (guidance buttons) appear by default, but you may change either or both.
		See "Favorites and Shortcuts" on page 15 for more information.
16		Favorites button
		Displays the Favorites panel of buttons you use often and want quick access to. The panel has five buttons by default, but you may add additional buttons (or replace any default buttons) for a total of 18 (two columns of nine favorites each).
		See "Favorites and Shortcuts" on page 15 for more information.
17	Menu	Menu button
		Displays the Menu Options panel—this is the main panel, the highest level of panels from which all options are accessible.
		See "Using Panels to Work with the Touchscreen" on page 10 for more information.
18	Contour Lock off	Contour Lock button
		Contour Lock button is displayed only when DISPLAY is in Contour mode—see "Setting and Following Contour Paths" on page 89 and "Contour Lock" on page 101 for more information.
	Contour Lock on	
	Contour Lock locked	
19	eTurns not ready	eTurns button (appears at left of Menu button only with ECU-S1 systems)
		Displays eTurns Control panel where you configure/make eTurns.
		See "eTurns" on page 103 for more information.
	eTurns ready	

Screen Item		Description
20		Alert indicator (upper left of map)
		Appears when boundary alert condition is met.
		See "Alert Mode" on page 77 for more information.
21		Zoom distance (lower left of map)
		Distance between the grid lines on the map (value increases as you zoom out and decreases as you zoom in).
		See "Zooming In and Out on the Map" on page 14 and "Straight Paths Options" on page 82 for more information.

Real-Time Status Tab

At the top right of the map, the real-time status tab displays one row of commonly used read-only information. By default, only the first row appears (left graphic below). Press the tab to expand and display all rows (right graphics below); press the tab again to collapse it (hide all but the first row).

Single row   *Expanded (three rows)*   *Expanded w/ Boundary Alert (four rows)*

The following table describes each row of the real-time status tab.

Tab Row	Item	Description
First row	Speed	Current speed of the vehicle
	Signal (correction) type with differential (diff) age	(Signal correction type) DISPLAY is receiving the following signals: • N/A = not receiving a GPS signal • 2d = two-dimensional signal • 3d = three-dimensional signal • 2D = two-dimensional differential signal (DGPS) • 3D = three-dimensional differential signal (DGPS) • RTKa = real time kinematic (acquire or float mode) • RTK = real time kinematic corrections (fixed mode) (Differential age) Age of the corrections used in the DGPS correction: • SBAS signals - typically 6 to 10 seconds • RTK - optimal operating values are < 5 seconds
	Signal status	Satellite icon color indicates the following: • Red = no fix on a DGPS signal • Orange = tracking satellites • Green = receiving a GPS signal
	Signal strength	Vertical bars indicate the quality of the GPS signal related to the standard deviation of the solution: • SBAS - 3 to 4 bars are typical • RTK - 4 bars are typical
Second row	Worked	Area of job worked so far
	Field	Field size for the job
Third row	Pass	Pass number (for straight, AB contour, and pivot paths) Once the straight or pivot path is set, all passes are numbered. Pass 1 is to the right of the straight path and to the outside of a

Tab Row	Item	Description
		pivot path; Pass -1 is to the left of the straight path and to the inside of a pivot path.
	Heading	Vehicle's heading
Fourth row (optional)	Distance to Boundary Distance to Headland Line	Depending on the configured mode of the Boundary Alarm, this row will display the Distance to Boundary or Distance to Headland Line. If Boundary Alarm Mode is disabled, then this row is hidden. See "Alert Mode" on page 77 for more information.

Using Panels to Work with the Touchscreen

A panel is a popout tab that appears to the left of the sidebar and contains buttons, fields, and other information you use to select system settings and options, view information, and perform work. You start by pressing Menu or by pressing a specific button on the map. Panel widths vary depending on how much information needs to be displayed.

- Narrow panel (example: press Menu > Settings > Map Settings to display the Map Settings panel)

- Wide panel (example: press Menu > Settings > System Preferences to display the System Preferences panel)

When pressed, some buttons on a panel may display another panel. Additionally, one of the following buttons appears at the bottom of each panel:

- Back - closes the current panel and displays the previous panel
- Close - closes the current panel (no panels are visible)
- Save - saves the currently selected options (where applicable)
- Done - completes a selection and returns you to the previous panel

Use the 'hide panel' button ▶ and the 'close panel' button ✕) along the left side of any panel, the 'show panel' button ◀ that appears after hiding a panel, and the Menu button to hide and close panels as follows:

- Hide a panel: Press ▶.

- Redisplay a hidden panel: Press ◀ or press Menu.

- Close a panel: Press ✕ or press Menu. The next time you press Menu you start over by displaying the Menu Options panel.

Hide panel (top) and
close panel (bottom) buttons
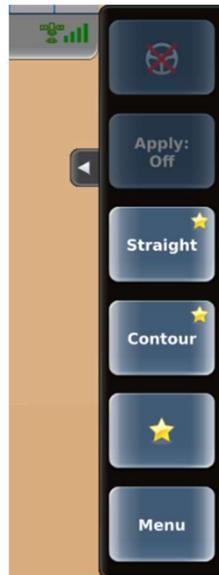
Show panel button

The following example (based on the above figure) shows how to navigate the menus.

1. Press **Menu > Settings > System Preferences > Units**. The Units of Measure panel appears.

2. Press **U.S.** or **Metric** to set the units.

3. Press **Back/Close** repeatedly or press the close panel button to close the panel, or press the hide panel button to hide the panel.

Entering/Adjusting Settings

Fields/buttons appear in different colors and may or may not show the current setting. The following table provides descriptions/examples of several DISPLAY field/button types.

Field/Button Type	Example	Function When Pressed
Blue button with no setting value displayed	System Preferences button	Displays a panel where you select/enter values
	Wind Direction button	Displays a data entry window where you enter a value
Blue button with value setting displayed	Attack button	Displays an adjustment window where you set values with a slider or arrows
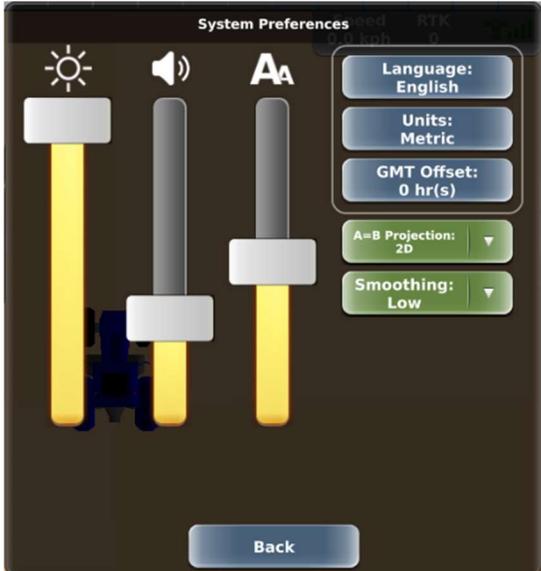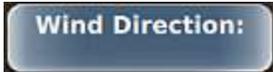
Field/Button Type	Example	Function When Pressed
	Units button **Units:** **U.S.**	Displays buttons to select a value
Green with arrow	Map View button **Map View:** **Vehicle** ▼	Displays a drop-down list to select a value
White field	Implement Width **5.00** m	Displays a data entry window where you enter a value

Zooming In and Out on the Map

Use the common touchscreen 'pinch' method to zoom in or zoom out on the map.
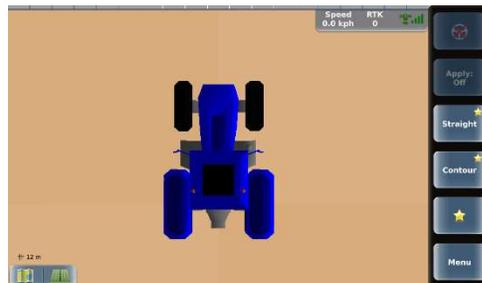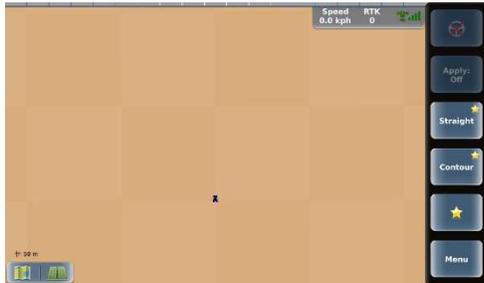
Favorites and Shortcuts

DISPLAY gives you two options (favorites and shortcuts) to quickly access often-used buttons:

- Favorites are buttons you use often and want quick access to. The Favorites panel, by default, includes five favorites, but you can add favorites (for a maximum of eighteen) and delete favorites. As shown below, the Favorites panel is narrow when showing up to nine favorites but expands to show between ten and eighteen favorites. If a favorite is disabled (for example, Path Adjustment in the figures below), the related functionality is not available. Not all buttons can be added to the Favorites panel.
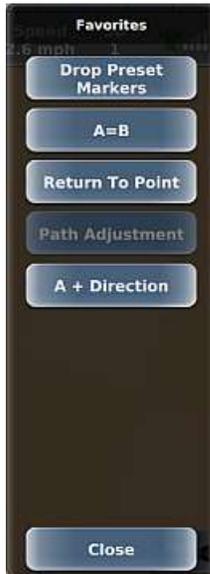
| Single-width | Double-width |
| (up to 9 favorites) | (10 to 18 favorites) |

When you add a favorite, the button appears on the Favorites panel exactly as it appears in its default location (and the button is still accessible from its default location). Deleting a favorite removes the button only from the Favorites panel; it does not remove it from its original location. For example, if you delete the Terminal Diagnostics button as a favorite that button is still available on the Diagnostics panel (after you press Menu > Diagnostics). You can also delete all favorites to start over and place all new favorites on the panel.

Note: The Favorites button functions as a screen capture button when a USB drive (with screenshots folder on the drive) is inserted into the DISPLAY terminal—see "Capturing Screen Images" on page 122.

- Shortcuts refer to the two buttons above the Menu button on the sidebar. By default, the two shortcuts are Straight and Contour (guidance mode buttons). Any button that you can assign as a favorite you can assign as a shortcut.

To use a favorite or a shortcut:

- Press the Favorites button then press your preferred favorite or press your preferred shortcut.

To add a favorite or assign a shortcut:

1. Navigate to the button you want to add as a favorite or shortcut. For example, to add the Terminal Diagnostics button as a favorite press **Menu > Diagnostics** to display the Diagnostics panel.

2. Press and hold your preferred button for several seconds until the Manage Favorites window appears.

3. To add the button as a favorite, press Add to Favorites then press Ok in the confirmation window that appears.

-or-

To assign the button to one of the shortcuts, press your preferred shortcut button (1 or 2).

To remove a favorite:

1. Press the favorites button then press and hold the favorite you want to remove for several seconds until the Manage Favorites window appears.

2. Press **Remove from Favorites**. The favorite is removed from the Favorites panel.

Settings

The Settings panel (Menu > Settings) provides access to multiple panels and screens that enable you to enter/edit various settings. Depending on your system features, the number of buttons on the panel varies and the panel will have a single column of buttons when displaying up to nine buttons or two columns (as at right) when displaying more than nine buttons. For example, the eTurns Setup button appears only if your system is authorized for eTurns.

Use the links below to access information on DISPLAY settings.

- "System Preferences" on page 18
- "Map Settings" on page 72
- "Viewing and Entering Subscriptions" on page 24
- "Configuring and Making eTurns" on page 105
- "ECU-S1 Settings" on page 25

System Preferences

Use the System Preferences panel (Menu > Settings > System Preferences) to enter all system preferences settings. See the following sections for more information.

To set display preferences:

- "Adjusting the Screen Brightness and Sound Level" on page 19
- "Setting the Language, Units, and GMT Offset (Local Time)" on page 20

To set driving/map preferences:

- "Setting A=B Projection" on page 22
- "Setting Smoothing" on page 23
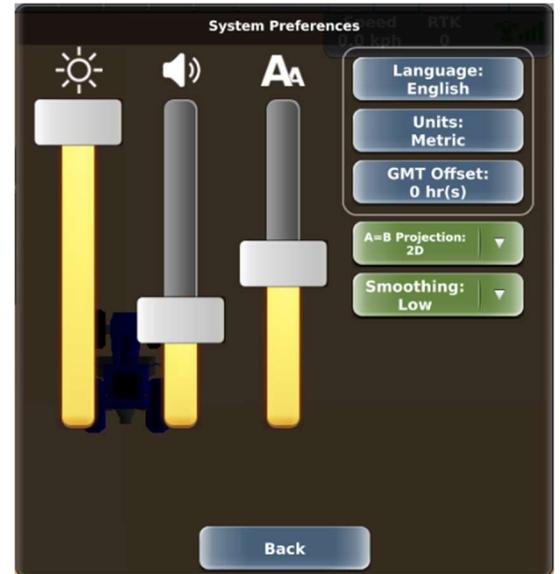
Adjusting the Screen Brightness and Sound Level

Use the sliders on the System Preferences (Menu > Settings > System Preferences) panel to adjust the screen brightness (left slider), the sound level (middle slider), and text size (right slider). As you move the sliders the system provides feedback on the new settings:

- Brightness - As you move the slider up/down the screen brightens/dims, respectively.

- Sound - When you move the slider and release your finger from the screen the systems produces a beep at that volume level.

- Text size – When you move and slider and release your finger from the screen the system resizes the text on all buttons as appropriate. There may be a maximum size limit for the text on some buttons as the system tries to make all the text fit on the button.
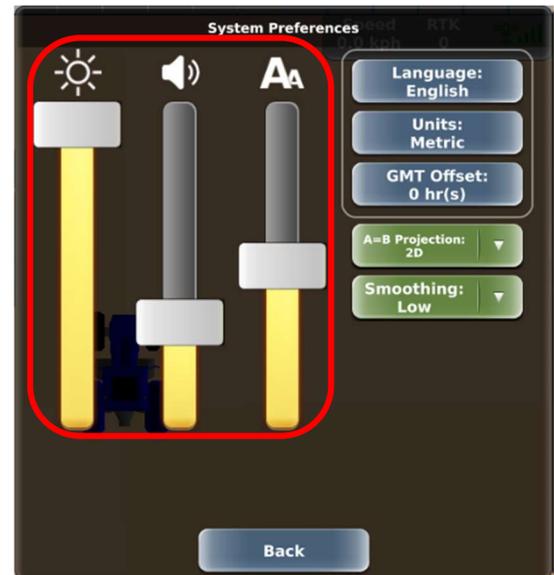
Setting the Language, Units, and GMT Offset (Local Time)

Use the System Preferences panel (Menu > Settings > System Preferences) to set the following (three blue buttons on the panel):

- Language - The terminal should be set to the language you requested when you ordered your system. Use either procedure below if you need to change the language. DISPLAY supports the following languages: English, Spanish, Portuguese, German, French, and Japanese.

- Units (of measure) - Set the unit of measurement (U.S. or Metric) in which DISPLAY displays/records measurements.

- GMT Offset (local time) - The default system time is based on GMT. To set your local time enter an offset from GMT. For example, if your local time is seven hours before GMT, set the GMT offset to -7 hr(s). Local time is used for display in debug logs and appears on the GPS Status screen (Time field) - see "GPS Status" on page 113 for details on this screen.
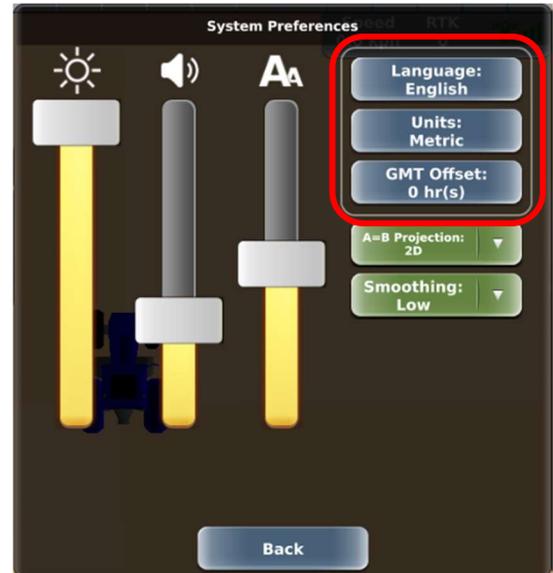
To set the language at startup:

1. On the bootup Warning window, press **Language** to display the Select Language panel.

2. Use the up/down arrows to scroll through the list of languages (if necessary) then select a language. A message (similar to below) appears briefly and you are returned to the Warning window.
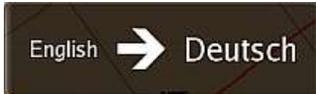
To set the language, units, or GMT offset after startup:

1. Press **Menu > Settings > System Preferences**. The System Preferences
    panel appears.

2. Change the settings as follows:

    - Press **Language** to display the Select Language panel. Use the up/down
      arrows to scroll through the list of languages (if necessary) then select a
      language. A message (similar to below) appears briefly, the panel closes,
      and Language button (System Preferences panel) shows the current
      setting.
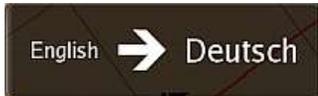
    - Press **Units** to display the Units of Measure panel. The current selection
      is green. Press the blue units button to switch units. The panel closes and
      the Units button (System Preferences panel) shows the current setting.

    - Press **GMT Offset** to display the GMT Offset panel. Press the up/down
      arrows to change the offset (the offset changes in increments of 0.5
      hours). Press **Back**. The panel closes and the GMT Offset button
      (System Preferences panel) shows the current setting.

3. Close or hide the panel.
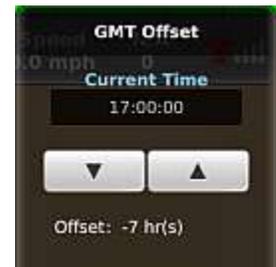
Setting A=B Projection

A=B projection relates to the effect of the earth's curvature on guidance accuracy for A=B straight guidance. There are two A=B projection options: 2D (default) and 3D. Select 3D for wide field operations or interoperability with third party guidance systems that also use 3D guideline projection; otherwise, keep the default setting of 2D.

Note: 3D A=B projection is unrelated to the 3D map view or the 3D GPS position type.

To set A=B projection:

1. Press **Menu > Settings > System Preferences**. The System Preferences panel appears and the Projection button displays the current setting (at right).

2. Press **A=B Projection** then select an option.

3. Close or hide the panel.
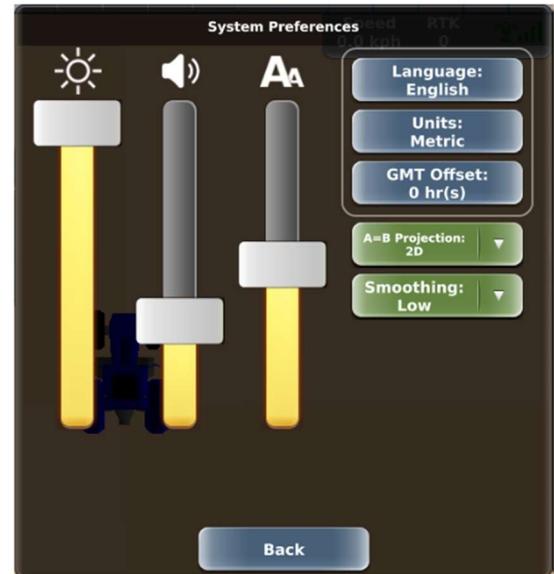
Setting Smoothing

Smoothing determines the amount of smoothing of contours and applies to Contour paths and AB Contour paths. The smoothing applied to the current contour is based on the smoothing setting that was active during the preceding pass. Depending on preference and needs, smoothing can be adjusted to None, Low (the default), Medium, or High. For example, you may need to adjust the smoothing if a vehicle/implement combination does not allow turning within a tight radius or a very sharp curvature may not be desired during high-speed operation. Use the following table as a guide to setting the smoothing.

Setting	Minimum Radius	Performance
Off	5 m	System tries to follow every contour, even if the contour has a very tight curvature but may disengage when following a very tight turn.
Low (default)	10 m	System applies minimum smoothing.
Medium	15 m	System applies medium smoothing.
High	20 m	System generates optimized control paths for high-speed operation where the minimum curvature for each turn is large. It is not suitable for tight-turn operations as unwanted coverage gaps may occur.

Note: DISPLAY *cannot generate the correct path if the curve diameter is less than twice the minimum radius.*

To set smoothing:

1. Press **Menu > Settings > System Preferences**. The System Preferences panel appears and the Smoothing button displays the current setting (at right).

2. Press **Smoothing** then select an option.

3. Close or hide the panel.
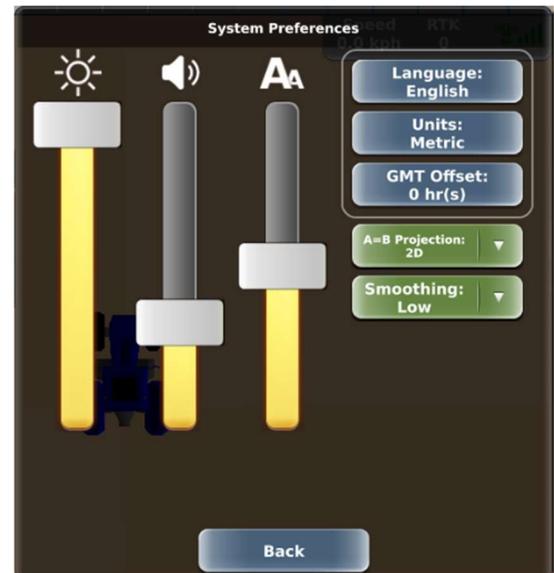
Viewing and Entering Subscriptions

The Subscriptions screen (Menu > Settings > Subscriptions) enables you to view the terminal serial number and current subscription, and enter a code for new subscriptions. When you enter a code, you are unlocking the features of that specific application license (such as eTurns). Before you can enter a code, you must first contact Customer Service to obtain the code.
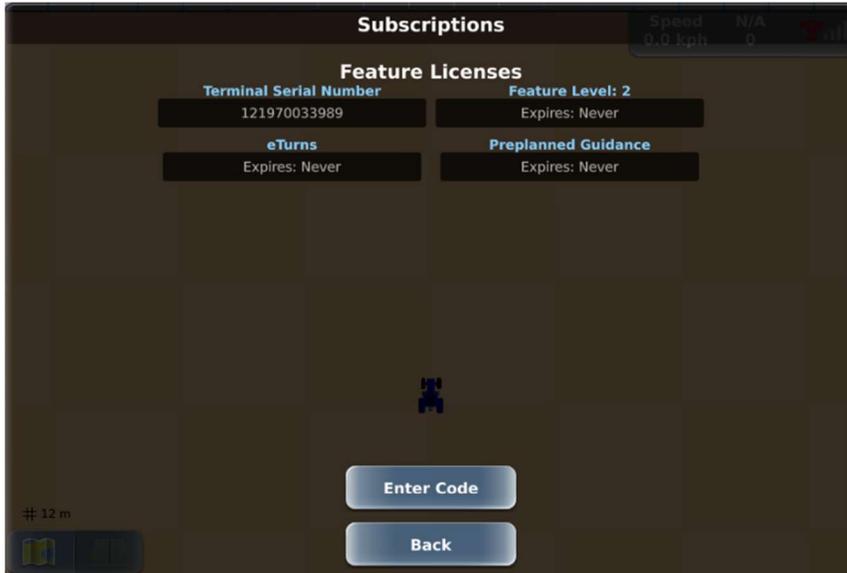
To enter a subscription/license code:

1. Press **Menu > Settings > Subscriptions** to display the Subscriptions screen.
2. Press **Enter Code**, enter the code, then press **Done**.
3. Press **Ok** to close the success message, then press **Back** to close the Subscriptions screen.
4. Close or hide the panel.

ECU-S1 Settings

Use the ECU-S1 Settings panel (Menu > Settings > ECU-S1 Settings) to configure ECU-S1 settings. This will open a browser window displaying the ECU-S1 web page. See ECU-S1 user manual for more information.

Note: There is an alternative method to display the ECU-S1 web page:

Menu > Vehicle Profiles > ECU-S1 Vehicle Setup

Backing Up and Restoring Data

In any computer or machine environment it is good practice to back up your data. Security and the ability to restore previous terminal data are the two main reasons. DISPLAY enables you to back up data to a USB drive and restore terminal data from the USB drive. When you perform a backup, DISPLAY saves the data as a single file with a .tar file extension. For example, if you backed up your terminal data on January 12, 2020 the tar file is:
ADO_Backups_01122020.tar

To back up data to a USB drive:

1. Insert a USB drive into the terminal then press **Menu > Diagnostics > Terminal Diagnostics**. The Terminal Diagnostics screen appears.

2. Press **Backup Data**. DISPLAY briefly displays backup messages in the Last Backup field, creates a folder named 'ADO_Backups' on the USB drive and backs up the data to this folder. When the backup is complete:

   o   A Backup Complete message appears. Press **Ok** to close the message.

   o   The Last Backup field shows the date of the backup.

To restore data from a USB drive to the DISPLAY terminal:

1. Insert the USB drive containing your backed-up data into the terminal then press **Menu > Diagnostics > Terminal Diagnostics**. The Terminal Diagnostics screen appears.

2. Press **Restore Data**. The Terminal Diagnostics screen closes and the Restore Data panel appears (shown at right).

3. Use the up/down arrows to scroll through the list of data files (if necessary) then select the data file you want to restore.

    o   The Restore Data panel closes and the Terminal Diagnostics screen appears.

    o   A progress indicator (circle) briefly appears followed by a reboot message. Press **Ok** to close the message.

    o   The Last Backup field shows the date of the restored file.

4. Reboot your terminal.

Help Messages

While using DISPLAY a Help message may appear—typically when an action cannot be performed such as when pressing a disabled (dimmed) button. If a Help message appears, review the message then press **Ok** to close it. Below are two examples of Help messages that may appear while operating DISPLAY.

This message appears when attempt to create a new job (New Job button on the Jobs panel is disabled) with no GPS. Close the message, examine your system and take the necessary steps to obtain a GPS signal (such as verifying no cables are loose), then try again to create a new job.
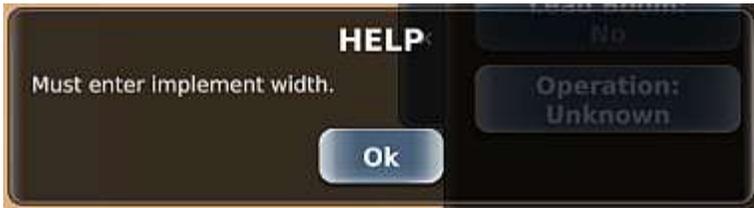
This message appears when you attempt to configure an implement (Implement Config button on the Implement Settings panel is disabled) before entering the implement width. Close the message, enter the implement width, then try again to configure your implement.

Chapter 2: Working with Vehicles

A vehicle refers to a machine you drive in the field, such as a sprayer or tractor. The map displays the vehicle in the color you select.
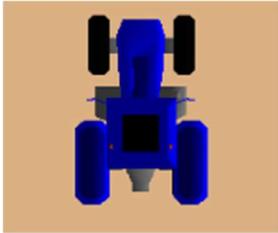
Use the Vehicles panel (Menu > Vehicles) and the sections below to work with vehicles.

Selecting the Vehicle Color

Select the vehicle color: Press **Vehicle Color** then press a color in the Select Color window. The new color appears on the Vehicle Color button and on the vehicle on the map.

Selecting ECU-S1 Vehicle Setup

Press **ECU-S1 Vehicle Setup** to configure ECU-S1 vehicle settings. This will open a browser window displaying the ECU-S1 web page. See ECU-S1 user manual for more information.

Note: There is an alternative method to display the ECU-S1 web page:

Menu > Settings > ECU-S1 Settings
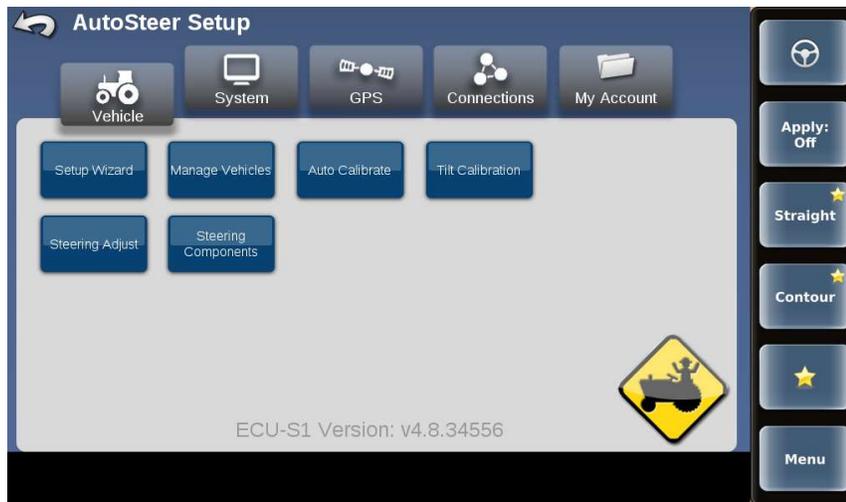
Note: There is an alternative method to display the ECU-S1 web page:

Menu > Settings > ECU-S1 Settings

Converging Filters

Filters are an important part of the data processing that enables precision guidance and autosteering. A check mark next to Filters Converged in the Run Time section of the ECU-S1 Status screen indicates filters have been converged. To converge the vehicle must move. Every time the system starts up or when a new vehicle is created or selected in ECU-S1 Filters Converged will show a red exclamation mark—this is normal. Drive the vehicle forward at 1.6 km/h or faster and Filters Converged will show a green check mark.

Note: The minimum speed for filter convergence depends on GNSS quality. 1.6 km/h is the minimum.
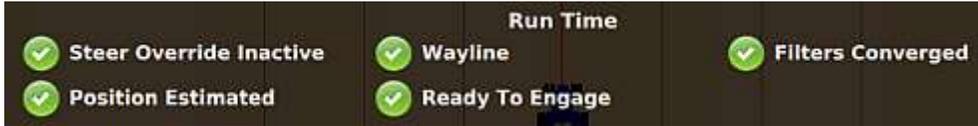
Steering Sensitivity and Attack Overview

This section provides an overview of steering sensitivity and steering attack. Each setting has a default value and you typically review/adjust the settings when adding a vehicle.

Forward Sensitivity and Reverse Sensitivity

Note: These settings are equivalent to adjusting the ECU-S1's Steering Response and Reverse Response. They are provided in this Vehicle Profile menu for convenience.

Steering sensitivity determines how aggressively a vehicle steers on a guideline while engaged on the line. You typically adjust sensitivity after calibrating a vehicle (during the process of adding a vehicle). An optimal value enables the vehicle to maintain the GPS guideline accurately without rapidly overshooting or responding too slowly. However, you may want to adjust sensitivity on the fly (while engaged on the guideline) if you notice:

- Vehicle jerks erratically back and forth across guideline (steering corrections too rapid)—sensitivity set too high (below left)
- Vehicle weaves excessively along guideline (crosstrack too high) —sensitivity set too low (below right)
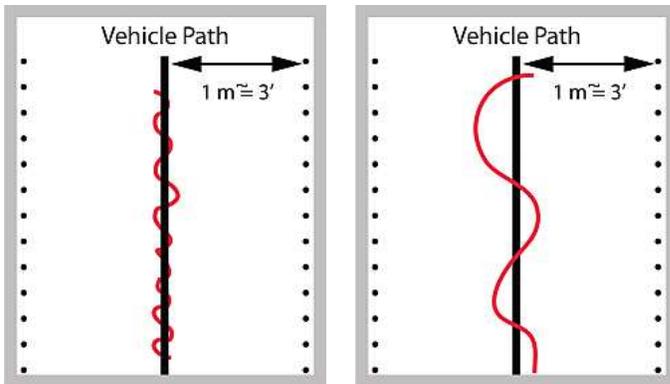
Depending on preference and needs, you can adjust sensitivity to between 0 and 20. The ECU-S1 default setting of 10 is a good value to start with on most vehicles. Use the following table as a guide to set the sensitivity.

Setting	Performance
Low value	Smooth steering adjustments, large crosstrack values (horizontal distance of the vehicle from the guideline).
Medium value	Good compromise between smooth steering and crosstrack.
High value	Aggressive steering adjustments with wheels very active, 'twitchy' (small crosstrack values).

Note: The best sensitivity setting for optimized machine control will depend on different parameters, such as vehicle type, implement, working speed, and field conditions.

Steering Attack

Note: This setting is equivalent to adjusting the ECU-S1's Line Acquisition. It is provided in this Vehicle Profile menu for convenience. The value of this Attack setting is half of the equivalent Line Acquisition setting.

Steering attack determines how aggressively the vehicle steers onto the guideline (not yet engaged on the line) when approaching it from a distance. Depending on preference and needs, you can set attack to between 1 and 10. The ECU-S1 default setting will result in an Attack value of 5 and is a good value to start with on most vehicles. Use the following table as a guide to set attack.

Setting	Performance
Low value	Very slow line acquisition. The system is not overshooting the guideline during approach.
Medium value	Good compromise between a fast line acquisition and a reasonable amount of overshoot.
High value	Fast line acquisition with the potential to overshoot the guideline until the system catches up.

Chapter 3: Working with Implements

An implement in DISPLAY refers to machinery attached to your vehicle, such as a sprayer, planter, or tiller. You can add as many implements to DISPLAY as you want and then select the ones you need for your job. DISPLAY stores information—such as implement geometry and eTurns setup—with each implement. The selected implement appears on the map with the vehicle (see figure below). The distance between the implement and the vehicle is determined by the front/back implement offset—see the "Implement Offsets" link below for more information.
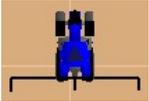
You set up the implement using the New Implement button (see panel at right).

Use the Implements panel (Menu > Implement Profiles) and the links below to work with implements.

To work with new implements:	To work with existing implements:
• "Implement Offsets" on page 36	• "Loading an Implement" on page 47
	• "Editing an Implement" on page 48
	• "Exporting an Implement" on page 49
	• "Importing an Implement" on page 50
	• "Deleting an Implement" on page 51

Note: If you have a valid eTurns subscription, the eTurn Radius button (New Implement Profile panel and Current Implement Profile panel) is visible. For each implement you want to use with eTurns, you must configure a minimum eTurn radius. See "eTurns" on page 103 regarding eTurns functionality.

Implement Offsets

In DISPLAY you can set two offsets for your implement: left/right offset and front/back offset. See the following sections for an overview of and how to set each type of implement offset.

Left or right (L/R) offset:

- "Left/Right Implement Offset Overview" on page 37

- "Setting the Left/Right Implement Offset - Preferred Method" on page 38

- "Setting the Left/Right Implement Offset - Alternative Method" on page 40

Front or back (F/B) offset:

- "Setting the Front/Back Implement Offset" on page 41

Left/Right Implement Offset Overview

The left/right implement offset is the lateral (perpendicular) distance between the center of the implement and the centerline of the vehicle. When calibrating a left/right implement offset, you are actually compensating for a physical implement offset. And to compensate for physical implement offset you:

- Measure the effect of the uncompensated implement offset
- Calculate the offset adjustment required
- Enter the calculated adjustment to compensate for the physical implement offset

Calibration is required if the vehicle successfully repeats its passes while driving up and down on a straight A=B line without an implement, but still shows an offset (skip or overlap) during field work with an implement attached. In this case it is likely the implement is not centered in relation to the vehicle centerline. To compensate for this you need to complete a left/right implement offset calibration for each implement used with DISPLAY.

The left/right implement offset—for which you will compensate—comprises a measured distance (the amount of the offset) and a direction (left or right of vehicle centerline). In the figure at right the offset distance (or amount) is X and the direction is right. Because it is difficult to measure the left/right implement offset on the vehicle/implement combination, you must determine the offset in the field to ensure maximum field work accuracy.

Note: Calibration compensates for a static left/right implement offset caused by the physical dimensions of the implement. It does not prevent offsets caused by dynamic movements of the implement (such as drift on a slope).

See "Setting the Left/Right Implement Offset - Preferred Method" on page 38 and "Setting the Left/Right Implement Offset - Alternative Method" on page 40 that describe the two ways to determine the left/right implement offset.
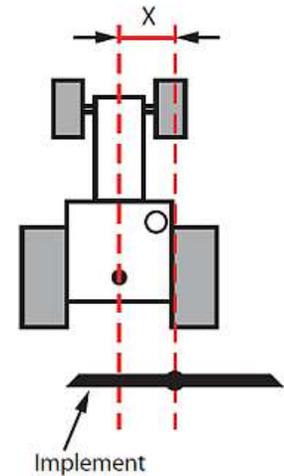
Setting the Left/Right Implement Offset - Preferred Method

This method for setting the implement offset is the preferred method because it eliminates the possibility of errors caused by an incorrect vehicle width.
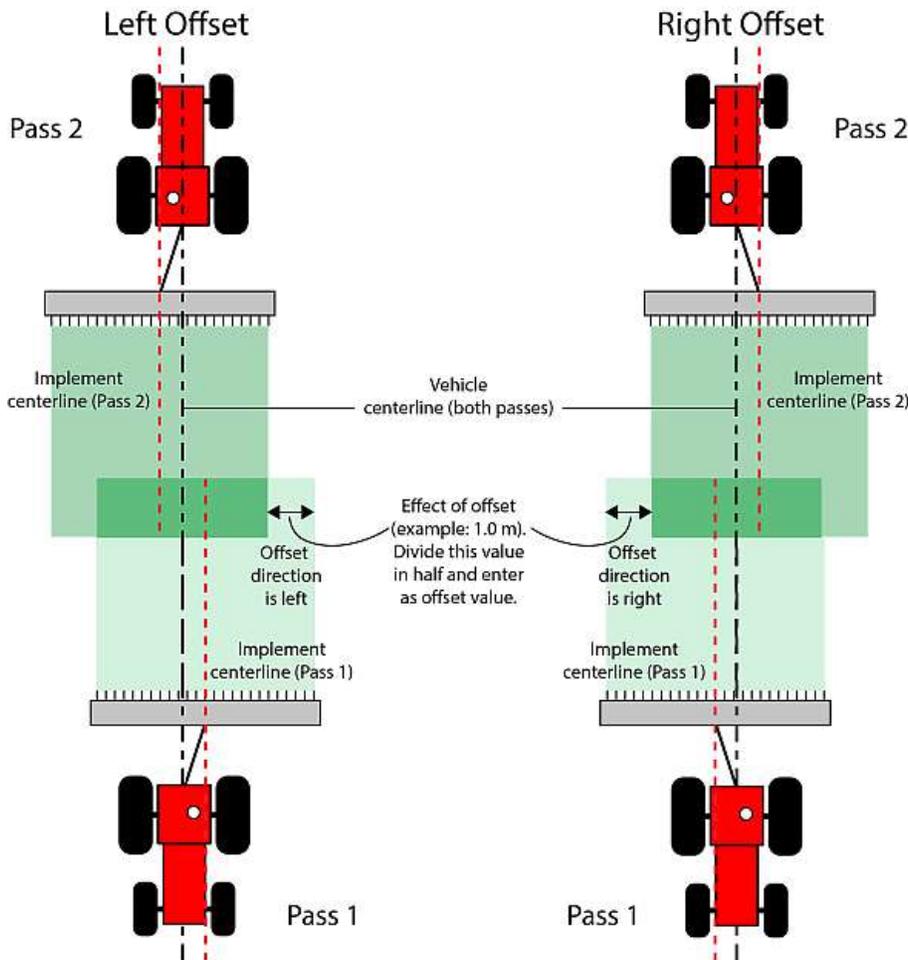
To determine implement offset:

1. Set an A=B path. See "Setting an A=B Path" on page 84 for more information.

2. Maintaining a speed of 5 kph (3 mph) engage steering and, with good crosstrack and with the implement straight, let the system steer you along the guideline for at least 100 m. Ensure the implement is in sufficient contact with the ground to leave a visible swath. See Pass 1 in the above figure.

3. Perform a keyhole turn, re-engage the steering, and let the system steer you down the same guideline, again with good crosstrack and with the implement straight. See Pass 2 in the above figure.

4. Measure the effect of the uncompensated implement offset shown in the figure above (1.00 m in example)—it is the width of the first swath not covered by the second swath.

5. Divide the measurement by two. This is the amount of the physical offset of the implement—the offset you need to compensate for and need to enter as the implement offset in the Implement Configuration screen (see step 7 below)—so 0.5 m in the figure above (and see step 8 below).

6. Determine the direction of the offset—this is the left or right direction of the implement's centerline relative to the vehicle centerline when viewed in the direction of travel. See the figure above for examples of both a left and right offset.

7. Navigate to the Implement Settings panel (see "Adding a New Implement" on page 43 for help) then press **Implement Config** to display the screen below.
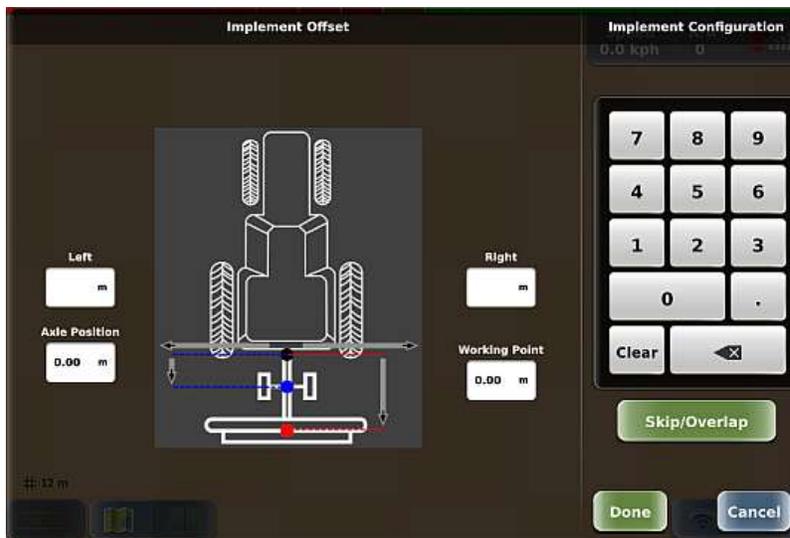
8. *Enter the left or right implement offset.* Press the appropriate offset field (white box) then enter an offset value using the keypad on the right of the screen. After you enter the value the implement on this screen moves to the position indicated by the offset; for example, if you enter a Right offset the implement moves to the right. Press **Done**. The value is entered and the screen closes.

9. On the Edit Implement Profile panel press **Save**. The Edit Implement Profile panel closes and the new implement position is indicated on the map.
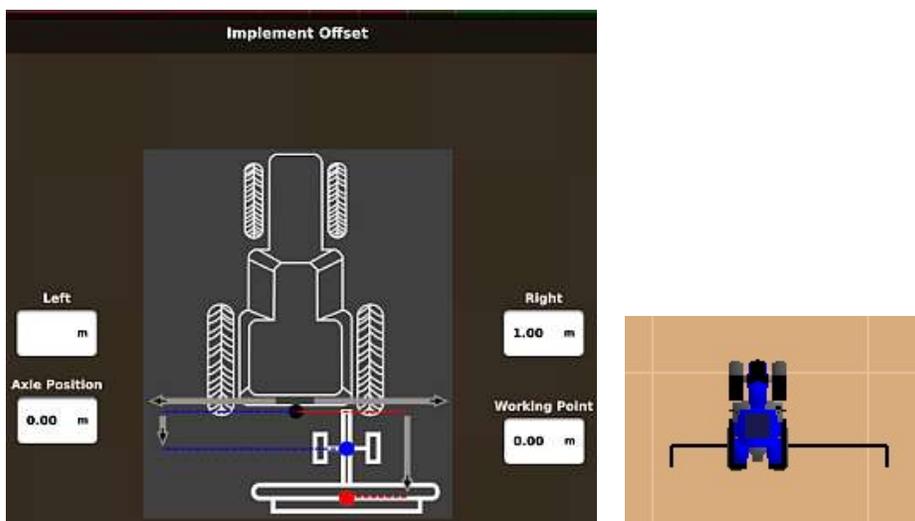
10. Close or hide the panel.

11. Test the completed calibration by letting the system control up and down on a new A=B line. The second swath should overlay the first exactly. If it does not, repeat the calibration.
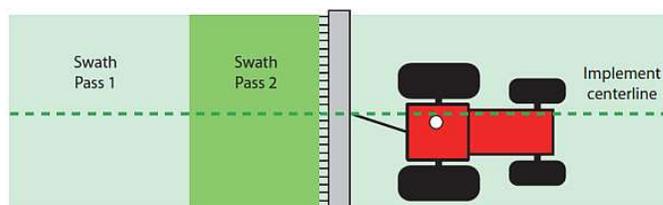
Note: If test results still show skips or overlaps after calibrating both the antenna and implement offsets, make sure the implement width (Width button on Implement Settings panel) is correct.

Setting the Left/Right Implement Offset - Alternative Method

With this method, instead of driving two passes on the same guideline—one in each direction—you drive three passes on adjacent guidelines. Depending on the direction of your implement offset (left or right), you will get a skip or an overlap on the second pass and the opposite on the third pass.

No implement offset entered. Skips and
overlaps occur (2X). Direction of offset is
Left when viewed in direction of travel.
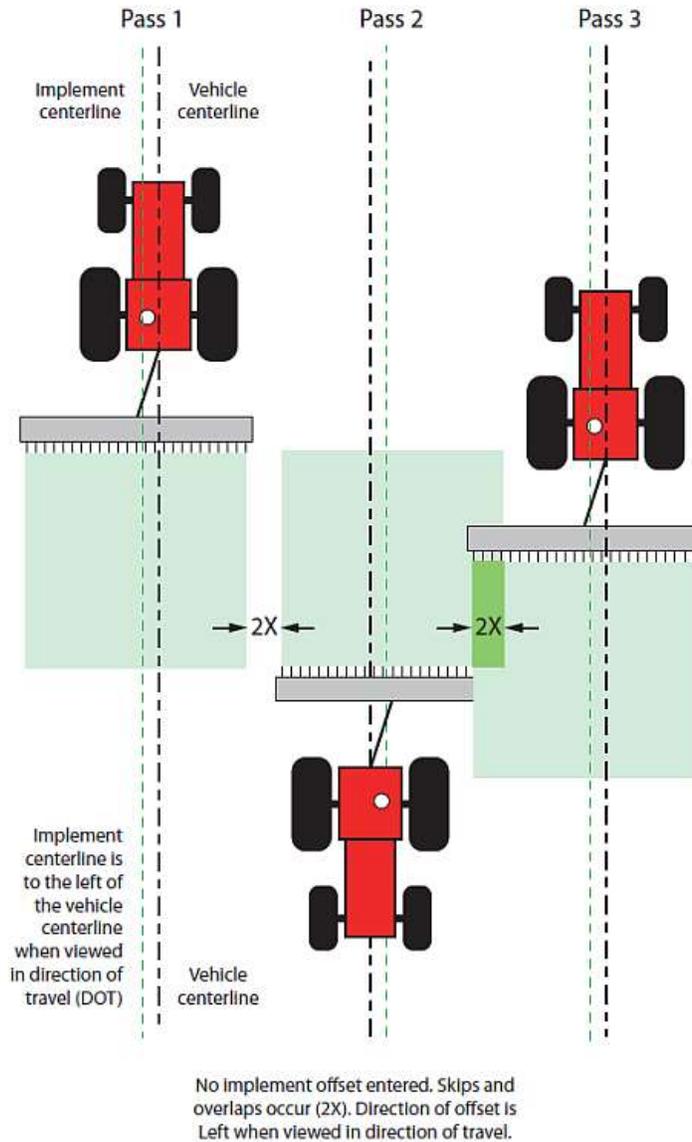
The amount of skip and overlap will be the same. Whichever you measure (2X) divide it in half and enter the result as the implement offset (X) along with the direction of the offset, which is left in the example - start at step 7 of "Setting the Left/Right Implement Offset - Preferred Method" on page 38.

Note: If the offset was to the right, Pass 2 would produce overlap, Pass 3 would produce skip.

Setting the Front/Back Implement Offset

DISPLAY enables you to set different front/back offsets and these depend on the mount type you selected for your implement.

- Front offset (Rigid Front mount only) or Rear offset (Rigid Rear mount only)—the Front or Back implement offset is the perpendicular distance between the vehicle's pivot point and the application line (spray impact point, seed drop point, etc.) of the implement. On the map, a Front offset places the implement in front of the vehicle and a Rear offset places it behind.

- Axle Position and Working Point (Trailed mount only)—axle position is the distance from hitch point to implement axle and working point is the distance from hitch point to application line. The working point is similar to a back offset. If you set these offsets, the implement is behind the vehicle on the map.

You set a front/back offset using the Implement Configuration screen, which changes based on the implement's mount type (as shown below). These offsets affect the applied swath 'on/off' points.
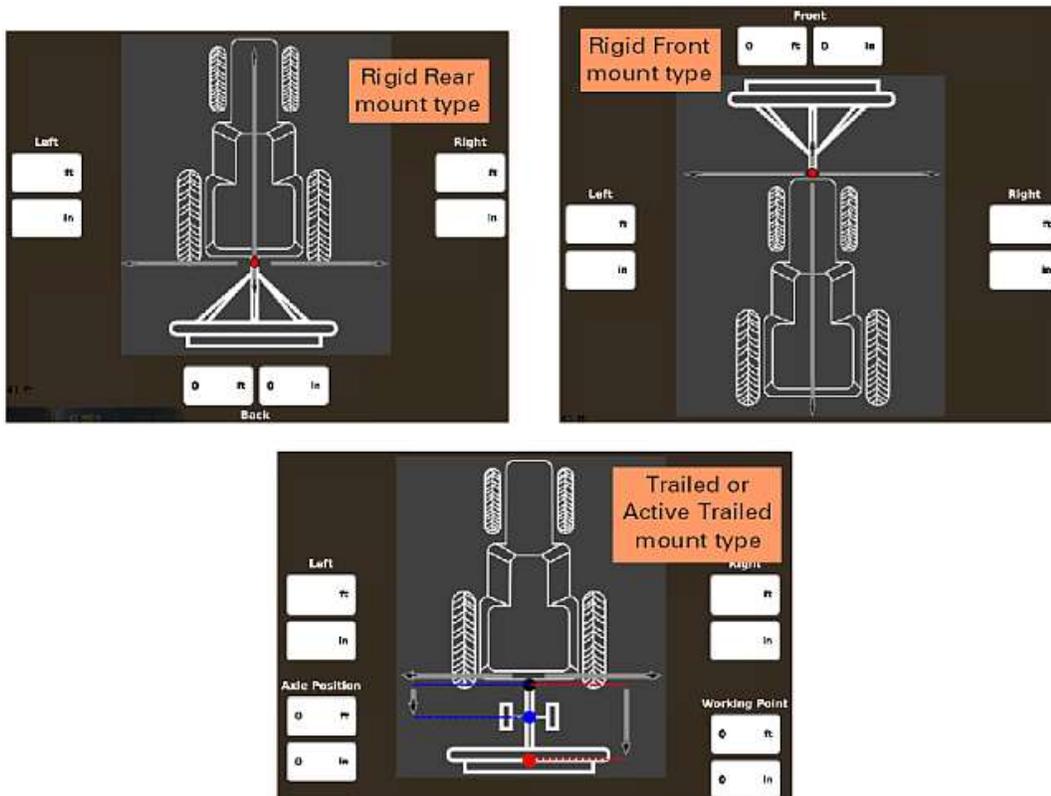
To set the front or back implement offset:

1. Navigate to the Implement Settings panel then press **Implement Config** to display the screen below.
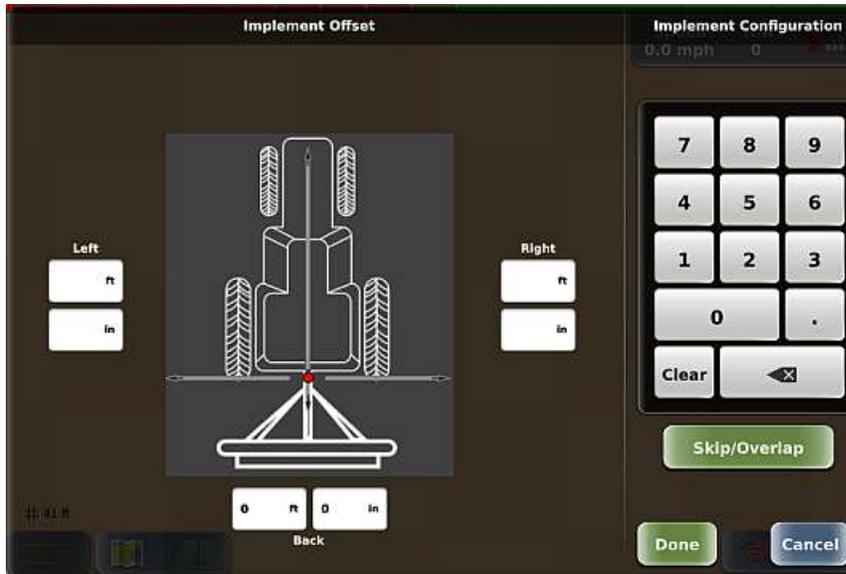
2. *Enter the front or back implement offset:* Press the **Front** or **Back** field (white box). Enter an offset value using the keypad on the right of the screen. After you enter the value the implement on this screen moves to the position indicated by the offset; for example, if you enter a Front offset the implement moves to the front. Press **Done**.

Note: Based on the location of the application line of the implement, you may need to set a combination of left/right and front/back offsets on the implement.

Adding a New Implement

When you add an implement, it remains in memory. You must add an implement before you can start/run a job. Use the sections below to add a new implement.

- "Adding a New Implement - Name and Mount Type" on page 43

- "Adding a New Implement - Implement Settings" on page 44

- "Minimum eTurn Radius Calibration" on page 104

Adding a New Implement - Name and Mount Type

When entering the implement name, use a name you will recognize if entering many implements. For example, step 2 below uses 'Trail_12m' for a 12-meter-wide trailed implement.

DISPLAY enables you to select from three distinct mount types:

- (2) rigid types: Rigid Rear (rigid mounting at rear of vehicle) and Rigid Front (rigid mounting at front of vehicle)
- (1) trailed type: Trailed (implement follows the vehicle but cuts corners, similar to towing a trailer with a car)

To enter the implement name and select the mount type:

1. Press **Menu > Implement Profiles > New Implement**. The New Implement Profile panel appears (top of panel shown at right).

2. *Enter the implement name:* Press **Name**, enter a name in the Enter Name window (shown below), then press **Done**. The new implement name appears on the Name button.

3. *Select the implement mount type.* When adding an implement, the Mount Type is preset to the default type (Trailed) and this appears on the Mount Type button (see New Implement Profile panel, above right).

   Press **Mount Type** (the Mount Type panel appears with the implement name above the buttons, see at right), then press a mount type. The panel closes and the selected type appears on the Mount Type button.

Go to the next section (implement settings) to continue setting up your implement.

Adding a New Implement - Implement Settings

On the New Implement Profile panel, press **Implement Settings** to display the Implement Settings panel.

The table below describes the implement settings.

Button	Description
Width	Implement width

Button	Description
Implement Config	Press to display the Implement Configuration screen. • Left side of screen shows Implement Offset (default, left below) section or Skip/Overlap section (right below) • Right side of screen shows a keypad (used to enter values) and a green button you press to toggle between displaying the sections (buttons text indicates the section not shown)

To enter values in any of the fields, press the field, type values with the keypad, then press Done.

For Implement Offset:

• Left or Right offset—see "Left/Right Implement Offset Overview" on page 37

• Axle Position—distance from hitch point to implement axle

• Working Point—distance from hitch point to the application line (spray impact point, seed drop point, etc.)

For Skip/Overlap:

Enter a value to drive a pattern where rows intentionally skip or overlap. When you enter a skip or overlap the map shows this as an area between swaths in the green coverage lines, where a skip is the non-sprayed area between swaths and an overlap is the dark green overlap between swaths.
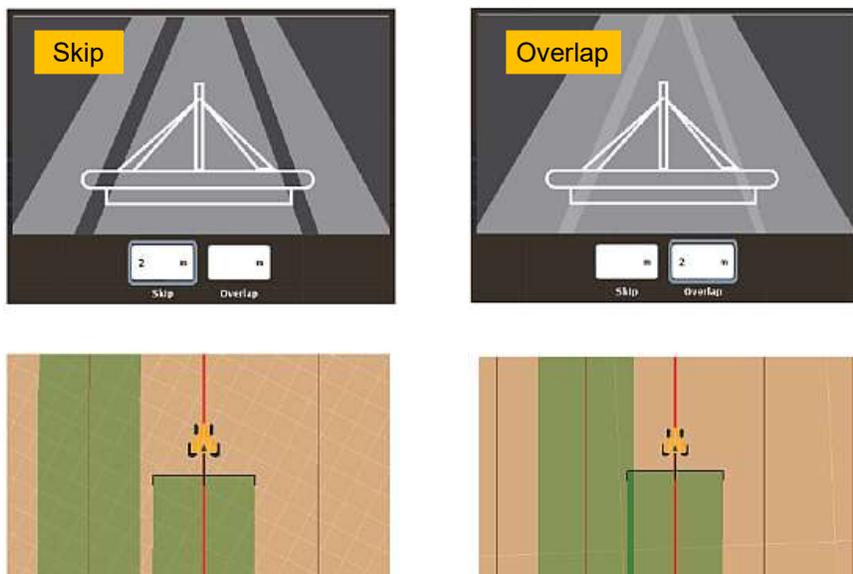
Button	Description
Operation	Field operation for the implement/boom
	Press Operation to display the Boom Operation panel. Then press the preferred operation (the panel closes and the selected operation appears on the Operation button). The operation you select is for reference only.

Loading an Implement

Each implement you create in DISPLAY is saved to memory creating a list of implements. When you load an implement, it will use the dimensions and any other setup for that implement. The Implement List panel (Menu > Implement Profiles > Implement List) shows all the implements (new or imported) on your DISPLAY terminal. The active implement has a check mark. Only one implement can be selected and saved.

To load an existing implement:

1. Press **Menu > Implement Profiles > Implement List** to display the Implement List panel. The current implement (if one is current) has a green check mark; press this implement to deactivate it (clear the check mark).

2. *(Optional)* If the implement list is long, you can filter the list by pressing the Search box at the top of the panel, typing text that is part of the implement name, then pressing **Done**. For example, you may want to filter the list and show only those implements that contain the word 'trail'.

3. Use the up/down arrows to scroll through the list of implements (if necessary), select the implement you want to load, then press **Save**. The panel closes and the selected implement appears on the Current Implement button.

4. Close or hide the panel.

Editing an Implement

You can edit only the current implement. Editing implement settings is similar to entering them when adding a new implement.

To edit an implement:

1. Press **Menu > Implement Profiles > Current Implement** to display the Current Implement panel. If eTurns is authorized on your system, an eTurn Radius button also appears.

2. Edit your preferred settings, similar to adding an implement, then press **Save**.

3. Close or hide the panel.

Exporting an Implement

You must have a USB drive inserted in one of the USB ports on the terminal to export an implement; otherwise, the functionality is disabled (the Export Implements button on the Implements panel is disabled). When you export an implement to a USB drive, DISPLAY creates an 'implements' folder on the drive (if one does not already exist) and copies the implement .xml file to that folder.

To export an implement:

1. Press **Menu > Implement Profiles > Export Implements** to display the Export Implements panel. The number at the lower right of each implement indicates the number of booms for that implement.

2. Use the up/down arrows to scroll through the list of implements (if necessary) then select the implements you want to export; to export all implements press **Select All**.

   Note: If an implement of the same name you are exporting already exists on the USB drive, DISPLAY prompts you to confirm/cancel exporting that implement. Confirming the export will overwrite the implement on the USB drive.

3. Press **Export**. An export progress message appears briefly followed by an export complete message. Press **Ok** to close the message.

4. Close or hide the panel.

Importing an Implement

You must have a USB drive inserted in one of the USB ports on the terminal to import an implement; otherwise, the functionality is disabled (the Import Implements button on the Implements panel is disabled). The USB drive must contain an 'implements' folder at the root level of the drive and all implement files must be in this folder. For example, if your USB drive is drive M on your PC, your implement files should be in the following folder: M:\implements

To import an implement:

1. Press **Menu > Implement Profiles > Import Implements** to display the Import Implements panel.

2. Use the up/down arrows to scroll through the list of implements (if necessary) then select the implements you want to import; to import all implements press **Select All**.

    Note: If an implement of the same name you are importing already exists on the terminal, DISPLAY prompts you to confirm/cancel importing that implement. Confirming the import will overwrite the implement on the terminal.

3. Press **Import**. An import progress message appears briefly followed by an import complete message. Press **Ok** to close the message.

4. Close or hide the panel.

Deleting an Implement

Caution: Once you delete an implement it is permanently removed from memory; you cannot retrieve a deleted implement.

You cannot delete the current implement—thus, all implements except the current implement appear in the Delete Implements list. For example, the Implement List panel below left shows four implements (current implement, i1, has a check mark). The Delete Implements panel below right shows three implements—all but the current implement.

All implements   *Implements you can delete*

To delete an implement:

1. Press **Menu > Implement Profiles > Delete Implements** to display the Delete Implements panel (see above right). The number at the lower right of each implement indicates the number of booms for that implement.

2. Select the implements you want to export using any of the following methods:

   o Use the up/down arrows to scroll through the list of implements (if necessary) then select the implements you want to delete.

   o Press the search box (above the list), type text that is part of implement name, then press **Done**. DISPLAY filters the list of implements and displays only those implements containing the search text. Then select the implements you want to delete.

   o Press **Select All** if you want to delete all implements.

3. Press **Delete** then press **Yes** in the confirmation message (see below). The implements are deleted and you are returned to the Implements panel.

4. Close or hide the panel.

Chapter 4: Working with Jobs

You can work with jobs in two ways:

- Using the Start Up Menu after powering on DISPLAY—the Start Up Menu enables you to start a new job, continue a job (the job that was active when the terminal was last powered off), or skip loading a job (perform non-job functions).
- Using the Jobs panel (Menu > Jobs)—use the links below in conjunction with the Jobs panel to work with jobs.

To create a job:

- "Job Basics and Before Creating a Job" on page 54
- "Creating a Job" on page 55

To work with job templates:

- "Creating a Job Template" on page 60
- "Creating a Job from a Job Template" on page 61

To work with existing jobs:

- "Loading a Job" on page 56
- "Closing a Job" on page 57
- "Exporting a Job" on page 57
- "Importing a Job" on page 58
- "Renaming a Job" on page 59
- "Deleting Jobs and Associated Items" on page 60

Job Basics and Before Creating a Job

What is a Job?

A job is a field operation you perform, such as spraying, tilling, or harvesting and is required for guidance and autosteering. You can work with jobs in two ways: using the Start Up Menu after powering on DISPLAY or using the Jobs button on the Menu Options panel. You can create job templates from existing jobs and use these templates to create similar new jobs.

Job Numbering

When you start a new job DISPLAY automatically assigns it a job number. The job number is based on the current date and the order of the job number. For example, DISPLAY names the first job you start on April 2, 2020 as 20040201, where:

- 20 = year (2020)
- 04 = month (April, fourth month)
- 02 = day
- 01 = first new job on this date

If you start more than one new job on this date, DISPLAY uses the same year, month, and day and orders the last two digits. For example, if you start three new jobs on April 2, 2020, DISPLAY autonumbers them as follows:

- 20040201
- 20040202
- 20040203

Note: When you export jobs to a USB drive (see "Exporting a Job" on page 57 for more information) and then view the job files on your PC, the job files have a .Log file extension—this extension is hidden when you work with job files in DISPLAY.

Before You Start a Job

See the following sections before starting a job:

- "Real-Time Status Tab" on page 8 to verify you have a GNSS signal

- "Adding a New Implement" on page 43 to add an implement because you must have at least one implement in DISPLAY

Creating a Job

When you create a job DISPLAY automatically closes the active job. See "Job Basics and Before Creating a Job" on page 54 for information on what you need to do before starting a job and how DISPLAY automatically creates a job number when you start a job.

To start a job:

1. Press **Menu > Jobs > New Job** to display the New Job panel. Client, Farm, Field, and Crop display 'Default' unless you enter/select new values. Values you enter for Temperature, Humidity, Wind Speed, and Wind Direction are for reference only; these values are not used anywhere else in DISPLAY.

2. F*or Client, Farm, Field, and Crop:* Press a button to display a Select panel, then do either of the following:

   o   Select an existing option. The Select panel closes and the new value appears on the button on the New Job panel.

   o   Create a new one by pressing **New** (green button at the bottom of the Select panel), entering a value in the alphanumeric keypad, then pressing **Done**. The Select panel closes and the new value appears on the button on the New Job panel.

3. *For Temperature, Humidity, or Wind Speed:* Press the button to display a numeric keypad, enter a value, then press **Done**.

4. *For Wind Direction:* Press **Wind Direction**, press the appropriate direction buttons (see below) to enter the correct direction, then press **Done**.

5. Press **Begin** then close or hide the panel.

Loading a Job

Loading a job closes the previously open job and information associated with the job (such as swath lines, marks, and sprayed areas) appears on the map. There are two ways to load a job:

- Select from a list of previous jobs (Option #1 below)
- Continue (load) the most recently closed job to quickly continue that job without searching the list of previous jobs (Option #2 below)

When a job is loaded the top button on the Jobs panel is Current Job (below left). When no jobs are loaded and you have previously created a job, the top button on the Jobs panel is Continue Job (below right).

Option #1 - Loading a Previous Job

1. Press **Menu > Jobs > Previous Jobs**. The Previous Jobs panel appears (at right) displaying all previous jobs.

2. *(Optional)* To filter the list by Client, Farm, and/or Field to narrow the list of jobs displayed, press Client, Farm, or Field to display a panel, use the up/down arrows to scroll through the list (if necessary), then select an option (returns you to the Previous Jobs panel).

3. Use the up/down arrows to scroll through the list of jobs (if necessary), then select the job you want to load.

Option #2 - Continuing the Most Recently Closed Job

- Press **Menu > Jobs > Continue Job**.

Closing a Job

In addition to closing a job manually (described here), the active job is closed automatically when you create a new job or when you load a job.

To close a job manually:

1. Press **Menu > Jobs > Close Job**. The job closes.

2. Close or hide the panel.

Exporting a Job

You can export closed jobs and job templates; you cannot export an open job. You must have a USB drive plugged into the terminal to export a job; otherwise, the functionality is disabled (the Export Jobs button on the Import / Export panel is disabled). When you export a job, DISPLAY creates an 'S3Jobs' folder on the USB drive and copies the text file (.Log for job logs) and/or template (.tem for job templates). For example, if you export job number 12041101 to a USB drive, it appears as *12041101.Log*

To export a job:

1. Insert a USB drive into the DISPLAY terminal then press **Menu > Jobs > Import / Export > Export Jobs** to display the Export Jobs panel. This list displays only closed jobs.

2. Use the up/down arrows to scroll through the list of jobs (if necessary) then select the jobs you want to export; to export all jobs press **Select All**.

    Note: If the USB drive contains a job of the same name you are exporting, DISPLAY prompts you to confirm/cancel exporting that job. Confirming the export overwrites the job on the USB drive.

3. Press **Export**. The panel closes, an export progress message appears briefly, then an export complete message appears. Press **Ok**.

4. Close or hide the panel.
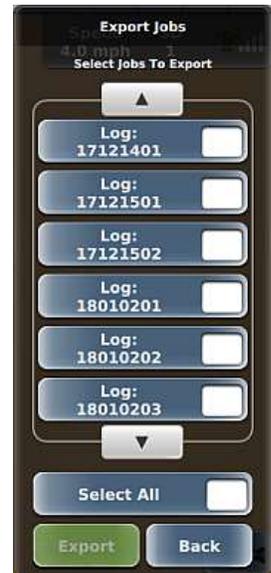
Importing a Job

You must have a USB drive plugged into the terminal to import a job; otherwise, the functionality is disabled (the Import Jobs button on the Import / Export panel is disabled). The USB drive must contain an 'S3Jobs' folder at the root level of the drive and all job files must be in this folder. For example, if your USB drive is drive M on your PC then your job files should be in *M:\S3Jobs*

To import a job:

1. Press **Menu > Jobs > Import / Export > Import Jobs** to display the Import Jobs panel.

2. Use the up/down arrows to scroll through the list of jobs (if necessary) then select the jobs you want to import; to import all jobs press **Select All.**

   Note: If the USB drive contains a job of the same name you are importing, DISPLAY prompts you to confirm/cancel importing that job. Confirming the import overwrites the job on the terminal hard drive.

3. Press **Import**, then press **Ok** to close the import complete message.

4. Close or hide the panel.

Renaming a Job

You can rename any job that is not the active job. To rename the active job you must first close it.

To rename a job:

1. Press **Menu > Jobs > Rename Jobs** to display the Rename Jobs panel (top of panel at right).

   o   If a job is open, the Last Job button is disabled (as shown at right) because you cannot rename the active job.

   o   If no jobs are open, the Last Job button is enabled.

2. *Rename the last job:* Press **Last Job**, enter a value in the keypad, then press **Done**. The keypad closes and new job name appears on the Last Job button.

   or

   Rename a previous job: Press **Select Other Job** to display the Rename Previous Job panel (shown at right), use the up/down arrows to scroll through the list of jobs (if necessary), then select the (Log button) job you want to rename. Enter the new job name then press **Done**. The new job name appears on the Log button.

3. Close or hide the panel.

Deleting Jobs and Associated Items

Caution: Deleting a job or associated item permanently removes the job or item—you cannot retrieve a deleted job or item.

You can delete any closed jobs; thus, you cannot delete the active job. You can delete items associated with jobs—clients, farms, fields, and crops—but you must first delete all jobs associated with these items.

To delete a job or an item associated with a job:

1. Press **Menu > Jobs > Delete Items** to display the Delete Items panel (near right).

2. Press the button for the item you want to delete. The Delete panel for that item type appears. For example, press Delete Jobs to display the Delete Jobs panel (far right).

3. Use the up/down arrows to scroll through the list then select the items you want to delete; to delete all items press **Select All**.

4. Press **Delete**, then press **Yes** to confirm the deletion.

5. Close or hide the panel.

Creating a Job Template

You can create a job template from any closed job; thus, you cannot create a job template from the active job. Additionally, creating a job template does not close the active job nor does it create a job if you have no job active.

To create a job template:

1. Press **Menu > Jobs > Templates > Create Template** to display the Create Template panel.

2. *(Optional)* Filter the list by Client, Farm, and/or Field: Press a button (Client, Farm, Field) to display a Select panel, use the up/down arrows to scroll through the list (if necessary), then select an option. Repeat as needed for the other buttons.

3. On the Create Template panel, use the up/down arrows to scroll the jobs list (if necessary), then select the job you want to use as a template. The panels close and the template is created from the selected job.

Creating a Job from a Job Template

Using a template starts a new job based on the job template you select. DISPLAY supports two types of job templates:

- Templates you create from an existing job—see below for instructions on creating a job from this type of template.

- Preplanned templates—these are templates created specifically for your field (usually by a third-party) that you then import into DISPLAY. A preplanned template uses the data from your field and when loaded, displays all the guidelines for you (see "Preplanned Guidance" on page 102).

To create a job from a job template (not Preplanned):

1. Press **Menu > Jobs > Templates > Use Template** to display the Use Template panel.

2. *(Optional)* Filter the list by Client, Farm, and/or Field: Press a button (Client, Farm, Field) to display a Select panel, use the up/down arrows to scroll through the list (if necessary), then select an option. Repeat as needed for the other buttons.

3. On the Use Template panel, use the up/down arrows to scroll through the list of templates (if necessary), then select the template you want to use for the job. The panels close and a new job is started based on the selected template.

Chapter 5: Map Options and Settings

Map Options and Settings Overview

DISPLAY includes options and settings that enable you to set up and customize your map.

You set mapping options using the Mapping Options panel below (see "Mapping Options" on page 64).

You configure map settings using the Map Settings panel below (see "Map Settings" on page 72).

Mapping Options

Mapping options refer to how you display your vehicle and field, markers (flags) you can set on your field, applied maps, and return-to-point guidance.

Use the Mapping Options panel (press) and the links below to work with mapping options.

- "Map Views, Perspectives, and Positions" on page 65

- "Using Event Markers" on page 68

- "Returning to a Point" on page 71

Map Views, Perspectives, and Positions

Map views, map perspectives, and vehicle positions work together to provide you with different ways to view your vehicle and field. There are two map views (Vehicle and Field), two map perspectives (Top Down and 3D), and three vehicle positions (Low, Middle, and High). The map view determines whether the vehicle appears stationary and the map moves or vice versa. The map perspective refers to the angle at which you view the map. The vehicle position refers to vertical position of the vehicle on the touchscreen. The table below provides more information on map views, perspectives, and vehicle positions.

Field		Description
Map View	Vehicle	Use Vehicle view to "follow" the vehicle while work is in progress. In this view the map moves while the vehicle appears stationary on the screen. The vehicle is always pointing 'up' toward the top of the screen and the field adjusts.
	Field	In this view, the vehicle appears to move while the map appears stationary on the screen. You can pan to a specific area on the map by touching the screen and dragging the area into view. The field is oriented with North at the top of the screen and the vehicle points in its actual direction. For example, if the vehicle is driving southwest then it will point toward the bottom left of the screen.
Perspective	Top Down	Provides a bird's eye view of the job
	3D	Provides a three-dimensional view down the field in the direction of travel
Vehicle Position	Low	Vehicle appears near bottom of screen
	Middle	Vehicle appears in middle of screen
	High	Vehicle appears near top of screen

When first using DISPLAY select different view/perspective combinations to become more familiar with how they appear on the screen. You should also review the following combinations:

- Correct: Vehicle:Top Down
- Correct: Vehicle:3D
- Correct: Field:Top Down
- Incorrect: Field:3D (If you are in Field:Top Down and you select 3D the Map View automatically changes to Vehicle. Also, if you are in Vehicle:3D and you select Field the Perspective automatically changes to Top Down).

Both Map Views display the vehicle's position on the field and direction of travel.

See "Zooming In and Out on the Map" on page 14 for more information on zooming in and out on the screen.

The following examples illustrate different map/perspective combinations:
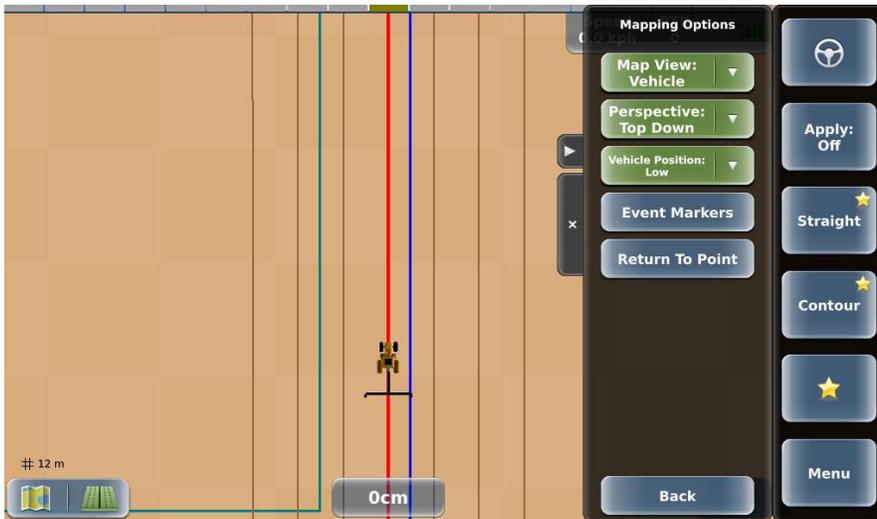
Map View: Vehicle

Perspective: Top Down
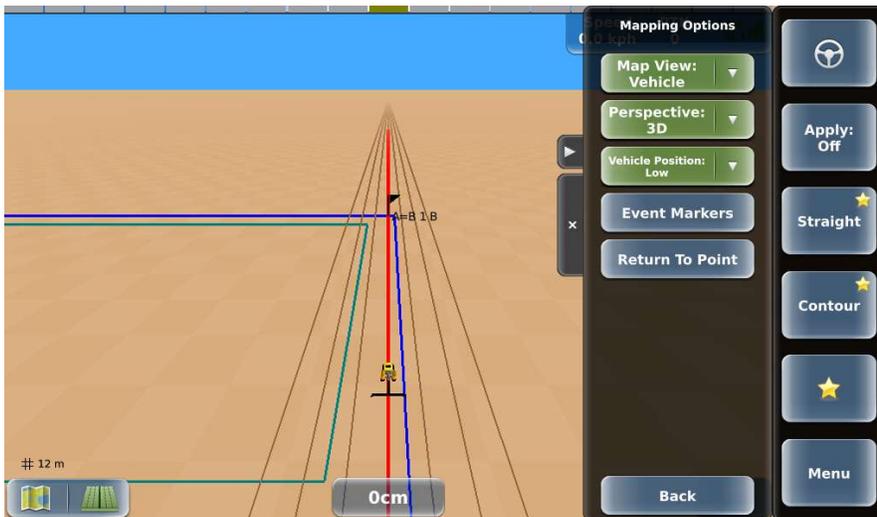
Map View: Vehicle

Perspective: 3D
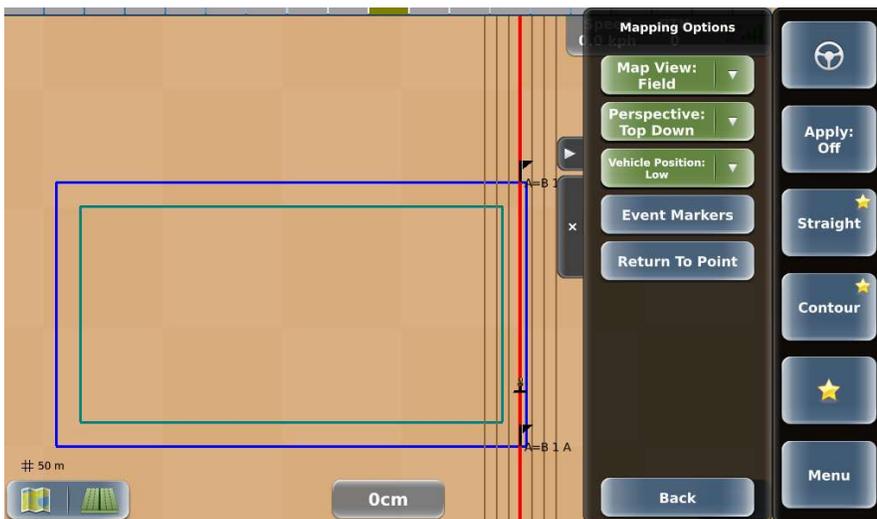
Map View: Field

Perspective: Top Down

The screens below show the different vehicle positions (low, middle, and high):

Low   Middle   High
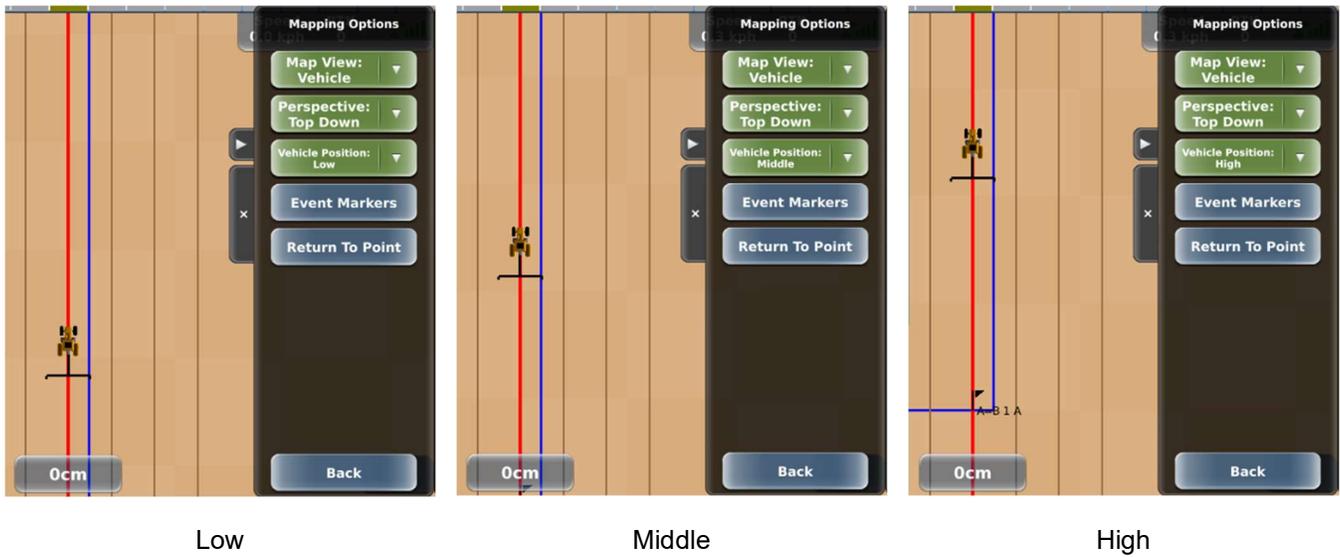
To set the map view, map perspective, and vehicle position:

1. Press [icon] to display the Mapping Options panel (at right).
2. For each option press the appropriate green button then select an option.
3. Close or hide the panel.

Using Event Markers

An event marker refers to any item you want to mark in a field, such as a pole, a rock, a tree or any other obstacle. Markers appear as flags on the screen with the following identifiers:

- Color - by default each event marker type is a different color, such as green for a tree or blue for water
- Label - accompanying text that identifies the marker type, such as 'rock' or 'ditch'

The example below shows a Tree marker.
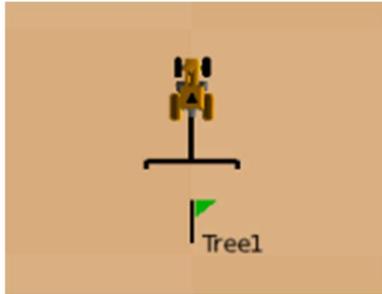
Using the Event Markers panel (> Event Markers), you can drop a marker, edit a preset marker, and delete a dropped marker. You must have an active job to drop or delete a marker (otherwise, the Drop Preset Markers and Delete Marker buttons are disabled); however, you can edit a preset marker with or without an active job. DISPLAY includes preset markers for the following obstacles: Tree, Rock, Pole, Water, Ditch, and Obstacle.

The table below describes how to use the buttons on the Event Markers panel.

Button	Description
Edit Preset Markers	You can change both the label (text) and color of a preset marker. For example, if you rarely use the Ditch (gray) marker but have a need for a Fence marker, you can change the Ditch marker text to 'Fence.' Editing a preset marker does not affect any previously dropped markers.

To edit a preset marker:

1. Press [icon] **> Event Markers > Edit Preset Markers** to display the Edit Preset Markers panel.

2. To change the marker text, press the left side of the button, enter a new value, then press **Done**.

3. To change the marker color, press the right side of the button (color box), then press a color.

4. Press **Save**, then close or hide the panel.

| Drop Preset Markers | Dropping a marker refers to placing a marker in your current location. You must have an active job to drop a marker. |

To drop a marker:

1. Press [icon] **> Event Markers > Drop Preset Markers** to display the Drop Preset Markers panel.

2. Press a marker. The marker appears as a flag on the map with an incremented text label and color of the marker. For example, if you drop a Pole marker (gold color) and this is the first marker you dropped then a gold 'Pole1' marker appears on the map at that point. If you then drop another Pole marker that marker is named 'Pole2' (also gold).
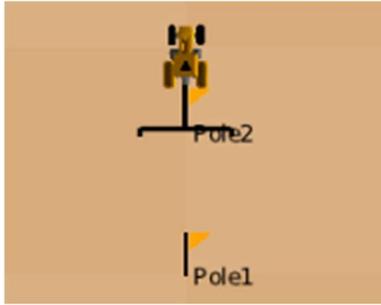
3. Repeat step 2 as necessary as you are driving, then close or hide the panel.

Button	Description
Delete Marker	***Caution:*** *Once you delete a marker from a job it is permanently removed from that job; you cannot retrieve a deleted marker.* You can delete an individual marker (such as Pole2) from the active job. Deleting a marker does not change the numbering of other, higher-numbered markers and new markers will continue to increment from the last (highest) number used. To delete a marker:

1. Press ![map icon] **> Event Markers > Delete Marker** to display the Delete Marker panel that shows all dropped markers for the active job.

2. Press the up/down arrows to scroll through the list of markers (if necessary) then select the marker you want to delete. The marker is removed from the map and the Delete Marker panel.

3. Repeat step 2 as necessary then close or hide the panel.

Returning to a Point

DISPLAY can provide guidance to an existing point in the active job—such as the Last Apply point, any A or B point, or any dropped marker in your field. Keep in mind that DISPLAY does not automatically steer you to this point—you only receive guidance (distance and bearing) to the point and you must manually steer to the point.

To return to a point:

1. With your preferred job active, press **> Return To Point**. The Return To Point panel appears (shown at right) showing available points to return to for the active job.

2. Use the up/down arrows to scroll through the list of return points (if necessary) then select your preferred point.

    The panels close and a Return To Point window appears showing the distance and bearing to the point (below top). As you get closer to the return point the distance and bearing reflect this (below bottom).
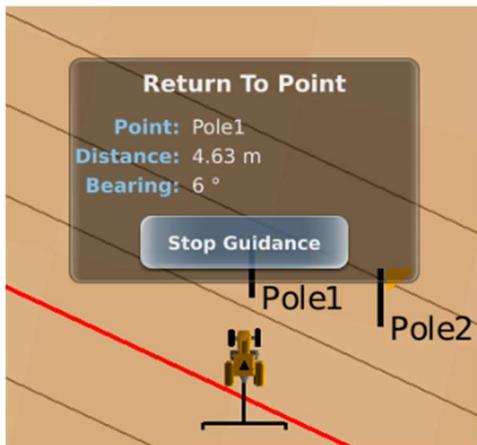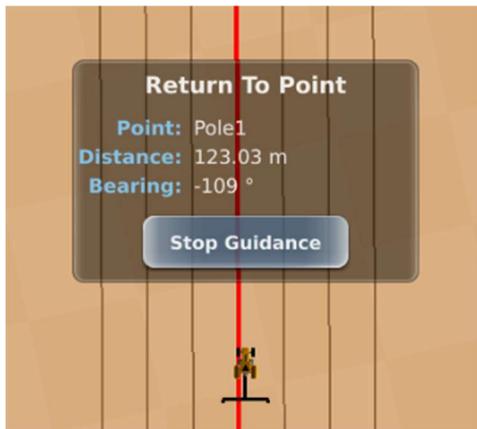
3. When you no longer need guidance to the point press **Stop Guidance**.

Map Settings

Use the Map Settings panel (Menu > Settings > Map Settings) to:

- Show A=B lines (parallel lines or grid pattern) or hide A=B lines
- Set grid spacing (for when A=B Lines is set to show a grid pattern)
- Edit preset markers (same result as using the Mapping Options panel)
- Set Apply Trigger method

See the following sections for information on setting these options:

- "Straight Paths Options" on page 82

- "Using Event Markers" on page 68

Apply Trigger

The Apply Trigger setting controls the Apply behavior when engaging and disengage guidance. The table below provides more information.

Mode	Description
Manual (default)	In this mode, the Apply On and Off state is only changed by the operator.
Guidance Engage	When guidance is engaged, then Apply is automatically set to On. If Apply is already On, then it will remain On.
	When guidance is disengaged, then Apply is automatically set to Off. If Apply is already Off, then it will remain Off.
	This setting does not prevent the operator from manually changing the Apply state between On and Off at any time when pressing the Apply button.

Chapter 6: Boundaries

This section provides an overview of boundaries. See "Setting a Boundary" on page 75 and "Managing Boundaries" on page 76 for information on setting and managing boundaries.

Typically, you complete the first operational pass to set and record the boundary of the field. DISPLAY enables you to create boundaries to record field perimeters and save them for future operations—allowing boundary information to remain consistent from job to job, season after season. You can include multiple boundaries in a single field. When a field is divided into multiple areas (each defined by a boundary), DISPLAY adds the areas defined by the boundaries to calculate the total Boundary area. A boundary that adds to the total area is called an 'include' boundary. Conversely, you can create an 'exclude' boundary to have DISPLAY deduct that area from the total area calculation. For example, you may want to create an exclude boundary around a body of water in your field.

Additionally, you can pause and then resume a boundary—for example, if you run out of spray while creating the boundary you can go back, refill your tank, then come back and resume the boundary at the point where you paused it. You do not have to return to the exact point you pressed Pause because DISPLAY continues the boundary at the point you press Resume—if you are not at the exact Pause location when you press Resume, DISPLAY fills in the boundary line by connecting the Pause point and the Resume point.

The figure below shows a small exclude boundary (red border) within a larger include boundary (blue border).

Use the Field Boundary panel (Menu > Boundaries) as the starting point for working with boundaries. Referring to the figure on the next page, you can:

- Start, pause/resume, and finish boundaries. When you press:
    - Start Boundary: DISPLAY starts the boundary, the top right three buttons on the panel are disabled, and the Pause Boundary button appears above the Finish Boundary button.
    - Pause Boundary: DISPLAY pauses the boundary (stops calculating the boundary area) and the Resume Boundary button replaces the Pause Boundary button.
    - Resume Boundary: DISPLAY resumes calculating the boundary area and the Pause Boundary button replaces the Resume Boundary button.
    - Finish Boundary: DISPLAY completes the boundary, the top right three buttons are enabled, the Boundary List button appears, and the Boundary Area field displays the area of the completed boundary.
- Specify where the boundary is marked relative to the implement (middle button). Press the button repeatedly to cycle through the three options:
    - Left, boundary calculations start from left edge of the swath
    - Center, boundary calculations start from center of the swath
    - Right, boundary calculations start from right edge of the swath
- Specify whether the boundary should be part of the total area calculation ('include' boundary) or deducted from the calculation ('exclude' boundary).

Setting a Boundary

Note: You must have an active job to set a boundary.

To set a boundary:

1. Drive to the starting position of the field.

2. Press **Menu > Boundaries** to display the Field Boundary panel.

3. Press the top green button (showing Center at right) then select Left, Center, or Right to determine if the calculations should start from the left edge, center, or right edge of the swath width.

4. Press the bottom green button (showing Include at right) then select:

   o Include to get the total area calculation

   o Exclude to subtract the defined area from the total area calculation

5. Press **Start Boundary**. DISPLAY starts the boundary, the top three buttons on the panel are disabled, and the Pause Boundary button appears above the Finish Boundary button.

6. Drive around the outside of the field as accurately as possible. A solid black line indicates a boundary in progress. The example below left shows a Right Include boundary in progress. You can perform actual work while creating the boundary (Apply On) or drive around the field with Apply Off. The boundary is created from the edge or center of the current Implement swath, regardless of whether Apply is On or Off.
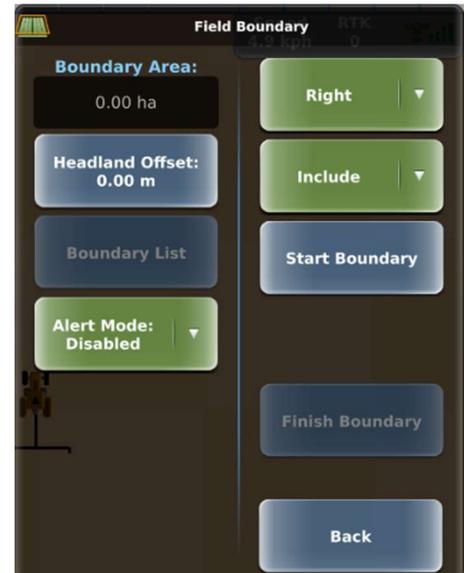
   You should close the perimeter as close to the starting point as possible. The boundary automatically closes anytime the vehicle is within a swath width of the boundary's starting point. However, to manually close the boundary at any time press **Finish Boundary**. A finished boundary is indicated by a solid blue line (Include boundary) or a solid red line (Exclude boundary). The example below shows a finished Right Include boundary.
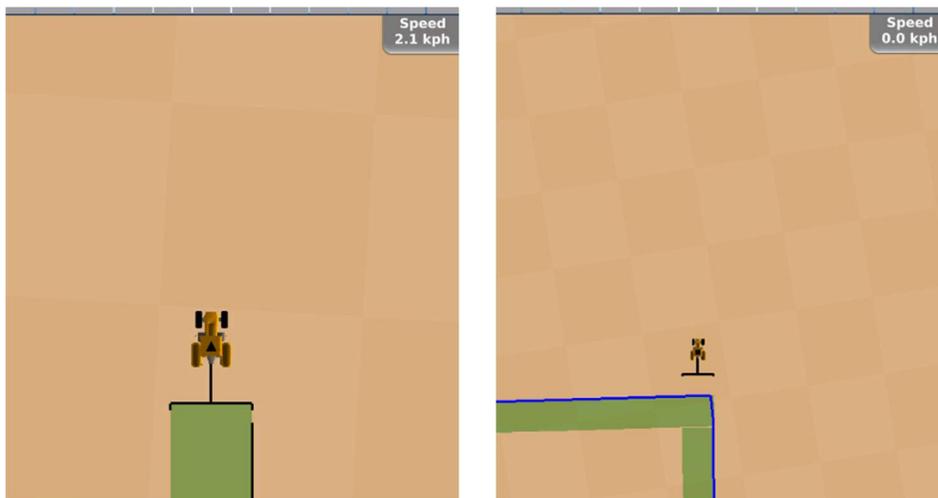
Managing Boundaries

When you create multiple boundaries for a job, you can select only those boundaries that apply to your current work. For example, if you created two boundaries (one 'include' and one 'exclude') and you only want to work with the 'include' boundary, you can deselect the 'exclude' boundary and remove it from the map.

To manage boundaries in a job:

1. In the active job (with boundaries), press **Menu > Boundaries > Boundary List**. The Boundary List panel appears (top of panel shown below).

2. By default, all boundaries are selected—each boundary button on the panel has a green check mark (below left). For each boundary you do not want to appear on the map press the button to remove the check mark and immediately remove the boundary from the map (below right). Only the 'checked' boundaries appear on the map.

3. Press **Select**. The Boundary List panel closes and the Boundary Area field is updated. For example, if you removed an 'exclude' boundary, the boundary area increases.

Two boundaries selected and both appear on map, area calculation reflects subtraction of interior (red exclude) boundary	*One boundary selected and it appears on the map, area calculation reflects just that boundary*

Headland Offset

DISPLAY can automatically generate headland lines from an existing field boundary. By setting a Headland Offset value, a headline line is calculated and displayed at the specified distance from the field boundary. The headline will be on the inside of all 'include' field boundaries. The headline will be on the outside of all 'exclude' field boundaries.

To disable or hide the headline line, set a Headland Offset value of 0. This is the default.

To manage Headland Lines:

1. With an active job (with boundaries), press **Menu > Boundaries > Headland Offset**. The Headland Offset panel appears.
2. Enter the desired value of the headland offset and select **Done**.
3. The headland line will be automatically shown offset from the boundary.

Alert Mode

It is possible to set an alert to occur when the vehicle is a configured distance from the end of a field. The alert can be set to occur relative to a Boundary or relative to a Headland Line. When the alert is configured to occur, both an audible and a vision notification will occur as follows:

1. The system will produce a short 4 tone beep. Make sure that the system Volume is set appropriately as described in "Adjusting the Screen Brightness and Sound Level" on page 19.
2. The Alert indicator (upper left of map) will appear for about 3 seconds.

To configure boundary Alert Mode:

1. With an active job (with boundaries), press **Menu > Boundaries > Alert Mode**.
2. Select the desired Alert Mode.
3. Set the Alert Distance by selecting **Menu > Boundaries > Alert Distance**.
4. Enter the desired value for the Alert Distance and select **Done**.
5. When the vehicle is the configured distance from the boundary type, then the Alert will occur.

Alert Mode	Description
Disabled (default)	No alert will occur.
Boundary	The alert will occur when the vehicle reaches the configured distance from the field Boundary. Distance to Boundary will also be displayed in the Real-Time Status Tab. See "Real-Time Status Tab" on page 8 for more information.
Headland Line	The alert will occur when the vehicle reaches the configured distance from the Headland Line (or reaches the configured distance from the field Boundary less the Headland Offset distance). Distance to Headland Line will also be displayed in the Real-Time Status Tab. See "Real-Time Status Tab" on page 8 for more information.

Note: The distance to boundary is calculated along the current wayline (red wayline on screen).

Chapter 7: Path Planning

You cannot create any new guidance lines or recall previous guidance lines while engaged on a guideline. You must disengage steering before setting any new or previous guidance lines. You cannot automatically engage any guideline. If you are already on a guideline, you can manually disengage the guideline by pressing the engage button, or you can steer off of the guideline, at which point the automatic steering disengages. You then must manually press the engage button to reengage the steering on a guideline.

To perform path planning functions, press [image] on the map or press Menu > Path Planning to display the Path Planning panel. DISPLAY supports various guidance modes and you can switch to any guidance mode at any time as long as you are not engaged on a guideline. The guidance mode buttons are disabled while engaged on a guideline.

Note: You must have an active job to display the Path Planning panel; otherwise, the Path Planning button (on the map and on the Menu Options panel) is disabled.

The links below provide information on path planning, such as setting up your initial pass lines, driving along contours, and using eTurns to make automated turns.

Basic path procedures:

- "Setting Paths Overview" on page 80
- "Reusing a Path" on page 91
- "Adjusting Paths" on page 92

Other path options:

- "Contour Lock" on page 101
- "Preplanned Guidance" on page 102
- "eTurns" on page 103

Setting Paths Overview

Note: You must have an active job before using path planning; otherwise, the Path Planning button ![path planning button] *is disabled.*

A path in DISPLAY is a line you follow while driving your vehicle. DISPLAY supports the following types of paths (described below and available from the Path Planning panel shown at right):

- Straight path (see "Straight Paths" on page 81)

- *A=B path* - an imaginary line that passes through two points that you set (Point A and Point B) to define the first pass

  A + Direction path - where you define a beginning point (Point A) and enter a heading angle (the direction)

- Pivot (circular) path (see "Setting a Pivot Path" on page 86)

- Contour (freeform) path (see "Setting and Following Contour Paths" on page 89)

- AB Contour path (see "Setting an AB Contour Path" on page 87)

Straight Paths

Straight Paths Overview

With DISPLAY, you create straight paths that you can reuse when needed. To first work with a straight path:

1. Create straight path (A=B path or A + Direction path). DISPLAY starts straight guidance.

2. Engage automated steering. DISPLAY automatically steers you along your guideline.

3. Once an A=B path or A + Direction path is established DISPLAY provides adjacent swath lines so all other passes are perfectly spaced on both sides of the first pass.

Use the following links to learn more about setting straight paths:

Straight Paths Options

Before working with straight paths, verify the two straight path settings (A=B Lines and A=B Grid Spacing) available from the Map Settings panel (Menu > Settings > Map Settings). There are three A=B Lines display options available: On, Grid, and Off. Grid lines are parallel guidance lines that are perpendicular to the A=B line (and its parallel guidance lines)—thus forming a grid. When Grid is selected the distance between the grid lines is based on the value set in the A=B Grid Spacing field.
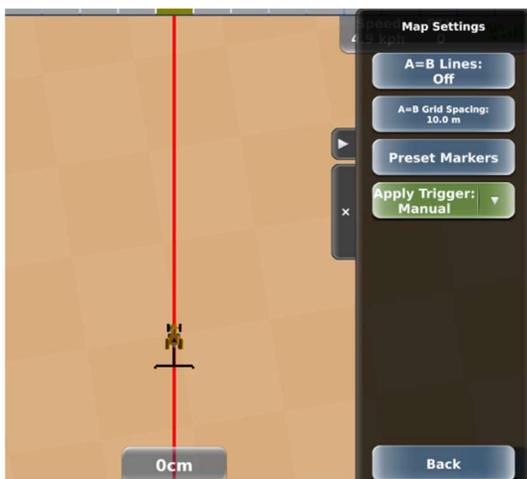
A=B Lines = On

Guidance lines are displayed parallel to and on both sides of A=B line
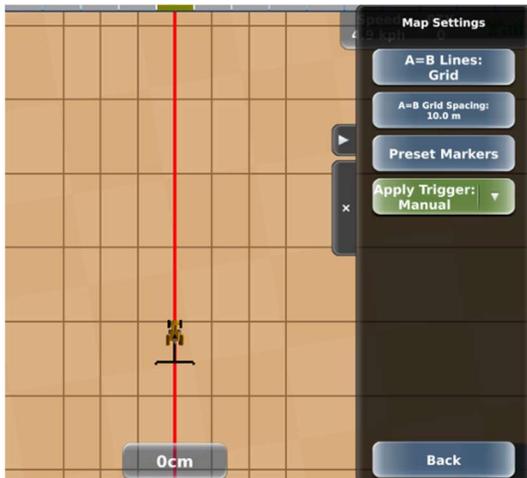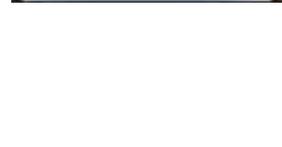
A=B Lines = Grid

Guidance lines are displayed parallel to and on both sides of A=B line and perpendicular grid lines are displayed with user-defined spacing

A=B Lines = Off

No guidance lines are displayed

The following table describes the buttons on the Map Settings panel.

Button	Description
A=B Lines: On	Cycles through the three options: On, Off, Grid.
A=B Grid Spacing: 32ft 10In	Displays a data entry window, where you enter a value then press **Done**. *Note: If you set your system to display U.S. units, the data entry window has two fields: one for feet and one for inches—press each field and enter a value. If you set your system to display metric units, there is only field for meters. See "Setting the Language, Units, and GMT Offset (Local Time)" on page 20 for information on setting units of measure.*
Preset Markers	Although unrelated to straight path options, see "Using Event Markers" on page 68 for information about event markers.

Setting an A=B Path

When you set the first line of an A=B path:

- Both the A and B points are labeled on the map (at the implement position) as you set them.
- The line is named A=Bx, where x is a digit starting at 1. This name appears in the Current Path field on the Path Planning panel. The A and B points of use this naming convention as well; for example, for path A=B 1, the A and B points are A=B 1 A and A=B 1 B, respectively.

The first straight path (A=B or A+ Direction) you create in a job is A=B 1 and the 1 is incremented for each additional straight path you set for that same job. For example, for a job where you define only A=B paths, the number following the B is incremented as follows:

- First A=B path: A=B 1 A and A=B 1 B
- Second A=B path: A=B 2 A and A=B 2 B
- Third A=B path: A=B 3 A and A=B 3 B, and so forth

You can rename an A=B path—see "Renaming a Path" on page 99 for more information.

Note: The last step of the procedure below describes using eTurns to engage on subsequent guidelines of your A=B path. Review "eTurns" on page 103 to familiarize yourself with the functionality that applies to your system.

To set an A=B path:

1. Position the vehicle at the beginning of the first pass.

2. Press [icon] **> Straight > A=B**. The A=B panel appears (top of panel at right).

3. Start driving the first pass, wait until the implement on the map trails straight, then press **Point A**. 'A' appears on the map marking point A, the Point A button is disabled, and the Point B button is enabled.

4. At the end of the pass, press **Point B**. The panels close and A=B 1 A and A=B 1 B appear on the map marking the A and B points. In the example below, swath lines appear because A=B Lines is set to On.

    If all automated steering requirements are met, the engage button is as shown below (state of 'ready to engage'). The button must be in this state to engage autosteering.
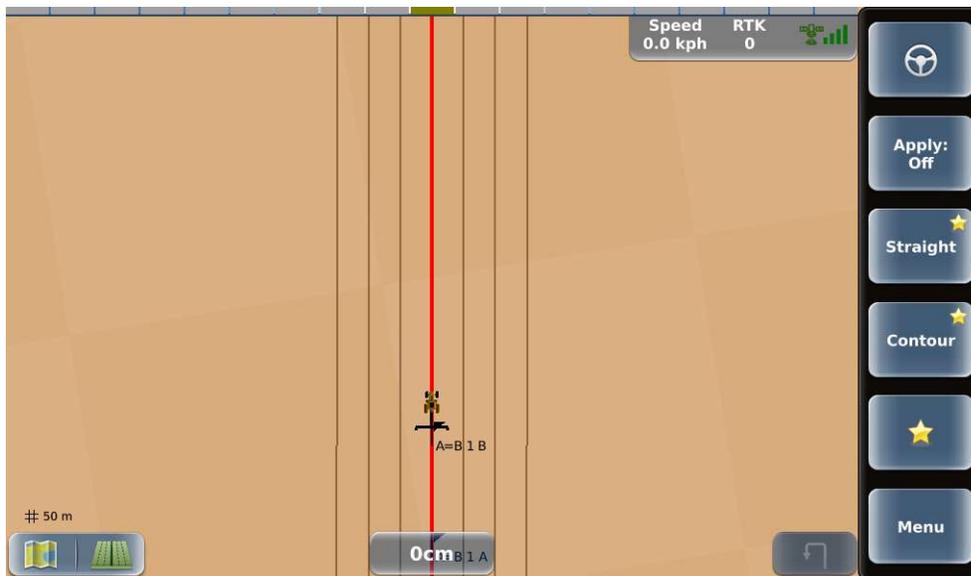
5. Press the engage button to engage automated steering. DISPLAY steers your vehicle along the A=B line.

6. At the end of the current pass turn around and engage on the next guideline (use eTurns if applicable).

Setting an A + Direction Path

When you set the first line of an A + Direction path:

- The A point is labeled on the map (at the implement position) as you set it.

- The line is named A=Bx, where x is a digit starting at 1. The first straight path (A=B or A+ Direction) you create in a job is A=B 1, the second is A=B 2, and so forth. This name appears in the Current Path field on the Path Planning panel.

You can rename an A + Direction path— see "Renaming a Path" on page 99 for more information.

Note: The last step of the procedure below describes using eTurns to engage on subsequent guidelines of your A + Direction path. Review "eTurns" on page 103 to familiarize yourself with the functionality that applies to your system.

To set an A + Direction path:

1. Position the vehicle at the beginning of the first pass.

2. Press ![icon] **> Straight > A + Direction**. The A + Direction panel appears (top of panel shown at right).

3. Press **Point A**. 'A' appears on the map, the Point A button is disabled, and the Direction button is enabled.

4. Press **Direction**, then in the Enter Path Direction data entry window enter an angle and press **Done.** The panels close, and A=B 1 A and the A + Direction guideline appear on the map. In the example below, adjacent swath lines appear because A=B Lines is set to On.

    If all automated steering requirements are met, the engage button is as shown below (state of 'ready to engage'). The button must be in this state to engage autosteering.

5. Press the engage button to engage automated steering. DISPLAY steers your vehicle along the A + Direction line.

6. At the end of the current pass turn around and engage on the next guideline (use eTurns if applicable).

Setting a Pivot Path

Note: You must have an active job before using path planning; otherwise, the Path Planning button ⬛ is disabled.

Pivot guidance is similar to straight guidance except that you define the circumference of a circle rather than a straight line. To do so, drive as much of the circumference of a representative circle as possible. The more of the circumference you drive, the better the accuracy.

To set a pivot path:

1. Position the vehicle at the beginning of the first pass.

2. Press ⬛ **> Pivot**. The Pivot panel appears (see at right).

3. Press **Start Pivot** and begin driving the circle. 'Logging pivot data...' appears below the Start Pivot button (left figure below). When DISPLAY has collected enough data to calculate the circumference of the circle being driven 'Pivot OK' appears below the Start Pivot button and the Finish Pivot button is enabled (right figure below).

4. Press **Finish Pivot**. The panels close and the pivot path (with swath lines radiating outward) appears on the map.

   If all automated steering requirements are met, the engage button is as shown below (state of 'ready to engage'). The button must be in this state to engage autosteering.

5. Press the engage button to engage automated steering. DISPLAY steers your vehicle along the pivot guideline.

6. When you have finished one circle move to either the right or left of the original circle and steer your vehicle to the next guideline. When that guideline turns red, press the engage button to engage automated steering.

Setting an AB Contour Path

Note: You must have an active job before using path planning; otherwise, the Path Planning button ![icon] *is disabled.*

AB contour path functionality enables you to create a reference guideline along a contour path—think of it as a curved A=B path. For example, if your field requires a curved path around an obstacle, you can create an AB contour where each swath line is parallel to the initial curved guideline. The figure below shows a zoomed-out view of a vehicle engaged on an AB contour path.
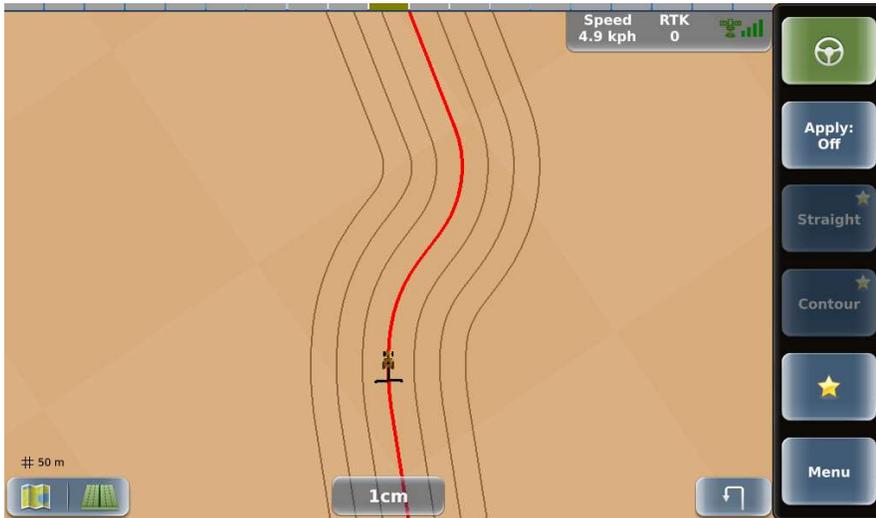

To set an AB contour path:

1. Position the vehicle at the beginning of the first pass.

2. Press ![icon] **> AB Contour > New AB Contour**. The New AB Contour panel appears (see at right).

3. Press **Start Contour** and begin driving. As shown below, the Start Contour button is disabled, your path is shown as a dotted line, and after driving a short distance the End Contour button is enabled.
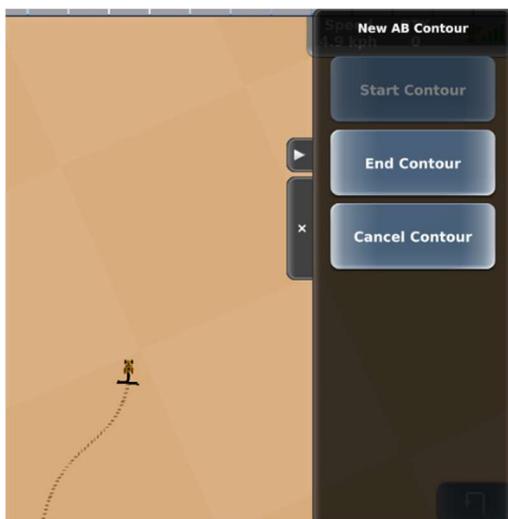
4. Finish driving your path, then press **End Contour**. The panels close, your current guideline appears in red, and swath lines appear because A=B Lines is set to On.

    If all automated steering requirements are met, the engage button is as shown below (state of 'ready to engage'). The button must be in this state to engage autosteering.
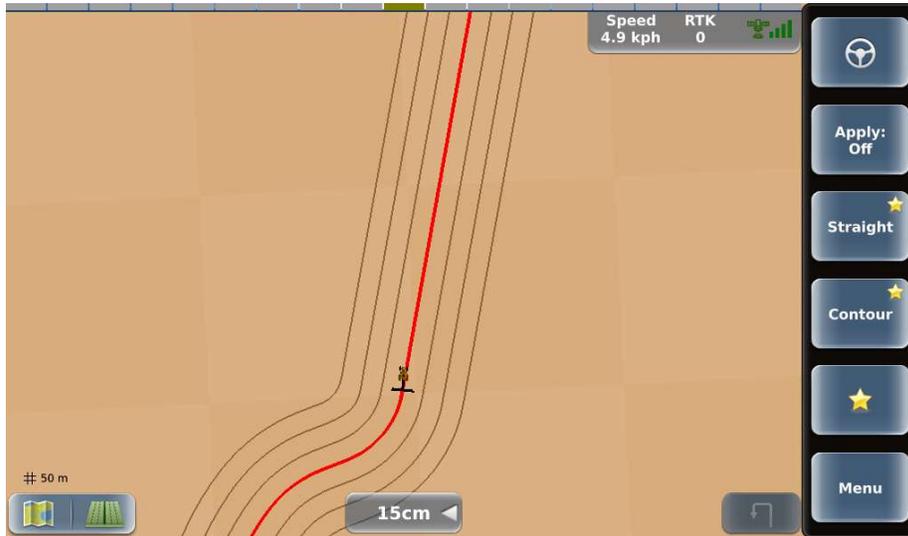
5. Press the engage button to engage automated steering. DISPLAY steers your vehicle along the AB contour line.

6. At the end of the current pass turn around and engage on the next guideline (use eTurns if applicable).

Setting and Following Contour Paths

Use Contour guidance to drive a freeform path or have DISPLAY provide guidance along any previously applied path, typically when working with borders, turn areas, and following the contours created by obstacles. To receive Contour guidance along an existing path, you must steer your vehicle within an implement's width of the guideline to enable automated steering.

Occasionally, a situation may arise in the middle of a job when you need to make a pass that follows a different path than the previous passes. Drive the new path; DISPLAY will recognize you are defining a new pass and subsequent passes are guided from this newly defined pass.

Note: Unlike straight, pivot, and AB contour paths, no additional swath lines appear to the left or right of the guideline in Contour mode.

To set a Contour path:

1. Position the vehicle at the beginning of the first pass.

2. Press [icon] **> Contour**. The panels close and Contour guidance mode is enabled (the unlocked lock appears in the lower right).

3. Press **Apply** (set it to On) then make your initial pass.
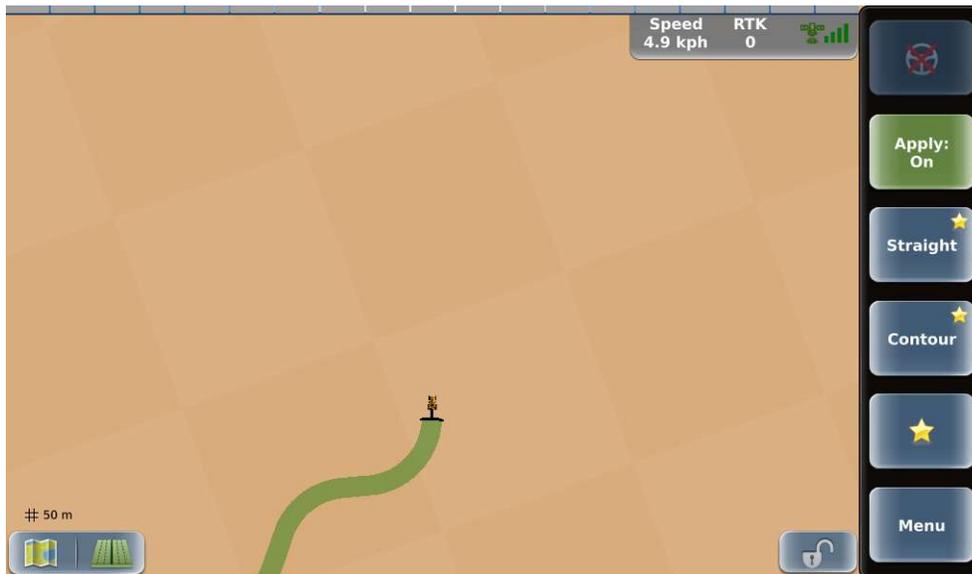
Note: To guide along subsequent adjacent passes, any time your vehicle is within a half swath width of a previously logged pass, you can engage automated steering. See the following steps for instructions.

4. At the end of your pass press **Apply** (set it to Off) then turn around and drive toward the location of the adjacent left or right swath. As you get near the adjacent swath, a red line appears indicating the guideline to follow, and the lightbar and crosstrack error indicator both indicate the direction you need to turn to follow the guideline.

5. As you get closer to the red contour line, autosteering is enabled.

6. Press the engage button to engage automated steering and turn Apply on. DISPLAY steers your vehicle along the contour and lock button is green and locked.

7. At the end of your pass press **Apply** (set it to Off) then turn around and drive toward the location of the adjacent left or right swath. During this time, the lock button is green and unlocked.

8. Repeat steps 6 and 7 as needed.

To use Contour guidance to follow a previous applied path:

1. Press ![icon] **> Contour**. The panels close and Contour guidance mode is enabled.

2. Drive toward a previously applied path. When a red guideline appears indicating a guideline you can follow, press the engage button to engage automated steering. See steps 6 through 8 above.

Reusing a Path

DISPLAY saves all straight, pivot, and AB contour paths you create per job and provides two ways to access them to use them for guidance:

- Previous Path feature: Enables you to select from a list of <u>all</u> straight (A=B or A + Direction), pivot, and AB Contour paths previously created for the active job.

- Last Path feature: Enables you to quickly select the <u>most recent</u> straight, pivot, or AB Contour path for the active job.

To use a previous path for guidance:

1. Press [image] > **Previous Paths**. The Previous Paths panel appears and the button for the current path is green (see at right).

2. Use the up/down arrows to scroll through the list of paths (if necessary) then select your preferred path. The selected path is represented on the map and the path name appears in the Current Path field of the Path Planning panel.

3. Close or hide the panel.

To use the most recent path for guidance:

1. Press [image], then press of the following sequences to access the most recent path:

   Straight > Last A=B
   Pivot > Last Pivot
   AB Contour > Last AB Contour

   The most recent path is represented on the map and the path name appears in the Current Path field of the Path Planning panel.

2. Close or hide the panel.

Adjusting Paths

Use the Path Adjustment panel (> Path Adjustment) and the links below to adjust straight (A=B or A + Direction), pivot, or AB Contour paths. While receiving guidance in these modes you can adjust the guideline on-the-go (without interrupting normal guidance operation). This feature is especially useful to correct for DGPS drift over time.

Note: You cannot adjust a path while an eTurn is in progress.

- **Path Offset**
  Move the guideline up to 1/2 implement width relative to the original guideline. See "Entering a Path Offset" on page 93.

- **Snap Here**
  Move (snap) the guideline to the vehicle's current location parallel to the original guideline. This feature is best used to insert a required gap between consecutive parallel swaths (for example, a conservation barrier strip). The amount of the snap from the original guideline is displayed in the Path Offset amount. For example, if you steer off the guideline by 3 ft 6 in and press Snap Here, the Path Offset displays 3 ft 6 in. Setting the Path Offset back to zero returns you to the original guideline. See "Snapping a Guideline to Your Current Location" on page 94.

- **Shift**
  Move the guideline left or right (up to 1/2 implement width relative to the previous shift) in small increments rather than re-establishing a new guideline. The sum of all shifts is displayed in the Path Offset amount. For example, three shifts of 2 ft to the right are displayed as a Path Offset of 6 ft to the right. Setting the Path Offset back to zero returns you to the original guideline. See "Shifting a Guideline" on page 95.

- **Update B**
  If you need to correct Point B in an A=B line, you can adjust the A=B line by pressing the Update B button on the initial pass. See "Updating Point B" on page 96.

- **Detour Contour**
  When driving along an AB contour you can create a detour path around the obstacle. You then decide whether to end your path after steering around the obstacle or merge into the original AB contour after driving around the obstacle—in both instances you have created a new AB contour that combines the original AB contour and the detour. See "Using Detour and Merged AB Contours" on page 97.

- **Rename Path**
  Rename a straight (A=B or A+ Direction) or AB Contour path. See "Renaming a Path" on page 99.

- **Save Path Offset**
  After applying a path offset (see first bullet above), use Save Path Offset to save the offset as a new path. See "Saving a Path Offset" on page 100.

Note: The Path Adjustment panel is the only place where you can adjust the guidelines and maintain engaged steering. Any other guideline change requires disengaging the steering. All path adjustments are removed when you close a job and the original guidelines are restored when you continue the job.

Entering a Path Offset

While using a straight path (A=B or A + Direction) or pivot path, you can enter a path offset to move a guideline by any amount to the left or right. The offset must be within the allowable range (between zero and half the current implement width); otherwise, DISPLAY displays an error and you must re-enter the offset.

To enter a path offset:

1. Press ▦ **> Path Adjustment > Path Offset** to display the Path Offset panel.

2. Press the left or right arrow (arrow turns green) to set the position of the offset relative to the guideline, use the keypad to enter an offset value, then press **Done**.

   The guideline on the map moves by the selected direction and offset amount and a path offset indicator appears (see below) to the left or right (based on the offset direction) of the crosstrack indicator (path offset of 2 feet appears below as 24 inches).
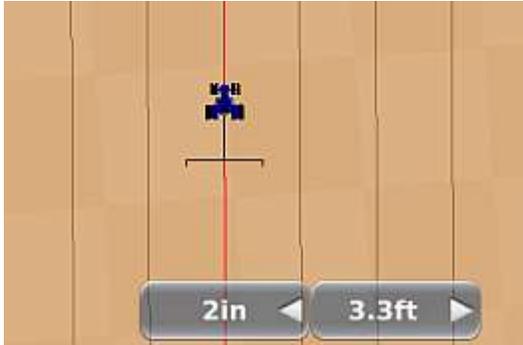

3. Close or hide the panel.

Snapping a Guideline to Your Current Location

While using a straight path (A=B or A + Direction) or pivot path, you can 'snap' the guideline to the vehicle's current location parallel to the original guideline.

To snap a guideline to your current location:

1. Press > **Path Adjustment > Snap Here**.

   The guideline on the map moves to your current location and a snap distance indicator appears (see below) to the left or right (based on the direction the guideline move) of the crosstrack indicator. In the example below the guideline snapped 3.3 feet to the right of the original guideline.

2. Close or hide the panel.

Shifting a Guideline

While using a straight path (A=B or A + Direction) or pivot path, you can shift (move) a guideline by any amount to the left or right.

To shift a guideline:

1. Press ![icon] **> Path Adjustment > Shift** to display the Shift panel.

2. Use the keypad to enter a shift value then press the left or right arrow to shift the guideline relative to the original guideline. A shift indicator appears on the panel below the arrows. You can press the arrow repeatedly to increase the shift by the same increment each time (or press the other arrow to 'back off' the amount if you shifted too far).

The guideline on the map moves by the selected direction and shift amount and a shift indicator appears (see below) to the left or right (based on the shift direction) of the crosstrack indicator (figure below shows a shift left of 3 feet).

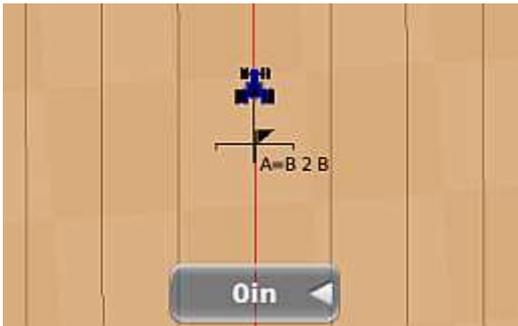

3. Close or hide the panel.

Updating Point B

While using a straight path (A=B or A + Direction), you can use your current location as the new Point B as long as you are within a half swath width of the original A=B line (Pass 0 as shown on the real-time status tab, see at right). If you are more than 1/2 swath width away from Pass 0, this functionality is disabled.

To update Point B:

1. Make sure you are within 1/2 swath width of Pass 0 of your straight path.

2. Press [image] **> Path Adjustment > Update B**. Your new Point B appears on the map.
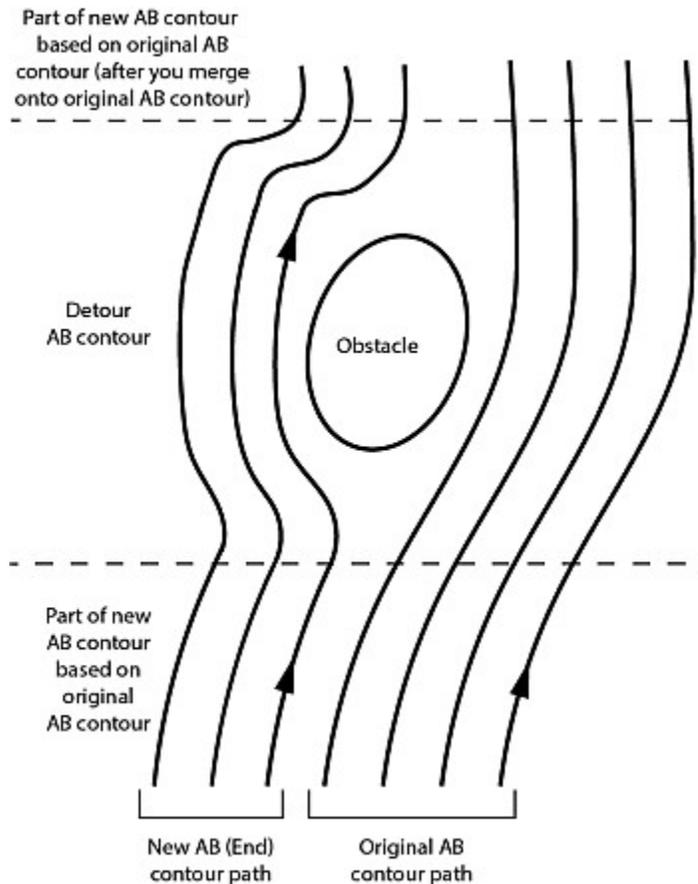

3. Close or hide the panel.

Using Detour and Merged AB Contours

When driving along an AB contour you may need to steer around an obstacle (such as a tree line or water area). You can adjust your AB contour path by creating a detour path around the obstacle. You then decide whether to end your path after steering around the obstacle or merge into the original AB contour after driving around the obstacle—in both instances you have created a new AB contour that combines the original AB contour and the detour as follows:

- A merged AB contour is where DISPLAY combines your original AB contour (before your detour), your detour, and the continuation of the original AB contour (where you merge back onto the original contour (left figure below)

- A new (End) AB contour is where DISPLAY combines your original AB contour (before your detour) and your detour (right figure below)

Original and New (Merged) AB Contour   Original and New (End) AB Contour
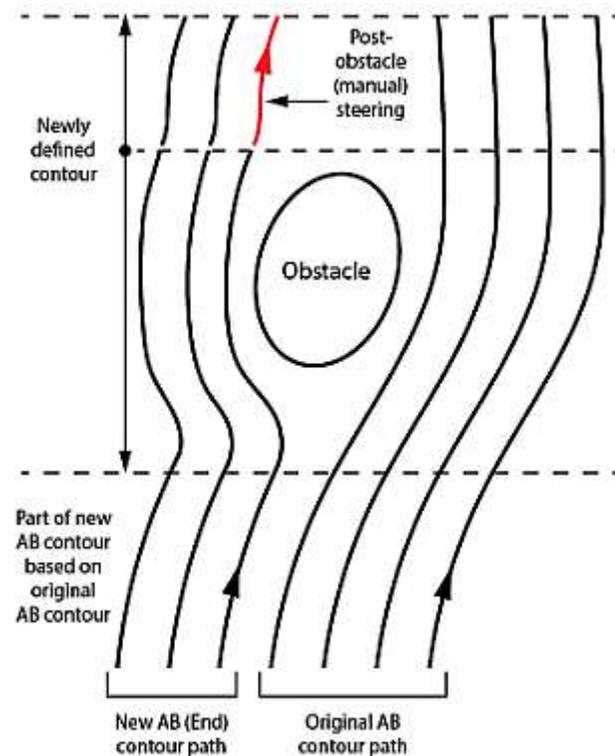
To create a detour:

1. Drive along your AB contour.

2. As you approach an obstacle, press ![crop icon] **> Path Adjustment > Detour Contour** to display the Detour AB Contour panel.

3. Press **Start Detour** (disengages autosteering) and drive off the AB contour to avoid the obstacle. The Start Detour button is disabled and the End Detour button is enabled.


4. After you pass the obstacle you can do one of the following:

   o Press **End Detour** to create a new AB contour.

   o Drive toward the original AB contour, engage autosteering, wait for the Merge Contour button to be enabled, then press **Merge Contour** to create a new merged AB contour.

Renaming a Path

DISPLAY enables you to rename a straight path (A=B or A+ Direction) or an AB Contour path. For example, if you have three A=B paths named A=B1, A=B2, and A=B3 you can use more descriptive names such as Barn Side, Hill, and Valley. You can only rename the current path. To rename a different path, make that path the current path.
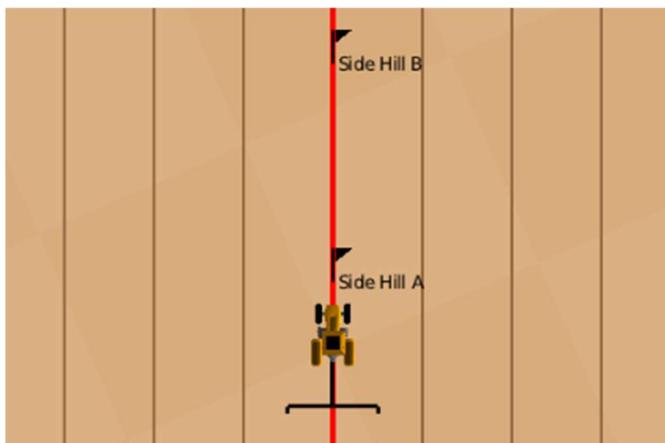
To rename a path:

1. Press . The Path Planning panel appears with the Current Path showing the path name.
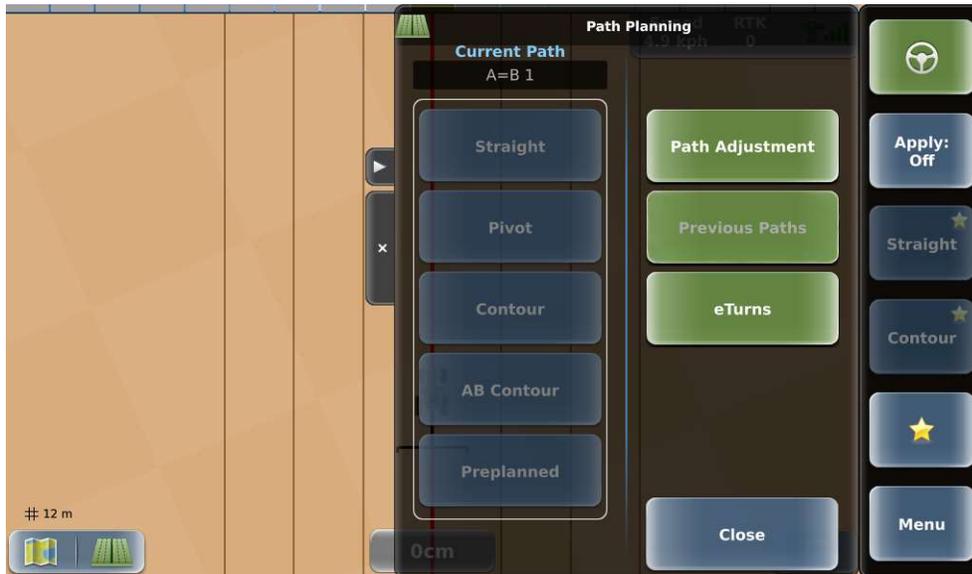
2. Press **Path Adjustment > Rename Path**, enter a new path name (such as Side Hill), then press **Done**.

3. Press **Back** to return to the Path Planning panel. The new path name appears in the Current Path field.

The updated name also appears on the map in the A and B points as shown below.

Saving a Path Offset

While using a straight path (A=B or A + Direction) or pivot path, and after you enter a path offset, snap a guideline to the vehicle's location, or shift a guideline, DISPLAY enables you to save the new current path. The path name is incremented from the previous path. For example, if you are guiding on A=B 1 and you shift the guideline to the right by 1 m, pressing Save Path Offset saves this new path as A=B 2. See the following sections for more information.

- "Entering a Path Offset" on page 93

- "Snapping a Guideline to Your Current Location" on page 94

- "Shifting a Guideline" on page 95

To save a path offset:

1. Enter a path offset, snap the guideline to your current position, or shift the guideline. For example, if you shifted the guideline 20cm to the right, the shift indicator (right of crosstrack indicator) appears. Press **Back** to return to the Path Adjustment panel. The Save Path Offset button is enabled.


2. While still on the Path Adjustment panel, press **Save Path Offset**. The offset indicator disappears, the Save Path Offset button is disabled, and DISPLAY disengages.

3. Re-engage on the guideline.

4. Close or hide the panel.

Contour Lock

When using Contour guidance, DISPLAY constantly searches for the nearest swath from which to provide guidance. Contour Lock enables you to stop DISPLAY from searching for the closest swath. In Contour Lock mode (shown below), guidance:

- Remains locked on its current swath until you manually unlock it
- Automatically unlocks if you drive offline by 2 m (or 10% of the swath width) and begins searching for the closest swath again
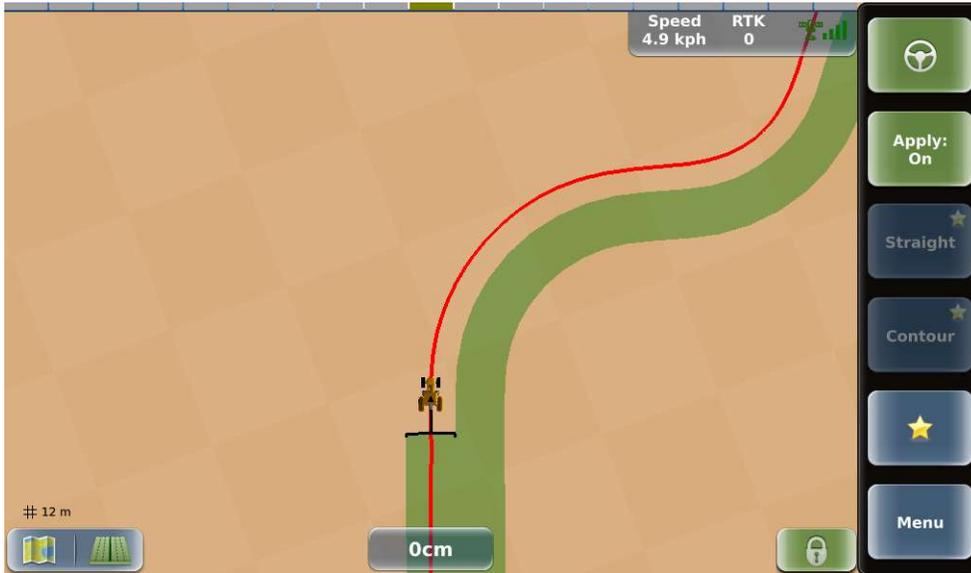
Contour Lock is helpful when you use guidance in close proximity to multiple swaths, such as when working with "point-rows." In these situations without Contour Lock, guidance could jump around and guide you on the wrong path whenever other swaths come close to your current one. With Contour Lock, you can decide to stay on the current swath all the way until the end of the field or let DISPLAY continue searching for the closest swath.

Note: When not in Contour Lock mode and when searching for the closest path, DISPLAY only picks up a different path if it is at a small angle to the path you are on. For example, if you cross a path at right angles, DISPLAY will not 'find' the crossed path and switch guidance to it. Only paths at a small angle (close to parallel) to the path you are on may be selected

To use Contour Lock:

1. In Contour guidance mode when on or approaching the required guidance contour press the blue (unlocked) Contour Lock button.

   This puts you in Contour Lock mode (lock engaged) and the Contour Lock button shows a locked padlock. DISPLAY stops searching for, and providing guidance on, passes for other defined contours (no matter how close).

   If you move more than 2 m off the current guideline, Contour Lock, while still engaged, becomes inactive and the padlock appears unlocked. DISPLAY resumes its contour search and locks again when you are within 2 m of any guideline.

2. To deactivate Contour Lock, press the green Contour Lock button— Contour Lock can be active (padlock locked) or inactive (padlock unlocked) when you disengage it.

   The button turns blue with the padlock unlocked.

Preplanned Guidance

Preplanned guidance enables you to use an externally created job template with guidelines to efficiently work your field. Typically, a third-party company will create the template and you import the template just as you would any other job or job template. See "Importing a Job" on page 58 for information on importing jobs and job templates. When creating your preplanned templates, use a name you will recognize to easily identify them in the Use Templates list (there may be other non-preplanned templates in the list). Consider prefacing each preplanned template with something like "PP_" or "Pre_" or "Plan_". For example, you may name a preplanned template for Farm1 as "Pre_Farm1".

To use preplanned guidance:

1. Press **Menu > Jobs > Templates > Use Template** to display the Use Template panel (see near right).

2. Select the preplanned template you want to use (PrePlanned or 50_Contours shown at right). For more information on filtering for and selecting a template, see "Creating a Job from a Job Template" on page 61.

   After you select the template the panels close, a 'Loading Template' message appears briefly, and a new job is started.

3. Press ![icon] on the map to display the Path Planning panel (see left side of panel, far right). When using a template, the last path that was created for the template will be the Current Path as shown in the Path Planning panel (until you change it).

4. Press **Preplanned**. The panel closes and the template appears on the map. The example below shows a boundary (blue), guidelines (gray/brown), and nearest guideline (red). When a guideline is red you can engage on that line using autosteering (provided all engage conditions are met).

5. Press the engage button to engage automated steering. DISPLAY steers your vehicle onto then along the guideline. The engage button must be in a state of 'ready to engage' (shown below) before you press it to engage automated steering.

6. At the end of the current pass turn around and engage on the next guideline (use eTurns if applicable).

eTurns

eTurns enables the vehicle to automatically execute a turn at the end of a swath (you determine which swath to turn onto). The key points about eTurns are:

- eTurns are applicable only to Straight guidance operations (A=B, A + Direction, and AB Contour paths).
- eTurns calibration is required for each implement.
- You can operate with a fixed turn configuration or change the configuration in real time for individual turns.
- eTurns guides the vehicle's turning path, not the implement's turning path.
- The headland prompt, if used, is based on the vehicle's position, not the implement's position.

Use the sections below to learn about eTurns.

Minimum eTurn Radius Calibration

WARNING! *Due to potential for damage to machinery if using a larger implement with the turn radius data configured for a smaller implement, you need to calibrate eTurns for different implements. When calibrating eTurn Radius, determine the minimal turn radius for both a left and right turn and then use the largest of these values.*

Note: eTurn Radius configuration is not required for rigid implements, but value can still be configured and used.

To calibrate eTurns:

1. Press **Menu > Implement Profiles > Current Implement > eTurn Radius**.

2. Enter the smallest turn radius that you feel comfortable driving. Consider the fastest speed you will be driving with this implement while using eTurns. Also consider that a turn radius that is too small (in either left or right direction) may result in damage to machinery.

3. Press **Done**, then press **Save** to save the implement (with eTurns calibrated).

3. Close or hide the panel.

Configuring and Making eTurns

Note: eTurn functionality is enabled only when all the following are true: a job is active, you are engaged on a straight (A=B or A+ Direction) or AB Contour path, and you are not currently making an eTurn.

After calibrating your implement for eTurns, you configure eTurns from the eTurns Setup panel.

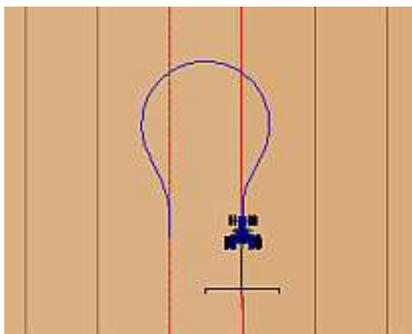There are three ways that you access the eTurns Setup panel:

1. Menu > Settings > eTurns Setup.

2. Pressing eTurns Setup on the eTurns Control panel.

3. Pressing ⤺. This is only applicable if Skip Setup button is not selected. This is the default configuration.

You can configure an individual eTurn in real time or use the same configuration for each eTurn.
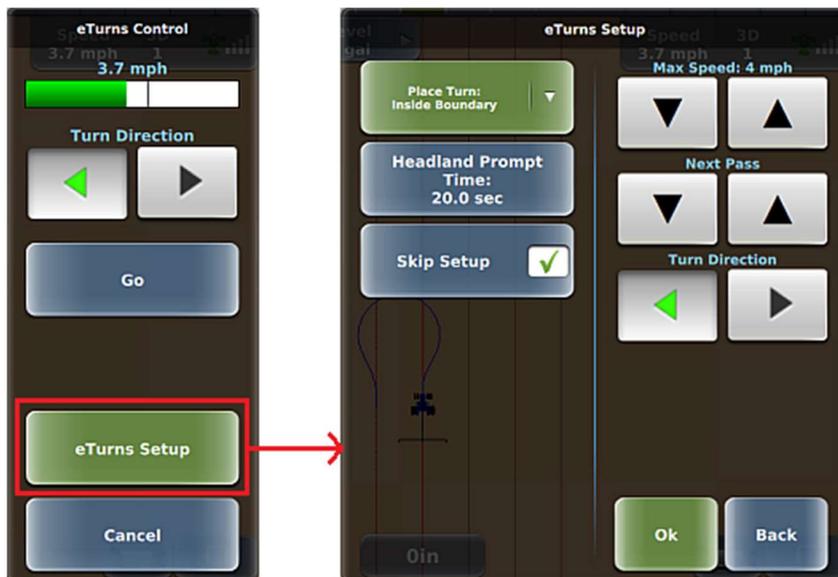
As shown below, a predicted eTurn is what you see on the map during setup before you make the eTurn and the eTurn path is blue. When you make the eTurn (pressing Go on the eTurns Control panel), the panels close, the map shows the actual eTurn path in red, and the eTurn begins.

*eTurns predicted path*   *eTurns actual path*
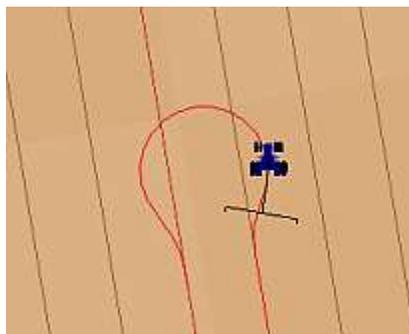
To configure and make eTurns (using the tables after this procedure as a guide):

1. When ECU-S1 is ready to engage, press the engage button. The eTurns button is enabled (blue).

2. Press [icon]. The eTurns Setup panel appears, the predicted eTurn appears on the map, and the eTurn direction on the map corresponds to green/selected Turn Direction arrow.

3. Configure eTurns using the table starting on the next page as a guide.

4. Press **Ok** to go to the eTurns Control panel, verify an acceptable speed (green speed bar at top of panel) and the correct turn direction, then press **Go**. The panels close and you begin guiding to the new actual eTurn path.
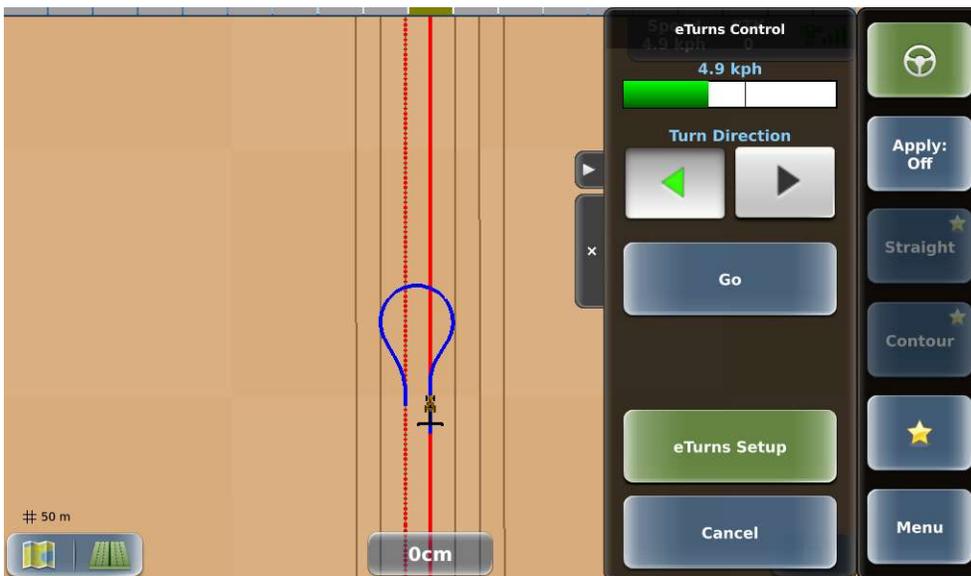

5. Repeat 2-5 as needed.

6. Pressing the eTurn button on the map during an eTurn will cause the actual eTurn to be cancelled. If a cancel occurs before the eTurn has started turning, then guidance will continue on the previous wayline if possible. If a cancel occurs after the the eTurn has started turning, then guidance will be disengaged.

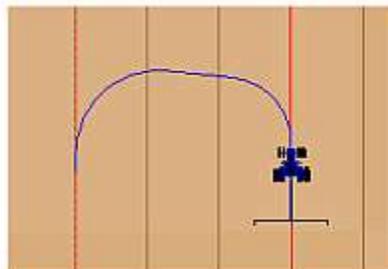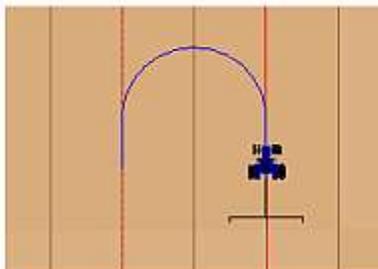| Parameter	Description
Max Speed	Speed at which you want your vehicle to execute the eTurn. The Speed and the Headland Distance combine to determine the linear distance from the headland that the prompt appears. If, during an eTurn, you exceed the speed you set (here or on the eTurns Control panel), automated steering will disengage. The predicted and actual eTurns paths are determined by the speed at which you set the eTurn to be made (and the curvature calibration for the tractor/implement combination). The two figures below show how the speed determines the eTurn path (slow eTurns speed on left; fast eTurns speed on right).

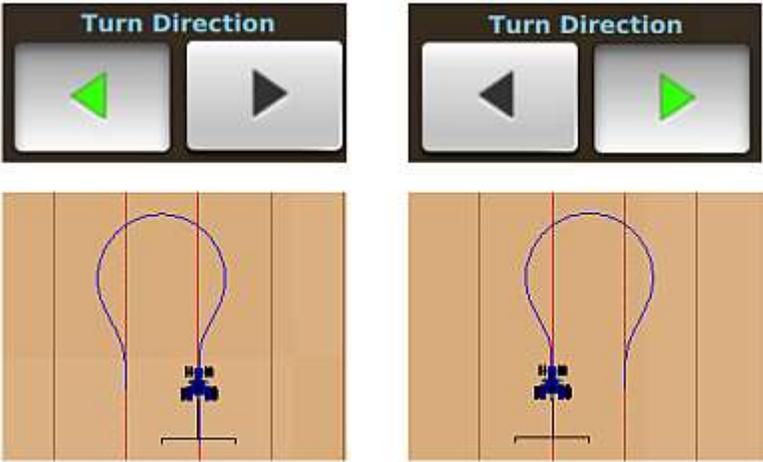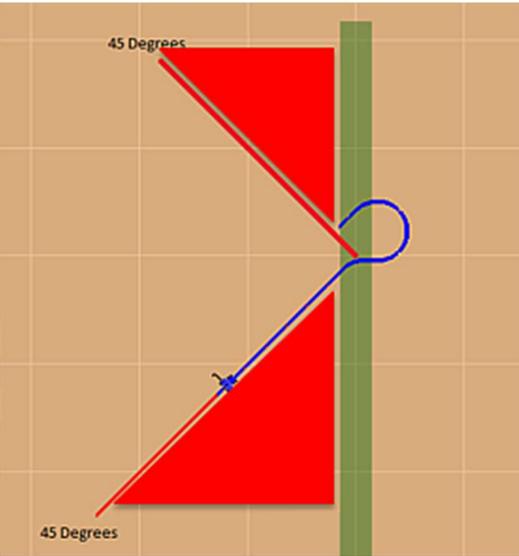| *slow eTurns speed*	*fast eTurns speed*
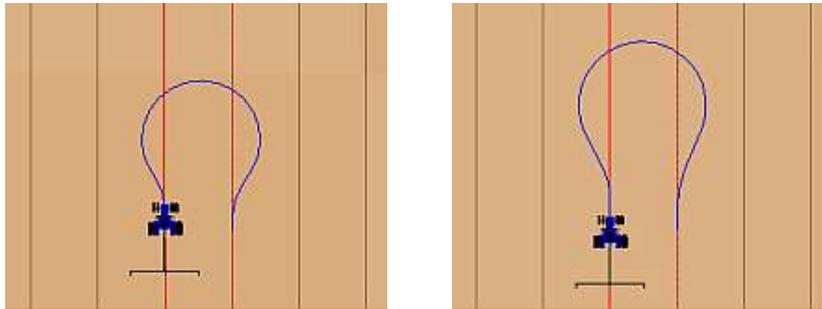
Parameter	Description
Next Pass	Order in which rows are worked (or 'steered to' - also known as the 'swath pattern'). Pressing the up/down arrows displays the following options:

- Current Pass - automatically turn back onto the current row
- Next Pass - automatically turn onto the adjacent row
- Skip Rows: # - skip the number of adjacent rows specified (for example, for Skip Rows: 1, the vehicle will automatically turn on the pattern 1, 3, 5, 7 etc.)

As you press the buttons, the eTurn path on the map changes and 'Next Pass' changes to 'Skip Passes' (followed by the number of times you press either button that corresponds to how many passes to skip). The first figure below shows skipping one pass to the left (after pressing the up arrow); the second figure below shows skipping two passes to the left (after pressing the up arrow again). To return to skipping no passes and turning onto the next pass, press the down arrow twice.
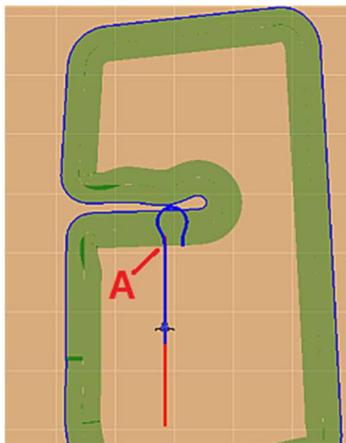
Parameter	Description
Turn Direction	Direction to turn (left or right). When you press a button the eTurn path changes to the appropriate side of the of the current swath.
Turn Settings	Additional settings are configuration here. See following Settings table.
Headland Prompt Time	When set to a non-zero value, (check mark appears in box) the headland prompt appears on the map during operations. DISPLAY will show the predicted eTurn based on what you select from the Place Turn drop-down. When you approach a headland at less than 45° (see below) DISPLAY will not automatically display the eTurns Control panel—you must press the eTurns button (see below top) on the map. The eTurn is generated in front of the vehicle—press Go at the point you want to perform the eTurn.
Skip Setup	Skips the eTurns Setup panel when making eTurns and displays the eTurns Control panel.

See "eTurns Settings and Resulting Actions" on page 111 *for information on how the Headland Prompt Time and Skip Setup settings determine what appears onscreen when making eTurns.*

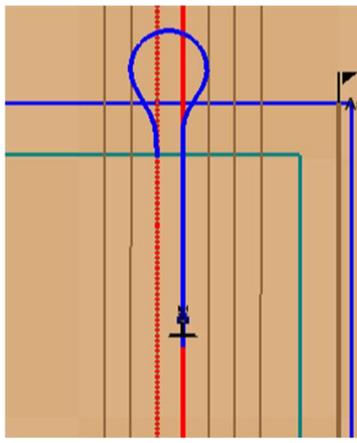| Setting	Description
Place Turn	- Under Vehicle - DISPLAY starts the eTurn in front of the vehicle. - Headland Passes - DISPLAY starts the eTurn when the vehicle enters the headland pass (previously applied area) and the vehicle is able to drive outside a boundary. - On Headland Line - DISPLAY starts the eTurn when the vehicle crosses the Headland Line and the vehicle is able to drive outside a boundary. - Inside Boundary - DISPLAY starts the eTurn so that the turn is inside the boundary—you must have a boundary in place for this feature to work.

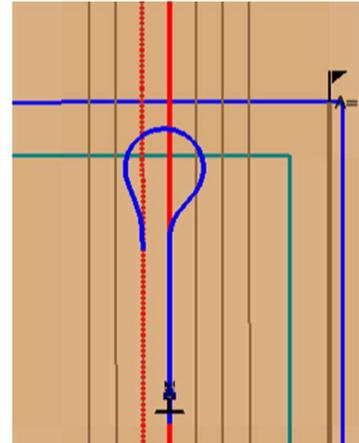| *Headland Passes*	*On Headland Line*	*Inside Boundary*
Predicted eTurn (blue vehicle path) will turn the vehicle when it enters the headland pass (A).	*Predicted eTurn (blue vehicle path) will turn the vehicle when it crosses the Headland Line (cyan line).*	*Predicted eTurn (blue vehicle path) will turn the vehicle so the right edge of the implement will be just inside the blue boundary line.*

Setting	Description	
Next track	![Next track dropdown showing Toggle Direction and Toggle Skip options]	• Toggle Direction - Once you complete a LEFT turn, the next turn will be automatically flipped to RIGHT (or vice versa). Use this setting to progress in the same direction across your field. • Toggle Skip - First turn will be executed with the number of adjusted skipped passes and turn direction. The second turn will be executed with same direction but Skip Passes-1. Use this setting to "spiral" across your field.

Toggle Skip with Skip Passes initially set to 3
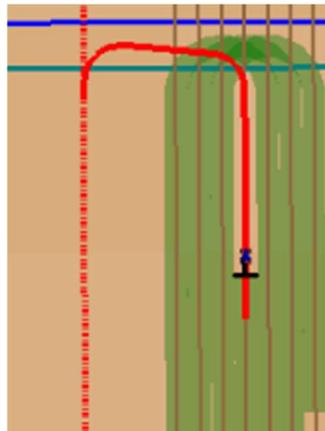
Toggle Skip works with the Next Pass setting. Here are some examples of the actual row skips that will occur with different initial configurations for Skip Passes.
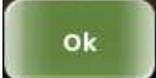
Initial Skip Pass setting	The initial pattern of row skips with each subsequent eTurn	The next pattern of row skips that will repeat for the rest of field
1	1, 0	2, 0
2	2, 1, 2, 1	4, 1, 2, 1
3	3, 2, 3, 2, 3, 2	6, 2, 3, 2, 3, 2

Note: When using Toggle Skip, if you change value of Skip Passes or Direction, then this will start a new pattern and may not cover the field as expected.

Turn Offset	The start and end of an eTurn will be shift by this value. A positive value will shift the eTurn farther away from the vehicle. A negative value will shift the eTurn to be nearer to vehicle. A value of 0 is the default.

eTurns Settings and Resulting Actions

Exactly how you activate an eTurn depends on how you set up eTurns. The table below details the actions you take for each configuration. In all cases, the predicted eTurn path (blue) is shown until you press Go in the eTurns Control panel. The predicted eTurn path stays in front of you until you press Go.

eTurns Settings	Result	
Skip Setup selected Headland Prompt Time not set (zero)	1. On the map press the eTurns button.	
	2. On the eTurns Control panel press **Go**.	
Skip Setup selected Headland Prompt Time set (non-zero)	1. The eTurns Control panel will automatically appear based on the Headland Prompt Time setting.	
	2. On the eTurns Control panel press **Go**.	
Skip Setup Not Selected Headland Prompt Time not set (zero)	1. On the map press the eTurns button.	
	2. On the eTurns Setup panel adjust the setup parameters then press **Ok**.	
	3. On the eTurns Control panel press **Go**.	
Skip Setup Not Selected Headland Prompt Time set (non-zero)	1. The eTurns Control panel will automatically appear based on the Headland Prompt Time setting.	
	2. On the eTurns Setup panel adjust the setup parameters then press **Ok**.	
	2. On the eTurns Control panel press **Go**.	
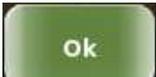
Chapter 8: Diagnostics and Troubleshooting

Use the Diagnostics panel (Menu > Diagnostics) to view status and diagnostics screens that enable you to verify certain settings and troubleshooting issues.

Note: The ECU-S1 button appears only if ECU-S1 is communicating with the terminal—that is, ECU-S1 is connected to the terminal and powered on.

If an error indicator ⊗ appears on the engage button, press the indicator to display the ECU-S1 Status screen to help you troubleshoot any issues.

Use the Diagnostics panel and the links below work with status and diagnostics information.

Status/diagnostics information:

- "GPS Status" on page 113
- "Terminal Diagnostics" on page 115
- "Updating Terminal Software" on page 118
- "ECU-S1 Status" on page 118

Other helpful information:

- "Capturing Screen Images" on page 122

GPS Status

The GPS Status screen (Menu > Diagnostics > GPS Status) displays read-only GNSS information you may find useful, especially if you need to troubleshoot an issue. The available status information is dependent on the GNSS receiver used.
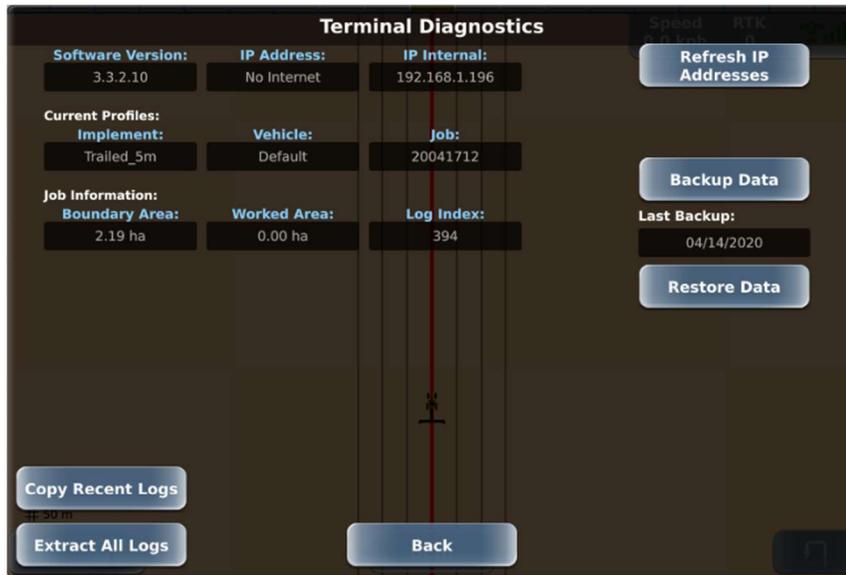
The following table describes each field on the GPS Status screen.

Field	Description
Time	Current time
Latitude	Vehicle's current latitude position
Longitude	Vehicle's current longitude position
Altitude	Vehicle's current altitude
Speed	Vehicle's current speed
Heading	Vehicle's current heading in degrees
Diff Age	Age of the corrections used in the DGPS calculation. Values > 120 seconds require acquiring a new RTK lock. For SBAS, the Diff Age is typically 6 to 10 seconds.
Std Dev	(Standard deviation) Pseudo-estimate of the DGPS solution accuracy determined as the RMS value of the positional residual errors. Std Dev is valid only if 6 or more satellites are used in the solution calculation. Typical values for SBAS correction are 0.5 ft – 1.5 ft (0.15m – 0.45m). Typical values for RTK corrections are < 0.1 ft (3 cm).
Status	Status of the GNSS receiver to receive GNSS differential corrections
Correction Type	Type of differential correction being used—may be WAAS (for SBAS), RTK, or LBAND
Station ID	ID of correction station
Sats Used	Number of GNSS satellites used to calculate the position
Signals	GNSS signals being used
Quality	Quality of GNSS signals
SBAS PRN	Satellites used by SBAS
BER	Bit error rate
	Relative strength of the correction satellites. In the case of WAAS, two numbers are shown separated by a hyphen. The number can be from 0 to 500, with 0 being the best and 500 being the worst.
	If BER > 20 verify the antenna has a clear view of the sky to properly find and track correction satellites. DISPLAY tracks multiple correction satellites, each satellite has a different BER, and the value in the BER field represents each value separated by a hyphen.
	For example, a value of 8-500 means DISPLAY has a very good signal on one satellite (BER=8) and is not receiving corrections from the other satellite (BER=500, the lowest reception value). Only one satellite must have a low BER value (less than 20) to provide differential corrections.
Available Diff	Differential corrections the receiver is getting
Excluded	Differential corrections the receiver is not using (excluded from the differential solution)
Modes	Current operating modes that control various GNSS tracking parameters
Accuracy	RTK accuracy status value

Terminal Diagnostics

The Terminal Diagnostics screen (Menu > Diagnostics > Terminal Diagnostics) displays such information as software version, current work profile (implement, vehicle, job), and last backup date.

The following table describes each field on the Terminal Diagnostics screen.

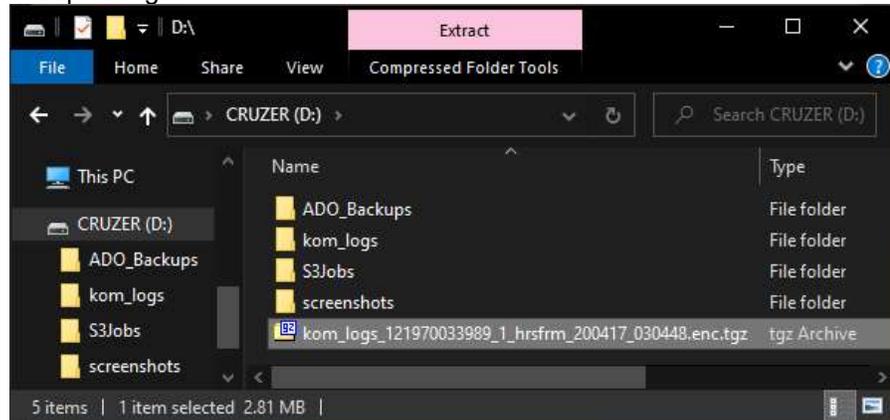| Field	Description
Software Version	Terminal software version
IP Address	IP address of any connected host
IP Internal	IP address of terminal as assigned if connected to a network device. ECU-S1 will typically assign 10.1.1.2 if connected.
Refresh IP Addresses button	Updates the IP addresses
Current Profiles	
Implement	Loaded lead implement (also appears as the button with a steering symbol on the Current Implements panel when you press Menu > Implement Profiles).
Vehicle	Loaded vehicle. This will be "Default" when using ECU-S1 to manage vehicle profiles.
Job	Active job (also appears on the Current Job button when you press Menu > Jobs).
Job Information	
Field Area	Field size for the job (also appears on the real-time status tab)
Worked Area	Area of job worked so far (also appears on the real-time status tab)
Log Index	Current console (terminal) log file (unrelated to job data)

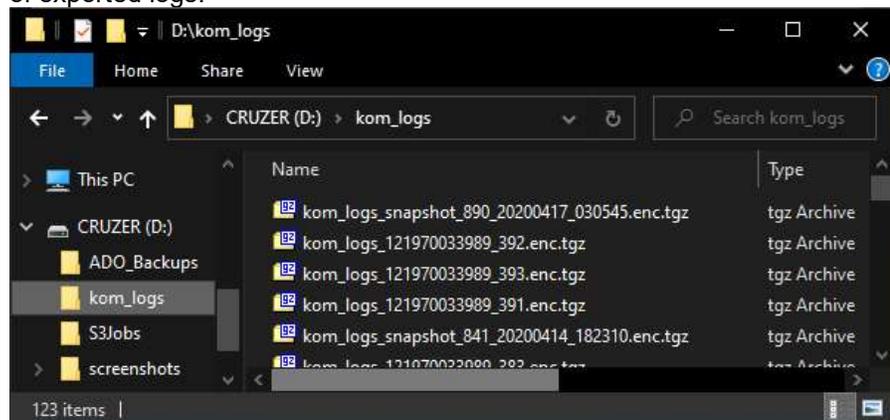| Field	Description
Copy Recent Logs	*This button is enabled when you insert a USB drive in the terminal.*
	Copies DISPLAY diagnostic files to the root folder of a USB drive for the most recent number of hours that you select. To copy DISPLAY diagnostic files to a USB drive:
	1. Show the Terminal Diagnostics screen then insert a USB drive into the terminal. The Copy Recent Logs button is enabled.
	2. Press **Copy Recent Logs**. You will be asked to enter the Hours to Copy. Type a number and then press **Done**. The screen/panels close and a Copying Logs progress window appears during export. The figure below provides an example of copied logs.
	When the export is complete the progress window closes.
	These encrypted logs can be shared with manufacturer for troubleshooting.
Extract All Logs	*This button is enabled when you insert a USB drive in the terminal.*
	Moves DISPLAY diagnostic files to the kom_logs folder on a USB drive. To move DISPLAY diagnostic files to a USB drive:
	1. Show the Terminal Diagnostics screen then insert a USB drive into the terminal. The Extract All Logs button is enabled.
	2. Press **Extract All Logs**. The screen/panels close and an Exporting Logs progress window appears during export. The figure below provides an example of exported logs.
	When the export is complete the progress window closes.
	These encrypted logs can be shared with manufacturer for troubleshooting.

Field	Description	
Backup Data button	Copies terminal data (such as profiles, jobs, and user configurations/settings) to a USB drive.	*The Backup Data and Restore Data buttons are enabled when you insert a USB drive in the terminal.*
Last Backup	Date of backup on the USB drive.	*See "Backing Up and Restoring Data" on page 26 for more information.*
Restore Data button	Copies backed up data from a USB drive to the terminal.	

Updating Terminal Software

You can update the software via USB drive (download the update from the DISPLAY website then save it to the USB drive).

Updating DISPLAY Terminal Software via USB

1. Insert the USB containing the software update into the DISPLAY terminal.

2. Press **Menu > Diagnostics > Software Update** to display the Update Software screen.
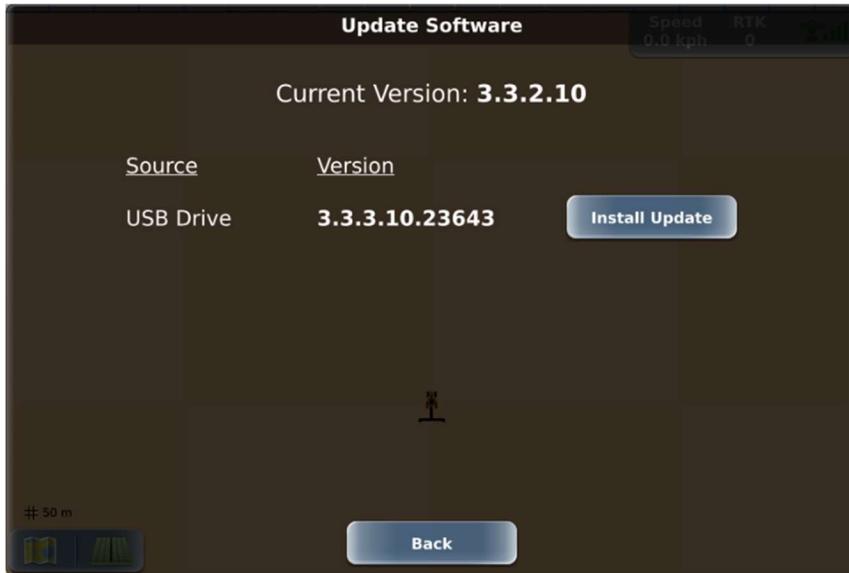
3. Press **Install Update**, then follow the onscreen instructions to complete the installation.

ECU-S1 Status

The ECU-S1 Status screen (Menu > Diagnostics > ECU-S1) shows the hardware, calibration, and run time status of the ECU-S1 system. Depending on your vehicle/valve combination this screen may look different than the two examples below; however, all possible fields are described in the table on the next page.
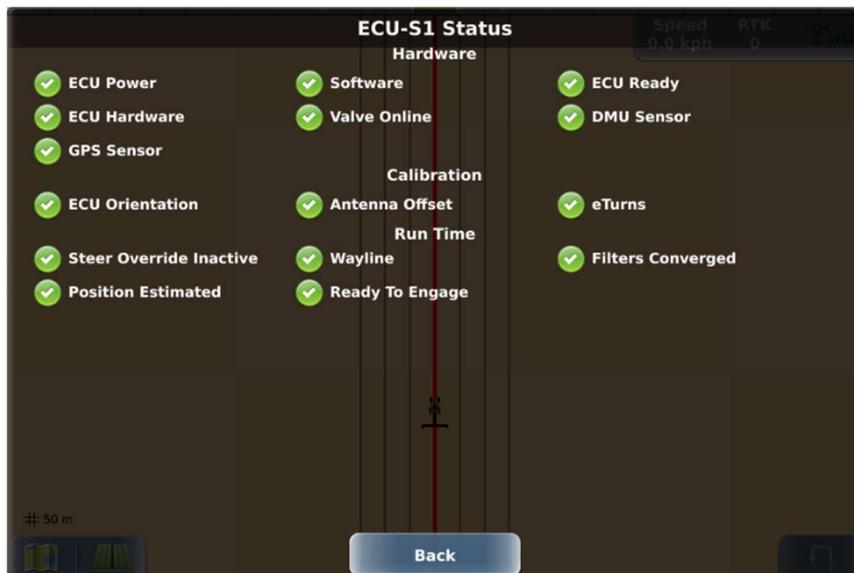
One of the following status indicators appears to the left of each status item:

OK (no issue).

Error or limitation, such as a part of the system is not ready for guidance/autosteering (ex: Filters Converged not OK) or some aspect of user setup is incomplete (ex: one of the calibration steps is incomplete).

Information that should be addressed but is not an error.

If a status item is underlined, press the underlined text for instructions to resolve the issue.

Note: A flashing alert also shows on the engage button so you can see that there are 'system not ready' alerts even if you are not viewing the ECU-S1 Status screen.
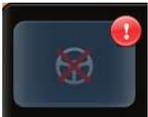
The following tables provide information on status alerts on the ECU-S1 Status screen. If the recommended action does not resolve the issue, contact Customer Service.

Hardware Status Alerts		
Item	**Reason**	**Action(s) as Applicable**
ECU Power	This will never show an alert as you cannot access this screen if ECU-S1 has no power.	
ECU Ready	This will never show an alert as you cannot access this screen if ECU-S1 is not ready.	
ECU Hardware	CPU load (alert shows only on startup).	
Valve Online	Out of range (current WAS position is outside calibrated values). Short/open circuit. Open/short circuit on one or more of solenoid lines. Current (mA) fault (not achieving the required current - check current and voltage rating on coils). WAS fault.	Power cycle steering controller. Recalibrate WAS. Check WAS harness connections for damaged wires/pins. Power cycle steering controller. Check solenoid harness for broken or damaged wires/pins. Review WAS troubleshooting.
Electric Steer	Electric Steer is not ready or not aligned.	Turn the wheel to align.
DMU Sensor	Roll/Pitch out of range because ECU orientation not set correctly. Failed DMU sensor.	Power cycle ECU-S1. Recalibrate ECU orientation.
GPS Sensor	Comms problem with GPS sensor (power problem) Failed GPS sensor.	Power cycle ECU-S1.

| Calibration Status Alerts	
Item	**Reason for Alert/Action**
ECU Orientation	Value not set; check ECU-S1 vehicle settings and set correct values.
Antenna Offset	Value not set; check ECU-S1 vehicle settings and set correct values.
eTurns	Value not set; check implement eTurn Radius and set correct value. Press Menu > Implement Profiles > Current Implement > eTurn Radius

| Run Time Status Alerts	
Item	**Reason for Alert/Action**
Steer Override: Inactive	Should be active only when the steering wheel is being turned. If active when steering wheel not being turned, problem with override system is indicated. Power cycle the system, check alert state.
Wayline	Wayline not set. Select job/template or create new A=B line.
Filters Converged	Perform filter converging process (a Help button appears next to this field when you need to take action; press the Help button and follow the instructions). See *Manual driving sequence* in "Converging Filters" on page 31 for more information on manually converging filters.
Ready to Engage	Not all Hardware and Run Time items are green (OK). Review items (with red exclamation point) using above tables.
Position Estimated	Incorrect configuration. Check ECU orientation and drive machine for a few minutes above 4 kph.

Capturing Screen Images

If you notice something on the touchscreen that you either do not understand or want to save for later review you can take a screen capture of the entire display. Insert a USB drive (with a "screenshots" folder at the root level) into the terminal and the Favorites button functions as a screen capture tool.

To capture screen images:

1. Create a "screenshots" folder on a USB drive.
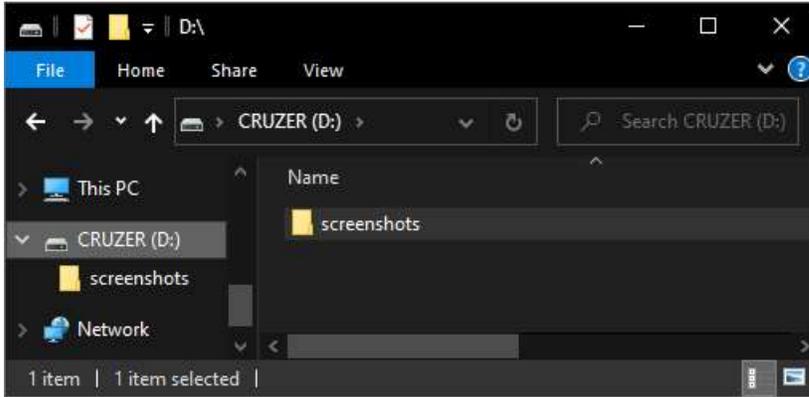
2. Insert the USB drive in the USB port on the DISPLAY terminal.

3. When DISPLAY displays the screen you want to capture, press the Favorites button. DISPLAY displays a screenshot message on the display (below) and saves a capture of the entire screen as a .png file in the screenshots folder on the USB drive.

Screenshot Taken:
kom10_23640-04_17_20-04_40_05.png
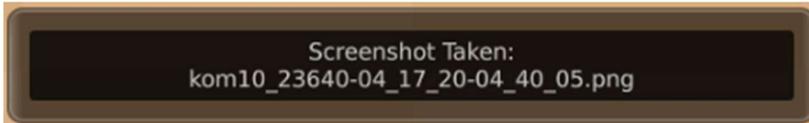
4. When you view the contents of the USB drive the "screenshots" folder shows the screenshot filename (shown below) as that shown in the screenshot message (see previous step).