

Patchwork Technology



BlackBox Advance Operating Instructions

(Downloadable)

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Product Overview

The BlackBox unit can be upgraded by unlocking various areas of the software allowing it to perform additional tasks. The Advance unit will be supplied with the both the GO and Advance software unlocked, please see the following for details on the different software versions:-

BlackBox Go

The Go software is a simplified version of the Advance software that enables the use of Guidance and Area measurement only.

Features: Simple Setup
 Multiple 3D Guidance modes
 Farm / Field Recognition*
 Resume Job*

*SD Card must be inserted

BlackBox Advance

Further to the Go software capabilities the Advance software allows the recording and storage of work done for record keeping. If used in conjunction with WebTrack these records can be enhanced with Notes (see below). The software is also the platform for adding additional hardware and software features, including an Auto Steer and Boom Switching system.

Other Features include : Headland Warning
 Weather Station Connection
 Setup Profile Manager
 Link up with Farm Management Software
 Compatibility list: Muddy Boots
 Pear Technology
 Farmade GateKeeper

Notes (WebTrack required) – This allows the farm manager to add notes (form items) to a specific job type and when that job type is selected on the BlackBox the notes will appear for the operator to fill in on the Blackbox before the job is completed.

VRT

This upgrade allows the unit to send application rate information using variable rate application maps to the controller attached to the implement. Adding Variable Rate to the Blackbox is simple and the compatibility list of controllers is extensive:

Amazone Amatron+ and Amados+
Bogballe 2003w, Uniq and Icon'
Raven 400, 600, 4000
LH Agro 5000, 500, 6000
Kuhn Quantron L, M, P, E
Kverneland Group
Passtronic
RDS Pro Series
Vaderstad
Dickey John
Teagle Tulip Centreliner

Auto Shut Off

With Auto Shut Off setup on the unit, when driving into an area which has been worked (indicated by the green area coverage recording in the job screen), a signal will be sent to the controller to stop the implement working. After driving out of the worked area the unit will send a new signal to the controller to start the implement working again.

N.B. Function not fully compatible with Amazone controllers.

Screen



Power On/Off button – This turns the screen on and off.

Please Note: this does not turn off the system completely, the system needs to be disconnected from the power source.

Brightness button – Press this button to scroll through different levels of brightness for the display screen

Touch Screen – The unit uses an LCD Touch Screen which allows the user to interact with the BlackBox software. Use the Touch Screen by pressing and applying some pressure to the area of the screen where the required button or option is located.

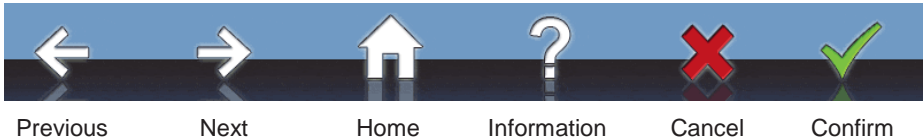
Tilt Compensator - An inclinometer is built in to the unit, which when active will correct the guidance position when working on side slopes and/or hills.

Important !! The unit must be fitted square to the windscreen and level for the tilt compensator to work correctly.

Overview

Navigation Bar

On various screens within the BlackBox software a Navigation Bar will appear across the bottom of the screen. This allows the user to move back and forth between setup screens when entering details and settings.



If any of the icons appear black they have no function on the current setup screen.

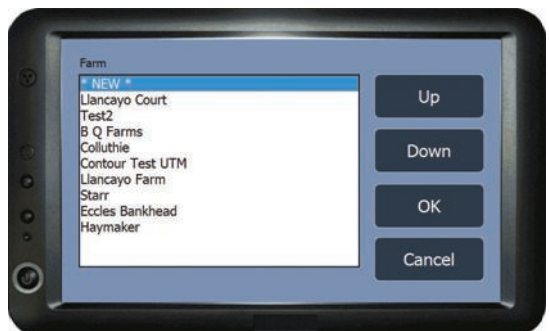
Entering details and settings

When using the BlackBox there will be a requirement to enter information or select an option from a list in order to continue. This will occur in the menus or when starting a job and there are four different input methods:-

Selection list

Some of the selection lists are predefined in the BlackBox. Others can be setup by the user on WebTrack in the My Units Setup section (see page 49 for details). The selection lists that can be setup by the user have a *NEW* option which if selected will open the text entry screen so the information can be entered manually (see 'Text Entry' on page 9 for more details).

To use the Selection List firstly highlight the option in the list by pressing on it or use the **Up** and **Down** buttons. Once the desired option is highlighted, set it by pressing **OK**. To exit the selection screen without making changes press **Cancel**.



Text Entry

This input screen will appear if the information required is text that needs to be entered manually.

To use the text entry screen, press the letters or numbers on the screen to enter the details. Once complete press on **OK** to add the details and close the text entry screen. To exit the text entry screen without adding any details press on **Cancel**.



Numerical Entry

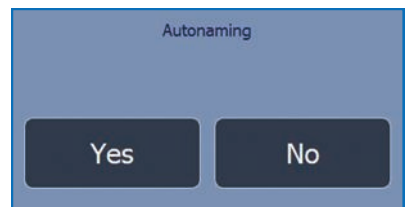
This input screen will appear if the information required is a number that needs to be entered manually.

To use the numerical entry screen, press the numbers on the screen to enter the figure. Once complete press on **OK** to add the figure and close the numerical entry screen. To exit the numerical entry screen without adding a figure, press on **Cancel**.



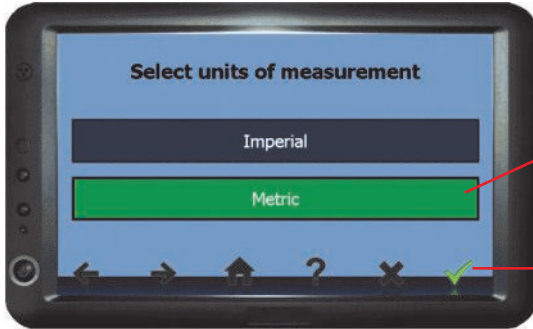
Option Box

The option box will appear if the required information is a simple Yes/No selection.



Initial Setup Wizard

Once the unit has been installed in the vehicle and all the wired connections secured, insert the 3-pin plug into the 3-pin socket of the vehicle. The unit will power on automatically and if using the unit for the first time a Setup Wizard will launch. The wizard will take the user through the basic settings so the system is ready for Guidance, Recording and Area measurement.



To work through the wizard screens :-

Select the required option and if required enter the relevant details.

Press the green tick (confirm), when it appears, to move to the next screen.



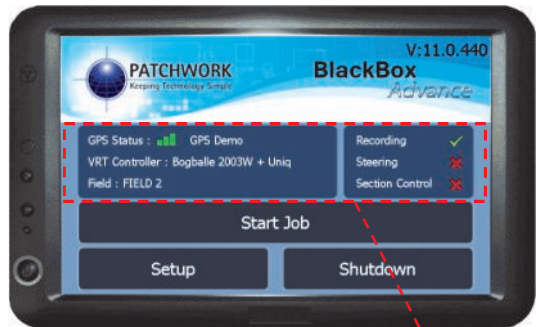
On some of the screens the '?' (Information) icon will appear, pressing this will give details about the options on the current screen and how it will affect the working of the system.

On completing the initial setup, the settings that have been entered will be saved as a profile under the profile manager (see Load / Save profiles on page 26).

If you have selected 'No' to run the wizard on start up, it can be re-launched by selecting Setup from the home screen, then Load / Save Profiles > Run Initial Setup Wizard.

Home Screen

The Home Screen is the main menu for setting up and accessing the different job modes of the BlackBox software.



Status Screen

Start Job - Start a guidance job, Field Boundary Map, Resume a Job, Planned Job (Farm Management Software plan) or Variable Rate Plan (VRT Software required) for more details see 'Starting a Job > Start Job' on page 30.

Setup - Opens the setup menu for the unit. Before starting a job it is important that the unit is setup for your requirements (see Setup Menu on page 13).

Shutdown - Will shutdown the software and open up to the Program Sub Menu (See page 12).

Status Screen - Displays relevant system information.



*GPS Status icons

	1 to 4 Satellites		5 to 6 Satellites		7 to 8 Satellites		9 or more Satellites
--	-------------------	--	-------------------	--	-------------------	--	----------------------

GPS signal strength

	No Connection with Auto Steer		No GPS Signal
	GPS No Differential		GPS With Differential

GPS status

Program Sub Menu

The Program Sub Menu is used to load and update the BlackBox software.



Start BlackBox - Accesses the BlackBox Home Screen (for more details see Home Screen on page 11).

Start BlackBox DR - Not applicable

Start Field Note - Not applicable

Upgrade - Initiates and installs any updates for the BlackBox that are stored on the memory stick.

Updates are available from the Support Services section on the Patchwork website www.patchwork.co.uk

Sync - Used to transfer data to and from WebTrack via a wireless modem connection (Additional hardware required call Patchwork on 01291 673366).

Setup

The Setup menu is used to setup the hardware and software for use within the job modes and it is vital that the settings are entered correctly for the unit to function as you require.



Recording Details - Sets the details that will be recorded for the job to assist record keeping and also the implement working width. It is important to accurately set the tracks when using the unit for guidance (See page 14 for more details).

Local Setting - This option is used to set preferences based on your location in the world (See page 17 for more details).

GPS Options - Accesses the options for adjusting the antenna position, headland warning and display smoothing (See page 18 for more details).

Ports Setup - Used to setup the serial ports if using an external GPS source or Weather Station. The Tilt Compensator reset, Demo Mode and the Coverage Area Recording On/Off method is also set under this option (See page 21 for more details).

VRT Options - Accesses the options for setting up data communications between the unit and a controller for Variable Rate Application and/or Auto Shut off (See page 24 for more details).

Save/Load Profiles - Opens the profile manager, where settings for specific jobs can be saved and reloaded, saving time when setting up the unit between different jobs (See page 26 for details).

Advanced - Accesses the menu to unlock software modules (See page 27) and setup the steering and section control add on hardware features (see supplied instructions for details).

Finished - Returns to the BlackBox menu.

Recording Details

All the details that are entered in this area will be added to the job recording. This is viewable within the information area of a job report when viewed in WebTrack.



Vehicle -	
Implement -	
Job Type -	
Operator -	Finished
Width - 24m	
Recording Options	

Vehicle - The name of the vehicle that is being used for the job.

Implement - The name of the implement that is being used for the job. If setup in WebTrack the width will be set automatically.

Job Type - Enter the name of the job operation that is being performed. If the Job Type selected has form items added to it in WebTrack (see page 49 for details on setting up Job Types), when the job is finished the operator will be prompted to fill in information related to the form items.

Operator - The name of the operator that is performing the job.

Width - Sets the working width of the implement, this is vital to achieve the correct distance between the guidance lines. The width will be set automatically if an implement that has been setup in WebTrack has been selected in the Implement option.

Recording Options - These options are used to setup how and/or whether the trace, farm details and weather station information is recorded (See page 15 for more details).

Finished - Return to the setup menu.

...Recording Details

Recording Options

The settings entered in this menu alter how data is recorded on the BlackBox, this includes the green trace recording and weather station information (if fitted).



Recording - This option is used to turn job recording on and off. **N.B. If recording is set to 'No' the pause job function will not be available and the unit will not save any job data when a job is finished.**

Autonaming - Not used, leave set to 'No'.

Minimum Speed - Sets the speed that the coverage area recording will start or stop recording.

Minimum Angle - Sets the number of degrees that the heading can change since the previous coverage area location point before a new point is set.

Maximum Distance - Sets the maximum distance that can be travelled in a straight line before a coverage area location point is automatically set. Note if the minimum angle setting is met or exceeded a point will be automatically set.

Weather Station - Opens the menu where the weather station recording options can be adjusted. See page 16 for Weather Station Recording Options menu.

Finished - Returns to the Setup Menu.

Important: Decreasing the values of the minimum angle or maximum distance will result in more location points being created, which can effect the performance of the unit.

...Recording Details > Recording Options

Weather Station Recording Options

The options in this menu are used to select the weather details that will be obtained from a vehicle mountable weather station and automatically saved to the job when complete. The weather station needs to be connected via the serial port (please refer to installation guide) .



Weather Station On - Sets the weather station recording On or Off. All other options are dependent on the Weather Station On being set to 'Yes'.

Temperature - Turns temperature recording On or Off.

Wind Dir - Turns wind direction recording On or Off.

Wind Speed - Turns wind speed recording On or Off.

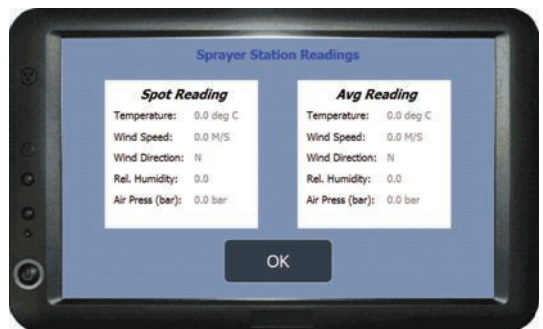
Units - Changes the units in which the wind speed is recorded in.

Humidity - Turns humidity recording On or Off.

Air Pressure - Turns air pressure recording On or Off.

Test - Press to ensure the information is being received from the weather station. The test screen will open displaying the information that has been set, once the test is complete press **OK** to return to the weather station menu.

If unsuccessful the serial port speed may need to be adjusted (see Ports Setup > Printer Speed on page 21).



Finished - Returns to the Recording Options menu.

Local Setting

The options in this menu are used to set your locality in the world, unit measurements, language and the time difference (based on GMT).



Country - To select country location of unit.

Units - Sets the unit measurement type to Imperial or Metric (i.e. Acres or Hectares); this will affect the menu areas and job screen where a measurement is required or displayed.

Language - To select the language that you want to use for menu display.

Time and Date - To adjust the time and date for your area.

Finished - Returns to the Setup Menu.

GPS Options

The options in this menu access settings related to how the GPS signal is used.



Antenna Offset - Opens the options for offsetting the antenna position (see page 19 for details).

Display Smoothing - Adjusts sensitivity of the guidance line to changes in GPS position when using guidance in the job screen.

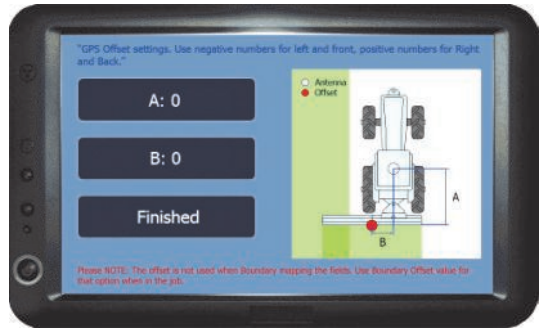
Fine –	Less Responsive
Medium –	Responsive
Coarse –	Most Responsive
None –	Standard

Headland Warning Options - Opens the Headland Warning Options menu. See page 20 for the Headland Warning Options.

Finished - Returns to the Setup Menu.

Antenna Offset

Adjusting the antenna position can improve coverage area recording accuracy and is vital when using Headland Warning, Boom Section control or Auto Shut Off to ensure that the on / off position is correct when based on the position of the implement.



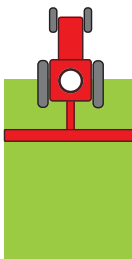
A - Sets the offset distance from the antenna for front or back. Note a negative number must be entered if setting to the front.

B - Sets the offset distance from the antenna for left or right to the centre of the implement. Note a negative number must be entered if setting to the left.

NB in most cases a left / right offset is only required when using an offset implement i.e. A Mower.

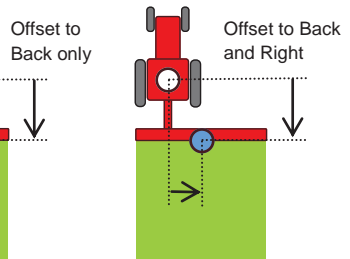
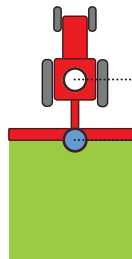
No Offset

Recording takes place from the antenna position.



With Offset

Recording takes place from the offset position.



○ Antenna position ● Offset position

Offset Example

Finished - Returns to the GPS Options Menu.

...GPS Offset

Headland Warning Options

The options in this menu are used to setup the Headland Warning feature. The feature guides you to a set point from the field boundary which we call the 'headland edge'. This counts down the distance as you approach it, so when the headland edge is reached the distance is zero and the operator knows when to stop or start the implement. This feature can also be automated using the headland management cable (2013 hardware only), call Patchwork for details.



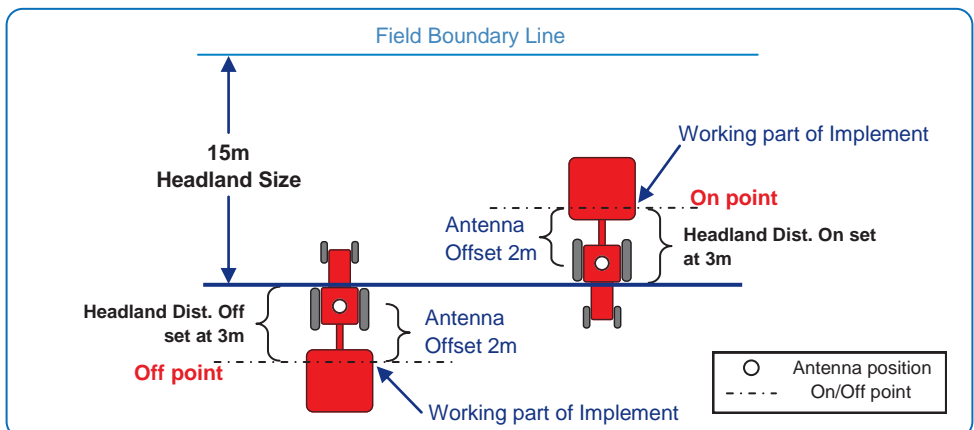
N.B. A field boundary map needs to be created for the field and the mini map in the job screen hidden for this function to work .

Headland Warning - Turns the headland warning feature on or off. When enabled an addition option 'Headland Size' appears on the guidance options screen when starting a job (see page 30 for details).

Headland Distance Off - Used to account for over run due to delays with the implement shut off times, when using the automated system.

Headland Distance On - Used to account for under run due to delays with the implement turn on times, when using the automated system.

Finished - Returns to the GPS Options Menu.



Headland Distance Off/On Example

Port Setup

The options in this menu are used to setup the serial ports speeds when connecting external devices, the coverage area recording On/Off method and built in Tilt Correction.



Printing On (Y/N) - Turns printing on or off.

GPS Speed - To setup the port speed for the GPS port when using an external source.

Printer Speed - Sets the port speed for when a weather station or other compatible external device is connected .

GPS Output - Turns the GPS output on or off. When set to 'Yes' the unit will transmit a GPS signal.

On/Off - Opens the Coverage Area Recording On/Off method selection list. See page 28 for details of the on/off methods in the On/Off selection list.

Demo Mode - Turns the demo on or off. When set to Yes the unit will simulate movement using a string of GPS coordinates.

Please note that when this mode is on the unit will not pick up a GPS signal.

Tilt Compensator - This opens the tilt compensator options menu to setup and reset the tilt compensator. See page 22 for the Tilt Compensator options menu.

Finished - Returns to the Setup menu.

...Port Setup

Tilt Compensator options

The options in this menu are used to setup the tilt compensator and to visually calibrate the tilt mechanism.



Angle Gauges

Angle Gauges - These gauges display the front/back and left/right angle that the tilt compensator is detecting, based on the last reset.

Height - Sets the distance that the antenna is from the ground. This needs to be set in order for the tilt compensator to function correctly.

Tilt - Turns the tilt compensator on or off.

Zero Tilt - To zero (reset) the angle gauges, when the vehicle is on a level surface (do not use the gauges to determine this) press Zero Tilt. The gauges will then show both the angle gauges as zero.

N.B. For the External GPS Version - It is important that the receiver is mounted flat and the red arrow is pointing towards the direction of travel.

For the Internal GPS Version - It is important that the Screen is mounted centrally in the cab with the display face on, is level and firmly fixed in position.

Finished - Returns to the ports setup menu.

...Port Setup

On/Off selection list

The options in this menu are used to set how the coverage area recording is turned on/off when in the job screen.

Turning the trace recording on and off when turning in the head land can give a more accurate coverage area reading for the recorded data.



N.B. On/Off type will be set automatically if an implement that has been setup in WebTrack has been selected from the Implement option in Recording Details.

Switch - (On/Off in WebTrack) – This type uses a switch which is connected to the unit that creates an electrical connection when in the on position, to turn the coverage area recording on and off.

On Screen - (Use Arrows in Webtrack) – When this type is set the coverage area recording can be turned on and off by the operator using the Recording on/off button on the guidance screen.

Always Record - This sets the coverage area recording to continually record and can not be turned off.

Switch Reverse - (On/Off Reversed in WebTrack) – This type uses a switch which is connected to the unit that creates an electrical connection when in the off position, to turn the coverage area recording on and off.

Controller - This option is used when the BlackBox is connected to an implement controller via a data cable for turning the coverage area recording On/Off. For example when the implement is working the trace will be on and when not working the trace will be off. Communications must be established between the BlackBox and Controller for this system to work (see VRT Options on page 24 for setup information).

Please Note: Some controllers do not have the facility to return an on/off signal.

VRT Options

The options in this menu are used to set up communications with external controllers for variable rate and/or auto shut off.



VRT Controller - Sets the controller type to which the unit is being connected. The recommended Port Speed for the controller will automatically change for the selected controller.

Port Speed - For manually setting the port speed.

Note: the recommended port speed will be entered when the controller has been selected from the VRT Controller option.

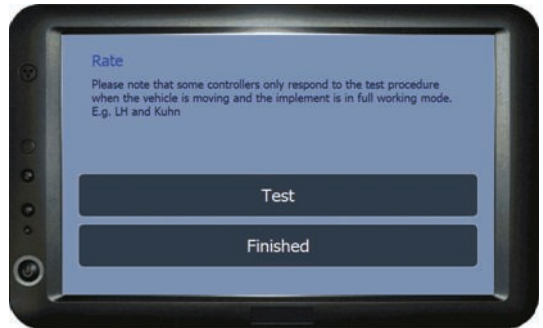
VRT Test - Opens the VRT test screen to test the connection between the unit and controller. See Page 25 for VRT Test Screen and details on performing a test.

Finished - Returns to the Setup Menu.

...VRT Options

VRT Test

This option is used to ensure that there is communication between the BlackBox and the Controller before using the unit for variable rate application and/or Auto Shut Off (Additional software required). It is recommended that the test is done with the implement empty of products.



Connect the BlackBox to the Controller via the supplied cable (When VRT or Auto Shut Off is purchased at extra cost, a cable and instructions are provided for the specified controller)

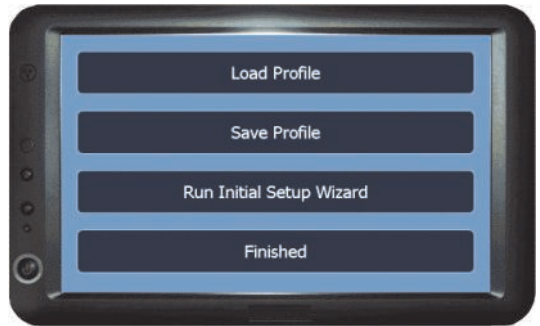
Before starting the test ensure the controller box is powered up and ready to receive data from the unit (some controllers require the implement to be in full working mode with the vehicle moving). When ready press **Test** to begin and the **Rate** will start counting up 100, 200, 300 up to 1000, check to ensure that the controller is also counting in sequence (May not be in sync because of a delay in the data transmission).

If the test is unsuccessful, turn off the controller and the Blackbox and check all connections. Power up the BlackBox, once loaded go to Setup > VRT Options > VRT Test. Next power up the controller and when ready run the test again.

If the test is successful press **Finished** to return to the VRT Options menu.

Load / Save Profiles

This area is used to access and store profiles. Profiles are a method to save all the settings that have been set for a specific operation, this then allows quick access to the settings relevant to that operation, especially when the unit is used for a variety of operations.



Load Profile - This option allows a previously saved profile to be opened.

To load a profile:-

- 1) Select the required profile from the list
- 2) Press OK. This will change all the settings in the system to the settings that are saved in the profile.

Save Profile - Accesses the area where all the current settings on the system can be saved as a profile.

To save a 'New' profile:-

- 1) Select * New * from the list
- 2) Press OK
- 3) Enter a name for the profile (i.e. name of the operation)
- 4) Press OK

To Overwrite a profile:-

- 1) Select the required profile from the list.
- 2) Press OK
- 3) Press Yes to Overwrite.

Run Initial Setup Wizard - Launches the Initial Setup Wizard. See page 10 for details.

Finished - Returns to the Setup Menu.

Advanced

The options in this menu are used to unlock software modules and setup the Steering and/or Boom Section add-on.



Steering - Opens the steering options screen, see page 28 for details.

Boom Section Control - This area is used to setup section control and auto shut off optional hardware/features that can be used with the BlackBox system. For setup please refer to the instructions supplied with the optional hardware/features.

Unlock - This area is used to upgrade the various product software options of the unit via 'lock codes', see page 29 for details.

Finished - Returns to the Setup Menu.

...Advanced

Steering

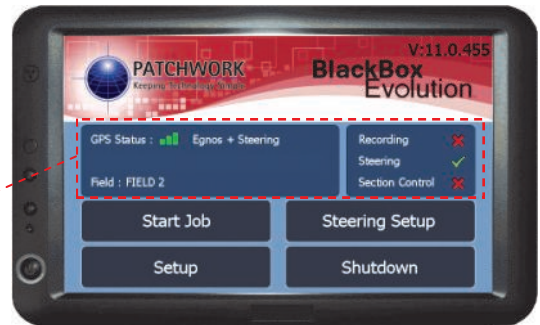
The options in this menu are used to activate the auto steering system when connected to the unit.



Steering On/Off - Enables or disables the auto steer system software. When 'On' is displayed the steering is enabled.

N.B. When steering is enabled the Home Screen will change from the GO to the Evolution Home Screen.

Status
Window



Steering Setup - Launches the auto steer setup screen (see below). For setup instructions please refer to the documentation supplied with the auto steer system.

Status Window - Pressing this area will launch the GPS Information screen (see below), which displays detailed information about the status on the steering systems GPS signal.



Auto Steer Setup screen

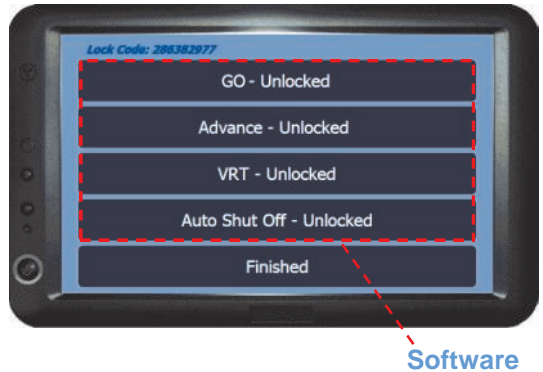


GPS Information Screen

...Advanced

Unlock

This menu is used to enter unlock codes to unlock different areas of the software for future upgrading.



To upgrade the unit first make a note of the unit's serial number and the lock code displayed in the top left hand corner of the unlock menu.

Next make a call to Patchwork Technology on +44 (0) 1291 673366 and state the upgrade you require (see Product Overview on page 5). The Patchwork operator will firstly agree a payment method for the upgrade and then issue an unlock code for the upgrade.

Software - To enter the unlock code press on the software option from the list. The numerical entry screen will appear, enter the unlock code and press **OK**. This returns to the Unlock menu with Unlocked filled in next to the option.

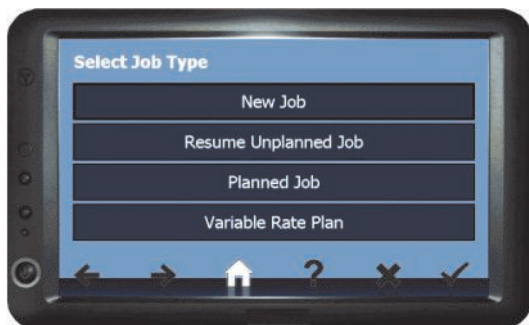
Finished - Returns to the Advanced menu.

Start Job

After the unit has been setup, position the vehicle in the field where the job will begin, when ready press **Start Job** from the Home Screen.

This launches the 'Start Job Wizard' which will guide through the steps for starting a job :-

Firstly a Job Type will need to be selected. The job types that are displayed will depend on whether a relevant file type is on the memory card.



New Job - Select to begin a guidance job with or without recording (also with auto shut off if available) and / or new boundary job (area measurement). See page 34 for the steps once selected.

Resume Unplanned Job - This option will only appear if a 'New Job' has been paused and is stored on the BlackBox memory card. Use this option when continuing a paused 'New Job'. See page 32 for the steps once selected.

Planned Job - When there are plan files on the BlackBox memory card from a Farm Management Software program this option will be displayed and is used to open the Farm Management plans on the BlackBox. See page 32 for the steps once selected.

Note - If a 'Planned Job' is paused it can be resumed by re-opening the plan.

Variable Rate Plan - For this option to appear the VRT software module needs to be unlocked and variable rate files in the relevant folder on the BlackBox memory card. Select this option when conducting a variable rate application job. See Quick Start Guide labelled 'VRT and Auto Shut Off' supplied with the VRT Software for the steps on loading a plan.

Note - If a 'Variable Rate Plan' is paused it can be resumed by re-opening the plan.

New Job

If recording is set to 'No' the unit will go to Step 3).



1) Enter **Farm/Field** and **Confirm**.



2) Check/edit recording details and **Confirm**



3) Enter the working **Width**, select the **Guidance Mode** (see page 33 for details), enter **Headland Size** (only available when using Headland Warning see page 20 for details) and press **Confirm**.



4) The Job Screen opens ready to begin.

Farm /Field Auto Recognition

If a field has had a 'Field Boundary Map' (see page 39) created previously and the field has been driven into, the unit will automatically detect the field from its GPS coordinates. This will also automatically fill in the Farm/Field name when starting a new job.

Resume Unplanned Job

N.B. Jobs cannot be paused if recording is set to No.



1) Select the **Job Type** to resume and press **Confirm**.

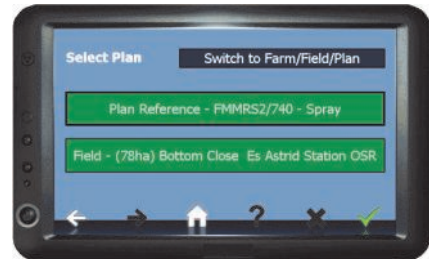


2) Select the Farm/Field to resume and **Confirm**. The Job Screen will open with coverage recording data and any AB lines that were saved at the time of pausing.

Planned Job



OR



1) Select a plan by **Farm/Field/Plan** and **Confirm**. Or **Switch to Plan/Field...**

... And select a plan by **Plan/Field** and **Confirm**.



3) If required **Edit Products** and/or check **Instructions**, when ready press **Confirm**.

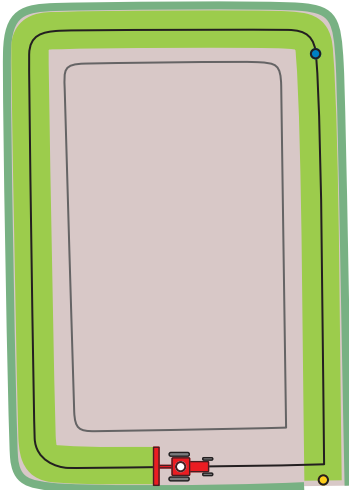


4) Enter the working **Width**, select the **Guidance Mode** (see page 33 for details) and press **Confirm**. The Job Screen will open ready to begin.

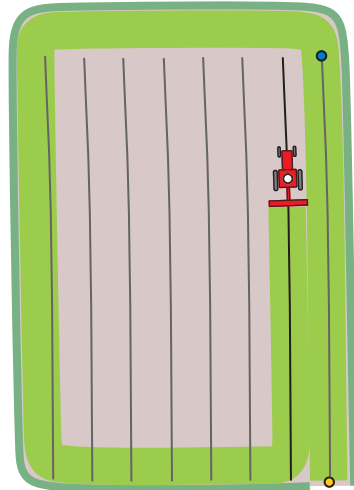
Guidance Modes

First Pass - Creates a Headland guidance line based on the entered Width and the Field Boundary Map (see page 39). This line is used to give guidance around the headland run(s) of the field being worked.

First Pass pathway



Headland guidance line used for headland passes.



Change to set AB line to complete inner work.

● A Set ● B Set

There are three track to track (AB line) guidance mode options to choose from :-

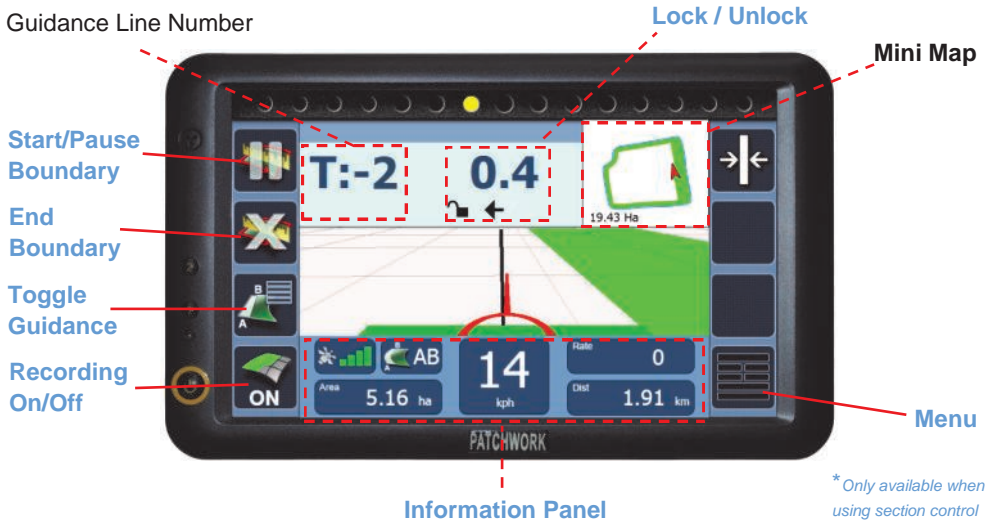
Straight - Sets a straight guidance line between set point A and point B, which is then replicated both sides of the original line at equal intervals based on the entered width.

Curved - Creates a curved guidance line based on the path driven between set point A and point B. The line is then replicated both sides of the original line at equal intervals based on the entered width.

Adaptive Curve - Automatically adjusts the guidance line based on the previous pass. **Note:** For the adaptive curve mode to work correctly an A and B point must be set as with 'Curved' and the pass next to the previous one needs to be followed.

Overview

The Job screen uses a 3D guidance view to display area covered, guide lines and off track information.



Start/Pause Boundary - Starts and pauses a field boundary map job, see page 39 for details.

End Boundary - Manually closes a field boundary map, see page 40 for details.

Guidance Options - Opens the guidance options menu used to Set, Load, Reset and Switch guidance lines, see page 36.

Recording On/Off - Displays the current status of the Coverage Area Recording; pressing toggles on/off (if the On/Off method is set to 'On Screen' see page 41).

Lock / Unlock - Locks / Unlocks the current guidance line. In AB line mode the line is automatically unlocked when turning greater than 60 degrees.

Mini Map - Displays a 2D overview of the field boundary and area covered. N.B. If using Headland Warning (see page 20) the mini map needs to be hidden (see Menu below)

Line Recalibrate - When using Straight line guidance this button repositions the guidance line to your current position. **N.B when the line is recalibrated the 'Guidance line number' is reset to 0. This feature is not available for curved modes.**

Menu - Opens the job screen options, see page 37 for details.

Information Panel - Displays various information relating to the system and the current job, see page 35 for details.

...Overview

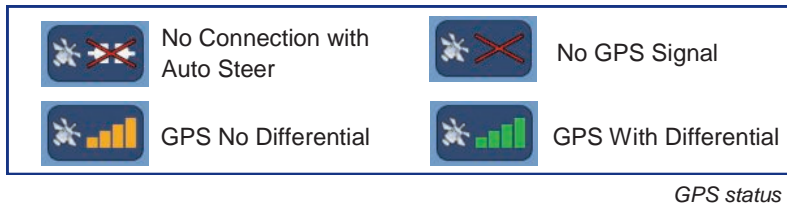
Information Panel



Guidance Mode - Displays the guidance mode being used and current status.



GPS Strength - Displays the GPS signal strength and status.



Coverage Area - Displays area covered based on the coverage area recording.

Speed - Displays current speed from GPS; press to change from analogue to digital display.

Application Rate / Width - Displays current application rate (VRT and/or Auto Shut Off software required) or current working width if using the section control system.

Distance Travelled - Displays the distance travelled based on the coverage area recording.

...Overview

Guidance Options

During a job if the guidance options button is pressed the guidance options menu will open. The options in this menu allow the operator to set an AB line, reset an AB line, switch between guidance modes and reload previously created AB lines for the same field and working width.



Set A - Sets the start point of the guidance line.

Set B - Sets the end point of the guidance line and after selected the guidance line is displayed.

Reset - Resets the AB line that is currently set.

Shift - Repositions the guidance line to the current GPS position (Straight only).

Guidance Mode - Allows the user to select and switch between the different guidance modes.

N.B. If the guidance mode being switched to has no AB line set, an AB line will need to be created for it.

Headland - Switches to the 'First Pass' guidance line (see page 33).

N.B. A field boundary map is required for the mode to work.

Track - Switches the guidance line to the currently set AB line.

Load AB - This option allows previously created guidance lines to be reloaded if they exist for the field and width being worked.

N.B. The guidance lines are automatically saved for the field and width being worked when the job is completed using 'Finish Job' (see page 33). Any newly created guidance lines will automatically overwrite the originals.

Finished - Returns to the Job screen.

...Overview

Menu

During a job if the menu button is pressed the job screen options will open. The options in this menu allow the operator to print the boundary map, show or hide various elements of the 3D guidance view for optimisation, set a point of reference, pause and finish a recording job.



Return To Job - Exits the menu and returns to the job screen.

Show/Hide Mini Map - Toggles the 2D overview map display on or off in the guidance screen.

N.B. The mini map needs be hidden when using the Headland Warning feature.

Show/Hide Boundary - Toggles the display of the blue boundary line on or off on the 3D guidance view.

Save Point Here - Use this to set a location point to return to if a refill is required. The location point will display in the mini map.

Ensure the trace recording is OFF when going to refill to avoid inaccurate records.

Pause Job - Press this option to pause the job if you need to fill up or are stopping for the day so it can be continued at a later time. This will close the job screen and save the recorded job.

N.B. This function will not work if Recording is set to No and/or Autonaming is set to Yes.

Finish Job - Press this to complete a job. This will close the job screen, save the recorded job data ready to be transferred to WebTrack and return to the Home Screen. If the selected 'Job Type' has notes attached the Notes screen will open to fill in before the job is completed (see Recording Details > Job Type on page 14 for more information).

...Overview

Steering Status Button

When Auto Steer is enabled the 'Steering Status' button will be visible in the guidance screen. The button can be used to engage the steering system and also changes colour depending on the status of the steering system.



The colours and meaning of each status is as follows :-



Red - The auto steer system cannot be engaged due to a major problem. Pressing the button will open the 'Steering Status Screen'.



Amber - The auto steer system is ready to be engaged.



White - The auto steer system is engaged, but trying to acquire the guidance line.



Green - The auto steer system is engaged and working.

Creating a Field Boundary Map

When creating field boundaries for future use and records it is important to set Recording to 'On' and Autonoming to 'Off' (see page 15 for details). The farm and field details can be entered manually to ease traceability and the function of the farm / field auto recognition.

Starting a field boundary map

Step 1 - To begin the field boundary press the Start Boundary button, this opens the boundary options menu. **N.B.** If boundary already exists a message will appear asking if you would like to delete the existing boundary.



**Start
Boundary
Button**

Step 2 - Boundary options

The options in this menu are used to setup the unit before creating a boundary map. It is important to setup these details correctly to get an accurate area measurement.



Boundary Type - Sets the type of field boundary that is being created. There are two types :-

Boundary – For around the outer edge of the field.

Inner Boundary – For excluding areas within a field boundary.

Offset - Sets the actual distance from the antenna to the edge of the field.

N.B. This offset will be from the antenna position if it has been offset (see page 19).

Direction - To select which side of the vehicle the edge of the field is on when travelling forwards.

Start - Starts recording the field boundary.

Cancel - Cancels the field boundary and returns to the guidance screen.

Step 3 - Once the boundary options are set and **Start** has been pressed, drive around the edge of the field until you reach the point where you began the run.

...Creating a Field Boundary Map

Pausing the boundary mapping

During the run the field boundary can be:-

Paused - Press the pause boundary button, when the job has been paused the button will change to the start boundary button, press again to continue.



**Pause
Boundary
Button**

Completing a field boundary map

When the start point is reached the boundary will automatically close and save. The completed boundary will be displayed in the mini map with the field size.

Manual completion

Press the End Boundary button, this will close the boundary by drawing a straight line from the current position to the boundary start position.



**End
Boundary
Button**

Once a field boundary has been completed, it can be redone if needed by pressing the Start Boundary button.

To create a new field boundary map for a different field the job will need to be finished then a New Job started with the new farm / field name.

Future use for the maps

When the field boundary maps have been completed perform a WebSync to transfer the field boundaries to WebTrack. On WebTrack the field boundaries will be securely stored and can be viewed, deleted or printed as a single field boundary and/or a multiple field boundary report including the total area calculated for the fields that are held under a farm name.

The maps are vital for the following features :-

- Farm/Field Auto Detect.

- Headland guidance line when using the First Pass guidance feature.

- Headland Warning.

Using Guidance and Coverage Area Recording

Guidance can be used to assist the operator in reducing under or overlap when applying products, improving coverage and reducing waste.

Using the Coverage Area Recording

Coverage Area Recording marks the path that has been driven and can be turned on and off using various methods, see page 21 for details.



Recording On/Off - Coverage area is being recorded when this is 'ON' and the green bar below the 'Guide Arrow' is displayed.

Using First Pass Guidance

To use first pass, a Field Boundary Map must be available for the field. First Pass guidance is used to guide around the Headland of the field.



Step 1 - When the job screen opens with the Field Boundary loaded, press [Guidance Options](#) and then press **Headland**.



Step 2 - The headland guidance line will appear indicated by 'H:', ready to guide. To switch back to AB guidance press [Guidance Options](#) and then press **Track**.

N.B. If using auto steer the steering can not be engaged when using a First Pass guidance line.

...Using Guidance and Coverage Area Recording

Setting and Resetting a Guidance line

N.B. When using a curved line it is important to use the longer edge of the field to set a guide line.



Step 1 - At the beginning of a run press the **Grid area** or press **Guidance Options** and then **Set A** to set point A.



Step 2 - Drive to the end of the run and press the **Grid area** or press **Guidance Options** and then **Set B** to set point B. The AB line is displayed.



Step 3 - When turning at the end of the run the next AB line will appear.

If using auto steer the steering can be engaged when the steering status is amber, the auto steer will line up to and follow the set guidance line.



Step 4 - Once the end of the run is reached turn on to the next run and the next AB line will appear.

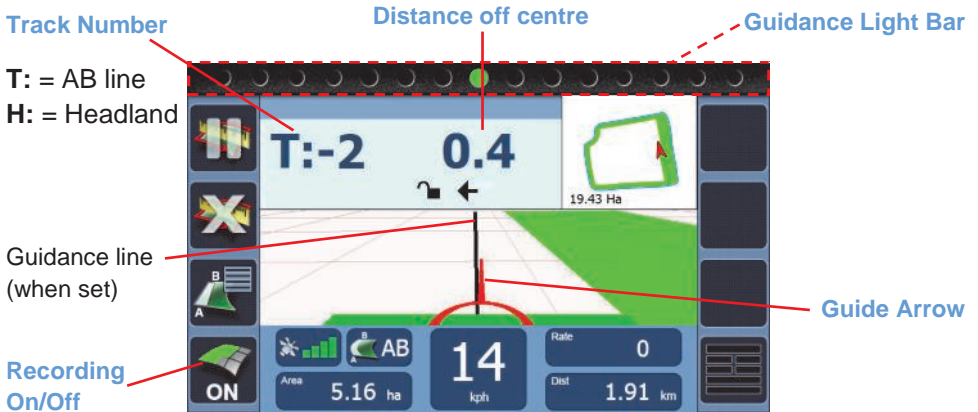
If using auto steer the steering will need to be disengaged before turning and then re-engaged when the next AB line appears.

To reset the AB line press the grid area used to set the A and B points and select **Yes** when prompted, when using straight line guidance there is also the option to 'Shift' which repositions the guidance line to your current position. The line can also be reset by pressing **Guidance Options** and then **Reset**.

...Using Guidance and Coverage Area Recording

Using a guidance line

The 3D guidance view uses a first person view, which means it rotates around the antenna's position (or offset position if set) as a central pivot point.



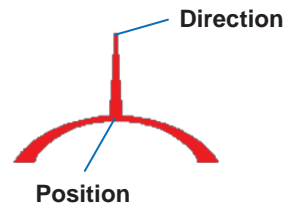
This example shows that the driver is not centre to the line and needs to steer/move 40 cm to the left to be back on centre.

Track number - Which guidance line track you are currently working.

Distance off centre - Distance that your current position is from the centre of the guidance line.

Guidance Light Bar - Displays the side that the guidance line is on in relation to your position.

Guide Arrow - Is a fixed guide that shows your position on the guidance view and the direction your heading. Your position on the screen (or pivot point) is the point at which the line and semi circle of the guide arrow meet. The direction you are heading is indicated by the end point of the line.



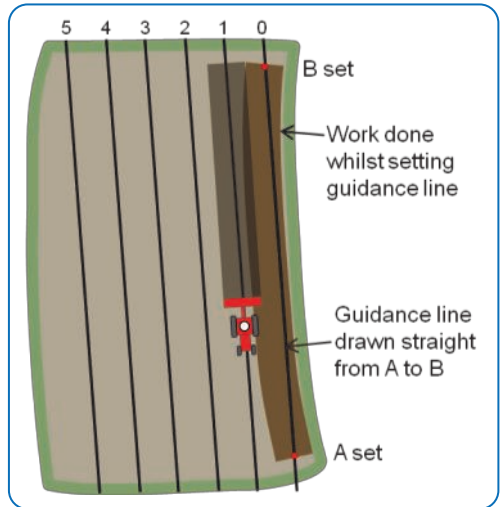
Using the Guidance Screens

...Using Guidance and Coverage Area Recording

Important - When using a straight AB line

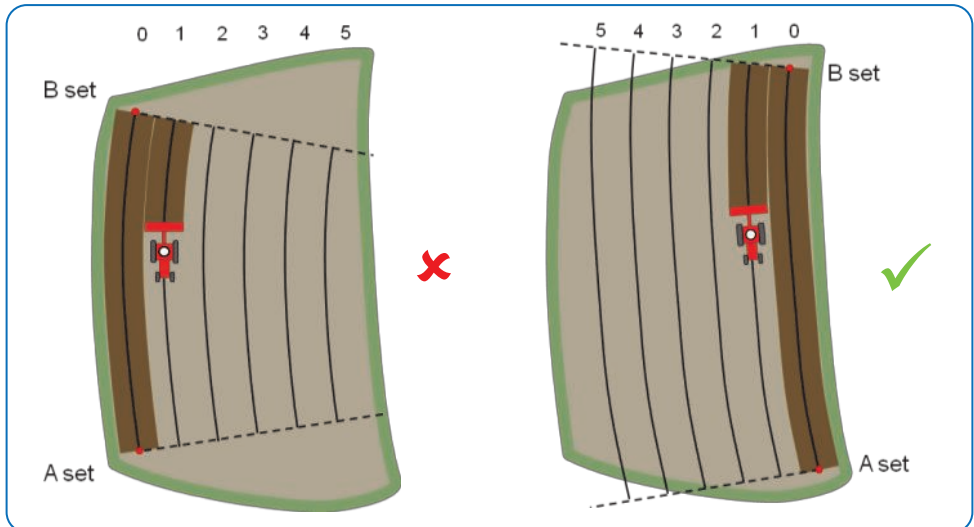
After a straight AB line has been set, when working on T:1 it is important that the guidance line is followed on the screen and not the marks from the work done whilst setting the guidance line.

N.B. There may be significant over/under lap between the first and second runs, but if the guidance line is followed the remaining runs will be straight and equally spaced.



Important - When using a curved AB line

It is important to use the longer edge of the field when setting a curved AB line to ensure the guidance line is visible from the one side of the field to the other.

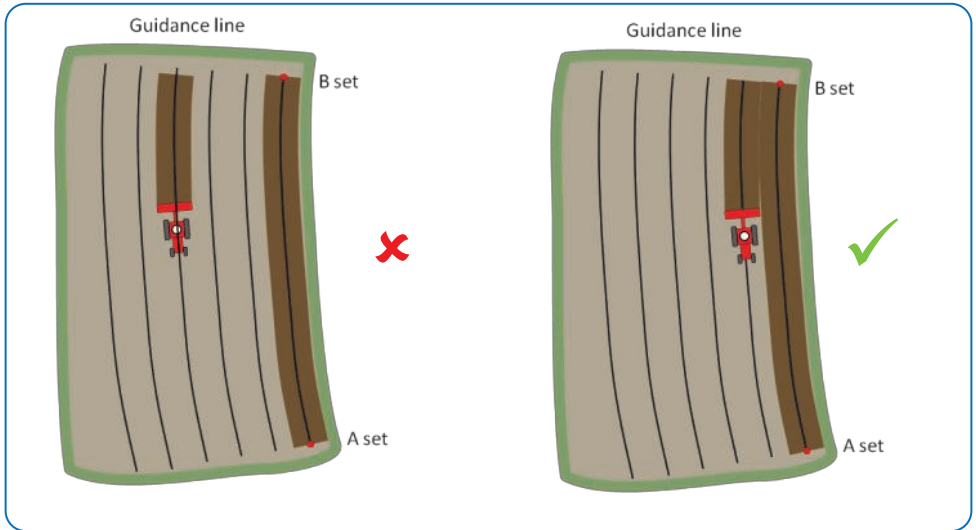


Using the Guidance Screens

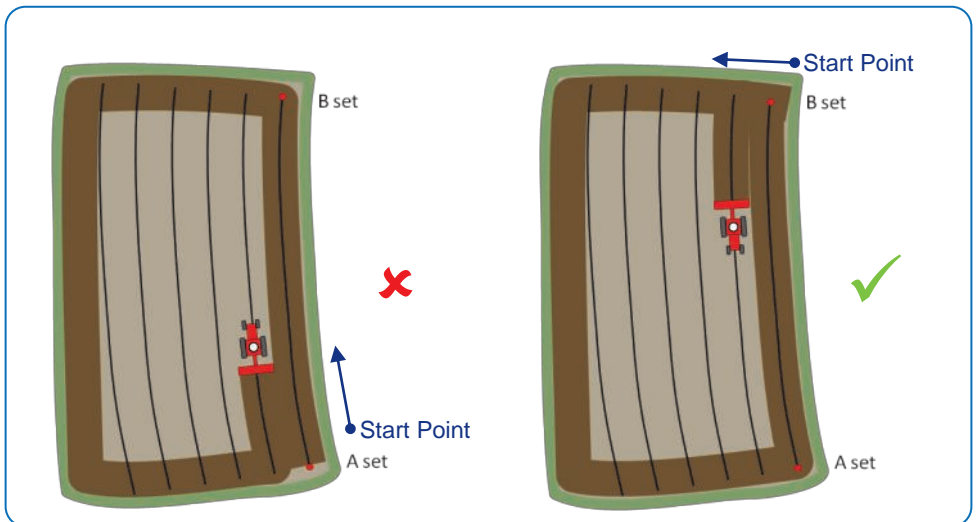
...Using Guidance and Coverage Area Recording

Important - When using an Adaptive Curve

After setting the Adaptive Curve A and B points it is vital that the next guidance line is followed for the line to adapt correctly.



The guidance line needs to be set on the final long run, if setting the guidance line whilst working the headland.



Problem	Cause	Solution
Unit not powering up	Unit not connected to the power supply.	Check that the unit is connected to the power source and that there is sufficient voltage at the source.
No GPS signal	Obstructions are causing the receiver to not pick up a GPS signal.	Make sure the receiver is outside the cab and has a clear view of the sky with minimal obstructions. NOTE: After repositioning the receiver the signal may take up to 20 minutes to acquire.
	The GPS speed is set to a number other than 19200.	From the main BlackBox menu go to the "Setup" screen, then into "Ports Setup", and then select "GPS Speed" and change it to the correct value of 19200.
	The "Steering" option is enabled.	From the main BlackBox menu go to the "Setup" screen, then into "Advanced", then into the "steering" menu. From here make sure that "Steering" is disabled.
Coverage Area Recording not working	The Coverage Area Recording on/ off method is set to the wrong setting.	From the main BlackBox menu go to "Setup", then the "Ports Setup" and here click on "On/ Off". Change this setting to the mode which you need to use. See page 21 for details.
Guidance line not displaying correctly	Using Headland guidance mode instead of AB line. Headland guidance is indicated by a 'H:' at the top left of the 3D guidance view.	Refer to page 36 for instructions on toggling the guidance modes.

Problem	Cause	Solution
Headland warning feature not working correctly	The minimap is still open.	Whilst in the job screen press the menu button and then select "Hide Minimap". The headland warning countdown will appear where the minimap was displayed.
	There is no boundary set for the current field.	Set a boundary for the current field first and then the Headland warning will be available. Refer to page 39 for creating boundaries.
Boundary not recording	The record boundary button is not working on the guidance screen.	Restart the unit, go back into the job and restart a boundary recording job. See page 39 for details.
Storage card cannot be found - error	No storage card inserted into BlackBox.	Insert the storage card supplied with the unit into relevant slot.
	Storage card not detected.	Power down unit and restart, if problem still persist please ensure that the memory card is prepared for a BlackBox unit.
Auto Steer not communicating	Auto steer system not powered up.	The auto steer system has its own power source and switches that are independent of the BlackBox Screen. Please refer to Auto steer documentation for assistance with power connections.
	Cables not connected.	Ensure the RJ45 cable is connected between the BlackBox screen and the auto steer system.

Patchwork Technology Ltd.

Oaklands

Llancayo Court

Usk

Monmouthshire

NP15 1HY

Tel : 01291 673366

Fax : 01291 673077

www.patchwork.co.uk