



# **System 110/150 Operator's Manual**

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# Preface

This manual has been developed to provide you with information necessary to operate and maintain this Topcon Precision Agriculture (TPA) product. Proper service and use is important for the safe and reliable operation of the product. The sections provided in this manual include information necessary for the safe and correct operation, care, and troubleshooting of this product. The benefits this product provides can be greatly influenced by your knowledge of the products described in this manual.



## *NOTICE*

*Please read these Terms and Conditions carefully.*

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**RETURN and REPAIR** - During the respective warranty periods, any of the above items found defective may be shipped to TPA for repair. TPA will promptly repair the defective item at no charge, and ship it back to you. You must pay the shipping and

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- the laws of South Australia if the product is sold and supplied to you in Australia (in which case the courts of South Australia or the Federal Court of Australia (Adelaide Registry) have exclusive jurisdiction in respect of any claim or dispute); or
- the laws of the State of California if the product is sold and supplied to you outside of Australia.

All information, illustrations, and applications contained herein are based on the latest available information at the time of publication. TPA reserves the right to make product changes at any time without notice.

If any part of these Terms and Conditions would be unenforceable, the provision must be read down to the extent necessary to avoid that result, and if the provision cannot be read down to that extent, it must be severed without affecting the validity and enforceability of the remainder of these Terms and Conditions.

## Service Information

Service assistance can be provided by contacting your local TPA Authorised Dealer.

## Communications Regulation Information



### **FCC Compliance Statement (USA)**

This equipment has been tested and found to comply with the limits for a Class 'A' digital device, pursuant to Part 15 of the FCC Rules. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

### **FCC Compliance Statement (Canada)**

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.



### **CE EMC Statement (European Community)**

Warning: This is a class 'A' product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



### **'C' Tick EMC Statement (Australia & New Zealand)**

This product meets the applicable requirements of the Australia and New Zealand EMC Framework.

## **Radio & Television Interference**

This computer equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used correctly – that is, in strict accordance with TOPCON Precision Agriculture instructions – it may cause interference with radio communication.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral electronic devices.

If your computer system does cause interference to a radio or other electronic device, try to correct the interference by using one or more of the following measures:

- Turn the radio antenna until the interference stops.
- Move the computer to either side of the radio or other electronic device.
- Move the computer farther away from the radio or other electronic device.
- Connect the computer to a different circuit to the radio or other electronic device.

If necessary contact your nearest TOPCON Precision Agriculture dealer for assistance.

**Important:** Changes or modifications to this product not authorized by TOPCON Precision Agriculture could void the EMC compliance and negate your authority to operate the product.

This product was tested for EMC compliance under conditions that included the use of TOPCON Precision Agriculture peripheral devices & TOPCON Precision Agriculture shielded cables and connectors between system components.

It is important that you use TOPCON Precision Agriculture peripheral devices between system components to reduce the possibility of causing interference to radios and other electronic devices.



## IMPORTANT SAFETY INFORMATION

It is very important that you read and understand the instructions in this section to prevent the risk of death, personal injury and damage to the system.

### Safety Alert Symbols



The above safety alert symbols mean **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

Look for the safety alert symbols both in this manual and on safety signs on this machine. The safety alert symbol will direct your attention to information that involves your safety and the safety of others.

### Safety Messages

The words **DANGER**, **WARNING** or **CAUTION** are used with the safety alert symbols. Learn to recognize these safety alerts and follow the recommended precautions and safety practices.



***CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in MINOR INJURY.***



**WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in DEATH OR SERIOUS INJURY.**



**DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.**

## Informational Messages

The word NOTICE is used mainly to give additional information and tips for operating or servicing this equipment.



*Supplementary information that can have an effect on system operation, system performance & measurements*

## Safety Signs



**WARNING: DO NOT remove or obscure safety signs. Replace any safety signs that are not readable or are missing. Replacement signs are available from your dealer in the event of loss or damage.**

If a used machine has been purchased, make sure all safety signs are in the correct location and can be read. Replace any safety signs that can not be read or are missing. Replacement safety signs are available from your dealer.

## A Word To The Operator

It is YOUR responsibility to read and understand the safety section in this book before operating this machine. Remember that YOU are the key to safety.

Good safety practices not only protect you, but also the people around you. Study the features in this book and make them a working part of your safety program.

Keep in mind that this safety section is written only for this type of machine. Practice all other usual and customary safe working precautions, and above all REMEMBER - SAFETY IS YOUR RESPONSIBILITY. YOU CAN PREVENT SERIOUS INJURY OR DEATH.



**WARNING:** In some of the illustrations or photos used in this manual, panels or guards may have been removed for clarity. Never operate the machine with any panels or guards removed. If the removal of panels or guards is necessary to make a repair, they **MUST** be replaced before operation.

The photos, illustrations, and data used in this manual were current at the time of printing, but due to possible inline production changes, your system can vary slightly in detail. The manufacturer reserves the right to redesign and change the system as necessary without notification.

## Preparation For Operation

Read this manual completely and make sure you understand the controls. Read and understand the machine manual before operating this system. Know the positions and operations of all controls before you operate your machine. Check all controls in an area clear of people and obstacles before starting your work.

All equipment has a limit. Make sure you understand the speed, brakes, steering, stability, and load characteristics of your machine before you start.



**WARNING:** An operator should not use alcohol or drugs which can affect their alertness or coordination. An operator on prescription or 'over the counter' drugs needs medical advice on whether or not he or she can properly operate equipment.

Make sure your machine has the correct equipment needed by the local regulations.



*This manual covers general safety practices for this system, and should be kept with the System 150 when relocated to another machine.*

## Disclaimer

TPA accepts no responsibility or liability for damages to property, personal injuries, or death resulting from the misuse or abuse of any of its products, including System 150 and any of its components.

Further, TPA accepts no responsibility for the use of TPA equipment or the GNSS signal for any purpose other than the intended purpose.

TPA cannot guarantee the accuracy, integrity, continuity, or availability of the GNSS signal.

It is the operator's responsibility to exercise common sense and navigational judgment while using System 150.

The operator must ensure that the steering switch is in the Off position (no LED indicator is lit) at all times unless used for hands free assisted steering with the System 150.

Before operating any machine equipped with System 150 products, the following pages contain specific safety precautions that you must read and follow when operating.

## Important Safety Information

Most incidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions.

Avoid an accident by recognizing potentially hazardous situations. Always be alert to potential hazards.

The system can be momentarily disabled if the GNSS satellite or differential correction signal is lost. It is imperative that the operator be alert to the machine position and conditions in the field at all times.

The purpose of the System 150 is to aide the operator with steering the machine. Operator attention is required at all times.

## System 150 and Components

The following outlines the basic safety provisions that you must adhere to when operating System 150 and any of its components. Operators and other relevant personnel must be advised of these safety provisions.

### Electrical Safety

The following outlines the basic safety provisions that you must adhere to when operating System 150 and any of its components. Operators and other relevant personnel must be advised of these safety provisions.



**WARNING: Incorrectly connected power can cause severe injury and damage to people or the equipment.**

When working with electrical components, you must do the following:

- Prior to doing any welding on the machine, make sure the negative terminal of the battery is disconnected.
- Check that all power cables to system components are connected to the correct polarity as marked. Please refer to the machine operator manual for safety information.

### Areas of Operation

When using the System 150 for assisted steering along a defined wayline, the operator must be sure the machine is operated including, but not limited to:

- Away from people and obstacles.
- Away from high voltage power lines or other overhead obstructions. Be aware of any clearance problems before activating System 150.

- On private property without public access.
- Within cleared fields.
- Off public roads or access ways.

## Steering On/Off Switch



**WARNING: Ensure the steering switch is in the off position to prevent unintentional engagement of the assisted steering.**

## Disengagement

The operator must disengage assisted steering and assume manual control of the machine if an obstacle is in the line of travel, or if the machine should steer away from the desired wayline.

Using any of the following manual interventions will disengage assisted steering:

- Turn the steering wheel a few degrees.
- Press the disengage auto-steering button on the console.
- Move the steering switch to the Off position if the above actions do not disengage assisted steering.

## Operator Responsibilities

- The operator must remain in complete control of the machine at all times. The System 150 assists operators to guide a machine along defined waylines.
- The operator must be alert and aware of the surroundings at all times.
- Alcohol or drugs can affect operator's alertness or coordination. An operator must not operate the machine with or without engaging System 150 while under the influence of alcohol or any drugs. An operator on prescription or 'over the counter' drugs needs medical advice on whether or not he or she can properly operate equipment.
- The operator must maintain the proper distance away from people, obstacles, buildings, power lines and other machines when operating using assisted steering.
- Before exiting the machine, the operator must disengage assisted steering, turn the steering switch to the Off position, and remove the key from the key switch.

## Avoiding Obstacles



*System 150 cannot detect obstacles such as people, livestock, or any other type of obstacle. Only operate the equipment using System 150 when there is an open area clear of obstacles. The operator is ultimately responsible for the safe operation of this equipment.*

## Using a Reference (Base) Station



***WARNING: Do not move a reference station while in operation. Moving an operating reference station can interfere with the controlled steering of a system using the reference station. This could result in personal injury or damage to property.***

The following is an outline of the basic provisions that you must adhere to when operating with a reference station.

Operators and other relevant personnel must be advised of the following safety provisions.

When working with the reference station, follow these general safety precautions:

- Do not erect the reference station under or within the vicinity of high voltage power lines.
- When using the portable reference station, make sure the tripod is securely mounted.



# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1-1</b>
<b>2</b>	<b>Using this Manual .....</b>	<b>2-1</b>
<b>3</b>	<b>Basic Concepts of the System 110/150.....</b>	<b>3-1</b>
<b>4</b>	<b>System 110/150 Kit Components.....</b>	<b>4-1</b>
	System 110/150 Console.....	4-1
	Lightbar .....	4-1
	Power/ CAN Harness .....	4-2
	Remote Hook Up Mapping Harness .....	4-2
	Universal GPS Harness.....	4-3
	Receiver Specific GPS Harness .....	4-3
	GPS Receiver .....	4-4
	RAM® Mount and Base .....	4-4
<b>5</b>	<b>Setting up the System 110/150.....</b>	<b>5-1</b>
	Mounting the Console to the Tractor Cab.....	5-1
	GPS Fitup .....	5-4
	Remote Hookup .....	5-6
	Power.....	5-7
<b>6</b>	<b>Getting Started .....</b>	<b>6-1</b>
	Overview of Functions on Main Screen.....	6-4
	a. The Guidance Screen.....	6-5
	Display Bar items.....	6-6
	a1. The Main Screen .....	6-6
	a2. Mapping ON/OFF Indicators .....	6-6
	a3. Boundary creation Buttons.....	6-8

- a5. Zoom Out ..... 6-10
- a6. Zoom In ..... 6-10
- a7. Change Viewing Perspective ..... 6-11
- a8. Select Guidance Pattern screen ..... 6-13
- a9. Auto-Steering Button ..... 6-19
- b. Guidance Setup Screen ..... 6-20
  - b1. End of Row Setup ..... 6-21
  - b2. Units and Time Settings ..... 6-26
  - b3. Select Language ..... 6-27
  - b4. Implement Setup ..... 6-28
  - b5. GPS Antenna Location Setup ..... 6-31
  - b6. Lightbar Setup Screen ..... 6-34
  - b7. Coverage Sense Setup Screen ..... 6-39
- c. GPS Settings Screen ..... 6-41
  - Data Settings for 'Other' GPS Receivers ..... 6-42
    - c1. Input/Output Setup Screen ..... 6-43
    - c2. Display GPS Information ..... 6-48
    - c3. GPS Antenna Selection ..... 6-49
    - c4. Correction System Selection ..... 6-50
    - c5. GPS Drift Compensation ..... 6-52
    - c6. AGI-3 Firmware Upgrade ..... 6-54
- d. The Job Setup Screen ..... 6-55
  - d1. Create Coverage Report ..... 6-56
  - d2. Access Job Selection Screen ..... 6-56
  - d3. Clear Current Job ..... 6-56
  - d4. Access Boundary Selection Screen ..... 6-57
  - d5. Access Enter Notes Screen ..... 6-57
- e. System Memory and Diagnostics ..... 6-58
  - Memory Warnings ..... 6-58
- f. Day or Night Mode ..... 6-60
- g. Reprogram the Console ..... 6-61
- h. Additional Console Features ..... 6-61
- Configuration Checklist ..... 6-62

**7 Creating a Boundary ..... 7-1**

Procedure.....	7-1
Boundary Offset.....	7-7
Recalling a Boundary.....	7-9
<b>8 Starting a New Job.....</b>	<b>8-1</b>
Procedure.....	8-1
Recalling a Job.....	8-6
Creating a Coverage Report.....	8-9
As Applied Maps.....	8-12
<b>9 Using Guidance Patterns.....</b>	<b>9-1</b>
Identical Curves.....	9-1
Adaptive Curves (System 110).....	9-5
Adaptive Curve Modes (System 150).....	9-10
Coverage Triggered.....	9-10
Manual End of Row.....	9-13
U-Turn Recognition.....	9-15
AB Lines.....	9-17
Pivot.....	9-21
Recalling a Guidance Pattern.....	9-25
Using Nudge for Pivots and AB Lines.....	9-28
Nudge Options Screen (System 150).....	9-29
Steering with Guidance.....	9-31
<b>10 Backup and Import Files from Thumbdrive.....</b>	<b>10-1</b>
Backing up to Thumbdrive.....	10-1
Importing Files from Thumbdrive.....	10-3
<b>11 Quick Start Reference.....</b>	<b>11-1</b>
Create a Boundary.....	11-1
How to create a boundary in 5 Steps.....	11-1
How to recall a boundary in 3 Steps.....	11-1
Start a New Job.....	11-2
How to create a coverage map in 5 Steps.....	11-2
How to recall a Coverage map in 3 Steps.....	11-2

How to create a Coverage report in 3 Steps ..... 11-2  
Sample Job ..... 11-3

**A Button Index ..... A-1**

**B Spare Parts List..... B-1**

**C Product Specifications ..... C-1**

**D Tractor Schematic ..... D-1**

**E File Name Information ..... E-1**

**F Using a USB Thumbdrive ..... F-1**

**G Additional GPS Information ..... G-1**

**H Bravo Link Feature..... H-1**

**I Advanced Features (Optimal Waylines)..... I-1**

**J Alarms List..... J-1**

**Index**

# Introduction



**Figure 2-1. System 110/150 Console**

Congratulations on your purchase of your System 110/150 console. The System 110/150 is a guidance console designed and built by Topcon Precision Agriculture to assist you in your farming activities.

For clarity, System 110/150 refers to both the System 110 and the System 150 console. Both the System 110 and System 150 can be used to perform Manual Guidance, however only the System 150 configuration can perform Auto-Steering.

In this operators manual, you will find instructions on how to setup the physical connections of your console and also how to configure the software for use. The button interface is designed to be straight forward and intuitive, allowing you to setup quickly for immediate operation.

The System 110/150 is robust and is designed to operate in harsh

conditions. The water tight casing protects the System 110/150 from moisture and dirt, elements that can be a frequent cause for concern for most electronic equipment in the field.

While designed to be robust, these features exist to ensure the longevity of your System 110/150 and serve only as precautions to protect you console in the event of such cases. Never push the limits of your console and always keep the System 110/150 well within its operating parameters whenever possible.

Utilizing the guidance software, you will be able to determine the coverage of your field more accurately, whether it be seeding, spraying, spreading or harvesting. This allows you, as the user, to know precisely where you have driven your vehicle and how much area you have covered with it.

Moreover, rather than simply knowing how much area you have covered, the ability of the System 110/150 to create and save field boundaries means you can determine the size of the total area of your field before you even start your coverage.

After coverage, you will also be able to create a coverage report that will give you a summary of your job. This information includes the amount of area you covered, the total area of your field (if you created a boundary), the time spent mapping the field, the total time spent on the field and also the start and end date of your job.

With the System 110/150, you will have the opportunity to step ahead of the competition and improve your farming activity now and in the future.

# Using this Manual

The following chapters in this manual will assist you in setting up and understanding the features of your System 110/150:

- Chapter 3, “Basic Concepts of the System 110/150” provides an overview of how the System 110/150 functions
- Chapter 4, “System 110/150 Kit Components” provides a brief explanation on the function of each component in the System 110/150 Kit
- Chapter 5, “Setting up the System 110/150” instructs you on how to set up the physical connections of the System 110/150 before turning it on
- Chapter 6, “Getting Started” explains how to turn ON the System 110/150 and provides an overview of the buttons and functions that you will use when operating the System 110/150
- Chapter 7, “Creating a Boundary” explains how to create and save a boundary file. The boundary of your field will be saved and can be used over again for different application jobs
- Chapter 8, “Starting a New Application Job” explains how to create and save an application Job file. This is usually done after a boundary has been loaded and you want to start a new application job. This file will store your field application information, displaying the area that has been covered by your vehicle on a given field
- Chapter 9, “Using Guidance Patterns” shows you how to apply guidance patterns so that you can map your field more accurately
- Chapter 10, “Backup and Import files from Thumbdrive” explains how to backup your files to a thumbdrive and import them back onto your console when need them again

- Chapter 11, “Quick Start Reference” provides quick start instructions on how to create a boundary and start a new coverage job
- Appendix A, “Button Index” Provides you with an index of all the icons used in the console for your reference. This section also explains to you how to use the buttons on the alphanumeric screen to enter letters and numbers
- Appendix B, “Spare Parts List” lists the items that you would find in the Kit that your purchase

Appendix C, “Product Specifications” displays the electrical, physical and environmental specifications of the System 110/150. Listed also are the dimensions of the console

- Appendix D, “Tractor Schematic” has an image of a tractor that is used as reference when taking necessary measurements for the software to work
- Appendix E, “File Name Information” provides an overview of the different file types that are used during the operation of the System 110/150
- Appendix F, “Using a USB Thumbdrive” explains how to properly insert and remove a USB thumbdrive from the System 110/150 console
- Appendix G, “Additional GPS Information” covers additional GPS information that is not covered in the GPS Setup section
- Appendix H, "Bravo Link Feature" explains how to enable Bravo Link for use with the System 110/150 console
- Appendix I, “Advanced Features (Optimal Lines)” explains how to enable and use Optimal Lines with the System 110/150 console
- Appendix J, “Alarms List” lists all the alarms available on the console and brief descriptions of what they represent



# B asic Concepts of the System 110/150

The System 110/150 is a standalone guidance console and is installed to assist users with guiding their vehicle when in a field. It is attached to the inside of the vehicle cabin and provides a virtual guide that the user may follow for more accurate coverage of a given field

## GPS

The System 110/150 is compatible with both GPS and DGPS receivers and offers accuracy from entry-level GPS through DGPS free-to-air marine beacon and WAAS (where available) and subscription systems (including OmniSTAR®, VBS and HP), to Real-time Kinetic (RTK) radio systems offering a range of positioning accuracy to meet any application.

## Guidance

Using the GPS, the System 110/150 is able to identify the precise coordinates of the GPS antenna attached to the vehicle. Using this, the System 110/150 is able to generate a virtual map of your current location and place a representation of your vehicle on that map.

The geographic location of your vehicle on the map correlates with the geographic location of your vehicle in reality. This is how you are able to map the boundaries and the coverage of your field as you drive across it, as the GPS is able to track precisely the area that you have travelled across.

## Boundary Mapping

With boundary mapping, you are able to create an outline of your field that you can then use over again for any application job that you perform on that field.

The benefits of this include being able to know the exact size of your field before moving off and also being able to plan your coverage route before hand.

## Coverage Mapping (Application Mapping)

After knowing the precise area of your field with Boundary Mapping, Coverage Mapping can now be used to track the area covered by your vehicle. The benefits of this include being able to identify missed areas so that you may go over that area again.

Alternatively, it will also help you identify areas of overlap so in future you can pre-plan your driving route in order to reduce product wastage and over applying product over a given area.

# System 110/150 Kit Components

This chapter will provide you with an overview of the components that you will find in your System 110/150 Kit.

## System 110/150 Console



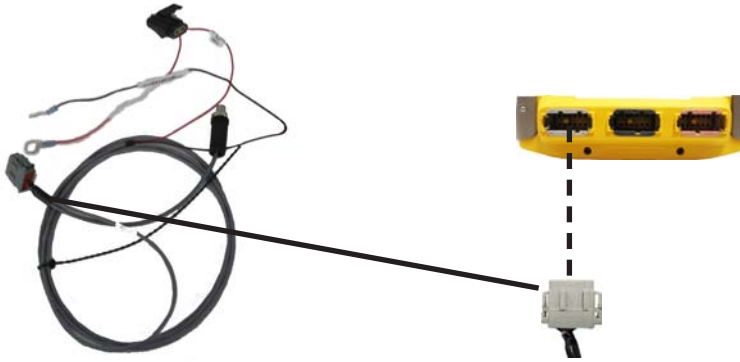
**Figure 4-1. System 110/150 Console**

The System 110/150 is the main console to which everything connects to.

## Lightbar

The lightbar sits on top of the System 110/150 console.

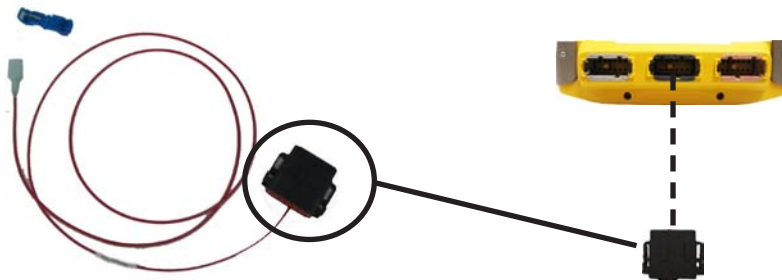
## Power/CAN Harness



**Figure 4-2. Power/CAN Harness**

The Power/CAN harness supplies power to the System 110/150 console and connects directly to the battery. The grey connector plugs into the grey port behind the System 110/150 console (Figure 4-2).

## Remote Hook Up Mapping Harness



**Figure 4-3. Remote Hook Up Mapping Harness**

This harness must be used for remote start/stop of the coverage map. This works by applying positive voltage to the harness to start mapping, and removing the voltage to stop mapping. The black connector plugs into the black port behind the System 110/150 console (Figure 4-3).

## Universal GPS Harness



**Figure 4-4. Universal GPS Harness**

This harness is used to allow data transmission between the System 110/150 and a GPS that has a DB9 connection and is able to supply power via a 2-Pin weatherpack connection. The pink connector plugs into the pink port behind the System 110/150 console (Figure 4-4).

## Receiver Specific GPS Harness



**Figure 4-5. Receiver Specific GPS Harnesses**

Receiver specific GPS harnesses connect directly from the pink 12-Pin Port to the GPS receiver. This harness will be different depending on the GPS receiver it is connecting to. The harness supplies 12V power to the GPS and NMEA data to the System 110/150 (Figure 4-5).

## GPS Receiver



**Figure 4-6. GPS Receivers**

GPS receiver profiles that are currently selectable in the System 110/150 include the AGI-3, SGR-1, AGE-1 and AGE-2 receivers. The System 110/150 is designed to support other third party GPS receivers, however it is recommended that the listed GPS receivers be used whenever possible to ensure the highest level of guidance performance and steering accuracy.

## RAM® Mount and Base



**Figure 4-7. RAM® Mount Arm and RAM® Mount Base**

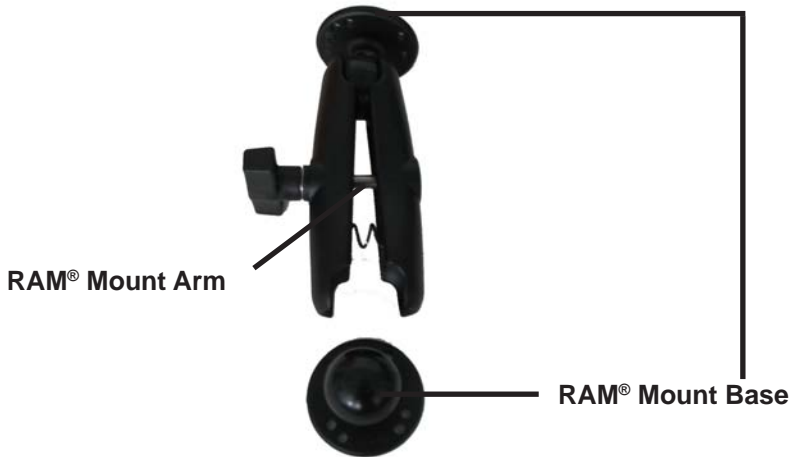
The RAM® Mount is used to mount the System 110/150 in the tractor cab.

# Setting Up the System

## 110/150

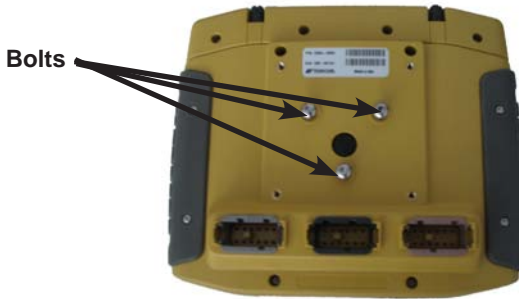
This chapter will provide you with instructions on how to setup the physical connections of the System 110/150.

### Mounting the Console to the Tractor Cab



**Figure 5-1. RAM® Mount Arm and RAM® Mount Base**

1. Locate the RAM® Mount component (Figure 5-1) from the kit.
2. Lightly turn the handle counter-clockwise, to release the ball mount on the spring side.



**Figure 5-2. System 110/150 Rear View**

3. Place the System 110/150 console face down, on a clean cloth to avoid scratching or dirtying the screen.
4. Line up the 3 holes on the Ball Mount with the 3 bolts behind the System 110/150 (Figure 5-2).
5. Using a 3mm Allen Key, attach the Ball Mount to the rear of the System 110/150 (Figure 5-3).



**Figure 5-3. Ball Mount Attached to Rear of System 110/150**

6. In a position that is easily accessible from the driver's seat, but will not impede your vision while driving, mount the RAM<sup>®</sup> Mount.





**Figure 5-4. Attach the System 110/150 to the RAM® Mount**

7. With both mounts secure, attach the System 110/150 to the inside of the tractor cabin using the RAM® Mount. Turn the handle (Figure 5-4) clockwise to tighten the connection between the Ball Mount on the System 110/150 and the RAM® Mount.

## GPS Fitup



**Figure 5-5. GPS receivers**

This section will vary depending on the GPS receiver you are using and you will need to refer to your specific installation manual for more specific instructions.

For GPS receivers which are selectable in the System 110/150 software you will be provided with a GPS specific harness that connects the GPS receiver to the System 110/150 console. This harness will support both power and data transmission between the console and the receiver.

For third party GPS units that have DB9 connections and alternate power sources, use the Universal GPS harness. This harness allows attachment to the System 110/150 Deutsch connector and also to the GPS DB9 connector. There is also switched power supplied by the console to allow the third party GPS to be turned ON/OFF when the System 110/150 is switched ON.



### **WARNING**

**Ensure that harnesses are secured properly away from heat and moving machine parts. Improper placement can result in permanent damage to the harness which may cause your system to stop functioning.**



**Figure 5-6. Fit GPS Harness to Color Coded Connection Port**

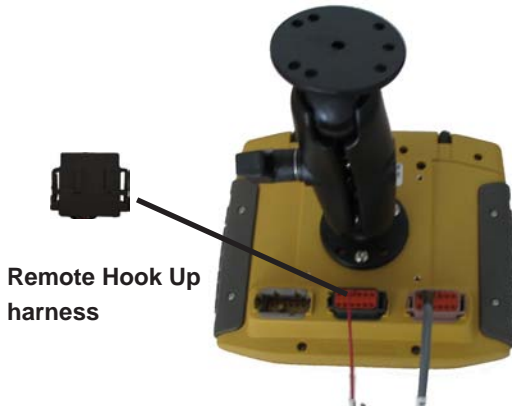
All GPS receiver harnesses for this system connect to the console in the same way using a Deutsch connection (figure 5-6). Connect this to the color coded port on the System 110/150 to complete the GPS fit-up.



### NOTICE

*There is only one way to plug the connectors into the port. When done properly, the connectors should slot in and the side clips will click.*

## Remote Hookup



**Figure 5-7. Fit Remote Hook Up Harness to Color Coded Connection Port**

1. Connect the Remote Hook Up harness to the center port (figure 5-7). This harness allows Guidance mapping to be remotely activated.

There is a “snap to” electrical connector supplied within the kit.

2. Locate a positive input power source from the controller that is being used, and connect the “snap to” connector .
3. Connect the loose female spade connector on the Remote Hook Up harness to the “snap to” connector.



### **WARNING**

**There should be a positive voltage through the applicator wire when the Master Switch is ON and zero voltage when the Master Switch is OFF.**

## Power



**Figure 5-8. Fit Power/CAN harness to Color Coded Connection Port**

1. Connect the Power/CAN harness Deutsch connector to the left port (figure 5-8). This harness supplies positive voltage to the System 110/150.
2. Connect the leads on the other end of the harness directly to a battery. Red leads should connect to the positive terminal and black leads should connect to the negative terminal.



### **WARNING**

**The console is rated 9-32VDC, do not attach the leads to anything outside this voltage rating. Also ensure that the terminals are connected as stated in the instructions, as reversing the polarity can damage the console.**



# Getting Started


This chapter will provide you with instructions on how to turn on the System 110/150 as well as explain the functions of the buttons you will find on the *Working* screen.



**Figure 6-1. System 110/150 front view**

1. Ensure that the System 110/150 is connected to a power supply.
2. Press and hold the Power button (for approximately 1 second) to turn on the System 110/150 console.

The green LED in the middle of the button will turn on to indicate that the System 110/150 has power and the startup sequence will begin.

3. A **Warning** screen (Figure 6-2) will appear displaying the products disclaimer.
4. **Read the entire disclaimer before proceeding.**
5. Select the down arrow button  to scroll down the screen.

### WARNING

This Topcon Precision Agriculture console and software (System) controls guidance, The System may be used to assist with planting, spraying, spreading and fertilizing (Applications).

**IMPORTANT:** You must read and follow the appropriate System manuals and have appropriate training before use. If you do not operate the System properly it will not correctly assist with guidance or apply the Applications to your requirements. This can result in damage to property and equipment, serious injury to persons, poor yields and/or crop damage or failure.

You are responsible for accurately entering the information required for the System to apply the Applications to your requirements (including measurement units (e.g. metric or imperial), vehicle dimensions, rate of application and vehicle speed). You are responsible for the calibration of the System and ensuring Applications are applied in accordance with their specifications (including wind, temperature and moisture conditions, dilution and withholding periods).

Failure by you to comply with the above may result in incorrect operation of the System. You should monitor at all times that the System is performing as required.

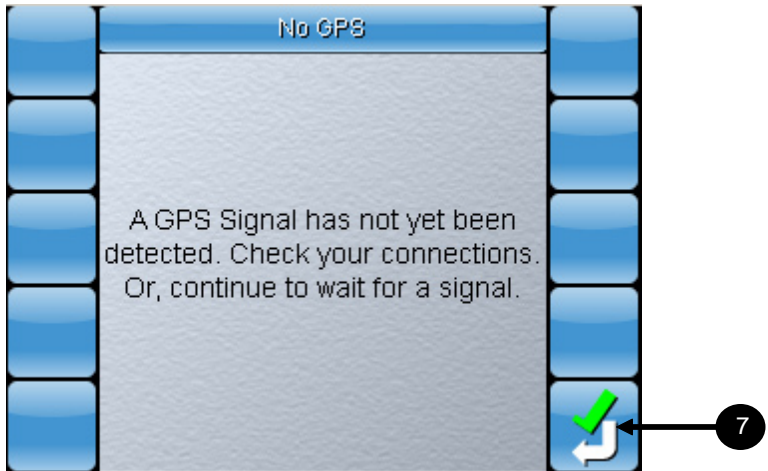
By selecting the YES button you agree that you:

- have read the above, have appropriate training and have read the System manual; and
- assume control and responsibility for the use of the System.

Figure 6-2. Warning Screen



6. Select **YES** if you have read the disclaimer and accept the conditions of use.



**Figure 6-3. No GPS Signal Detected Notice**

If a GPS signal is not detected, the screen shown in figure 6-3 will appear. If you have a GPS antenna connected and this screen appears, ensure that all harnessing is correct and refer to GPS Settings on page 6-41 to verify if the GPS is receiving.

7. Select  to access the **Working** screen.



### NOTICE

*Selecting the acceptance button will allow access to the System 110/150 Working screen, however Guidance will not be activated until a GPS signal has been detected.*























### NOTICE

*The clock on the console must be set the first time the System 110/150 is turned on with a GPS signal. The clock only needs to be re-set if the System 110/150 is taken into a different time zone. Refer to page 6-26 for instructions to set the clock.*

## Overview of Functions on Main Screen



Figure 6-4. System 110/150 Main Working Screen

Label	Description	
a1 		Accesses Console information
a 		Accesses the Guidance screen
b 		Accesses the Guidance Setup screen
c 		Accesses the GPS Settings screen
d 		Accesses the Job Setup screen
e 		Accesses the System Memory and Diagnostics screen
f 		Day or night mode
g 		Reprogram the Console
h 		Additional Console features
i 		Access Boom Leveller Options screen (not displayed when feature is not enabled)

## a. The Guidance Screen












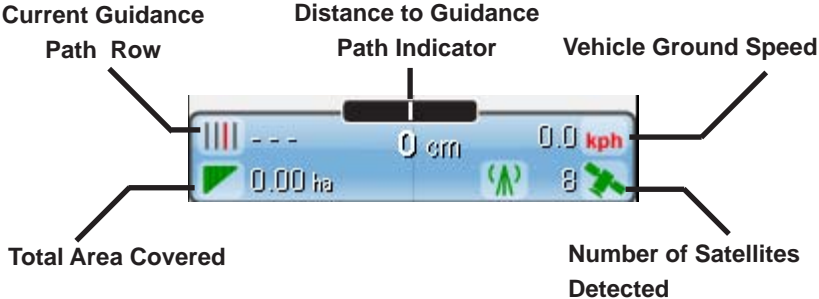
This section will provide you with an introduction to the features found on the **Guidance** screen. Select  (figure 6-4) to access the **Guidance** screen (figure 6-5).



Figure 6-5. Guidance screen with Sprayer and Auto-steer features enabled


Label				Description
a1				Returns you to the Main screen
a4				Accesses the Sprayer Setup screen (not accessible when feature is not enabled)
a3				Record/Pause/Complete/Create a boundary
a8				Accesses the Select Guidance Pattern screen
a9				Guide options for selected guidance pattern
a6				Zoom in for closer view of coverage map
a5				Zoom out for wider view of coverage map
a7				Changes the viewing perspective
a2				Indicates whether mapping is ON or OFF
a10				Auto-Steering Buttons (greyed out when feature is not enabled)

## Display Bar items



The display bar allows you to monitor a limited number of items while using the console.

### a1. The Main Screen

Select  to return to the *Main* Screen. The *Main* Screen (figure 6-4 on page 6-4) is where you can access all the main settings of the System 110/150 console.

### a2. Mapping ON/OFF indicators

This button changes, depending on which coverage map option is selected. This is configured under *Coverage Sense Setup Screen*, page 6-31.

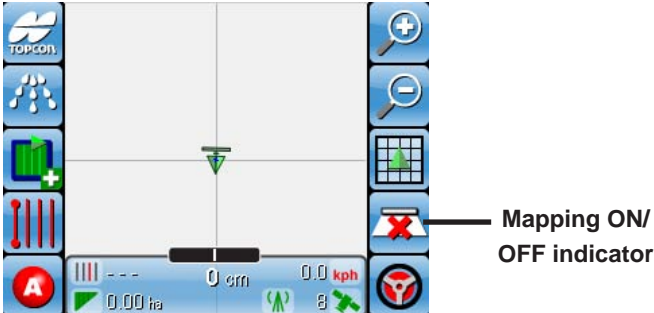
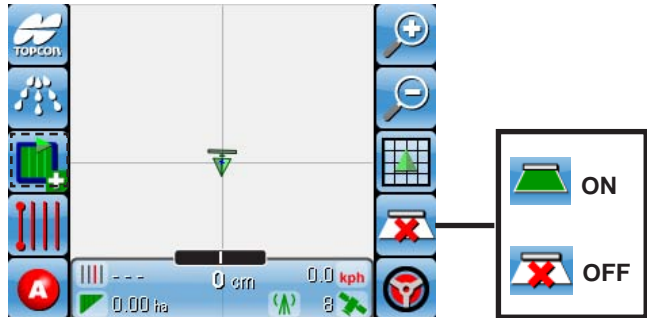


Figure 6-6. Guidance Screen

Coverage mapping can be set to either Manual Coverage or Switched Coverage.

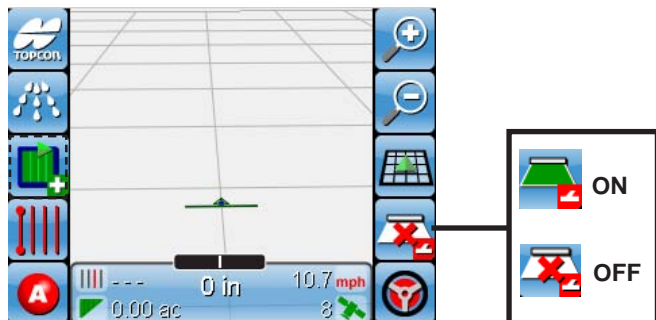
If **MANUAL** is selected, the screen will appear as below.



**Figure 6-7. Guidance Screen with MANUAL Coverage Mapping**

The tractor icon appears and can be selected to turn mapping ON and OFF.


If **SWITCHED** is selected, the screen shown in figure 6-8 will appear.



**Figure 6-8. Guidance screen with SWITCHED coverage mapping**


The tractor icon with a switch appears, and will turn ON when positive voltage is detected at the switch sensor. The voltage may come from sources ranging from a manual switch in the cabin, to a sensor detecting when a sprayer section is turned on.

### a3. Boundary creation buttons

Once a new boundary file has been created by selecting , the button will change at different stages of the boundary creation process. What these buttons are and when to use them are explained in the following section.




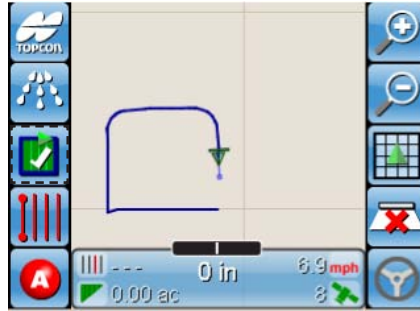
**Figure 6-9. Boundary Mapping OFF**

Select  to start recording the boundary. After selecting this button, you are expected to begin driving along your field boundary.





**Figure 6-10. Boundary Mapping ON**

Select  to pause boundary recording. It is advisable that you stop your vehicle before selecting this button. This is to avoid any gaps appearing in the boundary map on your display.



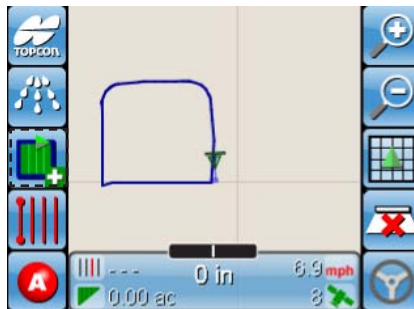
**Figure 6-11. Close Boundary End points**

This icon  will appear when you are within 50 meters of the start point. Selecting  will draw a straight line between your end points to complete your boundary. Alternatively, you can drive your vehicle to within 5 meters of the start point and the boundary will close itself automatically.




**NOTICE**

*The Boundary perimeter must be greater than 100 meters before it can be closed*




**Figure 6-12. Create New Boundary File**

Select  if you have completed your boundary and want to create a new boundary file. This button will store your currently displayed boundary and create a new empty boundary file so you can immediately proceed to creating your next field boundary.

### a5. Zoom Out




Figure 6-13. Zoomed out overhead view

This button  is for zooming out of the *Guidance* screen. Zooming out helps you get a wider view of your map as you are drawing it on your *Guidance* screen.

### a6. Zoom In



Figure 6-14. Zoomed in Overhead View

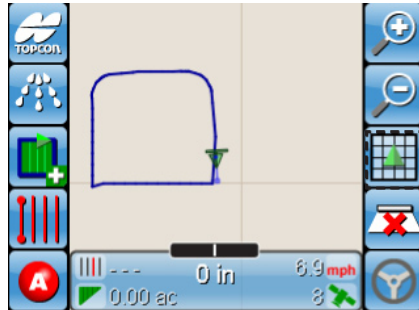
This button  is for zooming into the *Guidance* screen. Zooming in helps you to get a closer view of your map as you are drawing it on your *Guidance* screen.



## a7. Change Viewing Perspective

There are 3 main views that you can select from and they are Overhead view, North Up and Perspective.

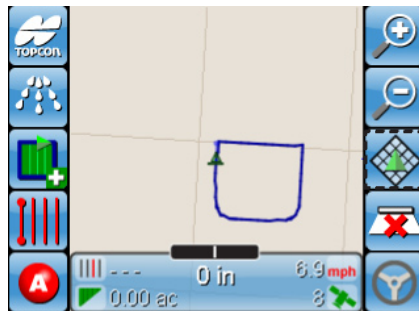
### Overhead View



**Figure 6-15. Overhead View**

This gives you a top down view of your vehicle and map.

### North Up



**Figure 6-16. North Up View**

North Up is similar to overhead view, except that your vehicle is always facing North relative to the screen.

## Perspective



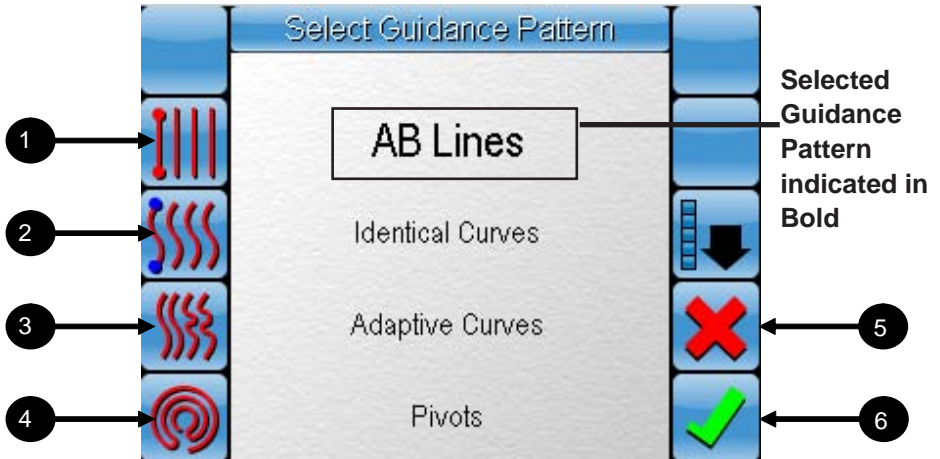
**Figure 6-17. Perspective View**

Perspective view allows you to view your virtual map as you might see your path from behind the vehicle.







## a8. Select Guidance Pattern screen

Select  to access the *Select Guidance Pattern* screen.

This screen will allow you to select a Guidance pattern to help guide your vehicle as you move across a given field.



**Figure 6-18. Select Guidance Pattern screen**

1. Select  to select AB Lines Guidance pattern.
2. Select  to select Identical Curves Guidance pattern.
3. Select  to select Adaptive Curves Guidance pattern.
4. Select  to select Pivots Guidance pattern.
5. Select  to cancel the selection and return to the *Guidance* screen.
6. Select  to accept the selection. If accepted, you will be taken to a screen similar to the one shown in figure 6-18. This screen appears when a Guidance pattern is accepted. Here you

will be able to save, edit, delete or import a Guidance pattern file.

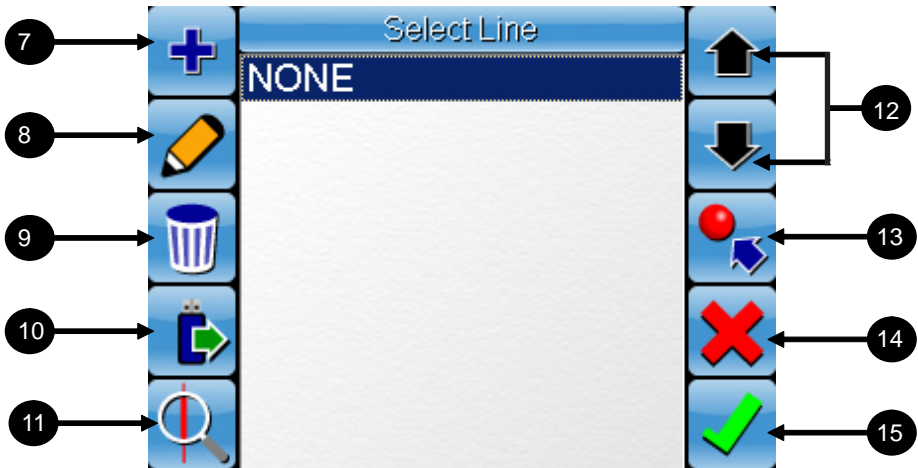












Figure 6-19. File Selection screen

7. Select  to create a new guidance pattern file. This is usually done when creating a boundary or after a boundary has been created.
8. Select a file and select  to rename an existing file.
9. Select a file and select  to delete an existing file.
10. Select  to load a file from a USB thumbdrive. When this option is selected, you will be taken to another file selection screen similar to the one above. Select a file and select the green arrow button to import the selected file to the *File Selection* screen (Figure 6-19).
11. Select  to locate only AB Line guidance patterns with GPS coordinates within 2km of your current GPS location. **Find** can only be used to locate AB Lines guidance patterns.
12. Select the up and down arrow buttons   to select a file.

13. Note - This button only appears when AB lines is selected as the guidance pattern. Selecting  will take you to another screen that will allow you to manually enter the longitude and latitude coordinates for A and B (refer page 6-16).
14. Select  to cancel the selection and return to the **Guidance Pattern Selection** screen.
15. Select  to accept the selection and return to the **Guidance Pattern Selection** screen.

## Saving Guidance Patterns for Future Use

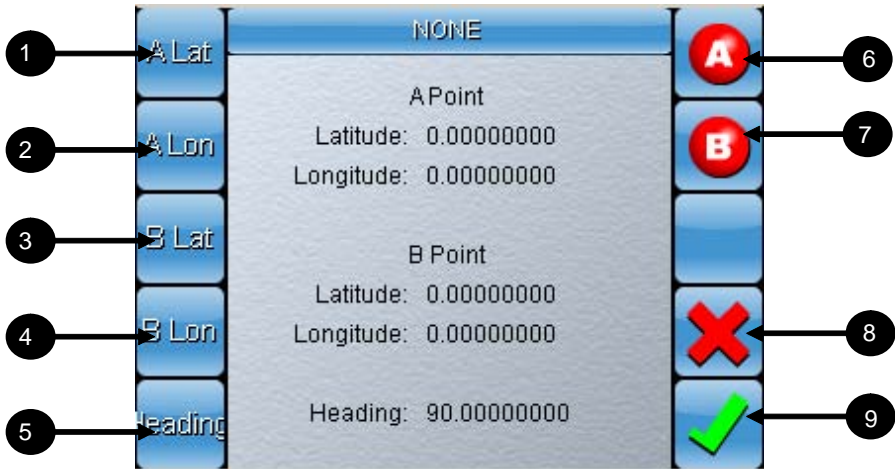
AB Lines, Pivots, Identical Curves and Adaptive Curves can be set and saved for use in specific fields. These lines can then be recalled in future when performing another application job in the same field.

Creating and saving these lines can ONLY be done while the vehicle is on the field and a Boundary file or Job file has been created. The only exception to this is the manual entry of A and B point coordinates.



### AB Lines

Creating an AB line can be done in either one of two ways. You can either select an A and a B point while you are on your field and your GPS is active or you can enter the coordinates of the A and B points manually. This is done by creating a new AB line file and selecting item 13 on figure 6-19. You will then be taken to a screen similar to as shown in figure 6-20.

Follow the instructions on page 6-16 to manually enter A and B point coordinates.



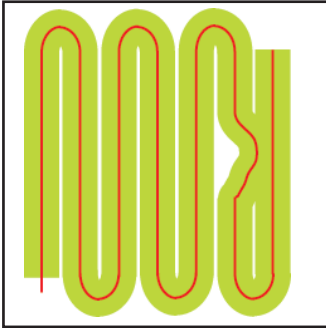
**Figure 6-20. Manually setting AB points screen**

1. Select and enter the co-ordinates for the Point A Latitude.
2. Select and enter the co-ordinates for the Point A Longitude.
3. Select and enter the co-ordinates for the Point B Latitude.
4. Select and enter the co-ordinates for the Point B Longitude.
5. Instead of entering coordinates for the B point, you can select the heading in degrees after the A point is selected.
6. Select  to place the first point of the parallel run line.
7. Select  to place the second point.
8. Return to *Select Guidance Pattern* screen without making any changes.
9. Save changes and return to *Guidance* screen.

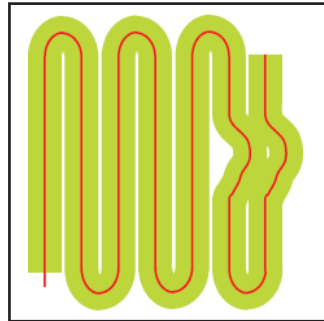
Refer to page 9-17 for more information on creating and saving AB Lines.

## Identical Curves vs Adaptive Curves

For the System 110/150 console, there are two curve options. These options are Identical Curves and Adaptive Curves. The differences between the two Curve options are explained below.



**Figure 6-21. Identical Curves**



**Figure 6-22. Adaptive Curves**

When using Identical Curves (Figure 6-21), every Identical Curve guidance path is a replica of the initial runline created with coverage mapping active. This is similar to AB Lines whereby all guidance paths that are drawn will be based ONLY on the first guidance path. This is different in Adaptive Curves (Figure 6-22). For Adaptive Curves, every guidance path that is created is based on the previous path taken by the vehicle.

This means that Adaptive Curves guidance path will change with each pass that is made, unlike Identical Curves which is the same for every pass. There are 3 modes that can be selected for Adaptive Curves to suit different field coverage methods. These modes are only accessible when Auto-Steering with AGI-3 is enabled. These modes are Coverage Triggered, Manual End Of Row and U-Turn Recognition.



### NOTICE

*Curved guidance path lines will not appear if they are too short. The lines must be long enough for the software to detect enough unique points otherwise a line will not be displayed.*

## Coverage Triggered

In Coverage Triggered mode, the guidance path begins to be drawn when coverage mapping is turned on. The end point of the guidance path is defined when coverage mapping is turned off.

This means that the guidance path will only be tracked when coverage mapping is on. When coverage mapping is turned off and on again, this initiates the tracking of a new guidance path.

This mode is particularly useful when used with Auto Section Control.

## Manual End Of Row

In Manual End of Row mode, the beginning of the guidance path is defined when an A point is set and the end of the guidance path is defined when a B point is set.

This is similar to how AB Lines are set except that the guidance path is tracked based on the actual path of the vehicle and not on the direct distance between the A and B point.

This mode is the preferred choice when performing round and round coverage of a field

## U-Turn Recognition

U-Turn Recognition mode is the same as Manual End of Row mode with one additional feature. In U-Turn Recognition mode, the console will detect when your vehicle is making a U-Turn and will automatically close the guidance path.

This means that instead of setting the B point to close the guidance path, the System 110/150 will do this automatically when a U-Turn is detected.

U-Turn Recognition mode is the preferred choice when performing row by row coverage of a field.



## Pivots

Select the Pivot option and drive the pivot track.

Once sufficient data has been gathered within one lap, a circle is drawn on the screen. The size of the circular guidance path will depend on the vehicle's distance from the pivot point. Eg. The circular guidance path will be small when the vehicle is close to the pivot point and large if the vehicle is far from the pivot point.

Saving and recalling pivot templates is the same as saving and recalling AB Lines, with the exception that there are no A/B points, and the coverage mapping must be ON.

### a10. Auto-Steering Button

When the console is in System 110 mode, this option becomes inaccessible. When the console is in System 150 mode, this option will display 3 different colors depending on the situation.



The auto-steering button will turn red if there are any issues that prevent Auto-Steering from being engaged. If the button is pressed when it is in this state, the **Steering Status** screen will be displayed. On the **Steering Status** screen, any item that is preventing Auto-Steering from engaging will display red instead of green.



Auto-Steering may be engaged at any time when the auto-steering button is white.

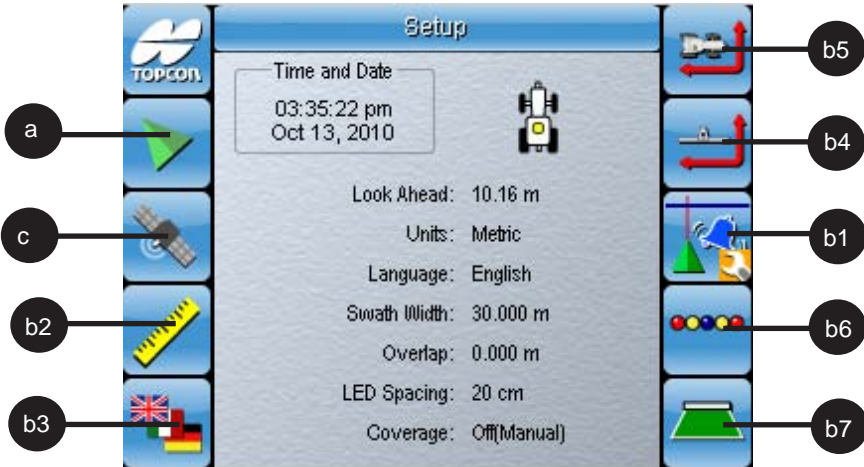


When the auto-steering button turns green, this indicates that Auto-Steering has been engaged and is currently in use.










## b. Guidance Setup Screen

Select  to access the *Guidance Setup* screen.

This section will provide you with an introduction to the *Guidance Setup* screen.



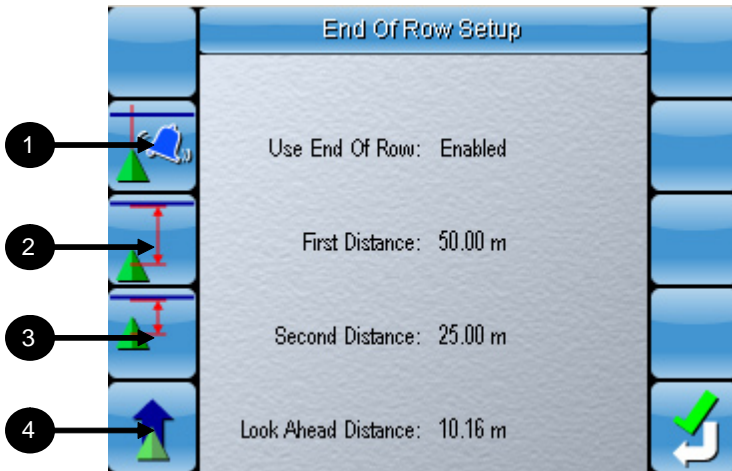
**Figure 6-23. Guidance Setup Screen**

Label	Description
<b>a</b> 	Returns you to the Guidance screen
<b>c</b> 	Accesses the GPS Settings screen
<b>b1</b> 	Accesses the End of Row Setup screen
<b>b2</b> 	Accesses the Units and Time Settings screen
<b>b3</b> 	Accesses the Select Language screen
<b>b4</b> 	Accesses the Implement Setup screen
<b>b5</b> 	Accesses the GPS Antenna Location Setup screen
<b>b6</b> 	Accesses the Lightbar Setup screen
<b>b7</b> 	Accesses the Coverage Sense Setup screen





## b1. End of Row Setup

Select  to access the *End of Row Setup* screen.

This screen allows you to adjust the GPS First Distance, Second distance and Look Ahead distance. Here you can also enable or disable the End of Row Alarms.



**Figure 6-24. End of Row Setup Screen**

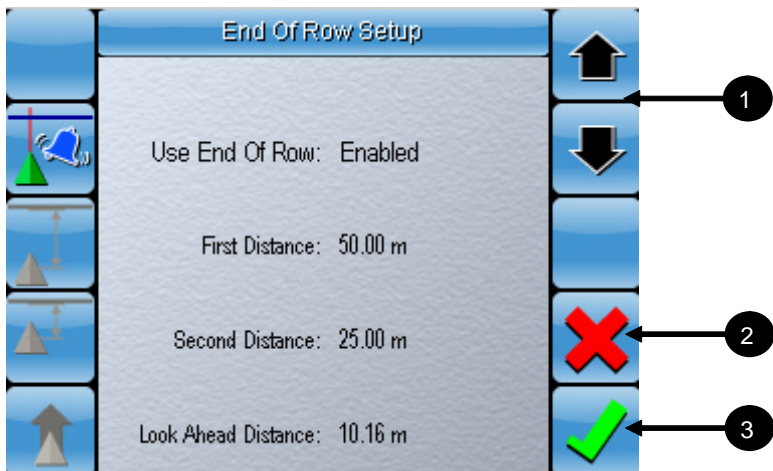
1. Select  to access the *Use End of Row Setup*.
2. Select  to access the *First Distance Setup*.
3. Select  to access the *Second Distance Setup*.
4. Select  to access the *Look Ahead Distance Setup*.

## Use End of Row



Select  (figure 6-24) to access the *Use End of Row Setup*.

When End of Row is enabled, this activates the End of Row alarms. The End of Row alarms will sound depending on the distances set under First Distance, Second Distance and Look Ahead Distance and only when a Boundary is loaded.


These distances represent the First, Second and Look Ahead distance of the vehicle from the Boundary (refer to Chapter 7 for information on how to create a Boundary).



### Use End of Row

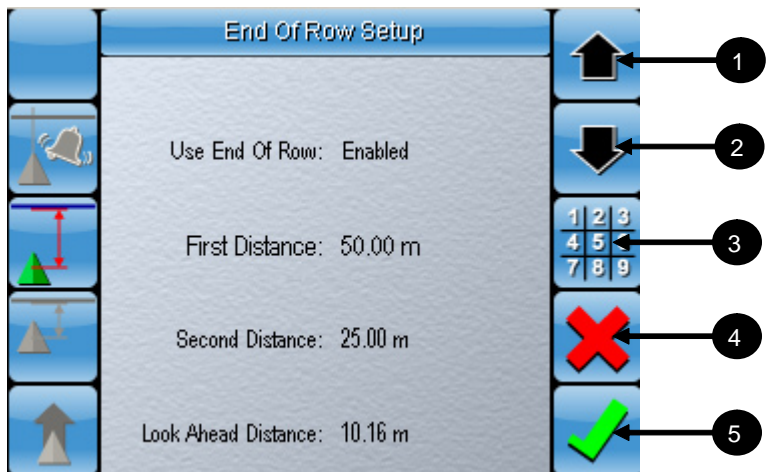
1. Use the **up** and **down arrows** to select between *Enabled* and *Disabled*.
2. Select  to cancel the changes and return to the *End of Row Setup* screen.
3. Select  to accept the changes and return to the *End of Row Setup* screen.

## First Distance




Select  (figure 6-24) to access the *First Distance Setup*

The First Distance is the first alarm indicating that the first distance from the Boundary edge has been reached. This distance is measured from the tip of the Look Ahead Distance extending from the GPS antenna position ahead of the tractor.


This means that if the First Distance is 50m and the Look Ahead Distance is 10m, the First Distance alarm will sound when the First Distance is 60m from the center of the vehicle GPS Antenna.



### First Distance

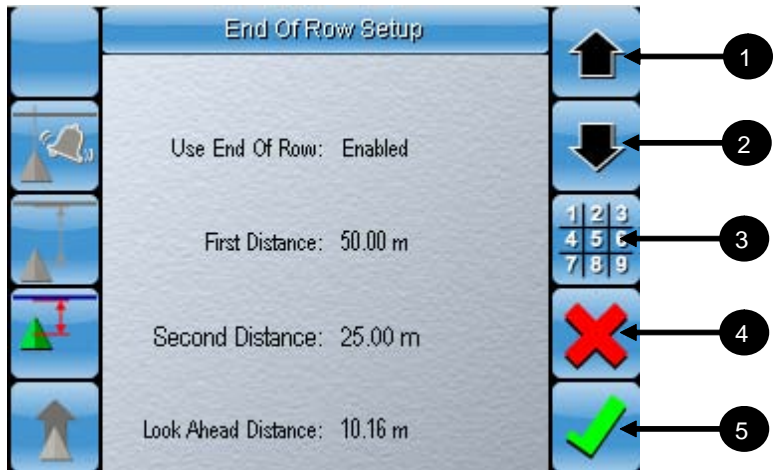
1. Select the **up arrow** to increase the value.
2. Select the **down arrow** to decrease the value.
3. Select  to enter a more specific value.
4. Select  to cancel the changes and return to the previous screen.
5. Select  to accept the changes and return to the previous screen.

## Second Distance




Select  (figure 6-24) to access the *Second Distance Setup*.

The Second Distance is the second alarm indicating that the second distance from the Boundary edge has been reached.. This distance is measured from the tip of the Look Ahead Distance extending from the GPS antenna position ahead of the tractor.

This means that if the Second Distance is 25m and the Look Ahead Distance is 10m, the Second Distance alarm will sound when the Second Distance is 35m from the center of the vehicle GPS Antenna.



### Second Distance

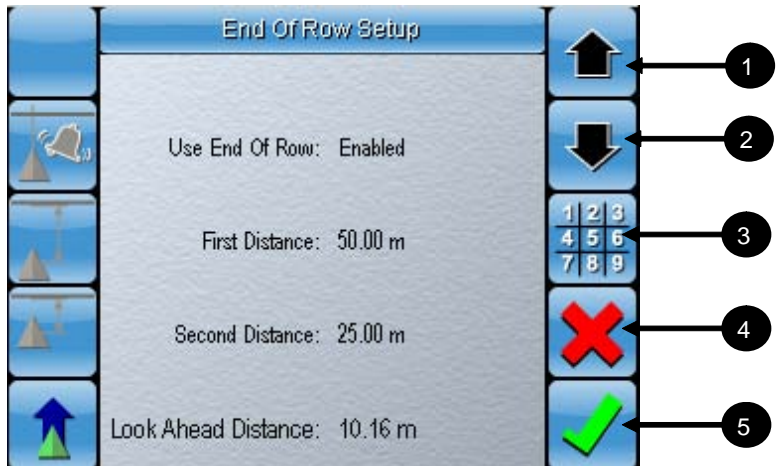
1. Select the **up arrow** to increase the value.
2. Select the **down arrow** to decrease the value.
3. Select  to enter a more specific value.
4. Select  to cancel the changes and return to the previous screen.
5. Select  to accept the changes and return to the previous screen.

## Look Ahead Distance




Select  to access the *Look Ahead Distance Setup*.

This is visually displayed on the console Guidance screen as the length of the indicator stick on the front of the vehicle icon when the console is in Guidance Mode without Auto-Steering.

The visual indicator is designed to assist you in estimating the distance on the console screen for improved manual steering performance.

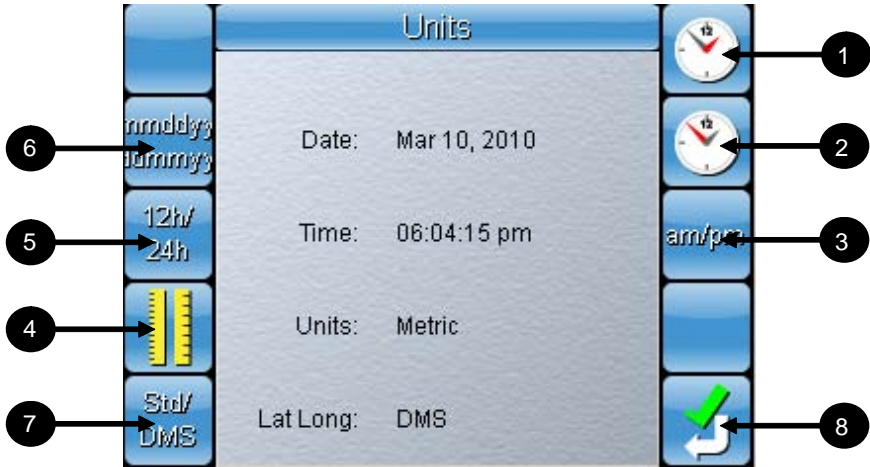


### Look Ahead Distance

1. Select the **up arrow** to increase the value.
2. Select the **down arrow** to decrease the value.
3. Select  to enter a more specific value.
4. Select  to cancel the changes and return to the previous screen.
5. Select  to accept the changes and return to the previous screen.







## b2. Units and Time Settings

Select  to access the *Units and Time Settings* screen.




**Figure 6-25. Units and Time Settings Screen**

Refer Appendix A, Page A-9 for instructions on using the Numerical Keypad.

1. Select  to set the hour.
2. Select  to set the minutes.
3. Select  to switch between am and pm.
4. Select  to switch between Metric and Imperial units.
5. Select  to switch between 12-hour clock display and 24-hour clock display.
6. Select  to switch between day/month/year date display and month/day/year date display.
7. Select Std/DMS to switch between Standard and DMS.



8. Select  to accept the changes.

**NOTICE**

**NOTICE**

*The clock has to be set the first time the System 110/150 is turned on with a GPS signal. The clock only needs to be re-set if the System 110/150 is taken to a different time zone.*





b3. Select Language

Select  to access the **Select Language** screen (figure 6-23).

This screen allows you to select the language that will be applied to all text in the console.



**Figure 6-26. Select Language Screen**

1. Select on the up and down arrows   to highlight the language you want to select.
2. Select  to cancel your selection and return to the **Guidance Setup** screen.
3. Select  to confirm your selection and you will be returned to the disclaimer screen in the language you selected.

## b4. Implement Setup

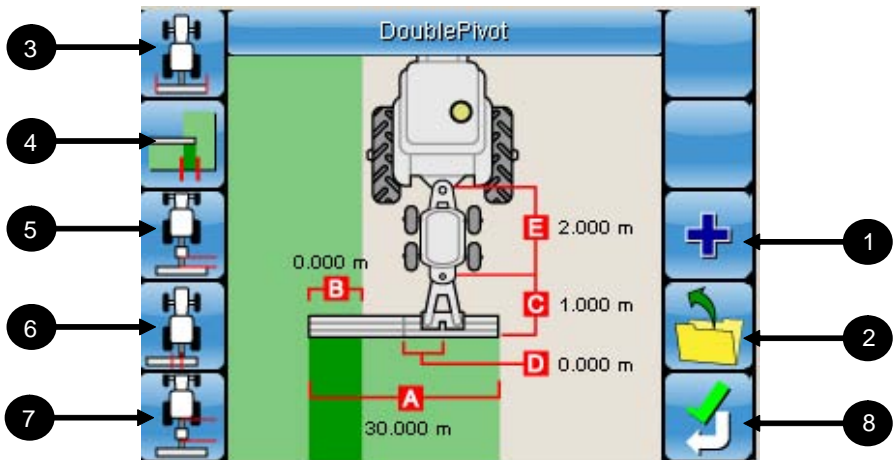
Select  to access the *Implement Setup* screen.

This screen allows you to adjust the swath width, the inline offset, the implement offset and the implement width.





You may select between the four implement types listed below:




- Rigid
- Header
- Pivot
- Double-Pivot

The tractor icon on the screen changes depending on the selected implement type.




**Figure 6-27. Implement Setup Screen**

1. Select  (Figure 6-27) to create a new Implement Setup.
2. Press  to choose a previously saved implement setup.
3. Select  to enter the Swath Width.
4. Select  to enter the Overlap value. Positive value for overlap and negative value for underlap.

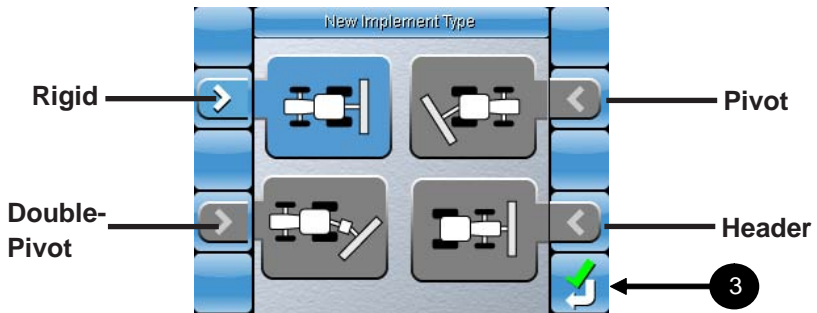
5. Select  to enter the Implement rear offset. An offset to the rear of the fixed wheel is positive and to the front is negative.
6. Select  to enter the Inline Offset. An offset to the left of the centerline is negative and to the right is positive.
7. Select  to enter the Trailer Offset. This option is only available when Double-Pivot is selected as the Implement Type.

Refer to Appendix D for schematics showing you how to take the above measurements for all the implement types.


8. Select  to accept the settings.

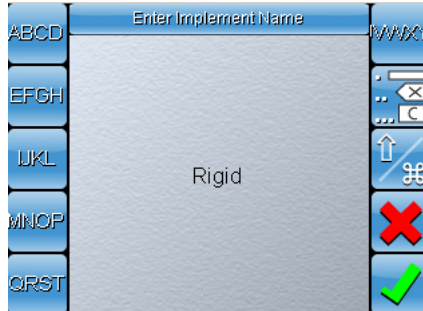
## Setting Up a New Implement

1. Select **New** (Figure 6-27) to enter the **New Implement Type** screen (Figure 6-28).



**Figure 6-28. New Implement Type screen**


2. Select the Implement Type. In Figure 6-28, the arrow next to **Rigid** is blue indicating that **Rigid** is the currently selected implement type.
3. Select  to confirm your selection.



**Figure 6-29. New Implement Type screen**

4. You can enter a new implement name or use the generated name. Since the **Rigid** Implement Type was selected, the default generated name is 'Rigid'.

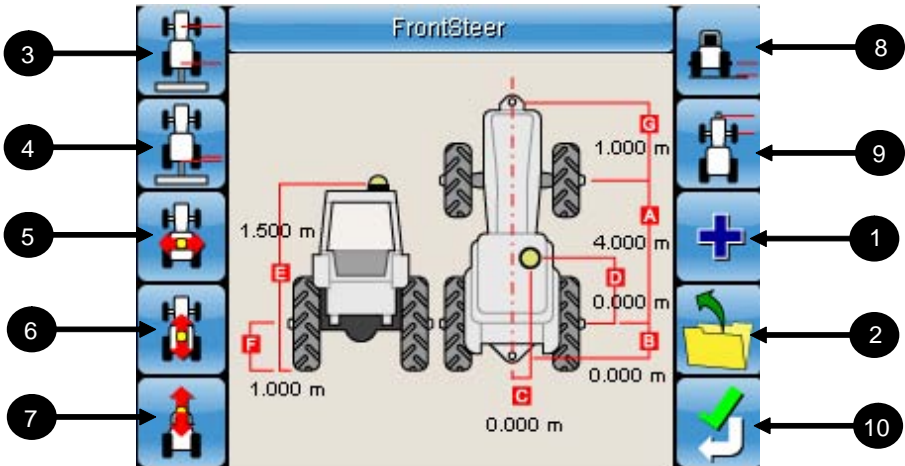
Refer to Appendix A, Page A-9 and A-10 for instructions on using the Alphanumeric pad.

5. Select  to confirm your entered name. You be returned automatically to the *Implement Setup screen*.

## b5. GPS Antenna Location Setup






Select  to access the *GPS Antenna Location Setup* screen.

This screen allows you to enter the GPS Antenna position in relation to the vehicle.







**Figure 6-30. GPS Antenna Location Setup Screen**


Refer Appendix A, page A-9 to use the numeric keypad.

1. Select  (Figure 6-30) to create a new GPS Antenna Location setup.
2. Press  (Figure 6-30) to choose a previously saved GPS Antenna Location setup.
3. Select  to enter the Wheel Base Length. This is the distance between the front and rear wheel axle.
4. Select  to enter the Tow Point Offset. This is the distance from the rear wheel axle to the tow point.
5. Select  to enter the GPS Steering Location. If the GPS antenna is offset to the left of the centerline the value is


negative. If it is to the right the value is positive.

6. Select  to enter the Antenna Location. The antenna position will be positive when it is in front of the rear axle and negative when it is behind the rear axle.
7. Select  to enter the Antenna Height.
8. Select  to enter the Axle Height.
9. Select  to enter the Front Hitch Offset.

Refer to Appendix D for a schematic showing you how to take the above measurements.

10. Select  to accept the settings.

### Setting Up a New GPS Antenna Location

1. Select  (Figure 6-30) to enter the **New Vehicle Type** screen (Figure 6-31).

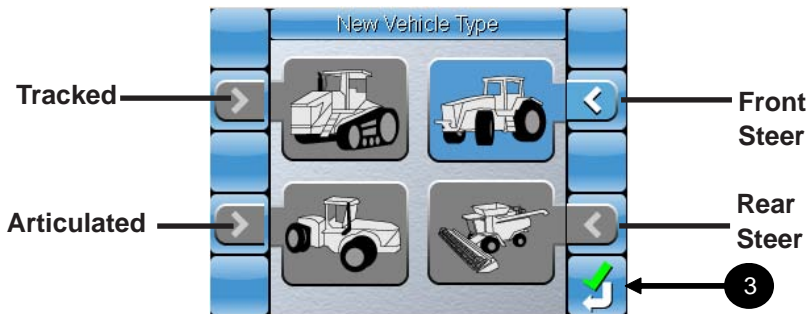



Figure 6-31. New Vehicle Type screen


2. Select the Vehicle Type. In figure 6-31, the arrow next to **Tracked Vehicle** is green indicating that **Tracked Vehicle** is the currently selected implement type.
3. Select  to confirm your selection.



**Figure 6-32. New Implement Type screen**

4. You can enter a new name or use the generated name. Since the **Rigid Implement Type** was selected, the default generated name is 'Rigid'.

Refer to Appendix A, Page A-9 and A-10 for instructions on using the Alphanumeric pad.

5. Select  (Figure 6-32) to confirm your entered name. You be returned automatically to the **GPS Location Setup screen**.





## b6. Lightbar Setup Screen

Select  to access the *Lightbar Setup* screen.

This screen allows you to configure your lightbar to suit your personal preferences.



**Figure 6-33. Lightbar Setup screen**

1. Select  to access the LED Spacing setup.
2. Select  to access the LED Mode setup.
3. Select  to access Lightbar Mount setup.
4. Select  to return to the *Guidance Setup* screen.



## LED Spacing

Select  to access the LED Spacing setup.


There are 19 LEDs on the lightbar. The lightbar is used to visually indicate the position of the center of your vehicle from the center of a guide line.



This option allows you to set the distance value each LED on your lightbar will represent when the LED is lit.

For example, if you enter a value of 7 inches, and the center of your vehicle drifts 21 inches to the left of a guide line, then 3 LED's on the left of your lightbar will be lit.



**Figure 6-34. LED Spacing**

1. Select the **up arrow** to increase the LED spacing value.
2. Select the **down arrow** to decrease the LED spacing value.
3. Select  to enter a more specific LED spacing value.

4. Select  to cancel the changes and return to the previous screen.
5. Select  to accept the changes and return to the previous screen.

## Specific LED Spacing value

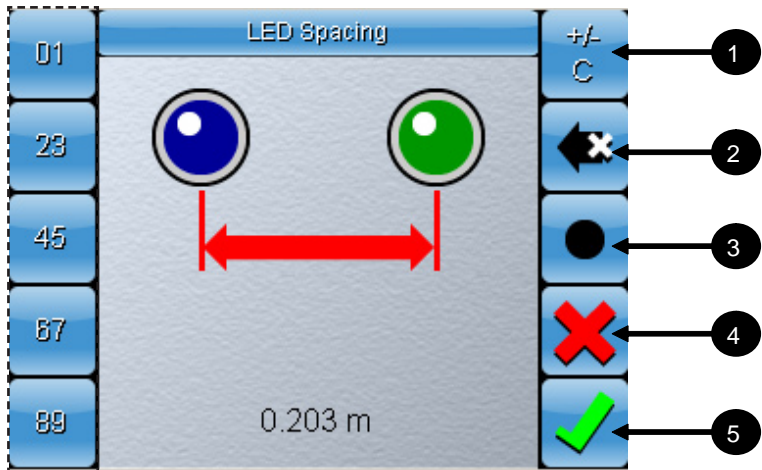








Figure 6-35. Enter LED Spacing Screen

Refer Appendix A, page A-9 for instructions on using the Numerical Keypad.

1. Select  twice to clear the current LED spacing.
2. Select  to undo the last entry.
3. Select  to enter decimal point values.
4. Select  to cancel the changes and return to the *Guidance Setup* screen.
5. Select  to accept the changes and return to the *Guidance Setup* screen.

## LED Mode

Select  to access the LED Mode setup.



There are 2 options available under LED Mode. These are **Drive Towards** and **Drive Away** options.

If **Drive Towards** is selected, the LED's on the left of the lightbar will light up as you drive away from the guidance path towards the right.

If **Drive Away** is selected, the LED's on the right of the lightbar will light up as you drive away from the guidance path towards the right. Refer to page 9-30 for an example.



**Figure 6-36. LED Mode**

1. Use the up and down arrows to select between **Drive Towards** and **Drive Away**
2. Select  to cancel the changes and return to the *Guidance Setup* screen.
3. Select  to accept the changes and return to the *Guidance Setup* screen

## Lightbar Mount

Select  to access the *Lightbar Mount setup*.

There are 3 options available under *Lightbar Mount*. These are **On Console**, **Remote** and **No Lightbar**.



Select **On Console** when the lightbar is mounted directly on the console.

Select **Remote** when the lightbar is mounted on a hotshoe.


Select **No Lightbar** when no lightbar is not connected.



**Figure 6-37. Lightbar Mount**

1. Use the up and down arrows to select between **On Console**, **Remote** and **No Lightbar** options.
2. Select  to cancel the changes and return to the *Guidance Setup* screen.
3. Select  to accept the changes and return to the *Guidance Setup* screen.

## b7. Coverage Sense Setup screen

Select  to access the *Coverage Sense Setup* screen. This section will allow you to set the logging parameters for the coverage map.

There are 2 options available under Coverage Sense setup. These are **Manual** and **Switched**.

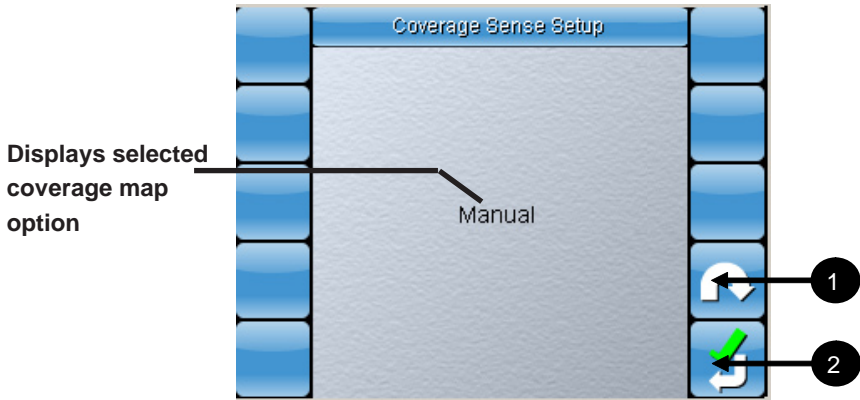
When **Manual** is selected, you will be able to manually turn mapping ON and OFF from the main console by selecting the *Coverage Mapping ON/OFF* button.

**Switched** is selected only when the System 110/150 is connected to a signal voltage that automatically engages mapping when the signal voltage is detected.



The source of this signal can range from a manual switchbox within the tractor cabin to voltage coming from the sprayers when they are switched on.

### **Switched Option** - Extended details and example


Positive voltage is applied to the input harness when the implement is enabled to activate mapping automatically. When this voltage is OFF, mapping is turned OFF.



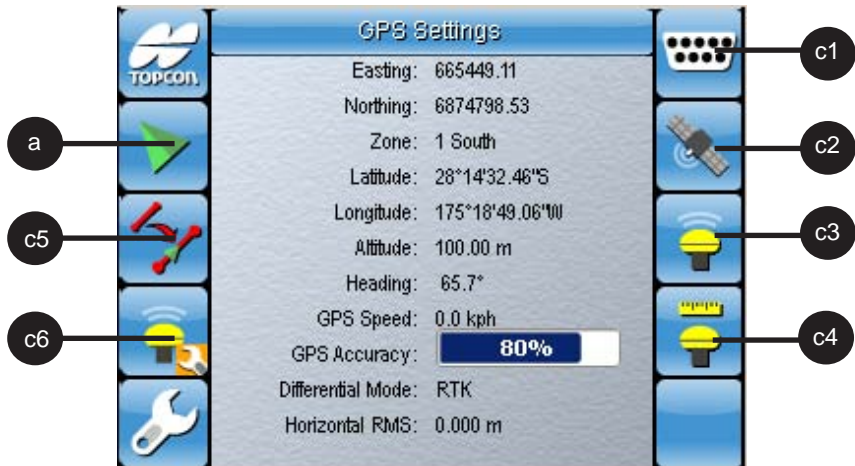
**Figure 6-38. Coverage Sense Setup**

1. Select  to select between **Manual** and **Switched** coverage sense options.
2. Select  to accept the changes and return to the *Guidance Setup* screen.








## c. GPS Settings Screen

Select  to access the *GPS Settings* screen.

This section will provide you with an introduction to the features found on the *GPS Settings* screen.



**Figure 6-39. GPS Settings Screen**

Label	Description
<b>a</b> 	Returns you to the Guidance screen
<b>c1</b> 	Accesses the Input/Output Setup screen
<b>c2</b> 	Displays GPS information
<b>c3</b> 	Accesses the GPS Receiver selection screen
<b>c4</b> 	Accesses the Correction System selection screen
<b>c5</b> 	Accesses GPS Drift Compensation screen
<b>c6</b> 	AGI-3 Firmware Upgrade Button

- Eastings/Northings - is a measurement (in meters) relating to position within the Zone.

- Zone - The world is divided up into areas so that the Eastings/Northings can be shown at a relatively lower number (digit).
- Latitude/Longitude - Indicates the position of the GPS antenna on the earth's surface.
- GPS Speed - Shows the actual speed of the vehicle moving across the ground.
- GPS Accuracy - By combining the number of satellites, HDOP, PDOP the relative accuracy of the GPS is shown on the bar graph: 0 = no GPS received, 100% = excellent signal and accuracy.
- Differential Mode - Indicates what GPS is connected and its status. There are items that can be displayed in this section:
  1. Invalid
  2. GPS Fix
  3. DGPS Fix
  4. PPS Fix
  5. RTK
  6. Float RTK
  7. Estimated
  8. Manual Input
  9. SBAS

## Data settings for 'Other' GPS Receivers

GGA 0.2 seconds (5Hz)

VTG 0.2 sec (5Hz)


ZDA 15 seconds

RS-232 communications

19200 baud rate (preferred) 8 data bits, No Parity, 1 Stop bit  
(19200, 8N1)



## c1. Input/Output Setup Screen

Select  to access the *Input/Output Setup* screen. Here you can setup the external antenna, set the baud rate for the GPS, setup the Radar output and configure the GPS Output settings.

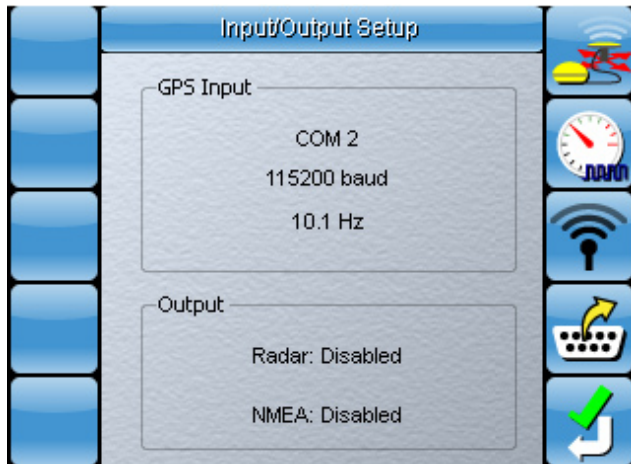


Figure 6-40. Input/Output Setup

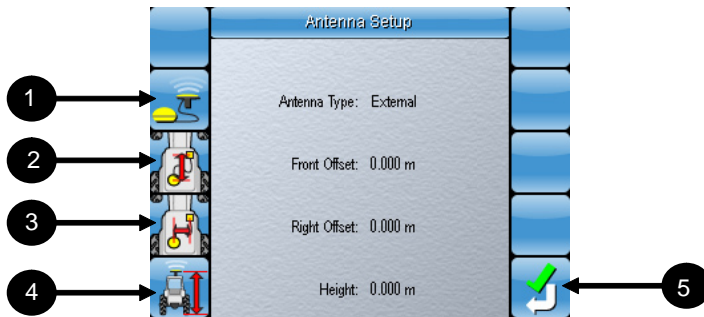
## External Antenna Setup

This feature allows you to configure an external antenna while the AGI-3 is set as the GPS receiver.





### NOTICE

*This feature is automatically disabled for all GPS types except for the AGI-3 receiver.*



**Figure 6-41. External Antenna Setup**


Select  (figure 6-40) to access the *External Antenna Setup* screen.

1. Select  to set the *Antenna Type*.


The options below are enabled when the *Antenna Type* is set to **External**.

2. Select  to set the *Front Offset*.


This is the distance of the external antenna in front of or behind the AGI-3 receiver. The distance is measured from the centerline of the AGI-3 receiver to the centerline of the external antenna. Enter a positive value if the antenna is in front of the AGI-3 receiver and a negative value if the antenna is behind the AGI-3 receiver.

3. Select  to set the ***Right Offset***.


This is the distance of the external antenna to the left or to the right of the AGI-3 receiver. The distance is measured from the centerline of the AGI-3 receiver to the centerline of the external antenna. Enter a positive value if the antenna is to the right of the AGI-3 receiver and a negative value if the antenna to the left of the AGI-3 receiver.

4. Select  to set the ***Antenna Height***.

This is the vertical distance measured from the ground to the top of the external antenna.



5. Select  to confirm your settings and return to the ***Input/Output Setup screen***.


## Baud Rate Setup

Select  (figure 6-40) to access the ***Baud Rate Selection*** screen.



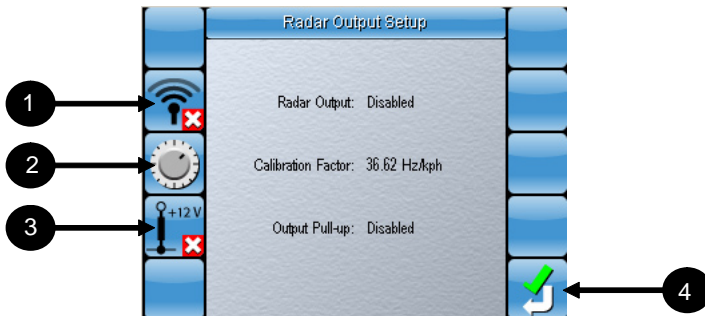
**Figure 6-42. Select Baud Rate**

1. Select the up and down arrow buttons   to select a baud rate.


2. Select  to accept the selection and return to the *Serial Port Setup* screen (figure 6-40).





## Radar Output Setup

This feature allows you to configure the designated radar output pin to output a simulated ground speed radar pulse for input to external controllers.



**Figure 6-43. Radar Output Setup**

Select  (figure 6-40) to access the *Radar Output Setup* screen.

1. Select  to enable or disable *Radar Output*.
2. Select  to set the *Calibration Factor*.
3. Select  to enable or disable the *Output Pull-up*.
4. Select  to confirm your settings and return to the *Input/Output Setup* screen.

## GPS Output Settings

The System 150 is required to output NMEA 0183 sentences with GPS location information. This section allows you to configure the output settings.

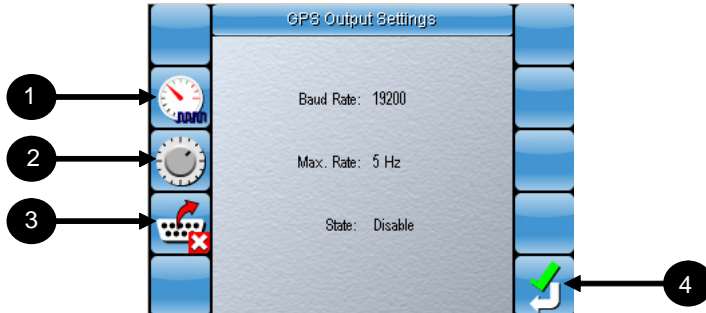







Figure 6-44. GPS Output Settings

Select  (figure 6-40) to access the *GPS Output Settings* screen.

1. Select  to set the *Baud Rate*.
2. Select  to set the *Maximum Rate*.
3. Select  to enable or disable the *GPS Output*.
4. Select  to confirm your settings and return to the *Input/Output Setup* screen.

## c2. Display GPS information

Select  to access the *Display GPS Information* screen.




**Figure 6-45. GPS Information**


The information displayed is the number of detectable satellites, the correction age in seconds and also the HDOP. The lower the value of your HDOP, the more accurate your GPS reading will be.

This is the reason why the GPS Antenna must be positioned on the roof without any obstructions with a clear view of the sky. Any obstruction of the GPS Antenna could cause your HDOP value to increase, leading to inaccurate GPS position readings.

Use the **down arrow** to scroll to the next page and view detected satellites data (Channel/ Sat Number/ SNR).





Select  to return to the *GPS Settings* screen.

### c3. GPS Receiver Selection

Select  to access the **GPS Receiver Selection** screen. Select among the preset options or select **Other** if you are using a GPS receiver that is not listed.



**Figure 6-46. Select Your GPS Receiver**

1. Select the up and down arrow buttons   to select a GPS receiver.
2. Select  to cancel the selection and return to the **GPS Settings** screen.
3. Select  to confirm the selection. A different screen will appear depending on your selection.

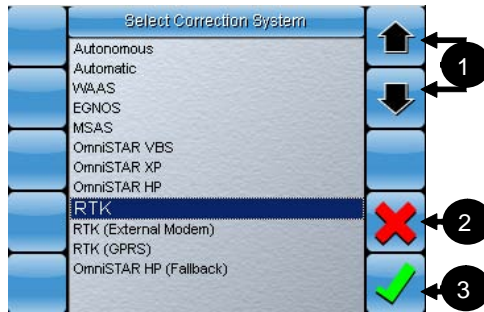
If the GPS receiver you selected and confirmed was **Other**, then you will be returned to the **GPS Settings** screen.

Refer to page 6-42 for information on GPS Settings if you are using a receiver different from the AGE-1, AGE-2, SGR-1 or AGI-3.

## c4. Correction System Selection

Select  to enter the *Correction System selection* screen.

The table below lists and describes all currently available correction system options however the correction systems you have access to will depend on the GPS receiver you selected in the previous section.







**Figure 6-47. Correction System options for AGI-3**

Correction System	Description
Autonomous	Let the receiver find any free available satellites. Will not use any correction
Automatic	Let the receiver select the best available correction source
ANY	Will use any SBAS satellite
WAAS	Use ‘Wide Area Augmentation System’
EGNOS	Use the ‘European Geostationary Navigation Overlay Service’
EGNOS (Test Mode)	Use the ‘European Geostationary Navigation Overlay Service’ test network
MSAS	Use ‘Multi-functional Satellite Augmentation System
Omnistar VBS	Use Omnistar Virtual Base Station (VBS) correction - submeter accuracy
Omnistar XP	Use Omnistar XP correction - high accuracy
Omnistar HP	Use Omnistar HP correction - very high accuracy



SBAS	Use only SBAS signals
SBAS (EGNOS Type 0)	Use the 'European Geostationary Navigation Overlay Service' test network
DGPS	Use only DGPS signals
CDGPS	Use Canada's CDGPS network
RTK	Use Real Time Kinematic Navigation
RTK (External Modem)	Use external modem connected to GPS receiver for RTK corrections
RTK (GPRS)	Use GPRS network to provide RTK correction ( <b>Refer to Appendix G for setup instructions</b> )

1. Select the up and down arrow buttons   to select a Correction System.
2. Select  to cancel the selection and return to the select ***GPS Receiver*** screen.
3. Select  to confirm the selection and you will be returned to the ***GPS Settings*** screen.

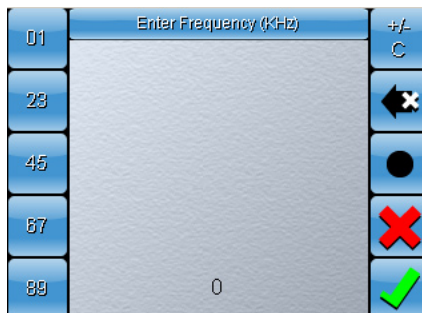
## Select Region - Omnistar

This option is available if **Omnistar** is selected as the correction system.



**Figure 6-48. Select Region Omnistar screen**

Select your location from the list. If the location is not listed, you will have to select **Custom...** to enter the frequency in manually.



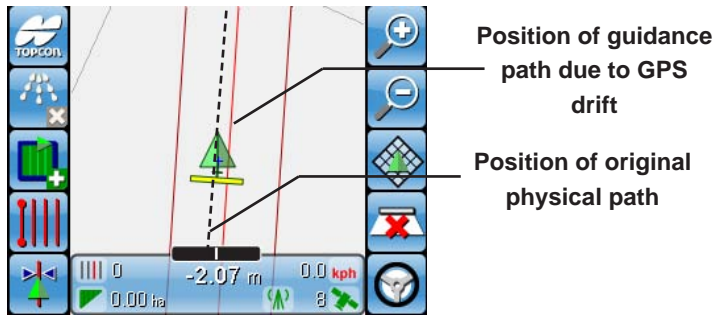
**Figure 6-49. Enter Frequency**

Refer Appendix A, Page A-9 to use the Numerical Keypad.

To activate Omnistar you will require the OSN (Omnistar Serial Number) which can be found on the label of the AGE-1 receiver.


For additional information on Omnistar frequencies, please visit : [www.omnistar.com.au/techinfo/freq.html](http://www.omnistar.com.au/techinfo/freq.html)

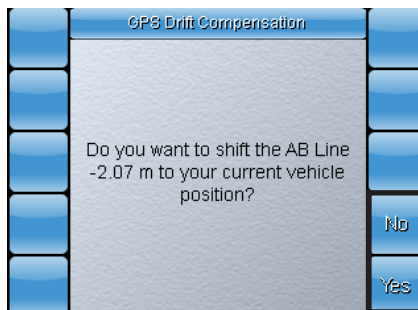
## c5. GPS Drift Compensation



**Figure 6-50. GPS Drift Example**

GPS drift can occur when a previously saved guidance path is reused in a field. The reloaded guidance path on the console screen may not correlate precisely with the original path the vehicle had previously taken.

This can be corrected by manually driving your vehicle, lining it up with the original path and selecting  on the GPS settings screen (Figure 6-39).



**Figure 6-51. GPS Drift Compensation confirmation**

You will be asked if you want to shift the loaded guidance path a set distance to your current vehicle position.




Guidance path is correctly positioned over original physical path

**Figure 6-52. GPS Drift Compensation**

Selecting **Yes** will shift the active guidance path to the center of your current vehicle position. Selecting **No** will return you to the previous screen.

## c6. AGI-3 Firmware Upgrade


Select  to upgrade the firmware on your AGI-3 receiver. This button is normally disabled unless the AGI-3 is selected as the GPS type.

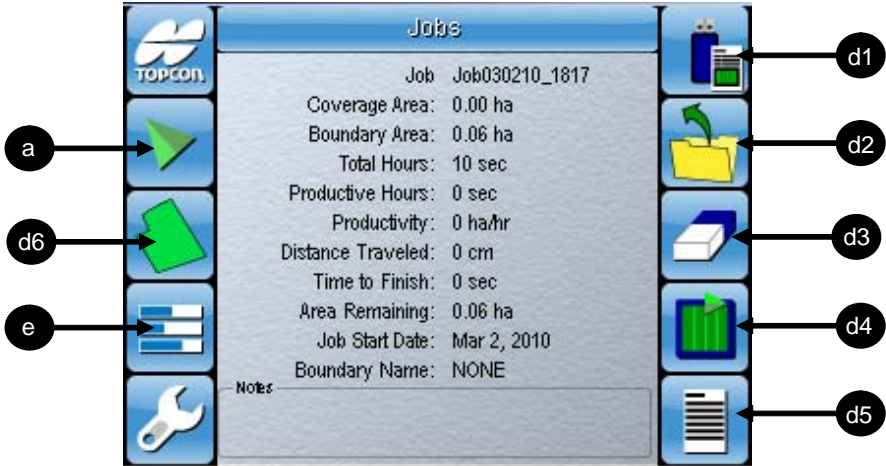


### NOTICE









*Firmware upgrades should only be performed by trained personnel so please consult with your local dealer if your AGI-3 requires a firmware upgrade.*

## d. The Job Setup Screen

Select  to access the *Job Setup* screen.



**Figure 6-53. Job Selection Screen**

Label	Description
a 	Returns you to the Guidance screen
e 	Accesses the System Memory and Diagnostics screen
d1 	Create Coverage Report of Active Job
d2 	Accesses the Job Selection screen
d3 	Clears the current Job
d4 	Accesses the Boundary Selection screen
d5 	Accesses the Enter Notes screen
d6 	Accesses Select Shape File screen

## d1. Create Coverage Report



Before you select this button, you must ensure you have a thumbdrive plugged into your System 110/150 console. Selecting this button will generate a coverage report of your active Job file. The report is saved as a pdf file and placed in a folder named 'Reports' on your thumbdrive. The information contained in this report include the duration of your Job and also the total area that you mapped. Refer to page 8-9 for more information on creating a coverage Report.

## d2. Access Job Selection Screen



Select this button to enter the **Job Selection** screen. There you can create new job files and select, edit or delete existing job files. Refer to Chapter 8 for information on starting a Job.

## d3. Clear Current Job



Select this button to clear Job data on a selected file. This clears all coverage map information and resets the job totals (shown on Job Setup screen) on a file without deleting the file itself.

#### d4. Access Boundary Selection Screen



Select this button to enter the **Boundary Selection** screen. Here, you can create new boundary files or select, edit or delete existing boundary files. Refer to Chapter 7 for information on creating Boundaries.

#### d5. Access Enter Notes screen



Select this button to access the **Enter Notes** screen. Here you can enter notes regarding your current Job.

Refer to Appendix A, page A-9 and A-10 for information on how to use the Alphanumeric type pad.


#### d6. Access Select Shape File screen



Select this button to access the **Select Shape File** screen.

Shape Files are used to define the active area of the field and can be used in place of a Boundary File.

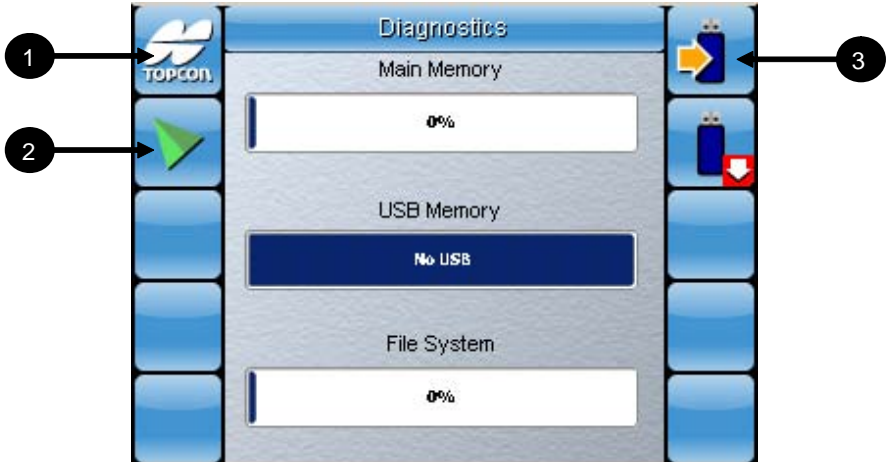
Unlike Boundary Files, you cannot draw a Shape File from the console. Shape Files need to be loaded into the console for use.

This can be done by inserting a thumbdrive with the desired Shape File and selecting  to import the file into the console.




## e. System Memory and Diagnostics

Select  to access the file memory and diagnostics screen.

Here you will be able to see how much memory is available on the main drive, the USB thumbdrive (if connected) and the File System.



**Figure 6-54. System Memory and Diagnostics Screen**

1. Select  to return to the *Guidance* screen.
2. Select  to return to the *Main* screen.
3. Select  to export your Job, Boundary and Guidance Path files directly to a thumbdrive.

### Memory Warnings

There are two important warnings that are related to memory. These warnings are:

1. Your memory resources are getting low.
2. Your memory resources are exhausted.



Follow steps 1 and 2 if you encounter the first warning during a job:

1. Stop your current job and create a new Job file.
2. Continue your coverage from the new Job file.

If the warning still appears after doing these 2 steps, follow up with steps 3 and 4:

3. Access the diagnostics screen and backup your files to a thumbdrive (Page 10-1 and 10-2).
4. Delete all unnecessary Job, Boundary and Guidance Pattern files from the System 110/150 console to free up the Main Memory.



### CAUTION

***Failing to follow the above steps when the first warning occurs will eventually lead to the appearance of the second warning. You will then be unable to perform coverage mapping at all and you will have to perform steps 3 and 4 in order to continue your current Job.***

## f. Day or Night Mode

This option allows you to switch the screen brightness to suit either day time or night time conditions.

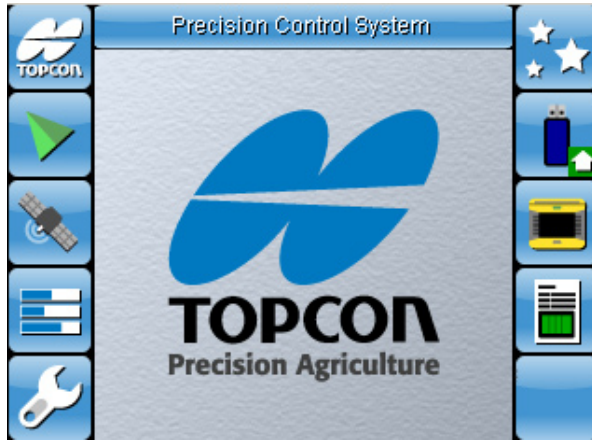


Figure 6-55. Main Screen in Day Mode

1. Select  to switch to Night Mode (this will also dim the lightbar, buttons, and the screen).

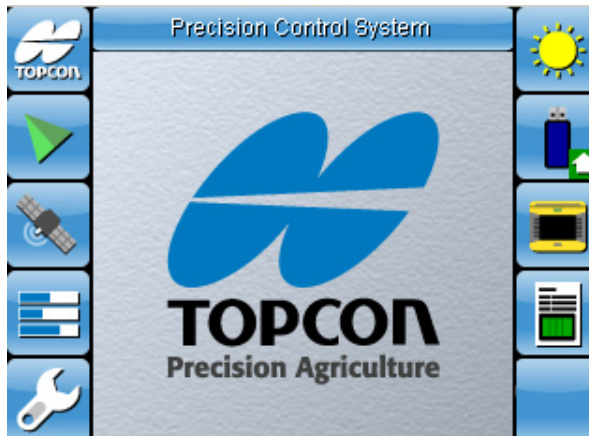




Figure 6-56. Main Screen in Night Mode

2. Select  to switch back to Day Mode.

## g. Reprogram the Console




**Figure 6-57. Reprogram the console from the main screen**

To upgrade the software in the console, a USB thumbdrive containing the update files will need to be plugged into the console. When this has been done, select  to update the software on the console.

## h. Additional Console Features



**Figure 6-58. Additional Console Features screen**

Select  to access the *Additional Console Features screen*. This button will take you to a screen where you can either enable or disable your additional console features. These features include Auto Section Control, Auto-Steering, Sprayer Control and Variable Rate Control.

Refer to the feature specific setup guides for more information on how to use and setup these additional features.

## Configuration Checklist

Now that you are familiar with the console, below is a checklist of the items that you must configure to use the System 110/150 properly.

Conduct the setup procedure in the order listed below:

### Initial Setup

1. Units and Time Settings Page 6-26
2. Select Language Page 6-27

### GPS Setup

3. GPS Receiver Selection Page 6-49

If selecting Omnistar, record your OSN here

4. Input/Output Setup screen Page 6-43

### General Setup

5. End of Row Setup Page 6-21
6. Implement Setup Page 6-28
7. GPS Antenna Location Setup Page 6-31
8. Lightbar Setup Page 6-34

# Creating a Boundary

This chapter will explain how to create a boundary of your field.

Creating or loading a boundary should be your initial step before starting a job. Doing this will help you determine the shape and size of your field and how best to proceed with the job. Boundaries can also be saved and used over again in future and for different applications.

## Procedure

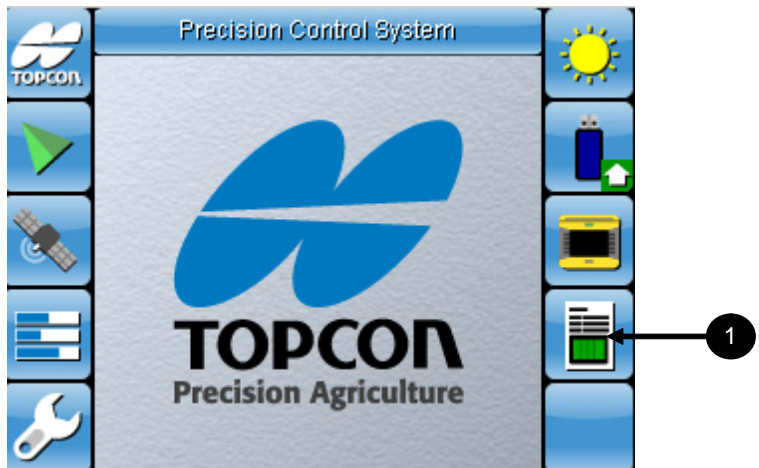



Figure 7-1. Main Screen

Before starting this procedure, setup your software as required according to the configuration checklist in Chapter 6 on page 6-62.

1. Select  to access the *Job Setup* screen.

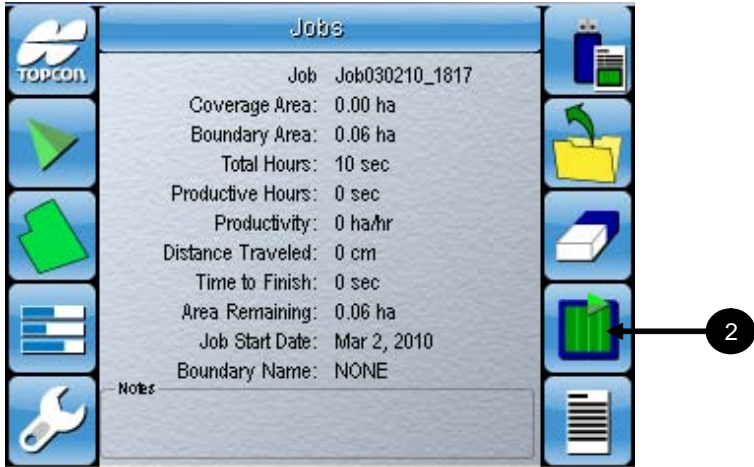


Figure 7-2. Job Setup screen

2. Select  to access the Boundary Selection screen.

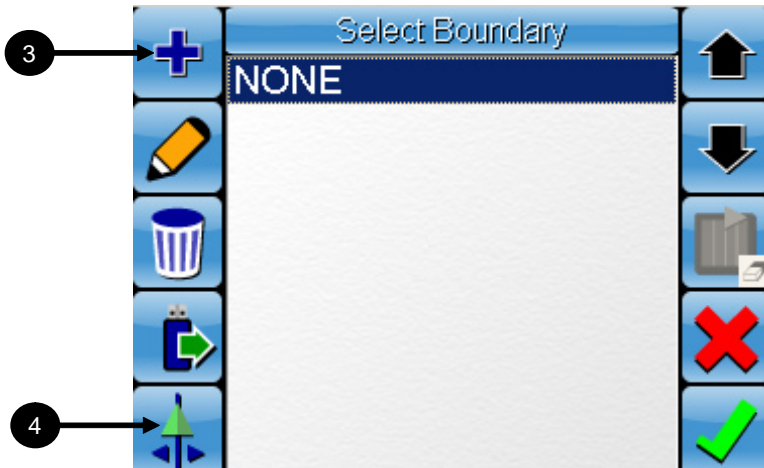



Figure 7-3. Boundary Selection screen

3. Select  to start a new boundary file.
4. Refer to Page 7-7 for information on how to set the boundary offset.

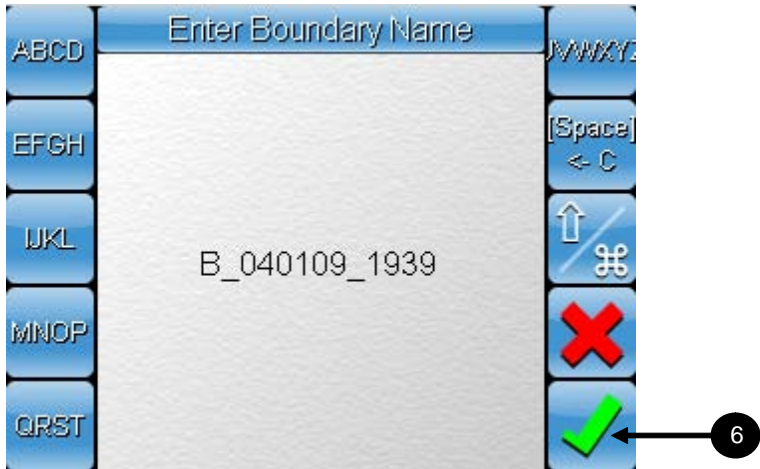


Figure 7-4. Enter Boundary Name



5. You can enter a new boundary name or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, Page A-9 and A-10 for instructions on using the Alphanumeric pad.
6. Select  to accept the name and return to the Boundary Selection screen.





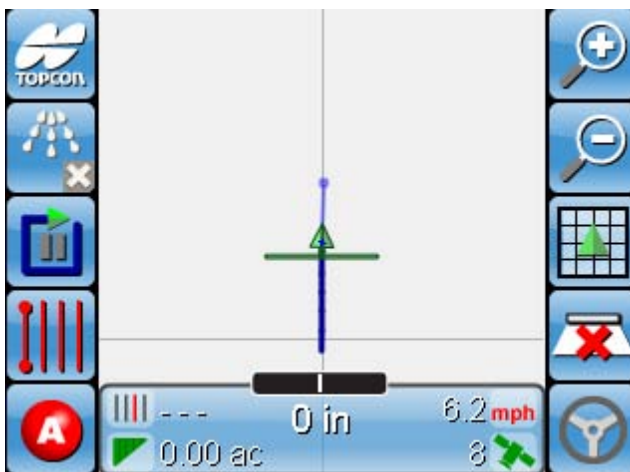
Figure 7-5. Job Setup screen displaying boundary

7. Select  to return to the guidance screen.



**Figure 7-6. Drive to starting point**

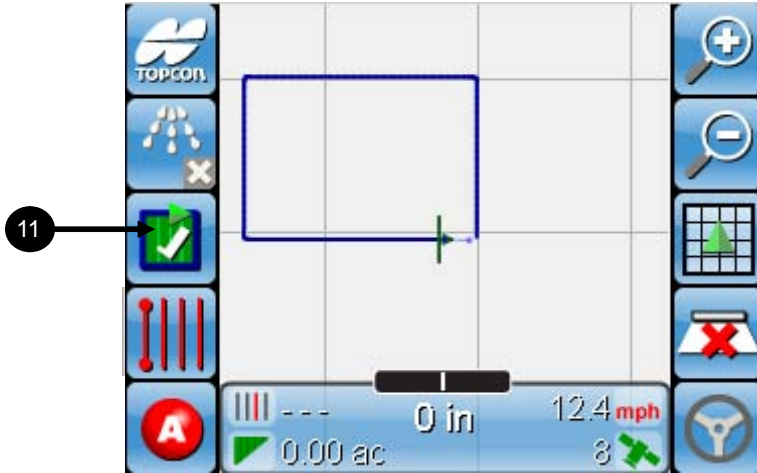
8. Drive to the desired starting point on your field and after selecting  select  when you want to start drawing your boundary.




**Figure 7-7. Start drawing your boundary**

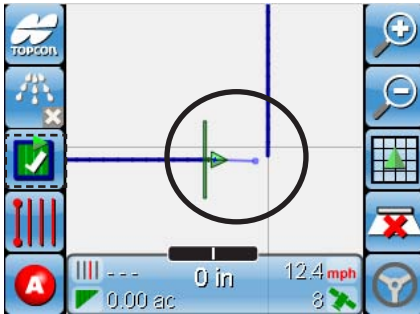
9. Drive off, and a line should appear on the screen next to or behind your vehicle icon (figure 7-7). This line represents your field boundary.



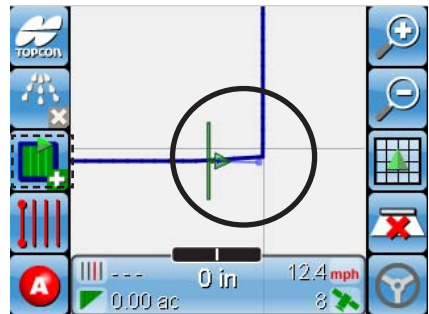


**Figure 7-8. Boundary icon will change to tick icon**


10. Watching the line on your screen, drive your vehicle around the boundary of your field until the lines are almost closed. When you near the starting point of your boundary, the boundary icon will change to this  (figure 7-8).



**Figure 7-9. Approaching Start of Boundary**




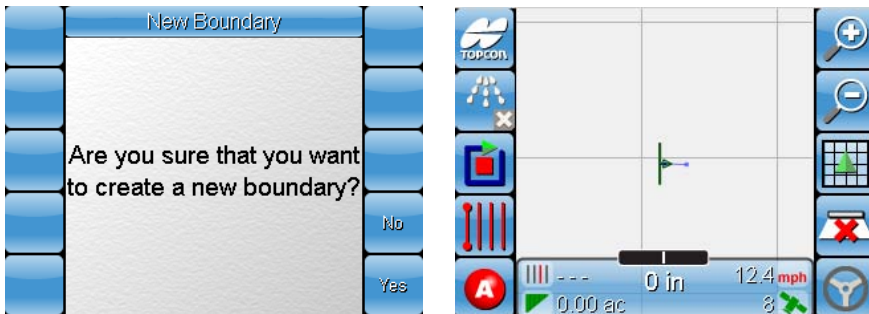
**Figure 7-10. Close the Boundary Line**

11. Select  to close the boundary line. A straight line will be drawn from the end point to the starting point of the boundary line.



**Figure 7-11. Boundary mapping completed**

12. Select  to save the current boundary and create a new file for the next boundary mapping. The saved file will close, and the new boundary file (that will be automatically named) will be opened.



**Figure 7-12. Create a new file to start a new boundary map**

13. Now you can either repeat the above procedure on another field to create and save more field boundaries, or you can start a new Job file.

Refer to chapter 8 for instructions on how to start a Job.

## Boundary Offset

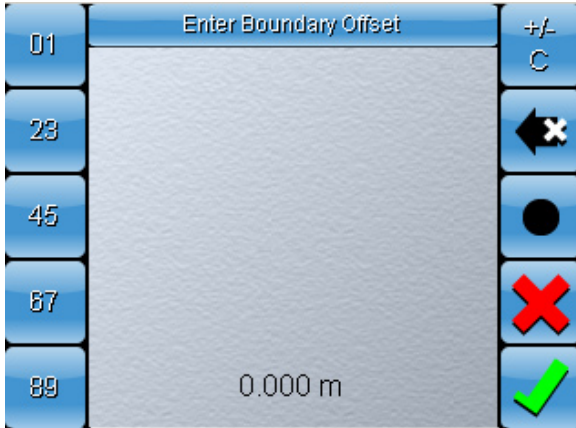
The boundary offset is used so you can draw your boundary line at a specific distance on the left or right of your vehicle icon. As such, if you were driving with the center of your vehicle directly over your field boundary, your offset would be zero. Sometimes it is only possible to drive next to your field boundary due to a fence line.

This is when you would use boundary offset. There offset values will be positive or negative depending on the direction you are travelling around your field. This section will explain how to set your boundary offset.



Figure 7-13. Access Boundary Offset screen

1. Select  to access the *Boundary Offset* screen.



**Figure 7-14. Enter Boundary offset value**

2. Enter a value for the offset. Use a positive number for an offset to the right of your vehicle and a negative number for an offset to the left of your vehicle. Normally this value is set at slightly more than half the swath width of your vehicle so that the boundary line is drawn just slightly over the edge of the implement (see figures 7-15 and 7-16).

Refer to Appendix A, Page A-2 for information on how to use the Numeric keypad.

3. Select  to confirm your selection.



**Figure 7-15. Negative offset (left)**

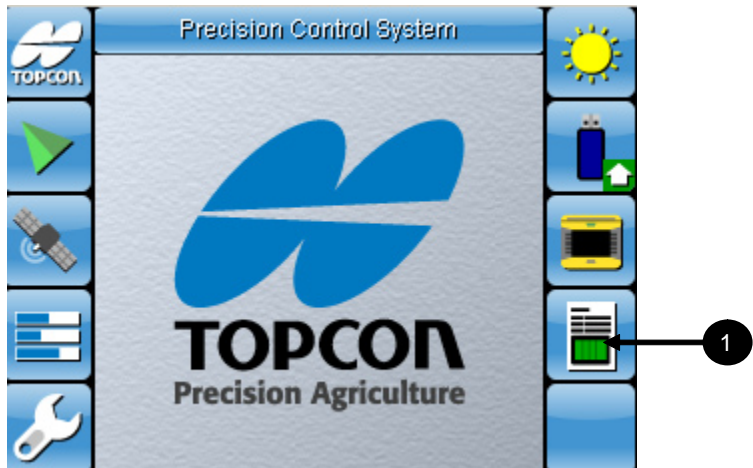
**Figure 7-16. and positive offset (right)**

## Recalling a Boundary

After a field boundary is created, you may want to recall it for use in different jobs and field applications. This section explains how to recall a boundary file for use in a new Job.


**NOTICE****NOTICE**

*The guidance screen displays your vehicle icon based on the GPS coordinates of your vehicle. Your saved field boundary also has GPS coordinates based on the location of the actual field. Because of this, your vehicle needs to be near the actual field for the field boundary to be displayed properly on the display screen.*



**Figure 7-17. Access Job Setup screen**

If using an old Boundary file in a new Job, ensure that the Job file is created first before loading the Boundary file.

1. Select  to access the *Job Setup* screen.

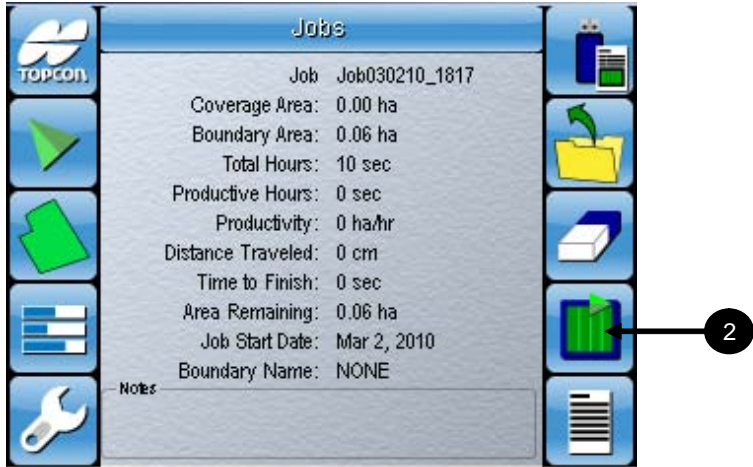


Figure 7-18. Access Boundary Selection screen

2. Select  to access the *Boundary Selection* screen.

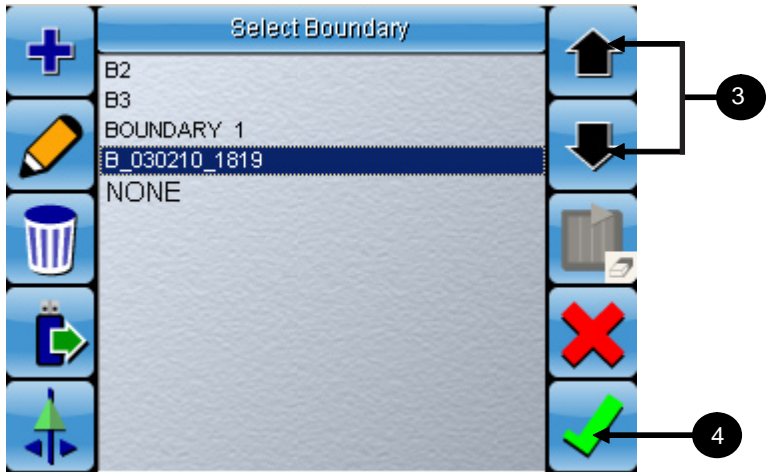


Figure 7-19. Select a boundary file





3. Select the up and down arrow buttons   to select a Boundary file.
4. Select  to confirm your selection and return to *Job Setup* screen.



Figure 7-20. Return to Guidance screen

5. Select  to return to the *Guidance* screen.

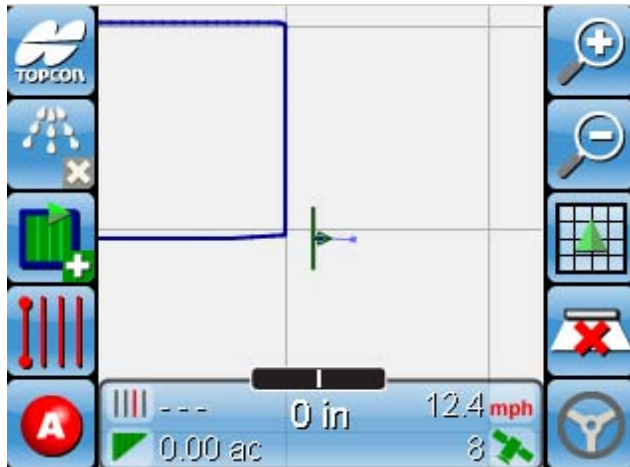


Figure 7-21. Boundary is displayed on Guidance screen

You will see your Boundary displayed on the screen.





# Starting a New Job

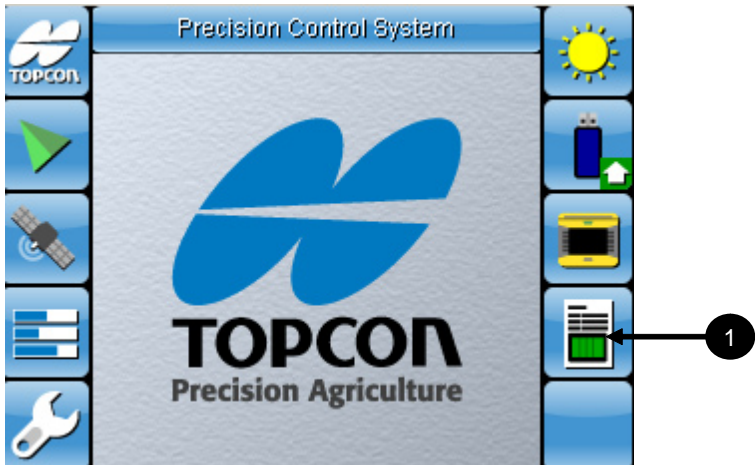
This chapter will explain how to start a job to perform coverage mapping using the System 110/150 Guidance software. You must create or select a Job before you can begin coverage mapping. It is recommended practice to create a new Job file for every new field. Boundary files can also be attached to specific Jobs by selecting the boundary file when a Job is active. Refer to chapter 7 for information on how to setup your vehicle before beginning a job.



## NOTICE

*A GPS input must be detected before the Job Setup screen can be accessed.*

## Procedure



**Figure 8-1. Access Job Setup screen**

Before starting this procedure, setup your software as required according to the instructions outlined in Chapter 6.

1. Select  to access the *Job Setup* screen.



Figure 8-2. Access Job Selection screen



2. Select  to access the *Select Job* screen.




Figure 8-3. Create a new Job file

3. Select  to create a new application job file.




**Figure 8-4. Enter a new job name or use generated name**

4. Enter a new job name (optional) or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, page A-9 to use the Alphanumeric keypad.
5. Select  to accept the name and return to the *Job Setup* screen.






**Figure 8-5. After Job is selected return to Guidance screen**

6. Select  to return to the *Guidance* screen.



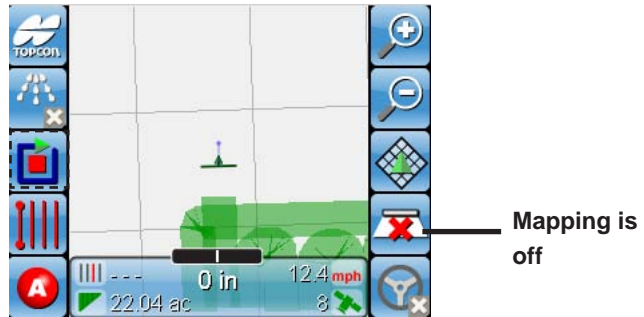
**Figure 8-6. Start Coverage Mapping**

7. Follow the instructions below depending on which coverage sense method you are using. Refer to page 6-39:
  - Manual - Select  to turn coverage mapping ON and drive off. The icon will change to  while coverage mapping is active.
  - Switched - Enable the positive input source to turn the coverage map ON and drive off. The icon will change to  while coverage mapping is active.
8. With the coverage mapping on, drive around your field until you have mapped the areas you wish to cover. To assist you, you may select between 3 guidance patterns (refer Chapter 9). These will create lines that you can follow to allow more accurate coverage of your field.



Refer to Chapter 9 for information on how to select and apply a Guidance Pattern.



**Figure 8-7. Coverage mapping is ON**



**Figure 8-8. Coverage mapping is OFF**

8. Select  to turn off the coverage mapping. The icon will change to display  indicating that mapping is OFF.

The coverage map is now saved to the Job File that you created and can be recalled at any time.

## Recalling a Job

After a Job is completed, you may want to recall the coverage map for viewing purposes. This section explains how to recall a job file.

**NOTICE** *NOTICE*

*The guidance screen displays your vehicle icon, based on the GPS coordinates of your vehicle. Your saved coverage map (Job File) also has GPS coordinates based on the location of the actual field. Because of this, your vehicle needs to be near the actual field for the coverage map to be displayed properly on the screen.*

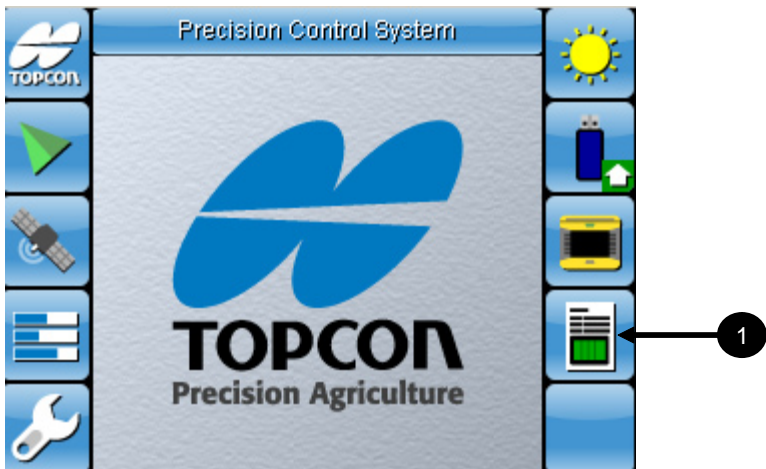


Figure 8-9. Access Job Setup screen


1. Select  to access the *Job Setup* screen.



Figure 8-10. Access Job Selection screen


2. Select  to access the *Job Selection* screen.



Figure 8-11. Select a Job file




3. Select the up and down arrow buttons   to select a Boundary file.
4. Select  to confirm your selection and return to the *Job Setup* screen..



Figure 8-12. Return to the Guidance screen

5. Select  to return to the Guidance screen.



Figure 8-13. The coverage map in the Job file will be displayed

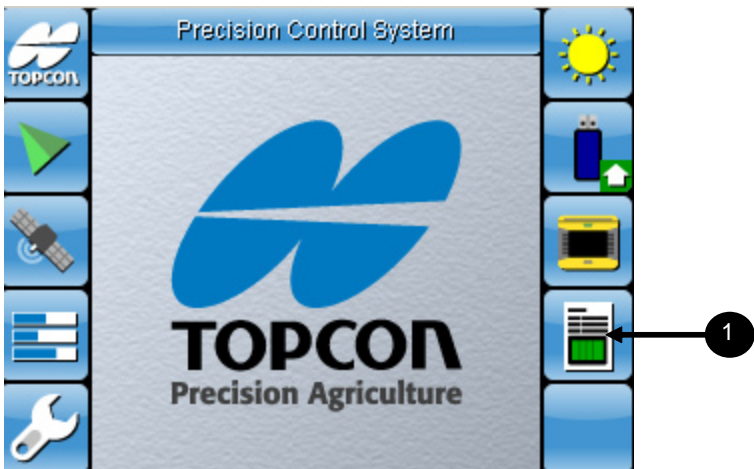
You will see your coverage map (created during the Job) displayed on the screen.



## Creating a Coverage Report


After finishing a coverage map, you can create and export a pdf file with details of your coverage. Your coverage report will contain the following items:

- Job Name
- Starting and End Date
- Total Area covered
- Total Hours to completion
- Total Hours coverage mapping active
- Distance covered
- Boundary Name
- Boundary Area
- Notes



**Figure 8-14. Access Job Setup screen**

Make sure that you have a thumbdrive with enough file space inserted into the USB port on the front of the console before proceeding.

1. Select  to access the *Job Setup* screen.



**Figure 8-15. A job file must be active to create a job report**

Ensure you have selected a Job file before proceeding.


2. Select  to create a coverage report to be exported to thumbdrive.



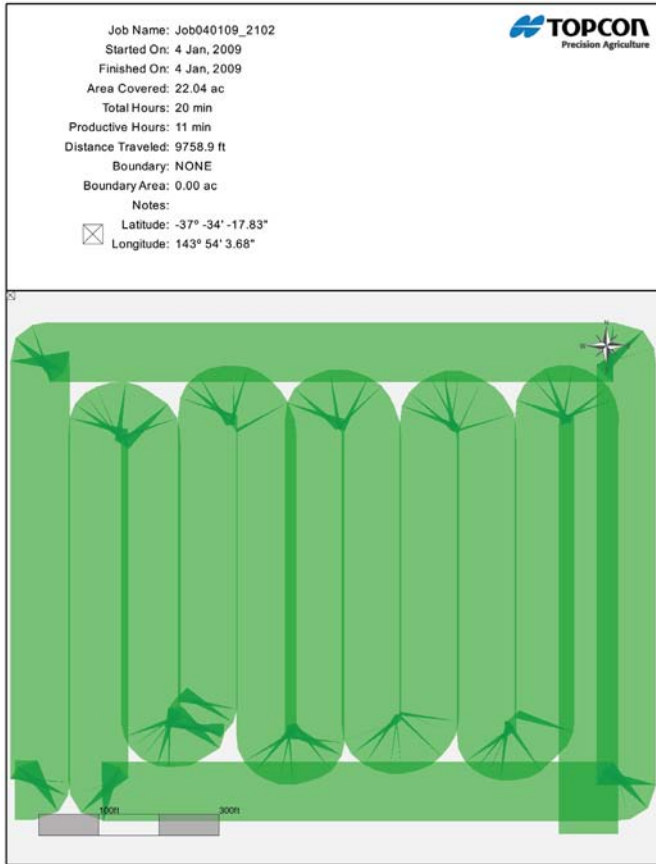
**Figure 8-16. Export in progress**



**Figure 8-17. Export completed**

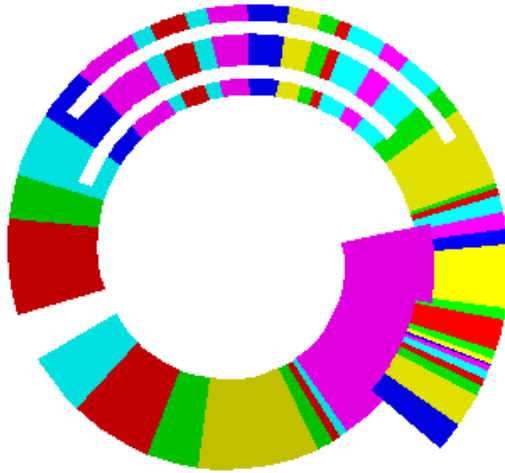
3. You should see the above screens. If the report export is successful, you will see the image on the right.
4. Select  (Figure 8-17) to exit the screen. You will be returned to the Job Selection screen.

On your thumbdrive, the coverage map report will be located in a folder named **Reports** and will be in a pdf file format. Below is an example of what your coverage report would look like.



**Figure 8-18. Example of Coverage Report**

## As Applied Maps



**Figure 8-19. Example of what an As Applied Map would look like when loaded in a shape file viewing software**

When a coverage report is exported coverage shape files are also automatically created and exported. These shape files are known as *As Applied Maps* and be viewed using LynxQMap or any other third party software that can view shape files.

These maps record coverage data which can then be displayed visually with different colors representing different rates or other similar data.

# Using Guidance Patterns

This chapter will explain how to create, use and save Guidance patterns that can be reused in a specific field during a job. There are 4 Guidance patterns that can be used and they are AB Lines, Identical Curves, Adaptive Curves and Pivots.

## Identical Curves




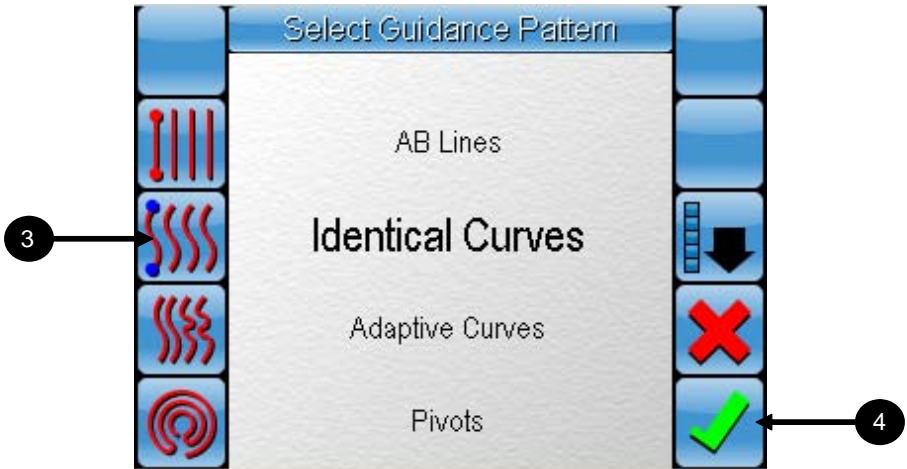
### NOTICE

*The Identical Curves option is only available on the System-150 when Auto-Steering with the AGI-3.*





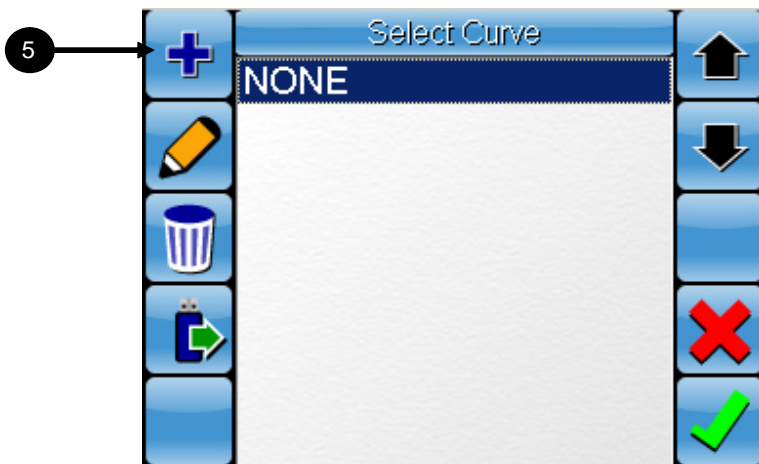
**Figure 9-1. Access Guidance Pattern screen**

1. Drive your vehicle the edge of the field where you want to draw your Curve line.
2. Select  to access the *Select Guidance Pattern* screen.




**Figure 9-2. Select Identical Curves Guidance pattern**

3. Select  (figure 9-2) to select Identical Curves guidance pattern.
4. Select  (figure 9-2) to confirm your selection.




**Figure 9-3. Create a new Identical Curve file**

5. Select  (figure 9-3) to create a new Identical Curve Guidance Pattern file.



**Figure 9-4. Enter a new file name or select default name**

6. You can enter a new curve file name or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, page A-9 to use the Alphanumeric keypad.
7. Select  to confirm your selection.



**Figure 9-5. Start coverage mapping**

8. Select  to turn on coverage mapping.



9. Select  to set the first point of the Identical Curve guidance path (figure 9-5).



Figure 9-6. Set your A point

10. Drive along your desired curve and select  to mark the end of your curve.

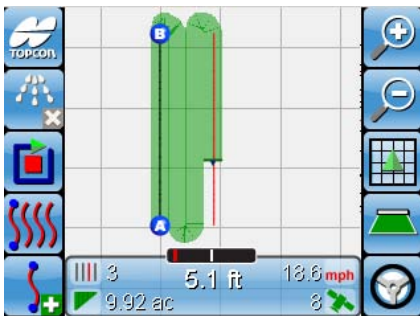


Figure 9-7. Up and Back




Figure 9-8. Round and Round

The two most common coverage methods used with Identical Curves is Up and Back (Figure 9-7) and Round and Round (Figure 9-8).

Identical Curves guidance paths are useful when you want to make




sure every pass you make is the same as the first pass. This allows you to avoid obstacles such as rocks and trees while maintaining consistency in the guidance path.

11. Follow the guidance path using your chosen coverage method to complete the coverage map.
12. Note - Select  at any time (Figure 9-7 and 9-8) to close (and save) the current Identical Curves file and create a new Identical Curves file. The created Identical Curves file will be named and loaded automatically so you can enter new AB points right away. You can rename the created file by accessing the *Select Guidance Pattern* screen and selecting Identical Curves (Figure 9-2).

## Adaptive Curves (System 110)



**Figure 9-9. Access Guidance Pattern screen**

1. Drive your vehicle the edge of the field where you want to draw your Curve line.
2. Select  to access the *Select Guidance Pattern* screen.

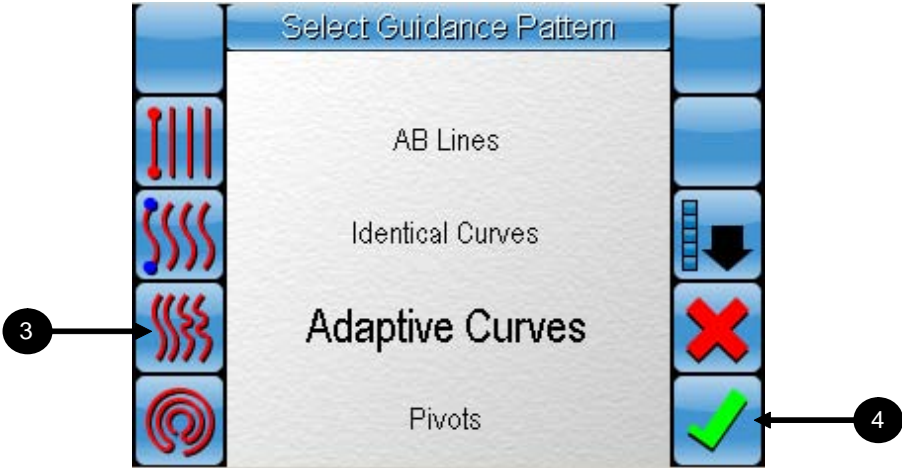




Figure 9-10. Select Adaptive Curves Guidance pattern

3. Select  (Figure 9-10) to select Adaptive Curves guidance pattern.
4. Select  (Figure 9-10) to confirm your selection.

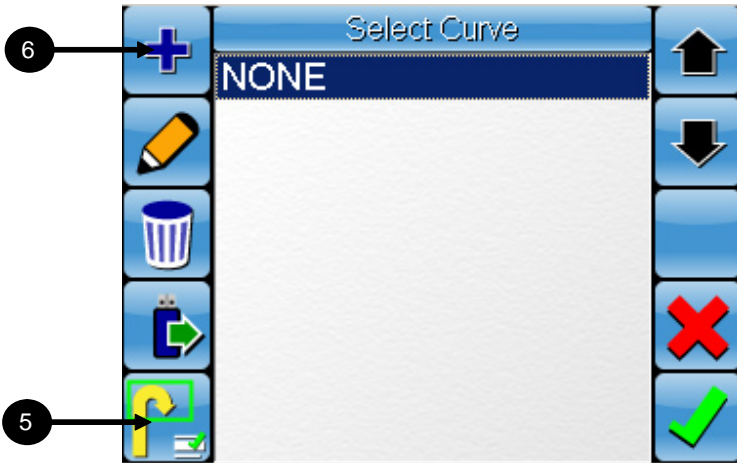




Figure 9-11. Create a new Adaptive Curve file

5. Select  (Figure 9-11) to select an Adaptive Curve Mode. Refer to page 9-10 for instructions on selecting and using an Adaptive Curve Mode.

## NOTICE

## NOTICE

The 'Mode' option (figure 9-11) under Adaptive Curves is only available when you are using Auto-Steering with the AGI-3. More information on these Adaptive Curve Modes can be found on page 6-18.

6. Select  (figure 9-11) to create a new Adaptive Curve Guidance Pattern file.



**Figure 9-12. Enter a new file name or select default name**



7. You can enter a new curve file name or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, page A-9 to use the Alphanumeric keypad.
8. Select  to confirm your selection.



Figure 9-13. Start coverage mapping

9. Select  to turn on coverage mapping.



**NOTICE**

*Adaptive Curves has three different modes. For detailed instructions on how to perform Adaptive curves in these modes, refer to page 9-10.*

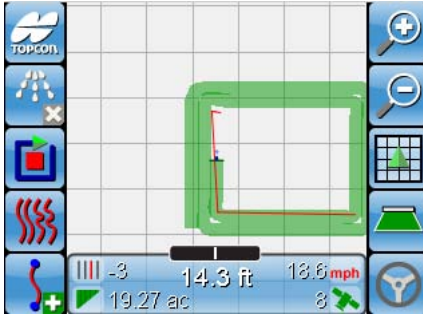


Figure 9-14. Perform 1st pass



Figure 9-15. Curve line will appear


10. Adaptive Curved lines will appear parallel to paths you have previously covered.



**Figure 9-16. Another Curve line will appear at the next corner**



**Figure 9-17. New Curve lines will appear based on previous coverage line**

11. Follow these lines around your field to complete your coverage map in Adaptive Curve mode.
12. Note - Select  at any time to close (and save) the current Adaptive Curve file and create a new Adaptive Curve file.

The created Adaptive Curve file will be named and loaded automatically so you can begin logging new curve lines right away. You can rename the created file by accessing the *Select Guidance Pattern* screen and selecting Adaptive Curves.

## Adaptive Curve Modes (System 150)

The instructions in the following section are a continuation from Step 5 on page 9-6.




### NOTICE

*The Adaptive Curve Modes are only available on the System-150 console when Auto-Steering with the AGI-3 is enabled.*

### Coverage Triggered





**Figure 9-18. Coverage Triggered**

1. Select **Coverage Triggered**.
2. Select  to confirm your selection.

You will be returned to the *Select Curve screen* (Figure 9-11). Follow steps 6 to 8 on page 9-7 and then follow the steps outlined below.



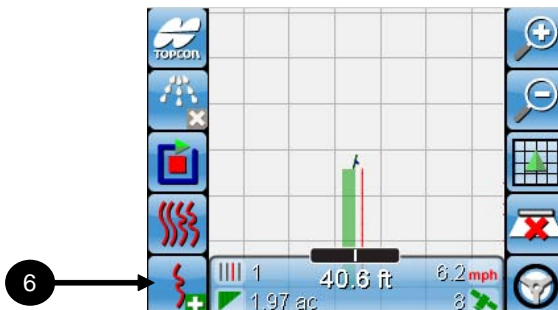
**Figure 9-19. Start coverage mapping**

3. Select  to turn on coverage mapping. This will also automatically begin the tracking of your guidance path.
4. Select  to turn off coverage mapping once you have completed your pass.




### NOTICE

*Guidance path tracking in Coverage Triggered mode starts when coverage mapping is turned on and stops when it is turned off. Everytime coverage mapping is turned on, a new Guidance path will begin tracking.*



**Figure 9-20. Guidance path appears parallel to last coverage pass**

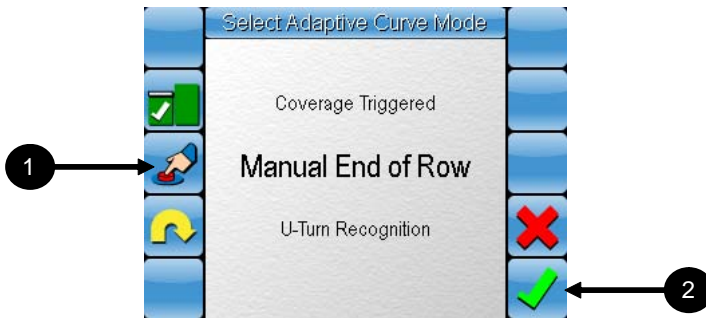
As you drive your vehicle next to the last coverage pass, the guidance path will appear parallel to it.

5. Follow the guidance path and repeat steps 3 and 4 until you have completed the coverage of your entire field.
6. Note - Select  (figure 9-20) at any time to close (and save) the current Adaptive Curve file and create a new Adaptive Curve file.


The created Adaptive Curve file will be named and loaded automatically so you can begin logging new curve lines right away. You can rename the created file by accessing the ***Guidance Pattern menu*** and selecting Adaptive Curves.



## Manual End of Row





**Figure 9-21. Coverage Triggered**

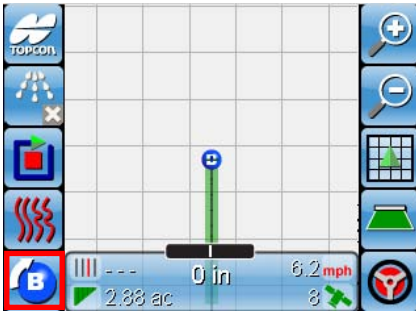
1. Select **Manual End of Row**
2. Select  to confirm your selection.

You will be returned to the *Select Curve screen* (Figure 9-11). Follow steps 6 to 8 on page 9-7 and then follow the steps outlined below.

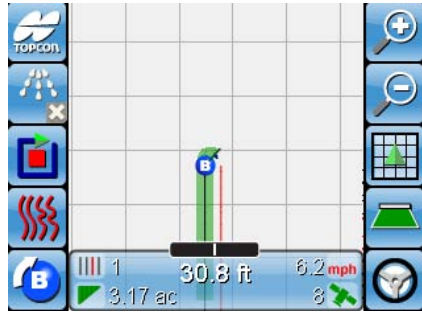


**Figure 9-22. Start coverage mapping**

3. Select  to turn on coverage mapping.
4. Select  to set the first point of the guidance path.



**Figure 9-23. Set B Point to mark the end of row**



**Figure 9-24. Path appears parallel**

5. Drive along your desired curve and select **B** (figure 9-23) to mark the end point of the guidance path.


The guidance path will appear between your A and B points. As you drive your vehicle next to your last pass, the guidance path will move and appear parallel to it (figure 9-24).



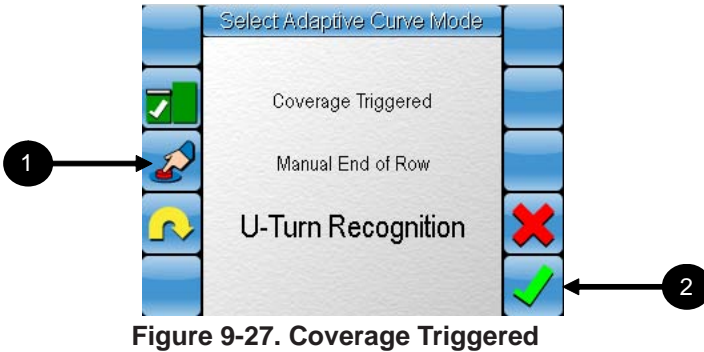
**Figure 9-25. Set B Point to mark the end of row**




**Figure 9-26. Path appears parallel**

6. Follow the guidance path and select **B** again (figure 9-25) to mark the end of it and to start a new one. Do this until you have completed the coverage of your field.
7. Select  to turn off coverage mapping.

## U-Turn Recognition





**Figure 9-27. Coverage Triggered**

1. Select **U-Turn Recognition**.
2. Select  to confirm your selection.

You will be returned to the *Select Curve screen* (Figure 9-11). Follow steps 6 to 8 on page 9-7 and then follow the procedure from step 3 on page 9-15.



**Figure 9-28. Start coverage mapping**

3. Select  to turn on coverage mapping.
4. Select  to set the first point of the guidance path.



**Figure 9-29. Perform U-turn to mark the end of row**



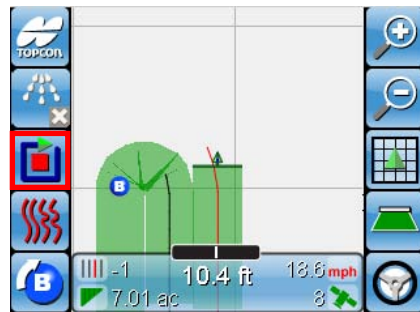
**Figure 9-30. Path appears parallel**

5. Drive along your desired curve and perform a U-turn to mark the end point of the guidance path.


The guidance path will appear between your A and B points. As you drive your vehicle next to your last pass, the guidance path will move and appear parallel to it.



**Figure 9-31. Perform U-turn to mark the end of row**




**Figure 9-32. Turn off coverage**

6. Follow the guidance path and perform a U-turn again to mark the end of it and to start a new one. Do this until you have completed the coverage of your field.
7. Select  (figure 9-32) to turn off coverage mapping.

## AB Lines



Figure 9-33. Access Select Guidance Pattern screen

1. Drive your vehicle to the edge of the field where you want to draw your AB Line.
2. Select  to access the *Select Guidance Pattern* screen.

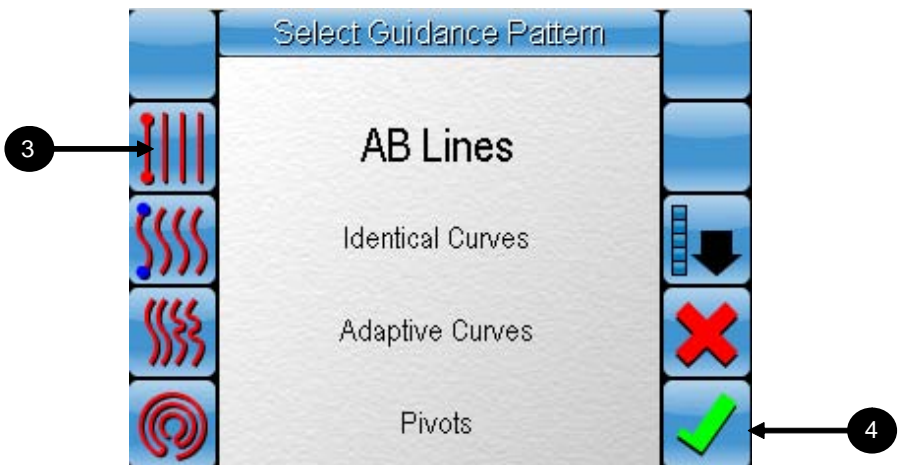


Figure 9-34. Select AB Lines Guidance pattern

3. Select  to select AB Lines guidance pattern.

4. Select  to confirm the selection.

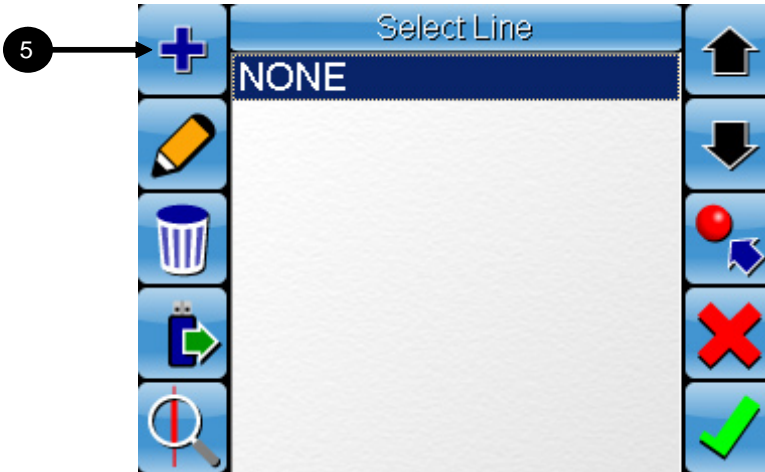


Figure 9-35. Create a new AB Lines file

5. Select  to create a new AB Lines Guidance Pattern file.





Figure 9-36. Enter a new file name or select default name

6. You can enter a new AB Line file name or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, page A-9 to use the Alphanumeric keypad.

7. Select  to confirm your selection.




**Figure 9-37. Start Coverage mapping**

8. Select  to turn on coverage mapping (Figure 9-37).
9. Select  to set the first point of the AB Line (Figure 9-37).



**Figure 9-38. Set the first point of the AB line**

10. Drive in a straight line until you reach the other end of your field and select  to mark the second point of the AB Line.

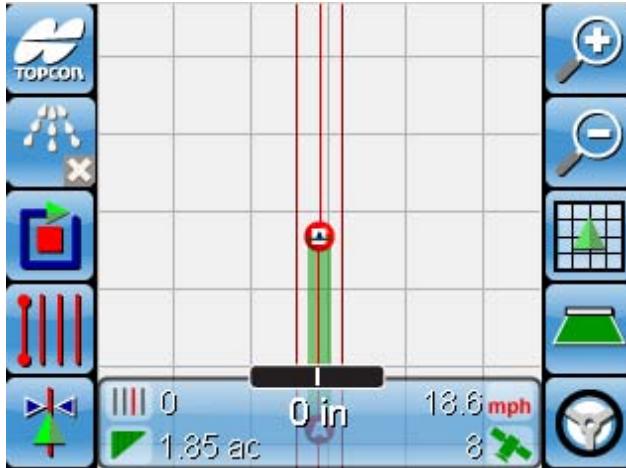



Figure 9-39. Set the second point of the AB line

11. A straight line will now appear (figure 9-39).



Figure 9-40. Follow the line up and down your field


12. Follow this line up and down across your field to complete the coverage map.
13. Note - Select  at any time to Nudge the Guidance Path to line up with the center of the vehicle. Refer to page 9-28 for more information on using the *Nudge* function.



## Pivot



Figure 9-41. Access Select Guidance Pattern screen

1. Drive your vehicle the edge of the field where you want to draw your Pivot Line.
2. Select  to access the Select Guidance Pattern screen.

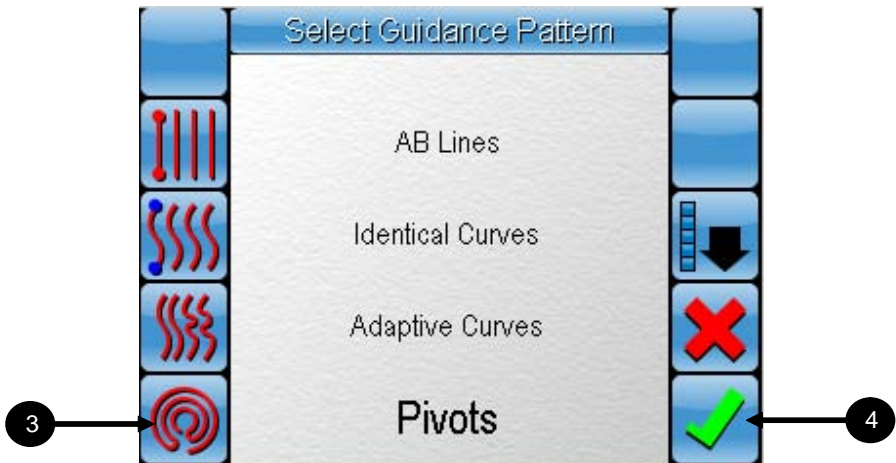

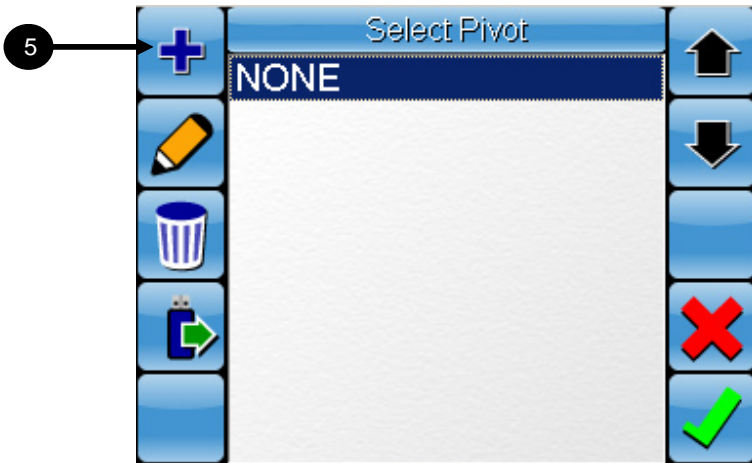


Figure 9-42. Select Pivots Guidance pattern

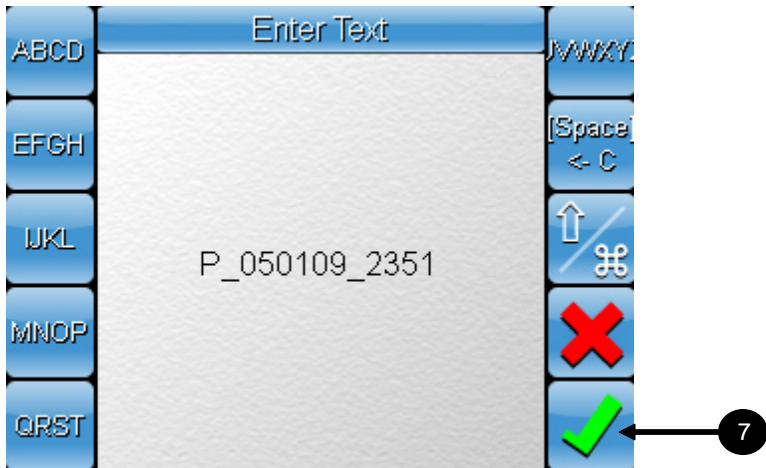
3. Select  (figure 9-42) to select Pivots Guidance Pattern.

4. Select  (figure 9-42) to confirm the selection.



**Figure 9-43. Create a new Pivot file**

5. Select  to create a new Pivot Guidance Pattern file.



**Figure 9-44. Enter a new file name or select default name**

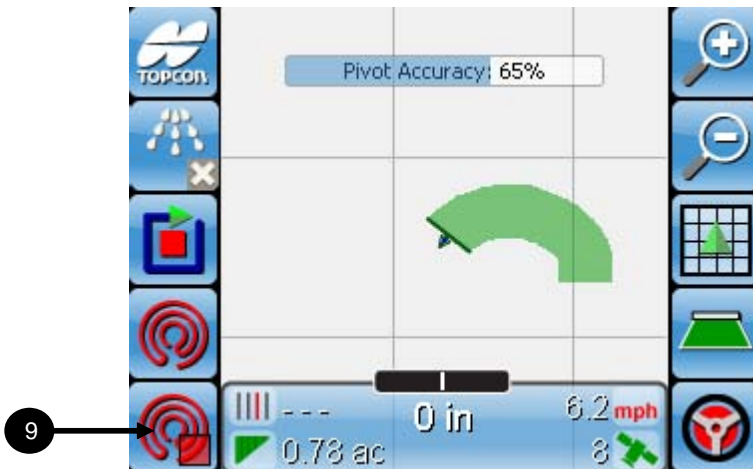
6. Enter a new pivot file name (optional) or use the generated name. Refer to Appendix E for information on the generated File Name. Refer to Appendix A, page A-9 to use the Alphanumeric keypad.

7. Select  to confirm your selection.



**Figure 9-45. Start Coverage mapping**

8. Select  to turn on coverage mapping and drive off along a pivot curve.



**Figure 9-46. Start driving and activate pivot calculation**




9. Select  for the software to begin calculating the pivot of your vehicle. This icon will begin flashing red  and grey  and you will have to maintain your vehicle curve until the flashing stops.




Figure 9-47. A red circle will appear when pivot point is determined

10. When the Pivot point has been determined a red circle will appear.



Figure 9-48. Follow the pivot line

11. Follow this line round and round to complete your coverage map (figure 9-48).

12. Note - Select  at any time to Nudge the Guidance Path to line up with the center of the vehicle. Refer to page 9-28 for more information on using the *Nudge* function.

## Recalling a Guidance Pattern

This section explains how to recall a saved Guidance Pattern for reuse.

### NOTICE

### NOTICE

*Saved guidance patterns can only be reused in the field that they were originally created in. However, you may save as many Guidance Patterns as you want per field. This allows you to use multiple Guidance Patterns when mapping your field.*



**Figure 9-49. Access the Guidance Pattern screen**

You may load a Guidance Pattern before you start, or during a job.

1. Select  to access the *Select Guidance Pattern* screen.

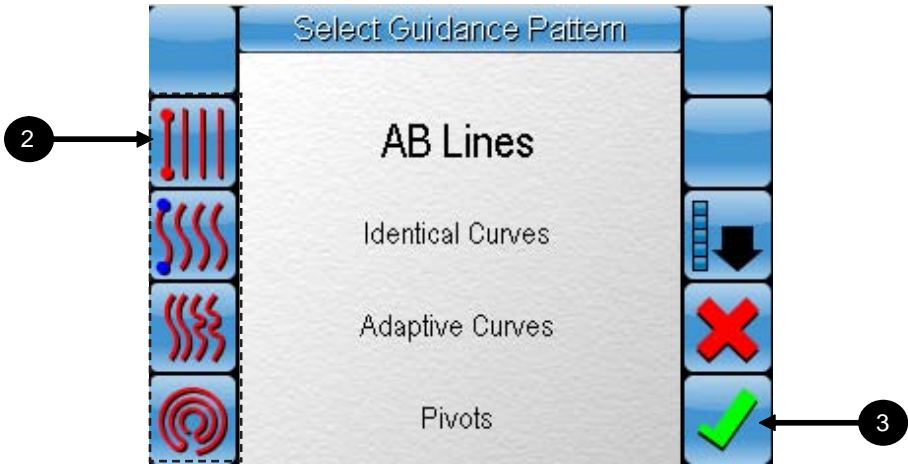


Figure 9-50. Select a Guidance pattern



2. Select a guidance pattern from the 3 buttons. For this example we will select AB Lines.
3. Select  to confirm the selection.



Figure 9-51. Select a Guidance pattern file

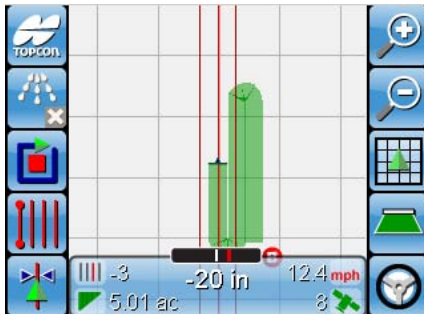
4. Select the up and down arrow buttons   to select a guidance pattern file.

5. Select  to confirm your selection and return to the *Guidance Screen*.



**Figure 9-52. Guidance Pattern will load on screen**

6. The Guidance Pattern will be loaded onto the screen (figure 9-52).



**Figure 9-53. Use selected Guidance Pattern**

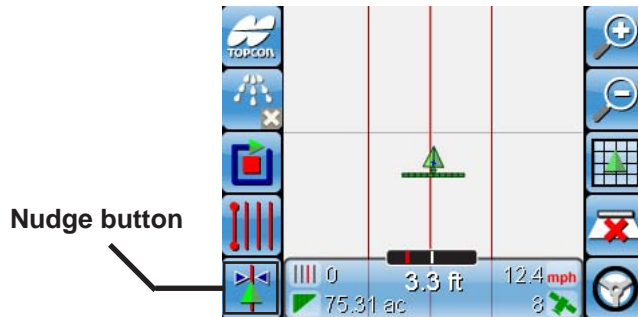


**Figure 9-54. Load another Guidance Pattern**

7. Repeat the above procedure if you wish to load another Guidance Pattern (figure 9-54) that has been saved for the same field.

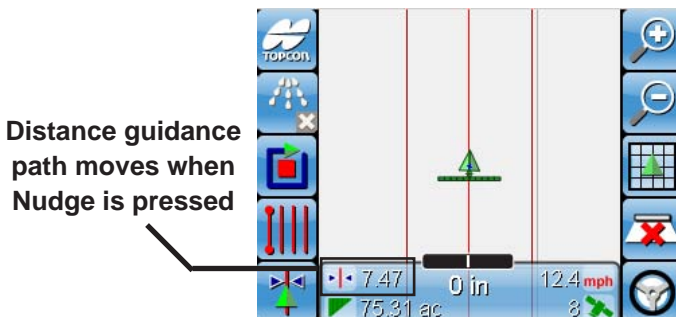
## Using Nudge for Pivots and AB Lines

This section will explain how the Nudge function is used when Pivots and AB Lines guidance patterns are recalled.



**Figure 9-55. Previously saved AB Line is loaded**

When a previously saved AB Line or Pivots guidance path is recalled for use in the field it was previously created in, the guidance path may not align precisely with the vehicle (figure 9-55).



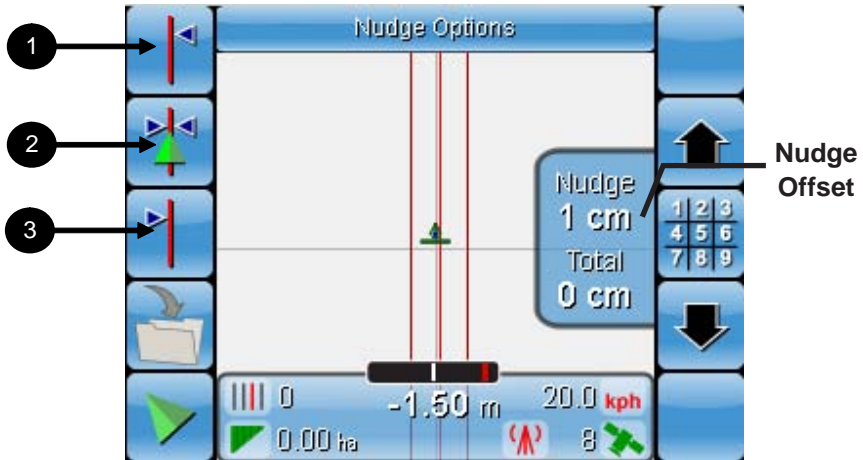
**Figure 9-56. Nudge is pressed to align the AB Line with the vehicle**

Should this happen, select Nudge once to align the AB Line or Pivots guidance pattern with your vehicle. The distance the guidance path moves to align with your vehicle is displayed on the console (figure 9-56).






## Nudge Options screen (System 150)

This section will explain the available options when Nudge is selected. These options are only available when the Auto-Steer feature is active.






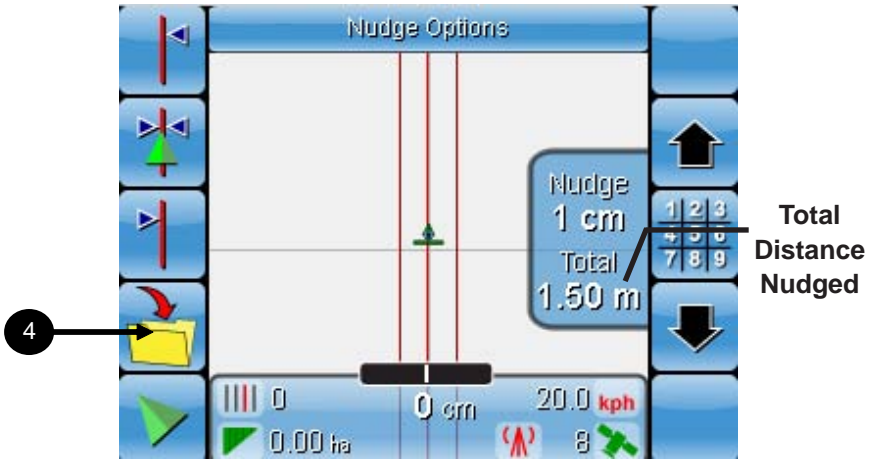
**Figure 9-57. Nudge Options screen**

Use the **up** and **down** arrows to increase or decrease the *Nudge Offset* size. The *Nudge Offset* determines the distance the guidance path will be moved when either  or  are selected.

Select  to set a specific value for the *Nudge Offset*. Refer to Appendix A, Page A-2 for information on how to use the Numeric keypad.

Once you have set these values, use the icons on the left of the display to nudge the guidance path either *left* or *right* or to *center*.



1. Select  to nudge the guidance path to the *left*.
2. Select  to nudge the guidance path to the *right*.
3. Select  to nudge the guidance path to the *center* of the vehicle icon.



**Figure 9-58. Nudge Options screen After Nudge**

The total distance the guidance path is nudged is indicated under **Total** (figure 9-58).

The value of the **Total** decreases as the guidance path is nudged to the right and increases as the guidance path is nudged to the left.

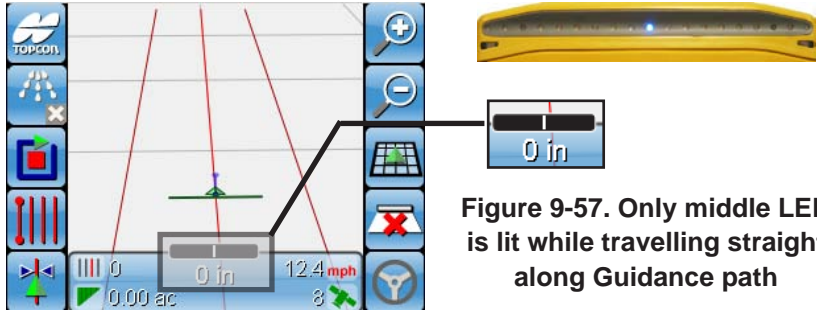
4. Select  to save the nudged guidance pattern. Refer to Appendix A, Page A-9 and A-10 for instructions on using the Alphanumeric pad.
5. Select  return to the **Guidance screen**.

**NOTICE** NOTICE

*When a Pivot guidance path (refer page 9-21) is nudged, it is important to note that the diameter of the Pivot will change. This is different from GPS Drift Compensation (refer page 6-50) which shifts the entire guidance path to the center of the vehicle without changing the diameter of the Pivot.*

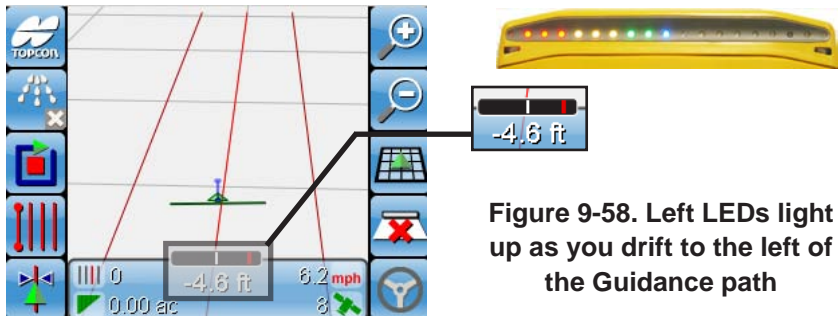
## Steering with Guidance

This section will explain how to read some of the steering indicators that appear on the screen and light bar while driving to a guidance pattern. The images below display an AB Line Guidance pattern.



**Figure 9-57. Only middle LED is lit while travelling straight along Guidance path**

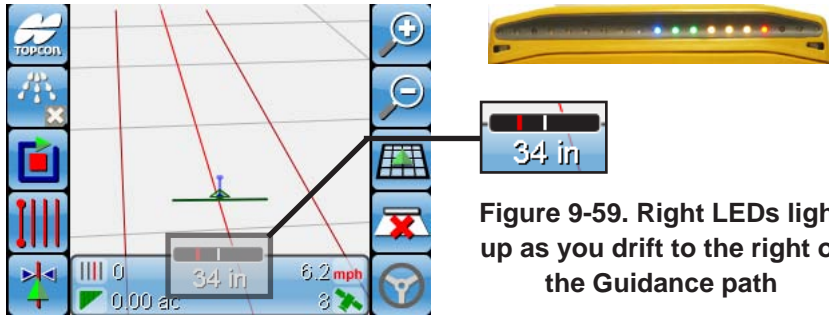
When you are travelling in a straight line along a guidance path, only the middle LED should be lit on the lightbar.



**Figure 9-58. Left LEDs light up as you drift to the left of the Guidance path**

If your vehicle is travelling left of the guidance path, the LEDs on the left of the lightbar will begin to light up. The further to the left you move from the guidance path, the more LEDs will be lit.

The indicator screen also indicates how far off center you are. Seeing the red bar (figure 9-58) move closer to the right indicates that you need to steer more to the right to get back on center.



**Figure 9-59. Right LEDs light up as you drift to the right of the Guidance path**

If your vehicle is travelling right of the Guidance path, the LED's on the right of the lightbar will begin to light up. The further to the right you move from the guidance path, the more LEDs will be lit (figure 9-59).

The screen also indicates with a red bar moving left that you need to steer more to the left to go back to center. The closer you are to center, the less arrows that are displayed and less LEDs are lit.

# Backup and Import Files from Thumbdrive


This chapter will explain how to backup all your saved Job, Boundary and Guidance Pattern files to a thumbdrive and also how to import these files from the thumbdrive into your System 110/150 console.

## Backing Up to Thumbdrive



Figure 10-1. Access Diagnostics screen

Make sure that you have a thumbdrive with enough file space inserted into the USB port on the front of the console before proceeding.

1. Select  to access the *Diagnostics* screen.

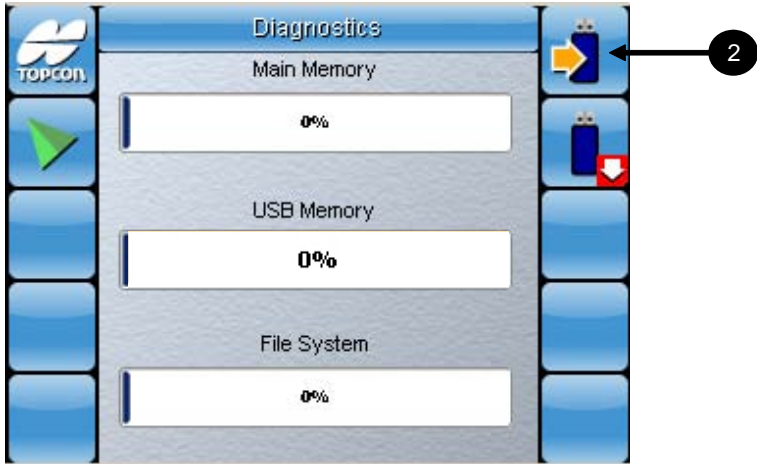



Figure 10-2. Back Up all Job, Boundary and Guidance Pattern Files

2. Select  to backup all your Job, Boundary and Guidance Pattern Files to your thumbdrive (figure 10-2).

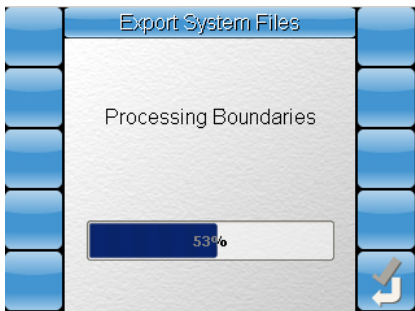


Figure 10-3. Back Up in Progress

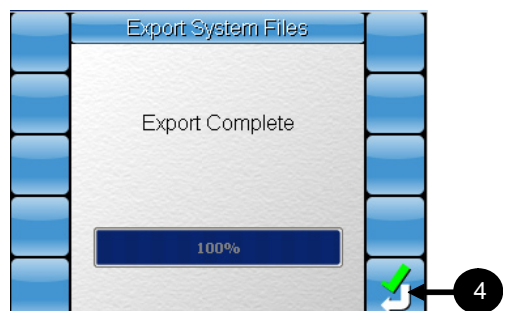



Figure 10-4. Back Up Complete

3. You should see the above screens. If the backup is successful, you will see the image in figure 10-4.
4. Select  to exit the screen.

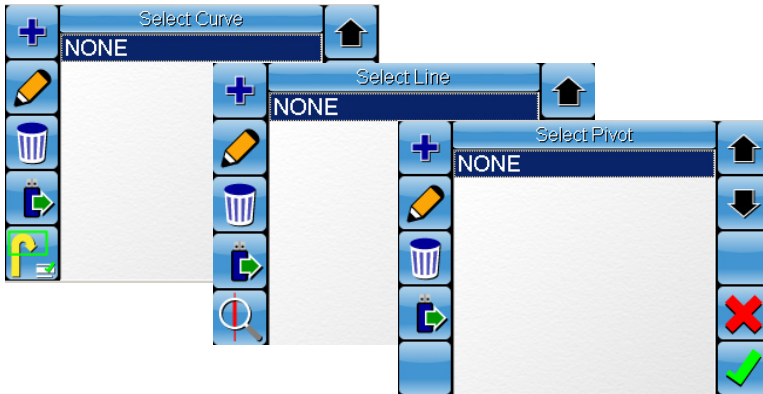
You will be returned to the *Job Selection* screen.

## Importing Files from Thumbdrive


To import your Job, Boundary or Guidance Pattern files from a thumbdrive, you have to access the screens where you select these files.



**Figure 10-5. Job and Boundary Selection Screens**






**Figure 10-6. Curve, AB Line and Pivot Guidance Pattern Selection Screens**

1. For any of these screens, select the USB icon  to load the respective file type.



**Figure 10-7. Select File to Import**

The **Import Jobs** screen is displayed if you are importing a Job file from a thumbdrive. All the import screens are the same, except for the title that indicates what type of file is being imported.

2. Select the up and down arrows   to select a file.
3. Select  to confirm your selection.

The job file will be loaded onto your console and you will be able to select it from the job selection screen. The same applies for Boundary files and Guidance Pattern files once they are imported, and they can be selected from their respective selection screens.

**NOTICE**

**NOTICE**

*The System 110/150 automatically exports the Boundary and Coverage Maps as Shape Files. These files are saved in the 'Boundary Shape files' folder and 'Coverage Shape files' folder respectively when exported to the thumbdrive. These files can be imported and used in other software programs that use shape files.*



# Quick Start Reference

## Create a Boundary

How to create a boundary in 5 steps:

1. Create a new Boundary file (Page 7-2)
2. Set your boundary offset (Page 7-7)
3. Select the Start recording boundary icon (Page 7-4)
4. Drive off along your boundary
5. Select Complete boundary icon when within 50 meters of starting point or drive within 5 meters of starting point to close boundary automatically (Page 7-5)

How to recall a boundary in 3 steps:

1. Enter the Job Setup screen (Page 7-9)
2. Enter the Boundary Selection screen (Page 7-10)
3. Select the Boundary file you want and confirm you selection (Page 7-10)

## Start a New Job

How to create a coverage map in 5 steps:

1. Create a new job file (Page 8-2)
2. Select a coverage sense method (Page 6-39)
3. Select the Start mapping icon (if in manual mode) or activate the switched input source whenever you want to map (Page 8-4)
4. Drive off around your field
5. Select, create and apply a Guidance pattern while driving for more accurate coverage (Page 9-1)

How to recall a coverage map in 3 steps:

1. Enter the Job Setup screen (Page 8-6)
2. Enter the Job Selection screen (Page 8-7)
3. Select the Job file you want (Page 8-7)

How to create a coverage report in 3 steps:

1. Enter the Job Setup screen (Page 8-9)
2. Insert a thumbdrive into the System 110/150 console
3. Select the create coverage report button (Step 2, Page 8-10)

## Sample Job

This section will provide an example of how a Job can be done when utilizing the System 110/150 software. If a field does not already have a boundary mapped and you want to perform coverage mapping, you may perform these two activities at the same time. Below are instructions on how to perform the coverage of your field in this manner.

1. Create a new Job file (Page 8-2)
2. Create a new Boundary file (Page 7-2)

*A Boundary file is created after the Job file to ensure that the boundary you create is recalled when that Job is recalled. Job files will recall boundary files but boundary files will not recall Job files.*

3. Set your boundary offset (Page 7-7)
4. Select a coverage sense method (Page 6-39)
5. Select the Start recording boundary icon (Page 7-4)
6. Select the Start mapping icon (if in manual mode) or activate the switched input source whenever you want to map (Page 8-4)
7. Drive off along your field boundary
8. Create a Curve Guidance pattern (Page 9-5)












*Normally Curves is selected for the first and second lap. AB Lines is then selected and this guidance pattern is used to complete the coverage of the rest of the field. Using Guidance, this is considered the most effective way to get maximum coverage on a rectangular shaped field.*

9. Select the Complete boundary icon when within 50 meters of starting point or drive within 5 meters of starting point to close boundary automatically (Page 7-5)
10. Perform another lap around your field following the Curve Guidance Path that was created during your first lap
11. Create an AB Lines Guidance pattern (Page 9-17) and complete the coverage of your field
12. Select the Stop mapping icon (if in manual mode) or deactivate the switched input source whenever you want to stop mapping (Page 8-5)














# Appendix A











## Button Index

### System 110/150 Main








	Guidance Screen: Selecting this will show the guidance screen
	Setup: Selecting this will access the setup screen, that allows for machine swath, language and units to be altered for the unit
	GPS: Accesses the GPS options
	Job Setup: Accesses the Job Setup screen
	Diagnostics: Selecting this will show Main Memory, USB Memory and file system space
	Day: If this is shown, the unit is selected for daylight mode, with a brighter screen
	Night: With this icon shown, the screen brightness dims, and the colour scheme changes to allow night time mode
	Reprogramming: If a USB device was fitted and it had a new version of software attached, this button would allow for the upgrading to commence
	Additional Feature: Accesses the additional features menu
	Hardware, Serial #, and Software versions are shown when this is selected
	Import from USB: Select this icon to import files from a USB device inserted into the System 110/150

## Guidance






	<p>Main Screen: Accessible from the Guidance screen, this allows the operator to access the job screen, day/night option and other options</p>
	<p>Manual Coverage Inactive: This icon indicates that the coverage map is inactive and will not be painted on the screen</p>
	<p>Manual Coverage Active: This icon indicates that the coverage map is active and the coverage map will be painted on the screen</p>
	<p>Switched Coverage Inactive: This icon indicates that the coverage map is inactive and will not be painted on the screen</p>
	<p>Switched Coverage Active: This icon indicates that the coverage map is active and the coverage map will be painted on the screen</p>
	<p>Boundary Ready: This icon indicates that boundary mapping is paused. Select this icon to begin boundary mapping</p>
	<p>Boundary Active: This icon indicates that boundary mapping is active. Select this icon to pause boundary mapping</p>
	<p>Close Boundary End points: This icon indicates that you are nearing the end point of your boundary. Select this icon to create a line between the two ends and close the boundary</p>
	<p>Boundary in use: This icon indicates that a boundary has been completed and is in use. Select this icon to clear the current boundary and start a new boundary file</p>
	<p>Place point A: Select this icon to place point A of the parallel line guidance pattern</p>
	<p>Place point B: Select this icon to place point B of the parallel line guidance pattern</p>
	<p>Place point A: Select this icon to place point A of the curve line guidance pattern</p>
	<p>Place point B: Select this icon to place point B of the curve line guidance pattern</p>

	Create New Curve Line: Select this icon to clear the current curve line guide and create a new Curve guidance pattern file
	Pivot OFF: Select this icon to start pivot guidance pattern creation
	Pivot Active: This icon indicates that pivot guidance pattern creation is active. The icon “square” will flash red and grey during this time
	Zoom Out: Select this icon to get a wider view of the Guidance screen
	Zoom In: Select this icon to get a closer view of the Guidance screen
	Overhead : This icon indicates that the screen map is in overhead view mode. This gives you an overhead view of your vehicle and the map
	Perspective: This icon indicates that the screen is in perspective mode. This gives you a cabin view perspective of the screen map
	North Up: This icon indicates that the screen map is in North Up mode. This gives you an overhead view of your vehicle and the map with the front of your vehicle always pointing towards the top of your screen
	Nudge: Select this icon to move a guidance path a set distance to the left or right of your vehicle or to line up the guidance path with the center of your vehicle antenna
	Sprayer: Select this icon to access the sprayer control screen. This option is only available when the sprayer feature has been activated







## Setup

	End of Row Setup: Select this icon to access the End of Row Setup screen
	Units: Select this icon to access the Units screen
	Select Language: Select this icon to access the Select Language screen
	Implement Setup: Select this icon to access the Implement Setup screen
	GPS Antenna Location: Select this icon to access the GPS Location Setup screen
	Lightbar LED spacing: Select this icon to access the Enter LED Spacing screen
	Coverage Sense Setup: Select this icon to access the Coverage Sense Setup screen





## GPS Settings

	Input/Output Setup: Select this icon to access the Input/ Output Setup screen
	Select Baud Rate: Select this icon to select the Baud Rate
	Satellite Details: Select this icon to see how many satellites are currently detected, the correction age and the HDOP
	Select GPS receiver: Select this icon to access the Select Your GPS Receiver screen
	Select Correction system: Select this icon to access the Select Correction System screen








	Satellite Diagnostic: Select this icon view satellite diagnostic information
	Firmware upgrade: Select this icon to upgrade your AGI-3 Firmware
	GPS Drift: Select this icon to compensate for GPS drift when using AB Lines and Pivot guide lines. When selected, the lines will move to the position of the GPS Antenna
	Radar Output Setup: Select this icon to access the Radar Output Setup screen
	GPS Output Setup: Select this icon to access the GPS Output Setup screen
	External Antenna Setup: Select this icon to access the External Antenna Setup screen




## Advanced Features

	Load Project: Select this icon to load a project file
	Wayline Selection: Use this to select a wayline. One click for the next line. Two clicks for the previous line
	Load Optimal Lines: Select this icon to load an optimal lines file
	Advanced Features screen: Select this icon to access the advanced features screen




## Select Guidance Pattern

	Curves: Selects Identical Curves Guidance pattern
	Curves: Selects Adaptive Curves Guidance pattern
	AB Lines: Selects AB Guidance pattern
	Pivot: Selects the Pivot Guidance pattern
	AB points Coordinates: Select this icon to manually edit the coordinates of the AB points when AB Lines is your chosen guidance pattern








## Jobs

	Create Coverage Report: Select this icon to create a Coverage Report
	Select Boundary: Select this icon to access the Select Boundary screen
	Enter Notes: Select this icon to access the Enter Notes screen





## Select Boundary - Boundary Offset Icons


	Boundary Offset: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the center of the swath
	Boundary Offset_Left: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the left side of the swath
	Boundary Offset_Right: Select this icon to access the Enter Boundary Offset screen. This icon indicates that the boundary line will be drawn from the right side of the swath

## Tractor Setup





	GPS Height: Select this icon to enter the GPS Antenna height from the ground
	Antenna Location: Select this icon to enter the distance from the drive wheels to the antenna.
	GPS Steering Location: Select this icon to enter the distance, left/right that the Antenna is located from the center line of the vehicle.
	Wheelbase Length: Select this icon to enter the distance between the two wheel axles
	Tow Point Offset: Select this icon to enter the distance from the rear wheel axle to the tow point
	Axle Height: Select this icon to enter the height of the rear wheel axle from the ground
	Front Hitch Offset: Select this icon to enter the distance from the front wheel axle to the hitch point

## Implement Setup





	Application width: Select this icon to enter the Swath Width
	Inline Offset: Select this icon to enter the Inline Offset. This is the offset of the vertical centerline of the swath from the vertical centerline of the GPS
	Implement Rear Offset: Select this icon to enter the Implement Rear Offset. This is the offset of the horizontal centerline of the swath from the horizontal centerline of the hitch point
	Implement Trailer Offset: Select this icon to enter the Implement Trailer Offset. This is the offset of the horizontal centerline of the swath from the horizontal centerline of the GPS



	<p>Underlap/Overlap: Select this icon to enter the amount of swath overlap or underlap. This value will determine the spacing of the guidelines when using a Guidance Pattern to perform coverage mapping</p>
---	---

## Units



	<p>Enter Hour: Select this icon to enter the hour for the Time settings.</p>
	<p>Enter Minutes: Select this icon to enter the minutes for the Time settings</p>
<p>12h/ 24h</p>	<p>Time Format: Select this icon to change between the 12 hour clock and 24 hour clock format</p>
<p>mmddy ddmmy</p>	<p>Date Format: Select this icon to change between the month/day/year and day/month/year date format</p>
	<p>Units: Select this icon to change between Metric and English units of measurement</p>
	<p>Std/DMS: Select this icon to change between Standard and DMS format for latitude and longitude coordinates</p>

## General Icons

	<p>Scroll Up: Select this icon to scroll up a window</p>
	<p>Scroll Down: Select this icon to scroll down a window</p>
	<p>Next Selection: Select this icon to scan through available selections</p>
	<p>Cancel: Select this icon to cancel any selections or changes that you have made and return to the previous screen</p>

	Accept: Select this icon to accept any selections or changes that you have made and return to the previous screen
	Accept: Select this icon to accept any selections or changes that you have made and return to the previous screen

## Number Pad Icons

01	Zero and One: Select this icon once to enter 0 or twice quickly to enter 1
23	Two and Three: Select this icon once to enter 2 or twice quickly to enter 3
45	Four and Five: Select this icon once to enter 4 or twice quickly to enter 5
67	Six and Seven: Select this icon once to enter 6 or twice quickly to enter 7
89	Eight and Nine: Select this icon once to enter 8 or twice quickly to enter 9
+/- C	Positive, Negative, Clear: Select this icon once slowly to add a positive or negative sign to your number or select this icon twice quickly to clear the number from the screen
	Backspace: Select this icon to delete the last number you entered on the screen
	Enter Decimal point: Select this icon to enter decimal place numbers
-	Dash and Underscore: Select this icon once to enter a dash '-', or select this icon twice quickly to enter an underscore '_'

## Alphanumeric Pad Icons

ABCD	A-D: Select this icon once to enter 'A', twice quickly to enter 'B', thrice quickly to enter 'C' and four times quickly to enter 'D'
EFGH	E-H: Select this icon once to enter 'E', twice quickly to enter 'F', thrice quickly to enter 'G' and four times quickly to enter 'H'
IJKL	I-L: Select this icon once to enter 'I', twice quickly to enter 'J', thrice quickly to enter 'K' and four times quickly to enter 'L'
MINOP	M-P: Select this icon once to enter 'M', twice quickly to enter 'N', thrice quickly to enter 'O' and four times quickly to enter 'P'
QRST	Q-T: Select this icon once to enter 'Q', twice quickly to enter 'R', thrice quickly to enter 'S' and four times quickly to enter 'T'
UVWXYZ	U-Z: Select this icon once to enter 'U', twice quickly to enter 'V', thrice quickly to enter 'W', four times quickly to enter 'X', five times quickly to enter 'Y' and six times quickly to enter 'Z'
[Space] <- C	Space, Backspace, Clear: Select this icon once to enter a space, twice quickly to backspace and thrice quickly to clear the screen
↑/⌘	Change type pad: Select this icon to change the type pad. You may choose between Capital letters, normal letters and numbers

# Appendix B

## Spare Parts List

General Parts (Kits A3642, A3641 Only)

Part Number	Description
A3673	GX-45 Display
B105	Ram Mount Base
B103	Ram Mount Arm
A3637	Operator Manual (CD) Multilingual
A3639	Quick Reference guide
A3240	Power/ CAN Harness
A3442	Remote Master Detect Harness
A1727	Mag-Mount (GPS)
AGA3663-EN	System 110/150 Operators Manual (Paper, English)
AGA3638	System 110/150 Quick Setup Card

Available in Kit with AGE-2 Antenna (A3642)

Part Number	Description
A3242	System 110 AGE-2 to Console Harness
9060-1408	AGE-2 Antenna

Available in Kit with AGE-1 Antenna (A3641)

Part Number	Description
A3441	System 110 AGE-1 to Console Harness
9060-1407	AGE-1 Antenna

## Available in Kit without GPS Antenna

<b>Part Number</b>	<b>Description</b>
A3443	Universal Power Comms GPS Harness

## Accessory Kits

### System 110/150 Transfer Kit (A3448)

<b>Part Number</b>	<b>Description</b>
B105	Ram Mount Base
A3240	Power/ CAN Harness
A3442	Remote Master Detect Harness

### System 110 Hotshoe Kit (A3449)

<b>Part Number</b>	<b>Description</b>
9192-2000	GX-45 Hotshoe
A3656	CAN Harness

### System 110 Universal GPS Harness

<b>Part Number</b>	<b>Description</b>
A3443	Universal Power Comms GPS Harness

### System 110 R130 Kit

<b>Part Number</b>	<b>Description</b>
A1870	CSI R130 Antenna and Receiver

### System 110 Lightbar Kit

<b>Part Number</b>	<b>Description</b>
9192-0000	LD40 Lightbar



# Appendix C

## Product Specifications

### Electrical Specifications

**Table C-1. Electrical Specifications**

Supply Voltage	10 to 30VDC
Supply Current	1A Typical operating current Maximum at 12VDC input power, no peripheral equipment
Switched Output Power	5A Sensor/Conditioned output power
Ports	USB (Type A) Deutsch 12 pin (3)

### Physical Specifications

**Table C-2. Physical Specifications**

Display	320x234 Color QVGA, high brightness.
Housing	Plastic
Switches	1 momentary push button ( power on/off) 10 x momentary application buttons
Connectors	3 ea 12 pin DTM06-12S Deutsch connectors, unique keyed
Weight	4 lbs (1.814kg)

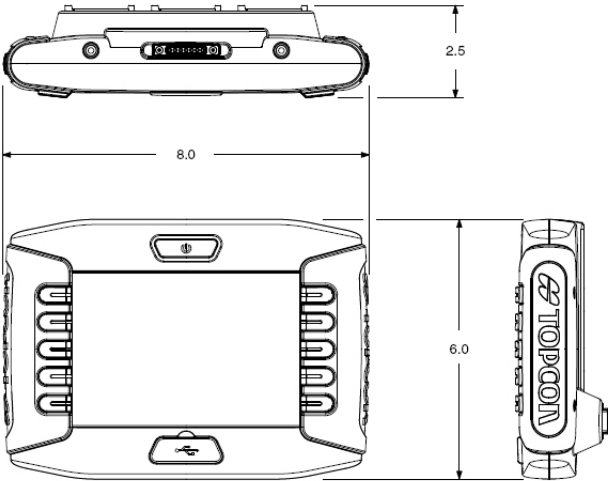
## Environmental Specifications

**Table C-3. Environmental Specifications**

Operating Temperature	-20°C to +60°C ( -68°F to 140°F)
Storage Temperature	-40°C to +85°C (-104°F to 185°F)
Moisture	Fully sealed from sand, dust and moisture to IP67 (MIL STD 810E)
Humidity	100% non-condensing
Vibration	MIL-810-F 14%c-17 on each axis
Shock	MIL-810-F 16.5-I to survive a 6.5ft (2 m) drop on hard surface

## Envelope Dimensions

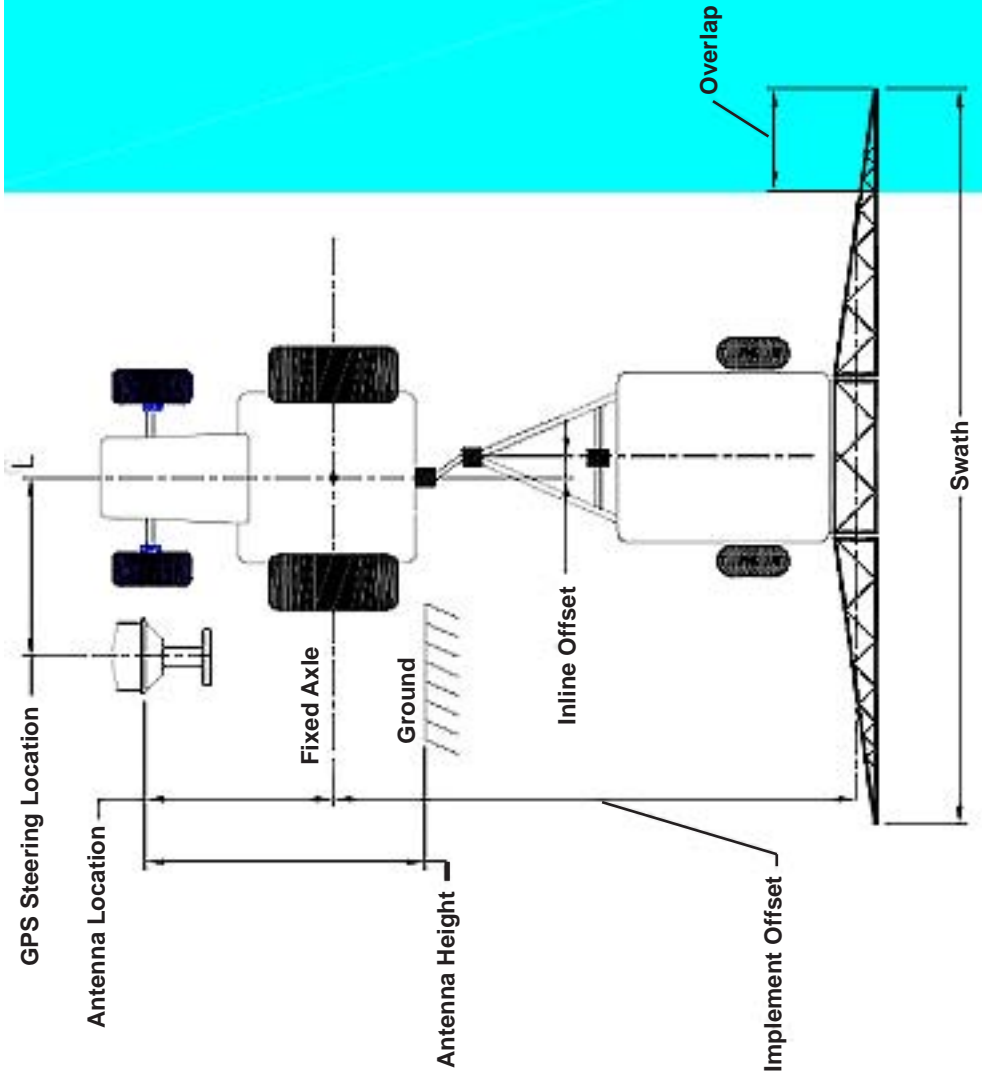
Envelope Dimensions	8" x 6" x 2.5" (203mm x 152mm x 63.5mm)
---------------------	---



**Figure C-1. Envelope Dimensions**

# Appendix D

## Tractor Schematic

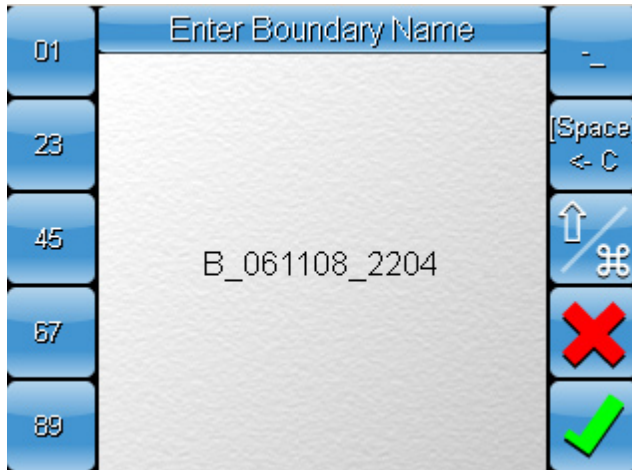




# Appendix E

## File Name Information

When you create a new file, a file name is automatically generated. In the image below is a file name automatically generated for a Boundary file.



Every file name can be broken into 3 part. The first part represents for the file type. For the above example this is represented by 'B'.

**B**\_061108\_2204

The second part represents the date the file was created. This is in the format of day/month/year or dd/mm/yy. For the above example, the date is 1st February 2008.

B\_**061108**\_2204

The third part represents the time the file was created. The time is always displayed in 24 hour clock format. This means that 0000

represents 12:00am and 2300 represents 11:00pm. For the above example, the time is 10:04pm.

B\_061108\_2204

Below are examples of each file type and explanations of what they represent.

Example	File Type	Date	Time
C_010208_1351	Curve	1st February 2008	1:51pm
L_010208_1357	Line (AB)	1st February 2008	1:57pm
P_040208_1121	Pivot	4th February 2008	11:21am
B_010208_1210	Boundary	1st February 2008	12:10pm
Job140108_0034	Job	14th January 2008	12:34am

As you would have noticed, the first letter of the file name represents the first letter of the file type.

These automatically generated file names provide a good reference for you to keep track of which files belong to the same Job.

Boundary files and Guidance Patterns files are generally created in conjunction with a Job. The duration of a Job is stated in the coverage report and by knowing when a Job was started and stopped, you will be able to easily locate other related files.

# Appendix F

## Using a USB Thumbdrive

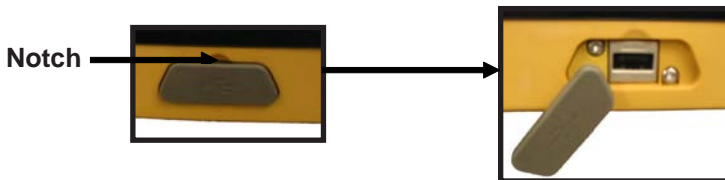
This section will explain how to properly insert and remove a USB device from the System 110/150 console.

### Inserting a USB thumbdrive



**Figure F-1. System 110/150 Front**

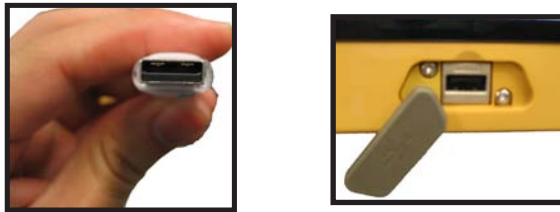
On the front of your console is a rubber flap (Figure F-1). This rubber flap should be in place whenever a USB thumbdrive is not connected to the System 110/150 to prevent moisture and dust from entering and damaging the console.



**Figure F-2. Remove the rubber flap**

Place the tip of your finger in the notch above the rubber flap (Figure

F-2). Pull lightly to remove the rubber flap and expose the USB port.



**Figure F-3. Ensure USB thumbdrive is oriented correctly**

There is only one way to plug the in the USB thumbdrive, so ensure that it is oriented correctly (Fig G-3).



**WARNING**

***Inserting the thumbdrive in incorrectly can result in permanent damage to the USB port***



**Figure F-4. Correctly Inserted USB thumbdrive**

The USB thumbdrive should slot in with light pressure when inserted correctly (Figure F-4).

To remove the thumbdrive, perform the above procedure in reverse.



# Appendix G

## Additional GPS Information

This section will covers any additional information relating to GPS settings that were not covered in the GPS Setup section of the manual.

Currently this section covers:

- RTK Base Station Setup (Pages G-1 to G-3)
- FH915 Setup (Pages G-4 to G-6)
- GSM Setup (Pages G-7 to G-11)
- GPS Satellite Diagnostic Information (Page G-12)
- GPS Icon Description (Page G-13)

### RTK Base Station Setup

This section will explains how to configure your base station settings when selecting RTK correction in your console.



Figure G-1. GPS Settings screen

1. Select  to access the *Select Correction System screen*.

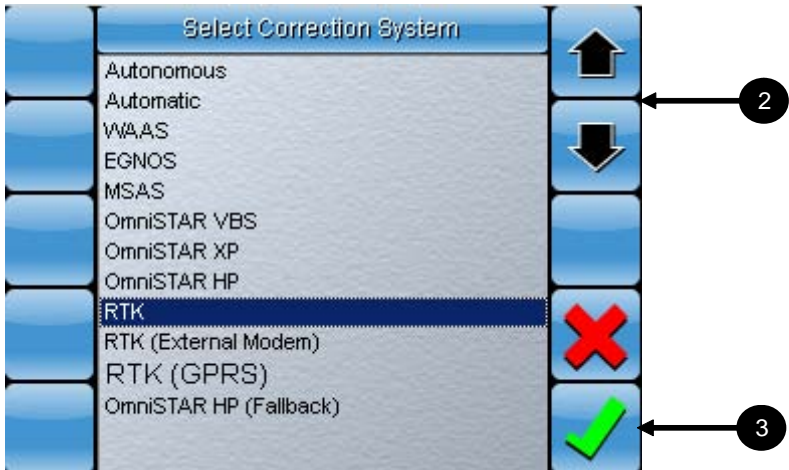


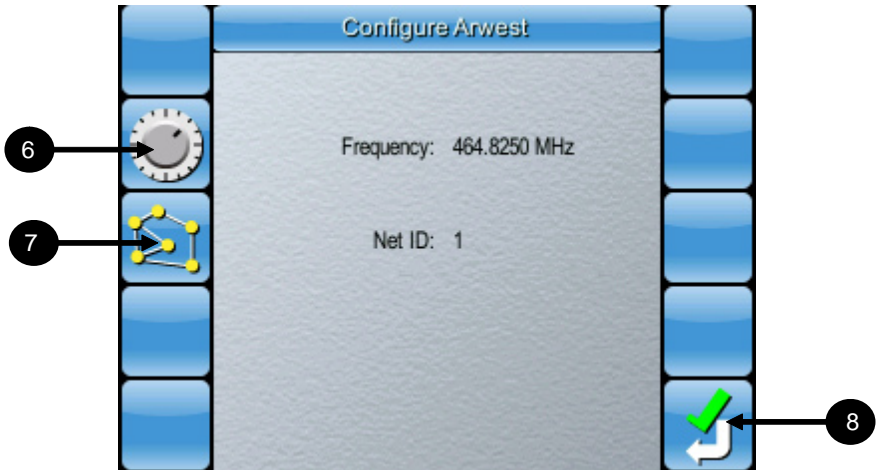
Figure G-2. Select Correction System screen

2. Select **RTK** from the list using the up and down arrows.
3. Select the **green tick** to confirm. You will be taken to the **RTK Protocol Selection screen.**



Figure G-3. Select RTK Protocol screen

4. Select an **RTK Protocol** from the list using the up and down arrows.
5. Select the **green tick** to confirm. You will be taken to the *Configure Arwest screen*.



**Figure G-4. Configure Arwest screen**

6. Select **Frequency** to set the UHF frequency your base station is set to.
7. Select **Net ID** to set the Net ID. This is usually set at 1 by default. If you are using a networked base station array you may need to change this value.
8. Select the **green tick** to confirm. A screen will appear indicating that the modem is being set up.

Once the modem is set up, you will be returned to the *GPS settings screen*.

## FH915 Setup

This section will explain how to configure your FH915 when selecting RTK correction in your console.



Figure G-5. GPS Settings screen

1. Select  to access the *Select Correction System screen*.

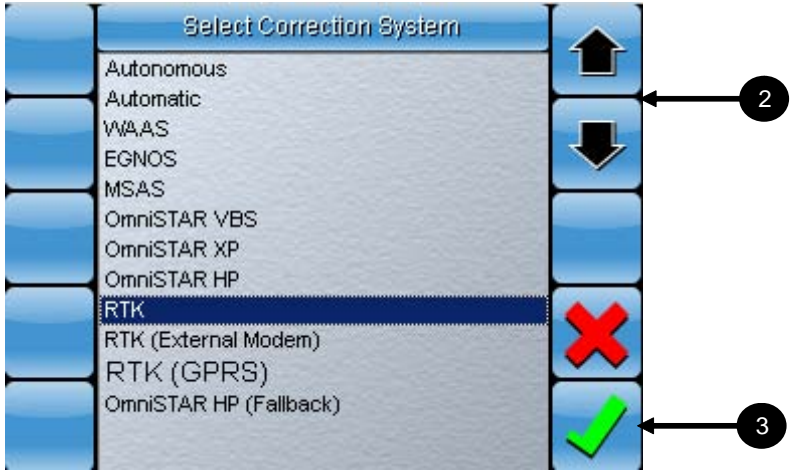


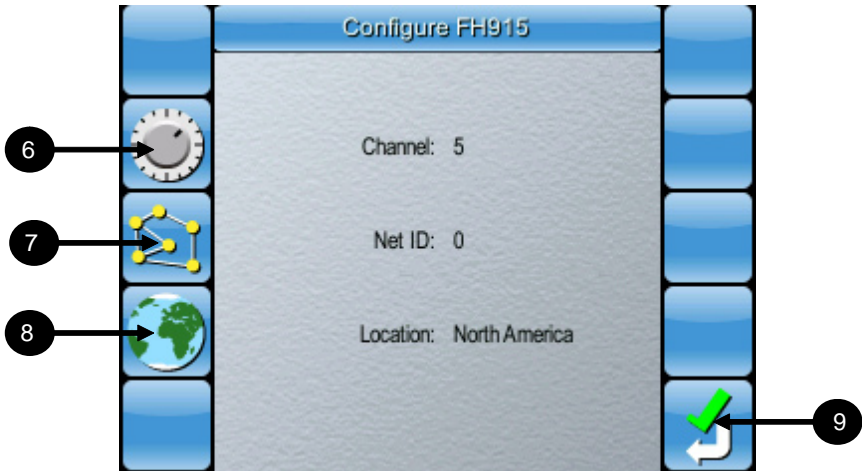
Figure G-6. Select Correction System screen

2. Select **RTK** from the list using the up and down arrows.
3. Select the **green tick** to confirm. You will be taken to the **RTK Protocol Selection screen**.



Figure G-7. Select RTK Protocol screen

4. Select an **RTK Protocol** from the list using the up and down arrows.
5. Select the **green tick** to confirm. You will be taken to the *Configure FH915 screen*.



**Figure G-8. Configure FH915 screen**

6. Select **Channel** to set the Channel.
7. Select **Net ID** to set the Net ID.
8. Select **Location** to set your current location.
9. Select the **green tick** to confirm. A screen will appear indicating that the modem is being set up.

Once the modem is set up, you will be returned to the *GPS settings screen*.

## GSM Setup

This section will explain how to properly perform the GSM setup when selecting RTK (GPRS) correction in your console.



Figure G-9. GPS Settings Screen

1. Select  to access the *Select Correction System* screen.

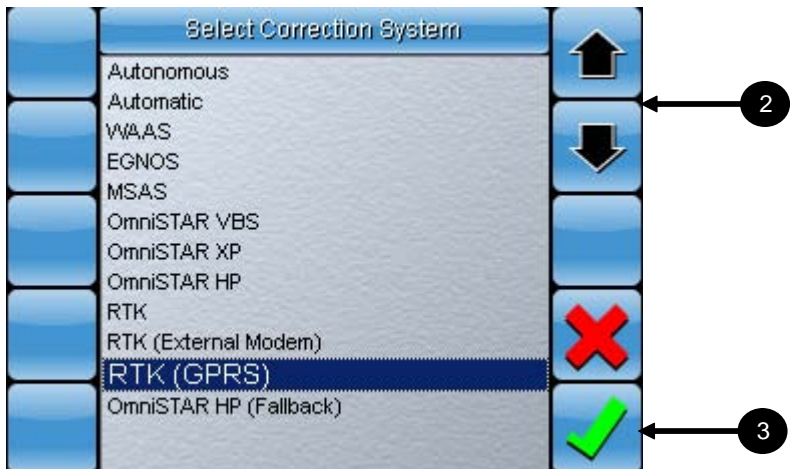


Figure G-10. Select Correction System Screen

2. Select **RTK (GPRS)** from the list using the up and down arrows.
3. Select the **green tick** to confirm. You will be taken to the **RTK Protocol Selection screen**.



**Figure G-11. Select RTK Protocol screen**

4. Select the **RTK Protocol** from the list using the up and down arrows.
5. Select the **green tick** to confirm. You will be taken to the **GSM Setup screen**.





**Figure G-12. GSM Setup screen**

The GSM Setup requires the following information to be carried out:

- a) SIM Pin
- b) GSM Username
- c) GSM Password
- d) APN

This information can be obtained from your GSM or Internet network provider.

1. Select each icon on the left and enter the required values.

Refer to Appendix A, page A-9 to use the Alphanumeric keypad.

2. Select the **green tick** to confirm. You will be taken to the *NTRIP Setup screen*.



**Figure G-13. NTRIP Setup screen**

NTRIP Setup requires the following information to be carried out:

- a) NTRIP Address
- b) NTRIP Port
- c) NTRIP Mount Point
- d) NTRIP Username
- e) NTRIP Password

This information can be obtained from your GSM or Internet network provider.

1. Select each icon on the left and enter the required values.

Refer to Appendix A, page A-9 to use the Alphanumeric keypad.

2. Select the **green tick** to confirm. You will be taken back to the *GPS Settings screen*.



**Figure G-14. GPS Settings screen**

The PPP status has 6 states, Idle, GPRS Stopping, GPRS Connecting, PPP Connecting, PPP Connecting, NTRIP Connecting, NTRIP Connected.

The differential mode should change to RTK once the PPP status is connected.

## GPS Satellite Diagnostics Information

Select  to access the *Satellite Diagnostic screen*



**Figure G-15. GPS Diagnostic information**

Here you can check to see if there is communication between your GPS receiver and the base station.

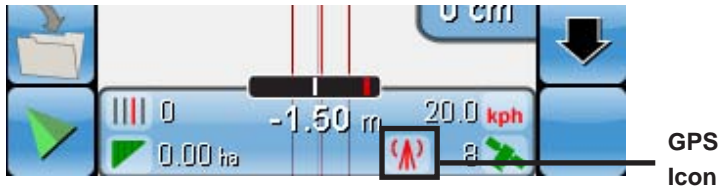
The *Number of Received Messages* should be increasing if there is communication between the receiver and the base station.

Also, check the *Link Quality* to ensure that there is a strong signal between the receiver and the base station.

In figure G-15, it can be seen that the *Number of Received Messages* is 1017 and the *Link Quality* is 100%.

1. Use the **up** and **down arrows** to view diagnostic information on any additional *Links* that may be active.
2. Select the **green tick** to return to the *GPS Settings screen*.

## GPS Icon Description



**Figure G-16. GPS Icon Visible**

The GPS icon appears only when specific receivers are selected. The following section explains what the GPS icon represents and what the different colors indicate.

The GPS Icon is green when the GPS Accuracy is greater than 50, yellow when the GPS Accuracy is between 10 and 50, and below 10 it is red.

The GPS accuracy is determined as follows:

- HDOP < 1.0 gps accuracy = 100
- HDOP between 1.0 and 4.0 accuracy = inverse percentage of hdop between 1 and 4 examples 1.1--> 93%, 2--. 75%, 3--> 43.75% ...
- HDOP > 4 gps accuracy goes to 1
- GPS invalid, gps accuracy goes to 0

The GPS icon is basically green if you have the differential source you selected, otherwise it is red.

When auto correction mode is selected, the icon color changes will vary depending on the correction source it is picking up at the time:

- If you selected DGPS, WAAS, EGNOS, MSAS, VBS the icon is green if have DGPS solution otherwise it is red

- If you selected XP it is green if you have Omnistar XP solution, otherwise it is red
- If you selected HP it is green if you have Omnistar HP solution, otherwise it is red
- If you selected RTK it is green if you have RTK fixed position mode, otherwise it is red
- If you selected AUTO or ANY it is green if you have fixed RTK, float RTK, XP, HP, it is yellow if you have a DGPS fix (VBS, WAAS, EGNOS, MSAS) otherwise it is red.

# Appendix H

## Bravo Link Feature

This section will explain how to enable Bravo Link functionality in the System 110/150 console.



### NOTICE

*The GPS Output feature and System 150 Sprayer Controller feature cannot be used while Bravo Link is enabled.*

### Enabling Bravo Link

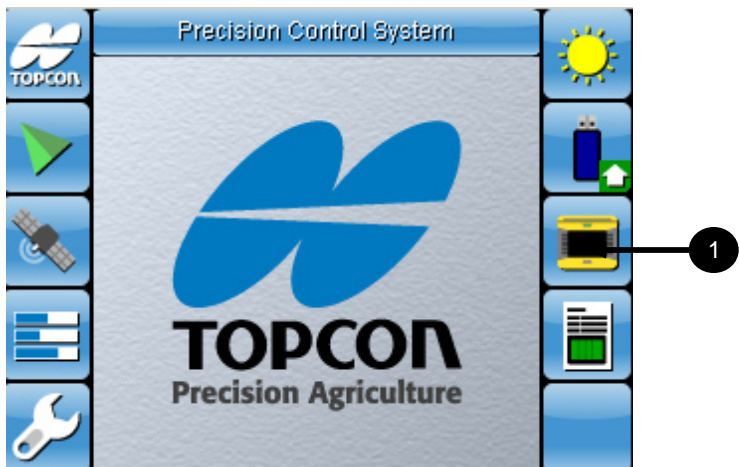


Figure H-1. Main Screen

1. Select  to access the *Select Feature* screen.



Figure H-2. Select Feature Screen 1

2. Select the **down arrow** until you see the screen in figure H-3.

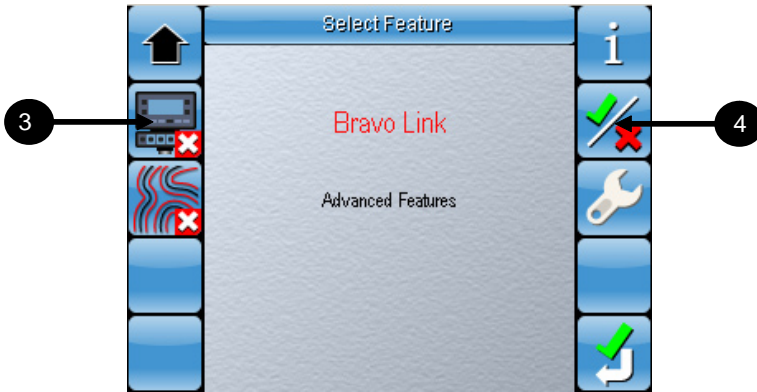




Figure H-3. Select Feature Screen 3

3. Select **Bravo Link**.
4. Select  to enable (or disable) **Bravo Link**.





**Figure H-4. Feature Registration Screen**

5. Enter the 3 ten digit registration numbers.
6. Select  after you have entered the registration numbers to unlock your Bravo Link feature.



**NOTICE**

*Contact your nearest local dealer if you require assistance registering your Bravo Link feature.*



# Appendix I

## Advanced Features (Optimal Waylines)

This section will explain how to enable the Optimal Waylines Advanced Feature functionality in the System 110/150 console.

### Enabling Advanced Features

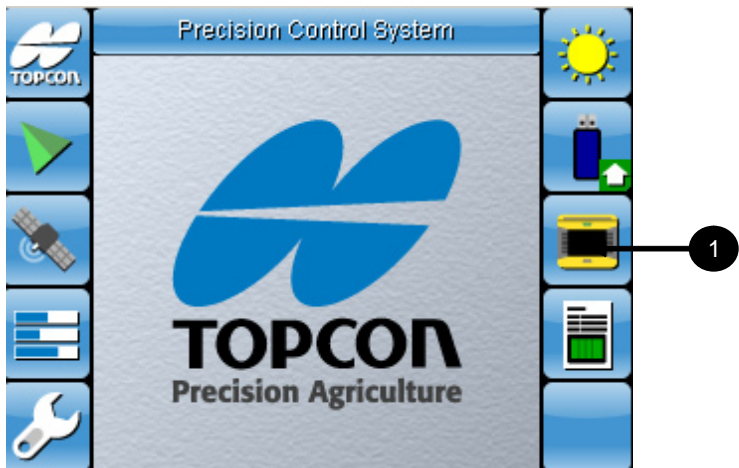


Figure I-1. Main Screen

1. Select  to access the *Select Feature* screen.



Figure I-2. Select Feature Screen 1

2. Select the **down arrow** until you see the screen in figure I-3.

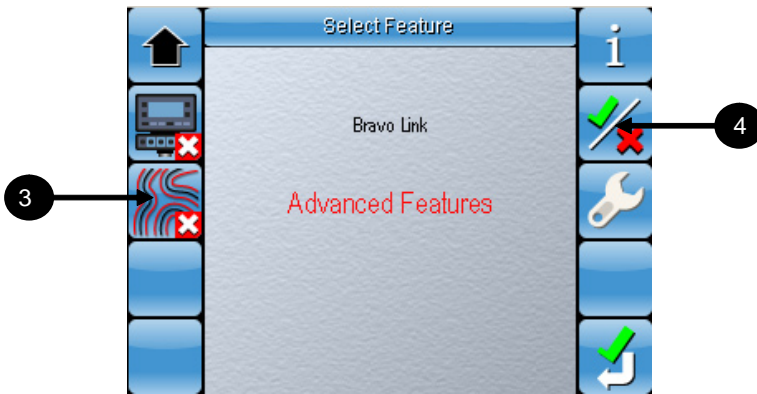


Figure I-3. Select Feature Screen 3



3. Select **Advanced Features**.
4. Select  to enable (or disable) **Advanced Features**.



Figure I-4. Feature Registration Screen

5. Enter the 3 ten digit registration numbers.
6. Select  after you have entered the registration numbers to unlock the **Advanced Features**.



### NOTICE

*Contact your nearest local dealer if you require assistance registering your Advanced Features.*



Figure I-5. Access Select Guidance Pattern screen

7. Select  to access the *Select Guidance Pattern* screen.

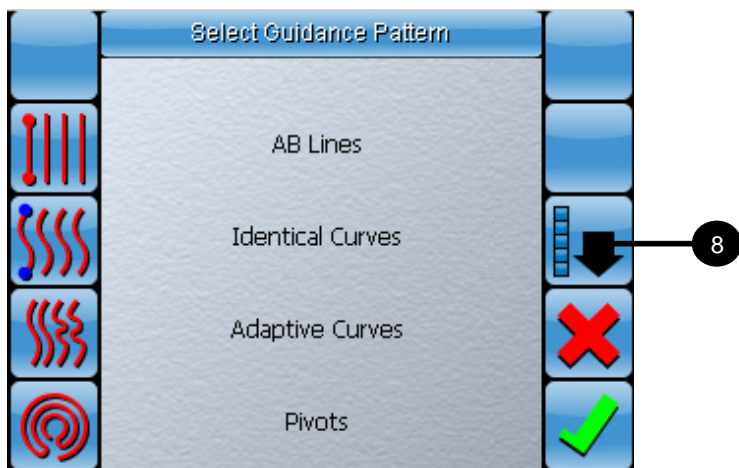


Figure I-6. Access the Advanced Features screen

8. Select  to access the *Advanced Features* screen.

## Advanced Features



**Figure I-7. Advanced Features screen**

When Advanced Features are enabled, the vehicle path can be recorded and this information can then be exported as a shape file for analysis and future use. There are 3 options available on the Advanced Features screen which will be explained in the following sections.

Optimal Waylines are parallel lines that are generated based on designated reference lines. Each of these lines are spaced according to the implement width that is set in the console.

These reference lines are created using external software and stored in the form of a shape file which is then loaded into the console.

Once the Optimal Waylines are loaded, a user can then begin selecting lines in order to perform planting. Each file that is loaded may have multiple lines that can be selected.



## Load Optimal Waylines

Optimal Wayline shape files can be transferred and loaded onto the console using the following procedure:

1. Create a folder in your USB thumbdrive and name it "OptimalLines".
2. Create another folder inside this folder and save the 3 files with the extensions (.dbf, .shp, .shx) there. These 3 files should all have the same file name.
3. Rename the folder so it has the exact same name as the 3 files. This is very important to ensure the console will be able to detect the files so they can be loaded into the console.



**Figure I-8. Select Load Optimal Waylines**

4. Insert the USB thumbdrive into the console.
5. Select **Load Optimal Waylines** .
6. Select  to confirm.



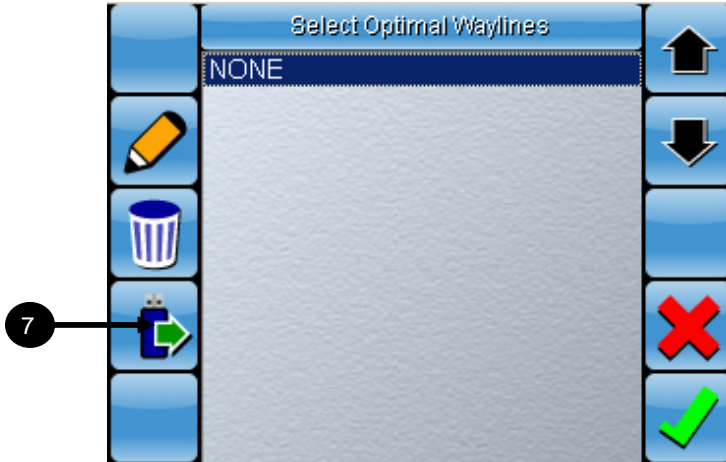



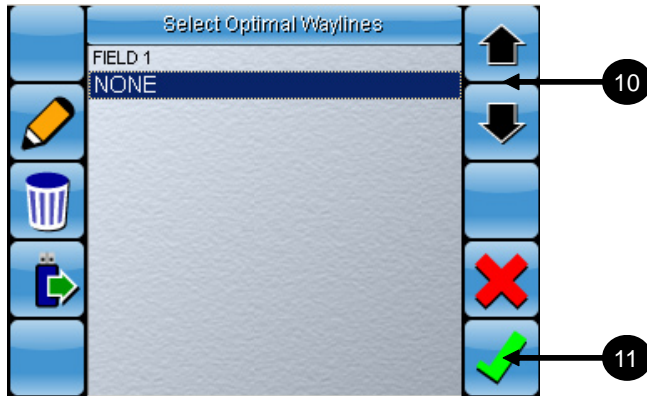
Figure I-9. Select Optimal Waylines screen

7. Select  to import files from the USB thumbdrive.




Figure I-10. Import Optimal Waylines screen

8. Use the **up** and **down** arrows to select the file you want to import.
9. Select  to confirm.



**Figure I-11. Optimal Waylines Imported to Console**

10. Use the **up** and **down** arrows to select the file you just imported.
11. Select  to confirm. You will be returned to the main guidance screen where the file you selected should be displayed.




**Figure I-12. Optimal Waylines Imported to Console**

In the figure above, the active Optimal Wayline is represented by the black line inbetween the A and B points. The parallel red line is drawn at set incremental distances relative to the active Optimal Wayline. These lines represent planting rows along which the vehicle is to travel. The blue line represents other Optimal Waylines that can be selected.



**Figure I-13. Select between available Optimal Waylines**

12. You can select between the available Optimal Waylines using the line selection button . Pressing it once will select the next available line. Pressing it twice fast will select the previously selected line.

As you are planting, a separate file will be created which can then be exported and used to create a Project file for harvesting later on.



## Load Project

Projects are files in shape format which display all the lines that the vehicle should be operating along. When a Project is loaded all the routes are pre-defined and no new parallel lines will be created.

In Project mode, the system operates in a similar fashion as the Load Optimal Waylines mode in that the system generates a second file with all of the performed lines. The planned file can then be checked against the performed file.



**Figure I-14. Select Load Project**

1. Insert a USB thumbdrive containing the Project shape file
2. Select **Load Project**  .
3. Select  to confirm.

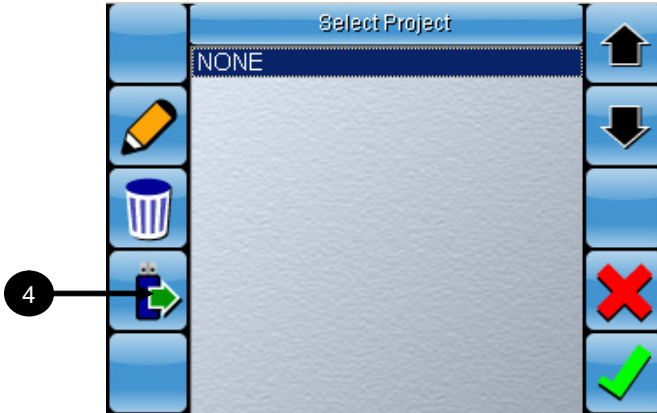


Figure I-15. Select Project screen

4. Select  to import files from the USB thumbdrive.

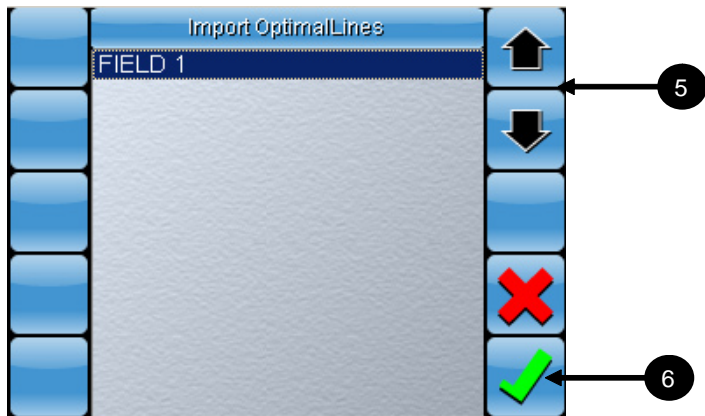




Figure I-16. Import Optimal Lines screen

5. Use the **up** and **down** arrows to select the file you want to import.
6. Select  to confirm.



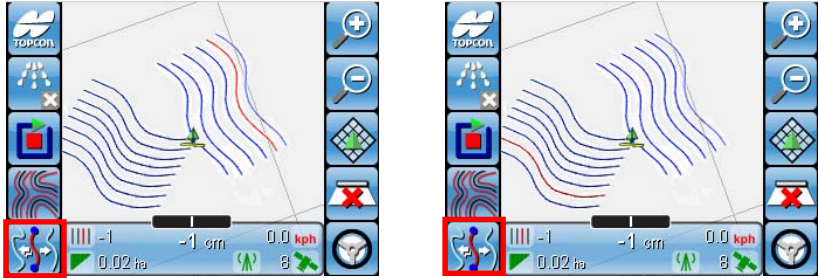
**Figure I-17. Project File Imported to Console**

7. Use the **up** and **down** arrows to select the file you just imported.
8. Select  to confirm. You will be returned to the main guidance screen where the file you selected should be displayed.




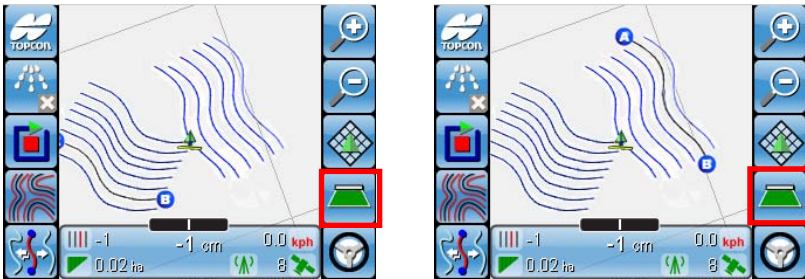
**Figure I-18. Project Imported to Console**

The Project will be loaded in the main guidance screen. The closest line to the vehicle will be highlighted in red.




**Figure I-19. Selected line is highlighted red**

You can select between the available lines using the wayline selection button . Pressing it once will select the next available line. Pressing it twice fast will select the previously selected line.



**Figure I-20. Pressing the coverage mapping button will confirm a selected line**

When a line is selected, press the coverage mapping button  to confirm and activate the line. When active, the line will turn into a black AB line which you will then be able to steer to. Auto-steering can only be engaged on lines that are active.



### NOTICE

*If you do not confirm a line you have selected within 5 seconds, that closest line to your position will be reselected by default. Also, you cannot confirm the selection of a line that is located more than 50m from your current vehicle position.*

As you are harvesting, a separate file will be created which can then be exported and used for analysis later on.



### Exporting All Lines



**Figure I-21. Export All Lines to USB thumbdrive**

This option allows you to export your coverage mapping path data from the console in shape file format. This can be used at the completion of any optimal waylines job, project job or normal job during which coverage mapping was enabled.

Three files with the same name but different file extensions (.dbf, .shp, .shx) are generated in the USB thumbdrive. These files are stored in an automatically generated folder named "AsDrivenShapefiles" in the USB thumbdrive.

1. To export your coverage mapping data, insert a thumbdrive into the console and select the export to USB thumbdrive button .
2. Select  to confirm.

Once the export is confirmed, remove the USB thumbdrive from the console.



# Appendix J

## Alarms List

This is a list of all the alarms on the console and their descriptions

<b>Alarm</b>	<b>Description</b>
Disengage	This is triggered when the steering has been disengaged by non-console input. These include due to losing satellites, losing the guideline and manually turning the steering wheel.
End of row	This is triggered when either the end of row, first distance or second distance are passed.
Flow sensor fail	This alarm is triggered whenever the master is turned on, ground speed present, and at least 1 Section is turned on, and there are no flow sensor pulses being received.
No sprayer coms	This is triggered if the sprayer feature is activate but the console is unable to communicate with the sprayer ECU.
No ground speed	This alarm is triggered if the master switch is turned and there is no ground speed present.
Pressure high	The high pressure alarm indicates that the pressure signal input has exceeded the alarm point setting. If correctly set, this usually indicates a blockage, booms off when they should be on, or Sprayer speed too high.
Pressure low	The most common cause of this alarm is an empty tank. With minimum flows set for nozzles, flowmeter and pressure, this alarm will only show up with a pump or plumbing failures, or an empty tank.

Incorrect rate	This is a sprayer alarm, when the sprayer is in Auto mode and the target rate is not achieved.
Tank empty	This alarm simply states that the calculated volume has reached zero. If there is still spray in the tank, the system will still operate giving the volume used still accumulating, and the tank volume as a negative figure.
Tank low	This alarm gives a warning that the tank is running low.

# Index

## Index

### Symbols

9-32vdc 5-7

### A

A3408 B-1

A3416 B-1

A3448) B-2

A3449 B-2

AB Lines 9-17

Accessory Kits B-2

Adaptive Curve Modes 9-10

    Coverage Triggered 9-10

    Manual End of Row 9-13

    U-Turn Recognition 9-15

Advanced Features 2-2, I-1, I-2, I-5

AGE-1 B-1

AGE-1 GPS Harness 4-3

    connectivity 4-3

    part number 4-3

AGE-2 B-1

AGE-2 GPS Harness

    connectivity 4-3

Allen Key 5-2

Alphanumeric Pad Icons A-10

Applicator Wire, voltage 5-6

As Applied Maps 8-12

AsDrivenShapefiles I-14

### B

### Backup

    Thumbdrive 10-1, 11-1

Backup to thumbdrive 6-56

baud rate 6-45

bolts 5-2

### Boundary

    Create 7-1

    Offset 7-7

    Recall 7-9

    Save 7-6

Boundary creation 6-8

### Boundary Selection

    Access 6-57

Bravo Link H-1, I-1

### C

Communications Regulation Information 5

### Coverage Report

    Create 8-9

### Coverage Sense

    Setup 6-39

Curves 9-1

### D

Day Mode 6-60

DGPS 3-1

Diagnostics 6-58

Differential Mode 6-42

### E

Eastings / Northings 6-41  
EGNOS 6-50  
EGNOS (Test Mode) 6-50  
Electrical Specifications C-1  
Enter Notes 6-57  
Envelope Dimensions C-2  
Environmental Specifications C-2  
Exporting All Lines I-14  
External Antenna Setup 6-44  
    Antenna Height 6-45  
    Antenna Type 6-44  
    Front Offset 6-44  
    Right Offset 6-45

## **F**

FH915 G-4  
Float RTK 6-42

## **G**

General Icons A-8  
General Parts B-1  
GPS 3-1  
    Accuracy 6-42  
    Antenna  
        Height 6-32  
        Location Setup 6-31  
        Selection 6-49  
    Diagnostics G-12  
    information 6-48  
    no signal 6-3  
    Receiver  
        Other 6-42  
    Settings 6-41  
    Speed 6-42  
    Steering location 6-31  
GPS DB9 Connector 5-4  
GPS Fitup 5-4

GPS Icon G-12, G-13  
GPS Location A-7  
GPS Settings A-4, A-5  
Grey Connector 4-2  
Guidance 3-1, A-2  
    guidance pattern 6-13  
Guidance Pattern 6-13  
    AB Lines 9-17  
Guidance Patterns 9-1  
    AB Lines 9-17  
    Adaptive Curves (System 110) 9-5  
    Adaptive Curves (System 150)  
        9-10  
    Curves 9-1  
    Identical Curves 9-1  
    Pivot 9-21  
    Recall 9-25  
Guidance Screen 6-5  
Guidance Setup 6-20

## **H**

Harness  
    Power/CAN 4-2  
    Remote Hook Up Mapping 4-2  
HP 3-1

## **I**

Implement  
    Setup 6-28  
Implement Setup A-7  
Import  
    Thumbdrive 10-1, 10-3, 11-1

## **J**

Job  
    Clear Current 6-56  
    Recall 8-6

Setup 6-55

Jobs A-6

## L

Language

Select 6-27

Latitude 6-42

LED Mode

Drive Away 6-37

Drive Towards 6-37

Lightbar 4-1

Lightbar Mount

On Console 6-38

Remote 6-38

Lightbar Setup

LED Mode 6-37

LED Spacing 6-35

Lightbar Mount 6-38

Screen 6-34

Specific LED Spacing value 6-36

Line 6-15

Longitude 6-42

## M

Main Screen 6-6

MANUAL 6-7

Mapping

Application 3-2

Boundary 3-2

Coverage 3-2

Mapping ON/OFF indicators 6-6

Mounting console 5-2

MSAS 6-50

## N

Net ID G-3, G-6

Night Mode 6-60

North Up 6-11

Nudge 6-19, 9-28, 9-29

Number Pad Icons A-9

## O

Omnistar 6-50, 6-52

OmniSTAR VBS 3-1

Optimal Lines 2-2

OptimalLines I-6

Optimal Waylines I-1, I-5, I-8, I-9,  
I-10

Load I-6

Overhead View 6-11

## P

Perspective 6-12

Physical Specifications C-1

Pivot 9-21

Pivots 6-13, 6-19

Power 5-7

button 6-1

Power/CAN Harness

connectivity 4-2

part number 4-2

Product Specifications C-1

Project

Load I-10

## R

R130 Kit B-2

RAM Mount 4-4

ball mount 5-1

attaching to PCS100 5-2

tighten connection 5-3

base 4-4

release ball 5-1

Real-time Kinetic 3-1

Recalling

- Job 8-6
- Remote Hookup 5-6
- Remote Hook Up Mapping Harness
  - connectivity 4-2
  - part number 4-2
- Reprogram 6-61
- Reverse Polarity 5-7
- RS-232 6-42
- RTK 3-1

**S**

- SBAS 6-42
- Select Boundary - Boundary Offset
  - Icons A-6
- Select Feature I-1
- Select Guidance Pattern A-6
- Serial Port
  - Setup 6-43
- Setup 5-1, A-4, A-5
  - Mounting 5-1
- shape file I-14
- shape files I-6
  - .dbf I-6
  - .shp I-6
  - .shx I-6
- “Snap To” Electrical Connector 5-6
- Spare Parts B-1
- Steering with Guidance 9-31
- SWITCHED 6-7
- System 110/150
  - Console 4-1
  - Kit 4-1
  - Main Screen 6-4
- System 110/150, functions 1-1
- System 110/150 Main A-1
- System Memory 6-58

**T**

- Third Party GPS Units 5-4
- Tractor Schematic D-1

**U**

- Units A-8
- Units and Time Settings 6-26
- Universal GPS Harness 4-3, B-2
  - connectivity 4-3
  - part number 4-3
- U-turn 9-16

**V**

- VBS 6-50
- Viewing Perspective 6-11

**W**

- WAAS 3-1, 6-50
- Warning Screen 6-2

**Z**

- Zone 6-42
- Zoom In 6-10
- Zoom Out 6-10



