## 13.2. Using identical curve guidelines

Some fields are not rectangular and have a curved or shaped boundary. For these, identical curves may be the best option for guidelines. This can be useful for steering the boundary of a field and using this guideline for future operations.

Identical curves allows the operator to set a curved guideline and the system will create equidistant guidelines across the field, based on a swath width.

1. Position the vehicle.
2. Select **Guidelines Menu**  / **Change Guidance Mode**, if necessary, to choose **Identical Curves**  .
3. Select **Create New Identical Curve**  .
4. Select **GUIDELINE NAME**.
5. Enter a name, if desired, and confirm. Confirm the new guideline.
6. Drive to the start of the swath. Select Set ‘A’ Point  .
7. Drive along the curved swath. A black line will appear behind the vehicle on the map to indicate the curve that is being recorded.

   **Note**: If required, recording the guideline can be paused.
8. At the end of the curved swath, select  to indicate the end of the curve recording.

## 13.3. Using center pivot guidelines

Some fields are best worked in a circular shape. This setting allows the operator to create guidelines around a center pivot point.

1. Position the vehicle.
2. Select **Guidelines Menu**  / **Change Guidance Mode**, if necessary, to choose **Center Pivot Lines**  .
3. Select **Create New Center Pivot**  .
4. Select **GUIDELINE NAME**.
5. Enter a name and confirm. Confirm the new guideline.
6. Drive around the center of the field. A pivot accuracy bar is displayed to indicate the progress of guideline creation.

   Once the system detects the arc, circular guidelines are created, based on the width of the implement. Remember to consider the turning circle of the vehicle and implement when driving the first arc.

## 13.4. Using guidelock guidance mode

Guidelock is a coverage based guidance mode. It generates a curve based on existing coverage, regardless of when that coverage was laid. This is convenient if wanting to steer around a contour or field boundary but you don't want to create and save a curve, or if you want to continue steering alongside some coverage that was treated earlier that you did not save a curve for. This guideline method is sometimes referred to as 'free form'.

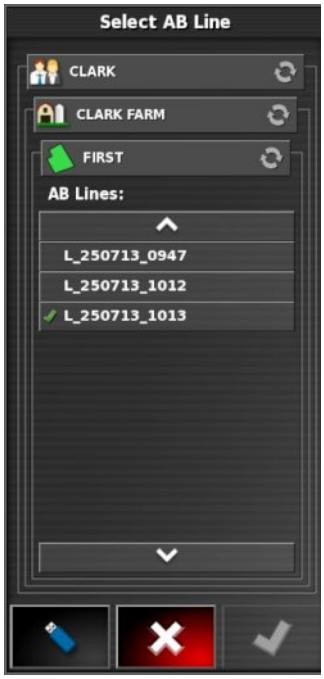
1. Select **Guidelines Menu**  / **Change Guidance Mode**, if necessary, to choose **Guidelock Guidance Mode**  .

A guideline is generated that follows whichever path the vehicle takes.

## 13.5. Selecting an existing guideline

Once guidelines have been created within fields, these are stored and can be accessed on future jobs in the field.

1. From the **Guidelines Menu**  , select the required guideline mode, then select **Select Guideline**  .
2. Select client, select farm and select field. Existing guideline sets will display.




3. Choose the guideline set required and confirm.

# Chapter 14 – Auto Steering

The Steering Options Menu allows the operator to set options for the auto steering. To use this feature, it must be enabled. If it has not been enabled, refer to Guidance setup, page 46 to enable auto steering.

To calibrate the steering refer to Steering Calibrations, page 131.

## 14.1. Auto steer status

Auto Steer Status allows the operator to view the status of the conditions required for auto steering. Red indicates that the conditions are not met and therefore steering is not ready.

1. To review the status of the auto steering, select **Steering Options Menu** / **Auto Steer Status** .

   The Steering Status screen displays.

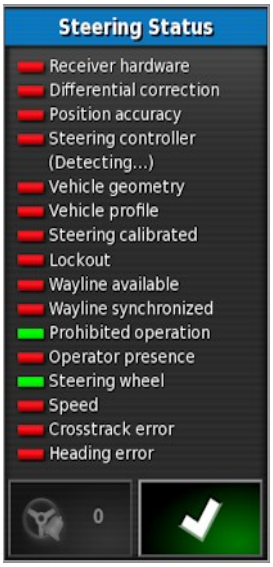

   Green indicates that the item is ready.

   Red indicates that the item is not ready.

   Steering alarms may be displayed by selecting the steering alarm button at the bottom left of the screen.

2. Select  to return to the main screen and complete the necessary actions (work through issues displayed from the top to the bottom of the screen).

### 14.1.1. Auto steer troubleshooting

| Error Display | Actions | Page |
|---|---|---|
|  <br>  | Auto Steering Engage is showing red. Auto steering does not engage.<br>Select Auto Steering Engage to bring up the Steering Status panel.<br>Red on the panel indicates that the item is not working correctly. | |
| Receiver hardware displays with red | Is the receiver connected correctly, mounted securely and turned on? | |
| Differential correction displays with red | Confirm setup in console matches the correction source requirements. | 58 |

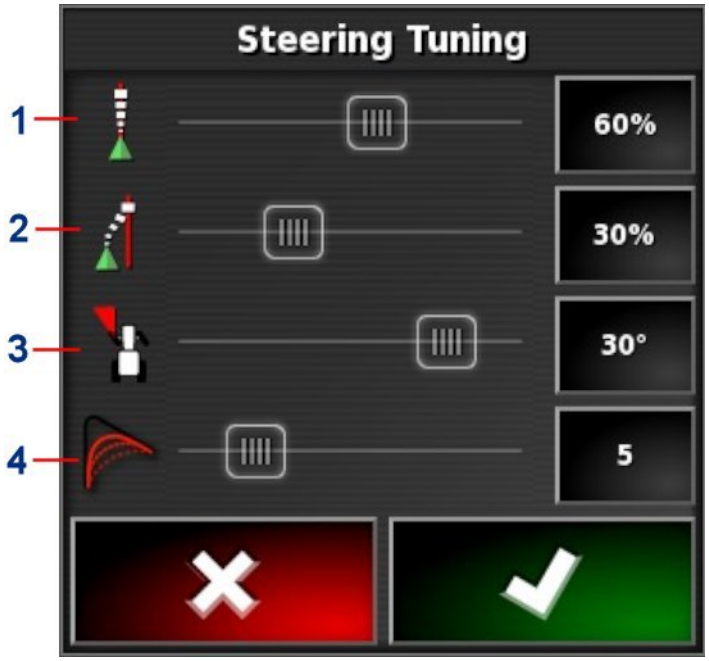
| Error Display | Actions | Page |
|---|---|---|
| Position accuracy displays with red | Allow time for convergence to occur.<br>What color is the satellite icon on the dashboard? How many satellites show next to the icon? You need at least four satellites available.<br>Is the correction source correct? If not, select the appropriate correction source.<br>Are you in an open space away from power lines? Drive to an open space and allow time for convergence.<br>If on a subscription scheme, confirm current subscription. Confirm correct frequency has been set. | 58 |
| Steering controller displays with red | Confirm controller is connected and turned on.<br>Confirm that the correct steering controller has been selected during setup.<br>If using AES-25, power cycle the AES-25, then turn wheel a ¼ turn to enable steering. | 92 |
| Vehicle geometry displays with red | Return to Setting the Vehicle Geometry and reset dimensions correctly or re-select the vehicle profile. | 90 |
| Vehicle profile displays with red | Review which vehicle has been selected and review geometry. | 87-90 |
| Steering calibrated displays with red | Confirm calibrations have been done for this vehicle. Drive to an open space away from power lines and obstacles, reboot and repeat calibrations. | 132-138 |

| Error Display | Actions | Page |
|---|---|---|
| Lockout | The steering system has been put into a transport mode (i.e. when driving on a highway) so that the steering cannot be inadvertently engaged. | |
| Wayline available displays with red | Drive closer to the wayline (guideline). Confirm that guideline has been created and selected. | 180-184 |
| Wayline synchronized | Wayline (guideline) is not successfully loaded. Confirm connection with receiver and reload the wayline. Note that it may take some time for the wayline to be uploaded to the receiver, particularly for large curves. | |
| Prohibited operation | Steering cannot be engaged while certain actions are being performed. For example; steering calibration, changing GPS settings, exporting a job. | |
| Operator presence | The steering system will disengage if the driver leaves the control seat. | |
| Steering wheel | Let go of the steering wheel and try again. | |
| Speed displays with red | Adjust speed to between 1 and 25 kph (0.7-15 mph). The necessary speed may vary with the vehicle. | |
| Cross track error displays with red | Drive closer to the guideline before engaging auto steering. | |
| Heading error displays with red | Check the angle or reduce the speed of the vehicle’s approach to the guideline. | |

## 14.2. Tuning auto steer

It is important to tune the auto steering to suit the conditions, the type of job and the type of vehicle/implement.

1. Select **Steering Options Menu** / **Auto Steer Tuning Parameters** .




**1** Online Aggressiveness sets how aggressively the steering will try to follow the guideline.

**2** Approach Aggressiveness sets how aggressively the steering will approach the line. If too high, the vehicle may turn sharply.

**3** Maximum Steering Angle limits the angle of turn to stay within the limits of the vehicle's safe capability.

**4** Smoothing Radius for Curve Waylines sets how tight or loose the auto steering will adhere to curved waylines.

2. Set **Online Aggressiveness** to suit the precision necessary for the task.

3. Set **Approach Aggressiveness** considering accuracy for the job and safety for the equipment users.
4. Set **Maximum Steering Angle** to the safe levels for the vehicle and any implement being towed.
5. Set **Smoothing Radius for Curve Waylines** to the appropriate level. Lower values will follow the curved waylines more closely.

### AES-25

Note that if **AES-25** is selected in the setup screen (**Vehicle** / **Steering** / **CONTROLLER**), three new options are added to this screen:

- **AES-25 Sensitivity Adjustment**: Adjusts the responsiveness of the steering when following guidelines.
- **AES-25 Deadband Adjustment**: Adjusts the amount of movement the AES-25 needs to make before the wheels respond.
- **AES-25 Disengage Threshold**: Adjusts the amount of effort required to disengage the steering wheel.

### Direct spool

Note that if **Direct Spool** is enabled in the Setup screen (**Vehicle** / **Steering** / **DIRECT SPOOL**), two new options are added to this screen:

- **Direct Spool Sensitivity Adjustment**: Adjusts the responsiveness of the steering when following guidelines.
- **Direct Spool Deadband Adjustment**: Adjusts the amount of movement the steering wheel can make before the wheels respond.

## 14.3. Engaging auto steer

To use auto steering, the operator must have:

- Established guidelines (page 179)
- Enabled auto steering on the console (page 46)
- Calibrated the steering (page 131)
- Confirmed that all Steering Status items are green (page 187)
- Set the auto steering tuning to suit the task and vehicle type (page 191)
- Positioned the vehicle at the desired starting point.

1. Zoom and pan on the screen until the vehicle is in the center of the screen and at a comfortable size for viewing (if panning is enabled, refer to Setting up map options, page 31).

   **Note**: If an external auto steering engage switch is to be used, this needs to be enabled during setup for the vehicle. Refer to Setting up the steering controller, page 92. If using an AES-25, turn on the AES-25 and turn the steering wheel a quarter turn to enable auto steering.

2. Confirm that the Auto Steer Engage is showing white. This means it is ready to use.

Auto Steer is ready to use. Select **Auto Steer Engage** to begin.

Auto Steer is engaged and active. Select **Auto Steer Engage** to change back to manual control. Note that the button may briefly flash blue before turning green.

Auto steer cannot engage. Select **Auto Steer Engage** or return to the Steering Options Menu to see Steering Status for possible causes.

Auto steer is flashing in ‘Delayed Engage’ mode.

If Auto Steer is displaying red and the only condition displaying red on the Steering Status is easily resolved (for example speed), the operator may select **Auto Steer Engage** twice (double click) and flashing yellow will indicate that auto steer will engage if conditions are met within 15 seconds. If conditions are not met, it will return to red.

3. Correct any issue displaying red in the Steering Status Panel (work through issues displayed from the top to the bottom of the screen). When **Auto Steer Engage** is white, auto steer is ready to engage.

   For more information on Steering Status Errors refer to Auto Steering, page 187.

4. Drive slowly to meet a guideline, heading in the desired direction.
5. Select **Auto Steer Engage**. It will turn green. The vehicle will steer to the nearest guideline.
6. If it steers towards the line too aggressively, stop, disengage auto steering and adjust the Auto Steer Tuning Parameters from the Steering Options Menu.

## 14.4. Disengaging auto steer

Auto steer will automatically disengage when the necessary conditions (shown on the **Steering Status** screen) are no longer met.

To manually disengage auto steering:

- Turn the steering wheel a few degrees OR
- Select the **Auto Steer Engage** button on the console to disengage OR
- If using an external steering switch, disengage using the switch.

**WARNING: Before leaving the vehicle, disengage auto steer, turn off the steering switch and remove the key.**

**Note**: A visual and audible alarm will display and sound whenever auto steer is engaged or disengaged. The volume can be adjusted. Refer to Setting up alarms, page 68.

14.4. Disengaging auto steer

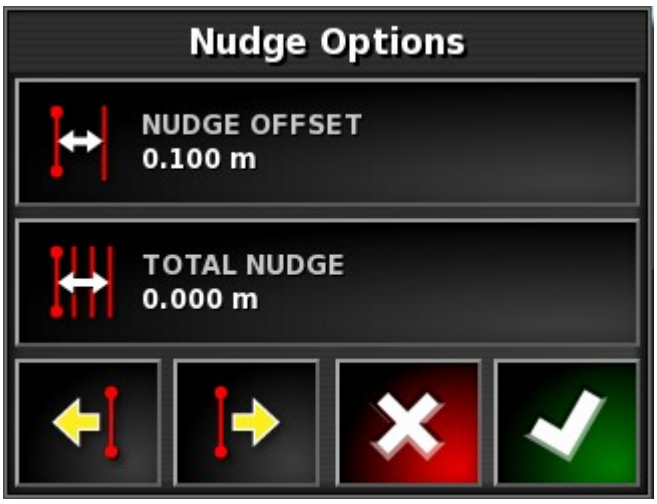
# Chapter 15 – Nudge Menu

The Nudge menu allows for minor adjustments to the guidelines that have been set. This is useful for slightly realigning the guidelines to changing conditions or when returning to a field the next season. Guidelines can be nudged in a number of ways.

Nudge works with AB lines, center pivot guidelines and identical curves.

## 15.1. Using nudge options

1. Select **Nudge Menu** / **Open Nudge Options** .
2. To set how far a nudge will move a line, select **NUDGE OFFSET**.




3. Enter the required **NUDGE OFFSET**.
4. Use Nudge Left or Nudge Right on the Nudge Options screen or on the Nudge menu to nudge the lines.
5. **TOTAL NUDGE** calculates the total distance nudged. Select this to set a total nudge offset or to reset to 0.
6. Select **Save Nudged Guideline** to save the new guideline positions.

## Nudging to the vehicle's position

To align the guidelines to the vehicle's current position:

1. Select **Nudge Guideline to the Vehicle's Position**  .

   **Note**: When nudging a curve or pivot, the size of the curve (or radius of the pivot) will change.

## 15.2. Compensating for GPS drift

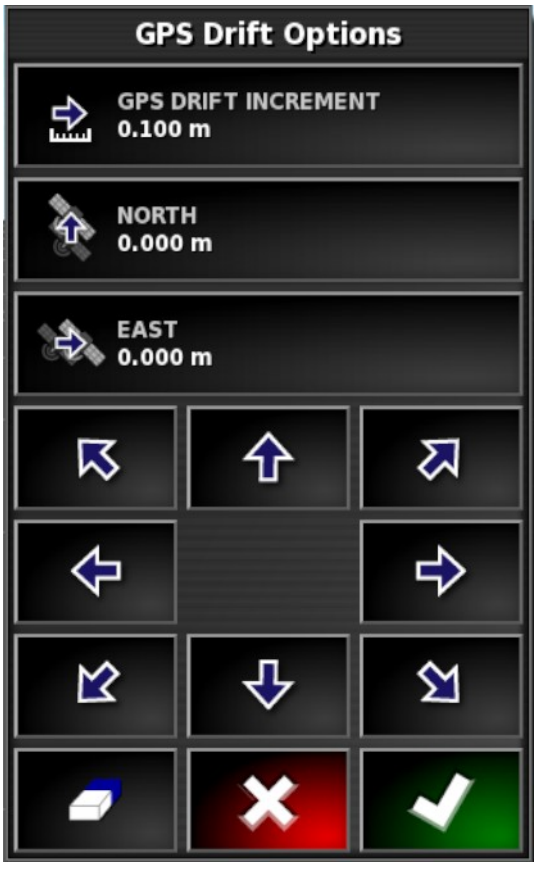
GPS Drift may occur over time (when using low accuracy correction sources). When the operator returns to a field, there may be a slight change in the reported vehicle position with respect to fixed objects such as the field boundary or guidelines. This is largely due to changes in the satellite constellation patterns.

Other factors such as having no clear access to the sky (operating near trees or other obstacles) and satellite data errors may also result in a drift.

**Note**: It is also possible to reposition the vehicle position to a selected flag point, refer to Removing or changing a flag point, page 163.

To compensate for GPS drift:

1. Select **Nudge Menu**  **/ GPS Drift Compensation**  .



The compensation value may be selected by:

Entering a positive or negative value in the **NORTH** and/or **EAST** field and confirming.

Or

Entering the required value in the **GPS DRIFT INCREMENT** field and then selecting the required direction button until the required compensation is achieved.

2. Select **Reset GPS drift**  to remove the selected GPS drift compensation.

### 15.2.1. Compensating correctly for GPS drift

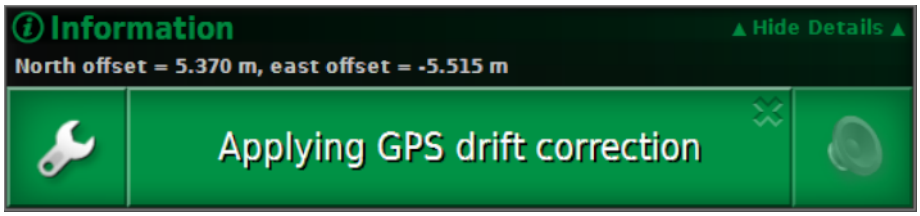
When correcting GPS drift, the vehicle on the map will be moved relative to the other objects on the map (for example, the field boundary, guidelines, flag points and any previous coverage). The easiest way to see this on the map is to switch to a North Up view  and pan the map so that the vehicle is visible next to the GPS Drift Options window.

To correctly compensate for GPS drift:

1. Drive the vehicle to an identifiable location within the field (for example, next to a gate, the corner of the field or in the previous year's wheel tracks).
2. Use the GPS Drift Options window to position the vehicle on the map relative to these fixed landmarks.

In order to do this more accurately and quickly, you may want to set a flag point at a marked location on the field. Then each time you return to the field, position the vehicle at that marked location, locate the flag point on the map and select it. This will open a window with the option for 'GPS Drift Correction'. Selecting that option will move the vehicle to the location of the flag point.

The GPS drift compensation that is applied is remembered when the console is restarted. However, this compensation may no longer be accurate if conditions have changed. An alarm will be shown shortly after the system starts that will advise the operator that GPS drift compensation is in effect. The operator must then decide if they want to continue using this compensation factor, clear it back to zero or perform the GPS drift compensation procedure again to get a more accurate result for that session.




### 15.2.2. High accuracy correction sources

GPS drift compensation should not be necessary with higher accuracy correction sources (for example, RTK). If a high accuracy source is being used, the GPS drift compensation should be reset back to zero in the GPS Drift Options window.

# Chapter 16 – Enabled Additional Features

This section describes the use of features that may have been enabled in the Setup screen: **System** / **Features**.

The enabled features documented in this section appear on the navigation bar.

## 16.1. Using auto section control

Auto section control is available when an implement and ECU have been set up and Auto Section Control has been enabled. This feature can be configured through its mini-view. Refer to the Spreader / Sprayer / Seeder operator manual for more information.

## 16.2. Using universal terminal (ISOBUS)

This option allows the operator to interact with an ISOBUS ECU.

The universal terminal is similar to the idea of a web browser. It has no context about what is running on it. User interfaces are loaded from the connected clients.

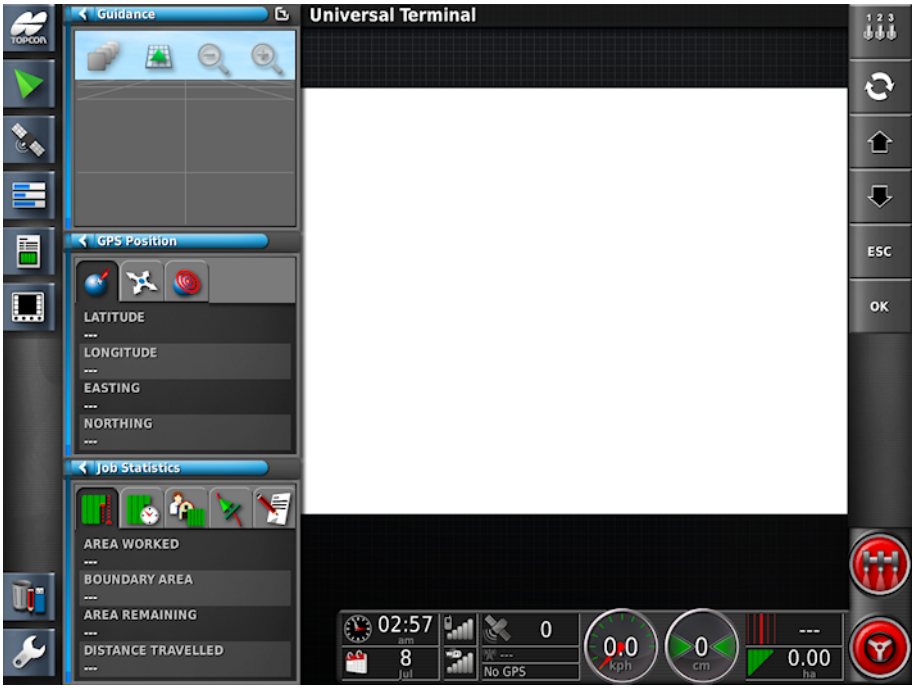
There is no practical limit to how many implements or clients can be accommodated by the universal terminal. Functionality is limited to the implement and controller design.

Universal terminal is enabled via **System** / **Features** / **Console**.

1. Select **Universal Terminal** from the Navigation bar to open the mini-view.


**Note**: The icon displayed for the universal terminal varies depending on the attached ISOBUS compatible equipment.

2. To open universal terminal in full screen, maximize the mini-view.




Screens will vary according to the ISOBUS equipment.

Opens the Aux-N Assignment window (see Auxiliary control setup, page 80).

Cycles through the connected UT Working Sets.

Moves to the previous input or button.

Moves to the next input or button.


Escapes out of an editing operation or acknowledges a UT alarm if present.

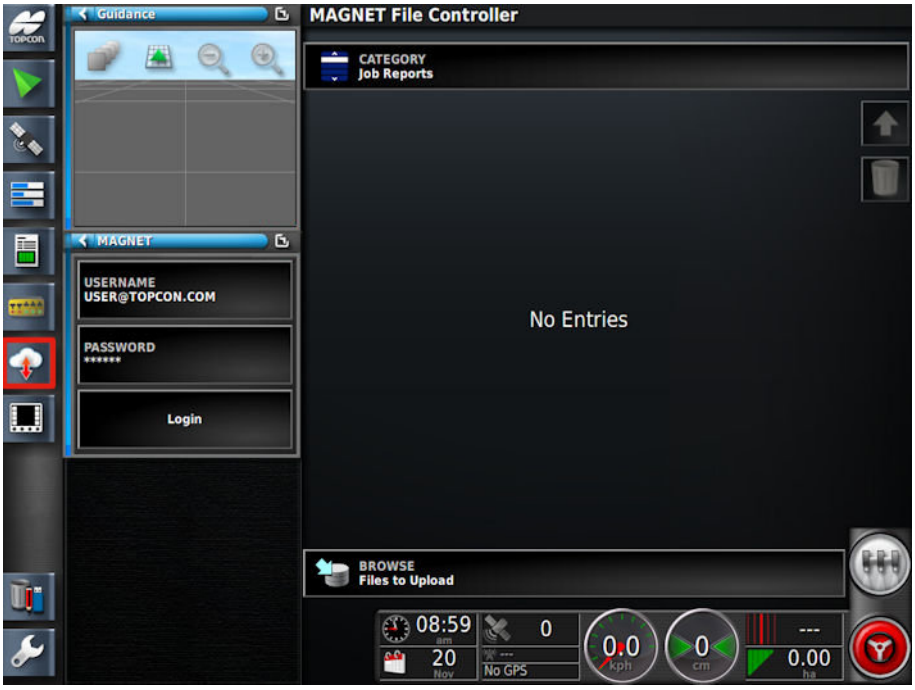

Activates the highlighted input or button.

## 16.3. Using MAGNET

This feature is provided to allow file transfer via Topcon MAGNET software.

The MAGNET option is available under **Cloud Based Services** on the **System** / **Features** / **Console** screen. The option must be enabled before use, refer to Console setup, page 40. Once it is enabled, the MAGNET icon appears on the Navigation bar.

1. Select the MAGNET icon to open a mini-view, then maximise the view by swiping right across the mini-view.




2. Enter your MAGNET username and password and select **Login**.

   Once logged into the MAGNET server from the console, a periodic (every 1 minute) update of the location of the console is sent to the server, provided GPS is available.

   This can be viewed by logging into MAGNET Enterprise (https://www.mobileagnetwork.com/) and selecting Asset Manager. The console will be listed under online devices. Select the console and view it on the map. The movement of the console is visualised on the map.

### 16.3.1. Uploading job reports from the console

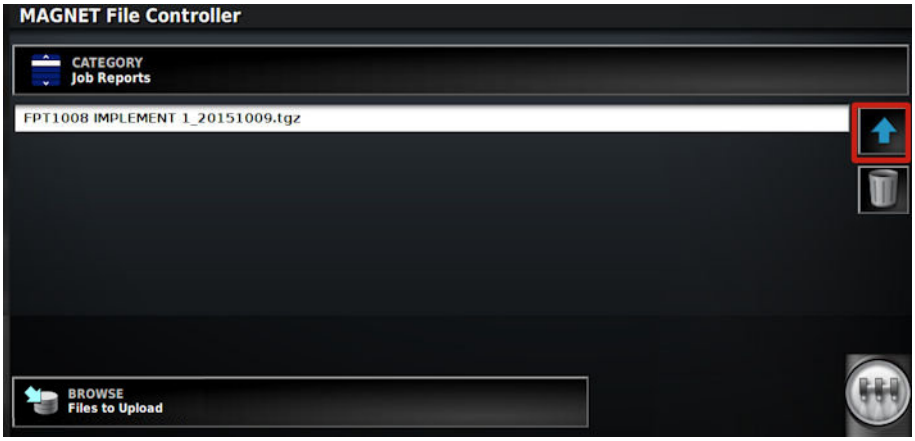
To transfer job reports from the console to the MAGNET server:

1. Log in to MAGNET.
2. Select **Job Menu** / **Data Exchange** / **Create Magnet Report for Upload** .

   The Job Report Options screen displays.
3. Select the required option/s:
   - **Auto adjust ranges**: If data exists that uses a color legend, the colors used in the report map shading are altered so that the maximum variation in colors is used to illustrate the yield rates.
   - **Create shape files**: Shape file data is exported.
   - **Task data**: Exporting a job report also exports XML based task data into a folder named TASKDATA.

The active or current job report is created ready to be uploaded.

4. Open MAGNET and select **Files to Upload** from the **BROWSE** dropdown.
5. Select **Job Reports** from the **Category** dropdown.
6. Select the file/s to be uploaded and select the Upload button.

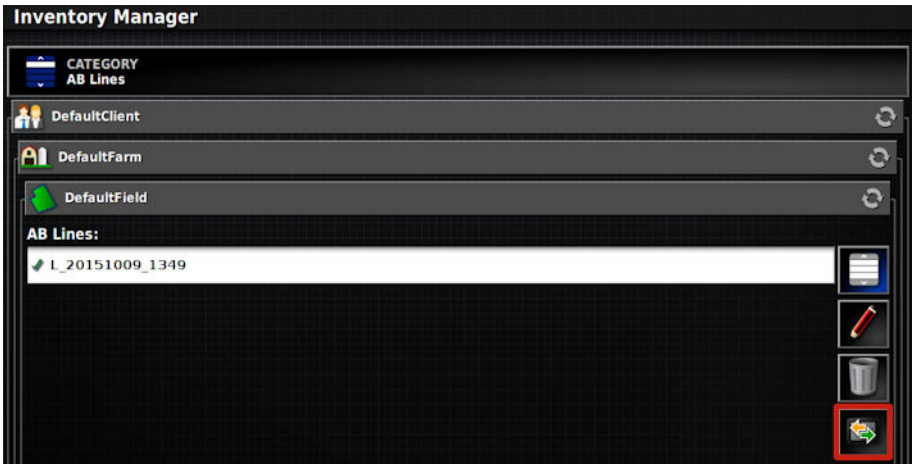



Once transferred successfully the file is automatically deleted from the pending folder on the console.

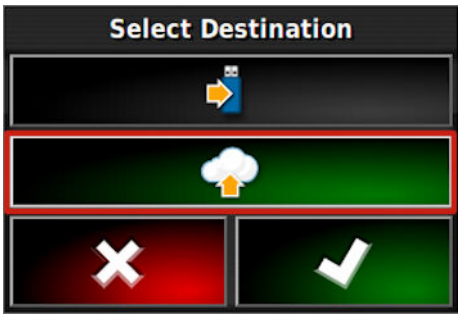
### 16.3.2. Uploading guidelines from the console

To transfer guidelines from the console to the MAGNET server:

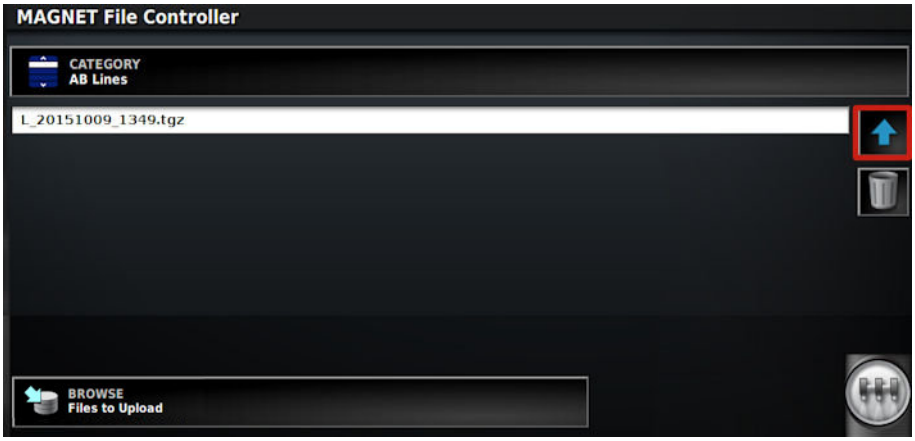
1. Log in to MAGNET.
2. Open the inventory manager  and select the required guideline type from the **Category** dropdown.
3. Select the required client / farm / field and highlight the guideline to be uploaded.




4. Select the Export selected guidelines button and select MAGNET as the destination.




5. Open MAGNET  and select **Files to Upload** from the **BROWSE** dropdown.
6. Select the required guideline type from the **Category** dropdown.
7. Select the guideline to be uploaded and select the Upload button.




### 16.3.3. Downloading files to the console

Files to be downloaded to the console must be placed in a folder of the required user on the MAGNET SERVER.

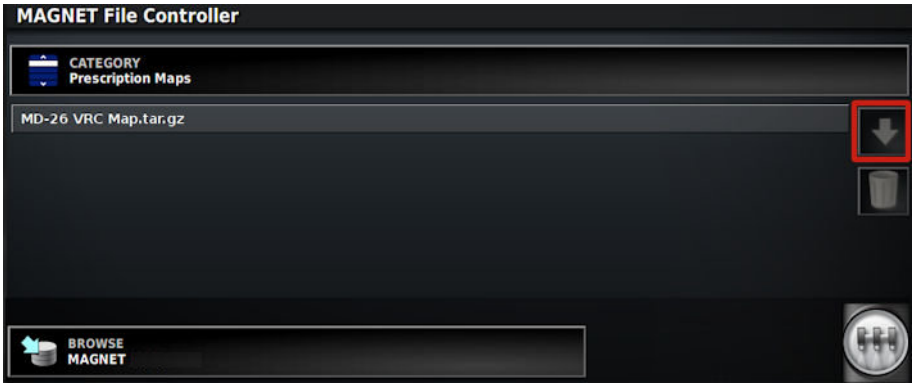
**Note**: The folder name must correspond to the required **Category** on the console (for example AB Lines, Project Lines), except if downloading prescription maps. In this case the folder must be named **To Console**.

Navigate to the required folder and use the **Upload a New File** option to add files.

Files must be in tar.gz or tgz format. This compresses the file size for transfer via the internet and preserves your folder structure for shape files and ISOXML files, allowing multiple prescription maps to be transferred at once.

Log out from the MAGNET application before logging in to MAGNET on the console (if using the same login details).

1. Log in to MAGNET and select **MAGNET** from the **BROWSE** dropdown.
2. Select the required file type from the **Category** dropdown.




3. Select the file/s to be downloaded and select the **Download** button. Files stored in the user's sub-folder/category (AB Lines, To Console, Curves etc) on the MAGNET server are downloaded to the corresponding category/folder on the console.

   Once files have been downloaded, they may be deleted from the MAGNET server by selecting the delete icon.

### Accessing downloaded prescription maps

Downloaded prescription map files may be accessed via the VRC configuration wizard. Refer to Using variable rate control, page 175. Select the **MAGNET download** button  at the base of the VRC configuration wizard.

### Accessing downloaded guidelines

1. From the **Guidelines Menu**  , select **Select Guideline**  , then select the switch view button  .
2. Select **MAGNET Cloud Services** from the displayed options.

## 16.3.4. Deleting downloaded files

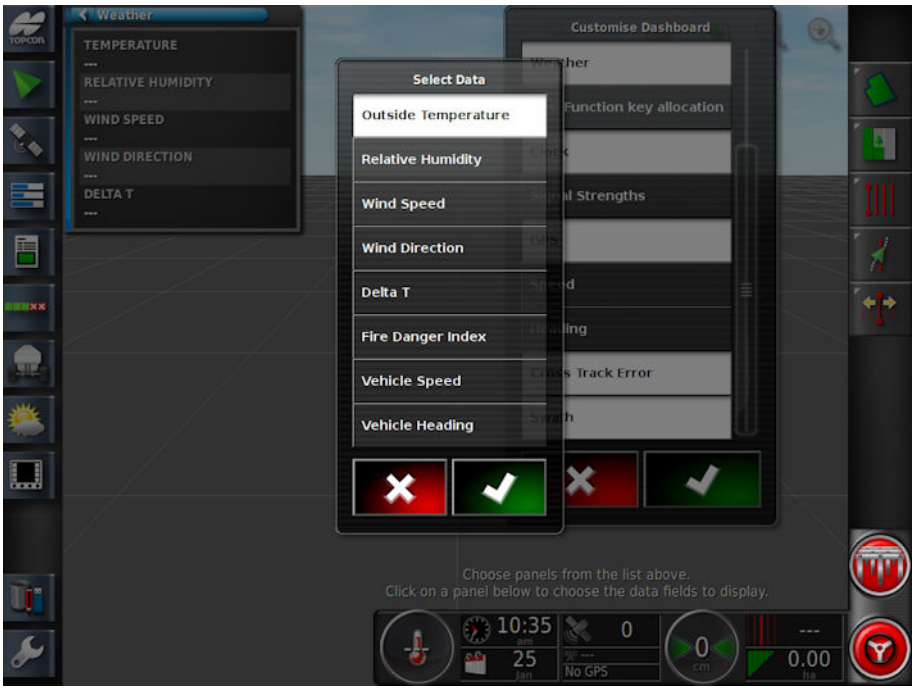
1. If downloaded files on the console are no longer required, open MAGNET and select **Downloaded Files** from the **BROWSE** dropdown.
2. Select the category of files and specific files to be deleted and select the delete icon.

# 16.4. Using weather station

The weather station port option is available under **System** / **Features** / **Console**. The CAN port to which the weather station is connected must be selected before use.

A registration code must be purchased to enable this functionality.

This option enables support for the AirMar 150WX Weather Station.




Once connected, both a mini-view and the dashboard can display temperature, relative humidity, wind speed, wind direction and Delta T.

Delta T is becoming one of the standard indicators for acceptable spray conditions. It is indicative of evaporation rate and droplet lifetime. Delta T is calculated by subtracting the wet bulb temperature from the dry bulb temperature.

**Note**: Weather station data will automatically populate job details. Refer to Recording job details, page 170.

## 16.4.1. Calibrating weather station

Once installed, the weather station requires calibration.

**Note**: The vehicle must be in an open area, away from obstructions, where it is possible to turn the vehicle in circles.

1. Turn the weather station off and then on again.
2. Within two minutes of cycling the power, turn the vehicle in a slow circle (7 - 11 kph).

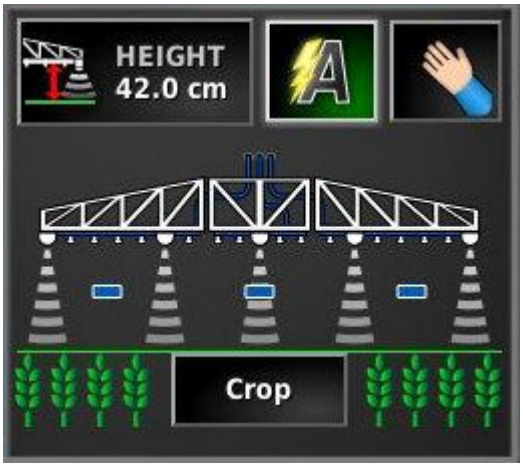
   Once the vehicle has completed 1 1/2 turns, the auto calibration will begin.
3. Continue to perform two or three more circles without changing the vehicle's speed.

For more information, refer to the user guide supplied by the weather station manufacturer.

## 16.5. Using NORAC Boom Height Control

This option automatically controls the height of the boom above the ground or the crop canopy. It requires NORAC sensors and Electronic Control Unit (ECU) to be installed.

The NORAC boom height control option is available under **System** / **Features** / **Implement** . Once enabled, a NORAC mini-view is available .




**Note**: Setup of the boom height control system must be performed via the UT screen. Refer to manuals supplied with the NORAC system.

The following settings are available:

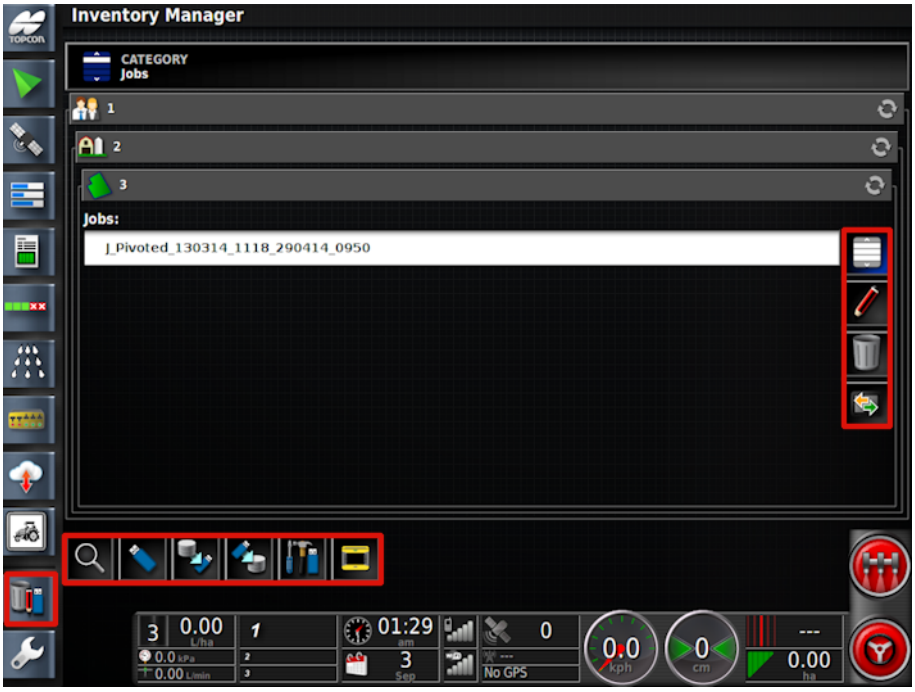
- **Target height**: The target height that the operator would like the boom to be set at when spraying in auto mode.
- **Auto mode**: Boom height is automatically controlled.
- **Manual mode**: Boom height is adjusted manually.
- **Mode**:
  - **Crop**: Reads the height from the spray nozzles to the top of the crop canopy.
  - **Soil**: Reads the height from the spray nozzles to the ground.
  - **Hybrid**: Uses a combination of the crop and soil readings. This is useful to avoid major boom movements for crops that are patchy.

# Chapter 17 – Inventory Manager

The Inventory Manager allows the operator to search for and view details of information items on the system, and make changes to that information. Items can be deleted, renamed, transferred to USB or imported from USB.

They can also be uploaded to MAGNET (see Using MAGNET, page 206).

1. Select **Inventory Manager**  .
2. Select **CATEGORY** to choose the item type to manage.





Search the selected category.


Access items from a USB. When browsing for USB items, the display is blue instead of grey.


Back up all system data onto a USB.

Restore All. **Note**: This overwrites any data on the system and is used to restore content from a backup USB. Normally this is used by service personnel.

Export diagnostic information. Use this when a dealer asks for it so the data can be assessed.

Use this to be compatible with System 150 files. (Must enable **User** / **Environment** / **System 150 file transfers**.)

Select all items.

Rename selected item.

Delete selected items.

Export selected items.

## 17.1. Searching categories

The search function  allows categories to be searched using a keyword.

It is possible to search in multiple fields, farms or clients at once. Navigate up the file hierarchy before pressing the search button to search through all items below that level.

The search results display the full path to items found.

**Note**: Jobs may be searched using more detailed data, as shown below.

## 17.2. Searching exporting jobs

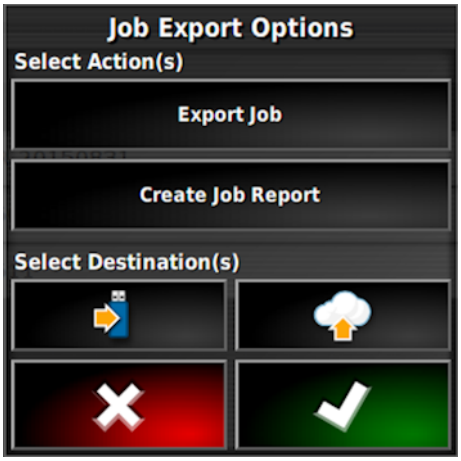
It is possible to export one or more jobs and/or job reports. If is also possible to search for and delete empty job items.

1. Select **Jobs** from the **CATEGORY** drop down list.
2. Select the Search button  .


   Jobs can be searched by keyword, a date range, whether the item is empty or not (useful for deleting empty jobs) and the implement used.

   The date is shown as DD/MM/YYYY or MM/DD/YYYY depending on the date format selected (see Time/date setup, page 22).

3. Once the required jobs are displayed, click to highlight the job/s required.
4. Select the **Export selected items** button  .




The Job Export Options screen enables the job/s and/or job report/s to be exported to USB.

# Chapter 18 – Task Data Menu

Task Data allows import/export and editing of ISOBUS task data XML files. Task Data mode allows you to select, configure and run a task from the imported task data. Shapefiles can be imported to automatically control the ECU. Enabling this feature will disable some field and job menu items during operations that are not relevant when using task data.

The Task Data icon  replaces the Job Menu icon  once task data has been enabled. Refer to Implement setup, page 50.

**Note**: This feature changes the functionality of the **Job Menu** and prevents fields from being created or selected from the **Field Menu**, as the selected task determines the field location.

The task data file sets up communication with the ECU and contains all the data to complete the job.

**Note**: All vehicle and implement geometry measurements should be checked for correctness before proceeding with task data (see page 90 and page 100).

# 18.1. Importing/selecting task data files

1. Place the USB containing the task data file into the USB port.
2. Select **Task Data Menu**  / **Data Exchange**  / **Import Task Data**  .

   The following screen displays.

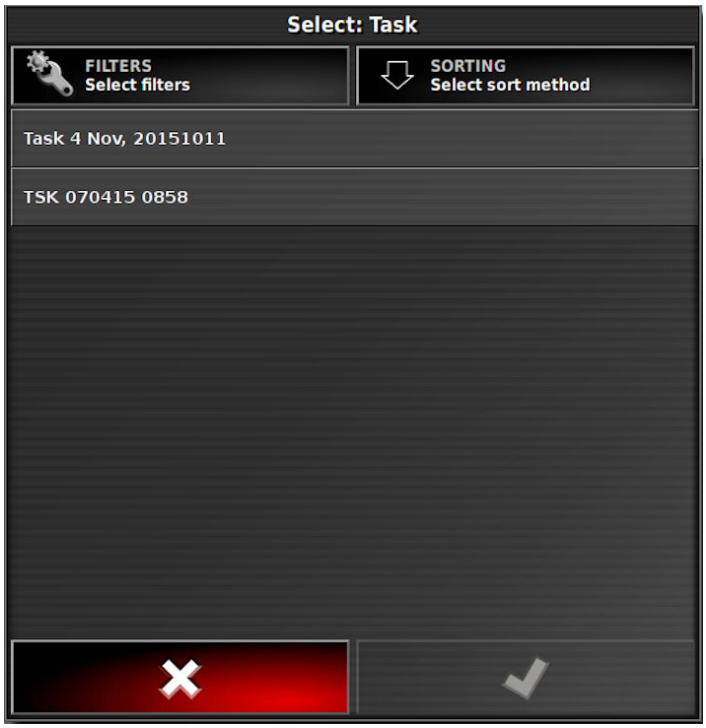

The toggle button  may be used to automatically search the top-level TASKDATA directory (if it exists), on the USB and list taskdata.xml files that are found. If this method is not successful, the USB may be browsed manually to select the required file.

3. Browse, choose the required .xml file and confirm.

   **Note**: Once a file is selected, it is possible to change the **Import Mode** to import all data, or import coding data only. Importing coding data only will import data such as customers, farms, fields, workers, products and implements, but will not import any tasks that may be present in the task data.

4. Drive to the starting position.

5. Select **Select Task** .




Files can be filtered by task status, customer, farm, city, worker, cultural practice and connected devices if desired.

6. Choose the required task file from the list and confirm. If the task data requires editing, refer to Editing task data files, page 224.

## 18.2. Create a new task

A new task may only be created if no current task is running. Once a task is created, it becomes the current task.

1. To create a new task, select **Task Data Menu**  / **Create New Task**  .

The Create Task panel is displayed.

The following information can be defined:

- Task designator (default: TSK_ddmm, yyyyhhmm)
- Customer
- Farm
- Worker
- Rate control assignment
- Partfield

The following controls are used when defining task information:

 View selected item

 Edit selected item

 Delete selected item

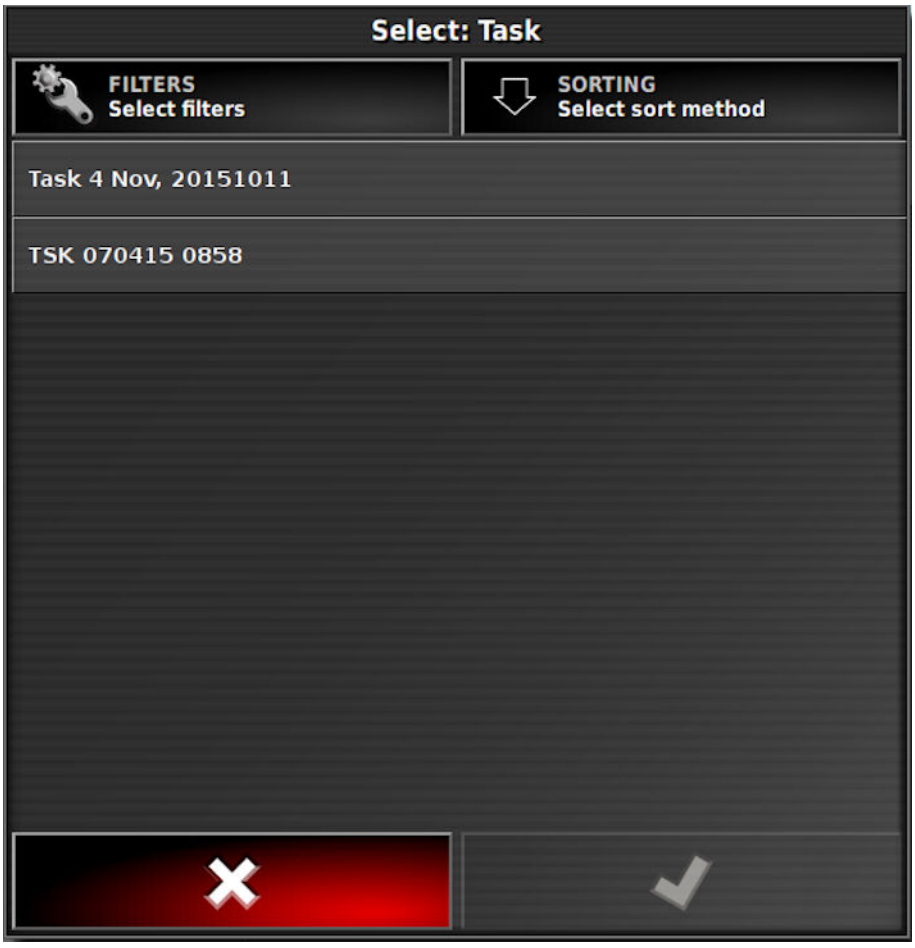
 Create a new item

 Copy selected item

## 18.3. Select an existing task

1. To select an existing task, select **Task Data Menu** / **Select Task** .

   The Select Task panel is displayed.




   Files can be filtered by task status and connected devices if desired.

2. Choose the required task file from the list and confirm.

## 18.4. Editing task data files

Once imported, task data files may be edited as required.

The Edit Task Data button is located on the left of the screen, above the inventory manager icon on the navigation bar.

All data defined for the task may be edited.

The following controls are used when editing task information:

 Edit selected item

 Delete selected item

 Create a new item

# 18.5. Define fixed / variable rate control

The ISO Task Controller Control Setup enables variable or fixed rate control configuration (or review of the existing configuration).

1. Select **Task Data Menu**  **/ ISO Task Controller Control Setup**  .

Each row in the table represents a variable or fixed prescription for a control target on the implement. The names and number of control targets that can be selected depends on the ISOBUS implement (see documentation supplied with the ISOBUS implement for more information).


## Set fixed prescription values

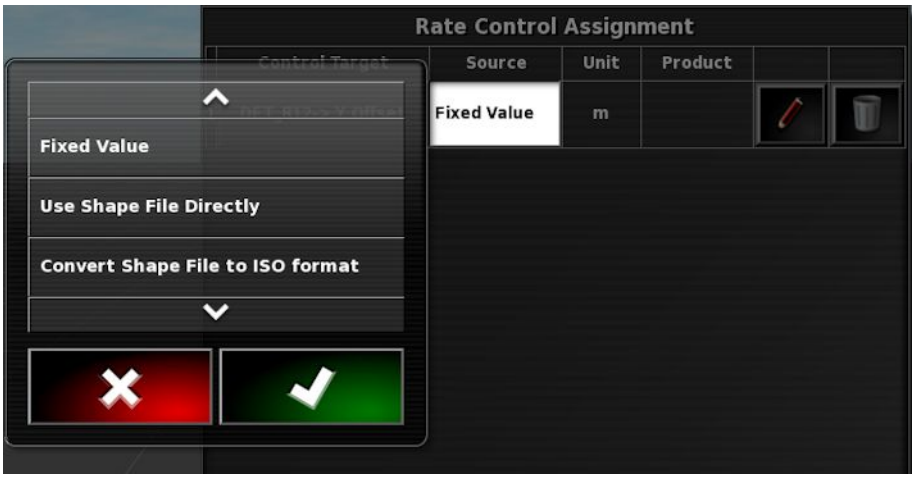
The Edit button  allows fixed values to be set for the prescription.

## Create a new prescription

The new prescription button  allows the user to create a new prescription by either setting the fixed values or importing a shapefile

to allow variable rate control.

Once the prescription is created, select the **Default** button in the **Source** column.




- **Fixed value**: Set the fixed values and associate this prescription with a product.
- **Use shape file directly**: Apply based on shape file but do not convert into ISOXML format. This supplies better results than conversion but the FMIS can not see what the prescription was.
- **Convert shape file to ISO format**: Convert shape file into a 'Type 2' ISOXML grid. The size of the chosen grid cells will be 1m x 1m or larger, such that the total grid file size is less than 10 megabytes.

  When importing a shapefile it is possible to set the fixed values, associate the prescription with a product and also set a scaling factor that is applied to the values in the shapefile when it is converted to the task data format.

# 18.6. Running a task

## 18.6.1. Start/stop a task

Tasks may be manually started and stopped or linked to the master switch.

When in task data mode, an extra option is added to the Setup screen (**System** / **ISOBUS** / **TC**) to select how tasks can be started and stopped (manually or using the master switch, or manually only). Refer to Setting up ISOBUS / universal terminal, page 78.

### Start and stop task manually

1. To start or stop a task manually, select **Task Data Menu** / **Start and Stop Task** .

## 18.6.2. Show task totals

The types of task totals stored is dictated by the connected ECU. A task must have been started at least once for any totals to be displayed.

1. To show task totals, select **Task Data Menu** / **Show Task Totals** .

The following image shows a sample of task totals.

### 18.6.3. Set the time type

When the task is running, the user can choose what type of time is currently being recorded.

1. To set the time type, select **Task Data Menu**  / **Set the time type**  .

The following options are available:

- Preliminary
- Preparation
- Effective
- Ineffective
- Repair
- Clearing

The default time type is Effective. If a task is started or restarted the default type is used.

## 18.7. Exporting task data files

1. Once the job is completed, check a USB is inserted and select **Task Data Menu**  **/ Data Exchange**  **/ Export Task Data**  to export the task data with collected task records.

   The following screen displays.

   By default, task data is exported as ISO XML (CSV and Shapefiles may be selected as additional formats).

2. Select any additional export formats (CSV and/or Shapefiles).
3. Select the required export mode:
   - **Delete all task data after export**: All task data is deleted from the console.
   - **Keep only coding data after export**: Tasks are deleted from the console but data such as customers, farms, fields, workers, products and implements is retained.

   Note that both options will export task data.
4. Confirm export.

**Note**: When exporting task data, a copy of the data is stored in the inventory manager. If a problem is encountered with the data exported to the USB, the backup data can be restored by exporting the data again using the inventory manager, Task Data Backups category.

# Chapter 19 – Troubleshooting Guide

## 19.1. Common error messages

For many errors an error code, or Trouble Code, will display. It is also possible to view errors via the Steering Status screen (see page 187), or the Diagnostics screen, Trouble Codes tab (see page 121).

The errors listed below are fairly common and may be corrected by the user. For other errors or if a problem persists, **always record the error message** to report to your dealer, including any code displayed.

| Code | Fault | Action | Page |
|---|---|---|---|
| U1052 | Steering subsystem firmware version is incorrect. | Upgrade the firmware. | 58 |
| U1054 | Steering subsystem is in fault mode. | Please power cycle steering controller. | |
| U1055 | Steering controller needs to be reset. | Please power cycle steering controller and the vehicle. Wait 20 seconds and restart. | |
| U1056 | Steering controller configuration error. | Please repeat WAS calibration. | 135 |
| U1061 | Tractor parameter settings not found in steering subsystem. | Return to main setup menu and confirm correct vehicle. | 86 |
| U1062 | Mounting bias calibration required. | Calibrate mounting bias. This allows the system to compensate if the receiver is not level on the cab roof. | 138 |

| Code | Fault | Action | Page |
|---|---|---|---|
| U1065 | Wheel angle sensor calibration required. | A change of tires is a common cause but is not the only possible cause. Confirm vehicle measurements and then recalibrate. | 90<br>135 |
| U1066 | Compass calibration required. | Calibrate compass. | 132 |
| U1067 | New vehicle or new steering controller has been detected. | Recalibrate compass. | 132 |
| U1068 | Vehicle profile does not match steering subsystem settings. | Confirm steering subsystem is turned on.<br>Return to main setup menu and reset vehicle and steering. | 87 - 92 |
| U1069 | Steering subsystem steering wheel sensor is not configured. | Contact dealer. | |
| U1071 | AES-25 average power is greater than the power limit. | Confirm load on AES-25 motor unit (for example the steering column is too heavy or the bushes or bearings are worn). Contact dealer. | |
| U1072 | AES-25 temperature greater than the temperature limit. | Turn off and allow to cool down. If problem persists contact the dealer. | |

| Code | Fault | Action | Page |
|---|---|---|---|
| U1074 | AES-25 steering controller not initialized. | Manually turn steering wheel by one quarter revolution. | |
| U1075-U1078 | CAN receive or transmit errors. | Confirm connections. Power cycle the junction box. Contact dealer if the problem persists. | |
| U1079 | Wheel angle sensor disconnected. | Check connection or replace faulty sensor. Contact dealer. | |
| U1080 | Wheel angle sensor has short-circuited. | Contact dealer. Sensor may need to be replaced. | |
| U1082 | Compact flash file system has less than 1% space remaining. | Confirm memory usage in the mini-view. It may be necessary to remove or transfer old files using inventory manager. | 121 & 215 |
| U3001 | Transfer failed. | Try exporting or importing the file from USB again. | 215 |
| U4001 | Wayline initialization error. | Recreate wayline. | 180 - 185 |
| U4006 | Valid system calibrations do not exist. | Calibrate compass, wheel angle sensor and mounting bias. | 132 - 138 |

| Code | Fault | Action | Page |
|---|---|---|---|
| U5001 | Steering subsystem not detected. | Confirm that steering subsystem is turned on.<br>Confirm that 'road lock switch', which prevents engaging while on public roads, is off.<br>Return to main setup menu to confirm correct steering system in setup. | 92 |
| U5002 | Implement and wayline are not defined. | Confirm correct implement chosen and confirm correct field and job chosen.<br>Create waylines if necessary. | 96<br>151 & 169<br>180 - 186 |
| U5003 | Could not engage due to steering controller lockout. | Confirm road switch is OFF. | |
| U5004 | Implement is not defined. | Confirm correct implement chosen. | 96 |
| U5007 | Row spacing (implement overlap subtracted from implement width) is too small. | Overlap set is too large. Change overlap in auto section control mini-view. Refer to the controller's manual. | |
| U6904 | Only one of the steering controller type and vehicle type is articulated. | Confirm settings in vehicle setup on the console match settings in the steering controller. | 90 - 92 |

| Code | Fault | Action | Page |
|---|---|---|---|
| U6905 | Unknown machine type. | Return to main setup menu, and revise vehicle setup. | 90 |
| U8505 | Factory calibration not present. | Calibrate compass, wheel angle sensor and mounting bias. | 132 - 138 |
| TC8 | No 12V power supply to inertial sensor and modem. | Confirm connections. | |

## 19.2. Wireless connection issues

If you are experiencing problems when trying to connect the X30 console to the internet (with an Ethernet cable plugged into the rear of the console), check the following:

1. Open the system information panel (refer to Viewing system information, page 111).
2. Under **Console**, check whether the **IP Address** is displaying an address in the range 192.168.0.x (where x = 0 - 255).
3. If this is the case, disconnect the Ethernet connection from the rear of the console and restart the X30 console. This will drop the default address and allow the X30 to connect to the wireless hotspot.

The issue is a conflict between the default address used by the Ethernet connection when no Ethernet DHCP server is available (192.168.0.10) and the address acquired when setting up a wireless connection.

# Chapter 20 – Appendices

## 20.1. Appendix A – Glossary

| | |
|---|---|
| Base Station | A GNSS receiver that supplies differential corrections to receivers equipped with GNSS. Also called a base or a reference station. |
| Baud Rate | This is the speed of data transfer, measured in bits per second. |
| Differential GPS | A method that uses correction data from satellite services or fixed reference stations to increase GPS accuracy. The satellites or local reference stations send correction data to vehicles equipped with GNSS receivers. |
| Easting/ Northing | Eastings and Northings show the Universal Transverse Mercator (UTM) position and zone of the vehicle. They are measured in meters.<br>The grid numbers on the east-west (horizontal) axis are called Eastings, and the grid numbers on the north-south (vertical) axis are called Northings. |
| EGNOS | (European Geostationary Navigation Overlay Service) This is a European SBAS developed to supplement GPS, GLONASS and Galileo systems by reporting on the reliability and accuracy of the signals. |
| EMC | Electromagnetic Compatibility is the science that studies impact of electromagnetic interference. EMC aims to ensure that equipment items or systems will not interfere with each other or prevent correct operation through emissions. |

| | |
|---|---|
| Fallback | Satellites and correction sources require specific position accuracy when computing the position of the vehicle. If the system is not receiving enough data to compute the vehicle's position with the required accuracy, auto steering will not be enabled. The fallback feature allows the system to bypass the position accuracy requirement so that auto steering can be engaged. This is useful in situations where a high degree of position accuracy is not required. |
| Field | Defined working area of the tractor. |
| Field Boundary | The edge of the field. |
| Firmware | A computer program that is permanently embedded in the hardware of a device. |
| GDOP | (Geometric Dilution of Precision) GDOP is a metric used to quantify the accuracy of GNSS satellite geometry. |
| GLONASS | Global Navigation Satellite System (Russian GNSS) |
| GNSS | Global Navigation Satellite System |
| GPS | Global Positioning System (US GNSS) |
| Guideline | The virtual line between two way points in a field. The guideline is used as reference for further field runs (also Wayline). |
| HDOP | (Horizontal Dilution of Precision)<br>HDOP is a metric for quantifying the accuracy of the horizontal (latitude/longitude) position information received from the GNSS satellites. |
| HRMS | The HRMS (Horizontal Root Mean Squared) calculates an average horizontal position from the source information from the satellites |

| | |
|---|---|
| Latitude | The distance of a position north or south of the equator measured in degrees.<br>One minute latitude is equal to one nautical mile (1852 m). The equator has a latitude of zero. |
| Longitude | The distance of a position east or west from the prime meridian measured in degrees. The prime meridian runs through Greenwich, England and is zero longitude. |
| Mobile Base Station | A base station that can be easily moved and can independently determine its new position so that it can then continue working with the DGPS system. |
| Mounting Bias | Mounting bias refers to whether the receiver is exactly level, when installed. |
| MSAS | (Multi-functional Satellite Augmentation System) This is a Japanese SBAS which supplements the GPS by reporting and improving on the reliability and accuracy of the GPS signals. |
| NMEA | (National Marine Electronics Association) This is a standard protocol used by electronic devices to receive and transmit data. |
| OmniSTAR | A commercial service (operated by Trimble Navigation Ltd) that broadcasts GNSS correction data from a global constellation of geostationary satellites. |
| Reference Station | A GNSS receiver that supplies differential corrections to receivers equipped with GNSS. Also called a base station. |

| | |
|---|---|
| RTK Network | Association of base stations that transmit their position data to a server via the internet (NTRIP). The vehicles in the RTK network (rovers) also transmit their position to the server via mobile radio. The server uses the position data from the base stations and vehicles to calculate the correction data for each vehicle and transmits it to the vehicle via mobile radio. This allows position determination to be carried out with an accuracy of 1-2 cm in real time. |
| SBAS | (Satellite-Based Augmentation System) This is a system which supports wide area or regional augmentation through the use of additional satellite broadcast messages. SBAS correction sources are commonly composed of multiple ground stations which take the measurements of one or more GNSS satellites, and the satellite signals and environmental factors that may impact the signal. |
| Shapefile | A shapefile stores non-topological geometry and attribute information for the spatial features in a data set. The geometry for a feature is stored as a shape comprising a set of vector coordinates. It is in the form: abcd.shp |
| TopNET Global D | A commercial service (operated by TerraStar GNSS Ltd) that broadcasts GNSS correction data from a global constellation of geostationary satellites. |
| WAAS | (Wide Area Augmentation System) This US SBAS was developed by the US Federal Aviation Administration to serve as an air navigation aid by improving the accuracy and availability of the GPS signals. |

| | |
|---|---|
| WAS | Wheel angle sensor |
| Wayline | The virtual line between two way points in a field. The wayline is used as reference for further field runs (also Guideline). |

## 20.1. Appendix A – Glossary

# Chapter 21 – Index