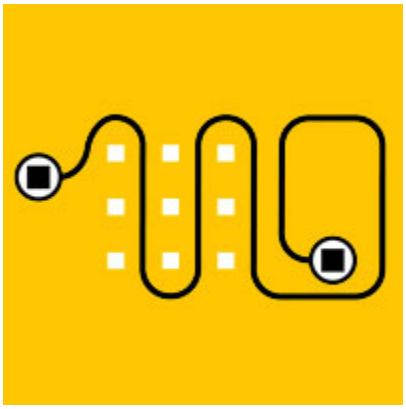
Farmlap 2 Operation Manual



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1.0 Introduction

The 5400 Professional has been designed to assist in the guidance of machinery for paddock based work along both non-linear and linear paths. This is achieved by recording the machine's path using GPS, and calculating the future path required to parallel the existing work and using GPS information to show the position relative to the intended path graphically.

The 5500 and 4000RT is a product that can assist you to improve the efficiency of your sprayer, spreader and other field operations, potentially improving the profitability of your business. The following information is designed to help you maximise the benefits from your investment. It aims to provide basic information to get you into the paddock and working as quickly as possible.

Once you begin to familiarise yourself with the basic elements of the 5500 Professional program this guide will help you to understand and utilise the more advanced features.

1.1 Farmlap 2 – 5500, 4000RT

If you require improved application for fertilizer and chemicals or air seeder variable rate control (if compatible) there is a professional solution for you.

The 5500 Professional and the RT4000 are a complete guidance system that incorporates racetrack, parallel and contour guidance or a mixture of all three.

Guidance Systems have been designed to apply fertilisers, grains and chemicals without the worry of getting lost at night, due to foam moving, drying, dust or becoming invisible in stubble or tall crops.

The 5500 Professional and the RT4000 are designed to save you considerable time, money and stress.

1.2 Descriptions of symbols used in this manual

Indicates to take care when following a procedure or be aware of potential hazards..

This symbol represents some helpful information about the system or manual.

1.3 Farmlap 5500 Navigation

There are 2 ways to select menu items. They are explained below. Throughout the manual only one method will be used. The 5500 has a touch screen. You activate by pressing them directly on the screen.

1. Press the  on the right hand side of the menu item, it will change to a  .
2. Using the up and down triangles at the button of the screen select the desired option.
3. Press  to select and save the change.
4. Highlight the menu item using the keyboard arrow buttons or mouse.
5. Press the  button to change to edit mode. Using the up and down arrows at the bottom of the screen change the option to the desired one.
6. Press the  button to select and save the change

1.4 4000 RT Navigation

The 4000 RT does not have a touch screen, you navigate around the menu system by using a combination of the up/down left/right arrow buttons and the screen buttons. The screen buttons line up with either menus or info boxes down the side and the main buttons along the bottom.

1.5 Remote Button Box

To ensure the most used functions are at your finger tips the system comes with a remote button box. The remote button box duplicates some of the buttons from the front of the 4000 and allows alternative ways of navigating with the 5500.

1.6 Button Box Shortcuts

There are several shortcuts that are designed to make use of the system faster and more efficient.

The button box has the following short cuts.

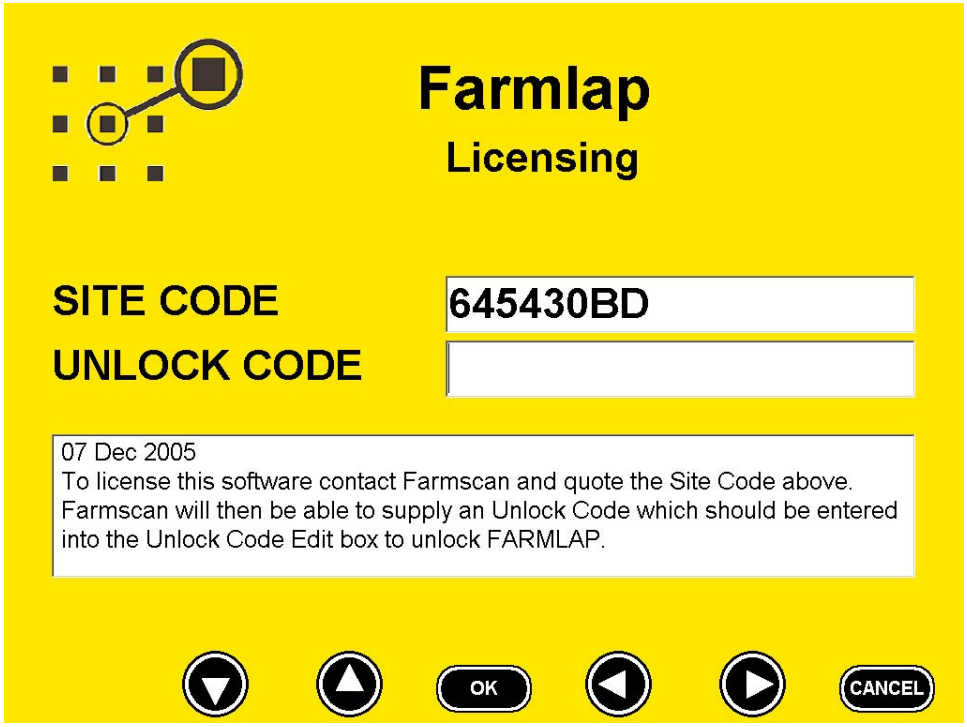
1. The **"OK"** button takes to the main menu where you can use the navigation keys to quickly navigate around.
2. The **"AUTO STEER"** button will escape you back to the main navigation screen from any place in the menu structure.
3. The **"LEFT"** and **"RIGHT"** navigation buttons take you straight to Nudge mode. *Only when in parallel mode*.
4. **"NEXT RUNLINE"** will close the boundary.

5. The **“SWAP SIDES”**, **NAVIGATION BUTTONS** and **“RUN HOLD”** buttons correspond to the buttons across the bottom of the screen when in a menu.
6. The **“UP”** and **“DOWN”** arrow changes the value of the selected item.
7. The **“UP”** arrow changes between light bar and information when on the main screen.

2.0 Farmlap Software Authorisation

When the Farmlap 2 software is run for the first time it will ask for an **“Unlock Code”**. This number can be obtained from the Farmscan head office.

When contacting the head office to obtain an Authorization number, please have the “Site Code” handy.



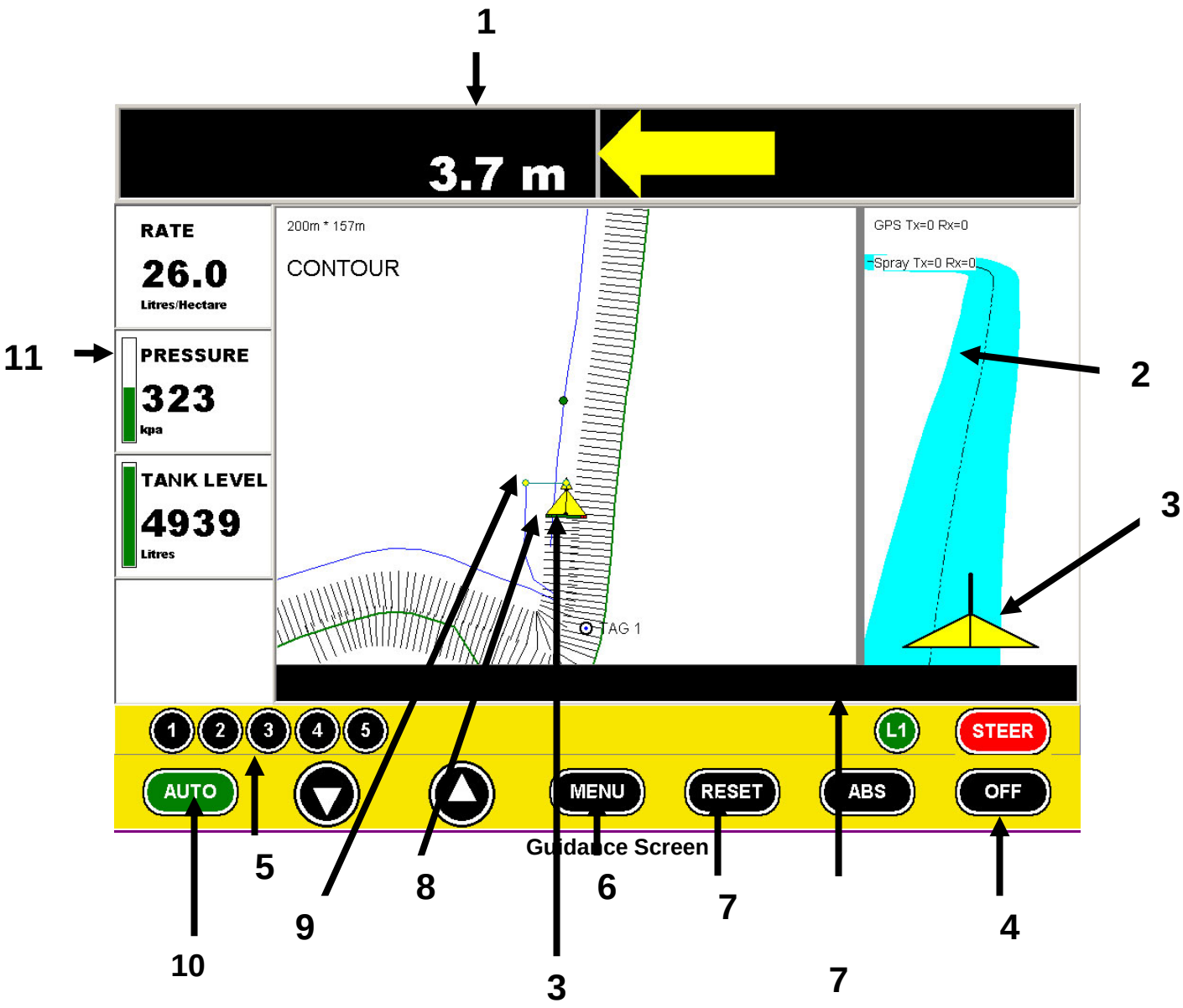
Unlock Screen

1. *If you reformat the computer hard drive you will have to contact Farmscan for a new “Unlock Code”.*
2. *If you need to replace or change the computer hard drive you will also have to contact Farmscan for a new “Unlock Code”.*
3. *Codes are not transferable between computers or systems.*

3.0 Guidance Screen and Main Menu

3.1 Screen layout

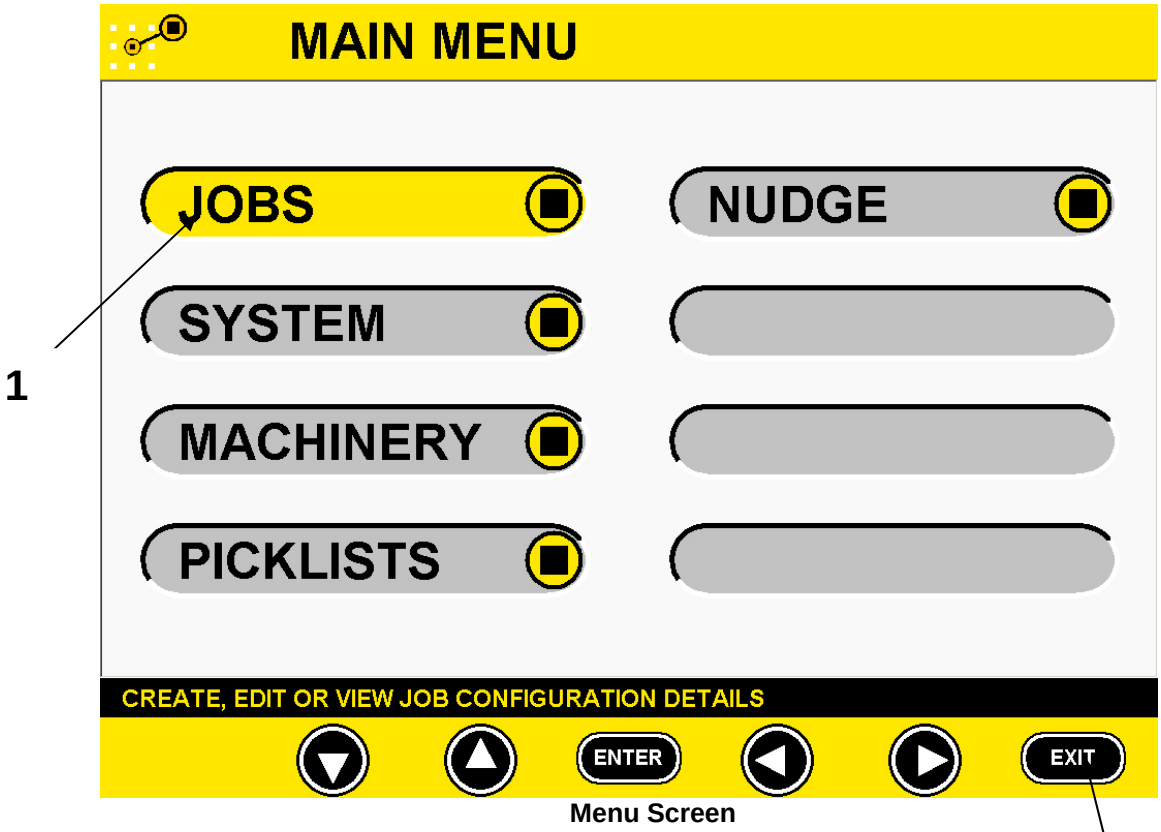
Depending on what options you have installed eg Auto Boom, the screen may look slightly different to the one shown below.



1. Graphical lightbar
2. Virtual Road
3. Triangle (machine representation)

4. Close Farmlap
5. Boom section indicators and switches when in Manual
6. Menus – press to enter menu screen
7. Reset values – eg tank litres
8. Machine Triangle
9. Run-line and Marker arm. This also shows the side which the run line will be generated on.
10. Auto/Manual button
11. Spraying information

3.2 Menu Layout



Menu Screen

1. System Menus
2. Exit back to guidance screen.

System menus will be explained further on into the manual. See the table of contents for specific menu item.

3.3 Menu Descriptions

JOBS – Menu's for entering all information about a job. Information includes operators, soil conditions, rate, farm name etc.

SYSTEM – System and diagnostic tools.

MACHINERY – Menu's for setting up your various machines.

PICKLISTS – Menu's for setting up picklists.

NUDGE – Feature for nudging the machine back onto line. Useful to achieve better accuracy with sub metre systems.

3.4 Using the Navigation screen

The main navigation screen holds all of the navigation information. It also holds spray pod and steering information.
When using this screen there are some functions to be aware of.

1. Pressing the **"UP"** on the button box, or pressing the lightbar toggles between the light bar and the information bar
2. Pressing the **"LEFT"** or **"RIGHT"** button on the Button box puts you into NUDGE mode. (Only in Parallel mode).
3.

4.0 Menus explained

4.1 Jobs

Navigate to **MENU→JOBS**

This section of the setup allows you to open an existing job, change the details of and existing job, or start a new job.

4.1.1 Viewing current Job

Navigate to **MENU→JOBS**

JOB NAME — The Name of the current job
OPERATOR – The name of the current operator
CONDITIONS – The conditions
→Wind speed
→Wind Dir
→Temperature

→Humidity
→Soil conditions

COMMENTS – General commets.
TANKx- Enter this menu to add the products for each tank

“NEXT”

FARM – The Farm where the job took place.
FIELD – The Field/Paddock that the job took place.
ACTIVITY – The activity taking place for that job, ie Harvesting or Spraying
RIG– The machine used for that job.

4.1.2 Previewing and Opening Existing Jobs

Navigate to **MENU→JOBS →confirmation→JOB SELECTION**

From this menu you can preview existing jobs. Press the **JOB NAME** selection icon. Use the **Up/Down** arrows to cycle through all the jobs.
Once the required job is selected in the “**JOB NAME**” menu, press “**EXIT”** to open that job.

4.1.3 Filtering Previewed Jobs

To make it easier to find the specific paddock there is a filtering menu. On the right hand side of the **JOB SELECTION** screen there are menus for filtering by FARM, FIELD, ACTIVITY, and RIG.

FARM- Show only jobs for the selected FARM
FIELD- Show only jobs for the selected FIELD
ACTIVITY- Show only jobs for the selected ACTIVITY
RIG- Show only jobs for the selected RIG

4.1.4 Creating a new job

Navigate to **MENU→JOBS→JOBNAME→confirmation→JOB NAME→NEW**

Because you are closing the existing job you will get a confirmation screen asking you if you would like to close the current job. Press **“YES”.** NO will return you to the JOBS screen with the current job.

FARM – The Farm where the job took place.
FIELD – The Field/Paddock that the job took place.
ACTIVITY – The activity taking place for that job ie Harvesting or Spraying
RIG– The machine used for that job.

“EXIT”

OPERATOR- The Machine operator
CONDITIONS-
→WIND SPEED- The wind speed while completing the job
→WIND DIR- The wind direction while completing the job
→TEMPERATURE- The temperature while completing the job
→HUMIDITY- The humidity while completing the job
→SOIL CONDITIONS- The soil conditions while completing the job
COMMENTS- Any general comments to add to the job
TANK-
PRODUCT1~8- The products that are being applied

4.2 Machinery

In this section, settings for the machine layout and the machine control systems, ie widths, ABS section control etc,are setup.

A RIG is a machine that the guidance system can be fitted onto ie a tractor and sprayer, a tractor and seeder, or the same tractor with a different tillage machine. Each one of these RIGs can have different options attached to it, ie a sprayer may have a 5206 ABS installed and the seeding RIG may have autosteer.

4.2.1 Adding and selecting RIGs

To add a new RIG select **"MACHINERY"** and press**"NEW"** at the bottom of the screen. Type in the name and press **"ENTER"**. Then have to set up the options and settings for that rig.

You can select a pre setup **"RIG"** by selecting **"MACHINERY"** and using the up and down arrows to cycle through the rig. Press the **"ENTER"** button to select one. When you press **"ENTER"** all the settings for that rig will appear. **"NOT SETUP"** will appear on the right if the rig has not been setup.

4.2.2 Machine Layout

To set up the machine layout press the **"LAYOUT"** button. Enter the layout of the machine.

1. IMPLIMENT – Either fixed to the rig or trailing
2. ANTENNA OFFSET – The distance the antenna is from the centre of the machine. Negative for left, positive for right.
3. NEXT RUNLINE – The default side the runline will be drawn when first strating a job.
4. OVERLAP – The amount of overlap required for your operation.

5. ANTENNA to HITCH – The distance from the antenna to the hitch point (drawbar)
6. HITCH to AXLE – The distance from the hitch to the implement axle.
7. AXLE to IMPLEMENT – Implement axle to Implement.
8. TURN RADIUS – The minimum turn radius you want the rig to take when turning corners.

To change these settings select the item to change and use the up and down arrows to either change the selection or change the value.

4.3 Master Control

Farmlap can be used with various options, you can select these options from **"MASTER CONTROL"**. Press the **"MASTER CONTROL"** button and use the up and down arrows to select the option. A setup menu will appear to the right of the screen. To enter setup, press the **"CONTROL"** button.

4.3.1 Master Control 5206 (Autoboom, ABS)

To enter the Setup menu for the 5206 ABS select 5206 in **"MASTER CONTROL"** and press the **"CONTROL"** button in the **"MACHINERY"** →**"SETUP"** page.

There are 2 pages of setup options. You can cycle through each page by pressing the **NEXT** button at the bottom of the screen.

1. SECTIONS – The amount of sections
2. WIDTH – The total or section width depending on mode.
3. LOOKAHEAD ON – The time in seconds that the section valves (Auto Boom Valves) will start to open when changing from worked ground to un-worked ground.
4. LOOK AHEAD OFF - The time in seconds that the section valves (Auto Boom Valves) will start to close when changing from un-worked ground to worked ground.
5. COMM PORT - The Com Port that the terminal uses to communicate with the spray pod.
6. COVERAGE – The coverage control you require .
7. RATE ALARM – The percentage amount from the target rate that an alarm will sound.
8. TANK ALARM – The point at which the tank alarm will sound.
9. 2nd LINE ON – The speed or pressure that the second line will turn on.
10. 2nd LINE OFF – The pressure that the second line will turn off

NEXT

1. 2nd Line- DISABLED turns off the 2nd line. You can also choose the type of second line you have.
2. Ctrl RESPONSE- The response time of the control valve. Usually in seconds.
3. PRESSURE- If you have a pressure transducer you set it to 600 KPa. Other wise it is set to DISABLED
4. PRESSURE OFFSET- An adjustment amount for the pressure transducer in KPa
5. SLOW HOLD- The minimum pressure /flow that you want the system to control down to.
6. SPEED SENSOR- Choose your external speed sensor device here. Normally speed is derived from the GPS.
7. WHEEL CAL- Used for entering or calibrating the external speed input
8. TEST PULSES- how many pulses came back from the calibration
9. TEST DISTANCE – The distance traveled during calibration

4.3.2 Master Control 5207/5210 (Autoboom, ABS)

The 5207 is for ABS Automatic boom switching. It does not control. The 5410 can be used to read flow and create 'as applied maps.'

To enter setup for 5207/5210 ABS select 5207/5210 in **"MASTER CONTROL"** and press the **"CONTROL"** button in the **"MACHINERY SETUP"** page.

1. COVERAGE – The coverage control you require
2. COMM PORT - The Com Port that the terminal uses to communicate with the spray pod.
3. SECTIONS – Number of sections.
4. WIDTH – Total width. If you press the selection button a "**SECTION"** button will appear. You can then cycle through each section and enter individual widths.
5. LOOKAHEAD ON – The time in seconds that the section valves (Auto Boom Valves) will start to open when changing from worked ground to un-worked ground.
6. LOOK AHEAD OFF - The time in seconds that the section valves (Auto Boom Valves) will start to close when changing from un-worked ground to worked ground.

4.3.3 Master Control BoomBits_NG_5300

Boombits NG only requires knowledge of the number of sections the rig has. This information is obtained from the rigs layout.

4.3.4 Screen control

Screen control is the simplest control offered. There is no control at all, though steering can be used. All settings, widths etc have to be entered manually and turned on and off manually. They are entered in the **"LAYOUT"** screen.

4.3.5 Master Control 2400

The Master Control 2400 is a direct interface to the 2400 spray controller. The system communicates directly with the 2400. The following information assumes that you have purchased the hardware needed to communicate to the controller.

The 5500 and the 4000 can communicate directly with selected spray controllers. If your spray controller is in the list of Master Controllers then select this option. A control menu will appear on the right. To set up the 2400 interface navigate to **MENU→MACHINERY→2400 master control SETUP**

1. SECTIONS- The number of sections you have
2. WIDTH – The total width or section width of each section.
3. COMM PORT – The comm. port the interface is connected to.
4. CONTROL RATE – Either NO or YES depending on if the 5500/4000 is controlling the rate on the spray controller. Used for variable rate.

4.3.6 Master Control 24V1

The Master Control 24V1 is a direct interface to the 24V1 spray controller. The system communicates directly with the 24V1. The following information assumes that you have purchased the hardware needed to communicate to the controller.

The 5500 and the 4000 can communicate directly with selected spray controllers. If your spray controller is in the list of Master Controllers then select this option. A control menu will appear on the right. To set up the 24V1 interface navigate to **MENU→MACHINERY→24V1 master control SETUP**

5. SECTIONS- The number of sections you have
6. WIDTH – The total width or section width of each section.
7. COMM PORT – The comm. port the interface is connected to.
8. CONTROL RATE – Either NO or YES depending on if the 5500/4000 is controlling the rate on the spray controller. Used for variable rate.

4.4 Autosteer Version 2

The 5400 and the 4000 can have the optional Autosteer function fitted. (This is only possible if the machine is compatible with the system). You are required to purchase additional hardware to permit Autosteer.

The system will automatically set up most of the settings needed for Autosteering. These auto settings can also be manually overridden if needed. There are however some settings which have to be manually entered.

To enter Setup for **"AUTOSTEER"** select **"AUTOSTEER"**. Use the up and down arrows to select **AUTOSTEER_V2**. Press enter to select.

An **"AUTOSTEER"** setup box will appear. Press the button on the box to setup Autosteer for this RIG. Each RIG can be set up differently to allow the system to be moved between rigs and set up quickly.

1. ANTENNA HEIGHT- The height of the antenna. Important for the Gyros to work.
2. POD POSITION – The orientation of the steering pod. This is important for operation of the gyros.
3. VERTICAL TILT – This is the vertical tilt as reported by the pod. If you press the selection button a **"SET"** button will appear at the bottom of the screen. If on a perfectly flat surface it can be used to set the vertical of the machine.
4. AXLE WIDTH – The distance between the steering axles.ie between the two front or rear tires.
5. STEER AXLE from antenna – The distance between the steer axle and the GPS antenna. This is a (-) value when the steer axle is in front of the antenna, and a (+) value when the steer axle is to the rear of the machine.
6. DRIVE AXLE from antenna – The distance from the drive axle to the antenna.
7. MIN LOOKAHEAD – The minimum look ahead distance the system will steers to.
8. MAX LOOKAHEAD – The maximum look ahead that the system will steers to.
9. AUTO SETUP – Enters the Austosteer Autosetup screens.
10. DIAGNOSTICS – Enters the diagnostics screens if needed.
11. TILT CORRECT – YES or NO depending on if you use this feature. Only relevant when optional steering pod is installed.
12. CENTER CORRECT – YES or NO, This should normally be "YES". This turns on or off the automatic centre correction for the wheel angle sensor.

4.4.1 Diagnostics

1. POD STATUS – Indicates whether the steering POD is disabled or enabled
2. SENSOR VALUE – The ADC Valve returned by the wheel angle sensor.

3. WHEEL CENTER – The wheel angle sensor value when the steering wheels are straight.
4. VALVE VALUE – The actuation value that is sent to the valve from the diagnostics screen.
5. STEERING – Indicates whether steering is disabled or enabled.
6. LEFT – steers the wheels left when pressed.
7. STRAIGHT – Steers the wheels straight when pressed.
8. RIGHT – Steers the wheels right when pressed.
9. LEFT SHOT – Delivers a shot of oil in the left direction.
10. RIGHT SHOT - Delivers a shot of oil in the right direction.
11. SHOT TIME – The duration of the shot in milliseconds.
12. STEER ANGLE- The calculated angle of steering wheels.

4.4.2 Auto setup

1. WHEEL CENTER – The wheel angle centre value.
2. COUNTS/DEGREE - The wheel angle sensor resolution value
3. MIN VALVE – The minimum valve actuation where wheel movement occurs.
4. MAX VALVE – The valve actuation where the increase in steering response stops.
5. STEERING MAX – maximum steering angle change achievable in 200 milliseconds.
6. MIN VALVE SHOT – The time in milliseconds that will move the steering the smallest measurable amount.
7. SENSOR VALUE – Wheel angle sensor value.
8. VALVE VALUE – The actuation being sent to that valve in Auto setup.
9. AUTO STEUP - Press this button to go into Auto setup and start Auto setup.

4.5 Pick Lists

Pick lists allow you to pre-setup Farms, Fields, Operators etc. This can all be done in the comfort of your office. When you commence your jobs its only a matter of selecting the right information.

1. FARMS – Cycle through and enter your farms.
2. FIELDS - Cycle through and enter your fields/paddocks.
3. SOIL CONDITIONS - Cycle through and enter your soil conditions.
4. OPERATORS - Cycle through and enter your different operators.
5. PRODUCTS - Cycle through and enter your products.
6. DEFAULT RATE – The default rate for the products above. This rate is not used in any calculations and is for information purposes only.
7. DEFAULT UNITS – The default units for the products.
8. ACTIVITIES – The activity you are going to be engaged in. ie harvesting, seeding.

4.6 System

“SYSTEM” holds information or settings that affect the system as a whole.

4.6.1 GPS Setup

Holds settings and information about the GPS and GPS Com Port. It also holds information like Lat/Long and GPS quality. You can also see RAW GPS strings being received.

4.6.2 Display Units

Changes system units from Metric to US.

4.6.3 Boundary Create

Either **“YES”** or **“NO”** to whether you create field boundaries.

4.6.4 Coverage Min

The minimum distance between coverage lines on the screen. The lower the number, the more dense the coverage.

When a low coverage value is used on a large field, a large amount of computer resources are consumed. This could affect system performance. If this happens use a higher COVERAGE MIN value.

4.6.5 Brightness

This value changes the screen brightness.

4.7.6 DATA Drive

Select the drive you wish to export DATA to. This is commonly a USB device.

4.7.7 Nudge Amount

The Nudge amount is the amount that you move the runlines with each push of the nudge button.

4.7.8 Import data

Menu for importing data into your jobs. Data may be runlines, boundary Obstacles etc

4.7.9 Export data

Menu for exporting whole jobs, or parts of jobs to your portable storage device ie Thumb Drive. This information can be used by desktop software to print maps and create VRC/VRT maps.

4.7.8 Tag Names

Menu for changing the default TAG names to something more descriptive.

4.7.9 Maximum Rate

This menu changes the maximum rate that is used when recording the rate for an as applied map. The rate differences will be shown on the screen in varying colours. The difference between 0 and the Maximum Rate will be divided into 10 segments and a colour assigned to them. These colours will represent a rate on the screen.

4.7.10 Show Map

Either **"YES"** or **"NO"** It will show or hide the rate polygons on an imported rate map. Even if the polygons are hidden the coverage colours for varying rates still show.

4.8 Nudge

The nudge feature allows you to move runlines left and right so that they match positions from the GPS. This is a handy feature when using sub-metre GPS systems that drift. There are two ways to NUDGE the runlines.

To use navigate to **MENU→NUDGE**. The system goes into nudge mode and the nudge buttons appear on the bottom of the screen.

1. LEFT/RIGHT – Nudges the runlines left and right by a set amount (5 cm) at a time. The more times you press it the further in that direction it will go.
2. NUDGE X – Nudges the runlines to your current position when pressing the **"NUDGE X"** button.

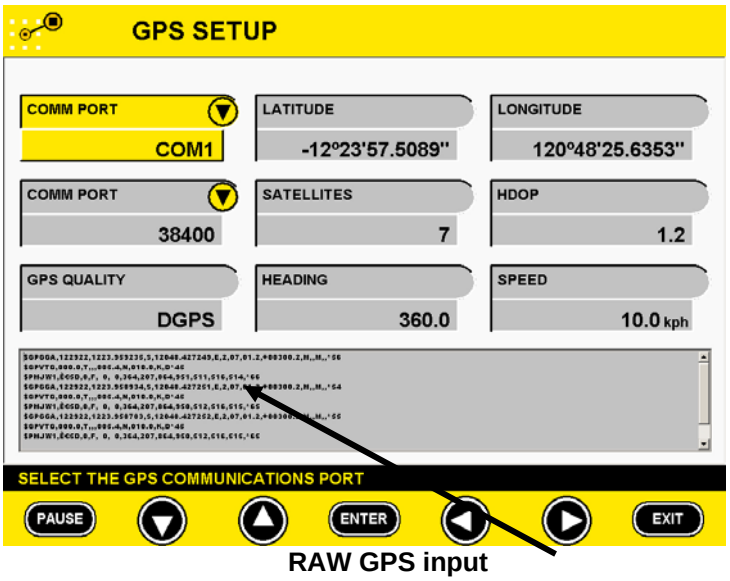
You can use the Left and Right arrows on the Button box as a short cut to the nudge mode.

5.0 How to – General System Wide Set up.

This section will go into more detail about setting up system wide or global settings. These settings affect the whole system no matter what mode or control is chosen.

5.1 How to select the correct COM Port.

Navigate to the **"GPS SETUP"** menu. **MENU → SYSTEM → GPS SETUP**
Press the **"COMM"** Port button and use the up/down buttons to select the correct com port. You can verify that the port is correct by pressing **"RESUME"** button. The display should start to fill with raw GPS strings.



RAW GPS input

5.2 How to Select the Correct Baud rate.

Navigate to "**GPS SETUP"** menu. **MENU→SYSTEM → GPS SETUP**
Press the **"BAUD RATE**" button and use the up and down arrows to select the correct **"BAUD RATE"** and press **"ENTER"** to apply the change.

Guidance can use a baud rate of 19200 or 38400. Steering systems must use a baud rate of 38400.

6.3 How to Set the Correct Units

Depending on your geographic location the standards for measurement are different. The 5500 can be set up to use metric or US imperial.

To change the units the system works in navigate to **MENU → SYSTEM → DISPLAY UNITS**
Press the **"DISPLAY UNITS"** button and use the **up/down** arrows to change the units. This setting changes the units globally throughout the whole system. Guidance, widths, rates and volumes will be changed.

You can switch between Metric and US Imperial at any time, the system will do the conversion for you.

5.4 How to Set Create Boundaries On or Off

To switch boundary creation On or Off navigate to **MENU → SYSTEM → CREATE BOUNDARIES.**

Press the **"CREATE BOUNDARIES"** button and using the up/down arrows change the value to "**YES"** or **"NO"**

5.5 How to Set Coverage Min (Density)

To switch boundary creation on or off navigate to **MENU → SYSTEM TOOLS → COVERAGE MIN.**

Press the **"COVERAGE MIN"** button and using the up/down arrows change the value. The value is a measurement. The measurement represents the minimum distance between runlines.

When a low coverage value is used on a large field, a large amount of computer resources are consumed. This could affect system performance. If this happens use a higher COVERAGE MIN value.

5.6 How to Set the Screen Brightness

The screen can be dulled to reduce the glare when working at night. To change the screen brightness navigate to **MENU → SYSTEM TOOLS** Select **"BRIGHNESS"** and choose a setting between 1 and 10. Press **"ENTER"** to apply setting.

5.7 How to Select the Data Drive.

To change the DATA DRIVE (Your thumb drive letter), navigate to **MENU → SYSTEM TOOLS** Select **"DATA DRIVE"** and choose a drive to export your data too. Press **"ENTER"** to apply setting.

See importing and exporting data for a more comprehensive overview

5.8 How to Change the Nudge Amount

The amount by which you nudge the runlines one way or the other can be changed. The feature allows you to nudge the runlines exactly ½ a row width for inter row sowing.

To change the Nudge amount, navigate to **MENU → SYSTEM TOOLS**
Select **"NUDGE AMOUNT"** and using the up/down arrows change the value.

5.9 How to Import DATA

See "How to Import and Export DATA"

5.10 How to Export DATA

See "How to Import and Export DATA"

5.10 How to Change and use the Tags

While working you can tag features in the field. This feature can tag up to 12 individual features. These features could include weeds and objects. The tag is positioned at the antenna position when the **"MARK POINT"** button is pressed.

5.1.1 Changing Tag Names

To change the default tag names to something that more represents the position navigate to **MENU → SYSTEM TOOLS** Select the **"TAG TYPE"** and using either the Up/Down Left/Right Navigation keys or Keyboard change the name. Press enter to apply.

Follow the same procedure to change the other tag names.

5.1.2 Using Tags

While working press the **"MARK POINT"** button on the button box. The system will change to the Tag screen. It will default to the last Tag used. After a period of time it will return to the main screen and the tag with its name will appear. You can return to the main screen quicker if you press the **"RUN/HOLD"** button on the button box.

To use another tag after pressing the **"MARK POINT"** button use the up/down left/right navigation buttons to choose another tag. This new tag will now be the default.

6.0 How to Select and Set Up a Job

6.1 Getting Started

The system relies on you having a Farm, Field and Activity entered. When you first start the system you have the choise of choosing an existing Job or creating a new one.

6.2 Opening an Existing Job

6.2.1 Opening an existing Job at Start Up

When first turn on the terminal **"JOB SELECTION"** screen is the first one you see. The last Job will be selected and the field will be displayed in the preview. Press **"EXIT"** to choose the current job showing in the **"JOB NAME"** Menu.

To choose a different job select the **"JOB SELECTION"** menu and use the up/down arrows to move through the job list. Press **"EXIT"** to load the selected job.

By selecting a **FARM, FIELD, ACTIVITY or RIG** filter, using the up/down arrows to choose an item to filter by you can filter down to specific jobs. If you were to select a certain field as a filter, only the jobs that were performed in that field will show up in the **"JOB NAME"** menu. Same system works for the **"VIEW ALL"** screen. This makes it quicker to select the correct job.

Select the filter and press **"CLEAR"** to remove filter.

Once the job is selected press "**EXIT"**, the job will load.

*If the job is large then it can take some time to load. The status bar will keep you informed***.**

6.3 How to Start a New Job

To enter a new job name navigate to the jobs screen, **MENU → JOBS.** On the **"JOB"** bar press the yellow selection icon.

A **JOB SELECTION CONFIRMATION** will appear. Press "**YES**" to close the job and continue.

Press the **“JOB NAME”** selection icon. A **“NEW”** button will appear on the lower left of the screen. Press the **“NEW”** icon. After a few seconds the **JOB SETUP** screen will appear. Select the **FARM, FIELD, ACTIVITY** and **RIG** you will to use for your new job then press **“EXIT”.**

You can also add new **FARM FIELDS** and **ACTIVITIES** from this screen

The next screen that appears allows you to enter the job details. Select the detail menu you wish to change and add your details.

Pressing the **“NEXT**” button allows you to change or add more job details. This screen also allows you to choose your RIG for the job.

Choosing the RIG is very important. The settings ABS, Flexi-Steer etc are all tied to the rig you choose.

7.0 How to Set Up a Machine

You can set up and save multiple machines in Farmlap. A machine holds all the settings for a particular machine and its implement. This may be a tractor for seeding and a harvester for harvest. This allows you to easily load the settings for the machine you wish to use, without having to manually enter all the settings again. This includes the settings for Autosteer.

Navigate to **MENU→MACHINERY** Press the machinery button, press **“NEW”** and type in a name for the machine. Press enter, the machine is now saved. You will see “**LAYOUT” (NOT SETUP)** appear to the right. Press the “**LAYOUT**” button.

If using multiple implements on the same tractor, you can set these configurations up as different machines. This allows you to save the different dimensions of the tractor and implement, and allows you to easily retrieve this information without having to re-enter it.

7.1 How to Set Up the Machine Layout

Navigate to **MENU→MACHINERY→LAYOUT**
In this screen enter the information about the machine to set up.

1. IMPLEMENT – The Implement can be either a trailed implement or a fixed implement
2. ANTENNA OFFSET – The distance the antenna is from the center of the machine. Negative for left, positive for right. This is useful for machines

with an offset cab or implement. For example, a harvester with an offset front.

3. NEXT RUNLINE – The default side the runline is drawn when you first start up Farmlap.
4. OVERLAP – The amount of overlap required for your operation.
5. ANTENNA to HITCH – The distance from the antenna to the hitch point (Drawbar)
6. HITCH to AXLE – The distance from the hitch to the implement axle.
7. AXLE to IMPLEMENT – Implement Axle to Implement.
8. TURN RADIUS – The minimum turn radius you want the rig to take when turning corners.

7.1.1 How to change the Values in Machine layout

Select the menu you wish to change the value of. Once selected use the up/down arrows to change the value. Either press **"ENTER"** or deselect to apply setting.

7.2 How to Change the Master Control

To use master controls like 5206 or 5207 you will have to purchase the required hardware and have it installed.

A master control is the control system that controls your machine. For example, you could have a 5206 ABS controlling and switching your boom spray or a VRC system controlling your seeder tank.

To change your master control, navigate to **MENU→MACNINERY** and press the "**MASTER CONTROL"** selection button. Use the **up/down** arrows to change the master control. When you select the required master control, a setup menu will appear. Enter set up menu to set up the control

See How to set up master control for set up options.

7.3 How to Enable the System for Flexisteer

To enable the system navigate to **MENU→ MACHINERY** Press **"AUTO STEER"** button and using the up/down arrows select **AUTOSTEER_2** and press **"ENTER"**. A set up menu will appear on the right hand side of the screen

See How to set up Autosteer for set up options

8.0 How to Set Up a 5206 ABS (Auto Boom Switching)

The 5206 in conjunction with the 5400/5500 has the ability to Auto switch the boom sections as well as control the application of product. It will work just like a normal spray controller, controlling application rate and up to 15 sections in single line mode, and 7 in dual line mode. Dual line mode can be either multi step or single step. In multi step mode you can use either pressure or speed to control lines.

To set up the 5206, ensure you have to master control set to "**SPRAY_AUTOBOOM_5206"** and navigate to **MENU→MACHINERY→CONTROL**

There are three screens to the 5206 setup, you can cycle through these by pressing the **"NEXT"** button.

8.1 How to Set the Target Rate

The "TARGET RATE" is the rate that you wish to apply product.

Navigate to **MENU→JOBS→TANKx** Select rate and using the up/down arrows you can change the target rate. The rate will increase and decrease by the **"STEP"** amount. This is the rate in L/Ha (litres per hectare) or G/AC (gallon per acre).

8.2 How to Set the Rate Step

The **"STEP"** is the step amount that the target rate will increase and decrease by.

Navigate to **MENU→JOBS→TANKx** and press the **"RATE"** button. Use the **up/down** arrows to change the Rate step. Press **"ENTER"** to save the value

8.3 How to Set Slow Hold

The **"SLOW HOLD"** function freezes the valve at the slow hold speed or pressure. If you continue below this speed or pressure, the system will not control lower. It will continue to spray as if it were at the slow hold speed or pressure.

Navigate to **MENU→MACHINERY→CONTROL→NEXT** and press the **"SLOW HOLD"** button. Use the **up/down** arrows to change the slow hold speed. Press the **"ENTER"** button to save the value.

8.4 How to Set the Tank Volume

The tank volume setting sets the maximum volume of the tank. This value is then used to show you the remaining volume when spraying and activate the low tank alarm.

Navigate to **MENU→JOBS→TANKx** and press the **"TANK VOLUME"** button. Use the **up/down** arrows to change the tank volume. Press **"ENTER"** to save the value.

8.5 How to Set the Rate Alarm

The rate alarm is a visual and audible alarm. It sounds when you reach your preset alarm point.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"RATE ALARM"** button. Use the **up/down** arrows to change the rate alarm percentage. Press **"ENTER"** to save the value.

8.6 How to Set the Tank Alarm

The tank alarm is a visual and audible alarm. It sounds when you reach your preset alarm point.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"TANK ALARM"** button. Use the **up/down** arrows to change the tank alarm percentage. Press **"ENTER"** to save the value.

8.7 How to set the ABS Look-a-Head on

The LOOKAHEAD ON value, is a value in seconds, section valves will start to open. This ensures you have full pressure when you reach un-worked ground.

A starting value is the speed of the valve. This is usually in seconds.

This value may vary with different valves and different systems. It will be a matter of trial and error to get it right.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"LOOKAHEAD ON"** button. Use the **up/down** arrows to change the lookahead value entered in seconds. Press **"ENTER"** to save the value.

8.8 How to Set the ABS look-a-head off

The LOOKAHEAD OFF value, is a value in seconds that section valves start to close. This ensures that the section valve is closed when you cover worked ground. This ensures double spraying is minimised.

A starting value is the speed of the valve. This is usually in seconds.

This value will vary with different valves and different systems. It will be a matter of trial and error to get it right.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"LOOKAHEAD OFF"** button. Use the up/down arrows to change the look ahead value in seconds. Press **"ENTER"** to save the value.

8.9 How to set the Second Line Type.

There are 2 types of second line.

1. Split line – This is where the second line is split up into sections like the first line. When a section turns off on the first line, the corresponding section turns off on the 2nd line.
2. Full line – This is where the second line has no sections, it is one line. When a section turns off on the first line, the whole 2nd section turns off.

Navigate to **MENU→MACHINERY→CONTROL→NEXT** press the "**2nd LINE"** button and using the **up/down** buttons to choose your line type.

8.10 How to Set 2nd Line Mode

Navigate to **MENU→MACHINERY→CONTROL→NEXT** press the "**2nd LINE MODE"** button and using the **up/down** buttons to choose your line mode.

You can only use multi step when you have pressure enabled and a pressure transducer fitted.

The second line can operate in two ways, either single step or multi step.

Single step – The 1st line is open and as you pass the 2nd line on value the 2nd line opens. Both line 1 and 2 will stay open as long as you are above the 2nd line off value.

Multi step – The 1st line is open, when you pass the 2nd line on value, the 2nd line will open and the 1st line will close. The pressure will drop to below the 2nd line on value. As you speed up, the pressure increases and when it reaches the 2nd line on value a second time, both lines will open and drop the pressure again. The opposite happens when decreasing in speed but it uses the 2nd line off value.

8.10 How to the Line Priority

You can select which line you want to make the priority line. The priority line is the line, either LINE 1 or LINE2 which is first to switch on

Navigate to **MENU→MACHINERY→CONTROL→NEXT** press the "**LINE PRIORITY"**

Use the up/down arrows to change the priority line. Press **"ENTER"** to save the value

8.11 How to Set the Second Line Activation on Speed or Pressure

The second line on value, either speed or pressure, is the value at which the second line will be activated. To use pressure you have to enable the pressure transducer in the **MENU→MACHINERY→CONTROL→NEXT→PRESSURE.** When this is enabled you can not use speed to turn on the second line**.**

Navigate to **MENU→MACHINERY→CONTROL** and press 2nd line on. Press the **up/down** button to change the value. Press the **"ENTER"** button to save.

8.12 How to Set the Second Line off Speed and Pressure

You have to use pressure and have it enabled to use multi step second line mode. Speed can only be used for single step mode.

The second line off value, either speed or pressure, is the value at which the second line will be closed. To use pressure you have to enable the pressure transducer in the **MENU→MACHINERY→CONTROL→NEXT→PRESSURE.** When this is enabled you can not use speed to turn off the second line**.**

Navigate to **MENU→MACHINERY→CONTROL** and press "**2nd line off**". Press the **up/down** button to change the value. Press the **"ENTER"** button to save.

The 2nd line off value will always be a lower value than the second line on value.

8.12 How to Set the Coverage Type.

There are three (3) ways to set up coverage when using Autoboom,

1. **OVERLAP (%)**
2. **AVOID OVERLAP**

AVOID GAPS works by waiting until the whole section is over the covered area before turning the section off. This ensures that there are no bits missed but there will be a slight amount of overlap.

OVERLAP (%) works by turning off the section as soon as it starts to cover worked ground (when at 0%). This will stop overlaps, but gaps of unsprayed ground will remain. You can also set an overlap amount. This works the same as OVERLAP 0% but adds an amount that the section will overlap before it turns off the section. This can leave gaps but gives you control on the size of the gaps left.

OVERLAP 0% is the same as NO OVERLAP in previous systems.

Navigate to **MENU→MACHINERY→CONTROL→COVERAGE** Press the selection button and using the **up/down** arrows select the option you would like to choose.

8.13 How to Change the Valve Control Response Time

There are many types of valves for controlling the application rate, these valves work at many different speeds. Because of this, Farmlap has a setting called **"CONTROL RESPONSE"** and it is measured in seconds. This should be the time that it takes for the valve to move from fully open to fully closed.

Navigate to **MENU→MACHINERY→CONTROL→NEXT→Ctrl RESPONSE**

Use the **up/down** arrows to change the value.

8.14 How to Change the Autoboom Com Port

Farmlap has to communicate with the ABS POD to control the application rate and section switching. This is done via a com port. You have to choose an unused com port.

Navigate to **MENU→MACHINERY→CONTROL→COMM PORT**

Press the selection button and using the **up/down** arrows select the required com port.
Press **“ENTER”** to apply.

8.15 How to Activate the Wheel Speed Sensor

Farmlap has the ability to use a speed input from the GPS or a wheel sensor. To use the wheel sensor you must enable it.

Navigate to **MENU→MACHINERY→CONTROL→NEXT→SPEED SENSOR**

Using the **up/down** arrows select **“NONE”**, **“RADAR”** or **“WHEEL”**

Press **“ENTER”** to apply.

8.15 How to Vary the Rate from the Front Screen

When you set up the 5206 you set up a default target rate. This is the rate that you wish to apply your product. See item 9.1

If you wish to raise or lower the target rate temporarily you can do it from the main navigation screen.

Press the area (panel) around the rate on the main navigation screen (5500) or press the soft key next to the rate (RT 4000). It will turn Yellow, this means it is in **“SLECTED MODE”**. Using the **up/down** arrows you can adjust the rate above and below the default rate. It will increase and decrease by the step size set up in item **9.2. (ABOVE)** or **(BELOW)** will be displayed to indicate if you are above or below the default rate. To return to the live application rate deselect the panel by pressing it again.

To reset the rate back top the default, press the panel to select it (Turns yellow) and press **“RESET”** at the bottom of the screen.

8.16 How to Set up Sections with the 5206 ABS

To set up the amount of sections navigate to **MENU→MACHINERY→CONTROL→NEXT→,** press the **“SECTIONS”** button and use the **up/down** button to change the amount. Press the **“ENTER”** button to save setting. There is a limit of 15 sections on one line and 7 sections with dual lines.

If you have purchased a Section switch box there is no need to set this up. Just install the switch box and it will setup automatically. If the switch box has a different amount of section switches than actual sections it will automatically group them together.

8.17 How to Set up Section Widths with the 5206 ABS

To change the individual section widths navigate to **MENU→MACHINERY→CONTROL→SECTIONS** Select **"WIDTH"** . **"WIDTH"** will change to **"SECTION"** and the width of **"SECTION 1"** will appear. You can use the **up/down** arrows to change the width. Press the **SECTION** button at the bottom left of the screen to move to the next section. Repeat until all the sections have a width. Press **"ENTER"** when finished. The total width of all sections will be displayed.

8.18 How to Reset the Tank level

From the main navigation screen select the **"TANK LEVEL"** box and press the **"RESET"** button. This will reset the tank level to the default tank level as entered in the 5206 setup.

8.18 How to change from Tank Level to Amount Used

From the main navigation screen select the **"TANK LEVEL"** box. Press the **"TANK LEVEL"** button again and it will change to **"USED"**. Press the button again and it will change to **"TANK LEVEL"**

8.18 How to change the pressure readout to flow per minute

From the main navigation screen select the **"PRESSURE"** box. The Box will then display **"FLOW"**. Pressing the button again will toggle between the two functions.

8.19How to temporarily change the Tank Level

Because you don't always start off with a full tank you can temporarily adjust the size of the tank.

To adjust the size of the tank Highlight the **"TANK VOLUME"** box and use the up/down arrows to change the size.

Resetting the tank will take the tank volume back to the volume in the setup pages.

8.20How to turn ABS on and off

You can turn the ABS function on and off at any time. This function allows you to override the automatic behavior of ABS.

To turn the ABS function on or off press the **ABS** button at the bottom of the main navigation screen. It will change colour to represent its state.

Green – ABS ON
Red – ABS OFF

The ABS can be also overridden by the use of the optional switch box. This box has 3 states.

- Auto
- Forced ON
- Forced OFF

8.21How to Change the Maximum rate for as applied maps

Navigate to **MENU→SYSTEM→MAXIMUM RATE**

Using the up and down arrows change the rate to the maximum rate that you will be applying.

8.22How to show or hide the Rate Polygons

Navigate to **MENU→SYSTEM→SHOW MAP**

This setting is either **“YES”** or **“NO”.** If no is selected the polygons will be hidden but the coverage colour will continue to show the rate changes.

If yes is selected the actual rate polygons will be shown. The rate changes as you pass over the rate boundaries.

9.0 How to Set Up a 5207/10 ABS (Auto Boom Switching)

The 5207/5210 works in conjunction with another controller. The controller does all the spray control and the 5207/5210 switches the sections only.

To set up the 5207/5210, ensure you have to Master control set to **SPRAY_AUTOBOOM_5207** and navigate to **MENU→MACHINERY→CONTROL**

9.1 How to Setup your Coverage Type

There are two (2) ways to set up coverage when using Autoboom

1. **OVERLAP (%)**
2. **AVOID OVERLAP**

AVOID GAPS works by waiting until the whole section is over the covered area before turning the section off. This ensures that there are no bits missed but there will be a slight amount of overlap.

OVERLAP (%) works by turning off the section as soon as it starts to cover worked ground (when at 0%). This will stop overlap, but gaps of unsprayed ground will remain. You can also set an overlap amount. This works the same as OVERLAP 0% but adds an amount that the section will overlap before it turns off the section. This can leave gaps but gives you control on the size of the gaps left.

OVERLAP 0% is the same as NO OVERLAP in previous systems

Navigate to **MENU→MACHINERY→CONTROL→COVERAGE** Press the selection button and using the **up/down** arrows select the option you would like to choose.

9.2 How to Change the Autoboom 5207/10 Com Port.

Farmlap has to communicate with the ABS pod to control the application rate and section switching. This is done via a com port. You have to select an unused com port.

Navigate to **MENU→MACHINERY→CONTROL→COMM PORT**

Press the selection button and using the **up/down** arrows select the required com port.

9.3 How to Set Up Sections with the 5207/10 ABS

To set up the amount of sections navigate to **MENU→MACHINERY→CONTROL,** press the **"SECTIONS"** button and use the **up/down** buttons to change the amount. Press the **"ENTER"** button to save the settings. There is a limit of 5 sections with the 5207 and 10 sections with the 5210.

9.4 How to set up Section Widths with the 5207/10 ABS

To change the individual section widths navigate to **MENU→MACHINERY→CONTROL→SECTIONS** Press the **"WIDTH"** button. **"WIDTH"** will change to **"SECTION"** and the width of **"SECTION 1"** will appear. You can use the **up/down** arrows to change the width. Press the **"SECTION"** button at the bottom left of the screen to move to the next section. Repeat until all the sections have a width. Press **"ENTER"** when finished. The total width of all sections will be displayed.

9.5 How to Set the ABS look-a-head on

The look-a-head on value, is a value in seconds that the section valves start to open. This ensures you have the full pressure when you reach un worked ground.

A starting value is the speed of the valve. This is usually in seconds.

This value can change with different valves and different systems. You may have to use some trial and error to get it right.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"LOOKAHEAD ON"** button. Use the **up/down** arrows to change the look-a-head value in seconds. Press **"ENTER"** to save the value.

9.6 How to Set the ABS look-a-head off

The look-a-head off value, is a value in seconds that the section valves start to close. This ensures that the section valve is closed when you cover worked ground. This ensures double spraying in minimized.

A starting value is the speed of the valve. This is usually in seconds.

This value can change with different valves and different systems. You may have to use some trial and error to get it right.

Navigate to **MENU→MACHINERY→CONTROL** and press the **"LOOKAHEAD OFF"** button. Use the up/down arrows to change the lookahead value in seconds. Press **"SELECT"** to save the value.

9.7How to turn ABS on and off

You can turn the ABS function on and off at any time. This function allows you to override the automatic behavior of ABS.

To turn the ABS function on or off press the **ABS** button at the bottom of the main navigation screen. It will change colour to represent its state.

Green – ABS ON
Red – ABS OFF

The ABS can be also overridden by the use of the optional switch box. This box has 3 states.

- Auto
- Forced ON
- Forced OFF

10.0 How to Set Up the Boombits NG_5300 Boom Section Sensing

Boombits NG is Boom sensing. It senses if the valve is on or off and translates that onto the Farmlap 2 screen. If you manually turn off a section, the section will be turned off on the screen also.

10.1 How to select Boombits NG as Master Control

Navigate to **MENU→MACHINERY→MASTER CONTROL** and using the **up/down** arrows select **BOOMBITS_NG_5300**

10.2 How to setup Sections and Widths for Boombits_NG_5300

Navigate to **MENU→MACHINERY→MASTER CONTROL** . Select **"SECTIONS"** and using the **up/down** arrows select the amount of sections you require.

Press **"ENTER"** to apply

Select **“WIDTH”** and using the up/down arrows enter Section 1 Width. Press the **“SECTION”** Button to advance to the next section. Following the same procedure enter all the section widths. When all widths are entered press the **“ENTER”** button to apply.

11.0 How to Import and Export Data

The system has the ability to export and import different types of data. The data types include whole jobs, runlines, boundary and obstacles. This data can be used by Farmlap 2 at a later date or used to produce various maps using a computer and software.

11.1 Exporting DATA

To export data navigate to **“MENU→SYSTEM”** select **“DATA DRIVE”**
Using the up/down arrows select the correct drive, usually a thumb drive.

The **IMPORT** and **EXPORT** menus will appear.

Select the **EXPORT** menu. A confirmation box will appear. Press **“YES”**
The **EXPORT DATA** screen is very similar to the **JOB SELECTION** screen.

Select the job you wish to export by selecting **JOB NAME** and using the up/down arrows to select the job. Select the data type and select the data type you wish to export. Once you have the job and data type selected press **“EXPORT”**. The DATA will be exported to the removable device.

11.1.1Filtering Jobs for Export

Just like when selecting Jobs for opening, you can filter the jobs for export.

While in the **EXPORT DATA** screen select **FARM**, **FIELD** and/or **ACTIVITY** menus and select the information you wish to filter by.

Only the jobs that match the filter settings will be able to be selected for export. Pressing **“CLEAR”** will clear any filter in the selected menu.

11.2 Importing DATA

To import data navigate to **“MENU→SYSTEM”** select “**DATA DRIVE”**
Using the up/down arrows select the correct drive, usually a thumb drive.

The **IMPORT** and **EXPORT** menus will appear.

Select the **IMPORT** menu. The **IMPORT DATA** screen will appear. Select the **FARM** and **FIELD** that you wish to import the data into. Select the **DATA TYPE** by selecting the menu and using the up/down.

Press the **FILE NAME** menu and using the file manager select the job you wish to import the data from. Jobs are kept in a folder called **FL_Exports.** Expand the **FL_Exports** folder by clicking on the small cross, or selecting it and pressing the right cursor button. Select the file you wish to export and press **“OK”**

Press **“EXIT”** until you are back at the main screem

Navigate to **MENU→JOBS→NEXT→IMPORT menu’s**

Select the same **FARM** and **FIELD** as the imported file. Select the menu for the data type you wish to import. As you can import multiple files use the **UP** and **DOWN** arrows to select the file you want. Exit back to the main screen and start to use you imported data.

If you are importing parallel run lines you will have to parallel mode to be able to see the lines and use them.

12.0 How to set up Screen mode

Navigate to **MENU→MACHINERY→MASTER CONTROL** . Select **“SECTIONS”** and using the **up/down** arrows select the amount of sections you require.

Press **“ENTER”** to apply.

Select **“WIDTH”** and using the up/down arrows enter Section 1 Width. Press the **“SECTION”** button to advance to the next section. Following the same procedure enter all the section widths. When all widths are entered press the **“ENTER”** button to apply.
Coverage can be turned on and off by either pressing the Master button on the screen or the Master on the Button Box.

13.0 How to set up 2400 and 24V1 master control (Interface)

The Master Control 2400 is a direct interface to the 2400 spray controller. The system communicates directly with the 2400.
The following information assumes that you have purchased the hardware needed to communicate to the controller.

Navigate to **MENU→MACHINERY→MASTER CONTROL** Select either 2400 or 24V1. A setup menu will appear.

Select the **CONTROL SETUP** menu.

Select **SECTIONS** and use the up /down arrow to change the amount of sections.

Select **WIDTH** and the width of section 1 will appear. Use the up/down arrow to change the width of section 1.

Press the **SECTION** button at the bottom of the screen to change to the next section. Repeat the above procedure until all section width are entered.

When all sections are entered deselect the menu and the total width will be displayed.

13.1 How to allow 5500/4000 to change the Rate on the Controller.

The 5500/4000 can change the rate in real time based on an imported rate map. These rate maps are created in software and imported into the 5500/4000. See the Import/Export section of this manual.

If an imported rate map is being used you navigate to

MENU→MACHINERY→MASTER CONTROL
2400/24V1→CONTROL→CONTROL RATE

Choose **"NO"** if the 2400/24V1 is not to control the rate, and **"YES"** if the 2400/24V1 is to control the rate.

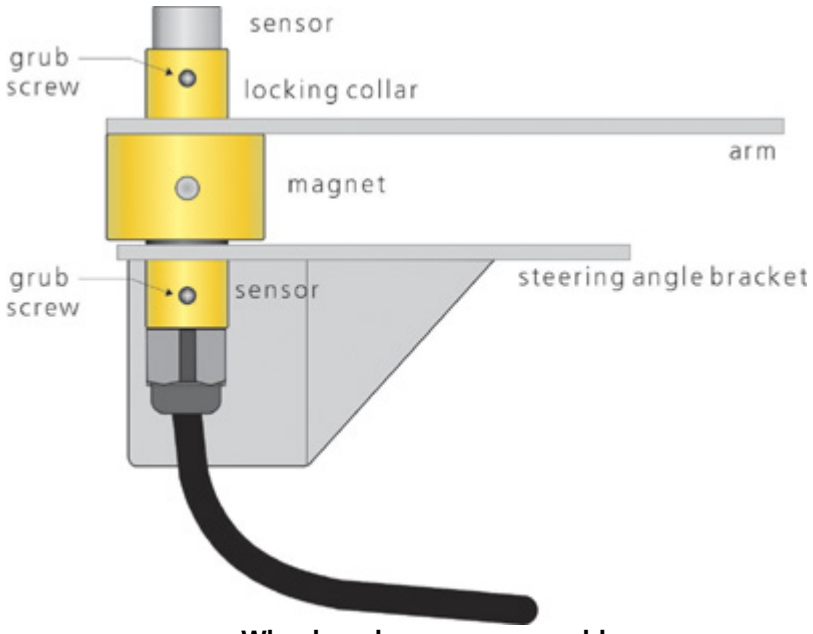
14.0 Setting up Autosteer Hardware

Before you can set up the system for Austosteer you have to set up the steering hardware. A layout diagram of the whole system can be found in Appendix

14.1 Fitting the Wheel Angle Sensor (WAS)

As there are many different machines, and many different options fitted to machines, a WAS fitting bracket is not supplied and has to be made specifically for the machine.

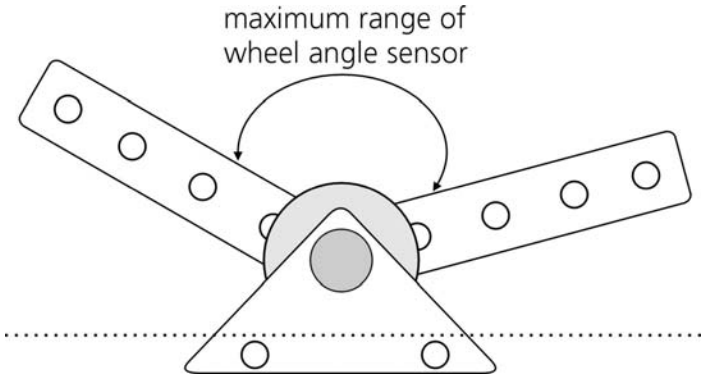
The WAS will only work if assembled in the correct way. The illustration below shows how to assemble the WAS.



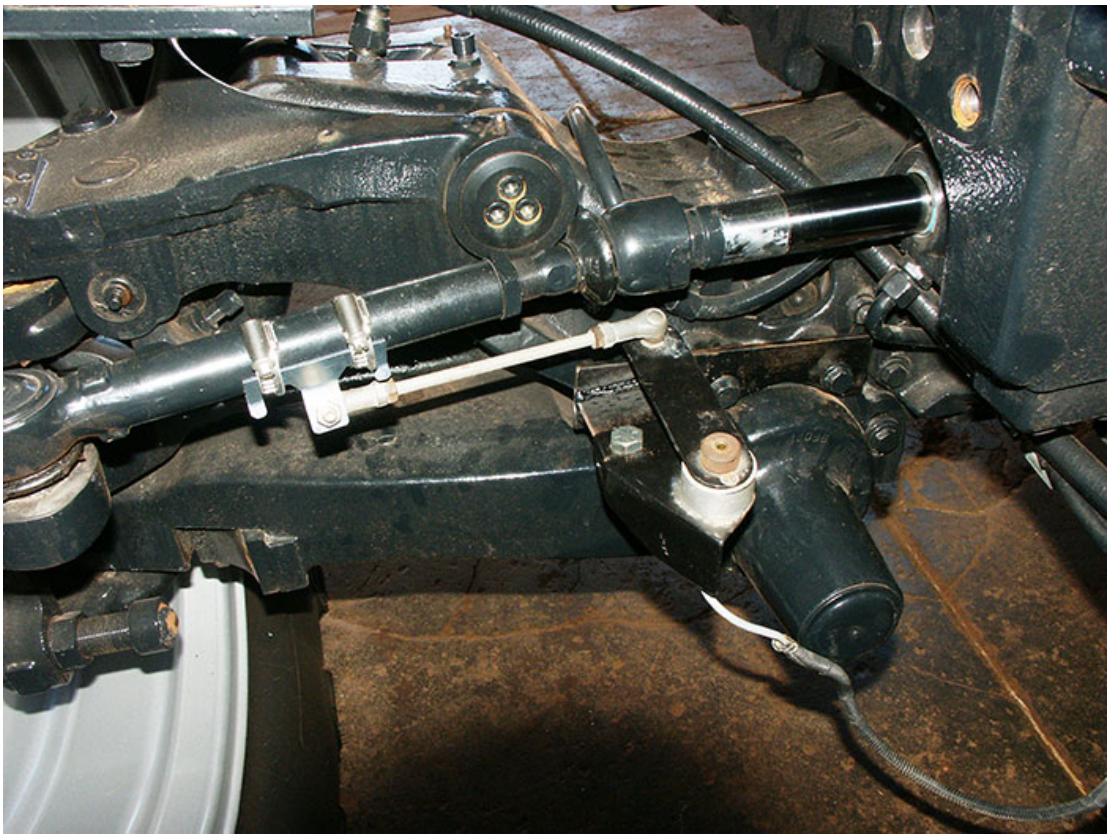
Wheel angle sensor assembly

Fit the WAS to the machine ensuring that it has the maximum range without fouling on the machine through full suspension travel.

*The sensor **MUST** be mounted so that when the steering mechanism is moved from lock to lock, the sensor movement is as linier as possible.*



The illustration below shows a correctly fitted WAS



Wheel angle sensor fitment

14.2 setting up the Wheel Angle Sensor (WAS)

With the GPS connected and turned on, enable Autosteer by navigating to **MENU→MACHINERY→AUTOSTEER** and selecting **AUTOSTEER_V2** by using the **up/down** arrows and pressing **"ENTER".**

With the steering wheels straight, navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTO SETUP.** Loosen the locking Allen screw and turn the brass sensor until the value in the **"SENSOR VALUE**" item reads 500 +/- 2 points.

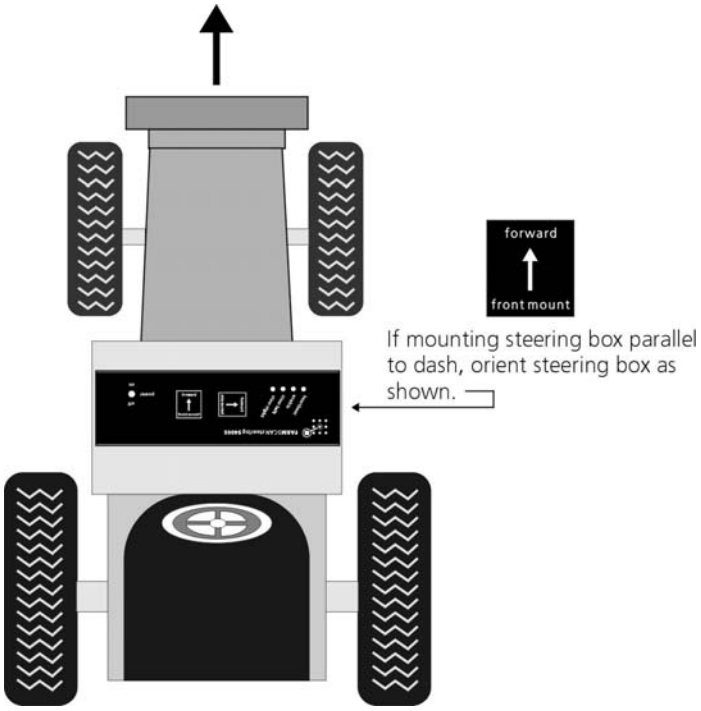
The **"SENSOR VALUE"** should increase when the wheel is turned to the right and decrease when turned to the left.

If this is happening the opposite way around, loosen the Allen screw and rotate the sensor 180 degrees and recheck.

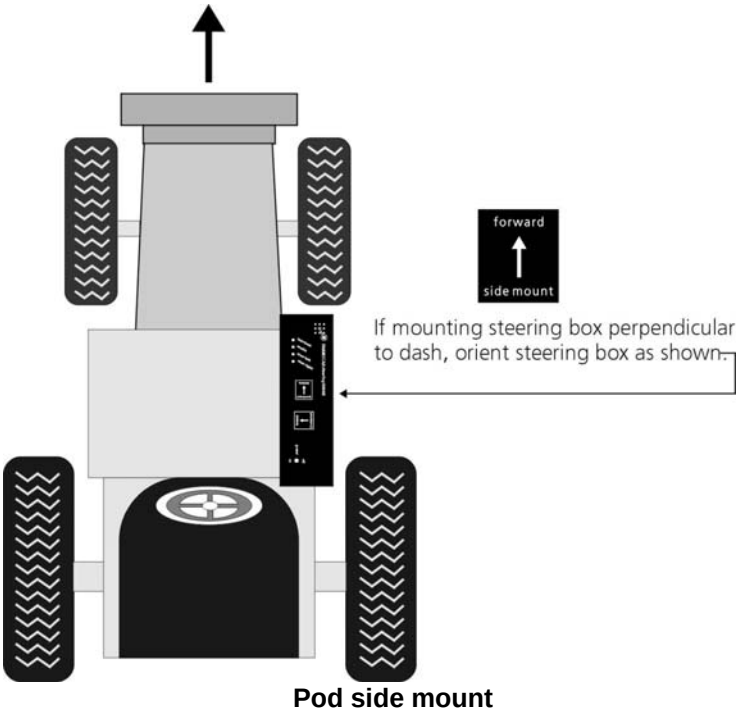
14.3 Fitting the Steering Pod

The steering Pod includes 3 Gyro's and a Tilt sensor. Because of this the Pod has to be mounted in a particular way.

There are arrows printed on the box to guide you as to the orientation. It must be mounted upright with one of the arrows pointing in the direction of travel. You must set the Pod orientation setting in the software.



Pod Front/Back mount



Pod side mount

When the Autosteer Pod is installed and in its final position you will have to set the vertical position. See. 14.4 How to set the Vertical Tilt zero position

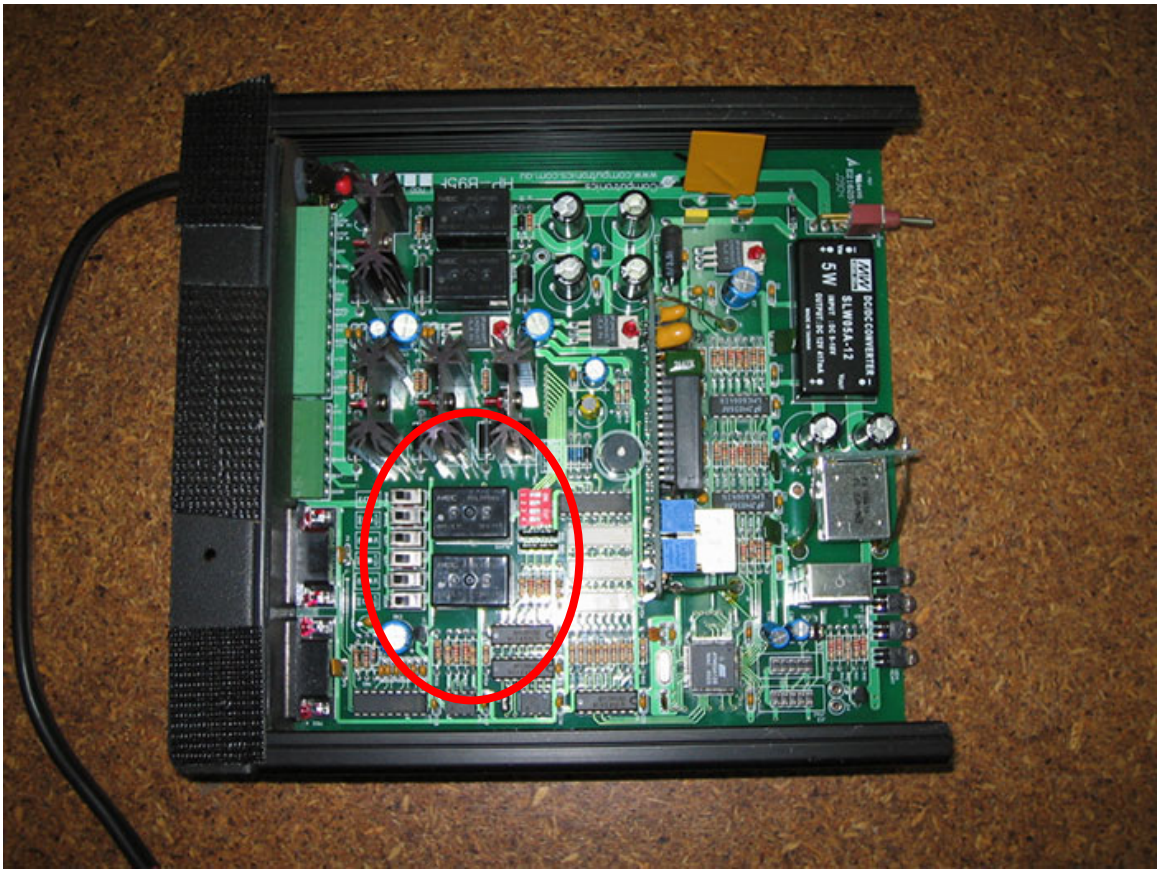
14.4 Setting up the Steering Disables

The steering Pod has 4 inputs for disables. ie turning the wheel, pressing the brake, sitting on the seat, and opening the door. These work by the Pod either detecting 12 volts or detecting that the input has been grounded.

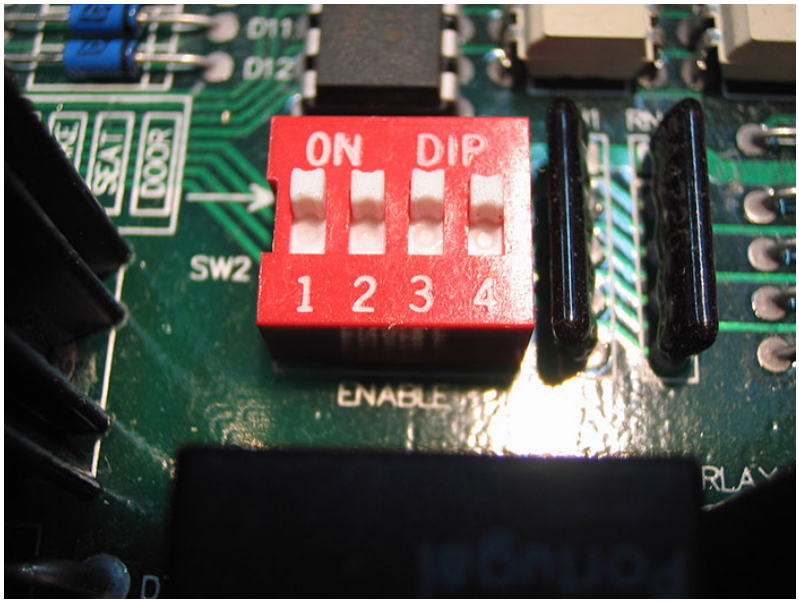
Open up the steering Pod by removing the four (4) screws and removing the top. Slide the side cover out.

Sliding out the cover off the Pod

This will expose the disable DIP switches and the set up switches.



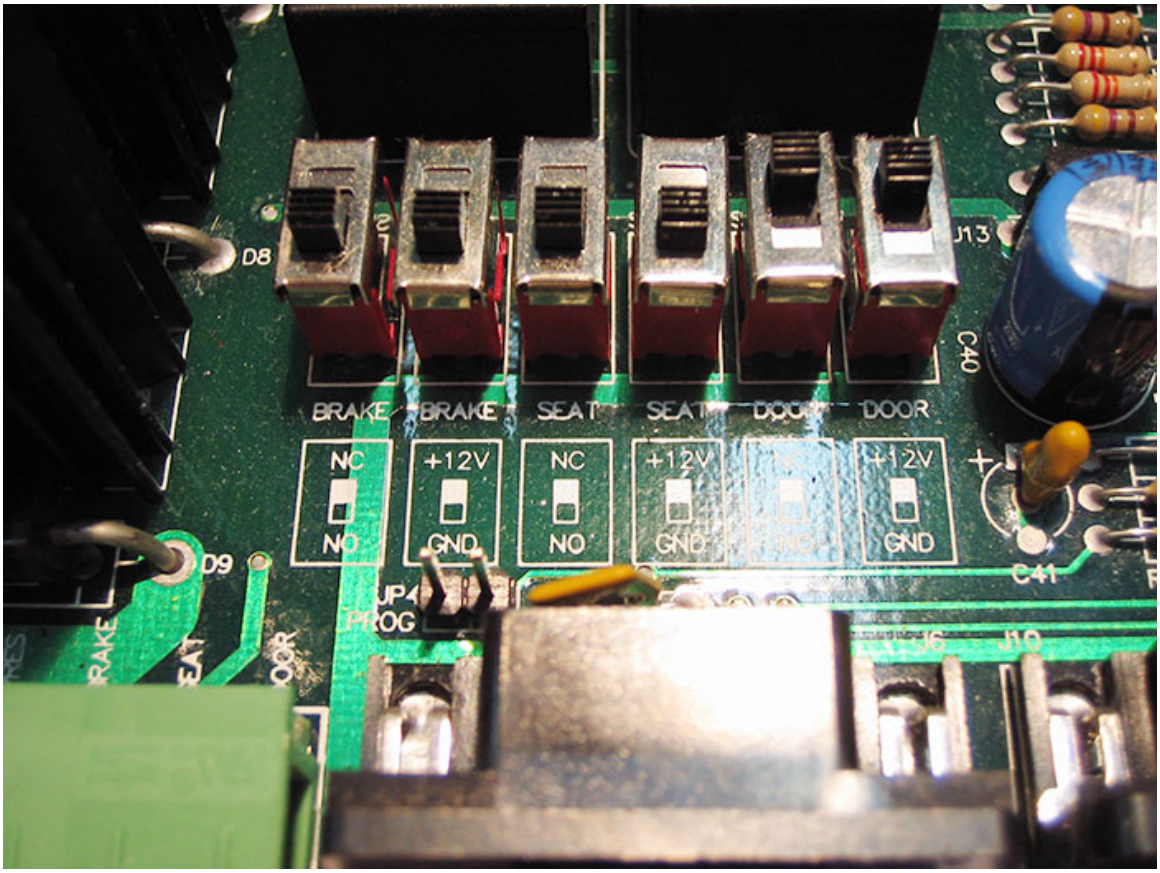
DIP switches and setup switches position on the PCB



Disables DIP switches

The DIP switches are labeled on the PCB.

1. Hydraulic (steering Wheel)
2. Brake
3. Seat
4. Door



Setup switches for 12 volts and Ground setup

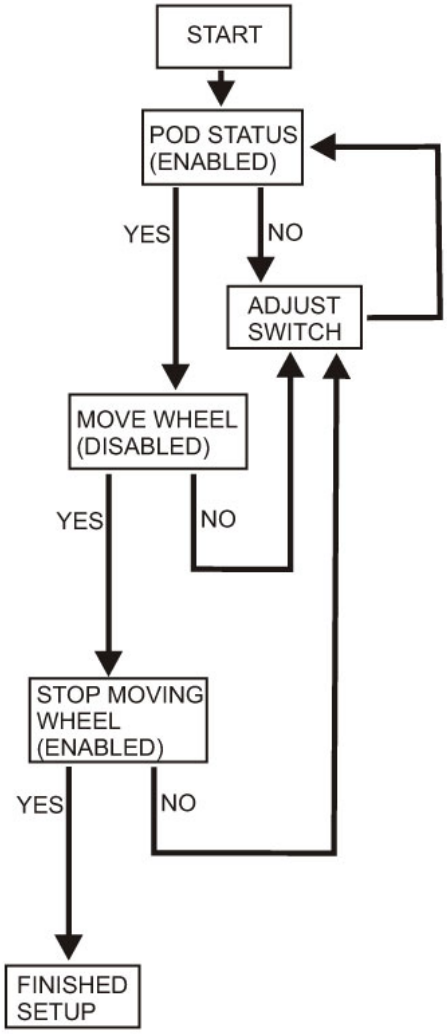
14.5 How to set up the Hydraulic disable

With the system installed (Hydraulic and electronic), and the GPS running navigate to **MENU→MACHINERY→AUTOSTEER SETUP→DIAGNOSTICS**

Switch all DIP switches to the **Disabled** side. Switch No 1 to the **Enabled** side.

The hydraulic disable does not have a setup switch. It's either On or Off.

With the engine running and no movement of the steering wheel the POD STATUS should be **ENABLED**. As you move the wheel the POD STATUS should change to **DISABLED**. When you stop moving the steering wheel it will change back to **ENABLED**. If this does not happen follow the chart below.

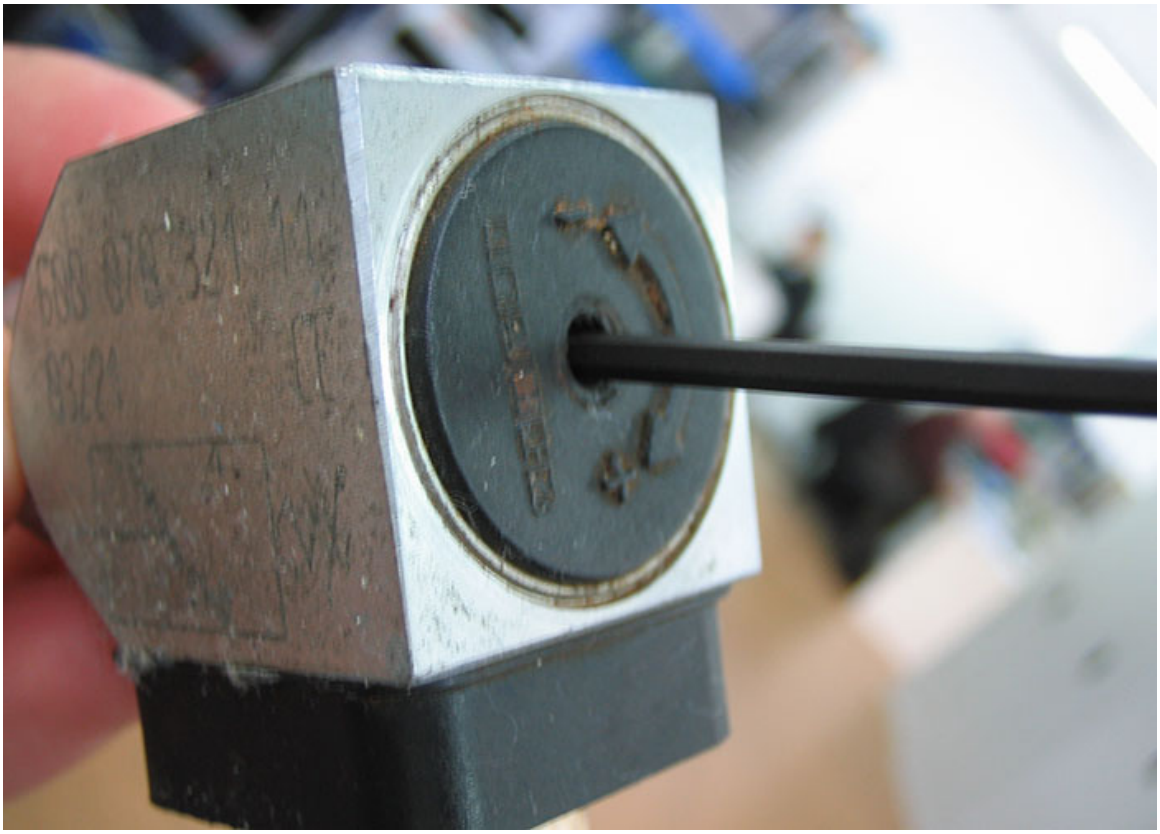


Hydraulic disable setup flow chart

Adjust pressure switch using an Allen key like shown below.

+ Direction opens the switch at a higher pressure

– direction opens the switch at a lower pressure.



Adjusting Pressure Switch

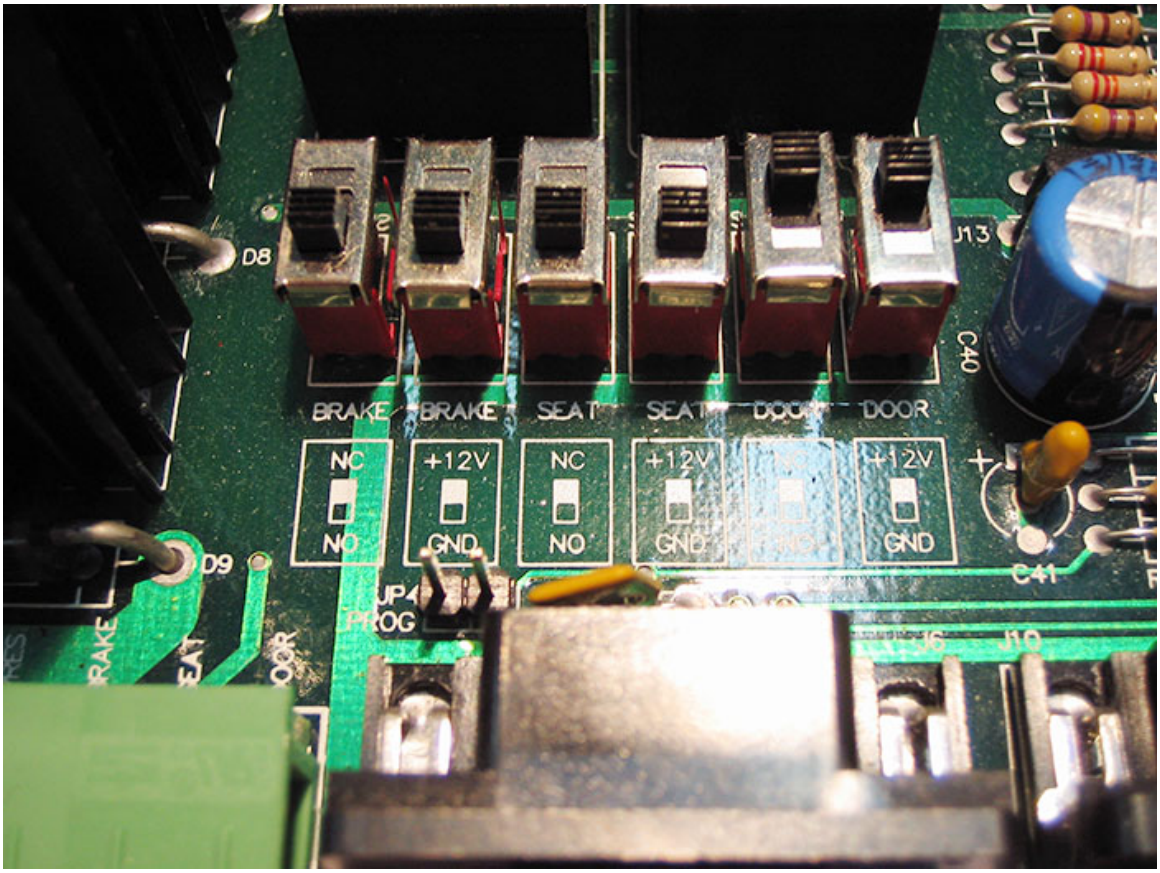
The system standby pressure can change when using an implement. This may change the hydraulic system characteristics. The Pressure switch may need adjusting after you attach an implement to the machine.

Some oils change viscosity with temperature. This viscosity change may affect the pressure at the disable. The disable may require re-adjusting when at operating temperature.

Using hydraulic functions on a machine may send a pressure spike to the disable switch. This may disable steering. The disable may require re-adjusting to rectify this situation.

14.6 Setting up the Disables

The Seat, Door and Brake disables can detect either 12 volts or Ground (Earth). This is set up using the 6 switches in the Pod. See below



Set up switches for 12 volts or ground.

There are two switches for each disable. One for the N/C – N/O (Normally Closed or normally open) and one for switching 12 volts or switching ground.

Splice into the relevant circuits and run a wire to the Pod. Using a Multi-Meter set the switches one at a time, turning off all the disables you are not setting.

15.0 How to set up and Calibrate Autosteer

When the optional hardware is purchased, and the **AUTOSTEER_V2** option in the Machinery menu is chosen, the system can automatically steer a machine in Parallel lines or round and around (Racetrack).

15.1 How to setup a Machine for Autosteer

Enable Autosteer by enabling **AUTOSTEER_V2** in **MENU→MACHINERY→AUTOSTEER** by selecting the **AUTOSTEER** menu item and using the up/down arrows to choose **AUTOSTEER_V2** press **“ENTER”** When you enable this feature a menu will appear to allow setup.

Navigate to **MENU→MACHINERY→AUTOSTEER→AUTSTEER SETUP**. There are machine specific settings that have to be entered.

15.2 How to setup the GPS Antenna Height

The GPS antenna height has to be entered correctly to allow the Gyros and tilt sensors to correctly calculate the tilt of the machine as it is working, and compensate for it. To use this feature ensure **"TILT CORRECT"** is set to **"YES"**

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→ANTENNA HEIGHT.** Use the **up/down** arrows to change the antenna height to the correct value

15.3 How to setup the Autosteer POD position

The Autosteer POD has Gyros and Tilt sensors built into it, therefore you have to mount the POD vertical and follow the arrows printed on the top of the pod.

The software needs to know the orientation of the POD for proper operation.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→POD POSITION.** Use the **up/down** arrows to change between **BACK** and **SIDE**

Using the BACK setting the Pod can be mounted either on the Front or back of the machine's cabin. Ensure the arrow for the FRONT/BACK position is pointing forward.

15.4 How to set the Vertical Tilt zero position

For the correction to work correctly it needs a reference. This reference is the machine vertical position. To set this machine vertical position, move the machine to a known level surface.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→VERTICAL TILT** Select the **"VERTICAL TILT"** menu item. A **"SET"** button will appear at the bottom of the screen. Press the **"SET"** button until the **"VERTICAL TILT"** becomes **"0.00"**

Press **"EXIT"** when the operation is completed.

15.5 How to set the Axle Width

To autosteer correctly the system needs to know the axle width of the machine. This is the distance between either the front steering wheels or the rear steering wheels.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→AXLE WIDTH** Use the **up/down** arrows to change the axle width to the correct value.

15.6 How to set the Steering Axle to Antenna measurement

For the system to steer correctly and accurately the system needs to know the dimensions of the machine. The antenna to steer axle is an important measurement.

The measurement is a negative (-) value if the steering axle is in front of the GPS antenna, and a positive (+) value if the steer axle is behind the GPS antenna.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→STEER AXLE** Use the **up/down** arrows to change the STEER AXLE to the correct value.

15.7 How to set the Drive Axle to Antenna measurement

For the system to steer correctly and accurately the system needs to know the dimensions of the machine. The antenna to drive axle is an important measurement.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→DRIVE AXLE** Use the **up/down** arrows to change the DRIVE AXLE measurement to the correct value.

The measurement is a negative (-) value if the steering axle is in front of the GPS antenna, and a positive (+) value if the steer axle is behind the GPS antenna.

15.8 How to set the Minimum Look-a-head

When the system is in autosteer mode the system is looking ahead to anticipate upcoming movement or corners. The MINIMUM LOOKAHEAD is the minimum amount in seconds that the system will look ahead. The lower the value the more aggressively the system will attack the line. If the setting is too low it will have a detrimental affect on the autosteer.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→MIN LOOKAHEAD** Use the **up/down** arrows to change the MIN LOOKAHEAD value.

A good starting point for the MIN LOOKAHEAD is 2 seconds.

15.9 How to set the Maximum Look-a-head

When the system is in Autosteer mode the system is looking ahead to anticipate upcoming movement or corners. The MAX LOOKAHEAD is the maximum amount in seconds that the system will look ahead. The lower the value the more aggressively the system will attack the line. If the setting is too low or too high it will have a detrimental affect on the autosteer.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→MAX LOOKAHEAD** Use the **up/down** arrows to change the **"MAX LOOKAHEAD"** value.

*A good starting point for the**"MAX LOOKAHEAD"** is 4 seconds.*

15.10 How to enable Tilt Correction

The Autosteer Pod has tilt correction built in. This feature can be enabled or disabled. The recommended setting is enabled **YES**. Contact a Farmscan Technician before using the system with this setting set to **NO.**

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→TILT CORRECT.** Use the **up/down** arrows to change the value between **YES** (Tilt correct on) and **NO** (Tilt correct off).

15.11 How to enable Center Correction

The Autosteer Pod has center correction built in. This feature can be enabled or disabled. The recommended setting is enabled **YES**. Contact a Farmscan Technician before using the system with this setting set to **NO.**

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP→Center CORRECT.** Use the **up/down** arrows to change the value between **YES** (Center correct on) and **NO** (Center correct off).

15.12 How to start an AutoAuto Calibration

The Autosteer system needs to know information about the machine it is fitted to. Most of these settings can be automatically calculated.

To start an auto calibration you have to be in a field, the minimum field size needs to be 10 hectares/24 acres.

Set the **MIN LOOKAHEAD** and **MAX LOOKAHEAD** (see **5.5 Autosteer Version 2**) to 2 and 4 seconds respectively.

Navigate to **MENU→MACHINERY→AUTOSTEER SETUP→AUTOSETUP** and press the start button at the bottom of the screen. The system will start the auto calibrate procedure. Do not touch the steering wheel during this procedure. If you do turn the wheel you will have to restart the calibration again.

While the calibration is taking place, the status will be displayed in the black message bar.

The auto calibration does the following in the order listed.

1. Sets the current position as a starting point for the wheel angle centre.
2. finds the accurate center.
3. Calculates the bytes per degree on the wheel angle center.
4. Allows you to reposition the vehicle.
5. Calculates and graphs the hydraulic system and oil flow.
6. Finishes

*The calibration procedure will stop half way through and allow you to reposition the vehicle if needed. Press the **"Continue"** to continue calibration.*

When the calibration procedure had finished, the system will notify you and enter the calculated settings into each field.

15.13 Reasons why an Auto Calibrate may fail

1. System was disabled while the Auto Calibrate was in progress. This could be user initiated ie touching the steering wheel, or a hydraulic set up issue ie hydraulic disable not set correctly.
2. Starting Auto Calibrate on a very undulating area.
3. Steering sensors fitted incorrectly

15.14 Auto Calibration adjustments

As good as the Auto Calibration is, outside influences can sometimes cause calculated figures to be incorrect. All the values editable so you can make fine adjustments.

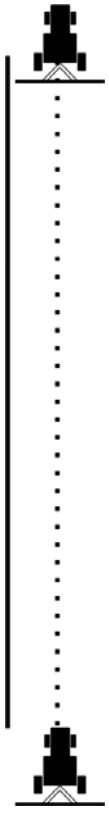
For an explanation of what the fields and values represent go to **5.5 Autosteer Version 2**

15.15 Autosteer Fine Tuning

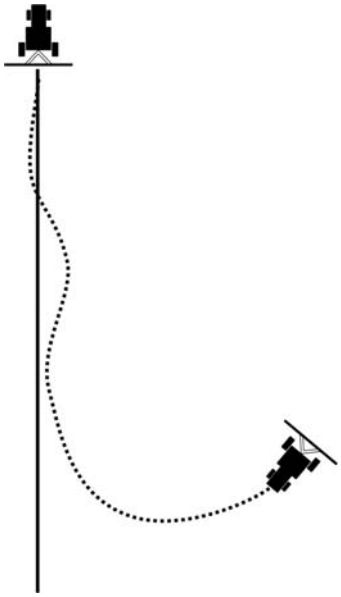
Issue: The machine steers straight but parallel on the screen to the run line.
Fix: Navigate to Menu→Machinery→Autosteer→Centre CORRECT ensure this setting is set to **"YES"**

Issue: The machine is steering straight and on the runline on the screen, but is off line on the ground.
Fix: The GPS position has drifted or changed as a result of changing the base station position. Nudge the system back to the runline.

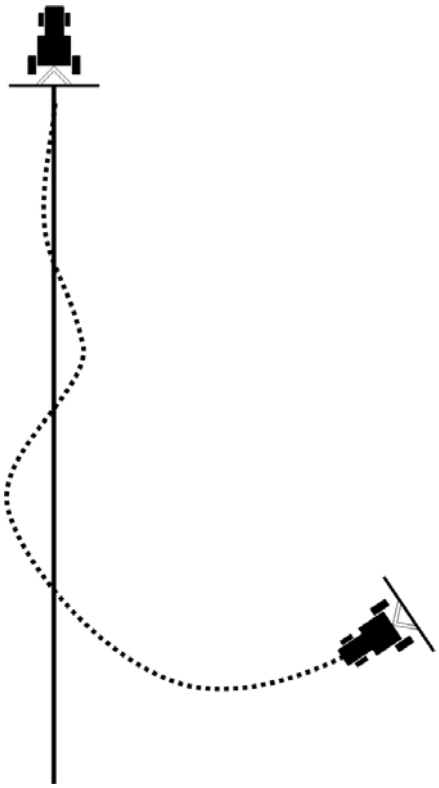
]



Issue: When coming onto the run line the machine straightens up to soon, but eventually makes it to the runline.
Fix: Max valve setting to low, Increase the MAX VALVE value



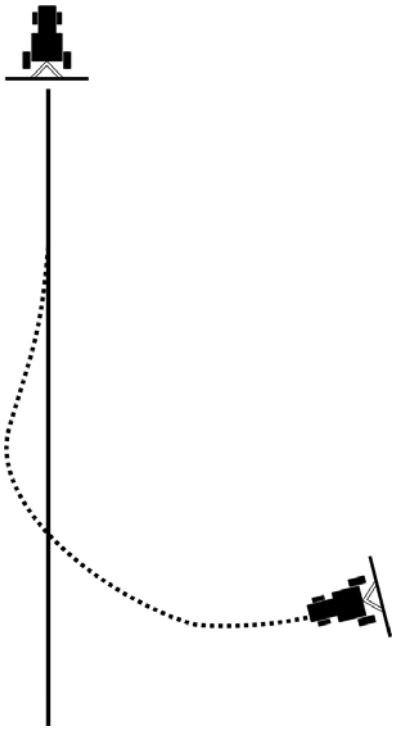
Issue: The machine overshoots the runline and continues to oscillate. Slowly the oscillations get smaller and smaller eventually the machine steers straight and on the runline.
Fix: “Counts per Degree” to low. Increase the “Counts per degree” value.



Issue: The machine overshoots the runline then comes onto line and steering straight.
Fix: “COUNTS PER DEGREE” to low. Increase the “COUNTS PER DEGREE” value.

“MIN and MAX LOOKAHEADS” to high, reduce the values.

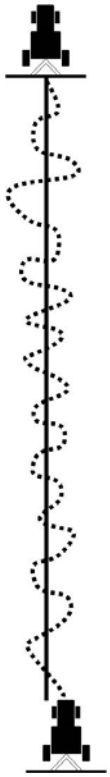
It is nearly impossible to take out all overshoot. There may be a few centimeters of overshoot in a correctly set up system.



Issue: Short sharp oscillations
Fix: The following can produce short sharp oscillations.

“COUNTS PER DEGREE” value to high
“STEERING MAX” value to low
“MIN VALVE” to high
“MAX VALVE” to high.
“MIN and MAX LOOKAHEADS” to low

Adjust the values above one at a time, until you get the system to steers your satisfaction.



Issue: Constant slow oscillations
Fix: The following can produce slow oscillations.

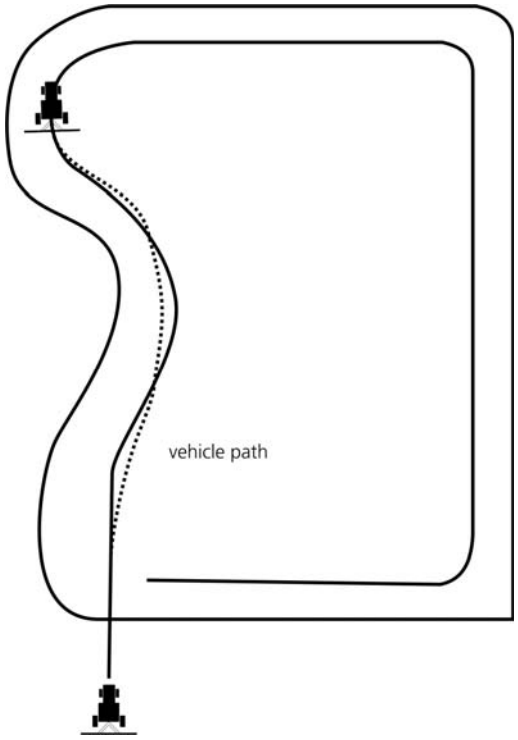
“COUNTS PER DEGREE” to high
“STEERING MAX” to high
“MIN VALVE” to Low
“MAX VALVE” to Low
“MIN and MAX LOOKAHEADS” to high

Adjust the values above one at a time, until you get the system to steers your satisfaction.

Issue: Cutting corners in round and round mode.
Fix: The system does cut corners when in round and round mode, this is normal. Cutting the corners serves two functions.

1. It stops the corners getting progressively sharper
2. It smoothes out wobbly lines.

If you conclude that it is cutting corners to much, you can adjust the look-a-heads. The lower the value, the less it will cut the corners. Lowering the look-a-heads will also make the system aggressively attack the runline. This could result in short sharp oscillations.



16.0 Steering Diagnostics

When setting up Autosteer for the first time, or diagnosing a problem you may need additional information. This information is found in the steering diagnostics screen.

Navigate to **MENU→Machinery→AUTOSTEER→DIAGNOSTICS**

See item **5.5.1 Diagnostics** for descriptions

16.1 How to use Pod Status

POD STATUS indicates whether the hardware or software disables have triggered the Pod into a disabled state.

Hardware disables are:

1. Steering
2. Seat
3. Brake
4. Door

Software disables are:

1. Slow speed
2. Lost runline

"POD STATUS" is used for setting up and adjusting the hardware disables.

To test a hardware disable turn off all but the disable you are testing (See hardware installation guide). Navigate to
MENU→Machinery→AUTOSTEER→DIAGNOSTICS
Monitor the POD STATUS item. Then the system is in an ENABLED state steering is possible. When the POD STATUS is in a DISABLED state steering is NOT possible.

16.2 How to use Steering Status

"STEERING" status indicates whether the system is autosteering. There are 2 states

1. **DISABLED** – The system is not autosteering and the Pod will not respond to steering commands
2. **ENABLED** – The system is autosteering and will respond to commands set to the Pod.
3.

Navigate to **MENU→Machinery→AUTOSTEER→DIAGNOSTICS→STEERING**

Select the steering item and press the "**TOGGLE"** button at the bottom of the screen. This will toggle the steering from enabled to disabled.

Be aware that the STEERING can to be put into an enabled mode if the POD STATUS is disabled. POD STATUS will over ride all other settings.

16.3 How to use Wheel Centre in the diagnostics screen

The "**WHEEL CENTRE"** menu item allows you to view and change the current wheel centre value.

Navigate to **MENU→Machinery→AUTOSTEER→DIAGNOSTICS→WHEEL CENTRE** Use the **up/down** arrows to change the value. Press the **"ENTER"** button to save setting.

16.4 How to use Valve Value in the diagnostics screen

The "**VALVE VALUE"** menu item allows you to view and change the current valve value being used for diagnostics.

Navigate to **MENU→Machinery→AUTOSTEER→DIAGNOSTICS→VALVE VALUE** Use the **up/down** arrows to change the value. Press the **"ENTER"** button to save setting. This setting is between 0 and 1000.

16.5 How to use Steer Angle in the diagnostics screen

The steer angle value is the current calculated steering angle. The system uses the inputted and automatically calculated autosteer settings to calculate this figure.

16.6 How to Manually Steer the Machine Left or Right

Navigate to **MENU→Machinery→AUTOSTEER→DIAGNOSTICS**. Ensure the **"POD STATUS"** is **"ENABLED".**

Select the **"STEERING"** menu item. **"TOGGLE"** will appear at the bottom of the screen. Press the **"TOGGLE"** button to enable steering. With STEERING ENABLED you can send the following commands to the Pod.

1. LEFT – Steers left continuously
2. RIGHT – Steers right continuously
3. STRAIGHT – Steers the wheels straight

4. LEFT SHOT – Steers the wheels left for the shot time (In Milliseconds)
5. RIGHT SHOT – Steers the wheels right for the shot time (In Milliseconds)

To send a steering command select the command you wish to send ie "**LEFT**" and press the "**ACTIVATE**" button at the bottom of the screen. The Pod will get the command in less than 200 ms and will attempt to execute the command.

You can change the **VALVE VALUE** at any time. Changing the **VALVE VALUE** changes the oil flow when carrying out the command.

17.0 Starting work

The 5500 and 4000 can guide and steer the machine in three modes.

1. Parallel
2. Racetrack
3. Contour

17.1 Starting in Parallel mode

After starting the system and choosing a job move out into the field. Move to the position of the first point and press **"A-B"** point on the remote button box. Move to the second position and press **"A-B"** point.

The system will draw a line between the two points and this will be the run line. The system will also generate lines to the right and left at the width that is set in the machine layout.

At any time you can press the **"MODE"** button and change to Racetrack mode.

Pressing **"SWAP SIDES"** will change the sides that the race track run line is laid down.

Pressing the **"RUN/HOLD"** button on the remote button box will start and stop the coverage.

If you have a switch box connected it will over ride the button box.

17.1 Starting in Race Track mode

After starting the system and moving out into the field. Press the **“RUN/HOLD”** button or the **“MASTER”** on the switch box if installed. Coverage will start to be created. If boundaries are enabled boundary will also start to be created.

After completing the first lap of the field the boundary will attempt to complete. If the boundary can not automatically complete, you can manually complete the boundary by pressing the **“NEXT RUNLINE”** button on the remote button box.

You can move outside of the first complete boundary and start a new boundary. By cycling the “Run/Hold” button on the remote button box.

Both boundaries are added together to get the boundary area.

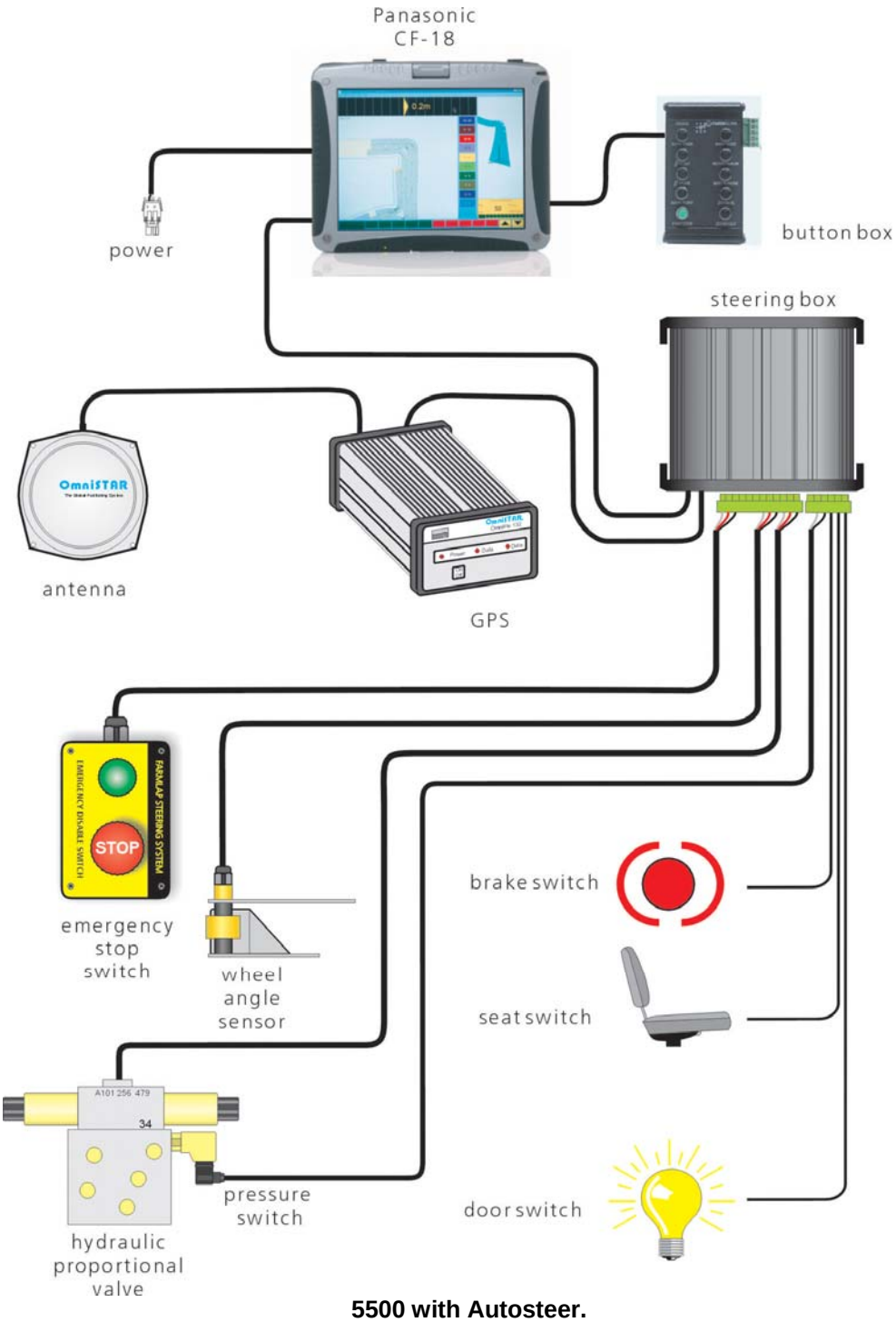
At any time you can create parallel lines by pressing the **“A-B”** button on the remote button box. You can then cycle between both modes by pressing the **“MODE BUTTON”**

17.1 Starting in Contour mode

Working in contour mode is the same as racetrack mode. The difference is at some point you swap the side the runline is being created, turn around and follow the line that was just created in the opposite direction.

When working in Contour mode it is a good idea to have boundaries turned off. See Turning boundaries on and off section.

18 Appendix A



5500 with Autosteer.

19 Support

For any enquiries regarding the performance of your Guidance System please contact:

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Phone Int'l

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A/H you will be directed to a service staff member

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