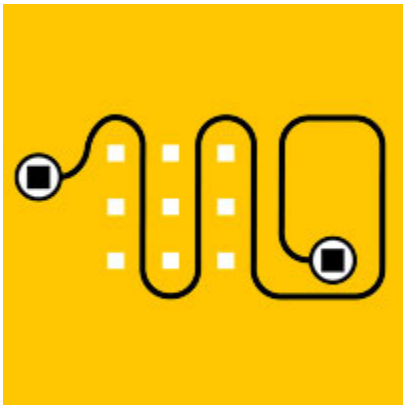
5500, RT4000 and 3500 Flexi Steer Hardware Installation Manual



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1.0 Introduction

2.0 Disclaimer

Warning

This manual is only designed to be a guide, if you are in any doubt on how to fit the Autosteer system, contact Farmscan before commencing installation.

FARMSCAN/COMPUTRONICS endeavour to keep this information as accurate as possible, but as the manufacturing, assembly, machine options, diagram interpretations and fitting of valve are out of our control, some information may not be accurate for every situation.

FARMSCAN/COMPUTRONICS accept no liability for any costs incurred from using the hydraulic information contained in this manual. It is the responsibility of the fitter to check the machines technical manuals to ensure the correct selection and installation of components.

1.1 General information

Legal Considerations

1. **Valve to be installed by a qualified Hydraulics fitter.**
2. **Use only the correct crimp on hydraulic and electrical fittings**
3. **Hydraulic hoses to be cleaned before installation.**
4. **Test operation of valve before moving the machine.**

Failure to observe these warnings may result in machine damage or personal injury.

3.0 Hydraulics

Hydraulic systems work at high pressure. High pressure can pierce the skin and force oil into the bloodstream. Hydraulic oils can heat up to more than 100 degrees Celsius. All care must be taken to avoid injury.

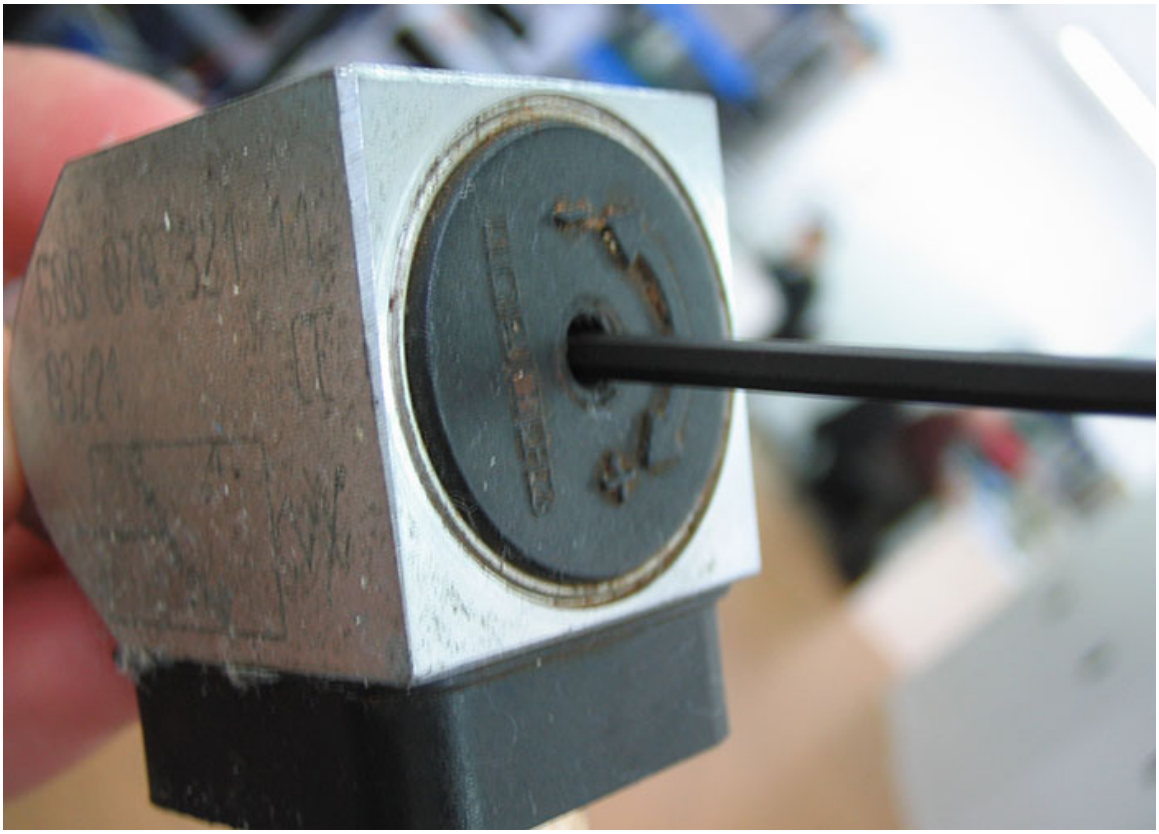
Flexi-steer hydraulics must be installed by a suitably qualified person. Information for fitting Flexi-Steer hydraulics can be sourced from the hydraulics installation information book or directly from Farmscan.

3.1 Fitting Valve Block

The valve block must be rigidly mounted to the machine. It must be mounted away from heat sources like exhaust pipes. Ensure that hydraulic hoses can not chafe on other hoses and the machine.

Mounted Valve

When mounting the valve block make sure that you can get to the hydraulic disable adjustment allen screw.



Hydraulic Adjustment Allen screw

3.2 Installation of hoses

*Reusable hydraulic ends **MUST NOT** be used.*

Hose ends must be of the crimped type. Correct hose type for the fittings must be used.

The hose must be in conduit wherever they rub on the machine or other hoses.

4.0 Valve types

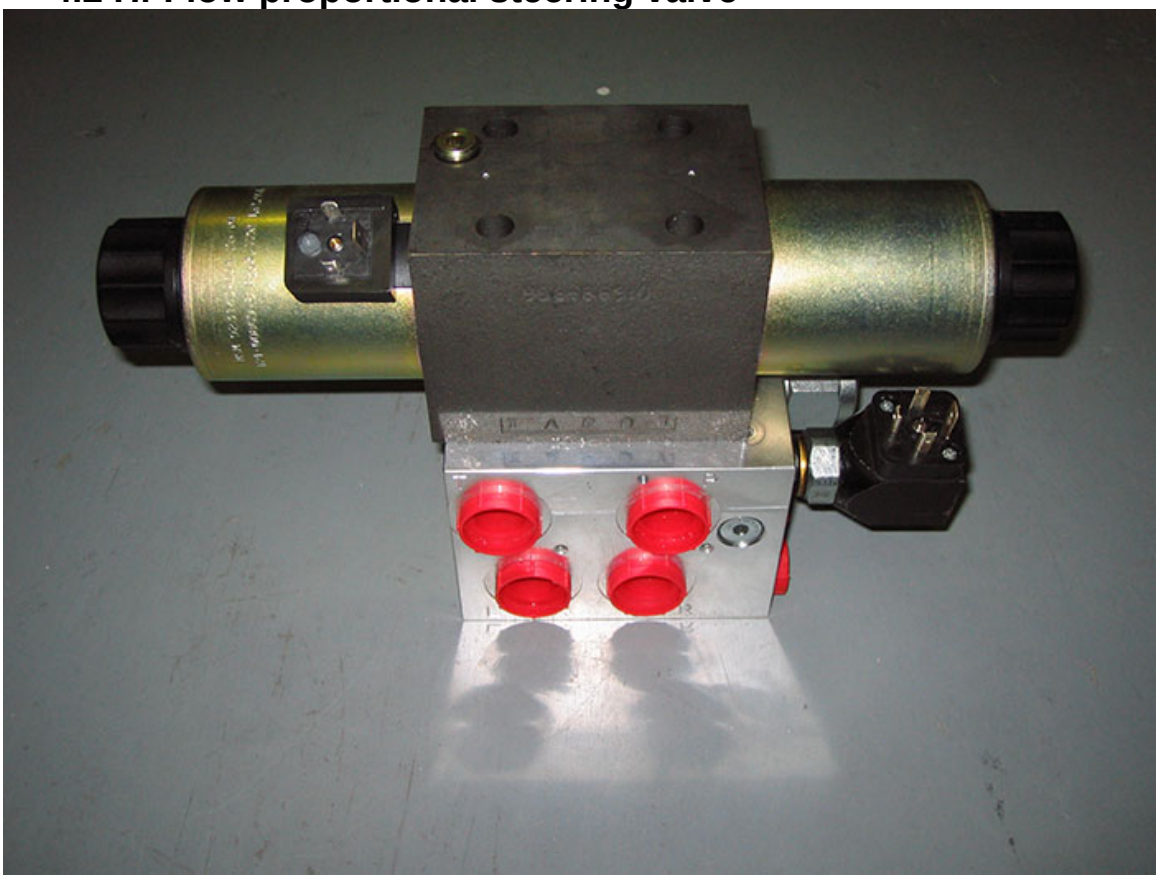
There are six types of valves available. With these six valves you can add Flexi Steer to nearly all hydraulic systems.

1. Standard proportional steering valve
2. Hi-Flow Proportional Steering valve
3. Lockout valve
4. Flow divider valve
5. Amplifier lockout valve
6. Pressure reducer

4.1 Standard proportional steering valve

This valve is used on most systems. This valve is used in conjunction with other valves to make it compatible with nearly all steering systems

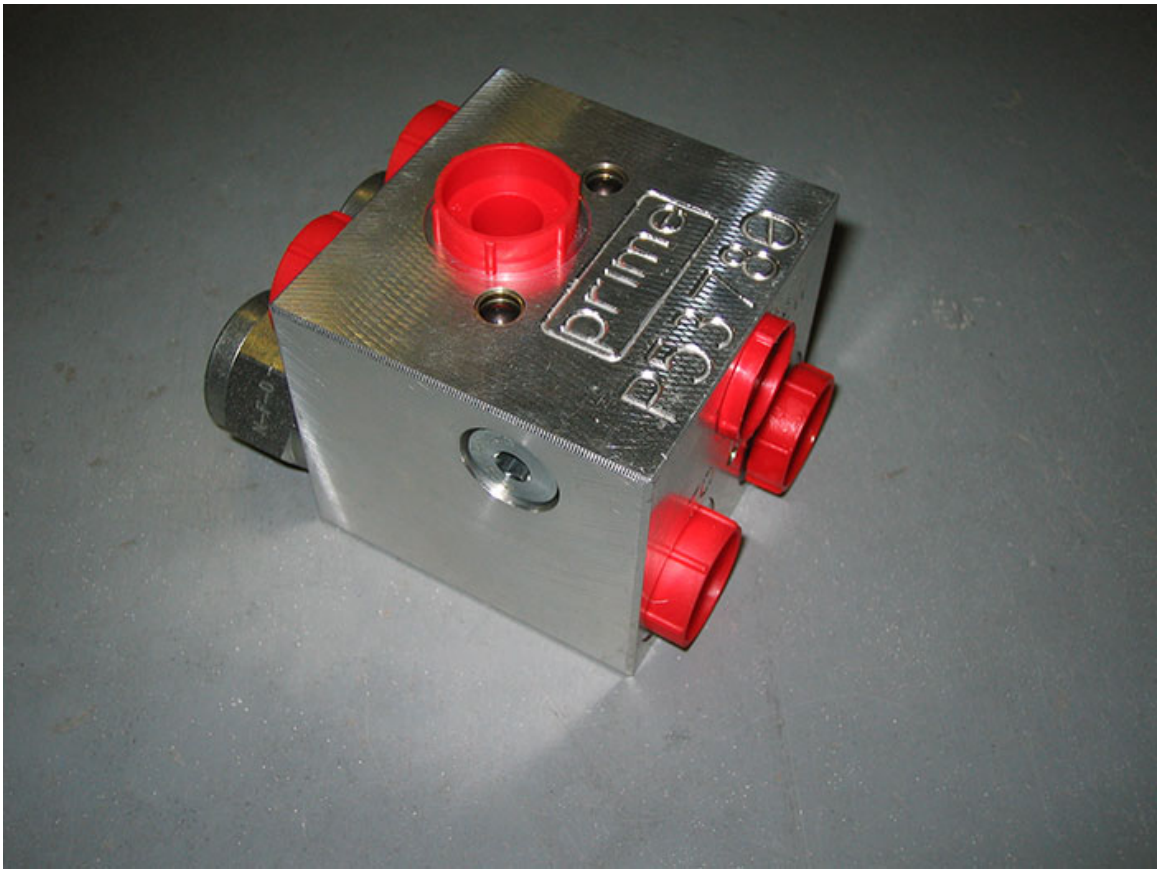
4.2 Hi-Flow proportional steering valve



High Flow Valve

This valve is used when a high oil flow is required. These valves are mainly used on the large 4WD tractors

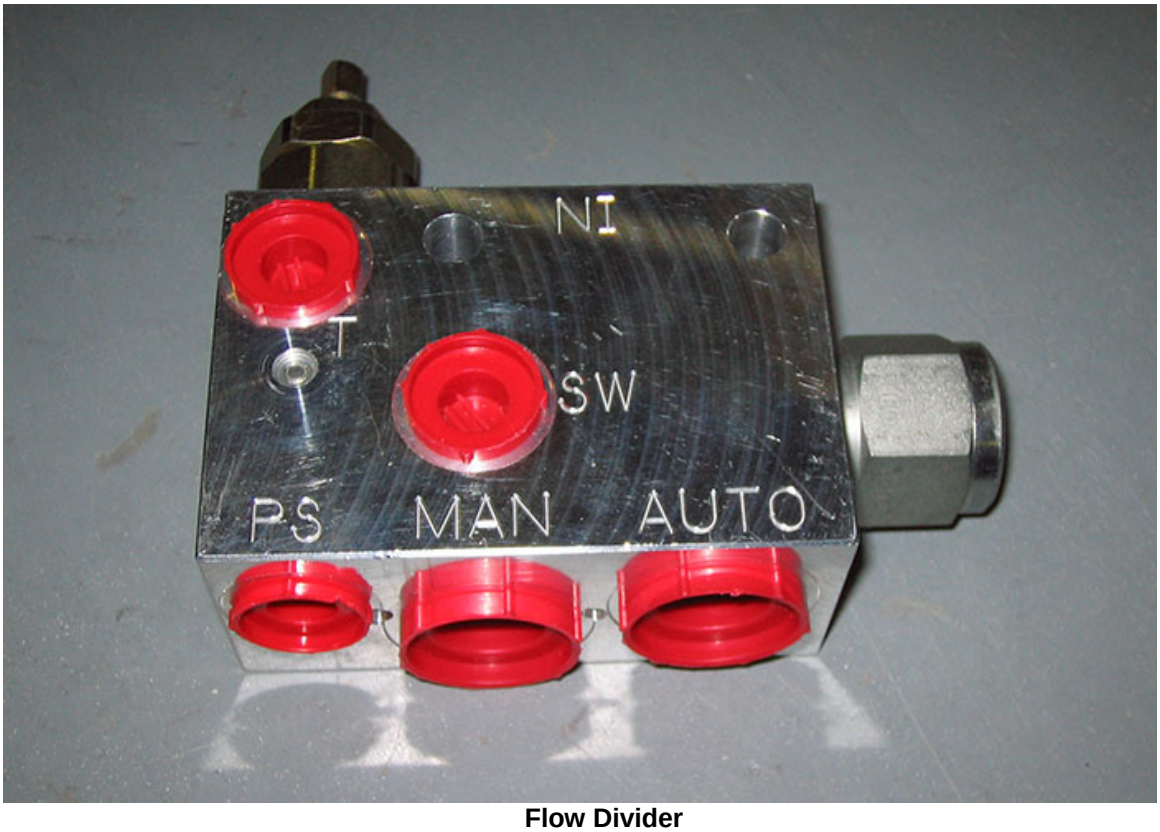
4.3 Lockout valve



Lockout Valve

This valve is used when there is pressure building up at the pressure disable switch when in use. Reactive steering system commonly used on European tractors need to use a lock out valve when Flexi steer is fitted.

4.4 Flow divider valve



Flow Divider

This valve is used when you can't directly tap into the steering system. Open centre systems also have to use this valve.

4.5 Amplifier Valve

An Amplifier lockout valve is primarily used on the older John Deere systems. The valve needs to be powered by 12 volts from the Autosteer pod.

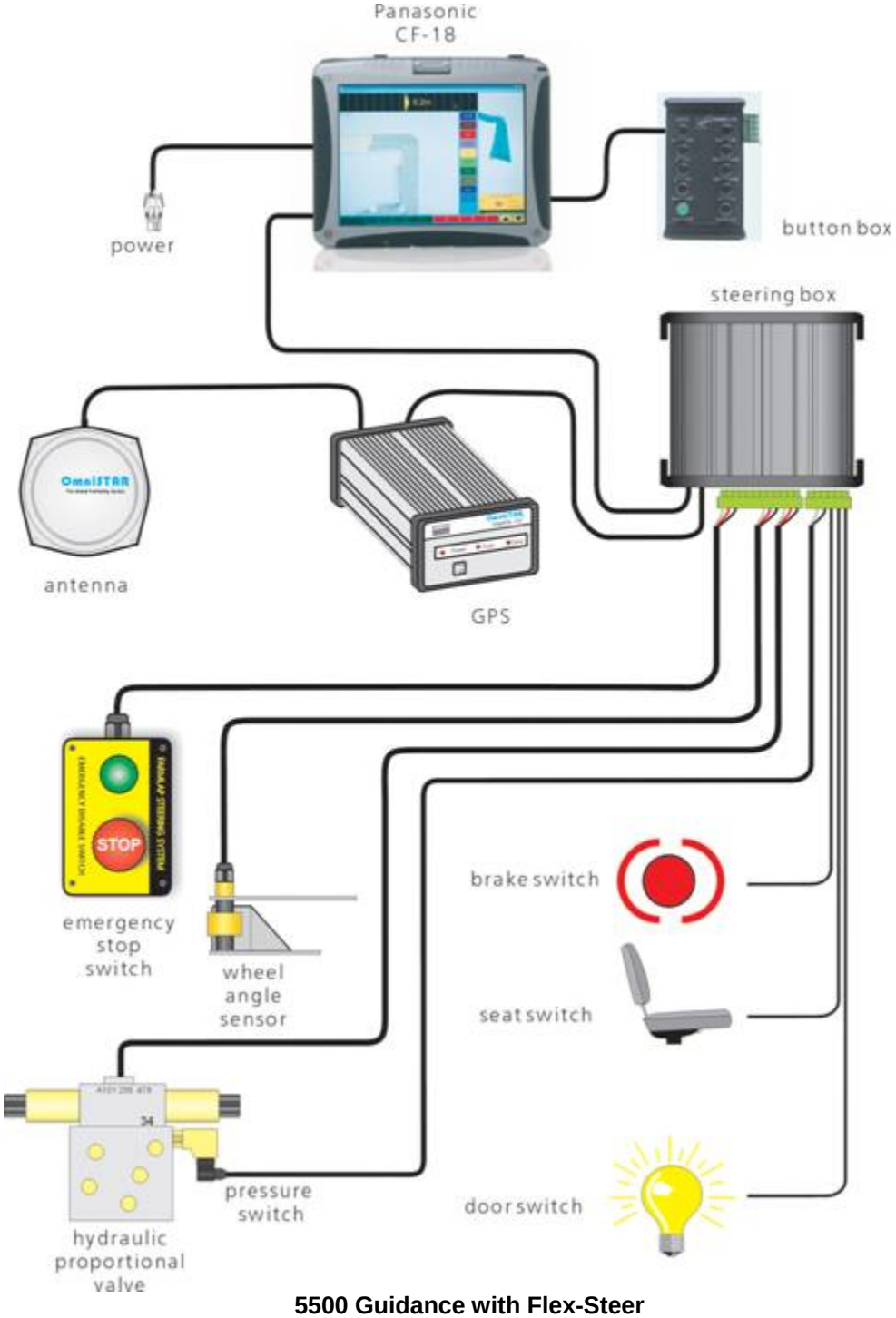
4.6 Pressure reducer

This valve is used on systems where the system pressure is greater than the specified pressure that the main valves and/or auxiliary valves will run.

5.0 Looms and Wiring Installation

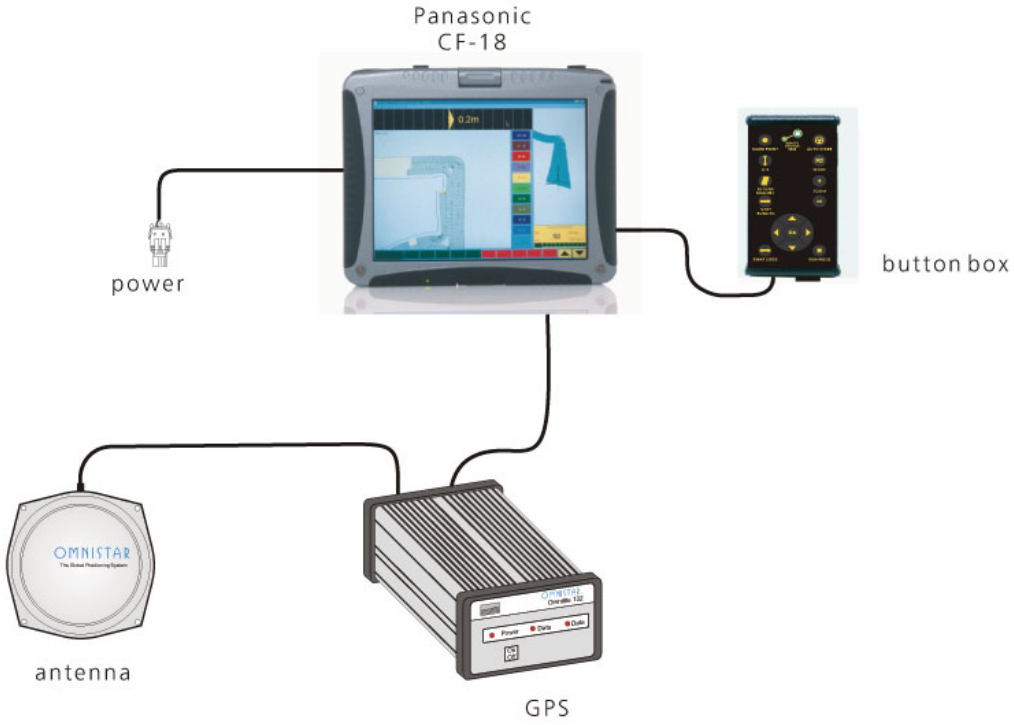
5.1 System Layout

5.1.1 5500 Guidance and Flexi-steer



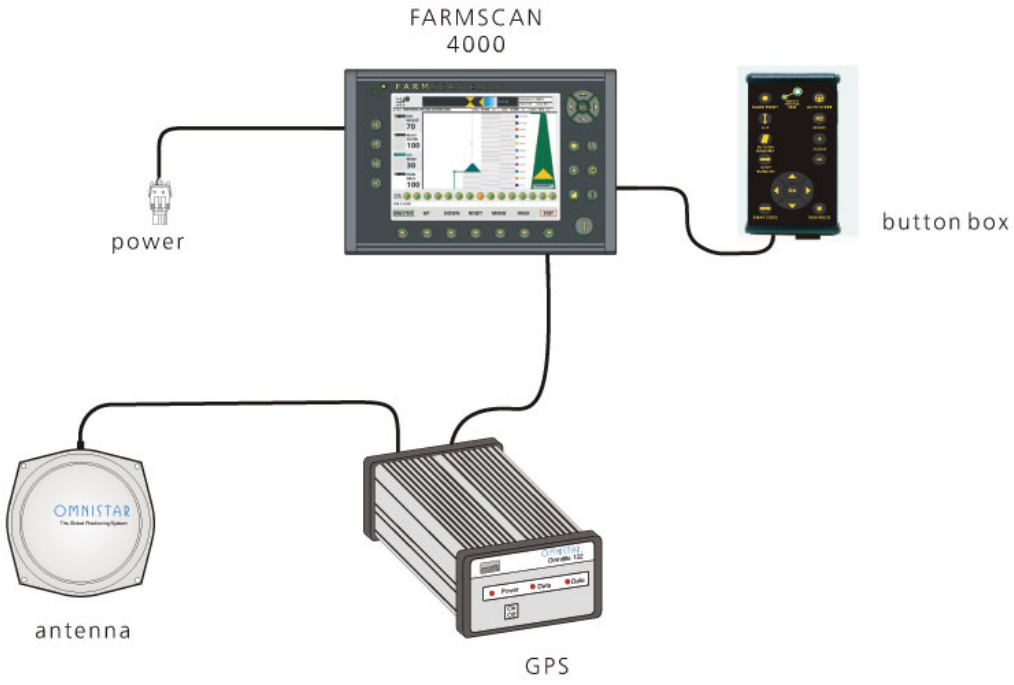
5500 Guidance with Flex-Steer

5.1.2 5500 Guidance



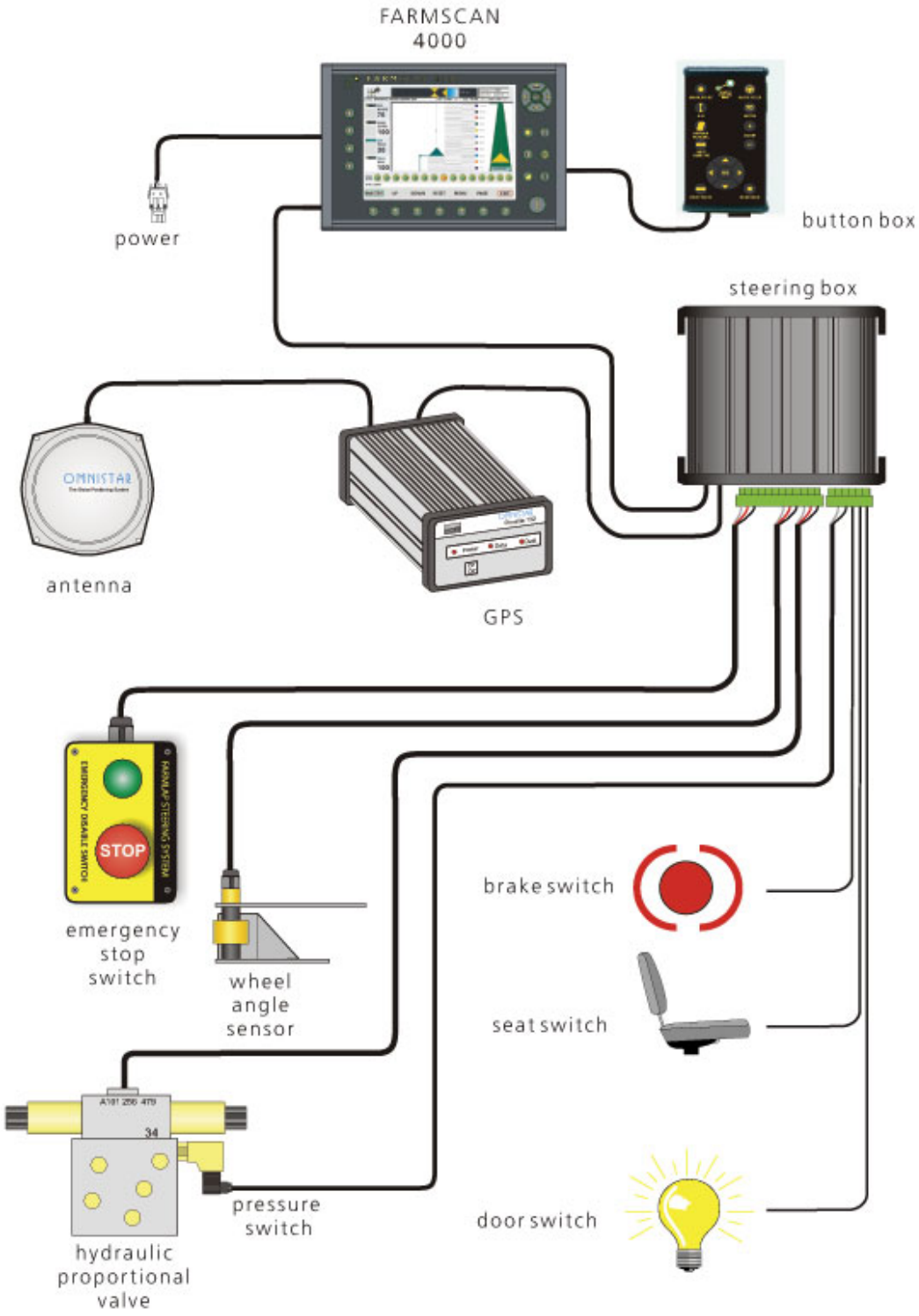
5500 Guidance

5.1.2 4000 Guidance



4000 Guidance

5.1.3 5500 Guidance and Flexi-Steer



4000 Guidance with Flex-Steer

5.2 Installing looms

There are some precautions to take when installing the looms.

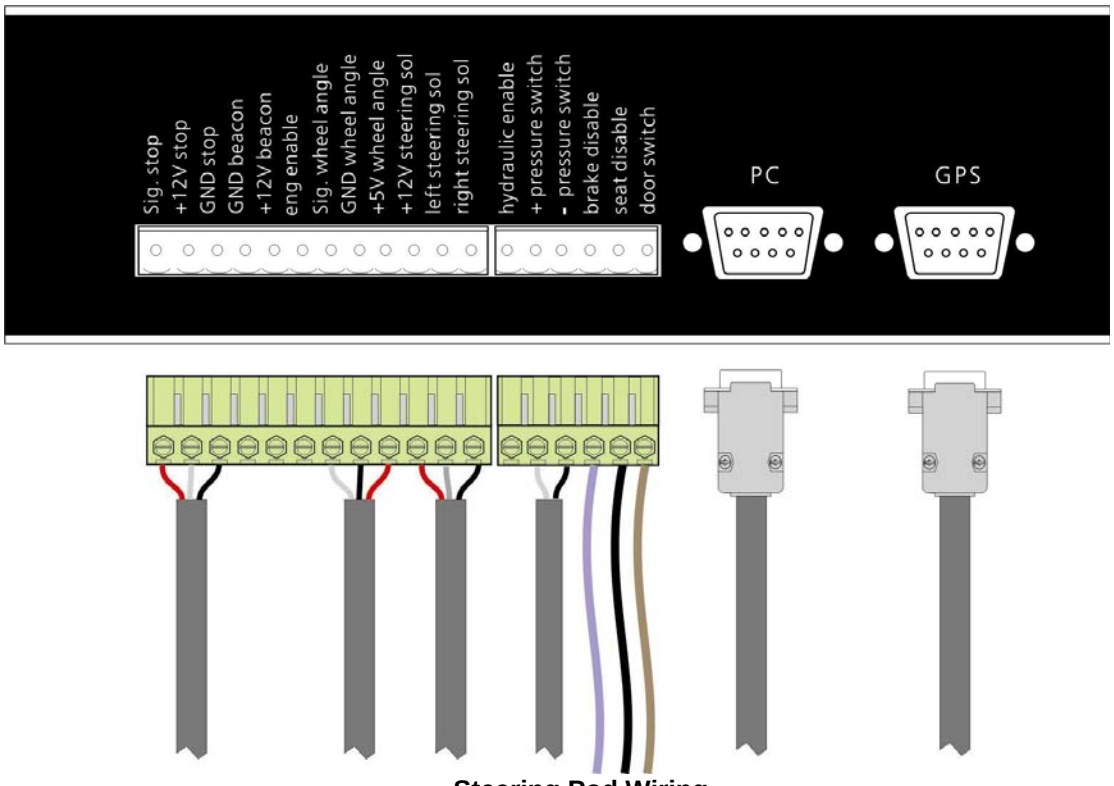
1. Always connect power straight to the battery
2. Ensure than looms can not chafe through
3. Fit all seals to DIN connectors
4. Protect cables were necessary from damage
5. Give enough loose cable where cables have to mount on suspension systems.
6. With self propelled sprayers make sure there is enough cable to move the wheels to the maximum width.

5.3 Wiring up the steering Pod

When all looms are fitted they can be cut to length and fitted to the steering Pod.

Strip 5mm of insulation from each wire and attach to steering Pod like below.

The diagram below shows all looms connected to the steering Pod. Depending on what disables you are using, you may not need to connect all the looms.



Steering Pod Wiring

Green Phoenix Pin 1 - 18	Function
Pin 1	+12 Volt signal from Stop Switch (Red 3 core)
Pin 2	+12 Volt to Stop Switch (White 3 core)
Pin 3	GND to Stop Switch (Black 3 core)
Pin 4	Signal (gnd) to Flash light Beacon
Pin 5	+12 volt to Flash light Beacon
Pin 6	Engine Disable
Pin 7	Signal to Wheel angle sensor (Wht)
Pin 8	Gnd to Wheel angle sensor (Blk)
Pin 9	+5 volt to Wheel angle sensor (Red)
Pin 10	+12 volt to Steering solenoids (Red)
Pin 11	Steer left solenoid (Wht)
Pin 12	Steer right solenoid (Blk)
Pin 13	Hydraulic Enable (Red)
Pin 14	Pressure switch + (Blu)
Pin 15	Pressure switch – (Brown)
Pin 16	Brake switch (Purp)
Pin 17	Seat switch
Pin 18	Door switch (Brn)

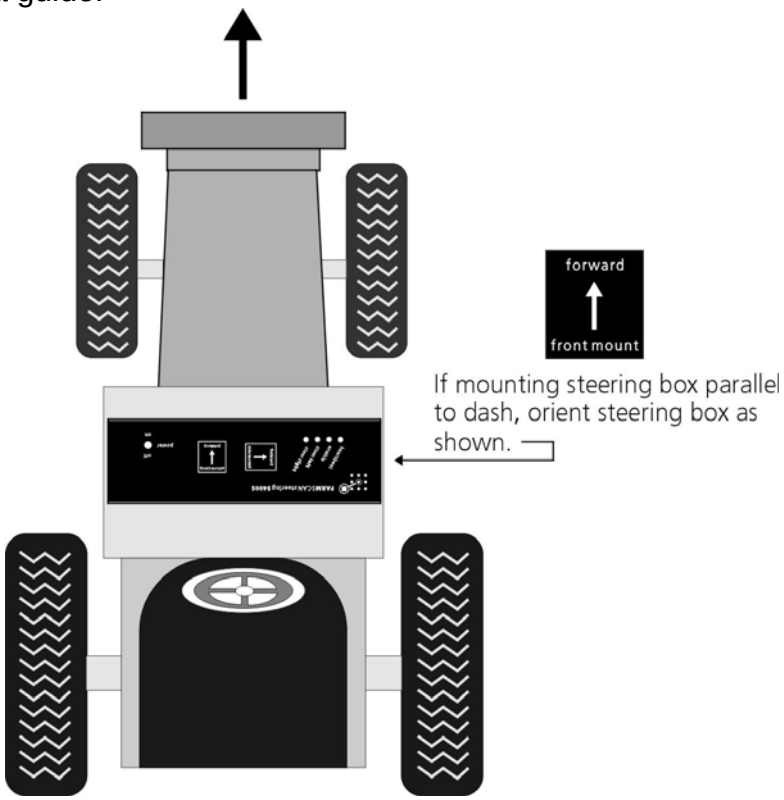
Steering Pod pin outs

6.0 In cabin Hardware

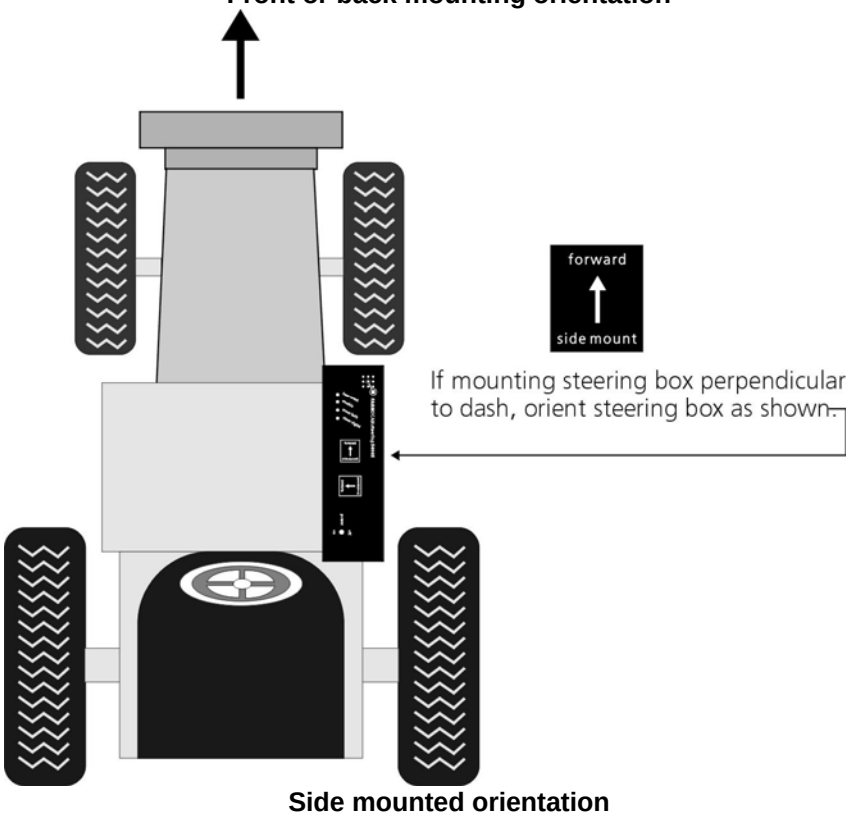
When installing the in cabin components ensure that they are fitted as neatly as possible and that all looms are neatly installed.
Mount the emergency button in a place where it is easily accessible in an emergency.

6.1 Mounting the steering Pod

The steering Pod has internal gyros and has to be mounted in a certain way. The following illustration shows the mounting position. Use the arrow illustrations on the POD as a guide.



Front or back mounting orientation



Side mounted orientation

6.2 In Cab fitting of Steering Pod

The next illustration shows an example of the steering Pod fitted into a cabin. In the example the Pod is in the Back/Front orientation.

Steering Pod fitted into a cabin

6.3 In Cab fitting of Console

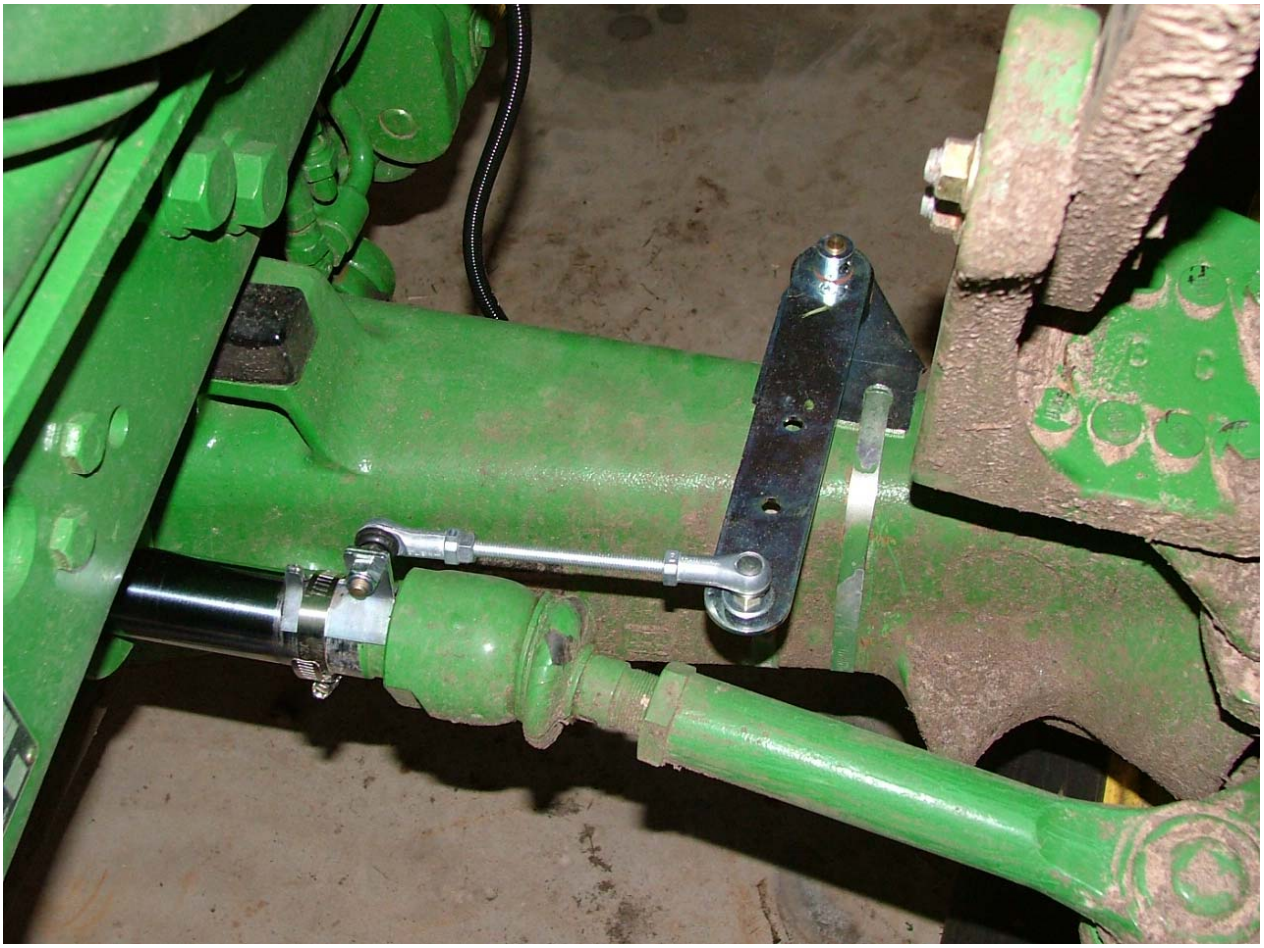
The in cabin console has to be fitted in such a way that it easy to see but does not obscure visibility. The illustration above shows an example.

In Cab installation of the console

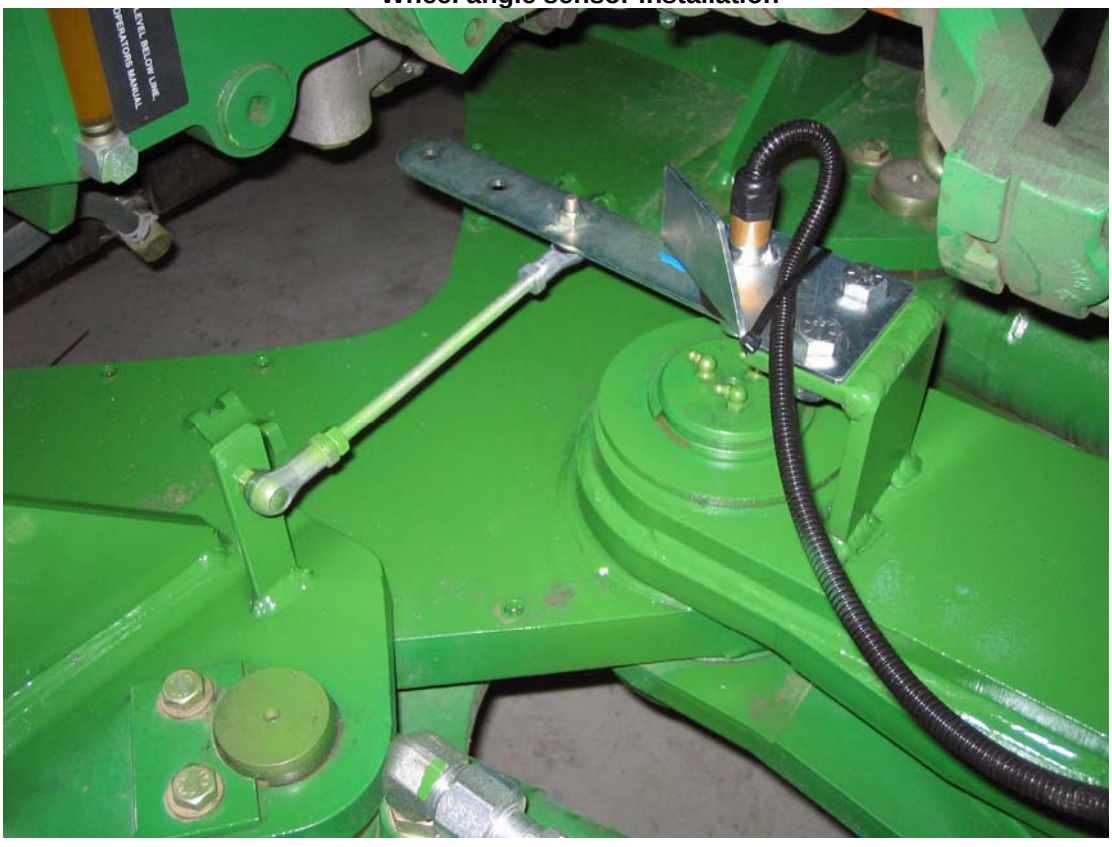
7.0 Wheel Angle Sensor Installation (Not relevant for the 3500)

Wheel angle sensor fitting is critical. Poor wheel angle sensor fitting can affect the steering accuracy and steering behavior.

The wheel angle sensor has 1024 graduations from full left to full right. The more of these graduations you can use the more accurate the steering will be. The number of graduations per degree of steering movement is the **“COUNTS/DEGREE”** figure in the Autosteer Setup. The higher this value the more accurate the system can be.



Wheel angle sensor installation



Wheel angle sensor installation

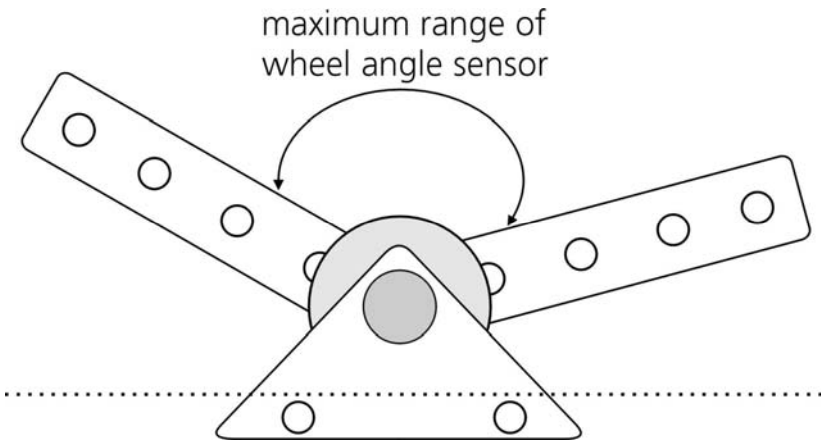
Wheel angle sensor installation

7.1 Fitting the wheel angle sensor

When fitting the wheel angle sensor there are a few things to consider.

1. Ensure that the wheel angle sensor movement is linier (see 7.2)
2. Make sure that the wheel angle sensor can not foul on any part of the machine or steering system when steered to full lock in both directions.
3. Make sure that the wheel angle sensor does not foul with the full actuation of the suspension.
4. When fitting to machines that have a variable width track ie SP sprayers, make sure you allow enough cable for the machine to be at maximum track.
5. Make sure the wheel angle sensor is assembled correctly (see 7.3)
6. Attach the Wheel angle sensor to the same part of the steering/suspension system ie don't attach the sensor to the chassis and the arm to the steering track rod. They may move independently of each other introducing errors.

7.2 Getting the Wheel angle sensor linier



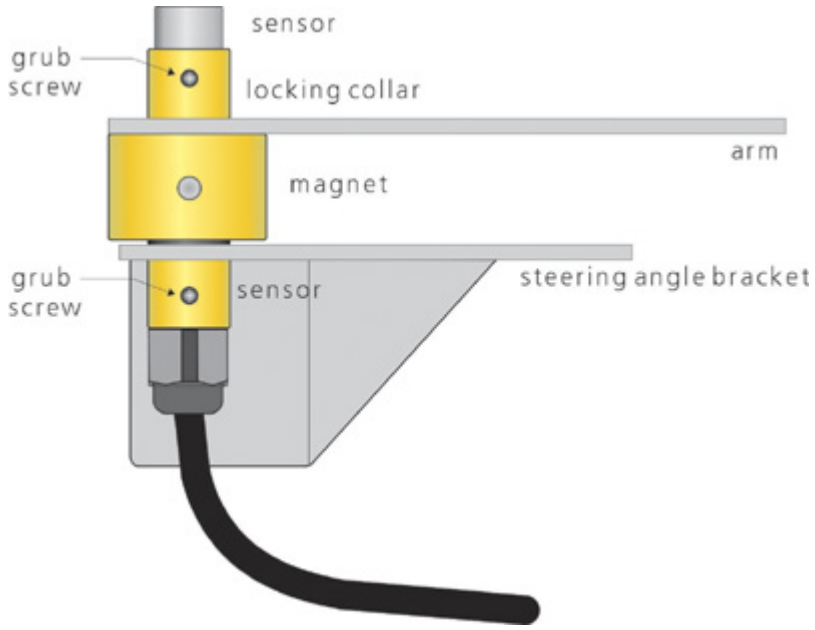
Wheel angle sensor range

Getting the wheel angle sensor linier means, that from its centre point it must have the same amount of movement to the left and to the right when steering to full lock in each direction. If the sensor moves more or less to either direction when turning the wheels to full lock, then the sensor is not linier and therefore not mounted correctly.

There usually is a small discrepancy between left and right because of the steering geometry. Try to keep the discrepancy as small as possible.

7.3 Assembling the Wheel angle sensor.

For the wheel angle sensor to work correctly it has to be assembled correctly. The following illustration shows the correct assembly. If the sensor is not assembled correctly you won't get the correct feedback.



Wheel angle sensor assembly

8.0 Decals and Warnings

The information and warnings decals must be fitted to the vehicle.

Warning Decal

Warning Decal

10.0 Trouble Shooting

Problem	Possible Causes	Remedy
No GPS input	GPS not turned on	Turn GPS on
	Steering POD not turned on or not connected to power	Connect power and turn switch on
	In correct serial cable used	Use the correct supplied cable
	Incorrect BAUD rate setting in Terminal	Use correct BAUD rate
	Incorrect com port setting in terminal	Use correct com port
	No GPS signal	Move out into a position to receive the GPS signal
No Differential Corrections	GPS not subscribed	Subscribe GPS
	GPS subscription needs renewing	Renew subscription
No heart beat from the steering POD	The steering POD will only start and flash the heart beat when a signal is sent from the terminal.	Connect and turn on the terminal
	No power to the POD	Connect power to the POD
Steering enabling but not steering	Check wiring to the POD from the valve and emergency stop switch	Replace and/or repair wiring
	Check that the emergency stop switch in not press in.	Release the stop switch by turning the knob
Steering wont enable	Pressure switch not set correctly	Adjust pressure switch
	Hydraulics not installed correctly	Refer to manufacturers documentation
	POD not communicating	Check POD power and connections.
Machine will only steer figure 8's	Wheel angle sensor need to the rotated 180 degrees	Rotate wheel angle sensor 180 degrees and re-etup
	Electrical DIN connectors need swapping.	Swap connectors and try again.

25 Support

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

Farmscan Service Centre

Phone Int'l
+61 8 9470 1177
A/H you will be directed to a service staff member

Farmscan
6 Sarich Way, Bentley, WA, 6102
Tel: (08) 9470 1177 Fax: (08) 9470 2855
E-mail: service@farmscan.net.au
www.farmscan.net