The HARDI ASC unit

A	⏻ POWER BUTTON	Turns the ASC power On/Off.
B	LCD Display panel	Graphical display.
C	GPS STATUS	Indicates the status of the GPS.
E	⌃ ⌄ ⌃ ⌃	Navigation keys
G	✕	Toggle between Operational & Setup mode.
I	✔	Enter/Edit in Setup mode
		Master Control Switch (MCS)
		On/Off (optional setting)
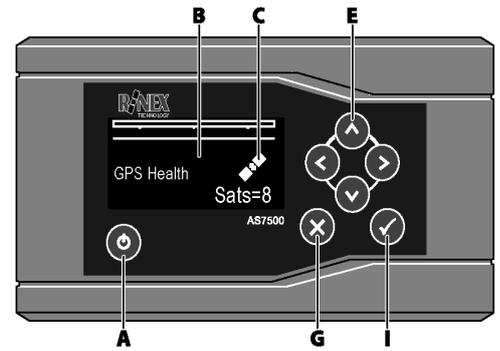
Startup & Shutdown

The Hardi ASC should always be started and shut down using the Power button ⏻ which is located on the lower front left corner of the unit.

Slide the Isolation Power Switch (IPS) on the lower right corner of the rear panel Off if the Hardi ASC is not to be used for extended periods of time.

Status Indicators

Mode	Icon
Setup	🔧
Operational	
No DGPS	
No GPS	

GPS Status Icon

Good GPS will show a scrolling satellite. An alarm will sound if good GPS data is not being received when the MCS is turned On. It also shows the number of satellites currently being observed. Must be 4 or more satellites.

GPS Health

This provides a summary of the status of the GPS information.

Area

This shows the area that has been treated since the field has been cleared.

HARDI ASC Operation

Spraying a field

1. Start the HARDI Controller and the HARDI ASC.
2. Wait approx. 15 sec until ASC is operational and until it acquires good GPS data.
3. Turn the HARDI Controller Main ON/OFF and all boom section switches to the ON position.
4. Press the ✔ button on the display panel.
5. Start to move the vehicle forward. The boom sections will automatically switch ON to spray the field, as the vehicle moves over a non-treated area and will switch OFF over a treated area which has been recorded by the HARDI ASC.
6. When the field has been treated, then press the ✔ to turn the Master Control Switch to Off position.

Pausing a Field

Turn the MCS Off to pause or suspend the treatment, the Hardi ASC may be turned Off if necessary.
To resume treatment turn the MCS On and commence working. Data will not be lost unless the field has been cleared.

Clearing the Field

Push and hold the ✕ button for a few seconds until the Hardi ASC displays CLEARING…
Then it will display Treatment Clear and a new field can be started.

GPS Signal

The GPS antenna needs a clear view around it, to receive signals from the Satellites and DGPS stations.

If the GPS antenna is covered by bigger objects as e.g. buildings then particularly the DGPS signals will be missed.

The HARDI ASC by default will operate with corrected GPS data, this is known as differential GPS (DGPS). DGPS provides a more accurate position and is recommended when using the HARDI ASC.

Configure the HARDI ASC to operate on GPS data if differential data is missed.
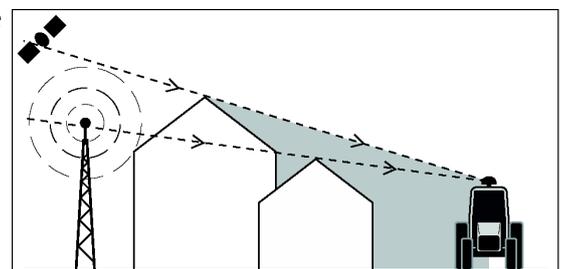
Spraying corners

The following method ensures maximum spray coverage of your field:

1. Drive close to the fence line at the corner.
2. Stop spraying
3. Turn the vehicle (A).
4. Reverse the vehicle until the spray boom is at the field boundary
5. Enable spraying.
6. Begin driving and continue spraying the field (C) as before.
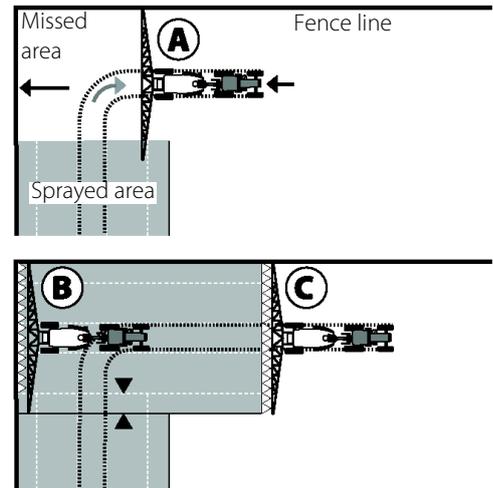
ⓘ Note: Menu 1.4 has to be set to "1" to allow spraying when stationary.

Tolerance

Tolerance is the amount of unsprayed area and overlap permitted when a section crosses an area which has been previously sprayed.
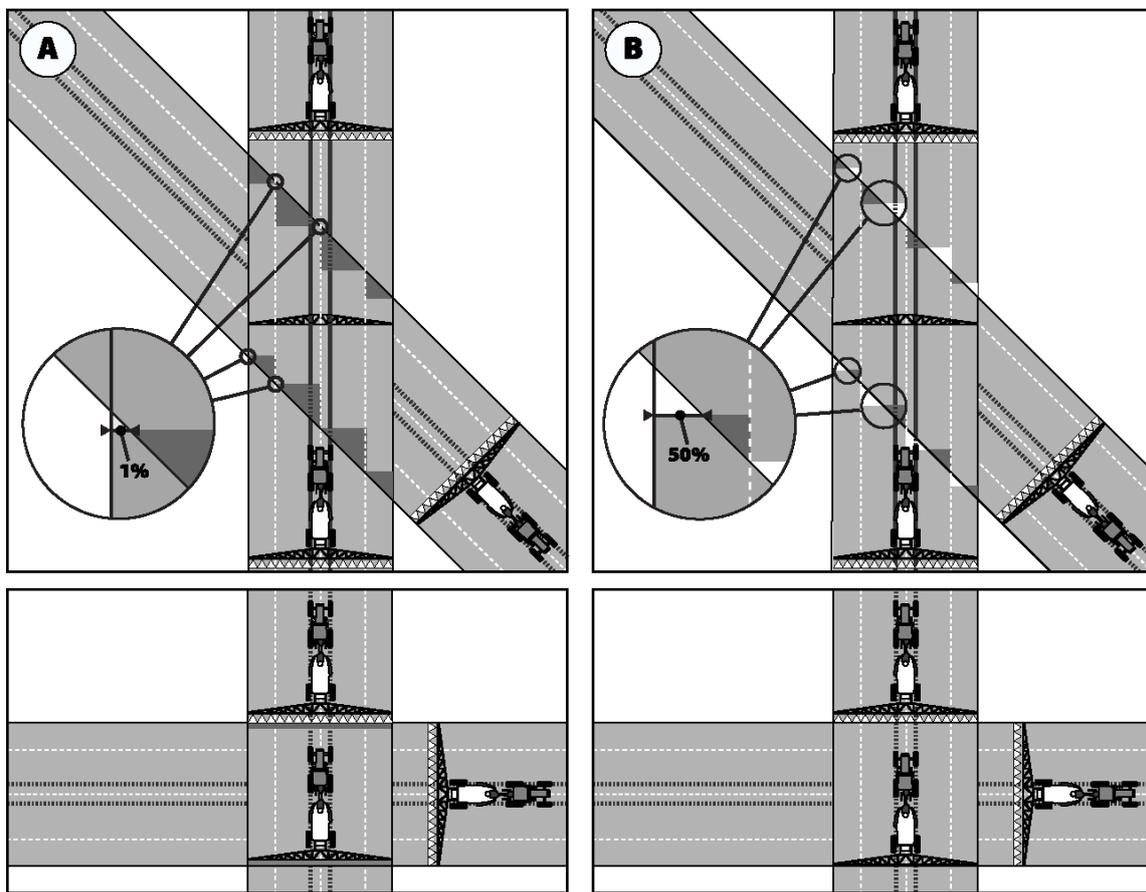
Tolerance set to 1 % (A)   Tolerance set to 50 % (B)

Picture A:
Upper picture:
Here spraying in an angle to a previous sprayed area; Minor miss occurs as HARDI ASC overlaps the previous sprayed area until it detects 1 % of section width not covered, and then close the section.

Below picture:
Here spraying perpendicular to a previous sprayed area; When tolerance is set for 1 % the HARDI ASC will overlap the previous sprayed area with 1 metre (dark grey area).

Picture B
Upper picture:
Here spraying in an angle to a previous sprayed area; The half of a section width will be missed because HARDI ASC overlaps the previous sprayed area until it detects 50 % of section width not covered, and then close the section.

Below picture:
Here spraying perpendicular to a previous sprayed area; When tolerance is set for 50 % the HARDI ASC will turn sections On/Off exactly on the border of the previous sprayed area.

The HARDI ASC System

A GPS Antenna
B Guidance System (GPS receiver)
C HARDI ASC with Display Panel
D HC5500/HC6500 Controller
E Fuse
F Battery
G Spray boom

Cables used

1 From GPS antenna to GPS receiver, Coax connectors.
2 Data cable 9 pin D-sub connectors
3 Data cable 9 pin D-sub connectors
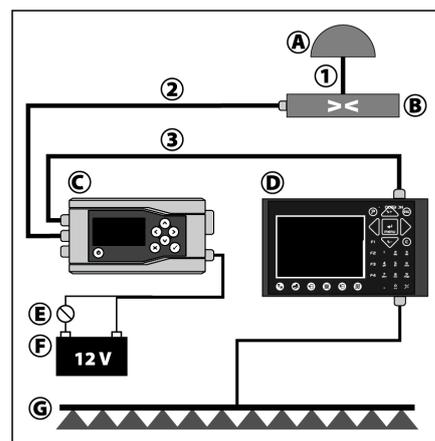
The rear of HARDI ASC unit

A	ISOLATION	DC isolation Switch.
B	CON. PORT	Not used for HARDI Controllers.
C	MOUNTINGPOINT	Mounting bracket point
D	PORT A	Connection to HARDI Controller.
E	PORT B	Connection to GPS recievers.
F	DC INPUT	12V DC power connection.
G	USB	USB con. for software upgrade.
H	CANBus Port	Connection to CANBus GPS rec.
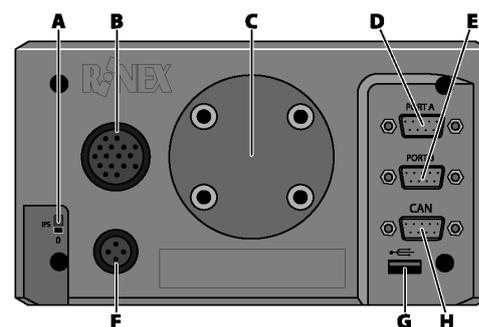
Connecting the HARDI Controller

The data cable is connected from the HARDI ASC on the port labelled port A to the COM port 2 (B), at the rear of the HARDI controller. The HC5500/6500 controller COM port 2 should be setup to VRA/Remote in menu 2.3.

Connecting the GPS

A GPS receiver or GPS guidance system must be connected to the HARDI ASC for the system to function. In order for the ASC to function correctly the GPS receiver must be configured to the following parameters.

NMEA message: GGA & VTG
Update rate: 5Hz
Baud rate: 9.600 baud

Configuring the EZ-Guide®

1. Select the Config menu.
2. Step to the "Lightbar" menu.
3. Select the "Data Port Settings" menu.
4. Change the Baud Rate to 9600.
5. Change the Output Rate to 5Hz.
6. Highlight "Exit" in the bottom of the screen; press arrow keys until "NMEA Output" is displayed. Press "OK" to select the menu.
7. Change GGA and VTG output to "On" with the arrow keys.
8. Connect the EZ-Guide® to the ASC and confirm that the ASC is receiving GPS data in the GPS Status and GPS Health pages in the Display menu.

Menu structure

The Hardi ASC Setup menus are accessed via the ⌃ or ⌄ buttons. The individual menu options are accessed using the ⌃ or ⌄ buttons. The main menu headings are shown to the right.	**Configure the system settings in the menus listed below**

	Configure the system settings in the menus listed below	
	GENERAL	Clear the field of data. Adjust volume, brightness.
	BOOM	Setup the boom sections and their measurements
	VEHICLE	Setup spray rig with the number of links and their measurements
Operational Mode	**GPS**	Setup GPS parameters
View status information relating to the field & GPS status	**PARAMETERS**	Setup spray parameters, delays and overrides.
✕ *Use ESC button to swap between Operational and Setup modes*	**SETTINGS**	Setup system settings and override function
	SYSTEM	View system status information relating to the AS7500.

The HARDI ASC Settings

Default Hardi Menu Settings

1.1	-	1.2	9	1.3	Yes	1.4	1		
2.1	-	2.2	-	2.3	-				
3.1	No	3.2	0,00m	3.3 - 3.4 - 3.5 - 3.6 - 3.7		*			
4.1	*	4.2	*	4.3	No	4.4	9600	4.5	0
5.1	1.5	5.2	1.5	5.3	**	5.4	Disabled	5.5	0%
6.1	Hardi	6.2	NMEA	6.3	English	6.4	Metric	6.5	Keypad
7.1	N/A	7.2	N/A	7.3	No	7.4	No	7.5	0

* Values transferred from the Instruction Book

Menu 3.3	Vehicle Number of Links	
Menu 3.4	Vehicle Link Distance 1 (LD1)	
Menu 3.5	Vehicle Axle Distance 1 (AD1)	
Menu 3.6	Vehicle Link Distance 2 (LD2)	
Menu 3.7	Vehicle Axle Distance 2 (AD2)	
Menu 4.1	GPS Cross track (D)	
Menu 4.2	GPS Long Track Value (LTV)	

** Tolerance settings

Please refer to "Tolerance" in the "Operation" to set the correct tolerance value

WARNING! Selecting other Latency values than 1.5 second recommended by HARDI will make the section On/Off times speed dependent.

HARDI ASC system test

Test GPS antenna position and total length

1. Set the tolerance to 50%.
2. Spray a long straight lane, pos. 1.
3. Mark the edge of the lane.
4. Drive at low speed, 0.7-1.0 Km/t, and spray a lane perpendicular to the first line, pos. 2.
   All spray sections will be open (A).
5. When crossing the first border of the perpendicular lane (pos. 3) all sections turn off (C).
6. When crossing the other border of the perpendicular lane (pos. 4) all sections turns On (A).

Test the Latency parameters

1. Set the tolerance to 50%.
2. Spray a long straight lane, pos. 1.
3. Mark the edge of the lane.
4. Drive with normal spraying speed, e.g. 7 Km/t, and spray a lane perpendic ular to the first line, pos. 2.
   All spray sections will be open (A).
5. When crossing the first border of the perpendicular lane (pos. 3) all sections turn off (C).
6. When crossing the other border of the perpendicular lane (pos. 4) all sections turns On (A).

If "Latency off" and "Latency On" values are correct the spray may not stop/start with a larger deviation than 50 cm from the actual border.

**This Quick Guide is a quick on-site reference for the operator of the Hardi ASC system.
This Quick Guide is intended to be used in conjunction with the Hardi Auto Section Control Instruction book part number 67008600-201 and the HARDI Controller Instruction book.
It is important for the operator to be familiar with the Instruction books before attempting operation.**