

Click "OK" to start the bootFIX upgrade.

- The "Hardi HC Upgrade" will erase the current application and upload the bootFIX application
- When upload of the bootFIX application is done, the following window popup.



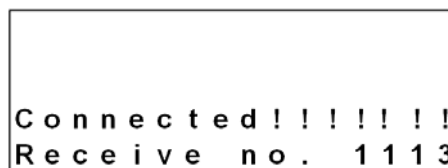
Important:

Follow the instructions point by point.

- Click "OK" to confirm user actions.
- The "Hardi HC Upgrade" will erase the current boot software through the bootFIX application and upload the new boot software version.
- When the boot software upload is done, the "Hardi HC Upgrade" software will ask if you wish to upload the application software to replace the temporary bootFIX software.
- Click "OK" to do normal application update.

The display in the HC5500 will change.

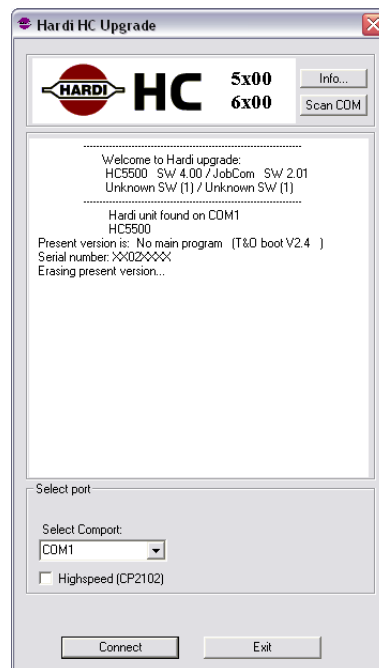
If the display does not change, something is wrong with the connection.



Is there no problem with the connection between HC5500 and the PC, the uploading will start.

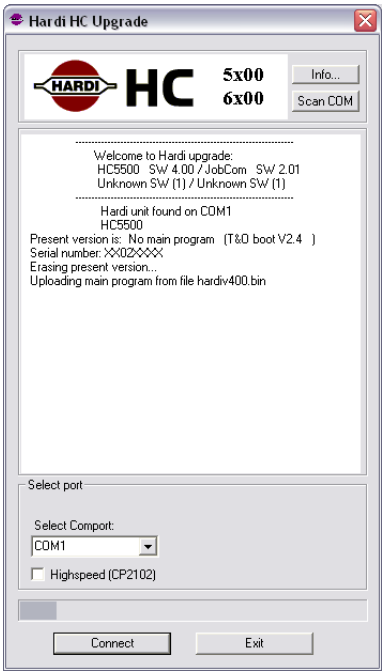
The upgrading program writes what it is doing.

The upgrade program starts to erase the software in the HC5500.

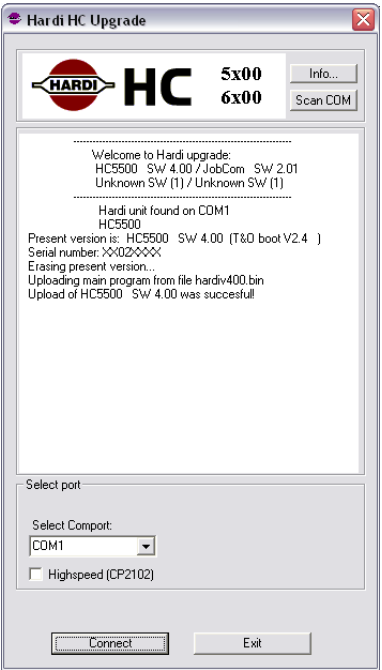




Then the uploading of the new software start.
The bar at the bottom of the dialogue box indicates the upload process.
When finished, the program informs if it has been successful or not.



The dialogue box displayed when uploading is finish.





Master Reset HC5500

To access Extended Menu, press and hold ESC button on HC 5500 and then power ON the controller. A “bip” will indicate Extended Menu is active and it will show E1.

With new software in the HC5500, it is necessary to perform a reset.

The reset is done in E7.2.

The PIN code is 12345. When keyed, press “Enter” and resetting will begin.

When done, press “ESC” to exit the menu.

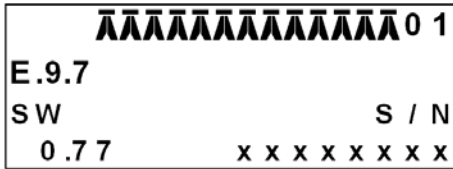

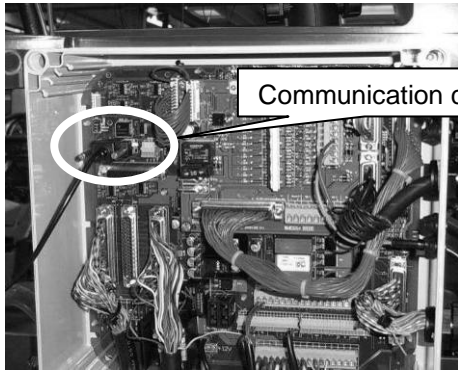
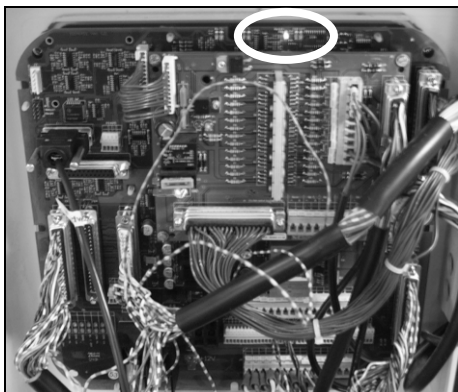
After reset, the HC5500 return to default values.

Only the total register “0” will not be reset.

AAAAAAAAAAAAAAAA 0 1
E.7.2
MASTER RESET
Enter code 00000

Software upload JobCom

The connection from the PC to the JobCom is made with HARDI cable P/N 72271600. The cable has a short circuit in one of the connector, a “Hardware halt”, normally where the label is. This connector should be connected to the device that is receiving data, in this case the JobCom. The PC needs the software program Hardi upgrade.

<p>The JobCom software version can be seen in Extended Menu E9.7. This menu will show what software version and what serial number the JobCom has.</p>	
<p>The communication cable is plugged into the PC, the plug without the “Hardware halt” (yellow sticker) – this is done before the computer is started up.</p>	
<p>The communication cable is plugged into the JobCom before it is switched on. The plug that is attached to the JobCom is the one with the “Hardware halt” (yellow sticker).</p>	
<p>When the JobCom and PC is connected the PC can be powered up and afterwards the JobCom. The JobCom is powered up on Spray box. To be sure that JobCom is ready to be upgraded, ensure that the red LED flashes 5 times and then pause in a loop. Here you notice the green circle which surrounds the red LED on the JobCom. The JobCom knows that it will receive software as soon as the communication cable is attached and therefore has it started up being ready for receiving data. The red LED can be seen, in the top of the picture, the watchdog is marked.</p>	

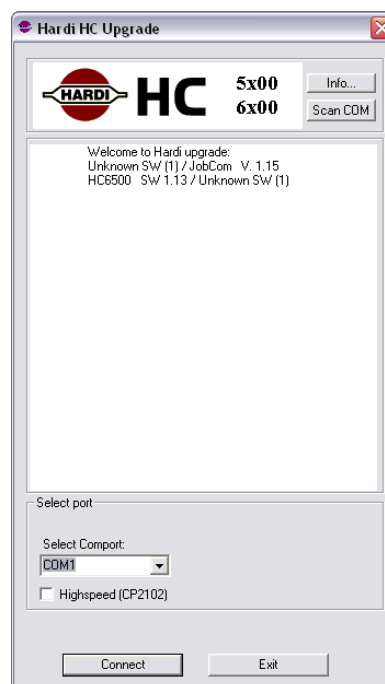


On the PC, the upgrading program can be started up and the PC dialogue box should look like this.

The dialogue box shows what software version will be uploaded to the JobCom. Communication port has to be chosen. If you use a USB-Serial converter see section "USB to RS232 Converter" how to find the Com port number.

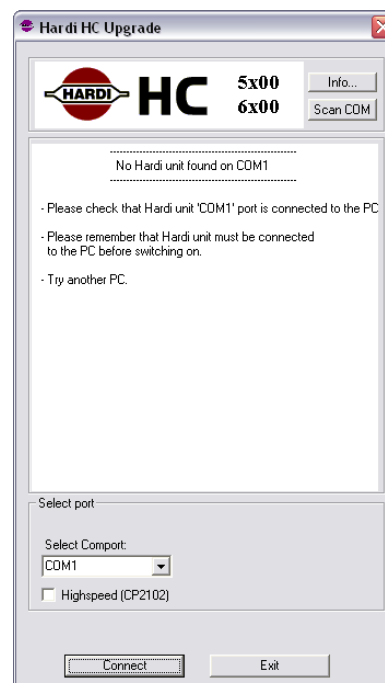
Select "Connect".

High-speed (CP2102) can only be used to the HC6500 Controller.

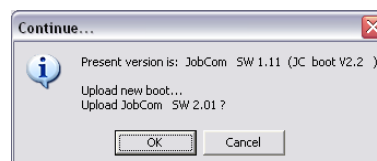


If the upgrade program does not find a connection between the JobCom and PC, this error message will appear.

If this message appears, then see if the cable is attached correctly and there is power on the controller. If this does not help, power down the PC and the controller and start all over.

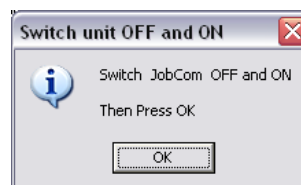


When you press "Connect" the upgrade begins, after a little while, you will be prompted with a window. There are two versions of this window, one where you have to upload a new boot and a new application. This looks like the window to the right:



The only difference between the two versions is the “Upload new boot...” line. This is because it isn’t always necessary to upload a new boot, to upload new application software.

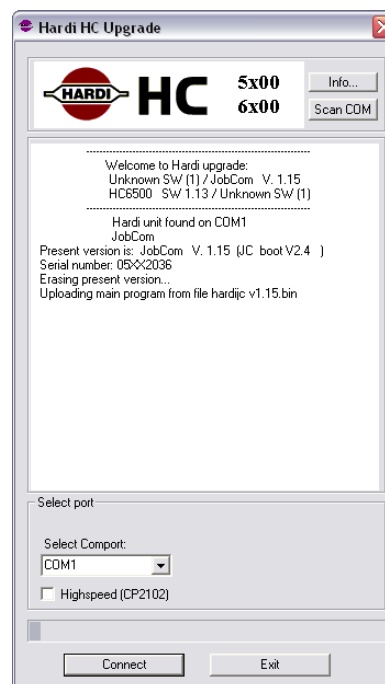
- Click “OK” to upgrade JobCom.
- If JobCom needs to upgrade boot software it will erase the old one, and the “Hardi HC Upgrade” will upload a new version.
- If it was necessary to upgrade the boot software (if not, skip this step), you will be prompted with the following window after the boot upload:



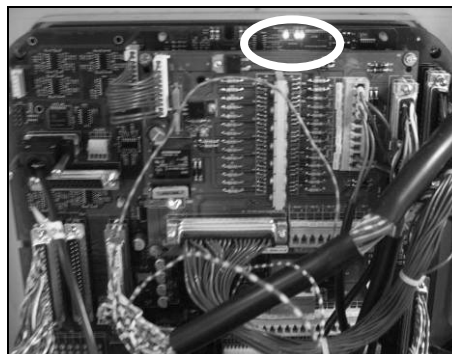
- Turn off and on the power on JobCom and wait until JobCom red LED continues to flash 5 times and then pause in a loop. Then click “OK” to continue upgrading JobCom.

- Afterwards “Hardi HC Upgrade” will erase the current application on JobCom and upload the new one.

The bottom bar of the display dialogue box indicates how far the uploading has processed.



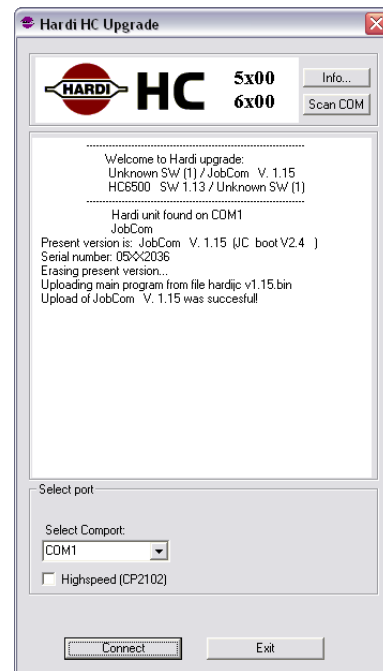
When the upload of the new software has started, diode N28 and D27 will start to flash together with the watchdog.





- At last "Hardi HC Upgrade" will prompt:
"Upload of JobCom SW X.XX was
successful!" and you are done.

If the updating was not successful, try
again.
Check the power supply to sprayer and
PC.



Reset JobCom with HC5500
With new software in the JobCom, it is
necessary to perform a reset.
To reset JobCom with a HC5500 enter
menu E.9.5.
The PIN code is 74650.

```

AAAAAAAAAAAAAAAA 0 1
E.9.5
RESET  JOBCOM
Enter  code 00000
    
```



Software error codes

Controller error codes

Error codes can be a combination of the below:

E.g. Code 6040: This is a combination of code 6000 and code 40 where 6000 means it could not write to the serial port and 40 means a reply is missing.

Codes indicating the uploader program have gone into a non-existence mode:

555

666

777

888

999

Codes for Send Data () errors:

1000 Serial port is not open

2000 Could not write to serial port (API-call WriteFile() failure)

Codes for GetData() error:

5000 Serial port is not open

6000 Could not write to serial port (API-call WriteFile() failure)

7000 Number of bytes read from serial port was less than expected

8000 Checksum fault in the received data

Codes for UploadMain() error:

3 H8 Flash could not be erased

10 Could not send 'SN' or 'MR' or 'PM' to the controller

20 No answer from controller on 'SN' or 'MR' commando

1..9 Controller answered 'SNx', 'MRx' or 'PMx' where x = 1..9 (0 expected)

30 Reply from controller not recognized (SN0 or MR0 expected)

40 Could not read the reply from 'PM' from the serial port

Codes for SendProgram() errors:

100 Unknown controller type (HC5500 or JobCom)

200 Could not write a data-block to serial port

300 Answer from the controller not recognized as block acknowledge

400 Negative block acknowledge from the controller

500 Could not read block acknowledge from serial port

600 Could not send BLKEND to controller

700 Could not read answer on BLKEND from serial port

800 Controller gave illegal answer on BLKEND

Codes for SendProgramExternalFile() errors:

10000 Program file is too small

20000 Unknown controller type (HC5500 or JobCom)

30000 Could not write data-block to serial port

40000 Could not read block acknowledge from serial port

50000 Answer from the controller not recognized as block acknowledge

60000 Negative block acknowledge from the controller

70000 Could not send BLKEND to controller

80000 Could not read answer on BLKEND from serial port




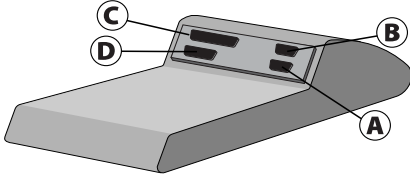
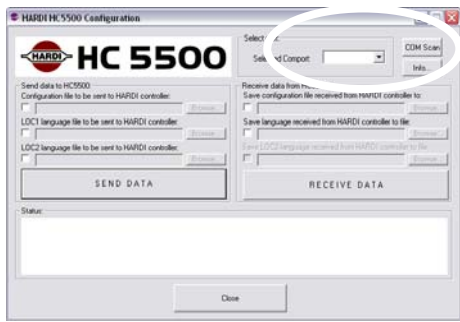
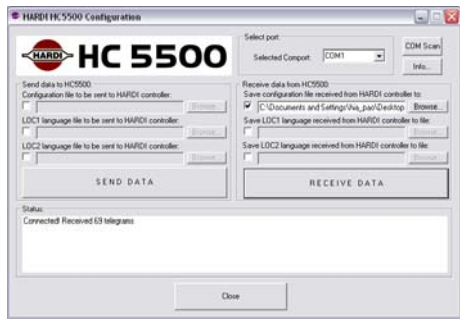
90000 Controller gave illegal answer on BLKEND


Hardi HC Upgrade software error messages:




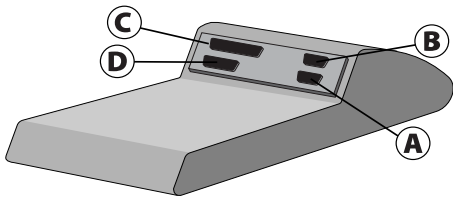

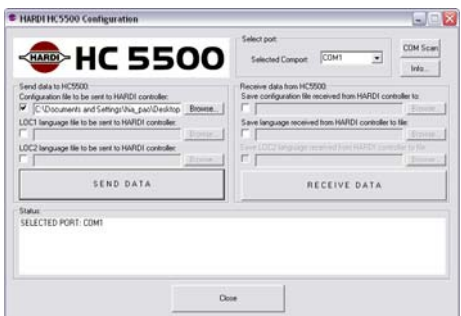
Message	Possible Error	Solution
Please select a Comport	Didn't select a Comport	See section "Software program for the controller"
No Hardi Unit found on ComX (Xbeing the selected comport number).	A: Didn't select correct comport, which is connected to Hardi Unit. B: No power on unit. C: Comport already in use.	A: See section "Software program for the controller" B: Make sure the device power cable is correctly installed. C: Make sure that the comport selected, isn't already in use by another program, in that case, close the other program.
Upload of main program failed, error code (20)	Forgot to turn off the HC5500/JobCom after boot Upload	HC5500: See section "Software upload HC5500". JobCom: See section "Software upload JobCom".
Upload of main program failed, error code (2)	No software to upload found	See section "Software program for the controller".
HW>=2.0 re!	Hardware version 1.1 can not be loaded with software version higher than 3.16	Upload software version 3.16 or exchange the HC5500 to a version 2.0

Handling the Configuration file

Save the configuration file to the PC:






<p>Power ON HC5500 in Extended Menu mode.</p>	
<p>Select E.7.3 Factory Send config</p>	
<p>Select E.7.3.1 Send Config Config only</p> <p>Push the “Enter” button</p>	
<p>Connect RS232 cable to HC5500 COM 1 (A) port. If using the HARDI communication cable P/N 72271600, connect the “Hardware halt” end of the cable to the PC.</p>	
<p>Open HARDI HC5500 Configuration program on the PC</p> <p>Select COM port for PC.</p>	
<p>Mark the “Save configuration file received from HARDI controller to:” on right hand side.</p> <p>Save the file on the PC</p> <p>Click “Receive data” and follow instructions in the “Status” box.</p> <p>Push the “Enter” button on controller.</p>	

Send the configuration file to the HC5500:

<p>Power ON HC5500 in Extended Menu mode.</p>	
<p>Select E.7.4 Factory Receive conf.</p>	
<p>Select E.7.4.1 Receive conf. Config only</p> <p>Push the “Enter” button</p>	
<p>Connect RS232 cable to HC5500 COM 1 (A) port. If using the HARDI communication cable P/N 72271600, connect the “Hardware halt” end of the cable to the PC.</p>	
<p>Open HARDI HC5500 Configuration program on the PC</p> <p>Select COM port for PC.</p>	
<p>Mark the “Configuration file to be sent to HARDI controller:” on left hand side.</p> <p>Select with the “Browse” button the file to be uploaded to HC5500.</p> <p>Click “Send data” and follow instructions in the “Status” box.</p> <p>Push the “Enter” button on controller.</p>	

Dump of data from HC5500 Controller

Configuration of HC5500 to dump data




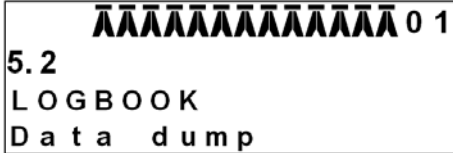

<p>Open the extended menu in the controller by doing following: Switch OFF the Controller Push and hold the “ESC” button on the Controller Switch ON the Controller and release the “ESC” when the E.1 Extended menu is showed.</p>	 <p>E.1 EXTENDED Language</p>
<p>Select: E1 Language E2 Unit E3 Sprayer type E4 Data exchange E5 Optional sensors E6 Service interval E7 Factory settings E8 Settings E9 JobCom</p>	 <p>E.4 EXTENDED Data exchange</p>
<p>Select: E.4.1 Data exchange</p> <p>COM 1 SETUP COM 2 Setup</p>	 <p>E.4.1 DATA EXCHANGE COM 1 setup</p>
<p>Select: E.4.1.1 Equipment type E.4.1.2 Baud rate E.4.1.3 Protocol select</p>	 <p>E.4.1.1 COM 1 SETUP Equipment type</p>
<p>Select: E.4.1.1 Equipment type Printer Dump Printer & dump GSM VRA/remote If “Dump” is chosen: Data will be dumped “raw” and the data from printed data in the controller will not be able to be printed out of the controller, like in Menu 5.1. If “Print & Dump” is chosen: Data can be written out “raw” or the data can be written out from the print menu.</p>	 <p>E.4.1.1 EQUIPMENT TYPE Printer & dump</p>



Select: E.4.1.2 Com 1 setup Baud rate 9600	<div>AAAAAAAAAAAAAAAA01</div> <div>E.4.1.2</div> <div>COM 1 SETUP</div> <div>Baud rate</div>
Select: E.4.1.2 Baud rate 1200 2400 4800 9600 19200	<div>AAAAAAAAAAAAAAAA01</div> <div>E.4.1.2</div> <div>COM 1 SETUP</div> <div>9600</div>
Leave the extended menu by switching off the controller	

Dump data from HC5500

Switch ON the controller and open the normal menu by pushing the Menu button. Connect the data cable to the PC. The Hardware Halt connector to the PC and the other end to the COM port that is selected in the section "Configuration of HC5500 to dump data".

Select: 5 MAIN MENU Logbook	
Select 5.1 LOGBOOK Print	
Select one of following options: 5.1.1 Print register number 5.1.2 Print all registers 5.1.3 Print configuration	
Select 5.2 LOGBOOK Data dump	
Select: 5.2.1 Data dump raw data 5.2.2 Data dump with header 5.2.3 Data dump Configuration	

Configuration of HyperTerminal

It is possible to transmit and receive data to and from the HC5500/6500 through the com port on the controller and the computer.

Use HyperTerminal on the PC to transmit or receive data from the Controller.

The connection from the PC to the controller is made with HARDI cable P/N 72271600. The cable has a short circuit in one of the connector, normally where the label is. This connector should be connected to the device that is receiving data.

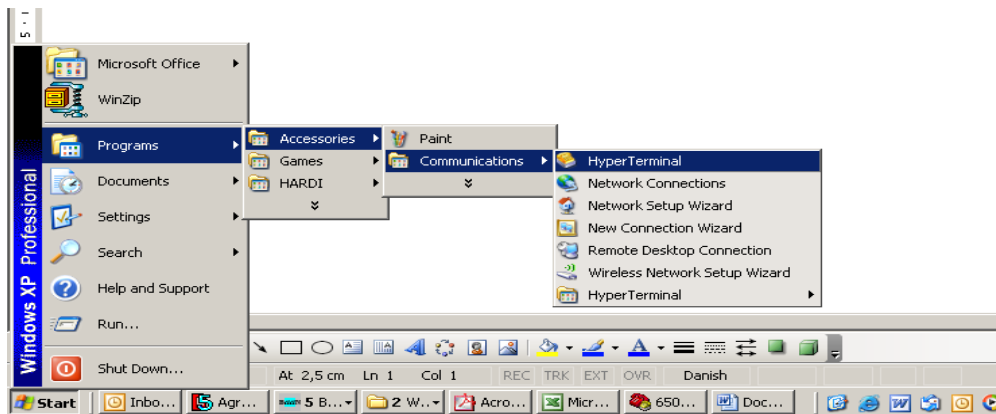
See appendix for drawing of the cable.



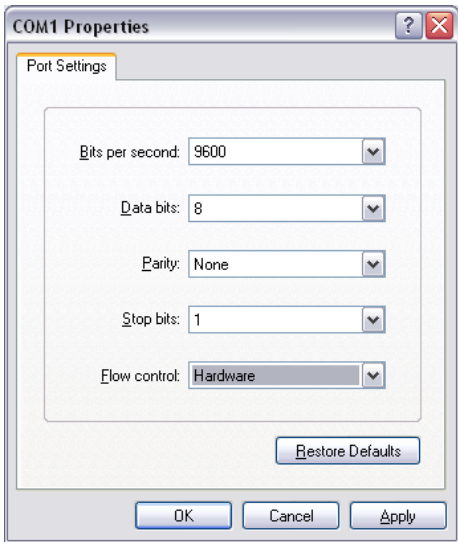
The data read in HyperTerminal can be exported to a spreadsheet or a word processing, see section "Handling the data".

Configuration of the HyperTerminal:

Baud rate	9600
Data bit	8
Parity	None
Stop bit	1
Flow control	Hardware
Emulation	ANSI

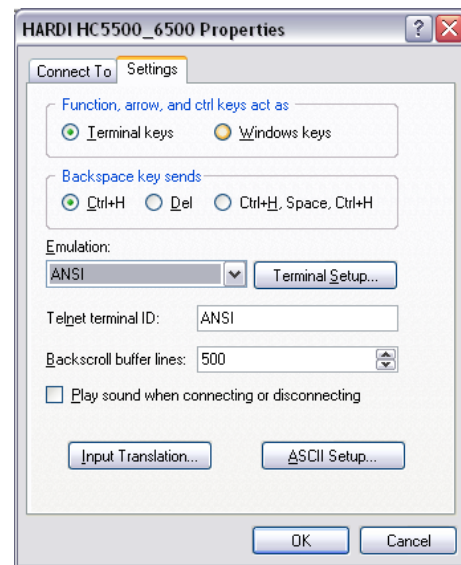
The HyperTerminal is normally installed in the "Start" menu in Windows:



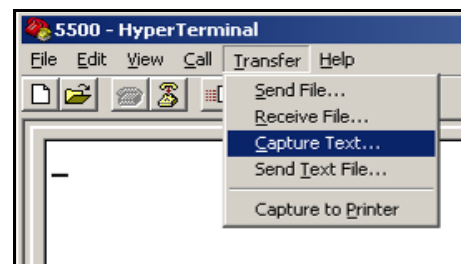
<p>Open HyperTerminal and enter a name</p>	 <p>The 'Connection Description' dialog box is shown. It has a title bar with a question mark and a close button. The main area says 'New Connection' with a modem icon. Below it, it says 'Enter a name and choose an icon for the connection:'. There is a text field for 'Name:' containing 'HARDI HC5500_6500'. Below that is an 'Icon:' section with a row of icons: a red telephone, a globe, a modem, a floppy disk, a network card, a USB drive, a document, and a red telephone. At the bottom are 'OK' and 'Cancel' buttons.</p>
<p>Select COM1 or another available COM port on the PC</p>	 <p>The 'Connect To' dialog box is shown. It has a title bar with a question mark and a close button. The main area says 'HARDI HC5500_6500' with a red telephone icon. Below it, it says 'Enter details for the phone number that you want to dial:'. There are three input fields: 'Country/region:' with a dropdown menu showing 'Denmark (45)', 'Area code:' with a text field containing '1', and 'Phone number:' with an empty text field. Below these is a 'Connect using:' section with a dropdown menu showing 'COM1'. At the bottom are 'OK' and 'Cancel' buttons.</p>
<p>Add the port setting data and select “Apply” and “OK”.</p>	 <p>The 'COM1 Properties' dialog box is shown. It has a title bar with a question mark and a close button. The 'Port Settings' tab is selected. The main area contains several settings: 'Bits per second:' with a dropdown menu showing '9600', 'Data bits:' with a dropdown menu showing '8', 'Parity:' with a dropdown menu showing 'None', 'Stop bits:' with a dropdown menu showing '1', and 'Flow control:' with a dropdown menu showing 'Hardware'. At the bottom right is a 'Restore Defaults' button. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.</p>

To set up the Emulation in HyperTerminal select in the File menu:

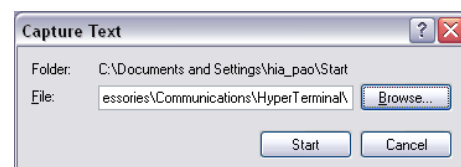
Properties and then Settings



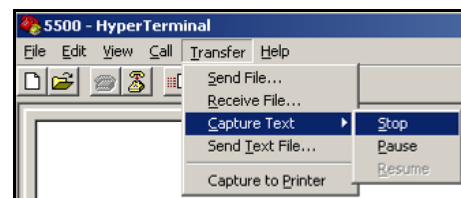
If the data should be saved in a file the “Capture Text” need to be activated



When the “Capture Text” is activated select a place to save the file

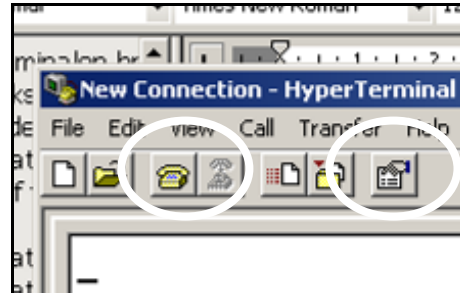


When the controller is finished to transmit data select “Stop” or “Pause” in the menu



If the terminal is open with wrong settings do following:

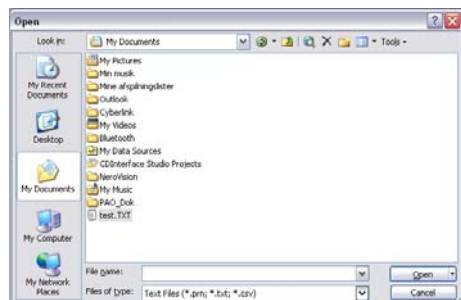
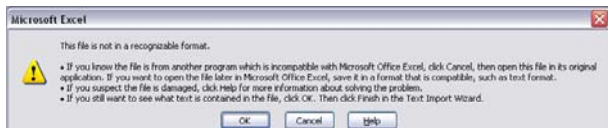

The terminal can be connected or disconnected. It is not possible to change settings in the Connection and Port settings if the terminal is connected. Push the "phone" button to connect/disconnect. To change settings, push the "Properties" button in the menu.



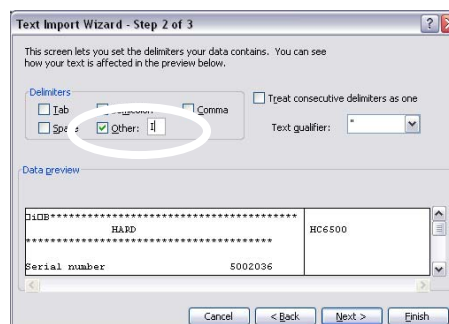
Handling data from HyperTerminal

The dumped data can be used in different ways. If the data is used for analyse later on, the data must be saved. If not necessary to save the data, the data will be shown on the PC screen and lost when the file is closed.

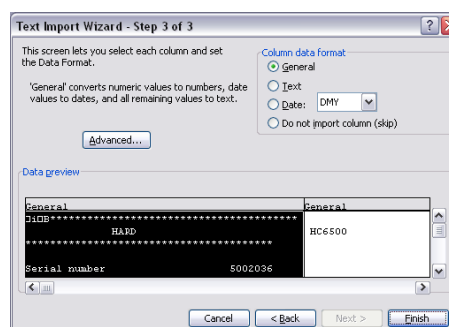
If the dumped data is to be opened with a spreadsheet after the transfer, the data must be saved on the PC. The data is saved as a Notepad data file. These files can also be opened in a spreadsheet (e.g. Excel) but it has to be done the right way.

<p>Open the data file in Excel Open Excel and select "Open" file. Select "Files of type *.txt."</p> <p>Select the file to open, e.g. Test.TXT.</p>	
<p>Select OK in this warning window.</p>	
<p>Select "Delimited" as data type in the next window.</p>	

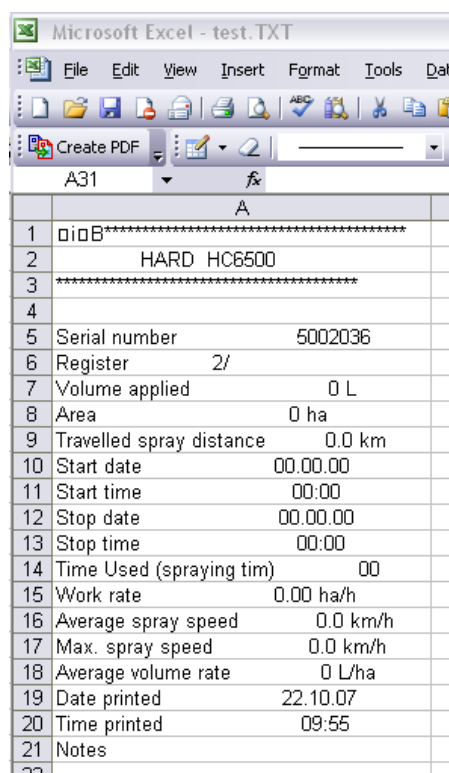
Mark "Other:" with an "|" (press AltGr+|).



Select "Finish"



And Excel will open the file:



Microsoft Excel - test.TXT

	A
1	DiOB*****
2	HARD HC6500
3	*****
4	
5	Serial number 5002036
6	Register 2/
7	Volume applied 0 L
8	Area 0 ha
9	Travelled spray distance 0.0 km
10	Start date 00.00.00
11	Start time 00:00
12	Stop date 00.00.00
13	Stop time 00:00
14	Time Used (spraying tim) 00
15	Work rate 0.00 ha/h
16	Average spray speed 0.0 km/h
17	Max. spray speed 0.0 km/h
18	Average volume rate 0 L/ha
19	Date printed 22.10.07
20	Time printed 09:55
21	Notes
22	

Local Language maintenance

The HC5500 has UK, F, D, DK, SF and HU as standard languages. It can also store 2 local languages. This allows you to write and download a local language to the controller.

How to translate a language file

Select a file with a known language, e.g. English.

Open the file with Notepad, re-name it, and overwrite the text. Note that “MaxLength”, refers to the maximum number of letters that can be used. The spacebar also counts for a letter.

When finished, save it. Now it can be transferred to the HC5500 from a PC.

If you do not have the language file it is possible to download it from the controller. See section “Download language file from HC5500 to PC”.

New software and local language

When the software in HC5500 is updated will the language file be deleted. Follow the next seven step to maintenance the local language.

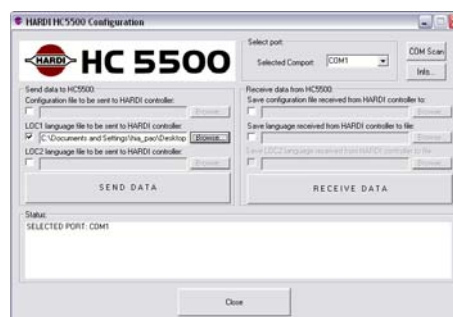
1. Transfer local language file from controller to the PC
2. Upload the new software to the controller
3. Upload the same local language file to the controller again
4. If the new software has new menu lines, will these lines be in English
5. Transfer the local language file to the PC again
6. Translate the English menu lines to the current local language
7. Upload the local language file to the controller again

Begin with step two if you have the local language file on the.

Configuration program for the HC5500.

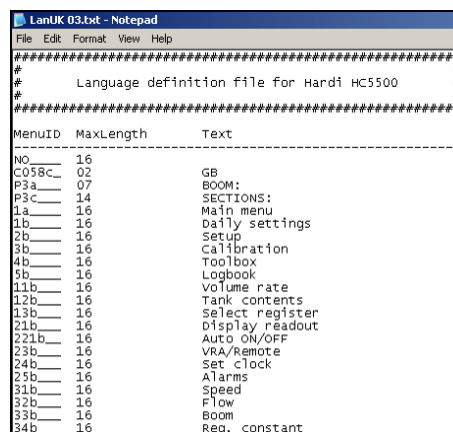
For transferring files from the PC to the HC5500 or to the PC a Configuration HC5500 program is needed.

If you don't have this program, Customer Service/Technical Service can supply it.



Standard language files

Language file opened in Notepad



```

LanUK 03.txt - Notepad
File Edit Format View Help
#####
# Language definition file for Hardi HC5500 #
#####
MenuID MaxLength Text
-----
NO 16
C058c 02 GB
P3a 07 BOOM:
P3c 14 SECTIONS:
1a 16 Main menu
1b 16 Daily settings
2b 16 Setup
3b 16 Calibration
4b 16 Toolbox
5b 16 Logbook
11b 16 Volume rate
12b 16 Tank contents
13b 16 Select register
21b 16 Display readout
221b 16 Auto ON/OFF
23b 16 VRA/Remote
24b 16 Set clock
25b 16 Alarms
31b 16 Speed
32b 16 Flow
33b 16 Boom
34b 16 Reg. constant

```

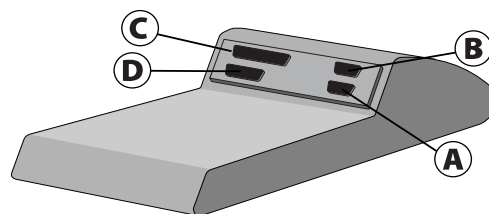
Transfer the language file from PC to HC5500

Power ON HC5500 in Extended Menu mode.

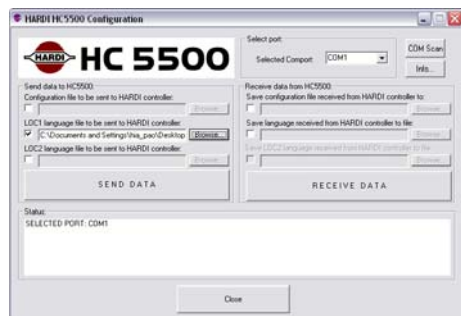
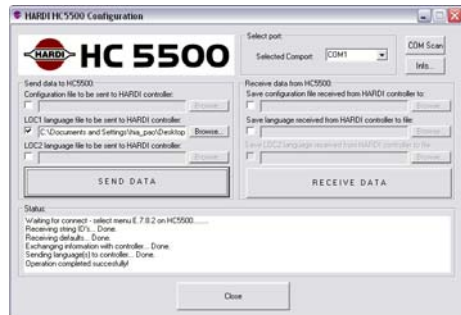

Select
E.7.8 Factory

Select
E.7.8.2
PC to box


Push the "Enter" button



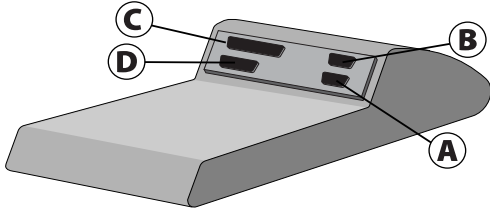
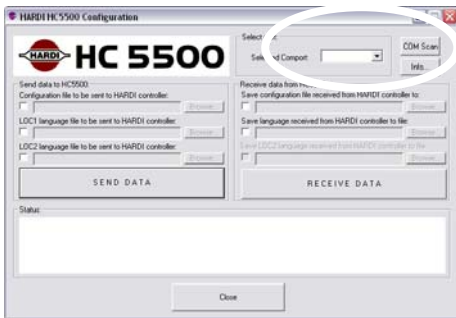
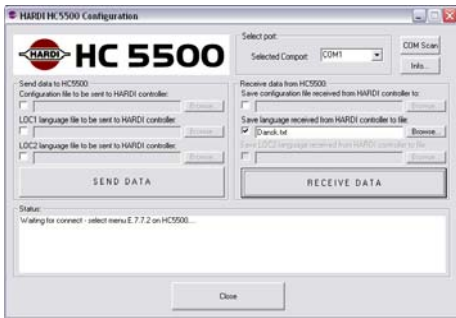

Connect RS232 cable to HC5500 COM 1
(A) port. If using the HARDI communication
cable P/N 72271600, connect the
"Hardware halt" end of the cable to the PC.Open Language configuration program on
the PC

Select COM port for PC.

<p>Click “LOC 1” or “LOC 2” on left hand side and select your local language file to be sent with the browser function.</p> <p>Click “Send data” and follow instructions in the “Status” box.</p> <p>Push the “Enter” button on controller.</p>	
<p>Various messages will be showed in the display!</p> <p>Wait until the display show that it has send and received data and show “Hardware halt. Wait for connect” second time.</p>	<div data-bbox="882 689 1337 853"> <p>E.7.8.2</p> <p>Connected !!!!!</p> <p>Sending no. 035</p> </div> <div data-bbox="882 891 1337 1055"> <p>E.7.8.2</p> <p>Connected !!!!!</p> <p>Receive no. 305</p> </div> <div data-bbox="882 1093 1337 1256"> <p>Hardware halt.</p> <p>Wait for connect</p> </div>
<p>HC5500 software will show following box:</p> <p>Operation completed successfully!</p>	

Download language file from HC5500 to PC:

<p>Power ON HC5500 in Extended Menu mode.</p>	
---	--

<p>Select E.7.7 Factory Send language</p>	
<p>Select E.7.7.2 Send language Box to PC</p> <p>Push the “Enter” button</p>	
<p>Connect RS232 cable to HC5500 COM 1 (A) port. If using the HARDI communication cable P/N 72271600, connect the “Hardware halt” end of the cable to the PC.</p>	
<p>Open Language configuration program on the PC</p> <p>Select COM port for PC.</p>	
<p>Click “Save language received from HARDI controller to file:” on right hand side.</p> <p>Click “Receive data” and follow instructions in the “Status” box. Select language to download: UK, D, DK, F, SF, HU, Local 1 or Local 2.</p> <p>Push the “Enter” button on controller. Open the file with Notepad</p>	



PCB's

There are several different kinds of PCB's (Printed Circuit Board) on the sprayers. The PCB's can be divided into two main groups "Leaded components on PCB" and "Surface Mounted Devices on PCB" (SMD)

The group with the "Leaded components on PCB" covers the PCB's:

1. Breakout PCB
2. PCB for section valves
3. Hydraulic PCB

Characteristic for these PCB's are that there is no intelligence "computer" in these PCB's. The components on these PCB are soldered on. This PCB can be repaired of a person that can solder new components onto the PCB.

The group with the 'Surface Mounted Devices on PCB are:

1. JobCom

On this PCB, there is intelligence, "a computer", on the PCB. The PCB is a SMD print. The components are soldered only to the surface of the print, not through holes like a normal print. The SMD print is very difficult to repair if it breaks down, so the JobCom is to be sent back to Hardi Technical Support for repair.

Common for all the PCB's are that all the connectors have a description for what function on the sprayer is connected to the particular connector. Furthermore, a description of where the wires that comes from the sensor or function must be mounted "+ / - or signal". Picture 14 show a PCB example.

PCB for Liquid

There are four different types of PCB for liquid control;

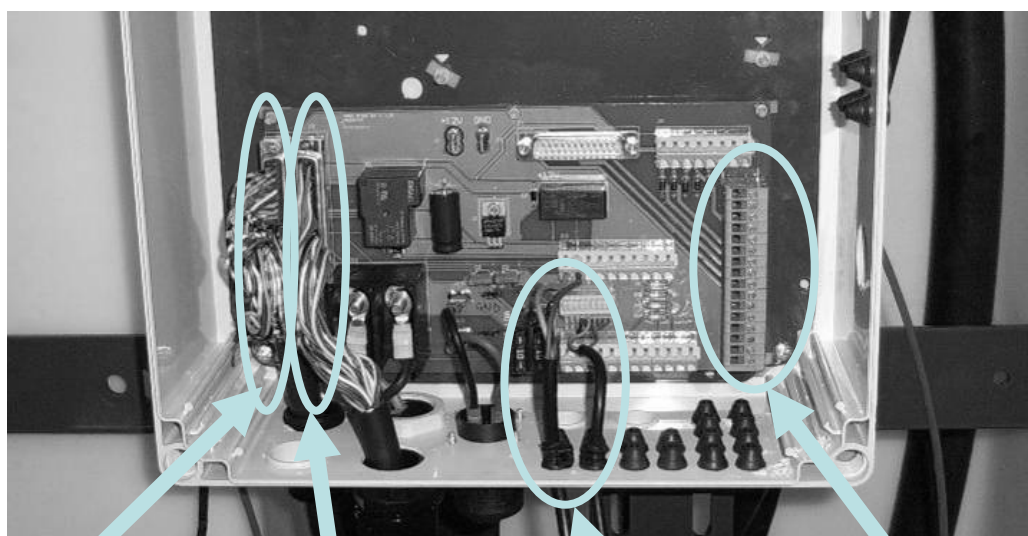
- | | |
|---------------------|------------------------|
| 1. Breakout PCB | Picture 13 on pages 71 |
| 2. 9 section's PCB | Picture 14 on pages 72 |
| 3. 13 section's PCB | Picture 15 on pages 73 |
| 4. JobCom PCB | Picture 18 on pages 76 |

The Breakout or JobCom PCB is mounted in front of the sprayer in a grey box.
The 9 or 13 section PCB is mounted at the rear of the sprayer.

Breakout PCB

The Breakout PCB is used when the CM05 is without Track. The Breakout PCB will split up the cable from the HC5500. The wires for the pressure regulation valve will be taken out here and the rest of the cable from the HC5500 will go on to the PCB for section valves.

Breakout PCB



From HC5500

Wire to PCB for
section valves

Power supply to
Pressure regulation
valve, and position sensor

HY connections

Picture 13 Breakout PCB

PCB for section valves, 9 sections

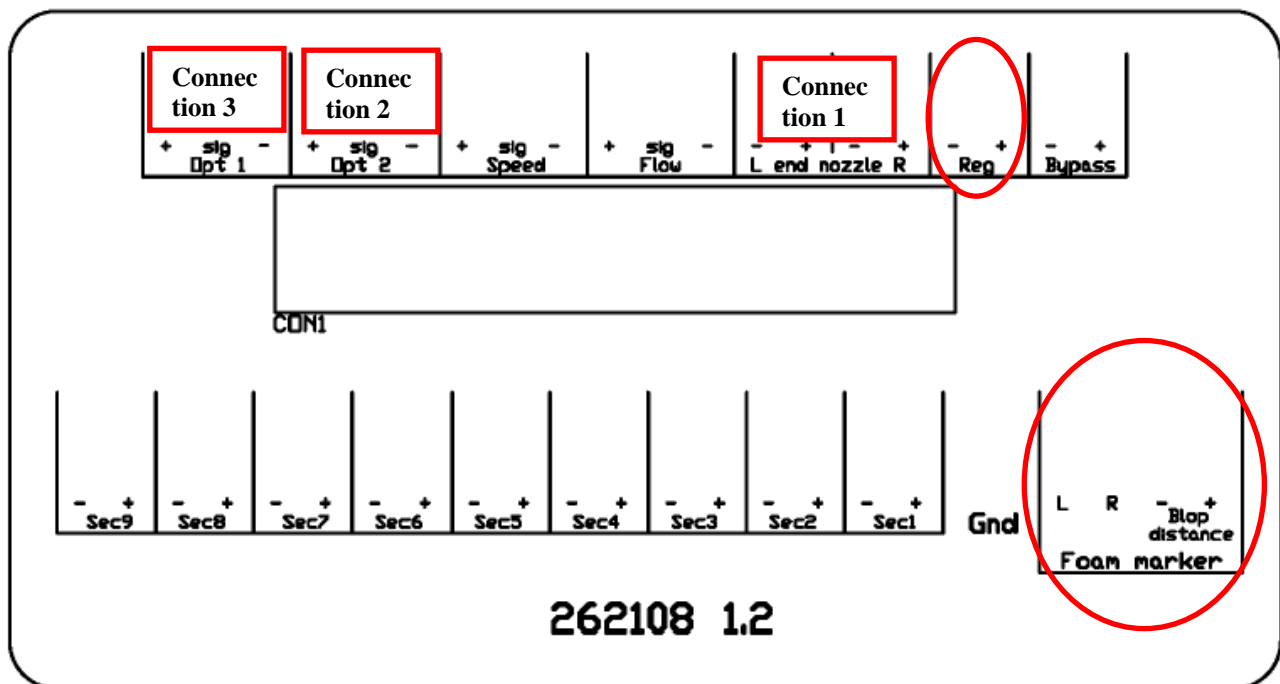
The difference between the 9 and 13 section PCB is the connection for the pressure regulation valve.

9 section: Connection for the pressure regulations valve, see Picture 14, is shown in the small circle.

13 section: No connection for the pressure regulation valve, see Picture 15 on pages 73.

This means that it is not possible to connect the HC5500/Spray box II direct to the 13 section PCB. There has to be a Breakout PCB or JobCom in between.

The 9 section PCB will be used on a MASTER, MEGA, RANGER and NAVIGATOR sprayer where all the section valves and the pressure regulation are mounted at the same place on the sprayer. The cable from the HC5500 is connected directly to the 9 section PCB. The wiring for the two PCB's is not the same, so they can not replace each other.



Picture 14 PCB for sections valves (9 section's PCB)

Part number for the 9 sections PCB is 72173900

Connection of optional sensors:

Pressure sensor:

The wires from the Pressure sensor are attached to "Connection 3" on the PCB. See Picture 14.

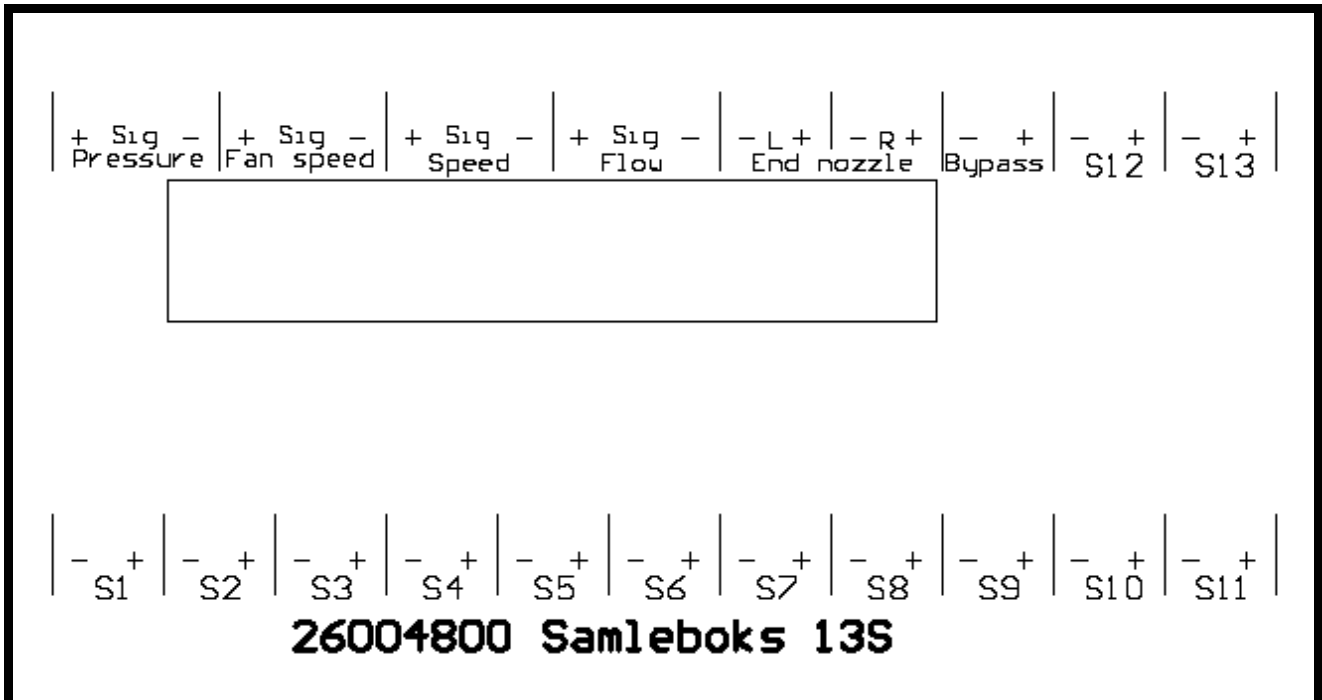
TWIN:

The wires from the Fan speed sensor are connected to "Connection 2". Picture 14.

End nozzle kit:

The wires from the End nozzle kit are connected to "Connection 1" on the PCB, on Picture 14.

PCB for section valves 13 sections



Picture 15 PCB for section valves "New Commander" (13 sections PCB)

On PCB "13 sections", it indicates where the optional sensors must be connected.

For the Pendulum Lock, the End nozzle connection is used for controlling the cylinder.

PCB for hydraulic

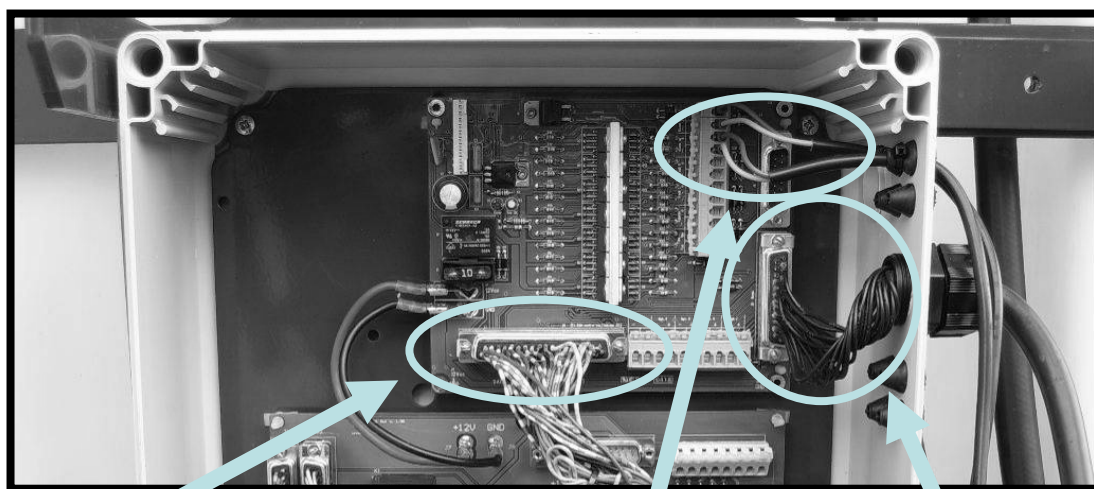
The PCB for hydraulic is called DAH (Direct Activated Hydraulic) and can be seen on Picture 16.

The PCB controls the hydraulic system on the sprayer, boom hydraulic and SafeTrack. If a sprayer is without SafeTrack, the PCB will be mounted as shown on Picture 16.

If it is with SafeTrack, the PCB will be mounted on top of the JobCom, see Picture 18 on pages 76.

Furthermore the PCB for SafeTrack will also be mounted, see Picture 17.

Part number for the hydraulic PCB is 26004300.



From hydraulic
control box (tractor)

Boom up and
down (ParaLift)

To boom
hydraulics valves

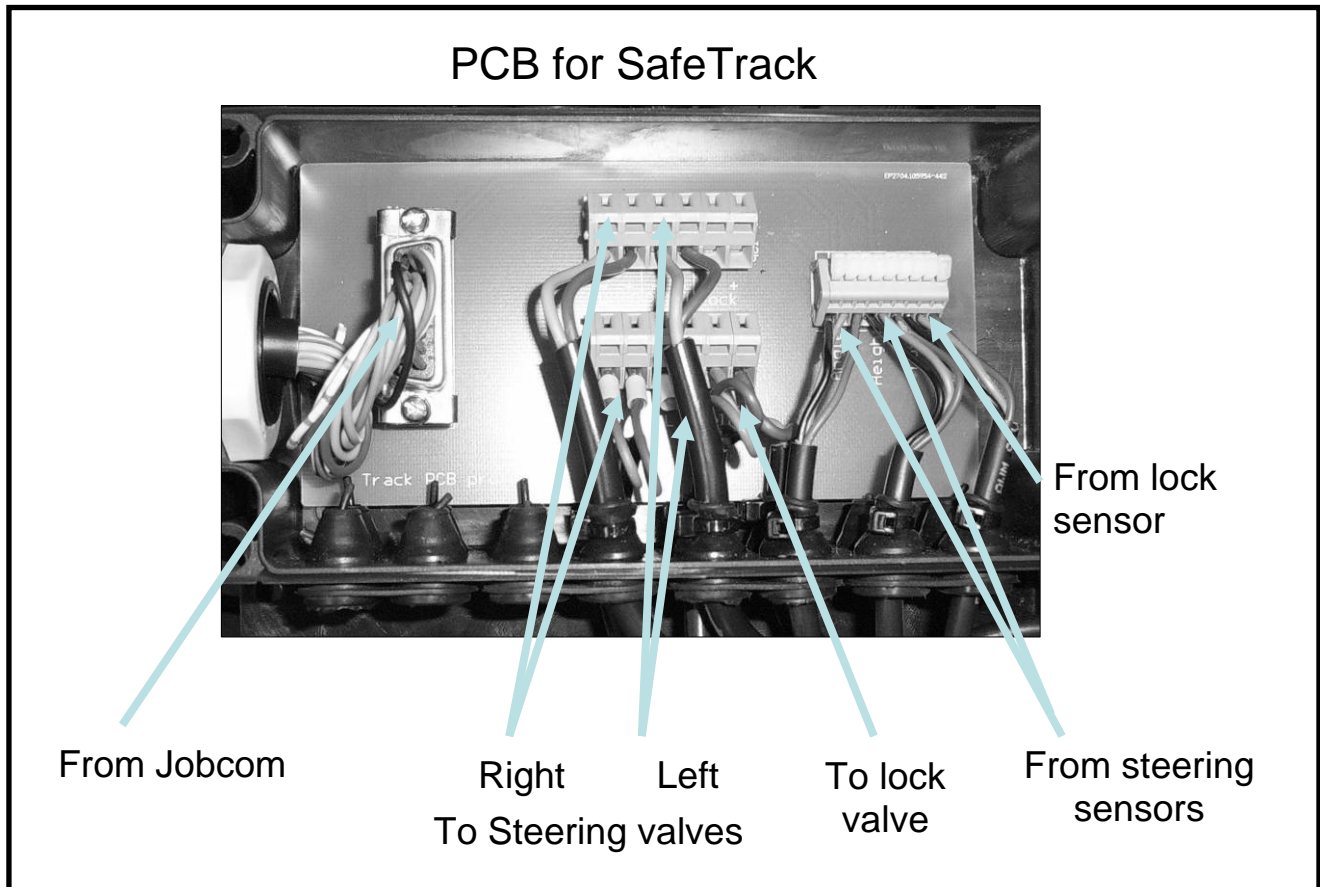
Picture 16 PCB for hydraulic

Sprayer fitted with Y hydraulic

Y hydraulic is the most simple and economic hydraulic system. The sprayer will be without SafeTrack and electric boom controls. Boom folding and lift up and down will be controlled directly from the tractors hydraulic.

PCB for SafeTrack

The PCB for SafeTrack is mounted underneath the sprayer next to the hydraulic block for the SafeTrack. Part number for the PCB is 26007600.



Picture 17 PCB for SafeTrack

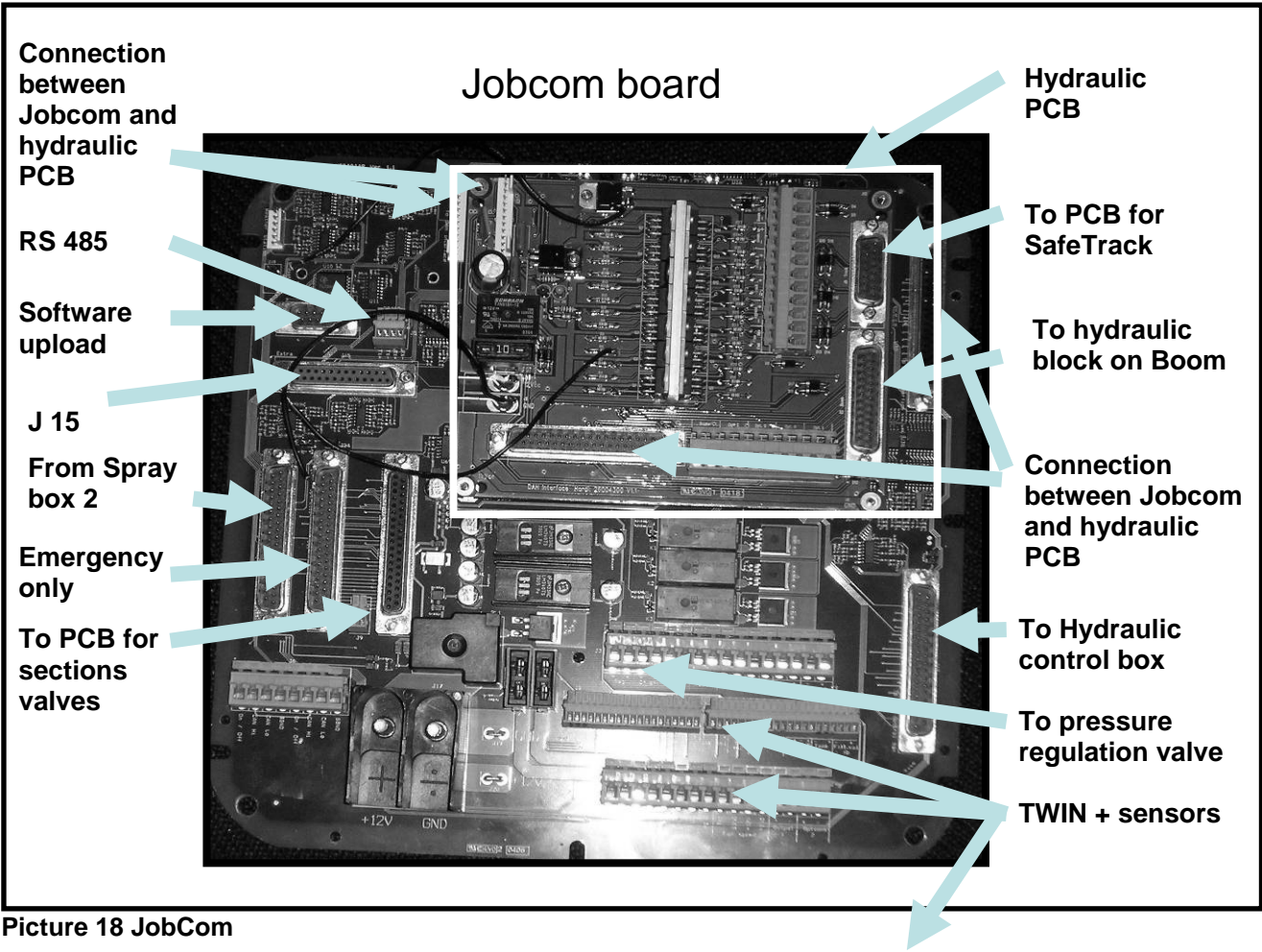


PCB for JobCom

The JobCom is a computer that handles the Track and AutoSectionControl function.

Resetting the JobCom

When the JobCom is reset, all the setting will return to default values including the Track setting. Re-calibration will be necessary.



Picture 18 JobCom

TWIN actuator connection to Breakout PCB or JobCom

Wire colour	Connection
Yellow	Sig
Brown	SGND
Green	+12V
White	PGND

J4															
Sig	SGND	+12V	PGND	Sig	SGND	+12V	PGND	Sig	SGND	+12V	PGND	+	-	+	-
Angle L				Angle R				Fan speed				Output 1		Options 2	



Fault finding on HC5500 & JobCom

JobCom

FAULT	PROBABLE CAUSE	CONTROL/REMEDY
Power to JobCom	Power supply not sufficient. The power cable to the JobCom has to be a unbroken power line from the battery.	The cable from the battery to JobCom has to be 6 square millimetres. Fit 72266300 tractor power cable. The fuse on the cable has to be 25A
JobCom not responding or unintended function	Communication error	Check menu E9.2 All cables connections in the JobCom, Junction box and track assembly box is checked, retighten screw on the cables plugs.
JobCom not responding!		Check If the 3 green LED's Rx/Tx are flashing 3-4 times per second and N28/D27 red and green is Flashing 2 times per second it means communication between JobCom and HC5500 is OK
Will not uploaded Software successfully.	Cable incorrect, or incorrectly fitted, Communication error.	Cable 72271600 has to be used. The plug with the yellow tag has to be mounted in the JobCom. Use the USB to RS232 converter instead of the PC com port.
Incorrect response from JobCom. When calibrating sensitivity in menu 3.6.6 the per cent will com above 40% and display FAIL!	The JobCom does not respond correctly after uploading the newest software. Error under uploading of software. The DAH PCB has to be hardware version 1.2.	Upload the software on more time, and then reset the JobCom. Use the test procedure for Track / Manual, reset also the HC 5500 by pressing arrow left, enter, arrow right and area remaining.
No response from the hydraulic.	Burned JobCom PCB. If there is a brown circle on the PCB there has been extreme heat.	Bypass the JobCom by taking the blue cable from J14 and assemble it with cable from the Hydraulic box J13.

LED's on JobCom

JobCom	HC5500		HC6500	
LED	Green D27	Red D28	Green D27	Red D28
While starting	Version no, integer part	Version no, fractional part	Version no, integer part	Version no, fractional part
While operating	1Hz	2Hz	0,5Hz	As for terminal
Ready for SW upload	Off	5 blink code	Off	5 blink code
Loading software	Off	(10Hz)	Off	Fast (10Hz)
SW upload successful	Off	8 blink code	Off	8 blink code
JobCom frequency is 0,5Hz for Green LED, D27. Hence Green LED shows the software family in the JobCom either for HC5500, 1Hz or HC6500, 0,5Hz.				

Thermal fuses on the HC5500 and Spray box

The Spray box has 3 thermal fuses. If a short-circuit occurs, one or more of these will become active. An error message will appear on the HC 5500 when electrical fuse is “on”. It will flash on the bottom line of the HC 5500.

The number (1, 2 or 3) indicates what area is short-circuited.

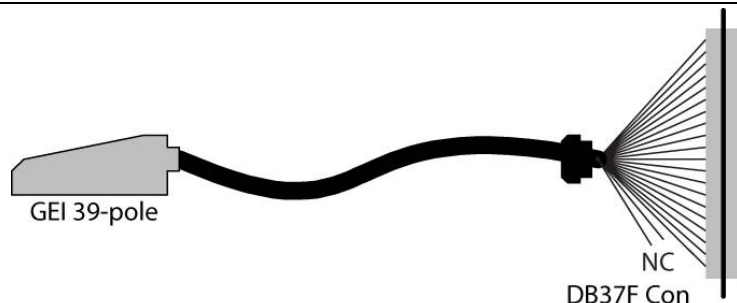
- 1 Left-hand side and centre switch of the section valves
- 2 Right- hand side of the section valves and main ON/OFF
- 3 Options and pressure regulation

The thermal fuses protect the system but it must be powered off immediately. When the problem is resolved, and the fuses have cooled down, the system can be powered on again.



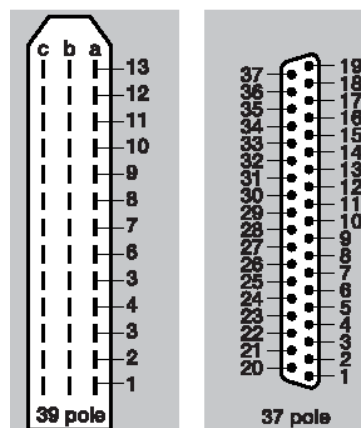
Cables configuration

37–39 pole cable between Spray II and the JobCom / Breakout or 9 sec. PCB

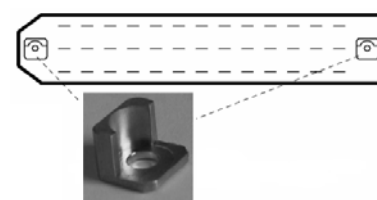


Length meter	Part number
17,5	26004200
14	28028700
11,5	28027500
8	28028900
5	28028800
2	26003900
0,5	26028300

39-pol	Colour	Spray	Spray II	37-pol
1a	White	S1+	S1+	5
1b	Brown	S1-	S1-	6
1c	Green	END NOZZLE L	END NOZZLE L	26
2a	Yellow	S2+	S2+	7
2b	Grey	S2-	S2-	8
2c	Pink	END NOZZLE R	END NOZZLE R	25
3a	Blue	S3+	S3+	9
3b	Red	S3-	S3-	10
3c	Black	+12V SENSOR	+12V SENSOR	29
4a	Violet	S4+	S4+	11
4b	Grey/Pink	S4-	S4-	12
4c	Red/Blue	GND 1	PWM 1TX	4
5a	White/Green	S5+	S5+	14
5b	Brown/Green	S5-	S5-	15
5c	White/Yellow	GND 2	GND	27
6a	Yellow/Brown	S6 +	S6 +	16
6b	White/Grey	S6 -	S6 -	17
6c	Grey/Brown	GND 3	OPT5 REG FEEDBACK	13
7a	White/Pink	S7 +	S7 +	18
7b	Pink/Brown	S7-	S7-	19
7c	White/Blue	OPTION1 4-20Ma	OPTION1 4-20Ma	33
8a	Brown/Blue	3-pos 1a	S8+	37
8b	White/Red	3-pos 1b	S8-	36
8c	Brown/Red	Option2 frq	Option2 frq	32
9a	White/Black	3-pos 2a	S9+/AIR ANGLE 0-5V	35
9b	Brown/Black	3-pos 2b	S9-/FAN SPEED 0-5V	34
9c	Grey/Green	(option3)	option3/TANK GAUGE	NC
10a	Yellow/Grey	On/off+	On/off+	21
10b	Pink/Green	On/off-	On/off-	22
10c	Yellow/Pink	(option4)	PWM2 OUTPUT OPTION	NC
11a	Green/Blue	Pressure+	Pressure+	23
11b	Yellow/Blue	Pressure-	Pressure-	24
11c	Green/Red	Flow	Flow	28
12a	Yellow/Red	FM up	FOAM BLOB 0-5V	20
12b	Green/Black	FM dn	OPT 4 RX	1
12c	Yellow/Black	Speed	Speed	31
13a	Grey/Blue	FM L	FM L	3
13b	Pink/Blue	FM R	FM R	2
13c	Grey/Red	Gnd sensor	Gnd sensor	30



The 37 - 39 pole connector has the same wiring combination for the hydraulic and fluid system.

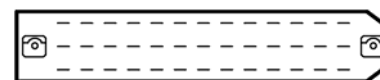


The dowel is set as when viewed into the plug on the cable. Re-coding the dowel allows switching from liquid to hydraulic and vice-versa.

Coding of 37-39 pole cables:



Cable for liquid

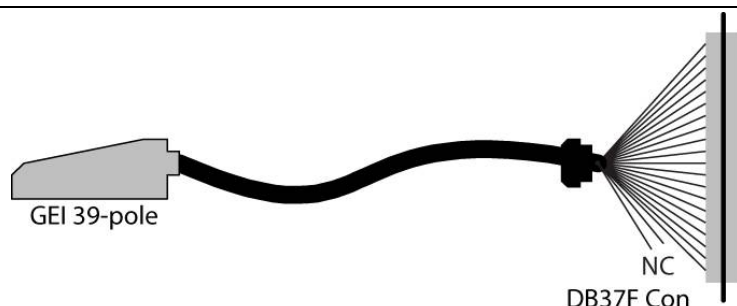


Cable for hydraulic

Technical data:

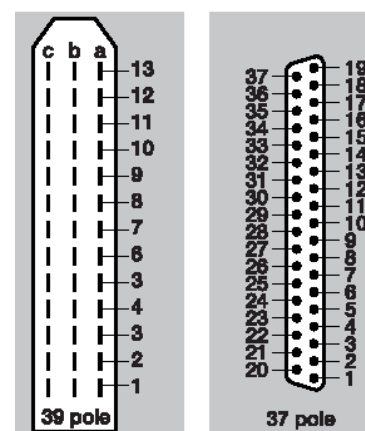
Jacked	Black, min 1.5 mm
Working temp	0-70 deg C
Voltage rating	>50 V
Multi-wire	Colour-coded, DIN 47100
Thickness	max 15.5 mm

37–39 pole cable between Hydraulic Box and the JobCom / Breakout PCB

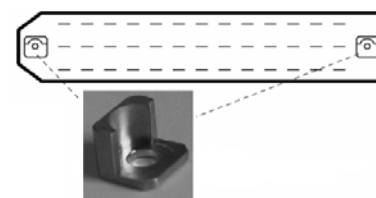


Length meter	Part number
5	72236600
8	72236400

39-pol	Colour	Spray	Spray II	37-pol
1a	White	S1+	S1+	5
1b	Brown	S1-	S1-	6
1c	Green	END NOZZLE L	END NOZZLE L	26
2a	Yellow	S2+	S2+	7
2b	Grey	S2-	S2-	8
2c	Pink	END NOZZLE R	END NOZZLE R	25
3a	Blue	S3+	S3+	9
3b	Red	S3-	S3-	10
3c	Black	+12V SENSOR	+12V SENSOR	29
4a	Violet	S4+	S4+	11
4b	Grey/Pink	S4-	S4-	12
4c	Red/Blue	GND 1	PWM 1TX	4
5a	White/Green	S5+	S5+	14
5b	Brown/Green	S5-	S5-	15
5c	White/Yellow	GND 2	GND	27
6a	Yellow/Brown	S6 +	S6 +	16
6b	White/Grey	S6 -	S6 -	17
6c	Grey/Brown	GND 3	OPT5 REG FEEDBACK	13
7a	White/Pink	S7 +	S7 +	18
7b	Pink/Brown	S7-	S7-	19
7c	White/Blue	OPTION1 4- 20Ma	OPTION1 4-20Ma	33
8a	Brown/Blue	3-pos 1a	S8+	37
8b	White/Red	3-pos 1b	S8-	36
8c	Brown/Red	Option2 frq	Option2 frq	32
9a	White/Black	3-pos 2a	S9+/AIR ANGLE 0- 5V	35
9b	Brown/Black	3-pos 2b	S9-/FAN SPEED 0-5V	34
9c	Grey/Green	(option3)	option3/TANK GAUGE	NC
10a	Yellow/Grey	On/off+	On/off+	21
10b	Pink/Green	On/off-	On/off-	22
10c	Yellow/Pink	(option4)	PWM2 OUTPUT OPTION	NC
11a	Green/Blue	Pressure+	Pressure+	23
11b	Yellow/Blue	Pressure-	Pressure-	24
11c	Green/Red	Flow	Flow	28
12a	Yellow/Red	FM up	FOAM BLOB 0-5V	20
12b	Green/Black	FM dn	OPT 4 RX	1
12c	Yellow/Black	Speed	Speed	31
13a	Grey/Blue	FM L	FM L	3
13b	Pink/Blue	FM R	FM R	2
13c	Grey/Red	Gnd sensor	Gnd sensor	30

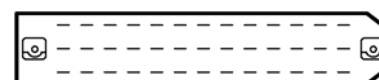


The 37 - 39 pole connector has the same wiring combination for the hydraulic and fluid system.

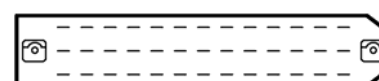


The dowel is set as when viewed into the plug on the cable. Re-coding the dowel allows switching from liquid to hydraulic and vice-versa.

Coding of 37-39 pole cables:



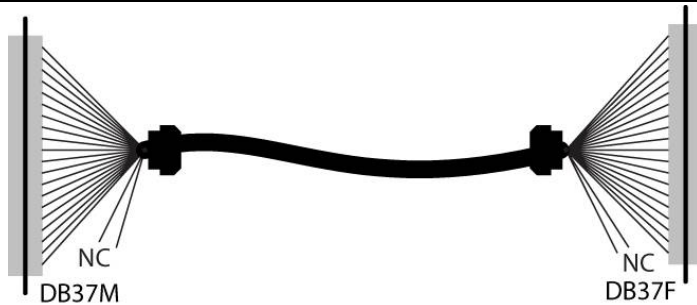
Cable for liquid



Cable for hydraulic

Technical data:

Jacked	Black, min 1.5 mm
Working temp	0-70 deg C
Voltage rating	>50 V
Multi-wire	Colour-coded, DIN 47100
Thickness	max 15.5 mm

DB37M-DB37F pole cable between JobCom / Breakout PCB to 13 sec. PCB


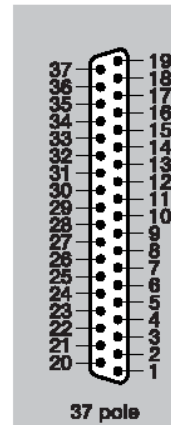
Length meter

9,5

Part number

26004900

DB37M	Colour	Function	DB37F
1	Yellow/Grey	S12+	21
2	Pink/Blue	S11+	2
3	Grey/Blue	S11-	3
4	Red/Blue	S10+	4
5	White	S10-	5
6	White/Black	S1+	35
7	Brown/Black	S1-	34
8	Brown/Blue	S2+	37
9	White/Red	S2-	36
10	White/Pink	S3+	18
11	Pink/Brown	S3-	19
12	Yellow/Brown	S4+	16
13	White/Grey	S4-	17
14	White/Green	S5+	14
15	Brown/Green	S5-	15
16	Grey/Pink	S6+	12
17	Grey/Brown	S6-	13
18	Red	S7+	10
19	Violet	S7-	11
20	Pink/Green	S12-	22
21	Green/Blue	Bypass +	23
22	Yellow/Blue	Bypass -	24
23	Green/Black	S13+	1
24	Yellow/Red	S13-	20
25	Pink	End nozzle R	25
26	Green	End nozzle L	26
27	White/Yellow	GND Power	27
28	Green/Red	Flow	28
29	Grey/Red	12V Sensor	30
30	Black	GND Sensor	29
31	Yellow/Black	Speed	31
32	Brown/Red	Option 2 frq	32
33	White/Blue	Option 1 4-20L	33
34	Yellow	S9-	7
35	Brown	S9+	6
36	Blue	S8-	9
37	Grey	S8+	8
No fct	NC	Grey/Green	NC
No fct	NC	Yellow/Pink	NC



37 pole

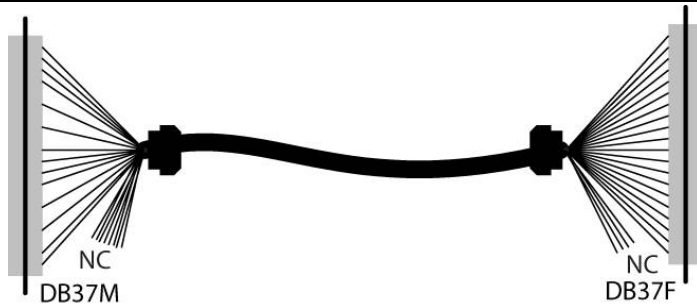


Mounted with screw kit 3M
Thread: 4-40 UNC

Technical data:

Jacked	Black, min 1.5 mm
Working temp	0-70 deg C
Voltage rating	>50 V
Multi-wire	Colour-coded DIN 47100
Thickness	max 15.5 mm

DB37M–DB37F pole cable between JobCom / Breakout PCB to 9 sec. PCB



Length meter

9,5

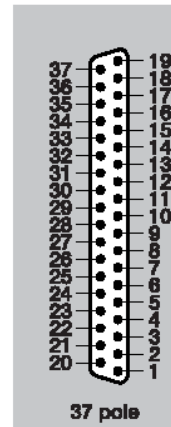
Part number

26023800

DB37M	Colour	Function	DB37F
Wire (to term. J3_5)	Green/Black	FM dn	1
Wire (to term. J2_15)	Pink/Blue	FM R	2
Wire (to term. J2_14)	Grey/Blue	FM L	3
Wire	Red/Blue	No fct	Wire
Wire	Grey/Green	No fct	Wire
6	White	S1+	5
7	Brown	S1-	6
8	Yellow	S2+	7
9	Grey	S2-	8
10	Blue	S3+	9
11	Red	S3-	10
12	Violet	S4+	11
13	Grey/Pink	S4-	12
14	White/Green	S5+	14
15	Brown/Green	S5-	15
16	Yellow/Brown	S6+	16
17	White/Grey	S6-	17
18	White/Pink	S7+	18
19	Pink/Brown	S7-	19
Wire (To term. J3_6)	Yellow/Red	FM up	20
21	Yellow/Grey	On/Off+	21
22	Pink/Green	On/Off-	22
Wire (to ter. J3_2)	Green/Blue	Pressure+	23
Wire (to ter. J3_1)	Yellow/Blue	Pressure-	24
25	Pink	End nozzle R	25
26	Green	End nozzle L	26
27	White/Yellow	GND2	27
28	Green/Red	Flow	28
29	Black	+12V sensor	29
30	Grey/Red	GND Sensor	30
31	Yellow/Black	Speed	31
32	Brown/Red	Option2 Frq	32
33	White/Blue	Option1 4-20mA	33
34	Brown/Black	S9-	34
35	White/Black	S9+	35
36	White/Red	S8-	36
37	Brown/Blue	S8+	37
Wire	Yellow/Pink	No fct	Wire
Wire	Grey/Brown	No fct	Wire

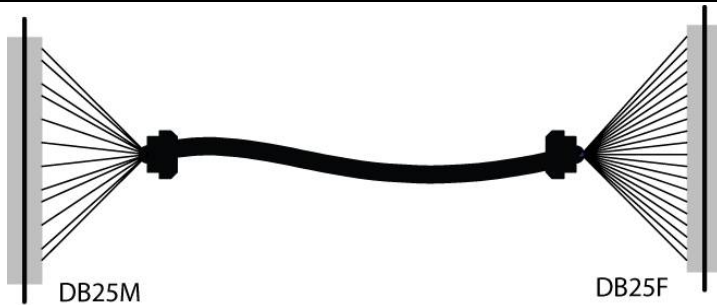
Technical data:

Jacked	Black, min 1.5 mm
Working temp	0-70 deg C
Voltage rating	>50 V
Multi-wire	Colour-coded DIN 47100
Thickness	max 15.5 mm



Mounted with screw kit 3M
Thread: 4-40 UNC

DB25M–DB25F pole HY cable



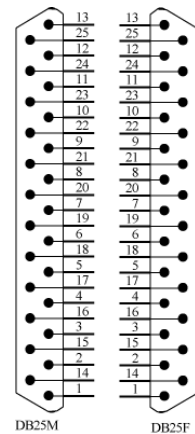
Length meter

8,5

Part number

26016900

DB25M	Function	DB25F
1	Flow reverse	14
2	Lock	9
3	Slant sensor	2
4	GND Sensor	16
5	Fold Sensor	1
6	+12V Sensor	15
7	GND	17
8	GND	22
9	GND	18
10	GND	19
11	GND	20
12	GND	21
13	Slant R dn	4
14	Flow forward	10
15	Fold R out	23
16	Fold R in	24
17	Fold inner out	12
18	Fold inner in	11
19	Tilt R up	7
20	Tilt R down	8
21	Tilt L down	6
22	Tilt L up	5
23	Fold L out	25
24	Fold L in	13
25	Slant L dn	3



DB25M

DB25F



Mounted with screw kit 3M
Thread: 4-40 UNC

Technical data:

Jacked

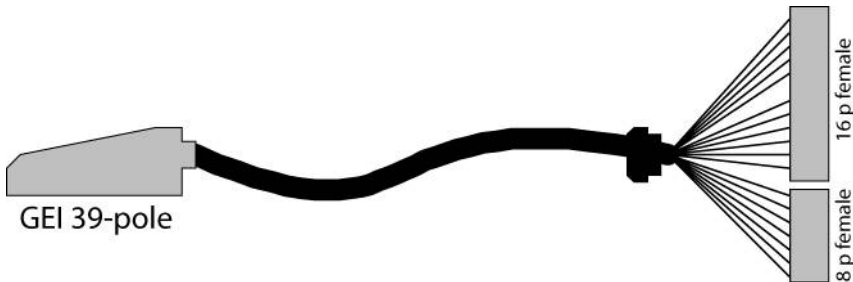
Working temp Black, min 1.5 mm

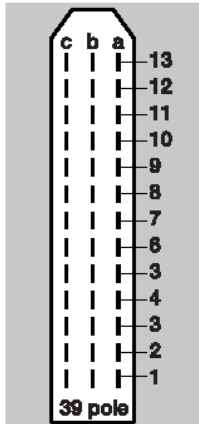
Voltage rating 0-70 deg C

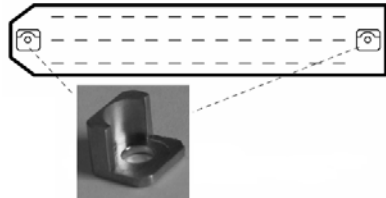
Multi-wire >50 V

Thickness Colour-coded

Cable for LPZ/DH


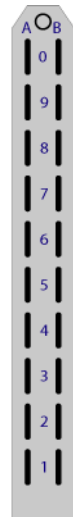
<div></div> <div>GEI 39-pole</div>				Length meter	Part number
				8	26008400
39-Pole	Function	Minifit 16p	Minifit 8p		
12a	Boom up		2		
10a	Boom down		1		
11a	Slant R down	10			
11b	Tilt L up	11			
2c	Tilt L down	7			
1c	Tilt R up	13			
5c	Tilt R down	6			
11c	Pend. Lock	12			
3c	GND		8		
12c	Fold inner out	9			
9c	Flow reverse	4			
10c	Flow forward	3			
7c	Fold outer L out	8			
9a	Fold outer R out	5			
3b	Option E		3		
4a	HY Bypass	14			
3a	Option G		4		
6c	GND		7		
5a	GND	16			
5b	GND	15			
1a	GND	2			
1b	GND	1			
2b	Option H (hy)		5		
13a	Option I (hy)		6		
Technical data:					
Jacked		Black, min 1.5 mm			
Working temp		0-70 deg C			
Voltage rating		>50 V			
Multi-wire		Colour-coded DIN 47100			
Thickness		max 15.5 mm /24x17 AWG (1mm2)			





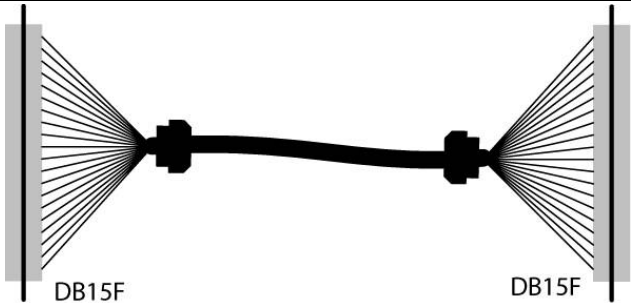
The dowel is set as when viewed into the plug on the cable.

Cable for VHZ

 GEI 20-pol				Length meter	Part number
				8	72168100
				12	72278300
20-Pole	Colour	Function	Wire ter. PCB	 GEI Connector 20-pol	
1a	Grey	Fold R outer	5 (V5)		
1b					
2a					
2b	Green	V6b	3 (V6a)		
3a					
3b					
4a					
4b	Pink	Fold R inner	6 (V4)		
5a					
5b	Blue	Fold L inner	7 (V3)		
6a	White	GND	1 (GND)		
6b	Brown	GND	2 (GND)		
7a					
7b					
8a					
8b					
9a	Violet	Slant	10 (V0)		
9b	Black	Lock	9 (V1)		
0a	Red	Fold L outer	8 (V2)		
0b	Yellow	V6a	4 (V6b)		

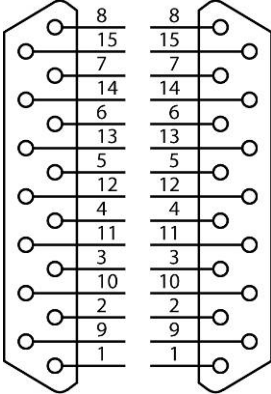


15F-15F DSUB Cable



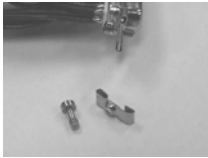
15-Pole	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15

Length meter	Part number
4,5	26007500



DB15F

DB15F



Mounted with screw kit 3M
Thread: 4-40 UNC

Revision

Service Manual HC5500		P/N 679060-702	rev. 7.02. GB 11.2008		
Date	Rev	Subject	Section	Page	Written By
04-09-2006		Error codes on HC5500	Error code on the HC5500	25	PER
25-09-2006	4	Proof reading of whole document	Error code on the HC5500	78	AF
21-11-2006	5	Printer paper thread added.	Printer	11	AF
		Thermal fuses added.	Fault finding	102	AF
		TWIN actuator wiring added.	PCB	98	AF
		TankGauge sensor removed	Appendix	77	AF
03-07-2007	6	Additions for SW 4.00 and NAV Some text revisions	Menu Tree		AF
10-03-08	7.00GB	Overall update to rev.7, S/W 4.XX.	All	75	PAO
15-07-08	7.01GB	Software upd. section rev. Some text revision	Software All	76	PAO
05-11-08	7.02GB	Fluid/Hydraulic cables	Sprayer connection	6-7	PAO
		Sensors overview	Sensors	11-12	PAO
		Error codes software	Software	52-53	PAO
		Handling the Configuration file	Software	54-55	PAO
		Cables configuration	Cables	78-86	PAO