

## **DA-Touch**

Installation manual

Version 1.4

---

## **Preface**

This manual contains information necessary for installation of a DA-Touch control on a pressbrake machine. It is meant for service people who are authorised for service and installation of the machine.

## **Limited guarantee**

- The equipment is supplied by Delem without safety features. The machine manufacturer has to ensure a safe environment.
- This equipment must be installed and used in accordance with Delem's specifications. The guarantee on the equipment is invalidated in the event of improper installation and/or use of this equipment.
- The General Terms and Conditions of Delivery of Delem shall apply to this product. These conditions are available from Delem on request.
- This manual does not entitle you to any rights. Delem reserves the right to change this manual without prior warning.
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## Part I - Hardware description

This section contains the hardware specifications of a Delem control of the DA-Touch series.

---

## 1. Introduction

This manual contains information necessary for installation of a DA-Touch control. Such a control is the heart of a pressbrake control system with which a synchronised pressbrake machine is controlled.



Figure 1.a

A DA-Touch control combines different tasks in one unit:

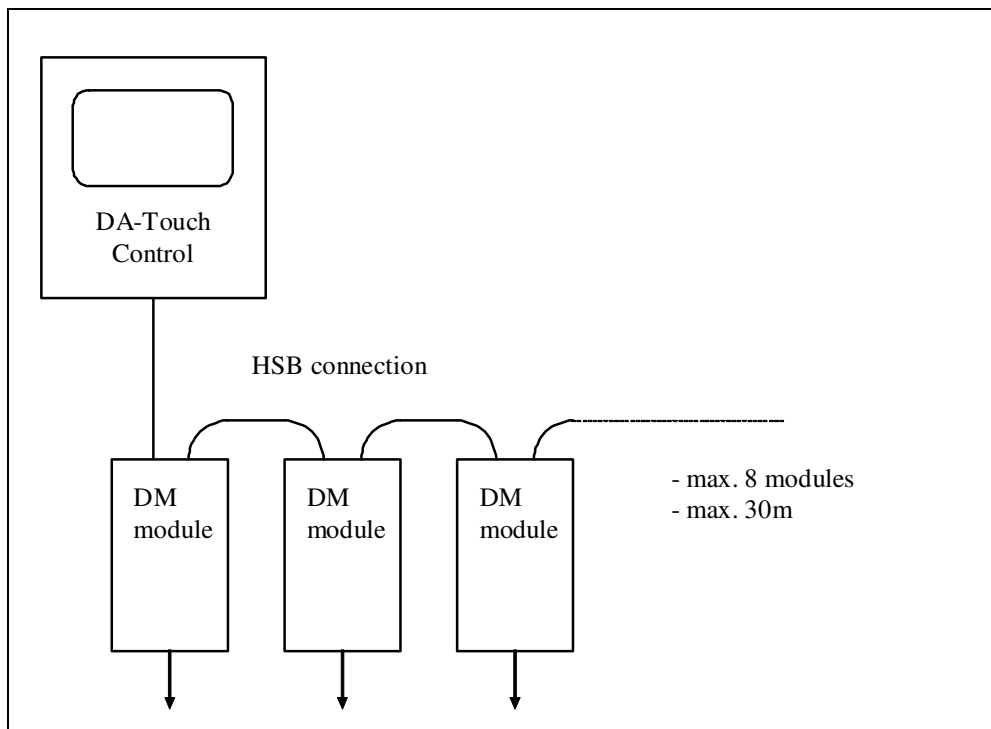
- programming products and tools;
- axis control during bending;
- adjustment of machine settings.

Product programming and control operation is described in the user manual [4,5] of the relevant control model.

Pressbrake control and system I/O between the control and the machine is carried out with the help of the DM modules. This is explained in chapter 2 of this section.

## 2. System I/O

The system I/O between the DA-Touch control and the machine is carried out by the DM modules. These modules are connected to the DA-Touch control by means of the High Speed Bus (HSB). The meaning of all I/O signals is described in the machine parameter manual of the Delem controls.



**Figure 2.a**

The maximum allowed number of modules for the HSB is 8. The total length of HSB cable on the bus may not be longer than 30 metres. If more modules are required on the system then a second, optional HSB link can be enabled through a software option.

Before a module can be used to control an axis, it must be connected to the control and be recognised as a valid DM module. The procedure to install DM modules in the system and assign axes to those modules is described in the machine parameter manual of the Delem controls [1].

Specifications of all the DM modules can be found in the Delem modusys manual [2].

---

## 3. Specifications

### 3.1. Physical dimensions

For the dimensions of the DA-Touch control, see the included drawings at the end of this section.

The following environment specification values are valid for every DA-Touch control:

Ambient temperature	0 - 50°C <b>Warning:</b> Avoid long-term exposure of the control to direct sunlight. Otherwise, the temperature inside the control will rise above tolerance levels. Operation of the control should be carried out indoors.
Storage temperature	min. -10°C max. 70°C
Relative humidity	max. 90 % non-condensing
EMC	designed and built to meet the following standards: <ul style="list-style-type: none"><li>• EN50081-2</li><li>• EN61000-6-2</li></ul>
Enclosure	Designed and built to meet the requirements for IP54 standard.



## 3.2. Technical specifications

Power supply	18 - 28 VDC 75W
Display	LCD/TFT 1280 x 1024 Fault tolerance: - total of 15 pixels defect - max. 4 pixels defect within 10 mm radius - max. 10 non-white pixels in white screen - max. 10 non-black pixels in black screen
Interfaces	2 x HSB 2 x RS-232 2 x USB 1 x 10/100 baseT
disk drive(s)	CompactFlash card, 1GB (DA-66T) or 2GB (DA-69T)
emergency stop button	Rated insulation voltage: 250 V AC/DC Rated peak voltage Uimp: 2.5 kV Rated operating current Ie: • AC 15 B300 3A / 120V, 1.5A / 240V; Ithe : 5A • DC 13 Q 300 0.55A / 120V, 0.27A / 240V; Ithe : 2.5A Degree of pollution: 3 Positive opening travel: > 3 mm Actuation speed: 5 ... 1000 mm / s Class of protection: II

---

## 4. Spare parts

### 4.1. Introduction

The table on the next page gives an overview of the available spare parts for the DA-Touch controls. The next chapter contains an exploded view of a DA-Touch control, in which the same spare part numbers are used.

**Note:**

When ordering spare parts, always mention control type, model number and serial number of the control for which the spare parts are meant.

### 4.2. Spare parts overview

Spare part number	Description
D-5185-002	Mainboard assembly, including Fan, DA-66T
D-5185-003	Mainboard assembly, including Fan, DA-69T
D-5169-005	Fan
D-5191-002	LCD + Touchscreen
D-EST-T	Emergency Switch
D-5196-001	Start button
D-5196-002	Stop button
D-5189-001	Handwheel set
D-6159-002	Back cover
D-5195-001	Sidebars + Grip
D-6160-003	OEM Panel

## 5. Schematics

### 5.1. DA-Touch info

**Location sticker product & serial number (backside)**

**Type & Serial number:**

Type:	DA-66T
Serial number:	123456
MADE IN THE NETHERLANDS	

Controller	Number from:
DA-66T	8075-001
DA-69T	8076-001

**Back Cover**  
D-6159-002 (DA-66T / DA-69T)

**Mainboard + Heatsink assembly \***  
D-5185-002 (DA-66T)  
D-5185-003 (DA-69T)

**LCD + Touchscreen \***  
D-5191-002 (DA-66T / DA-69T)

**Fan \***  
D-5169-005 (DA-66T / DA-69T)

**OEM panel**  
D-6160-003 (DA-66T / DA-69T)

**Emergency Switch + Knob \***  
D-ES-T (DA-66T / DA-69T)

**Handwheel + Encoder \***  
D-5189-001 (DA-66T / DA-69T)

**LCD + Touchscreen \***  
D-5191-002 (DA-66T / DA-69T)

**Start knob + switch \***  
D-5196-001 (DA-66T / DA-69T)

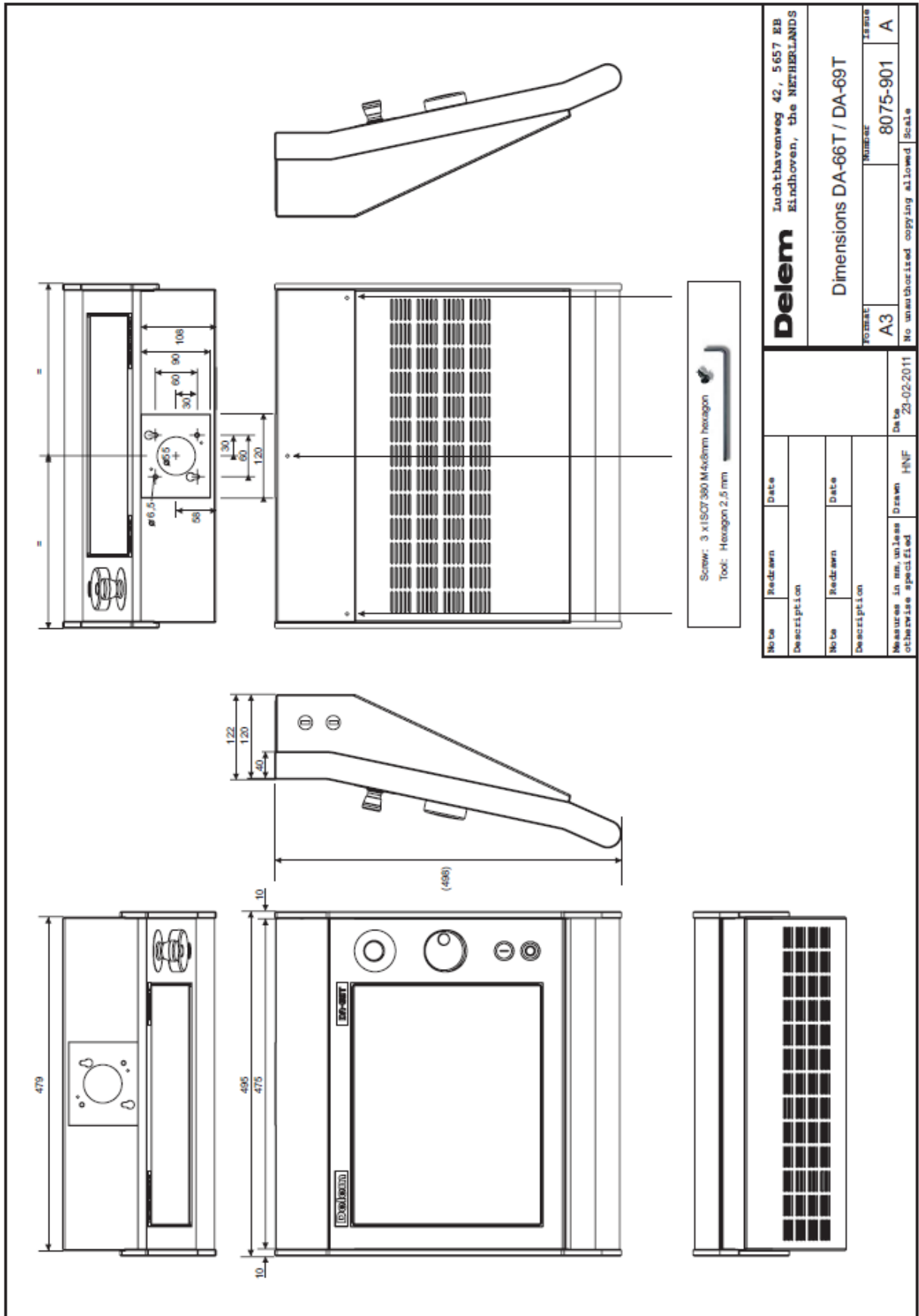
**Stop knob + switch \***  
D-5196-002 (DA-66T / DA-69T)

**Sidebar left + Grip + Sidebar point \***  
D-5195-001 (DA-66T / DA-69T)

No. in	Revision	Date
Description		Date
No. in	Revision	Date
Description		Date
Measures in mm, unless drawn otherwise specified		
		HNF

* Included	
Date	02-03-2011

<b>Delem</b> Luchthavenweg 42, 5657 EB Eindhoven, the NETHERLANDS	
Field Replaceable Units DA-66T / DA-69T	
FORMER	NUMBER
A3	DA-Touch
8075-902	
A	
No unauthorized copying allowed Scale	



**Option: OP-T-BM**

**A** Screw: ISO7380 M6x8mm hexagon 4x  
Tool: Hexagon 2,5 mm

**B** Screw: DIN7981 M5x16mm hexagon 4x  
Tool: Hexagon 3,0 mm

**Use adapter plate OP-WAD in case of other mounting dimensions:**

- 95 x 95 mm
- 120 x 120 mm
- 135 x 135 mm

Weight: 15 kg

1

2

3

4

5

6

7

8

9

10

11

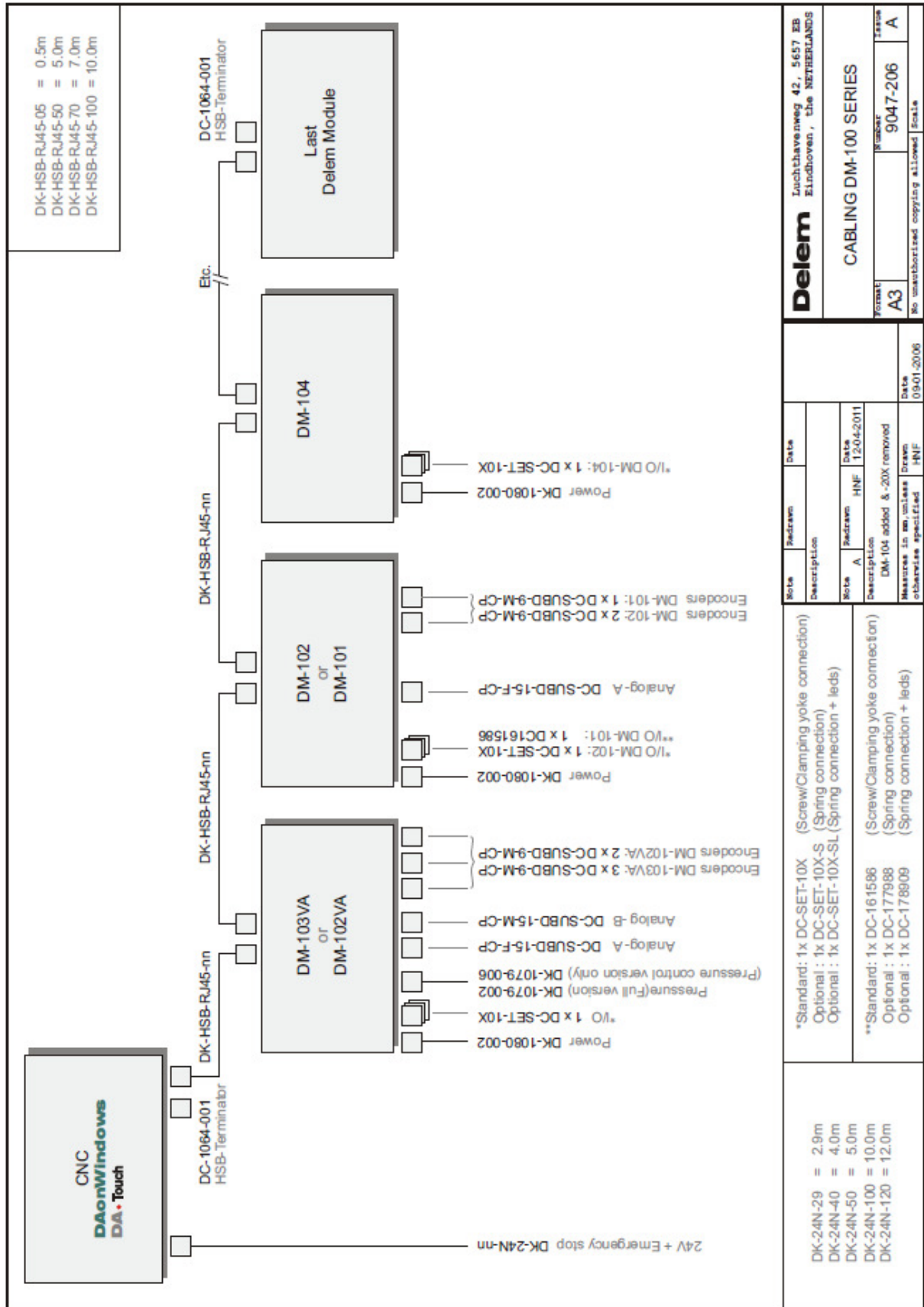
**Delem** Luchthavenweg 42, 5657 EB Eindhoven, the NETHERLANDS

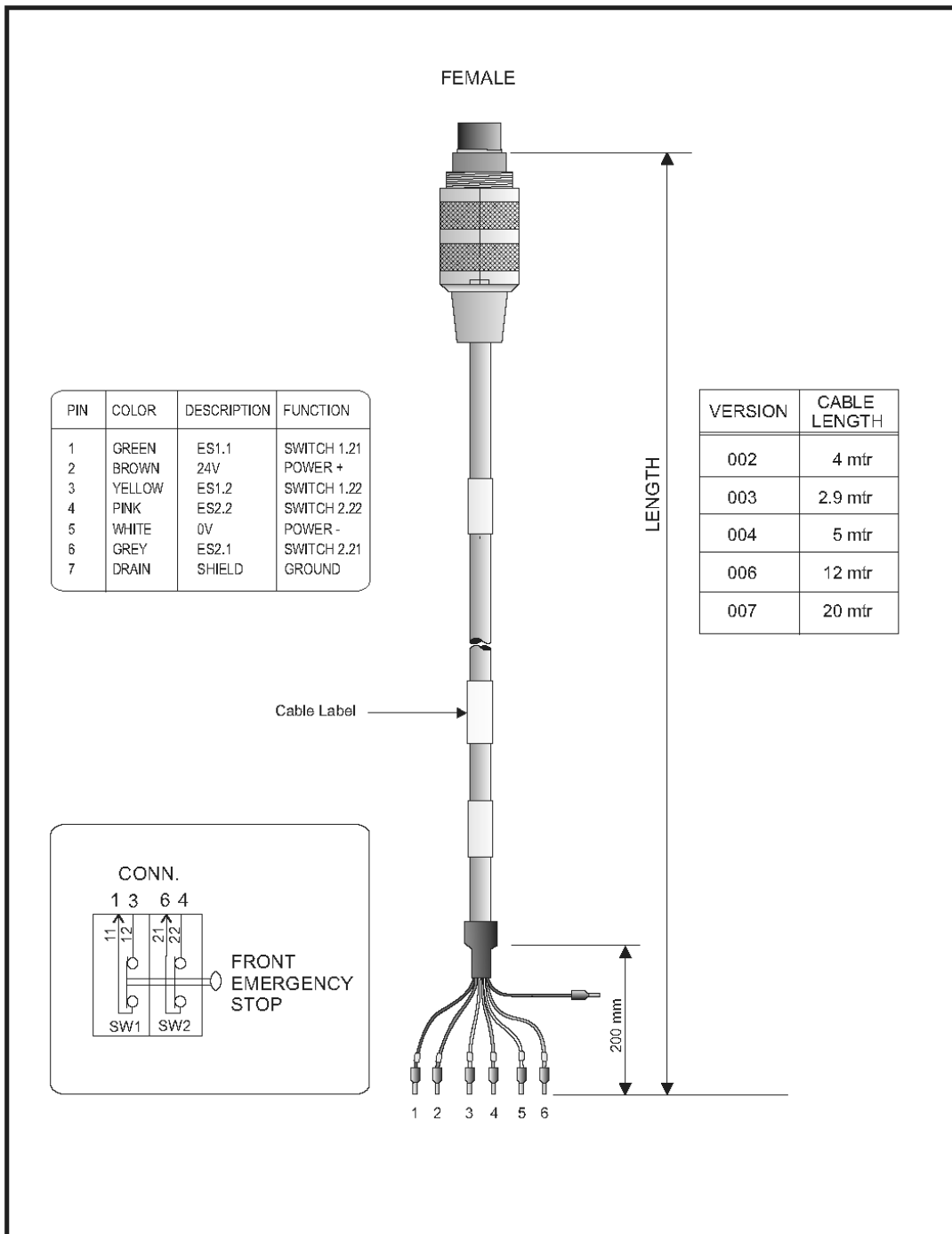
Optional rear mounting DA-66T / DA-69T  
Dimensions & Instruction

Format	A3	Number	8075-904	Issue	A
No unauthorized copying allowed/Scale					

Note	Redrawn	Date	Date
Description			
Note	Redrawn	Date	Date
Description			
Measures in mm unless otherwise specified		Drawn	HNF
		Date	02-11-2011

## 5.2. Miscellaneous





Note	Redrawn	Date		<b>Delem</b>	Luchthavenweg 42, 5657 EB Eindhoven, the NETHERLANDS		
Note	Redrawn	Date					
Note	Redrawn	Date					
Description					<b>DA6XW Power extern 24V + Emergency Stop</b>		
Measures in mm, unless otherwise specified			Drawn HNF	Date 15-06-2006	Format A4	Number 1128-902	Issue E1
No unauthorized copying allowed						Scale	





## Part II - Machine settings

This section will describe the necessary settings of a DA-Touch control regarding machine settings.

A lot of machine settings can be modified through the Windows environment. Windows operation should be done by an authorised person, who knows how to operate Windows.

---

## 1. The machine parameters

The adjustment of machine parameters and axis parameters is done in the Delem application. This procedure is described in detail in the Delem machine parameter manual [1].

**Note:**

Installation of options is not done within the Delem machine parameters menu. See chapter 3 for more information about option installation.

**Note:**

The software update procedure is not done within the Delem machine parameters menu. See chapter 2 of this part for more information about the update procedure.

## 2. Windows tasks

### 2.1. Windows introduction

To access Windows function in a DA-Touch controller, a keyboard and mouse should be connected to a USB port. To open the Windows start menu, press the Windows button on the USB keyboard.

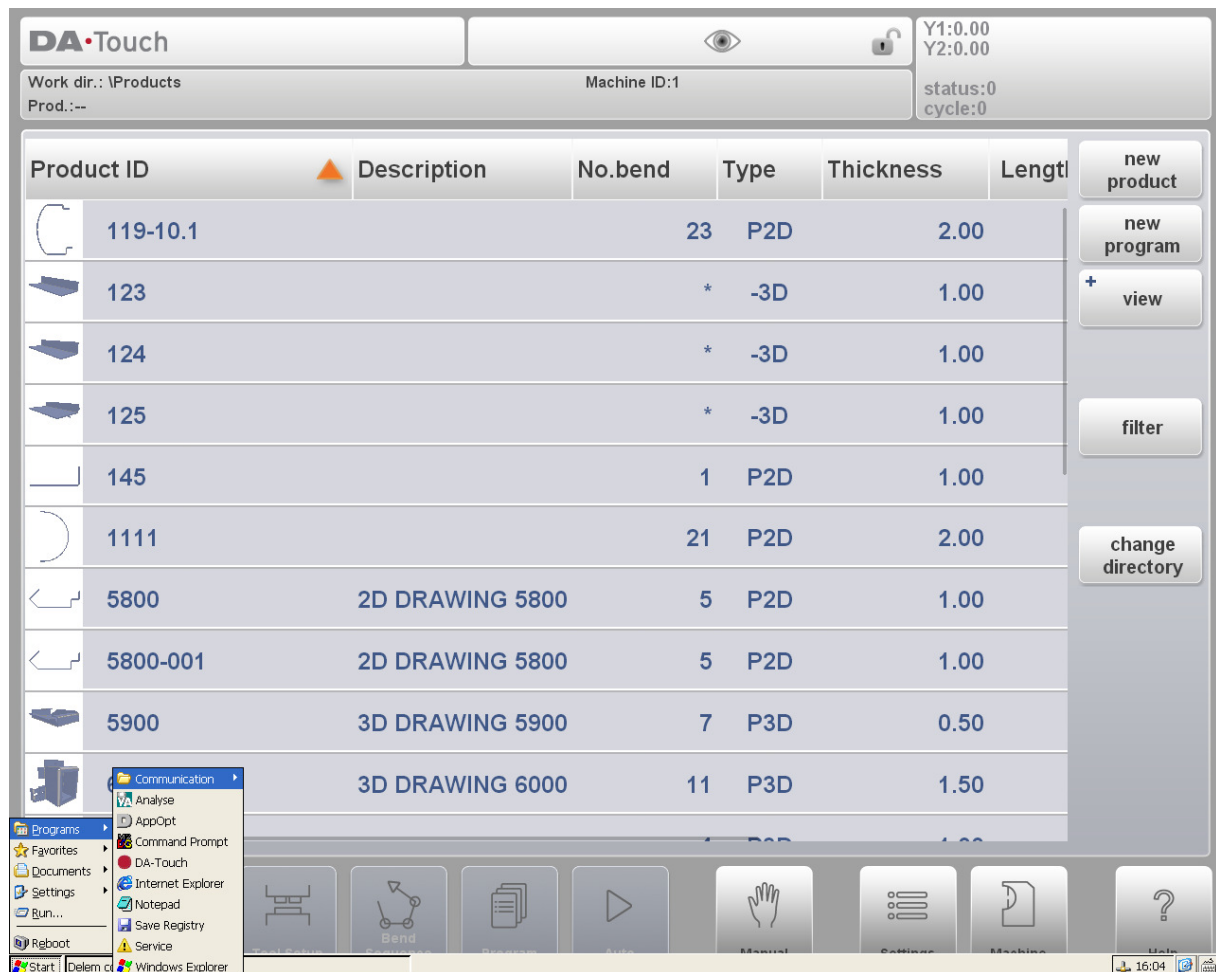


Figure 2.a

To switch to windows without opening any application, click on the pencil symbol in the lower right corner of the screen. The Delem control application is switched to the background, but remains active.

To activate a certain application, click on the Start button in the lower left corner of the screen. Choose an application from the list. For many of the machine tasks this procedure will be necessary, so be sure to familiarise yourself with this routine.

The 'Reboot' command right above the Start button serves to restart the control. It will be indicated in this manual when this is necessary.

---

## 2.2. Log-in

For several operations and functions in the Windows environment it is necessary to log-in first with the correct access level. If not logged in with the appropriate level the function will not be carried out or an error message will appear.

To login, tap on the key symbol in the DA-application



Enter one of the access codes:

Level 0: 741

Level 1: 14753

Level 2: 32157

Level 3: 25789

The actual access level will be indicated near the key lock symbol



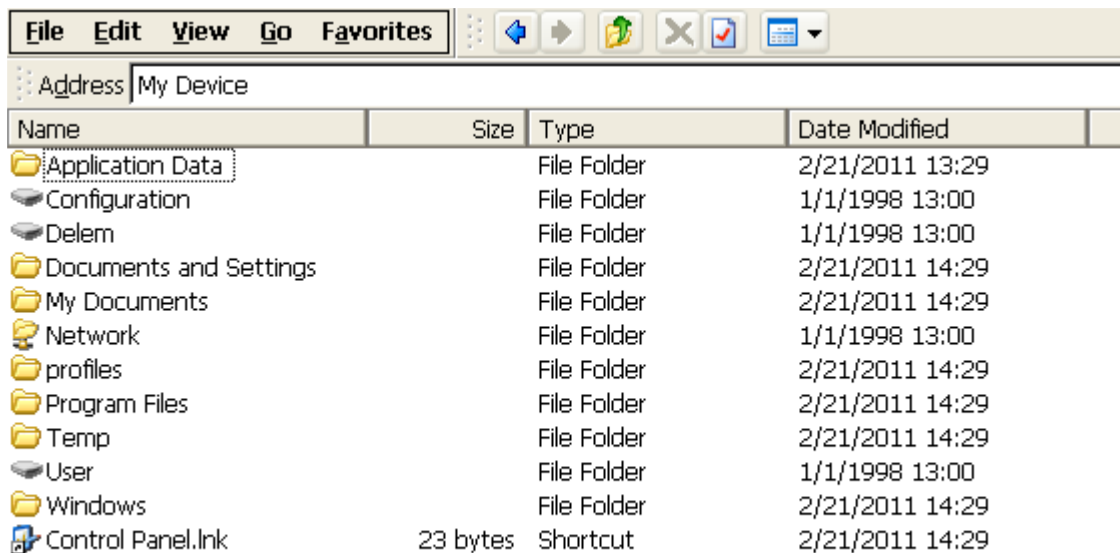
- After a restart/reboot of the control the access level will still be active.
- The access level is reset when the control is switched off.
- The mentioned access codes are the same codes as for access to the machine parameters menu.

## 2.3. Directory structure

The data on the control has been organised into drives and directories, like on a computer. Within the graphical interface of Windows, the term 'Folder' is also used for a directory. Most directories on the Windows desktop are volatile directories, which means they are lost when the control is shut off and are re-created when the control is started. The following drives are permanent, because it refers to the CompactFlash card of the control:

Delem  
Configuration  
User

This CompactFlash card is the internal storage device of the control. Any data that should be saved for later use should be stored in one of the drives that are located on the CompactFlash.



Name	Size	Type	Date Modified
Application Data		File Folder	2/21/2011 13:29
Configuration		File Folder	1/1/1998 13:00
Delem		File Folder	1/1/1998 13:00
Documents and Settings		File Folder	2/21/2011 14:29
My Documents		File Folder	2/21/2011 14:29
Network		File Folder	1/1/1998 13:00
profiles		File Folder	2/21/2011 14:29
Program Files		File Folder	2/21/2011 14:29
Temp		File Folder	2/21/2011 14:29
User		File Folder	1/1/1998 13:00
Windows		File Folder	2/21/2011 14:29
Control Panel.lnk	23 bytes	Shortcut	2/21/2011 14:29

**Figure 2.b**

The three drives mentioned above contain the following data:

### Delem

The \Delem drive contains the DA-Touch application software, including:

- DA application
- Windows kernel
- DM-module software
- Default sequencer
- KO-tables

The contents of this drive cannot be modified; all data is read only. The content is only modified when a software update is installed; see chapter 2.7, Update control.

---

## **Configuration**

The \Configuration drive contains machine (manufacturer) specific data. The machine parameter settings are stored in the folder

\Configuration\Delem\Machine

Other specific OEM files, like a sequencer, should also be stored in the \Configuration drive. See also chapter 3.4.

## **User**

The \User drive contains all the user specific data, like product files and tools. These are located in the following folders:

\User\Delem\Products

\User\Delem\Tools

## 2.4. Important files

A lot of control settings are stored in files, which are located on the hard disk of the control. This is the case for the Delem application as well as for the Windows platform. Whenever the control is (re)started, the software will search for these files and retrieve the last saved settings.

If for any reason the settings are mixed up, it is possible to delete these files. At the next start-up, the control will assume its default settings. This should only be done as a last remedy, if the control does not function properly anymore.

If the settings are correct and you do not wish unauthorised people to change them, it is possible to set these files as read-only files. This way settings cannot be changed. To set the file to read-only, proceed as follows:

- open the Windows Explorer
- browse to the correct location (directory) to find the file
- click on the desired file
- open the File menu and select 'properties'

A window like the one shown below should appear:

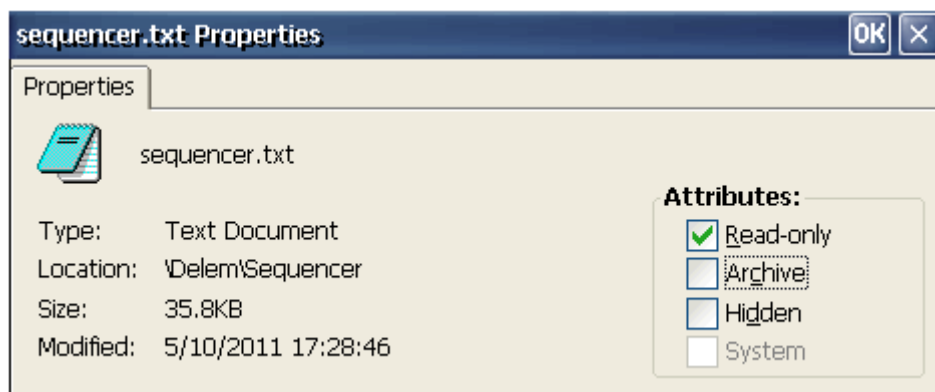


Figure 2.c

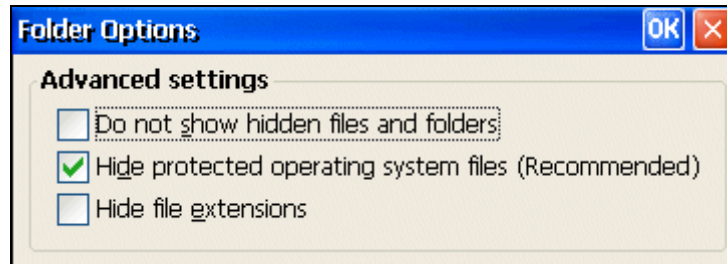
In the 'attributes' section of the window, mark the setting 'Read-only' and click on 'OK' to save the setting. The file cannot be altered anymore.

In the example above, the properties of the sequencer file are shown. This means that changes made in the sequencerfile will be ignored.

---

Another possibility is to mark files as 'hidden'. A hidden file is not shown in the Windows Explorer and as such it is protected against unauthorised user actions. A hidden file can also not be opened from within Windows applications, such as Wordpad. The Delem application can still open a necessary settings file, even though it is hidden.

If an authorised person wishes to access hidden files, the Windows Explorer has the setting to view all files. From within the Explorer, open the View menu and select 'Options...'. The following window appears:



**Figure 2.d**

**Do not show hidden files and folders**

The file Explorer will not show files that have been marked as hidden.

**Hide protected operating system files**

The Explorer will not show files that are used by the Windows Operating system.

**Hide file extensions**

The Explorer will not show the three-digit extension in file names.

On the following pages a list of files is given that contain settings for the Windows Operating system and for the Delem control application.



## Files with **Delem control settings:**

### BENDALLOWANCE.TAB

Location: \User\Delem\Tables

This file contains the bend-allowance table with X-axis corrections for the control. If such a file is present, the correction points can be edited in the Settings menu. See also the Delem manual 'Bend-allowance table instructions' for more information how to program a bend-allowance table.

### ANGLECOR.CDB

Location: \User\Delem\Tables

File with the angle correction database. See the operation manual of the control for more information about the angle correction database.

This file contains angle corrections for bends and is maintained by the Delem application.

### SPCORxx.TAB

Location: \Configuration\Delem\Machine\Tables

These files contain spindle correction tables for correction of axes positions. See the Delem machine parameter manual for more information about spindle corrections.

### GAU.FINGER x.dld

Location: \User\Delem\Tools

Text file with backgauge finger description. With these files, specially shaped backgauge fingers are defined. The shape of these fingers can be viewed in the graphical visualisation mode nad the bend sequence menu of the control.

### MACHINEPARAMETERS.DLD

Location: \Configuration\Delem\Machine

This file contains all machine parameter settings of the control.

### USERPREFERENCES.DLD

Location: \User\Delem\Config

This file contains the user settings, which are programmed in the Settings and Machine menus.

### NONVOLATILE.BIN

Location: \User\Delem\Config

Contains the momentary Delem application settings: manual mode parameters and active program. In case a loaded program causes problems with operation, you could delete this file. On the next restart, manual mode parameters will have been cleared and no bend program will be active.

### KO\_TAB.BIN

Location: \Configuration\Delem\Machine

Contains the active KO-Table of the Delem application. See also section 3.2.

### COLOURS.INI

Location: \Delem\Style\Default\1280x1024 (Delem default)

\Configuration\Delem\Style\Default\1280x1024 (OEM)

Contains colour settings for the DA application. See also section 3.5.

### LOGO.PNG

Location: \Delem\Style\Default\1280x1024 (Delem default)

---

\Configuration\Delem\Style\Default\1280x1024 (OEM)  
Picture file, shown in the main menu of the control application. This picture can be replaced or modified, for example by a company logo. See also section 3.6.

Files with **Windows settings**:

**AUTOEXEC.BAT**

Location: \Delem\Boot

\Configuration\Delem\Boot (OEM)

File with commands, which are executed at start-up of the control. This file can be edited through the utility 'Notepad'. See section 2.8 for more information.

**USER.REG**

Location: \User\Delem\Boot

File with 'registry settings'. Settings from the Windows OS (background colour, network settings) are stored in this file. See section 2.5 for more information.

**CONFIG.REG**

Location: \Configuration\Delem\Boot

File with 'registry settings'. Settings from the Windows OS (background colour, network settings) are stored in this file. See section 2.5 for more information.

## 2.5. Windows Registry

Within the Windows OS, several control settings can be adjusted, such as mouse sensitivity, etc. Normally, these Windows settings are reset to factory defaults when the control is restarted or switched off.

If you wish to keep these settings permanently, it is possible to save these settings through the utility 'SaveRegistry.exe'. This utility can be started from the Windows start menu, Programs->Save Registry. All current settings within Windows are stored and will be retrieved on the next start-up.

The settings are stored in the file 'user.reg', which is located in the directory '\User\Delem\Boot'. When Save Registry is carried out while logged in with level 1 or higher, the setting will be stored in 'config.reg' in the directory '\Configuration\Delem\Boot'.

At start-up, both registry files are checked and the settings from both files will be used (merged).

If for some reason the settings are not acceptable anymore then delete this file. On the next start-up the factory defaults will be restored.

Clearing the Registry can also be carried out through the Rescue Procedure. See section 2.10 about the Rescue Procedure.

### **Note:**

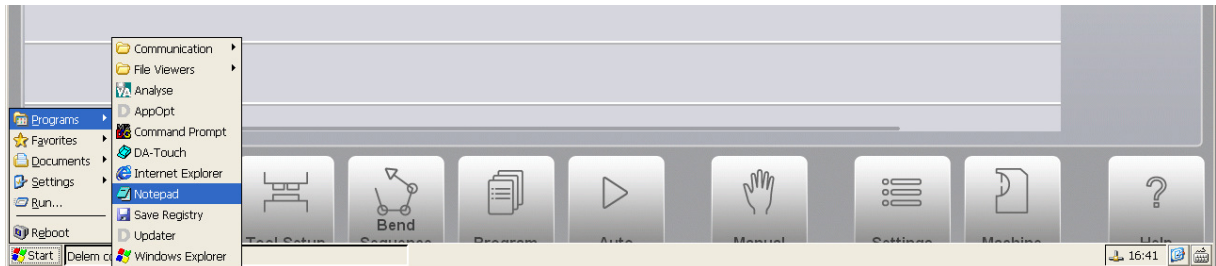
Not all settings of the Internet Explorer are saved in the registry. The Start Page of the Explorer is saved in the registry. Favourite website addresses, however, are saved in the directory \Windows\Favorites. This directory is lost after power-down. To save these settings you should copy the files in this directory to the control hard disk. After start-up, these files can be copied back to the directory 'Favorites'.

Files can be copied automatically after start-up by modifying the file 'autoexec.bat'. See section 2.9 about this file.

---

## 2.6. The Notepad program

The program Notepad can be used to edit plain textfiles on the control. The program can be activated through the Windows Start menu:



Another possible method is to open a suitable file by double-clicking on it with the mouse. A file is suitable if it has a notepad icon.

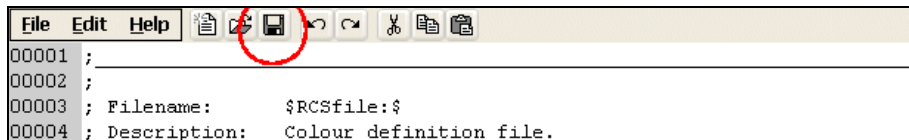


colours.ini

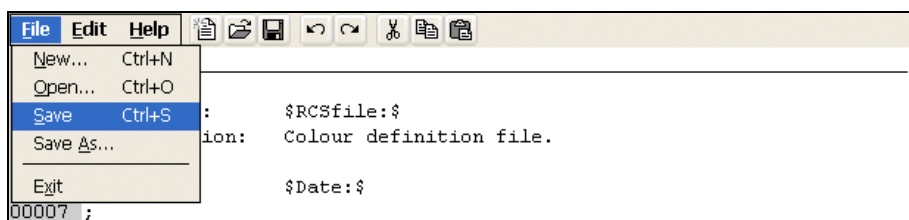
The control contains several types of textfiles for various purposes. If a file can be edited with Notepad, it is shown with a Notepad icon.

If a file has been opened, it can be edited as desired. After a file has been changed, there are two ways to save a file:

- Use the 'Save' button on the toolbar.



- Use the 'Save' command from the File menu.



The following files can be edited with Notepad:

File	Meaning
sequencer.txt	Sequencer file with PLC instructions. See also section 3.4.
colours.ini	File with colour settings of the Delem control. See also section 3.5.
autoexec.bat	Batchfile with commands which are executed at start-up of the control. See also section 2.9.

## 2.7. Networking

### 2.7.1. Configuration

With the network functionality, the Delem application is able to copy or retrieve files to or from a network. The available network locations for the Delem application must be arranged on the Windows platform.

The procedure for offering a network takes roughly four steps:

1. establish network for the Windows platform
2. define network paths for Windows
3. check the network availability on the control
4. save the settings (registry)

**Step one** should be arranged by the network administrator. This involves all common tasks like connecting the control to a network, select the correct network protocol for Windows and offer a shared drive.

**Step two** must be done on the control. Use the Windows Start menu to activate a command prompt. Type the following command:

```
net use <path name> <network path>
```

<path name> refers to the name by which the location will be addressed in the control. This name will also be used by the Delem application. This name can be any identifier you wish. <network path> refers to the pathname of the network location. This path must be arranged by the system administrator.

Example:

```
net use machine1 \\pc_001\shared
```

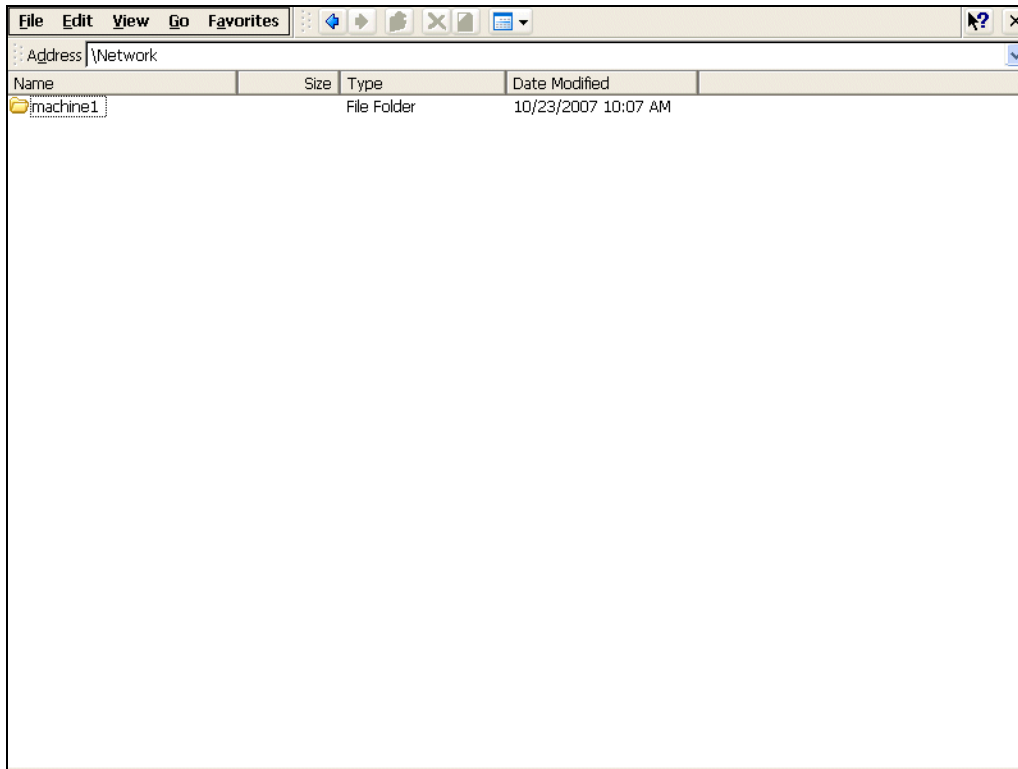
In this case 'machine1' is the name that will be used on the control. The name 'pc\_001' refers to the name of the computer that is used for product storage, 'shared' is the name of the folder that is shared on this computer.

When this command is entered, you will be prompted for a user name and password before you get access to the network. Instead of awaiting this prompt, it is also possible to enter this data directly into the command line as follows:

```
net use <path name> <network path> /user:<user> /password:<password>
```

---

When a network path has been mounted successfully, this path can be viewed in the windows environment. On the Windows desktop, double-click the icon 'My Device' to start the Windows Explorer. Then click on the folder 'Network'. Within this folder, the available network paths are listed.



**Figure 2.p**

**Step three** is done from within the Delem application. Choose 'Backup/restore in the Settings menu. Inside this screen, choose 'backup products'. From the backup menu, use the function 'backup directory' to check if a network path is available for backup operations.

**Step four** is to make the network settings persistent. These settings are store in the registry. To save the settings in the registry, run Programs->Save Registry from the Windows start menu.

### **2.7.2. Remove a network mapping**

To remove an existing network mapping, perform the following steps:  
Activate the command prompt and type the following command:

```
net use <path name> /d
```

Run Programs->Save Registry from the Windows start menu.

### 2.7.3. Network directory structure

When a network connection has been established, it is possible to store or retrieve data from a network.

When networking is only carried out with the Windows Explorer, it is not necessary to mount a network path as described before. With proper authorisation, it is possible to copy all types of files manually. Creating network paths is necessary to enable the DA-application to access network locations.

The user can create and select other subdirectories for storage. This is described in detail in the operation manual of the relevant control type. When products have been stored, the full pathname of its directory can be:

```
\network\machine1\products
```

And for tools:

```
\network\machine1\tools
```

You can check this by activating the Windows Explorer and browsing to the 'network' directory.

---

## 2.8. Editing the autoexec.bat

The file 'autoexec.bat' is a standard file in the Windows system. Any command that can be executed from the command prompt, can also be put in this 'batch file'. Whenever the control is started or rebooted, the system will first look for the special batch file 'autoexec.bat'. Any command that is written down there will be executed by the system automatically.

Common tasks for such a file can be to connect to a network and copy files to or from the network. In the standard file, one task has been implemented: activate the Delem application. Other tasks can be added if required.

To edit this batch file, the control is equipped with the application Notepad. This program can be started from the Windows Start menu. You can also select the file, open the File menu and select Edit.

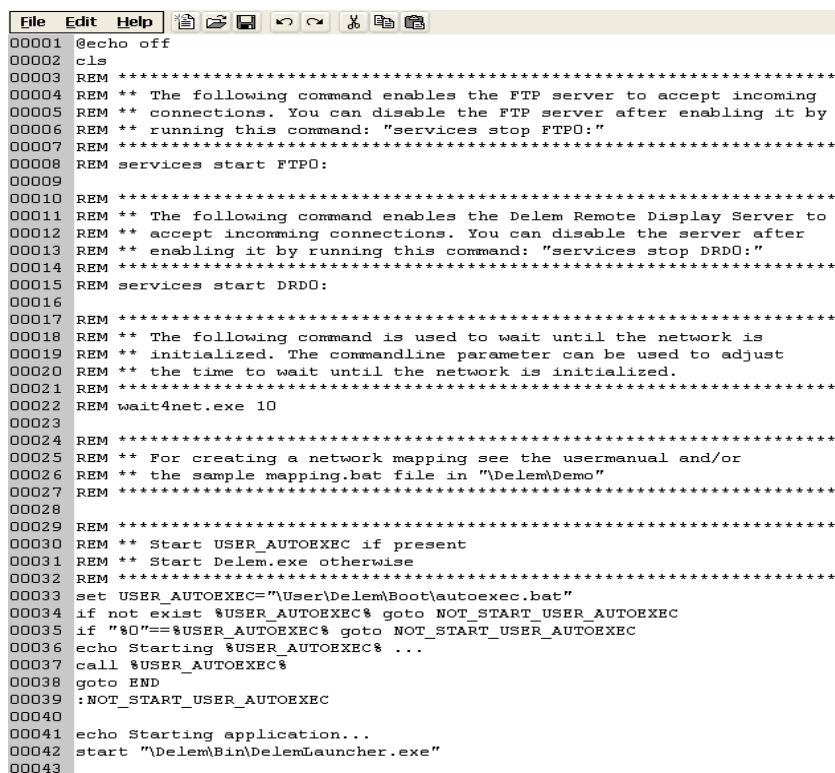
The default autoexec.bat file is located in the folder \Delem\Boot. Files in the \Delem drive are read-only and can not be modified. To be able to modify it, make a copy of the file and store it in \Configuration\Delem\Boot. Now this file can be edited if you are logged in with level 1 or higher.

Another option is to make a new autoexec.bat file with the commands you want to add and store this file in \User\Delem\Boot. This file will be executed after autoexec.bat from \Delem\Boot or \Configuration\Delem\Boot has been completed.

### Note:

Upon delivery of the control or after installation of new software, the file 'autoexec.bat' may be set to 'read-only' for safety purposes. If that is the case, it cannot be edited. See section 2.4 on how to change file properties.

When the file autoexec.bat is opened, the following screen appears:



```
00001 @echo off
00002 cls
00003 REM *****
00004 REM ** The following command enables the FTP server to accept incoming
00005 REM ** connections. You can disable the FTP server after enabling it by
00006 REM ** running this command: "services stop FTPD:"
00007 REM *****
00008 REM services start FTPD:
00009
00010 REM *****
00011 REM ** The following command enables the Delem Remote Display Server to
00012 REM ** accept incoming connections. You can disable the server after
00013 REM ** enabling it by running this command: "services stop DRDO:"
00014 REM *****
00015 REM services start DRDO:
00016
00017 REM *****
00018 REM ** The following command is used to wait until the network is
00019 REM ** initialized. The commandline parameter can be used to adjust
00020 REM ** the time to wait until the network is initialized.
00021 REM *****
00022 REM wait4net.exe 10
00023
00024 REM *****
00025 REM ** For creating a network mapping see the usermanual and/or
00026 REM ** the sample mapping.bat file in "\Delem\Demo"
00027 REM *****
00028
00029 REM *****
00030 REM ** Start USER_AUTOEXEC if present
00031 REM ** Start Delem.exe otherwise
00032 REM *****
00033 set USER_AUTOEXEC="\User\Delem\Boot\autoexec.bat"
00034 if not exist %USER_AUTOEXEC% goto NOT_START_USER_AUTOEXEC
00035 if "%0"==%USER_AUTOEXEC% goto NOT_START_USER_AUTOEXEC
00036 echo Starting %USER_AUTOEXEC% ...
00037 call %USER_AUTOEXEC%
00038 goto END
00039 :NOT_START_USER_AUTOEXEC
00040
00041 echo Starting application...
00042 start "\Delem\Bin\Delem\launcher.exe"
00043
```

Figure 2.q



The file can now be edited. When finished, click on the 'Save' button to save the changes and close the file. If you wish to abort the operation, close the file. When the program asks to save changes, choose 'No'. The file will be closed and the changes will be lost.

Lines in the file that start with 'REM' are considered as comment.

At the end of the file, the Delem application is started through the instruction:

```
start "\Delem\Bin\DelemLauncher.exe"
```

This will ensure that the control automatically activates the Delem application at start-up of the control.

---

## 3. DA Control settings

### 3.1. Introduction

In this chapter some functions are discussed with which the functionality of the DA application is modified.

---

## 3.2. Add a KO-Table

A KO-table is a file containing initial Y-axis control parameter setting for a specific type of hydraulics. A default set of KO-tables is always included in the software. In case a KO-table is needed that is not included yet, it can be added manually. Just copy the file (KO-7xxx.bin) to the following folder:

\Configuration\Delem\Machine

The active KO-table can be selected in the machine parameters menu (General parameters).

**Note:**

To be able to write, delete or modify files on the \Configuration drive you must login with level 1 or higher.

## 3.3. Option installation

### 3.3.1. Request option on the control

It is possible to install software options on the control. Options can be requested at Delem. Options for a DA-Touch control can be purchased at any moment. It is done by buying an 'Option Voucher' for a specific function (3D visualisation, barcode reader etc.). A new option voucher is valid for any DA-Touch control. Hence, it is possible to buy one or more option vouchers and keep them in stock until the option becomes necessary on a control. An option voucher looks as follows:

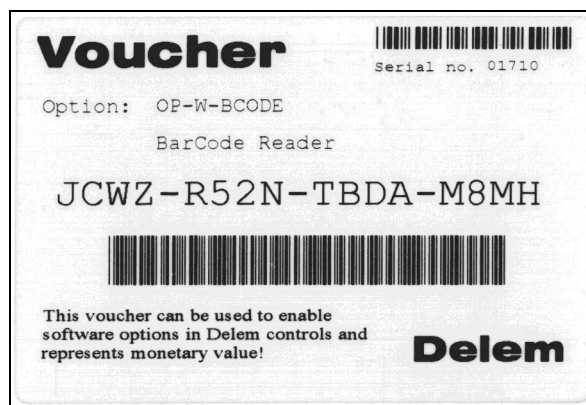


Figure 3.a

At the top, an option identifier and a short description is placed. In the middle, a 16-digit number is placed, divided by dashes. When requesting an option you must enter this number exactly as it is shown, including the dashes.

When an option must be installed on a control, you can take a voucher for the specific function and request the option on the control. Once an option is requested on a control, the control will receive a license for the requested option. From that moment on, the voucher is stored in the option module (DIM), the voucher cannot be used anymore on any other control.

If necessary, the option can be requested many times. Should an option get lost somehow, simply request the same option again for the same control.

The procedure to install an option runs as follows:

- Activate the Windows Start menu
- In the start menu, activate Programs->AppOpt.

When the program has been activated, the following window appears on the screen:

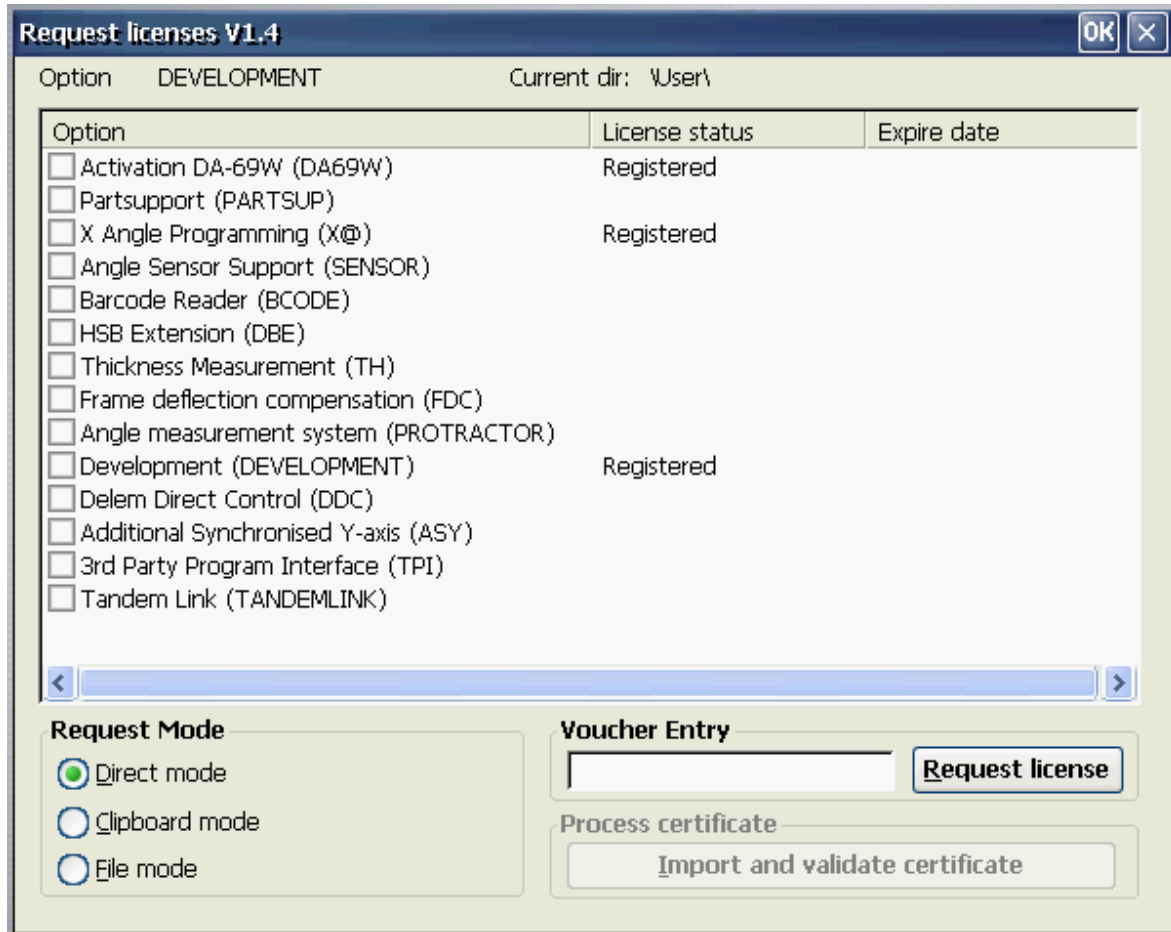


Figure 3.b

At the top of the screen, the ID number of the so called DIM is displayed. The DIM is a small card on which the activated options are stored. It is inserted in the mainboard. On the left side of the screen, a list of possible options is displayed for the control. If an option is already enabled, the word 'registered' is displayed.

The procedure to request an option depends on which mode is chosen. The 'direct mode' is only possible if the control has access to the Internet. If that is not the case, you should choose 'file mode' or 'clipboard mode'.

### Direct mode

To install an option:

- click on its checkbox in the 'option' area;
- select the direct mode in the area 'request mode';
- enter the 16-digit option voucher number in the field 'Voucher entry' and click on the button 'Request license'. When successful, the message 'license successfully imported' appears and the license status of the option will change to 'registered'.
- Click on 'OK' in the top of the window.
- Go to the start menu and choose 'reboot'. The control will restart.

## File mode

To install an option:

- click on its checkbox in the 'option' area;
- select the file mode in the area 'request mode';
- enter the 16-digit option voucher number in the field 'Voucher entry' and click on the button 'Generate UIR': a text file is generated, which contains the code to request a license, a UIR file;
- send the UIR text file to Delem; this is explained in detail in the next paragraph;
- receive the license file from Delem and put it on a USB memory stick;
- in the option program, select the requested option, select 'file mode' and click the button 'import and validate certificate'.
- in the file dialog that appears, select the received license file from the USB memory stick and click 'OK'.
- When successful, the message 'license successfully imported' appears and the license status of the option will change to 'registered'.
- Click on 'OK' in the top of the window.
- Go to the start menu and choose 'reboot'. The control will restart.

## Clipboard mode

To install an option:

- click on its checkbox in the 'option' area;
- select the clipboard mode in the area 'request mode';
- enter the 16-digit option voucher number in the field 'Voucher entry' and click on the button 'Generate UIR';
- activate the Notepad application through the Windows Start menu and use the 'paste' command to insert the UIR text from the clipboard into the document. Save this document as a text file;
- use the UIR text file to request a license from Delem; this is explained in detail in the next paragraph;
- receive the license text file from Delem and put it on a USB memory stick;
- activate the Notepad application through the Windows Start menu and copy the UIR text from the UIR file to the clipboard;
- activate the option program, select the requested option, select 'clipboard mode' and click the button 'import and validate certificate'. The license is now imported.
- When successful, the message 'license successfully imported' appears and the license status of the option will change to 'registered'.
- Click on 'OK' in the top of the window.
- Go to the start menu and choose 'reboot'. The control will restart.

---

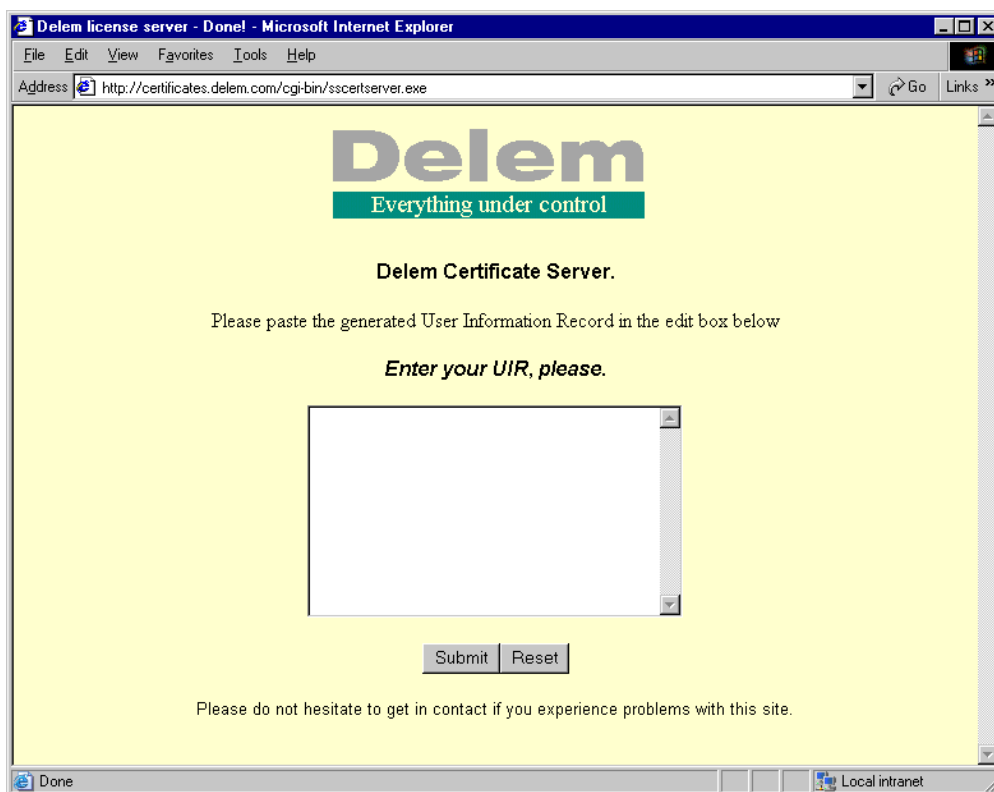
### 3.3.2. Request option code at Delem

The UIR file that was generated by the option program must be send to Delem. From this UIR file a license file is generated. This license file can then be used to enable the option on the control.

There are different ways to send the UIR file to Delem. The simplest (and slowest) way is put the file on a floppy disk and send this floppy to Delem. After a certain period, you will receive a floppy disk with the license file.

Another method is to send the UIR file by e-mail to Delem and request the option. You will receive a license file shortly.

The third method is to use an internet connection and connect to a special Delem license website: <http://certificates.delem.com>.



**Figure 3.c**

On this site, you can directly request the license code. Make sure the generated UIR file is accessible from your internet PC. Proceed as follows:

- open the UIR file and copy all text to the clipboard memory;
- in the browser, paste the clipboard contents into the license field; it should look as follows:





Figure 3.d

- press the button 'submit' below the field;



Figure 3.e

---

You will get a message whether or not the code has been processed successfully.

- the text has changed: copy this new text to the clipboard;
- open a new empty text document, paste the clipboards contents and save this as a new text file: this is your license file;

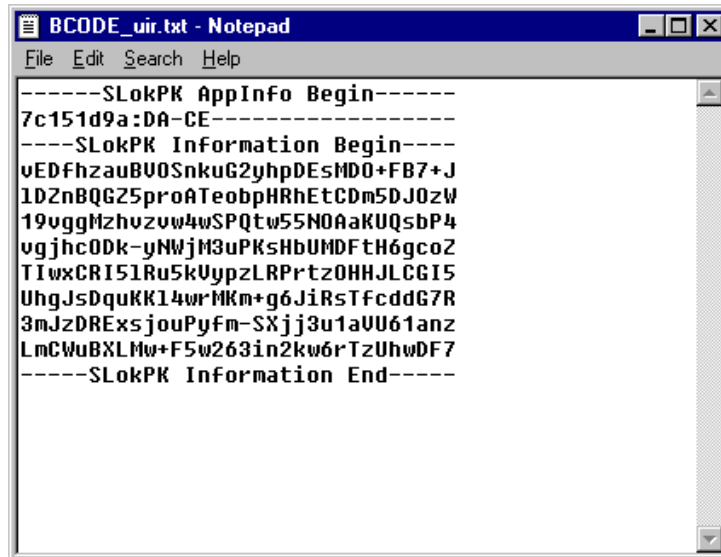


Figure 3.f

- transfer this file to the control (USB memory stick, network);
- resume with the option procedure as described in the previous section.

When a license has been registered, the file with the registration code is stored on the DIM.

### 3.3.3. Delem Identification Module (DIM)

When an option is activated, it is stored in the Delem Identification module (DIM). The DIM is a small card that is inserted in the mainboard. The activated options can be transferred to another control of the same type (DA-66T or DA-69T) by simply inserting the DIM in the new control.

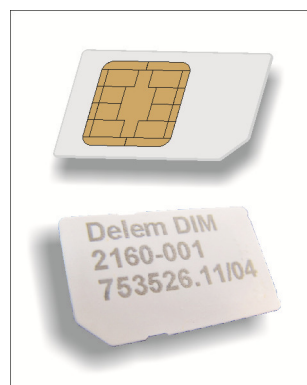


Figure 3.g

### 3.3.4. Disable an option

Once an option is activated, it is registered on the DIM. It is not possible to remove an option from the DIM. If for some reason an option should be (temporary) switched off, it can be disabled with the AppOpt application.

To disable an option, select the option from the list and press the button “Disable license”.

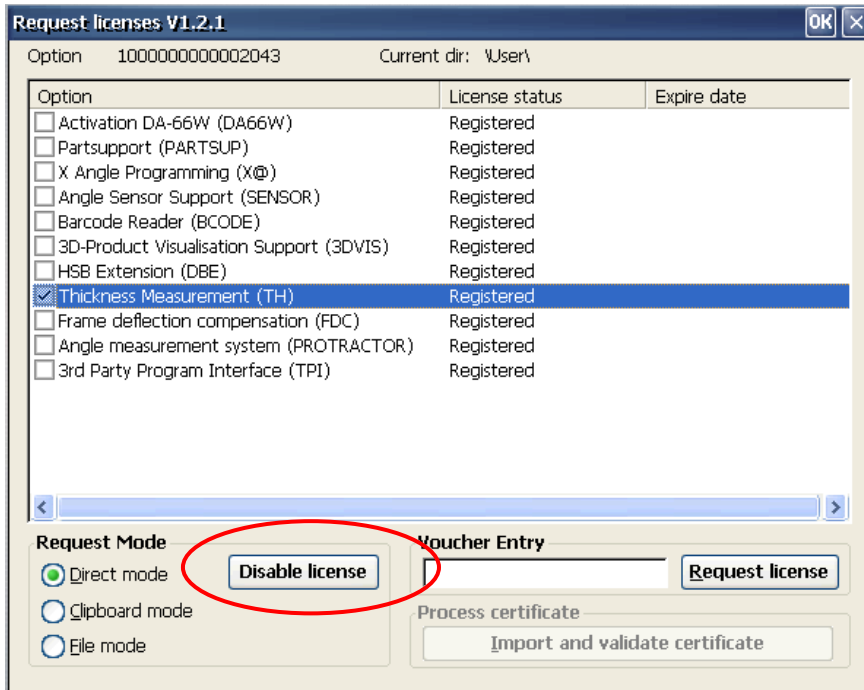


Figure 3.h

To enable the option again, simply select the option and select “Enable license”.

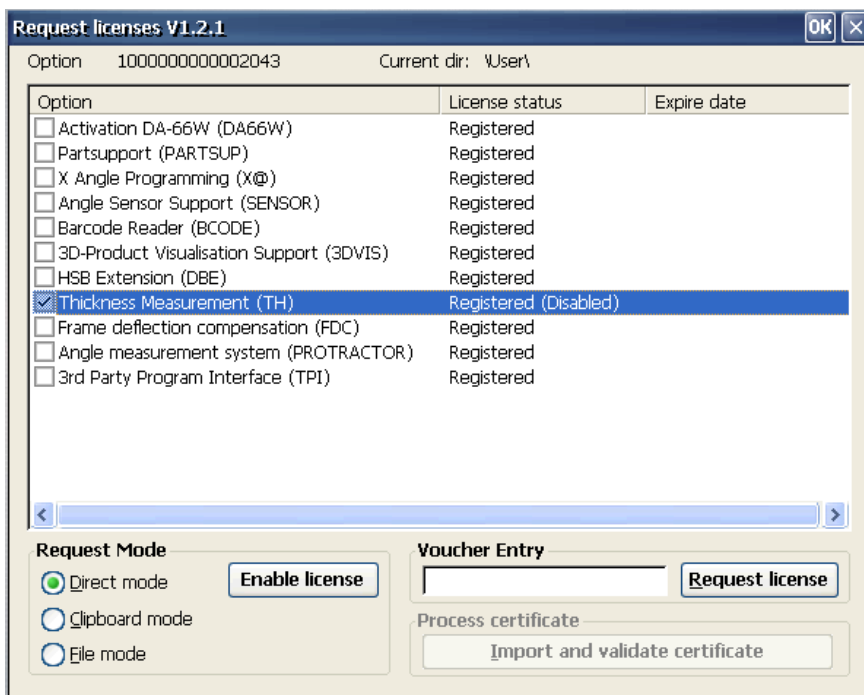


Figure 3.i

---

### 3.4. Sequencer adjustment

The sequencer is the built-in PLC function of the Delem system. The text file with sequencer code is stored on the hard disk of the control, in the file sequencer.txt. The default Delem sequencer is stored in the folder \Delem\Sequencer. This folder also contains the standard sequencer include files, like delem.def.

To be able to modify the sequencer, the sequencer.txt file needs to be copied to the folder:

\Configuration\Delem\Sequencer

It is not necessary, and also not recommended, to copy the standard include files to this folder. But OEM specific include files and sequencer message files must be copied into this folder.

**Notes:**

- To be able to make changes on the \Configuration drive, you must first login with level 1 or higher.
- It is not possible to make modifications on the \Delem drive.

The sequencer source file can be edited with the application Notepad that is built-in on the control. An alternative could be to copy the file to a network location and edit the file from a PC. After that, the file can be copied back to the control.

A new or modified sequencer file will be active after the next reboot of the control.

For a description of sequencer programming we refer to the Delem sequencer programming language manual [3].

## 3.5. Screen Colours

The control screens of the DA application can be modified to meet customer's wishes. This is carried out by modifying a file called 'colours.ini'. Upon delivery, this file contains factory standard values. The default colours.ini file is located in the folder \Delem\Style\Default\1280x1024. To be able to edit the colour settings, perform the following steps:

- Login with level 1 or higher
- Create the sub-folder \Style\Default\1280x1024 in \Configuration\Delem
- Copy the default colours.ini file from \Delem\Style\Default\1280x1024 to \Configuration\Delem\Style\Default\1280x1024
- Now colours.ini can be edited with a text editor, for example the built-in Notepad application.

The file colours.ini consists of keywords and colour index numbers. A keyword refers to a certain area of the control screen, sometimes to a certain page in a menu. The colour in that certain area can be changed by an index number.

The index number represents a certain colour value. There are 256 colour values possible. The standard colours.ini file consists of a collection of lines in which a keyword is linked to a certain colour number.

Example:

```
; part of original colours.ini file
;
; colour definitions:
;
USERRGB1=64,64,64      ; Dark Grey
;
USERRGB5=196,196,196  ; Light Grey
;
SOFTFIELD_TEXT=1
SOFTFIELD=5
;
```

These lines indicate that the text in each active function key must be colour number 1 and the background of the softkey must be colour 5. Before that, colour 1 is defined as dark grey and colour 5 is light grey. Lines that begin with ';' are considered as comment.

All colours can be defined as you see fit. Each colour consists of three components: red, green and blue. A colour is defined as follows:

```
USERRGB<number> = <red>,<green>,<blue>
```

Explanation:

<number>	colour index number
<red>	value of the red component
<green>	value of the green component
<blue>	value of the blue component

Each component can have a value between 0 and 255. The value of all components defines the resulting colour.

More information can be found in the manual 'colours.ini', which can be requested at Delem. Also, it is advised to study the delivered colours.ini file more closely.

---

## 3.6. Company logo

In the upper left corner of the control screen the Delem product logo 'DA-Touch' is displayed.



This logo is a small picture, which is stored on the control disk as a standard PNG image file: logo.png. If necessary, this logo can be replaced or changed to the appropriate company logo:



To install your own logo in the DA-Touch control, perform the following steps:

- Login with level 1 or higher
- Create the sub-folder \Style\Default\1280x1024 in \Configuration\Delem
- Copy the logo.png file with your logo to  
  \Configuration\Delem\Style\Default\1280x1024

The PNG file must meet the following specifications:

- Maximum width: 400 pixels
- Maximum height: 40 pixels
- Bit depth: 32

## 3.7. Backup system / Restore system

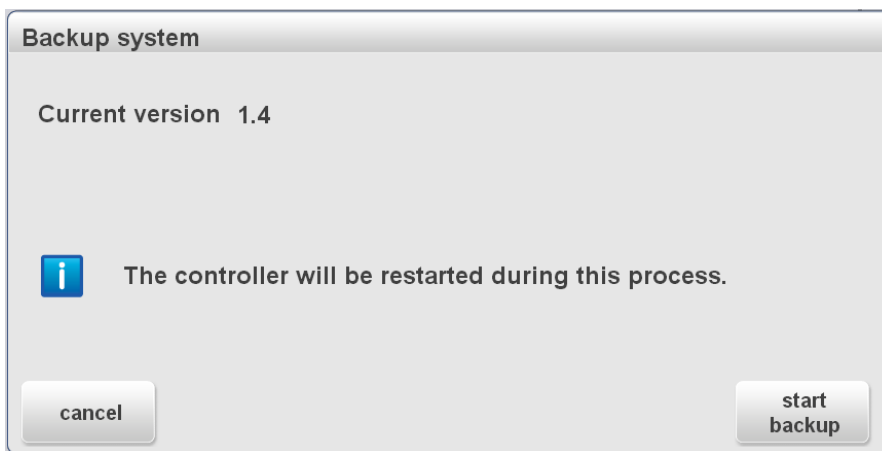
It is possible to make a full backup of the DA-Touch control. This backup includes:

- The application software
- All additional files on the \Configuration drive (sequencer etc.)
- Machine parameters
- All user data (products, tools, settings)

### Make a system backup

Perform the following steps to make a full system backup:

- Insert a USB memory stick to one of the USB ports.
- Select the System Information page of the Machine menu.
- Press the softkey “backup system”. The following window appears:



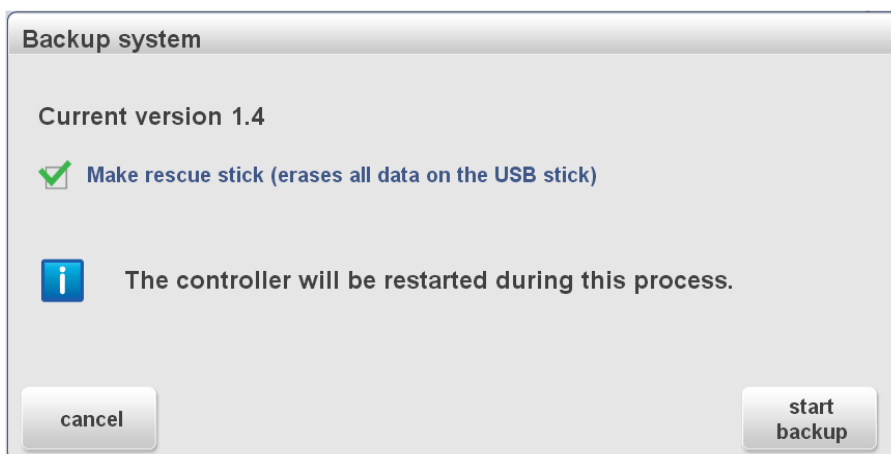
- Press “start backup”. After completion press OK to restart the DA-Touch control.

The backup will be written to the root of the USB stick. It is a single file, the extension is .sys. The name of the file starts with Delem.Backup followed by time stamp.

Example:

Delem.Backup.20111020T132039Z.sys

When login code for level 1 or higher has been entered, the additional selection “Make rescue stick” will appear.



---

When the “Make rescue stick” has been selected a bootable USB stick will be generated before the backup file is written. This can be used to boot the DA-touch control in order to do a clean install (rescue) and restore all the data. For more information about the rescue procedure see also paragraph 4.4.

Please note that in this case all data that is present on the USB stick will be erased.

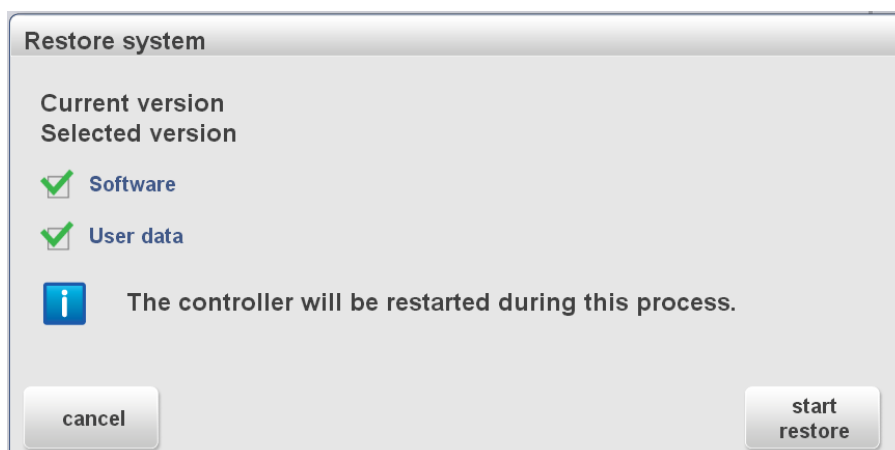
### Restore a system backup

To restore a backup on the same DA-Touch control:

- Insert the USB stick with the backup in one of the USB ports
- Select the System Information page of the Machine menu.
- Press the softkey “restore system”. The following window appears:



- Select the backup file to restore.
- On the next screen a selection can be made of which items to restore.
  - Software: the application software and all additional files on the \Configuration drive (including the machine parameters).
  - User data: all data on the \User drive (products, tools, settings)





To restore the backup on another DA-Touch control:

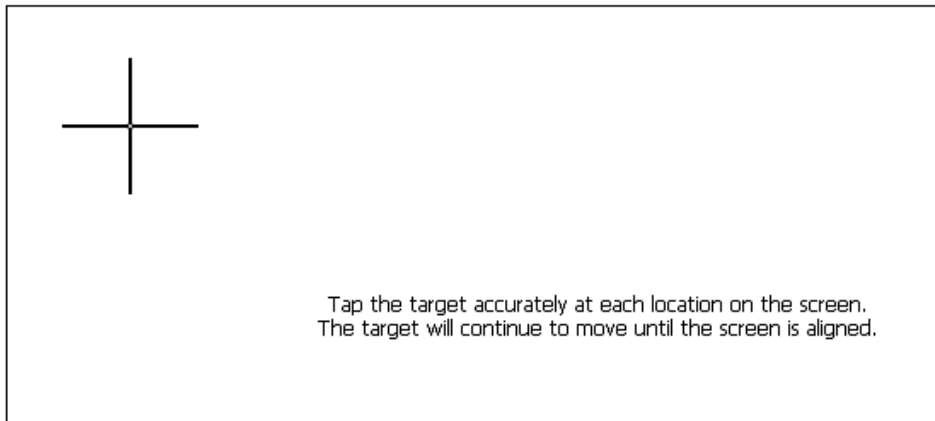
- Login with level 1 or higher
- Follow the steps a described above
- Without the proper login level it is not possible to restore the backup; an error message will appear.

---

### 3.8. Touchscreen calibration

The Touchscreen is calibrated and ready for use upon delivery. Sometimes, it may be necessary to recalibrate the Touchscreen, for example after the control has been mounted on the machine. Calibration is carried out quick and easy.

- Select the Maintenance page in the Machine menu.
- Tap the button 'calibrate touchscreen'.
- A white screen appears, with a black cross. Touch the black cross very carefully.
- Repeat this every time the cross has moved to a new position.



The more accurate you tap the screen on the black cross position, the better the screen is calibrated.

When the message 'calibration done' appears, the procedure is finished. The screen will quit automatically.

## 3.9. Analysis program

The control is equipped with a program for analysis of a pressbrake cycle. This analysis program can run parallel to the DA application.

The working principle is as follows. During one bend cycle, the program records the values of a number of analog and digital I/O signals. All this data is immediately stored in a file on the control disk and can be represented graphically.

First login with level 2 or higher. Then start Programs->Analyse from the Windows start menu to activate the analysis tool.

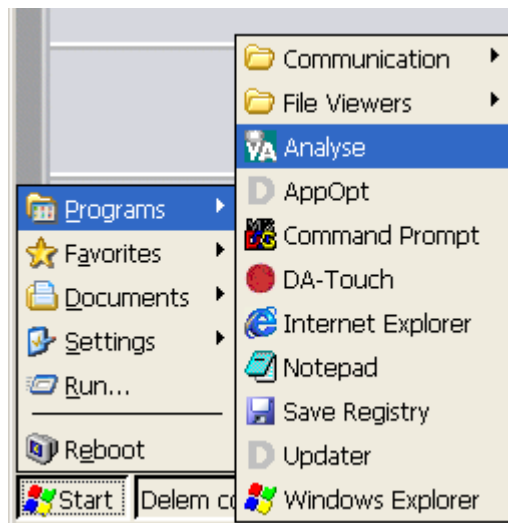


Figure 3.j

The Analyse tool can be used to record a Y-axis cycle or the positioning cycle of a servo axis. The axis can be selected from the drop down box at the top of the screen.

Each cycle that is recorded is stored in a separate file. To this end, the name of each file consists of the name of the axis (y\_analysis, x\_axis etc.), followed by a number. Everytime a cycle is recorded, the number in the filename is incremented by 1. So it is possible to record all bends of a product, each bend is stored in a file. Each bend can be analysed afterwards. With the buttons 'previous' and 'next' it is possible to browse through the collection of bends.

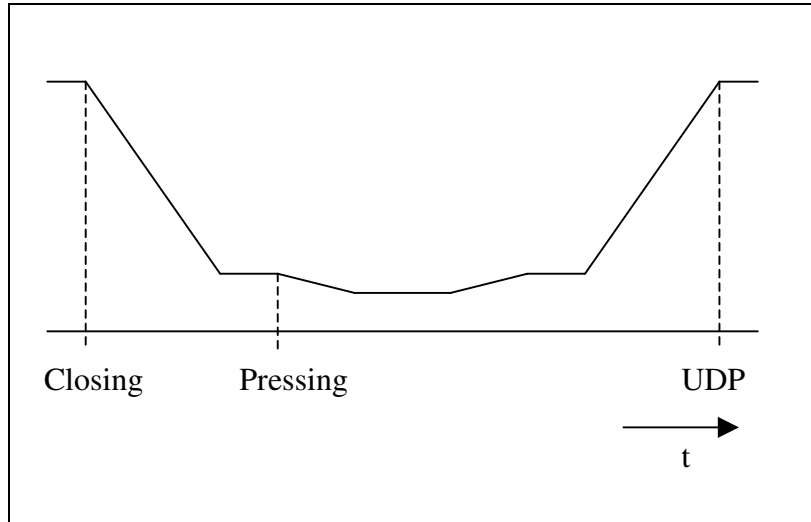
To record a bend cycle, use the 'start measure' command. The program will show the following dialog:



Figure 3.k

---

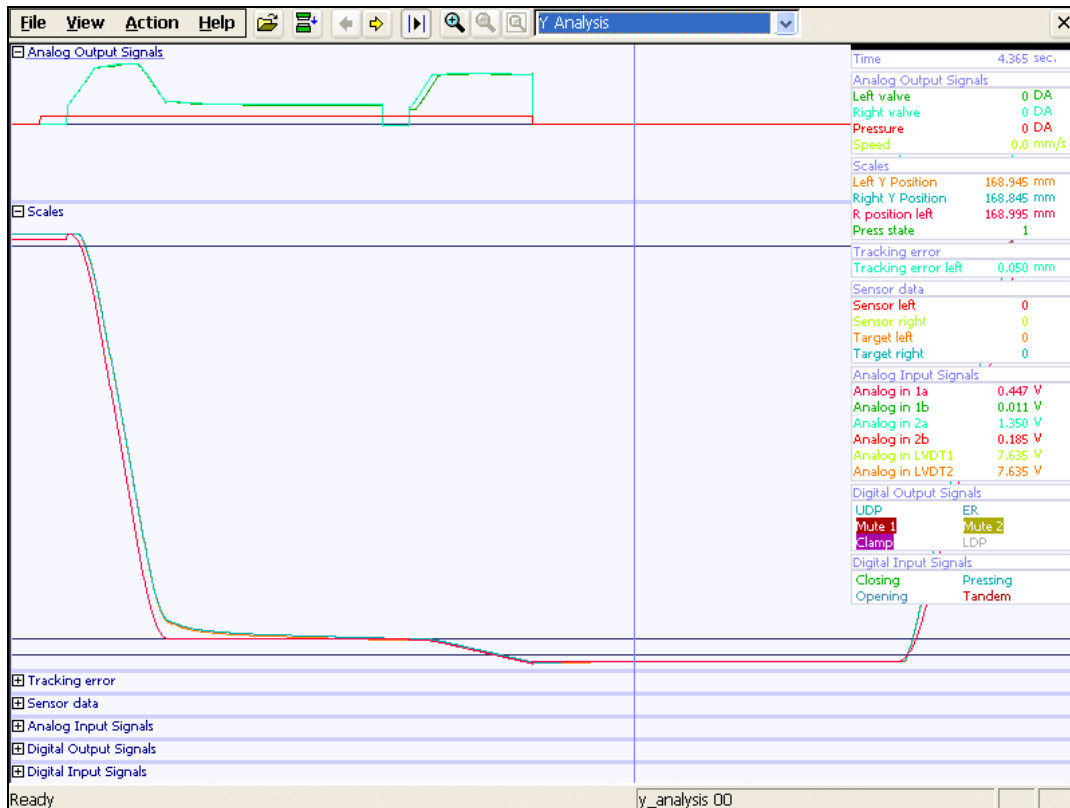
This means the analysis tool is now waiting for a bend cycle to be executed. Now switch to the DA application and execute a bend cycle in the normal way. The analysis program actually starts recording when a fast closing or a pressing command is activated. The program will continue to record until an UDP (upper dead point) signal is generated, indicating that the bend cycle is finished.



**Figure 3.1**









When the bend cycle is finished, switch back to the analysis program. On the screen you can see a graphic of the beam position as a function of the cycle time. As already explained, each recorded cycle is stored in a file. So it is also possible to open a previously recorded file for further analysis.

A typical analysis screen of one cycle could look as follows:



**Figure 3.m**

The toolbar at the top of the screen has the following commands:

- |   |               |   |
|---|---------------|---|
|  | open          | open an existing analysis file  |
|  | start measure | record a pressbrake cycle   |
|  | previous      | jump to previous recording  |
|  | next          | jump to next recording  |
|  | fix cursor    | freeze the cursor on the current position and move with a second cursor to another moment in the cycle, for comparison purposes |
|  | zoom in       | increase magnification, to study specific signals more closely  |
|  | zoom out      | decrease magnification, to get a more global view   |
|  | reset         | reset view to initial state, with smallest magnification  |

---

The signals are divided in four groups. Each group can be opened or closed, in order to examine one group more closely. The value of all recorded signals is shown in the text box, which can be placed left or right with the <tab> key.

The following groups are shown:

- analog output signals
- analog input signals
- digital output signals
- digital input signals

For the meaning of all signals we refer to the Delem machine parameter manual, where all signals are described in detail.

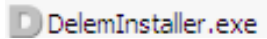
**Remarks:**

- By default the cycle files are stored in My Device\Temp\Analysis. The content of this \Temp directory is lost when the control is switched off! To keep the files on a permanent medium, store the cycle files on a USB disk or a network location.
- The cycle files are automatically given the extension '.paf' and can be read on any control that is equipped with this analysis software. They can also be sent to Delem if more support is necessary.
- The recorded files can also be examined afterwards on a PC using the offline viewer. This offline viewer is included in a software update set. To install it on a PC, run Delem Installer and select the option Install Offline Analyse...

## 4. Update control software

### 4.1. DelemInstaller

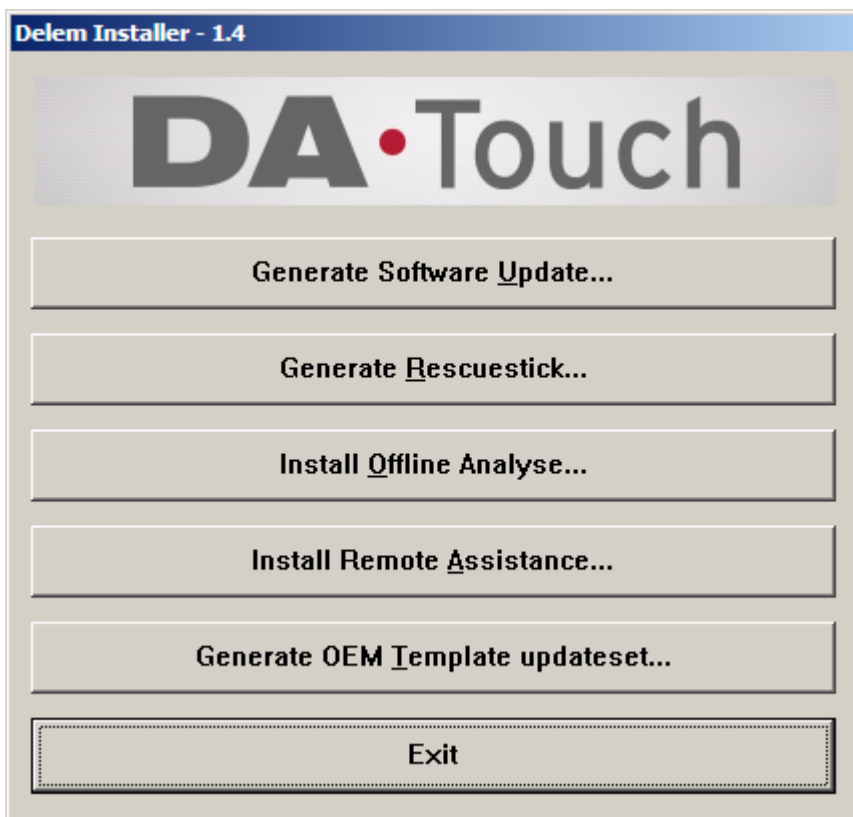
Software updates for the DA-Touch series controls are distributed as a single .exe file:



DelemInstaller.exe is a small program that runs on a PC. It is used to generate an update file to be installed on a DA-Touch control.

Furthermore additional tools can be installed with DelemInstaller or a rescue USB stick can be generated.

When DelemInstaller.exe is started on a PC, the following screen will appear:



The available options are:

#### **Generate Software Update**

Generate a software update file on a USB stick that can be installed on the DA-Touch control. The update procedure is described in paragraph 4.2

#### **Generate Rescuestick**

Generate a bootable USB stick to perform a clean install of the DA-Touch control.  
See paragraph 4.4

---

**Install Offline Analyse**

To install the offline analyse viewer on a PC. With this viewer analyse graphs recorded on a DA-control can be visualized and examined on a PC. See also paragraph 3.9.

**Install Remote Assistance**

To install the remote assistance tool on a PC.

**Generate OEM Template udateset**

Generate a template .zip file for an OEM update set. For a description of an OEM update set see paragraph 4.3.

**Exit**

To close the DelemInstaller application.



## 4.2. Software update procedure

**Note:** The update procedure as described in this paragraph will only update the application software of a DA-Touch control. Modification made on the \Configuration drive and data on the \User drive will remain unaffected.

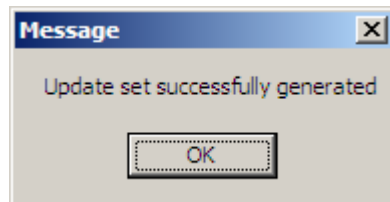
The software update procedure for a DA-Touch control consists of the following two steps:

- Prepare a USB stick with the new software
- Update the control software

### Prepare a USB stick

This part is performed on a PC:

- Start DelemInstaller.exe
- Select “Generate Software Update”
- Browse to the USB stick and click OK.
- When the update file is successfully generated, the following message will appear on the screen:



A single file with the extension .sys is written to the USB stick. The name of the file is:

Delem.DA-Touch 1.4.sys

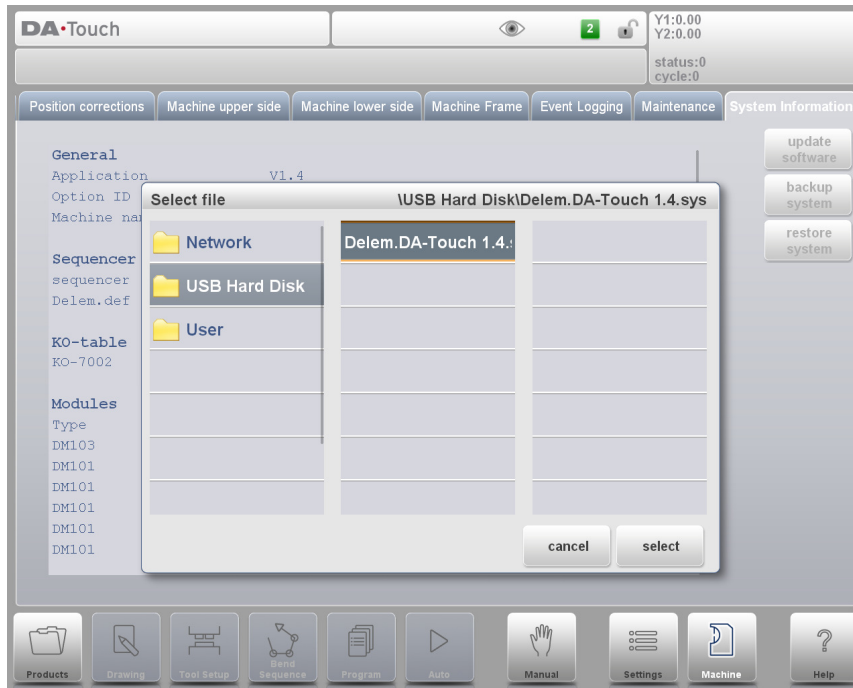
The name includes the version number of the software, in this example V1.4.

### Update control software

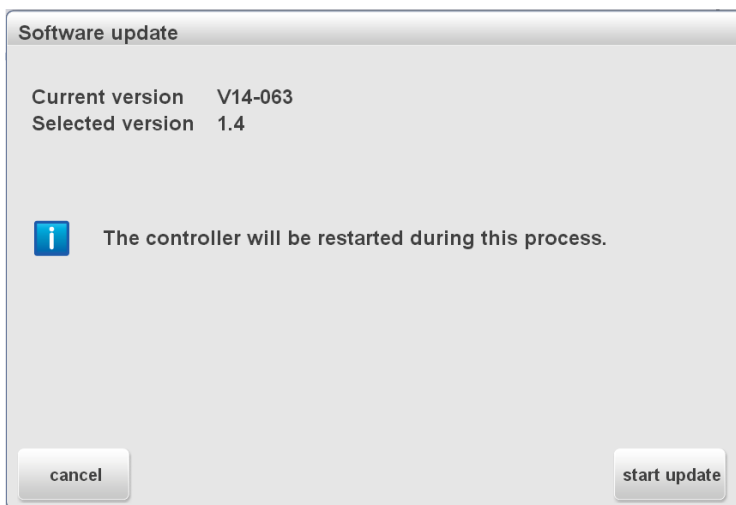
- Insert the USB stick in one of the two USB ports on the DA-Touch control.
- Select the page System Information in the Machine menu of the control.
- Press the softkey “update software”
- Browse to the USB stick and select the software update file.

**Note:** To be able to install a software update the key lock must be open



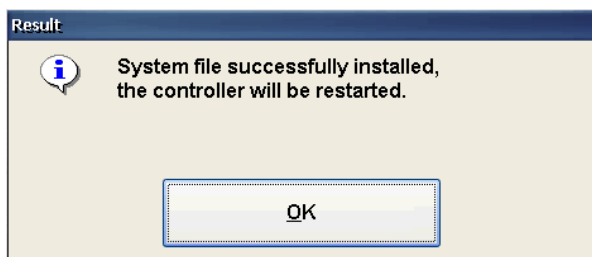


- Press “select”; the following screen appears:



- Now press “start update”. The DA-Touch application will be closed and the new software version is installed.

After completion the following message will appear on the screen:



- Press OK to restart the application. This completes the update procedure.

## 4.2.1. Update from V1.2.1 to V1.4 or higher

When the actual version is V1.2.1 an additional USB keyboard needs to be connected to the DA-Touch control.

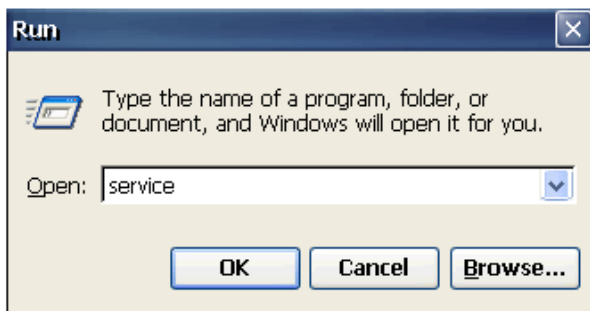
### Prepare a USB stick

This part is performed on a PC (see also paragraph 4.2):

- Start DelemInstaller.exe
- Select “Generate Software Update”
- Browse to the **root** of the USB stick and click OK.

### Update control software

- Login with level 1 or higher
- Insert the USB stick in one of the two USB ports on the DA-Touch control.
- Connect the USB keyboard
- Press the Windows button on the keyboard and select the Run command from the Windows Start menu.
- Now type “service” and press OK.



- The following screen will appear:

```
Operator/Service Menu (Access level = 2)
-----

0. Quit to Windows-CE
1. Update Delem system file
2. Backup configuration
3. Backup user data
4. Restore user data
5. Log in
6. Log out
7. Create restore stick
8. Clear non-volatile data
9. Verify system integrity

Your choice:
```

Select option 1 (Update Delem system file) and select the update file to start the update process:

```
0. Cancel
1. Delem.DA-Touch 1.4.sys

Enter file number:
```

- On completion, restart the control

**Note:** the service tool can also be started by keeping the stop button pressed during the start-up process of the DA-Touch control.

---

## 4.2.2. Update from V1.3.1 to V1.4 or higher

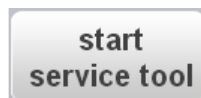
### Prepare a USB stick

This part is performed on a PC (see also paragraph 4.2):

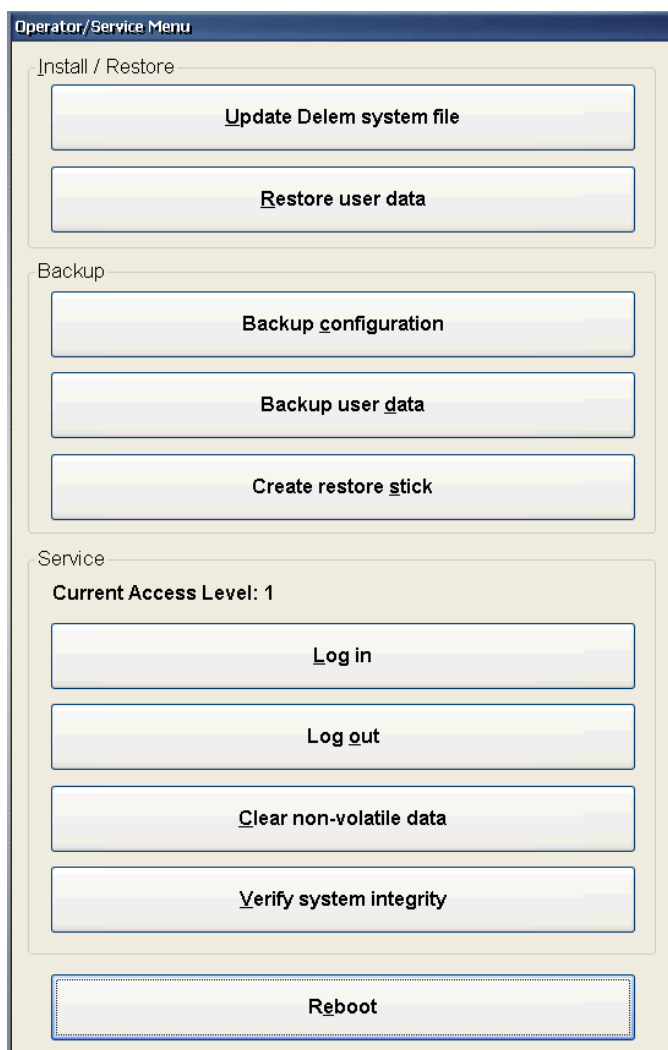
- Start DelemInstaller.exe
- Select “Generate Software Update”
- Browse to the **root** of the USB stick and click OK.

### Update control software

- Login with level 1 or higher
- Insert the USB stick in one of the two USB ports on the DA-Touch control.
- Select the first page (Punches) of the Machine menu. Press the softkey “start service tool”.

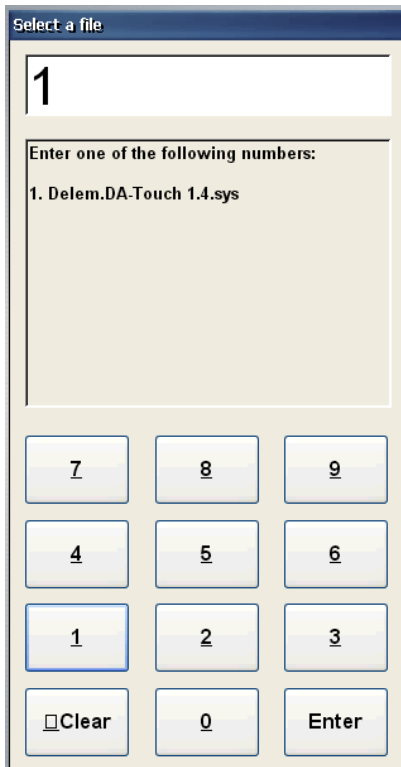


- On the next window, select “yes” to continue.
- The following screen appears:



- Select Update Delem system file.

- Select the update file and press enter.



- On the next window, press “yes” to start the update process.
- On completion, press OK to restart the DA-Touch control

### Alternative

- Prepare the USB stick on a PC as described above
- Rename the update file to: Delem.sys
- Select the Maintenance page in the Machine menu on the DA-Touch control.
- Press the softkey “update software” and press “yes” to continue.
- On completion, press OK to restart the DA-Touch control.

### 4.2.3. Update from V1.3.2 or higher to V1.4 or higher

#### Prepare a USB stick

This part is performed on a PC (see also paragraph 4.2):

- Start DelemInstaller.exe
- Select “Generate Software Update”
- Browse to the **root** of the USB stick and click OK.

#### Update control software

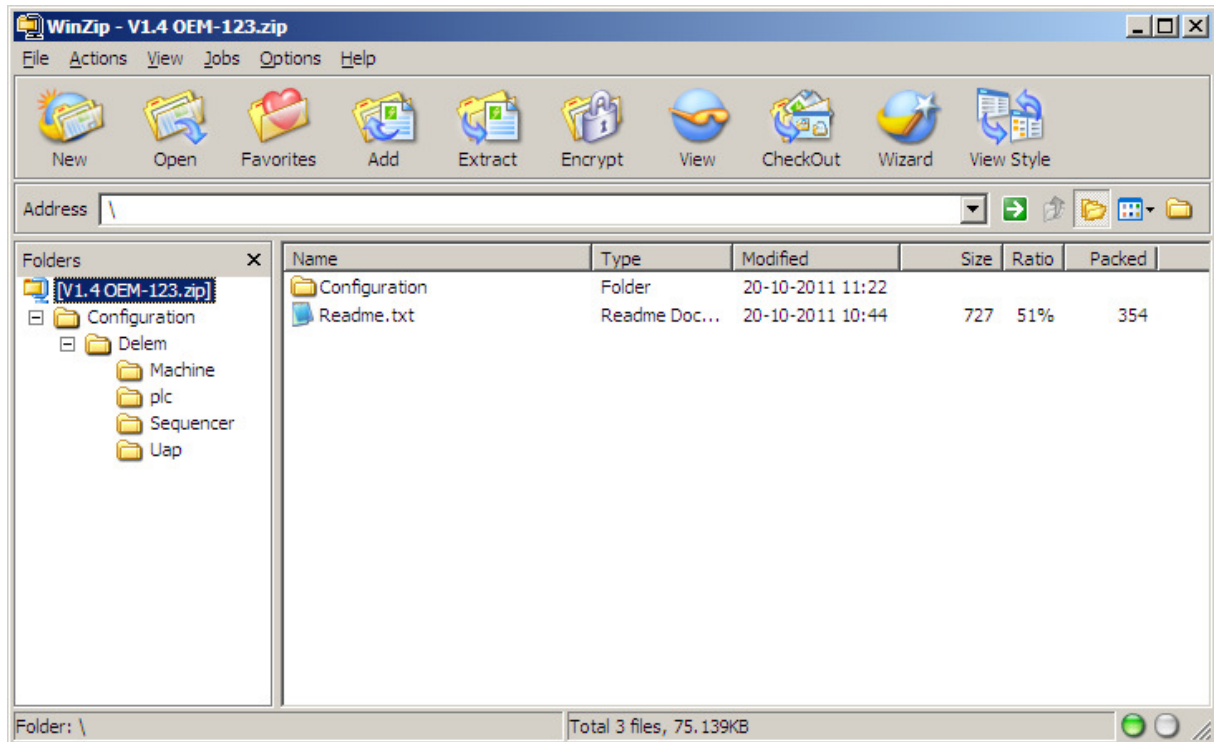
- Insert the USB stick in one of the two USB ports on the DA-Touch control.
- Select the page Maintenance in the Machine menu of the control.
- Press the softkey “update software” and press “yes” to continue.
- On completion, press OK to restart the DA-Touch control.

---

### 4.3. OEM update set

With the procedure as described in paragraph 4.2, only the standard application of the DA-Touch control will be updated. With an OEM update set additional files, like a sequencer file, can be installed at the same time.

An OEM update set is a .zip file containing the application software and the additional files, organized in the same folder structure as they are installed on the DA-Touch control. With the DelemInstaller application a template .zip can be generated that can be used as a starting point to compose your own update set. This .zip file already contains the most commonly used folders.



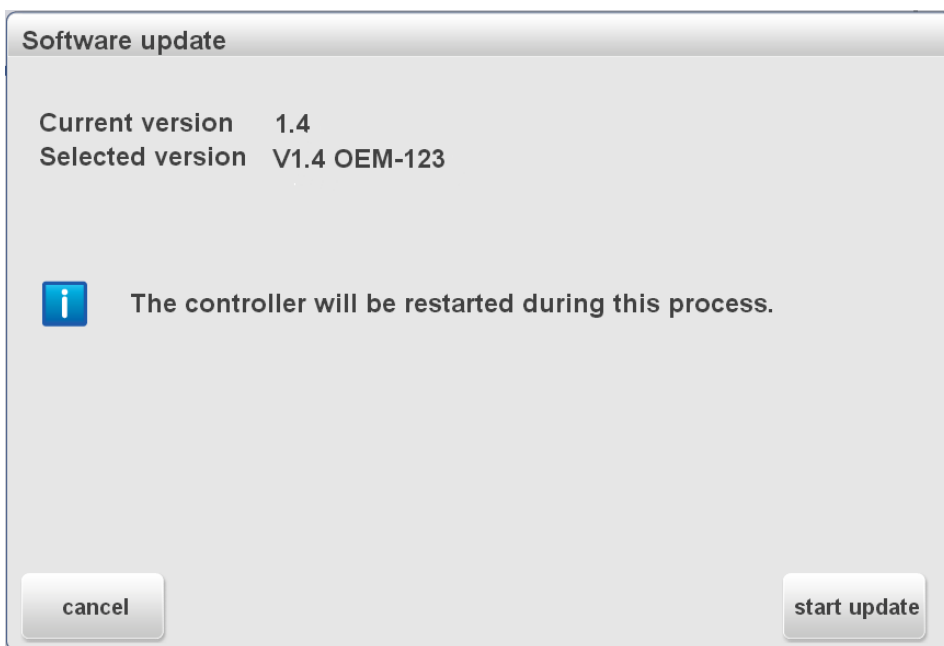
To add files, just drag them to the correct folder in this structure.

#### Install OEM update set

- Login with level 1 or higher
- Insert the USB stick containing the update set (.zip file) in one of the two USB ports on the DA-Touch control.
- Select the page System Information in the Machine menu of the control.
- Press the softkey "update software".
- Browse to the USB stick and select the software update file.



- On the following screen, press “start update”.



- On completion press OK to restart the control.

---

## 4.4. Control Rescue procedure

### 4.4.1. Introduction

The Rescue procedure for the Delem control is meant to re-install all original software on the control. It is meant as a last resort, when other attempts to 'cure' the control have failed and/or the control does no longer boot from the internal hard disk (the compactflash card). When this procedure is carried out, all existing data on the hard drive is erased: products, tools, etc. The license codes for control options are note erased. These options are not stored on the CompactFlash card but on the DIM.

This procedure can only be succesfull when all hardware is still functional.

### 4.4.2. Requirements

To perform the procedure on the control, the following equipment is necessary:

- a complete DA-Touch software set;
- a PC running the Windows operating system (Windows XP, Windows 7);
- a USB stick;

### 4.4.3. Rescue procedure

The rescue procedure is carried out with a USB stick, which is recognised by the control as an external USB disk. The USB stick is equipped with the necessary software and the control is booted from USB stick to re-install the control software.

#### Phase 1: create a bootable USB stick

This procedure must be performed on a PC, equipped with the Windows operating system. Here you must prepare a USB stick, with which you can start the control.

- Make sure a USB stick is inserted in a USB port of the PC.
- Start the program DelemInstaller from the DA-Touch update set that is delivered by Delem.

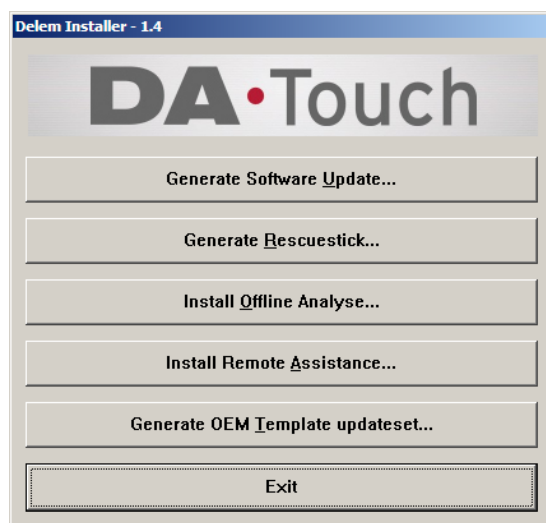


Figure 4.r

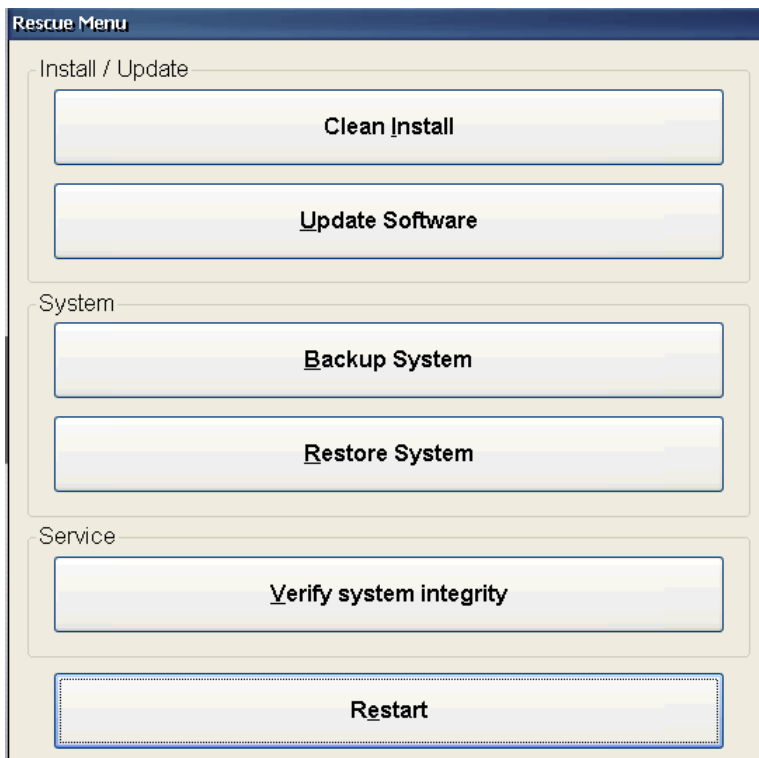


- Select Generate Rescuestick... This program will install the necessary software on the USB stick. During this procedure, all existing data on the USB stick will be removed.
- In the program, first select the proper USB device.
- Click on the button 'Create Rescue Stick'. On the question 'are you sure?' click Yes to proceed.
- When finished, the program will issue a message that the Rescue Stick was created successfully. Click OK to finish the program.
- Remove the USB stick from the PC and proceed to phase 2.

## Phase 2: clean install

This procedure is carried out on the control. With this procedure you will partition and format the CompactFlash card and install the software (Windows and DA-application).

- Insert the USB stick into a USB port of the control.
- Power-up the control.
- Press the start and stop button simultaneously. The buttons can be released when both lights begin to flash.
- The controller will start up and the rescue menu appears on the screen.



- Select the option Clean install from the list.
- When finished, press OK to restart the control.

---

## Part III - The diagnostic program

To be able to test a DA-Touch control, it has been equipped with a diagnostic program. With the test functions of the diagnostic program the service engineer can test the control itself and the communications to externally connected system components.

**Before starting** the diagnostic program it is required to check if the hydraulic pump of the pressbrake is not running. This is because during the diagnostic operation of the control no regulation of the pressbeam is performed.

**To select** the diagnostic program the following steps have to be performed:

- select menu "Machine"
- tap on the key symbol
- enter the access code [ 7 ], [ 4 ], [ 1 ].
- Press the "diagnostics" button that appears on the screen.

**To end** the diagnostic program the power supply to the control can be switched off and then on again to enter the normal operation menu.

It is also possible to leave the diagnostic program by tapping on the 'end'-button. The Delem application will restart.

---

## **1. General remarks**

### **1.1. Valve outputs**

With the diagnostic program you have to be very careful because the proportional valves can be deflected. The high-retaining valves have to be in the closed position in order to prevent the top beam coming down. It is good practice to place the top beam in its lowest position before starting the diagnostic program.

### **1.2. Components check**

In the description of the tests it is indicated which component(s) is(are) responsible for correct functioning of that particular part.

See for exploded view drawing with all internal cables and cards of the DA-Touch controls the included diagrams at the end of part I.

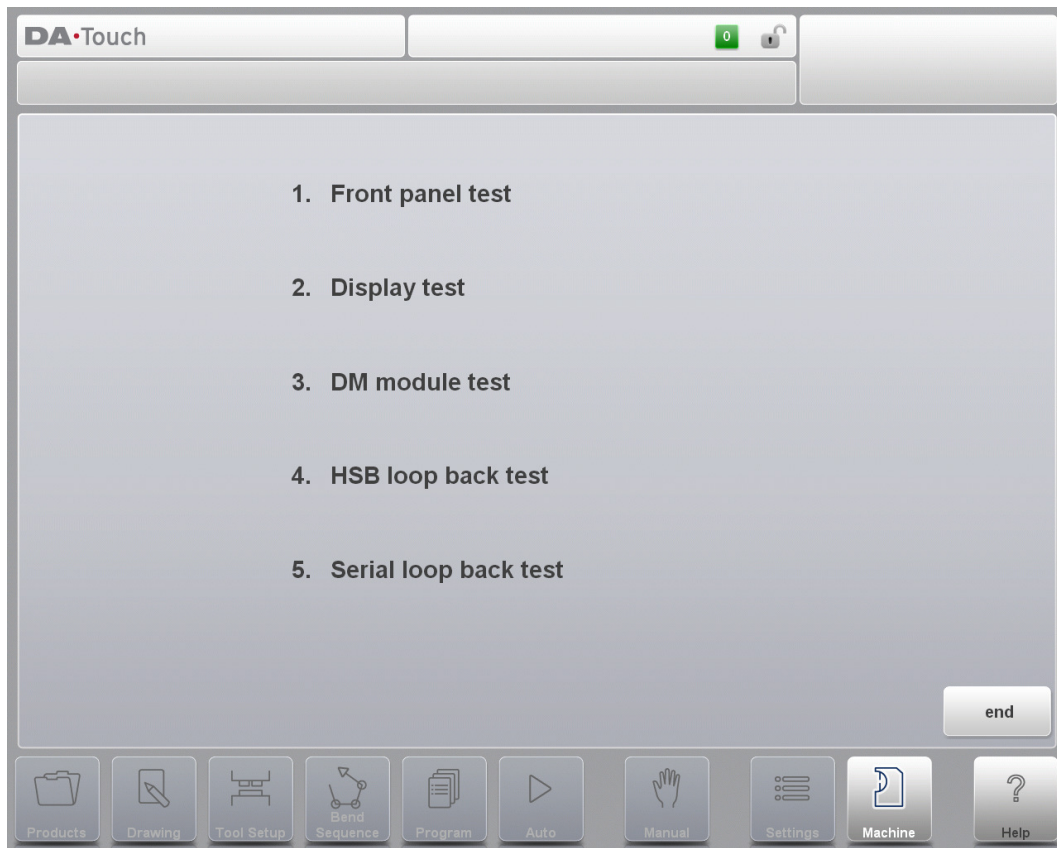
The mainboard assembly of the control can be exchanged easily, since all specific data is stored on the hard disk.

If the internal hard disk (the CompactFlash card) must be replaced, it is recommended to make a back-up of all user-specific data: products, tools, program constants and machine parameters. Use the 'product backup' and 'tools backup' tools in the Setting menu for this purpose. Together with the tools automatically the parameters from the Settings and Machine menu (entered by the user) will be written to the backup medium. To save the machine parameters, you have to go the machine parameters menu and select option 5, Parameter backup.

When you have exchanged the CompactFlash card, you can restore all the data from the backup medium before starting the pressbrake.

## 2. Test-menu

When the diagnostic program has been started the screen shows the menu as indicated in figure 2.a (example of diagnostic main menu).



**Figure 2.a**

### Diagnostic Options:

- |   |                       |  |
|---|-----------------------|--|
| 1 | Front panel test      | Testing the start and stop buttons and the handwheel. See Chapter 3.         |
| 2 | Display test          | Testing the screen.  |
| 3 | DM module test        | Testing the connected DM modules.  |
| 4 | HSB loopback test     | With this test the High Speed Bus (HSB) connector of the control is checked. |
| 5 | Serial loop back test | Test the serial interface (RS-232) connections                               |

---

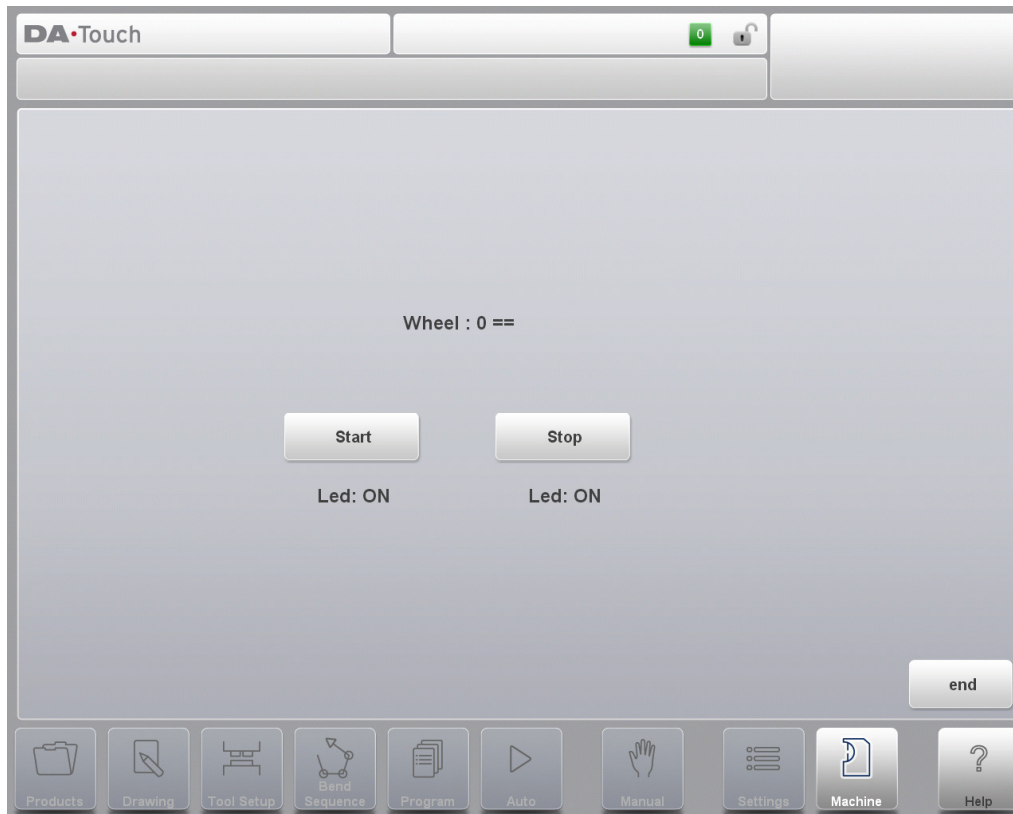
### 3. Front panel test

#### Function

This test is meant to check the functioning of the start and stop button and the handwheel.

#### Description

The following screen appears, like in figure 3.a.



**Figure 3.a**

- When one of the buttons is pressed, the colour of the corresponding button on the screen is changed. Initially the Led in both buttons is on. When one of the buttons is pressed the corresponding Led will be on, the other one off. This also indicated on the screen.
- The reading of the handwheel can be tested by turning the handwheel. When you turn the handwheel to the right (clockwise), it must result in an increasing value on the screen (up counting). Turning the handwheel to the left, this must result in a decreasing value on the screen (down counting).

#### Failure

A failure (a key is not operative) can be caused by the button, the cable or the connection to the mainboard.

#### End

Pushing the softkey 'END' finishes this test.

## 4. Screen test

### Function

To get a good idea about the colour setting and correct functioning of the colour screen you will see a number of horizontal bars. It is important that the 3 main colours are available (red, green and blue).

By tapping the button “colortest” a white screen will be displayed (toggle function).

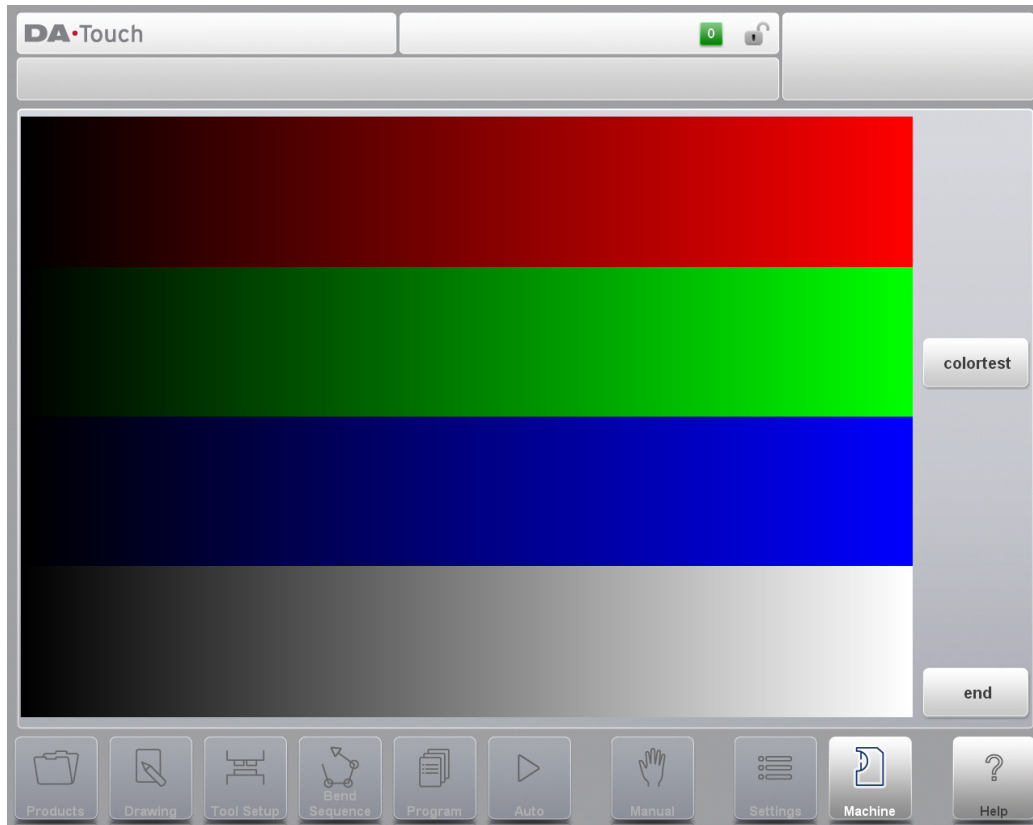


Figure 4.a

### End

To end the screen-test program press softkey END.

---

## 5. DM module test

### Function

This test checks the inputs and outputs of the connected DM modules.

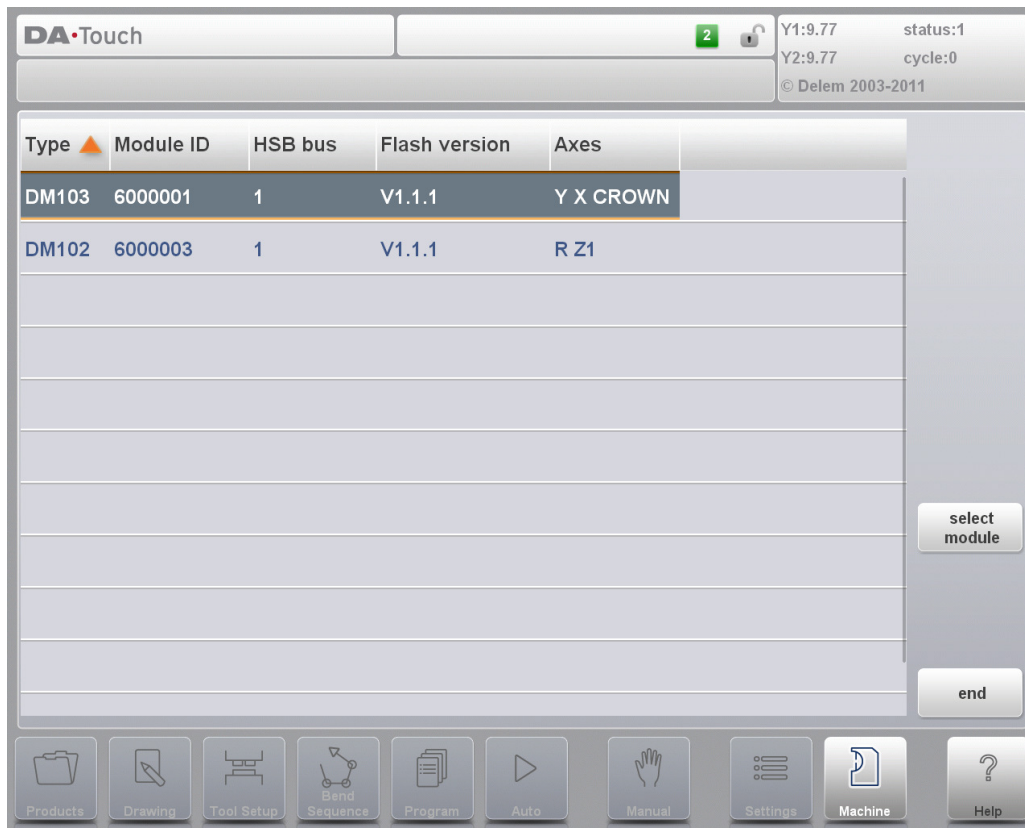


Figure 5.a

### Description

Tap on the row with the DM-module you want to test.

### End

To end the DM module test program press softkey END.



## 5.1. Testing a connected module

### 5.1.1. Description

On the left side of the screen, the digital inputs and outputs of the module are shown with their current status. The highlighted signals are on; in the example below the outputs 1, 13 and 16 are on. The next column on the screen shows analogue inputs and outputs.

On the right side, the read-out of available encoders on the module is shown.

In case of a Y-axis module, the lower right corner of the screen shows several parameters for configuration of valve control. This is explained in section 5.2.

The read-out of all I/O is updated continuously.



Figure 5.b

**previous module**

If available

**next module**

If available

**reset all outputs**

Reset all digital outputs of the module (set to zero).

**toggle anin display**

Function to switch value of analogue input voltage between AD-points and a percentage.

**reference disable/enable**

Testing the encoder counting of any axis. Toggle function between enabled and disabled. Default disabled. In the disabled situation you can test the count direction. In the enabled situation you can test whether the reference pulse is received (once per encoder rotation).

---

### 5.1.2. Testing the analogue output of the module

With this option the analogue outputs of the modules can be tested. These signals are used for the control amplifiers of auxiliary axes. The output voltage varies between -10V and +10V. Tap on the analog output field to select it and turn the handwheel to alter the output. The range is -4095...+4095 DA-points.

Testing an analog output in this menu is also useful for test and adjustment of the DA-values, in case they must be programmed in the machine parameters DA-min and DA-max for a deflection unit.

Depending on the module type, there are one or more analogue outputs available.

### 5.1.3. Offset test and adjustment procedure

1. Set both the OUTPUT and the OFFSET to zero by turning the handwheel. Meaning that you should measure 0V at the speed output of the DM module and the connected axis should not move.
2. If the measured output voltage is not zero, you must set the output voltage to zero with the OFFSET adjustment.
3. With the zero output voltage the motor should not move. A possible movement can be corrected with the offset adjustment of the concerning motor drive.
4. For further fine-tuning you can adjust the value of the OFFSET again.

### 5.1.4. Testing the digital inputs of the module

In case a digital input is active, the indication on the screen will be highlighted. Otherwise it means that the input is off. When you connect a DC-voltage of 24V at the selected input of the module, the signal indication of the corresponding input on the screen must become highlighted.

If none of the inputs is working, please check the common input connection on the module and the general +24V of the module.

### 5.1.5. Testing the digital outputs of the module

Tap on the output number to be tested. The indication on the screen will be highlighted and the output goes on. When you tap again on the same output, it will go off again (toggle function).

### 5.1.6. Testing the analogue inputs of the module

The value on the screen is the read-out of the analogue input voltage in DA-points which is offered to the module. By varying the voltage the read-out should vary likewise.

#### **End**

Press the END-key to finish this test.

## 5.2. Testing the valve deflection of a Y-axis module

### **Function**

With this test the hydraulic-valve drive circuitry of the Y-axis module can be tested. Also the hydraulic pressure can be tested. To perform this test all the valves must be connected correctly.

This test can be performed on a DM-103VA or DM-102VA module.

### **Description**

Tap on one of the valve deflection indications on the screen to select the valve to test.

The test procedure for valve deflection depends on the type of valves that is installed. On the following two pages two different procedures are described. The first procedure is for Hoerbiger valves, which are connected directly to the module. The second procedure must be followed when external valve amplifiers are used to control the valves.

- **Test procedure (Hoerbiger valves)**



**Figure 5.c**

1. Select 'Left valve deflection'.
2. Set 'Left valve deflection' at +10% by turning the handwheel. To avoid possible influence of hysteresis it is recommended to go first to +100% and than to the required +10%.
3. Select 'Left valve LVDT'. This is the read out of the left proportional valve. The value should be 8.0V. If not, then adjust this value with the handwheel.
4. Select 'Left valve deflection' again.
5. Set 'Left valve deflection' at -10% by turning the handwheel. To avoid possible influence of hysteresis it is recommended to go first to -100% and than to the required -10%.
6. Select 'Left valve LVDT'. This is the read out of the left proportional valve. The value should now be 7.15V. If not, then adjust this value with the handwheel.
7. Repeat this procedure (step 1 through step 6) for the right proportional valve.

When calibrating Hoerbiger valves, see table below for the various threshold values:

	-10%	+10%
Hoerbiger PIL	7.15V	8.0V
Hoerbiger PIH	6.75V	8.25V

The **pressure valve** can be tested by measuring the current through the pressure valve at several DA-points. With the handwheel you can regulate the valve deflection in DA-points (0 DA = 0 mA). The current can be measured with an ampere meter in series with the pressure valve.

- **Test procedure (External valve amplifier)**

In this menu the analogue output of the module for valve control is tested.



**Figure 5.d**

1. Select the field 'Left valve deflection'.
2. Use the handwheel to put both the output value and the offset value at zero. The voltage at the output should now also be zero.
3. If the measured output voltage is not zero, you must set the output voltage to zero with the offset adjustment.
4. Repeat these steps for the other valve.
5. Further fine-tuning can be done through the calibration procedure as described in the Delem machine parameter manual at parameter 15, 'Calibrate valves'. That procedure is designed especially for external valve amplifiers.

---

## 6. Test of HSB

### Function

With this test the High Speed Bus (HSB) connector of the control is checked.

### Description

With this test the HSB circuitry of the control is checked. To perform this test:

- open the control;
- remove the standard HSB cable that is connected to the mainboard;
- take a small HSB cable and put one end on the first HSB connector and put the other end on the second HSB connector;
- close the control;
- activate the control and go to the diagnostic main menu;
- Tap on item 4 in the main menu of the diagnostic mode.

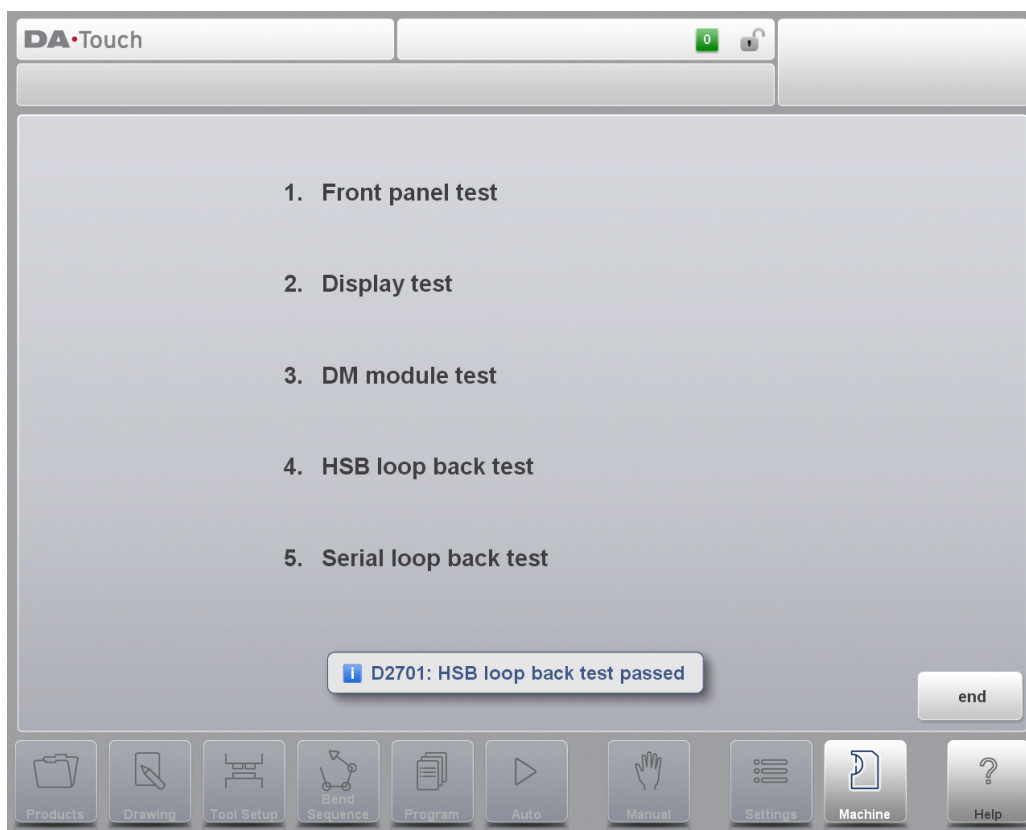


Figure 6.a

### End

To remove the message, tap the screen.

## 7. Test of the serial ports

### Function

With this test the serial interface (RS-232) connectors of the control are checked.

### Description

- open the control;
- mount a loopback connector on the RS-232 port to test;
- close the control;
- activate the control and go to the diagnostic main menu;
- Tap on item 5 in the main menu of the diagnostic mode.
- Both connections are tested at the same time.
- The result will be displayed on the screen.

### End

To remove the message, tap the screen.





## Appendix A - Reference list

- [1] Delem machine parameters
- [2] DM-100 installation manual
- [3] Delem Sequencer Programming Language
- [4] Reference manual for operation of DA-66T
- [5] Reference manual for operation of DA-69T