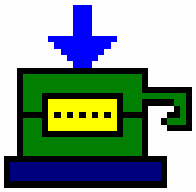
Evaluation and visualisation of direct shear test

GGU-DIRECTSHEAR

VERSION 5



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1 Preface

The **GGU-DIRECTSHEAR** program system allows the evaluation and visualisation of direct shear tests. Beside input of a failure value only and, if applicable, a slip value for each test, ASCII format data produced by the data sensors provided by the shear box manufacturer can also be evaluated.

Data input is in accordance with conventional WINDOWS operations and can therefore be learned almost entirely without the use of a manual. Graphic output supports the true-type fonts supplied with WINDOWS, so that excellent layout is guaranteed. Colour output and any graphics (e.g. files in formats BMP, JPG, PSP, TIF, etc.) are supported. DXF files can also be imported by means of the integrated Mini-CAD module (see the "**Mini-CAD**" manual).

The program has been successfully used in a large number of projects by renowned consultancies and institutes, and has been thoroughly tested. The program system has been thoroughly tested. No faults have been found. Nevertheless, liability for completeness and correctness of the program and the manual, and for any damage resulting from incompleteness or incorrectness, cannot be accepted.

2 Licence protection and installation

In order to guarantee a high degree of quality, a hardware-based copy protection system is used for the **GGU-DIRECTSHEAR** program.

The GGU software protected by the ***CodeMeter*** copy protection system is only available in conjunction with the ***CodeMeter stick*** copy protection component (hardware for connection to the PC, "***CM stick***"). Because of the way the system is configured, the protected software can only be operated with the corresponding CM stick. This creates a fixed link between the software licence and the CM stick copy protection hardware; the licence as such is thus represented by the CM stick. The correct Runtime Kit for the CodeMeter stick must be installed on your PC.

Upon start-up and during running, the **GGU-DIRECTSHEAR** program checks that a CM stick is connected. If it has been removed, the program can no longer be executed.

For installation of GGU software and the CodeMeter software please refer to the information in the ***Installation notes for GGU Software International***, which are supplied with the program.

3 Language selection

GGU-DIRECTSHEAR is a bilingual program. The program always starts with the language setting applicable when it was last ended.

The language preferences can be changed at any time in the "**Info**" menu, using the menu item "**Spracheinstellung**" (for German) or "**Language preferences**" (for English).

4 Starting the program

After starting the program, you will see two menus at the top of the window:

- File
- Info

After clicking the "**File**" menu, either an existing file can be loaded by means of the "**Load**" menu item, or new tests can be entered using "**New**". After clicking "**File/New**" it is necessary to select whether visualisation of the shear stress-path diagram shall take place on the output sheet. If the check box is activated an empty A3 format page is displayed on the screen when the dialog box is closed, otherwise an A4 format output sheet is displayed. The menu bar will then show five menus:

- File
- Edit
- Graphics preferences
- Output preferences
- Info

After clicking one of these menus, the menu items roll down, allowing you access to all program functions.

The program works on the principle of ***What you see is what you get***. This means that the screen presentation represents, overall, what you will see on your printer. In the last consequence, this would mean that the screen presentation would have to be refreshed after every alteration you make. For reasons of efficiency and as this can take several seconds for complex screen contents, the **GGU-DIRECTSHEAR** screen is not refreshed after every alteration.

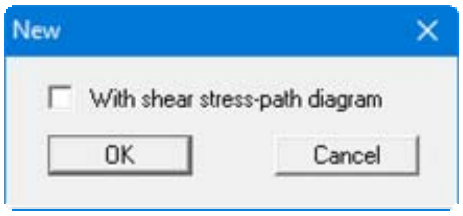
If you would like to refresh the screen contents, press either [**F2**] or [**Esc**]. The [**Esc**] key additionally sets the screen presentation back to your current zoom, which has the default value 1.0.

5 Description of menu items

5.1 File menu

5.1.1 "New" menu item

After selecting the menu item, the following dialog box appears:



If the "**With shear stress-path diagram**" check box is activated the program anticipates input of the shear path, normal stress, shear stress and the settlement during a shear process. This data can be visualised graphically in two diagrams (settlement-path diagram and shear stress-path diagram). The program then automatically determines the failure value (maximum value of all measurements in a test) and the slip value (last value of all measurements in a test) from the shear stress-path diagram. The measured data can also be imported from a file in ASCII format (see Section 5.2.2.3).

An A3 format page is automatically used for visualisation with shear stress-path diagram. However, the page format and the configuration of the individual graphical elements can be defined by the user.

If the check box in the dialog box is not activated, input of the failure value and the slip value only is necessary later (see input box in Section 5.2.2.2). In this case an A4 format page is used for visualisation.

5.1.2 "Load" menu item

You can load a file with test data, which was created and saved at a previous sitting, and then edit the test data.

5.1.3 "Add file" menu item

Using this menu item it is possible to load the results of a number of tests, stored on disk as separate files, in order to visualise them together on one sheet. The tests contained in the added file will be appended to the current record.

5.1.4 "Save" menu item

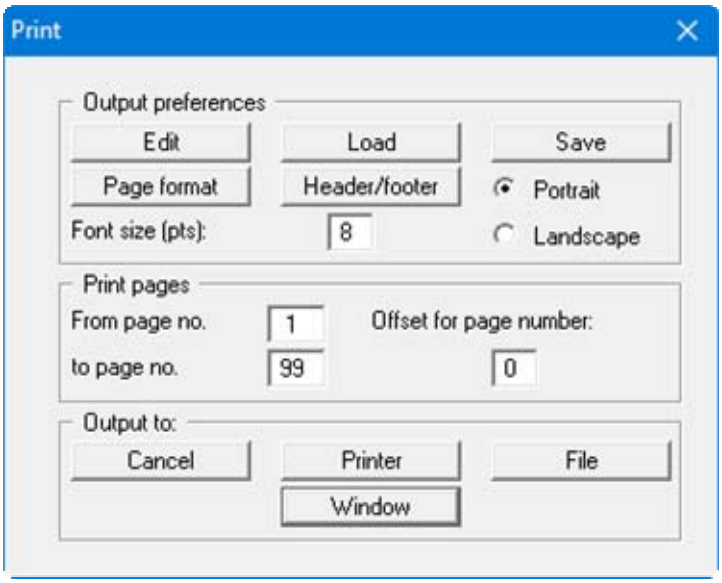
You can save data entered or edited during program use to a file, in order to have them available at a later date, or to archive them. The data is saved without prompting with the name of the current file.

5.1.5 "Save as" menu item

You can save data entered during program use to an existing file or to a new file, i.e. using a new file name. For reasons of clarity, it makes sense to use "**.scv**" as file suffix, as this is the suffix used in the file requester box for the menu item "**File/Load**". If you choose not to enter an extension when saving, "**.scv**" will be used automatically.

5.1.6 "Print output table" menu item

A result table containing the current test results can be printed or saved in a file (e.g. for further editing in a word processing application). Alternatively, it is possible to view the results in a separate window and to edit them, if necessary. You will then see the following dialog box for specifying output preferences.



- "**Output preferences**" group box
  Using the "**Edit**" button the current output preferences can be changed or a different printer selected. Using the "**Save**" button, all preferences from this dialog box can be saved to a file in order to have them available for a later session. If you select "**GGU-DIRECTSHEAR.drk**" as file name and save the file in the program folder (default), the file will be automatically loaded the next time you start the program.

  Using the "**Page format**" button you can define, amongst other things, the size of the left margin and the number of rows per page. The "**Header/footer**" button allows you to enter a header and footer text for each page. If the "#" symbol appears within the text, the current page number will be entered during printing (e.g. "***Page*** #"). The text size is given in "**Pts**". You can also change between "**Portrait**" and "**Landscape**" formats.

- "**Print pages**" group box
  If you do not wish pagination to begin with "***1***" you can add an ***offset number*** to the check box. This offset will be added to the current page number. The output range is defined using "**From page no.**" "**to page no.**".

- "**Output to:**" group box
  Start output by clicking on "**Printer**" or "**File**". The file name can then be selected from or entered into the box. If you select the "**Window**" button the results are sent to a separate window. Further text editing options are available in this window, as well as loading, saving and printing.

5.1.7 "Export to ASCII" menu item

The test data can be exported to an ASCII file, allowing processing in other applications.

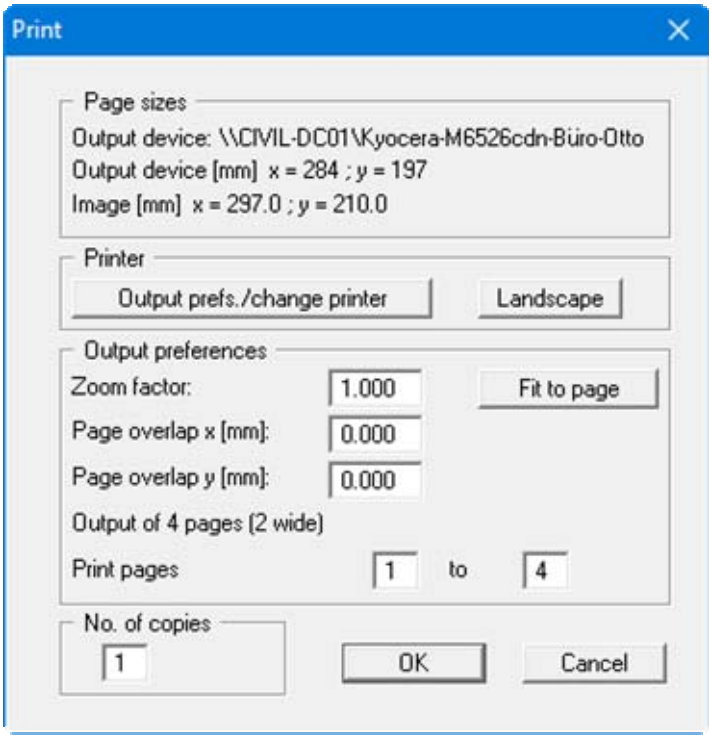
5.1.8 "Output preferences" menu item

You can edit output preferences (e.g. swap between portrait and landscape) or change the printer in accordance with WINDOWS conventions.

5.1.9 "Print and export" menu item

You can select your output format in a dialog box. You have the following possibilities:

- "**Printer**"
  allows graphic output of the current screen to the WINDOWS standard printer or to any other printer selected using the menu item "**File/Output preferences**". But you may also select a different printer in the following dialog box by pressing the "**Output prefs./change printer**" button.



In the upper group box, the maximum dimensions which the printer can accept are given. Below this, the dimensions of the image to be printed are given. If the image is larger than the output format of the printer, the image will be printed to several pages (in the above example, 4). In order to facilitate better re-connection of the images, the possibility of entering an overlap for each page, in x and y direction, is given. Alternatively, you also have the possibility of selecting a smaller zoom factor, ensuring output to one page ("**Fit to page**" button). Following this, you can enlarge to the original format on a copying machine, to ensure true scaling. Furthermore, you may enter the number of copies to be printed..

- "**DXF file**"
  allows output of the graphics to a DXF file. DXF is a common file format for transferring graphics between a variety of applications.
- "**GGU-CAD file**"
  allows output of the graphics to a file, in order to enable further processing with the **GGU-CAD** program. Compared to output as a DXF file this has the advantage that no loss of colour quality occurs during export.
- "**Clipboard**"
  The graphics are copied to the WINDOWS clipboard. From there, they can be imported into other WINDOWS programs for further processing, e.g. into a word processor. In order to import into any other WINDOWS program you must generally use the "*Edit/Paste*" function of the respective application.
- "**Metafile**"
  allows output of the graphics to a file in order to be further processed with third party software. Output is in the standardised EMF format (Enhanced Metafile format). Use of the Metafile format guarantees the best possible quality when transferring graphics.

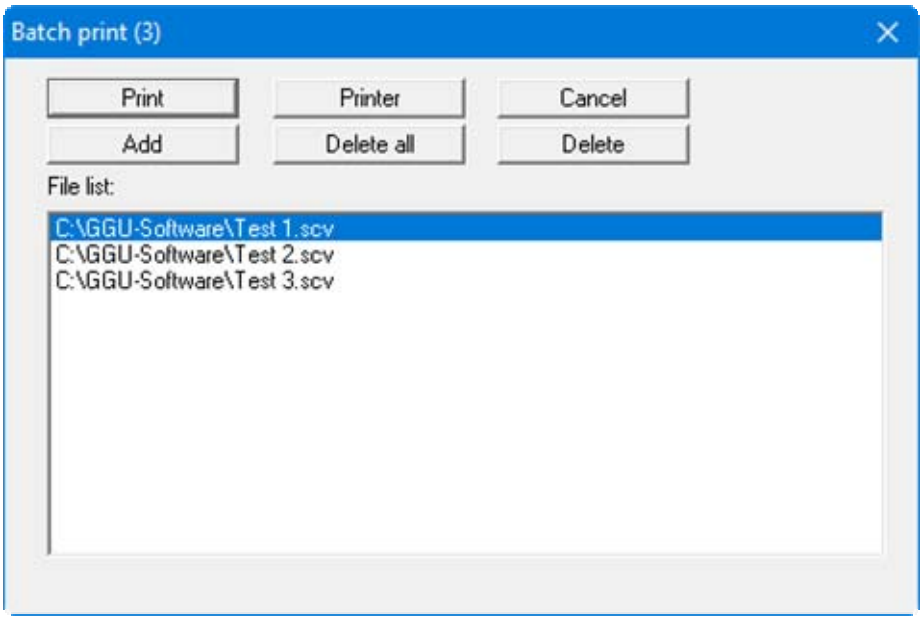
If you select the "**Copy/print area**" tool from the toolbar, you can copy parts of the graphics to the clipboard or save them to an EMF file. Alternatively you can send the marked area directly to your printer (see "**Tips and tricks**", Section 6.3).

Using the "**Mini-CAD**" program module you can also import EMF files generated using other GGU applications into your graphics.

- "**Mini-CAD**"
  allows export of the graphics to a file in order to enable importing to different GGU applications with the **Mini-CAD** module.
- "**GGUMiniCAD**"
  allows export of the graphics to a file in order to enable processing in the **GGUMiniCAD** program.
- "**Cancel**"
  Printing is cancelled.

5.1.10 "Batch print" menu item

If you would like to print several appendices at once, select this menu item. You will see the following dialog box:



Create a list of files for printing using "**Add**" and selecting the desired files. The number of files is displayed in the dialog box header. Using "**Delete**" you can mark and delete selected individual files from the list. After selecting the "**Delete all**" button, you can compile a new list. Selection of the desired printer and output preferences is achieved by pressing the "**Printer**" button.

You then start printing by using the "**Print**" button. In the dialog box which then appears you can select further preferences for printer output such as, e.g., the number of copies. These preferences will be applied to all files in the list.

5.1.11 "Exit" menu item

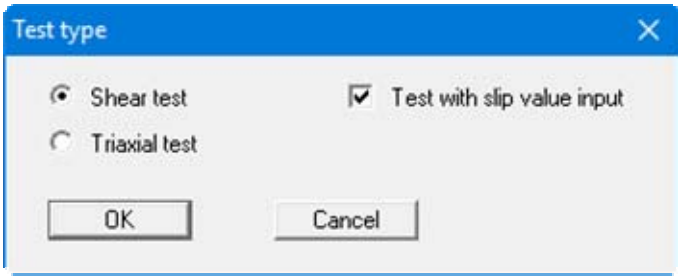
After a confirmation prompt, you can quit the program.

5.1.12 "1, 2, 3, 4" menu items

The "**1, 2, 3, 4**" menu items show the last four files worked on. By selecting one of these menu items the listed file will be loaded. If you have saved files in any other folder than the program folder, you can save yourself the occasionally onerous ***rummaging*** through various sub-folders.

5.2.1 "Test type" menu item

The shear test is selected by default. The following dialog box opens, in which it is specified whether the test evaluation is carried out also using slip values or with failure values only.

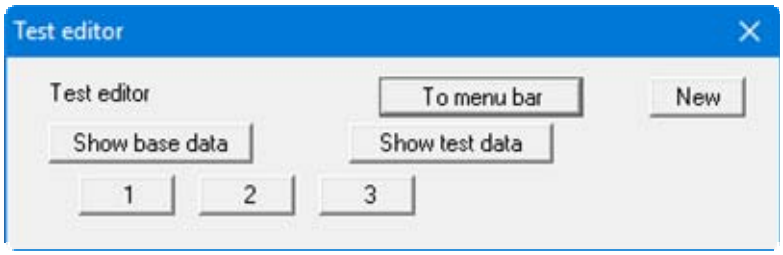


If the "**Triaxial test**" button is activated the diagram displays stress circles with stress planes. The parameters in the test texts table are automatically adapted by the program depending on the type of test selected (see Section 5.4.2).

5.2.2 "Tests" menu item

5.2.2.1 General

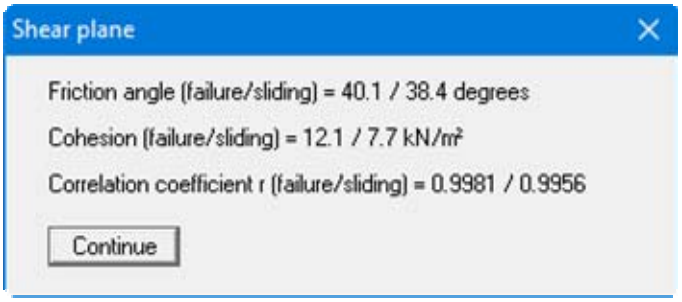
This point represents the program's central menu item. Almost all the test data are entered here. As an example, after clicking this menu item the following dialog box opens:



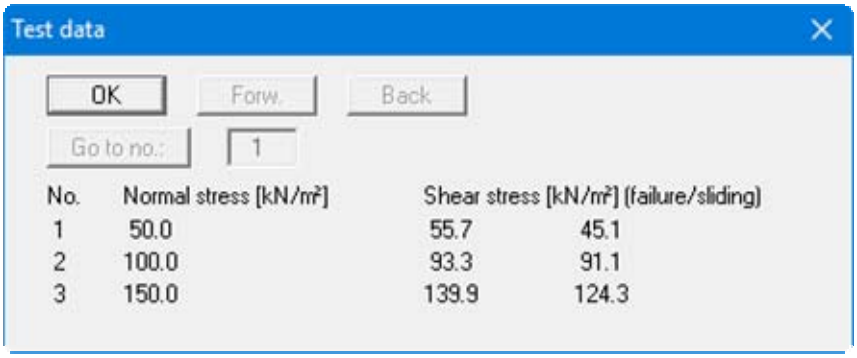
Three tests are already present in this example. The tests are automatically numbered and the test numbers ("1, 2, 3, ...") shown on the respective buttons. The following actions are possible:

- "**To menu bar**"
  You return to the original menu bar.
- "**New**"
  You can now enter data for a new test.

- "**Show base data**"
  The test data corresponding to any entered single tests are computed and displayed in an info box. The same data are shown on the output sheet in the "**Shear parameters**" element (see Section 5.4.7).



- "**Show test data**"
  The input data for the normal stress and the shear stress of the individual tests are computed and displayed together with all input data, e.g.:



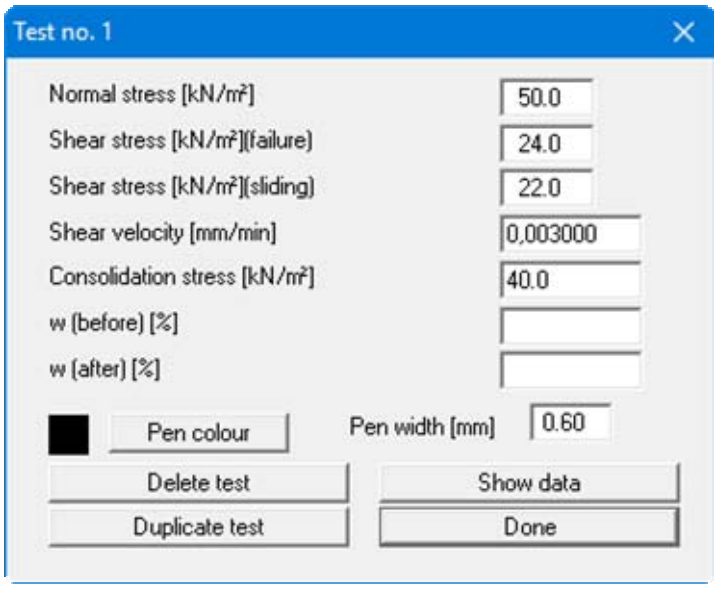
  The test data can also be shown on the output sheet in table format if the corresponding element is activated (see "**Output preferences/Table test texts**", Section 5.4.10).

- "**1**", "**2**", **...**
  By clicking the buttons labelled with the test numbers you can open and edit the data for the corresponding test.

After clicking on "**New**" or on the button of an existing test a dialog box opens for entering or editing test data. A variety of dialog boxes with different methods of measured data input are shown, depending on the whether visualisation with or without shear stress-path diagram is selected.

5.2.2.2 *Manual input of final test data*

In a test without shear stress-path diagram the following dialog box opens, for example, in which only the final test data are entered.



Enter the final test data from an individual test required for computation of the shear strength:

- normal stress [kN/m³];
- shear stress [kN/m³] (failure);
- shear stress [kN/m³] (sliding), if the test type with slip values has been selected.

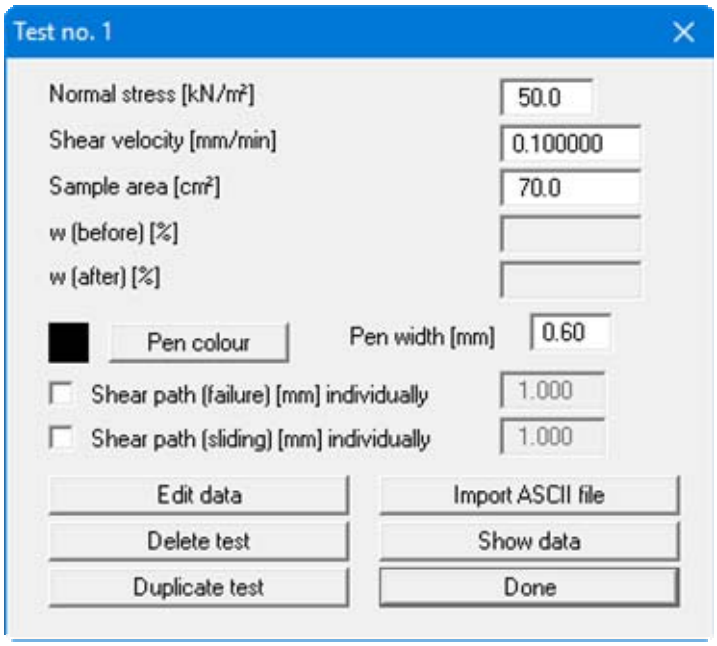
Four further data points can be entered below this, but are irrelevant for test evaluation and only serve to describe the course of the test. Editing of the texts, or hiding them completely, such as the boxes for water content in the dialog box above, is possible via the menu item "**Output preferences/Texts** ", "**Test texts**" button (see Section 5.4.2, Page 21). The pen colour can be user-defined for visualisation of the stress circles.

Furthermore, the following actions can be carried out:

- "**Delete test**"
  The currently displayed test will be deleted.
- "**Duplicate test**"
  The currently displayed test will be duplicated. You will automatically find yourself in the next test.
- "**Show data**"
  Input data for the current test will be displayed in a dialog box.
- "**Done**"
  You will arrive back at the previous dialog box. All data entered will be accepted.

5.2.2.3 Measured data input via ASCII data import

For a test employing a shear stress-path diagram the measured data are imported from an ASCII format file. The following dialog box will open, for example.



The normal stress selected for an individual test is entered in the first row in the dialog box. Four further data points can be entered below this, but are irrelevant for test evaluation and only serve to describe the course of the test. Editing of the texts, or hiding them completely, such as the boxes for water content in the dialog box above, is possible via the menu item "**Output preferences/Texts** ", "**Test texts**" button (see Section 5.4.2, Page 21). The colour and width of the pen used for the individual test can be user-defined.

The program automatically determines the failure value (maximum value of all measurements in a test) and the slip value (last value of all measurements in a test) from the shear stress-path diagram. If it is anticipated that test evaluation requires further data, activate the "**Shear path (failure) [mm] individually**" check box and enter the shear path at which it is estimated failure occurred. In analogy, corresponding input can be selected for the slip value.

The following additional actions can be performed:

- "**Edit data**"
  All measured data are displayed in a dialog and can be edited. New measured data can be entered by hand after clicking the "**Edit no. of values**" button by increasing the number as required, or by decreasing if data at the end of the list is to be deleted.

  Under certain circumstances when importing the measured data from the shear apparatus, there may be so many data points that it takes a long time to build up the visualisation of the path diagrams on the screen. The number of measured data points can be reduced to the required value via the "**Reduce measured data**" button. ***The measured data cannot be restored following this action!***

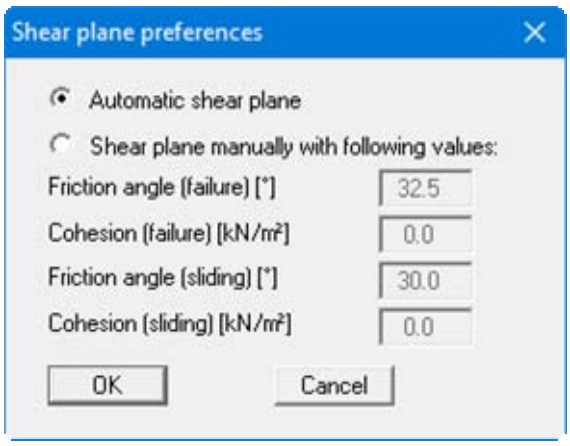
Under certain circumstances when importing the measured data from the shear apparatus, there may be so many data points that it takes a long time to build up the visualisation of the path diagrams on the screen. The number of measured data points can be reduced to the required value via the "**Reduce measured data**" button. The measured data cannot be restored following this action.

Using the "**Modify**" button all measured data can be increased or reduced by applying a constant.

- "**Delete test**"
  The currently displayed test will be deleted.
- "**Duplicate test**"
  The currently displayed test will be duplicated. You will automatically find yourself in the next test.
- "**Import ASCII file**"
  The measured data can imported from a file in standard ASCII format. In addition, ASCII data in the file formats of the shear apparatus manufacturers Wille Geotechnik, Micronic and Straßentest can be imported.
- "**Show data**"
  Result data for the current test will be calculated and displayed in a dialog box.
- "**Done**"
  You will arrive back at the previous dialog box. All values entered will be accepted.

5.2.3 "Shear plane preferences" menu item

In the default setting the shear plane is automatically computed by the program (regression curve according to Gauss' least squares method). If the values are to be specified individually, activate the "**Shear plane manually with following values**" check box in the dialog box and enter the required data for the shear parameters.

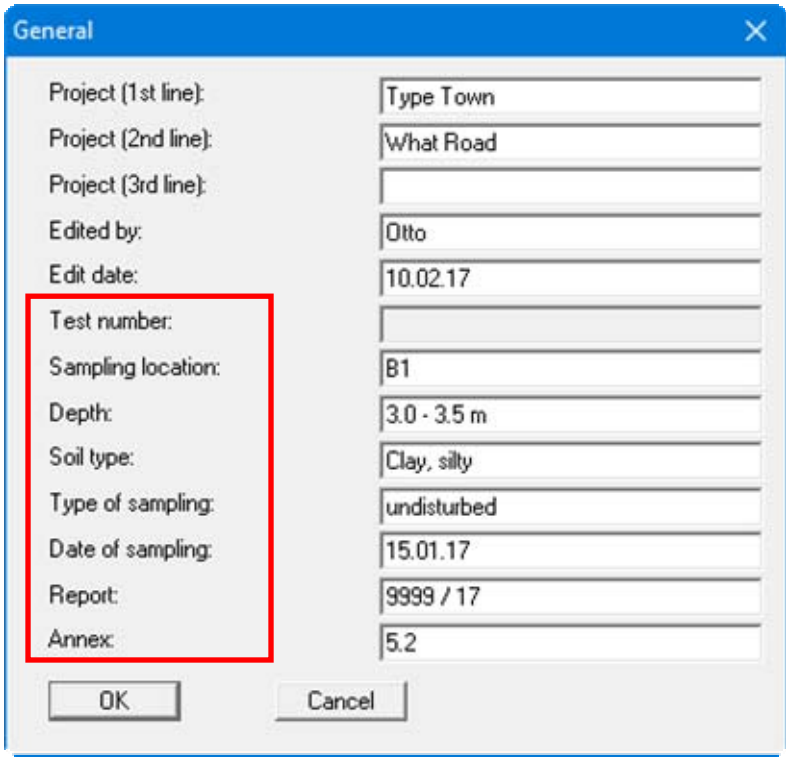


5.2.4 "Delete all tests" menu item

After a security request, all tests will be deleted. After this, you can enter a new test using the "**Edit/Tests**" menu item (see Section 5.2.2).

5.2.5 "General" menu item

Go to this menu item to enter general data such as the project identification, report number, annex number, etc. This data is displayed in the correct elements of the output sheet.



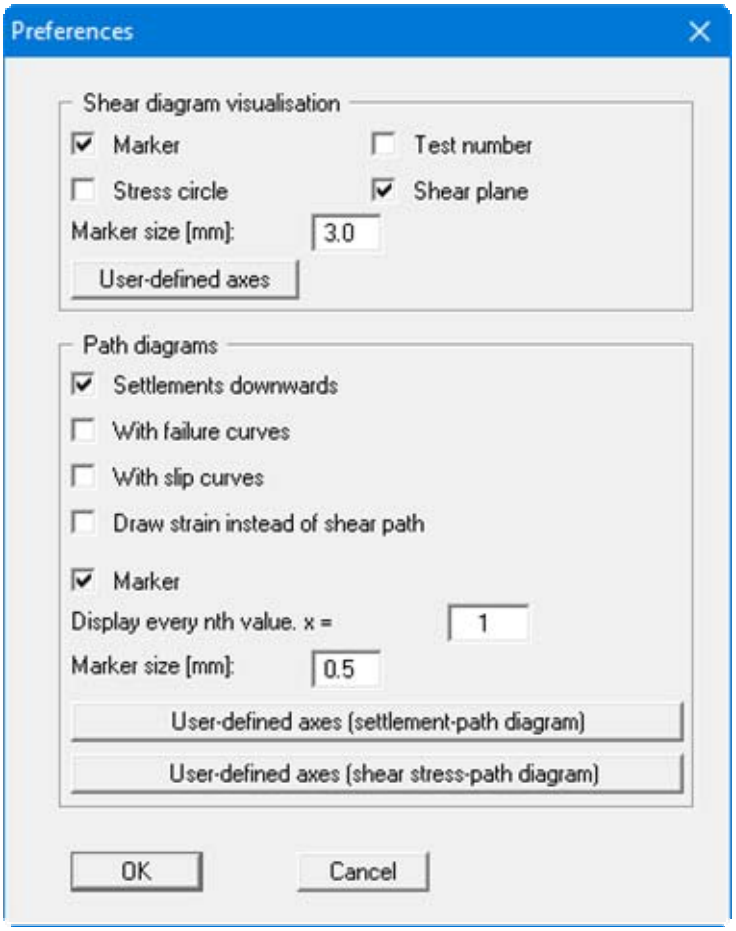
The marked texts in the dialog box also appear in the output sheet. Input boxes can be altered or switched off such as "**Test number:**" as shown in the above dialog box by going to the menu item "**Output preferences/Texts**" button "**Output sheet**" (see Section 5.4.2).

5.2.6 "Company" menu item

You can enter your company address in four rows. These rows will be entered at the top left of the output sheet.

5.3.1 "Preferences" menu item

After selecting this menu item a dialog box appears, in which you can edit preferences for graphical presentation. The lower group box is only active if you have activated the "**With shear strength-path diagram**" check box in "**File/New**".



- "**Shear diagram visualisation**" group box:
  The use of markers or test numbers for the data points of the shear diagram is specified by activating the appropriate check box. The marker size or font size of the test numbers is user-defined. If neither of these check boxes are selected the measured data will not be marked.

  "**Stress circle**" or "**Shear plane**" can be selected for visualisation of shear strength. Both can also be either visualised or hidden.

  The program automatically selects a sensible axes scale for the graphical visualisation of the shear diagram. If the "**User-defined axes**" button is clicked a dialog box opens in which the check box "**Use the following axes values**" must be activated. The required value for the maximum normal stress can then be entered. The shear stress (y-axis) is automatically adapted by the program.

- "**Path diagrams**" group box:
  The settlements in the settlement-path diagram can be displayed downwards. The failure and slip curves can be marked with dashed lines in the shear stress-path diagram by activating the corresponding check boxes.

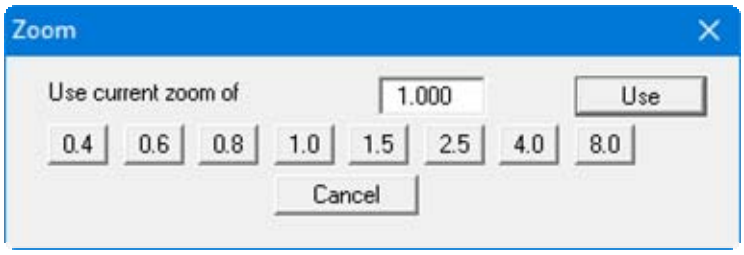
  The use of markers for the data points of the path diagrams is specified by activating the appropriate check box. Because the number of data points is generally very large, the spacing of the data markers can be increased via input in the "**Display every nth value**" box. The marker size is user-defined.

  The program automatically selects a sensible axes scale for the graphical visualisation of the path diagrams. Using the two buttons below you can adapt the axes scaling to your wishes.

5.3.2 "Refresh and zoom" menu item

The program works on the principle of ***What you see is what you get***. This means that the screen presentation represents, overall, what you will see on your printer. In the last consequence, this would mean that the screen presentation would have to be refreshed after every alteration you make. For reasons of efficiency and as this can take several seconds for complex screen contents, the screen is not refreshed after every alteration.

If, e.g., after using the zoom function (see below), only part of the image is visible, you can achieve a complete view using this menu item.



A zoom factor between 0.4 and 8.0 can be entered in the input box. By then clicking on "**Use**" to exit the box the current factor is accepted. By clicking on the "**0.4**", "**0.6**", etc. buttons, the selected factor is used directly and the dialog box closed.

It is much simpler, however, to get a complete overview using [**Esc**]. Pressing [**Esc**] allows a complete screen presentation using the zoom factor specified in this menu item. The [**F2**] key allows screen refreshing without altering the coordinates and zoom factor.

5.3.3 "Zoom info" menu item

By clicking two diametrically opposed points you can enlarge a section of the screen in order to view details better. An information box provides information on activating the zoom function and on available options.

5.3.4 "Legend font selection" menu item

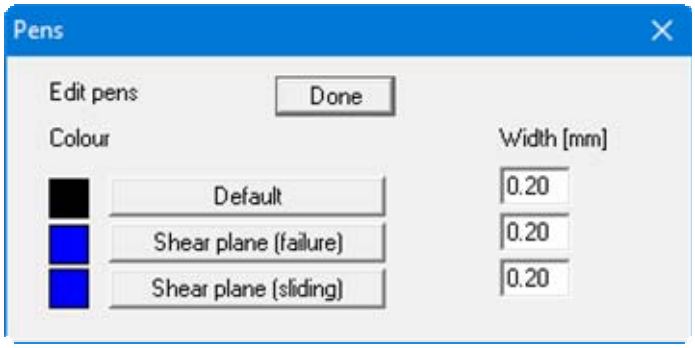
With this menu item you can switch to a different true-type font. All available true-type fontsare displayed in the dialog box.

5.3.5 "Font size selection" menu item

You can edit font sizes of texts [in mm] within the various input areas.

5.3.6 "Pen colour and width" menu item

For reasons of clarity, different colours are used as default for graphic presentation of the different lines, as well as the type of dashing. With this menu item you can alter the preferences to suit your wishes.



The pen width, line type and dashing can be edited for the listed lines and, after clicking the appropriate buttons, the pen colours be adapted.

On ***monochrome printers*** (e.g. laser printers), colours are shown in a corresponding grey scale. Graphic elements employing very light colours may be difficult to see. In such cases it makes sense to edit the colour preferences.

5.3.7 "Mini-CAD toolbar" menu item

Using this menu item you can add free text, lines, circles, polygons and images (e.g. files in formats BMP, JPG, PSP, TIF, etc.) to the main program graphics. A pop-up menu opens, the icons and functions used are described in more detail in the **Mini-CAD** manual provided.

5.3.8 "Toolbar preferences" menu item

After starting the program a horizontal toolbar appears below the program menu bar. If you would rather work with a popup window with several columns, you can specify your preferences using this menu item. The smart icons can also be switched off.

At the bottom of the program window you find a status bar with further information. You can also activate or switch off the status bar here. The preferences will be saved in the "**GGU-DIRECTSHEAR.alg**" file (see menu item "**Graphics preferences/Save graphics preferences**") and will be active at the next time the program is started.

By clicking on the tools (smart icons) you can directly reach most of the program functions. The meaning of the Smart icons appears as a text box if you hover with the mouse pointer over the tools. Some of the tool functions can be activated from the normal menu items.

"**Zoom out**"
If you have previously ***zoomed in***, this tool returns to a full screen display.

"**Zoom (-)**"/"**Zoom (+)**"
With the zoom functions you can zoom in or out of parts of the image, by clicking the left mouse button.

"**Undo move object**"
If you have previously edited the position or size of an element on the output sheet ([**F11**] or used "**Output preferences/Move objects**"), you can undo the last changement with this tool.

"**Restore move object**"
If you have previously undone a changement, you can restore with this tool.

"**Copy/print area**"
Use this tool to copy only parts of the graphics in order to paste them, e.g. to a report. You will see information on this function and can then mark an area, which is copied to the clipboard or can be saved in a file. Alternatively you can send the marked area directly to your printer (see "**Tips and tricks**", Section 6.3).

5.3.9 "Save graphics preferences" menu item

Some of the preferences you made with the menu items of the "**Graphics preferences**" menu as well as the inputs using the "**Edit/Company**" menu item can be saved to a file. If you select "**GGU-DIRECTSHEAR.alg**" as file name, and save the file on the same level as the program, the data will be automatically loaded the next time the program is started and need not be entered again.

> If you do not go to "**File/New**" upon starting the program, but open a previously saved file instead, the preferences used at the time of saving are shown. If subsequent changes in the general preferences are to be used for existing files, these preferences must be imported using the menu item "**Graphics preferences/Load graphics preferences**".

5.3.10 "Load graphics preferences" menu item

You can reload a graphics preferences file into the program, which was saved using the "**Graphics preferences/Save graphics preferences**" menu item. Only the corresponding data will be refreshed.

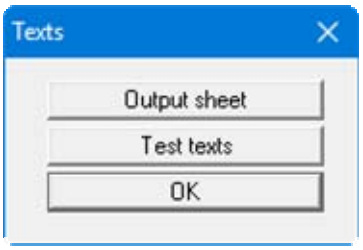
5.4 Output preferences menu

5.4.1 "Page size" menu item

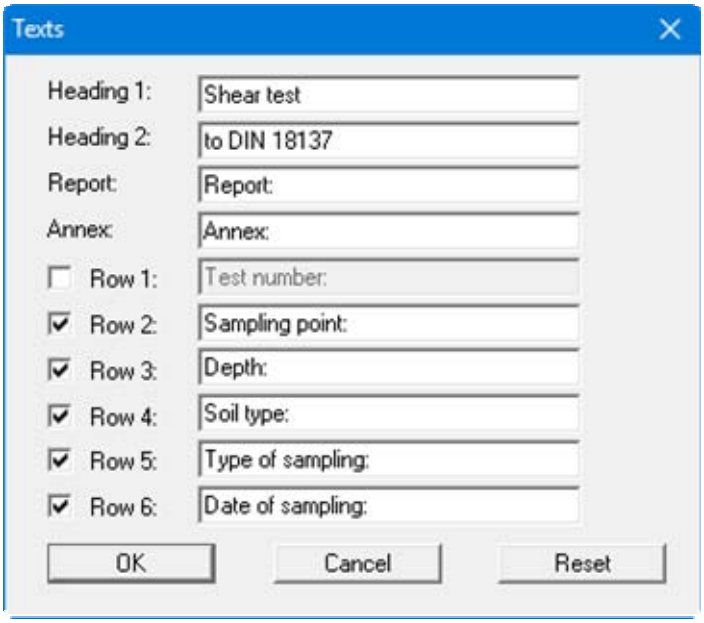
You can edit the page size in the dialog box of this menu item to your personal requirements.

5.4.2 "Texts" menu item

The default labelling of some output sheet elements can be edited in this menu item's dialog box. Among other things, the name of the output sheet can be specified here. An option box opens in which the various fields can be selected for editing using the correspondingly labelled buttons.



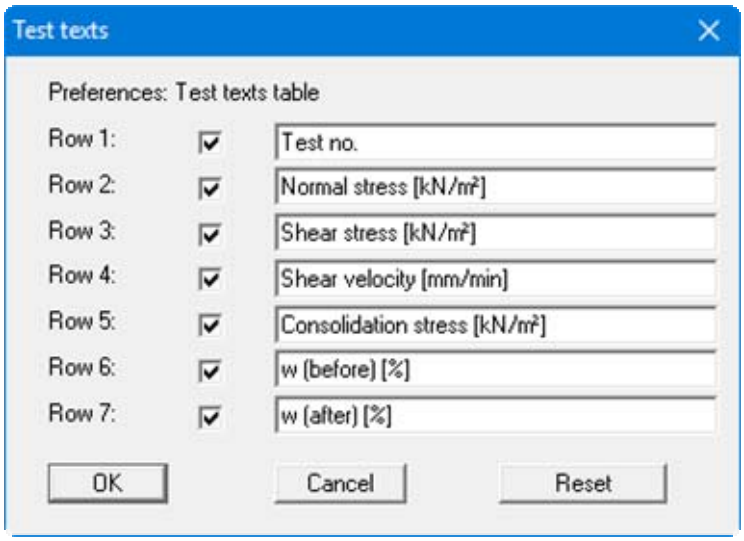
After clicking "**Output sheet**" the following dialog box opens:



Your input in rows 1 to 6 of the above dialog box, as well as the input for "**Report:**" and "**Annex:**" also represent the designations for the input boxes in the "**Edit/General**" menu item dialog box. If rows are deactivated in the above dialog box, the corresponding input boxes in the "**Edit/General**" menu item dialog box are also deactivated (see Section 5.2.4).

Use "**Reset**" to restore the default labelling settings. If you have retroactively changed the language you will see the internal program translations in the input boxes.

If the "**Test texts**" button is clicked in the above option box the following dialog box opens, allowing editing of the test data input box labelling and the display of the test data table on the output sheet:

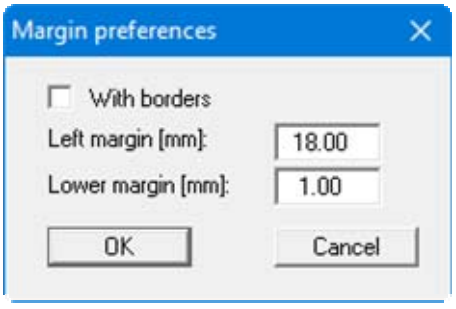


The appropriate parameters are presented in the above dialog box; depending on whether a shear test or a triaxial was selected in "**Edit/Test type**" (see Section 5.2.1). If any of the rows are deactivated in the dialog box the input boxes in the "**Tests**" dialog box are also deactivated (see Section 5.2.2.2). These rows are completely hidden in the output sheet table containing the test data.

Use "**Reset**" to restore the default labelling settings. If you have retroactively changed the language you will see the internal program translations in the input boxes.

5.4.3 "Margins" menu item

In the default program preferences the form is shown with cutting borders. For output to an A4 printer, a reduction of the printer output is generally necessary, as proprietary printers cannot fully cover an A4 page. The margin preferences can be defined in the following dialog box.



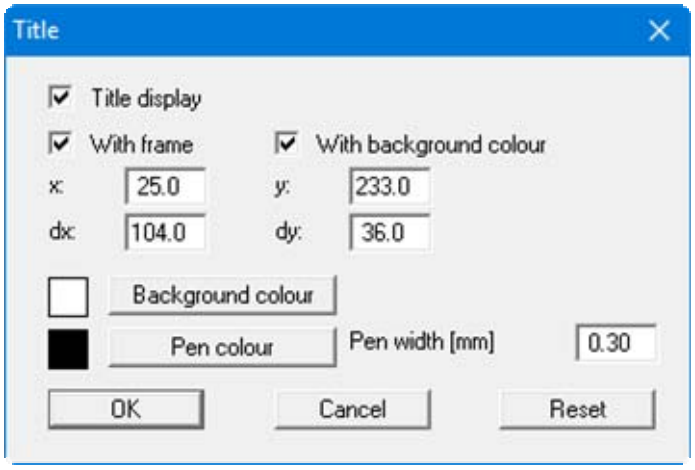
By deactivating the "**With borders**" check box and with an appropriate choice of left and lower margins, it is generally possible to create a non-reduced printer output. It is necessary to also adapt the page height and width (see Section 5.4.1).

5.4.4 "Position info" menu item

The positions and layout of the individual elements on the output sheet can be altered using the following menu items. This menu item provides information on the options for altering the position and layout more quickly using the mouse.

5.4.5 "Title (change position)" menu item

The position and layout of the title elements can be altered via the dialog box for this menu item, if the "**Title display**" check box is activated.



The position of the element on the output sheet and its size can be defined or edited by means of the variables "***x***" and "***y***", "**dx**" and "**dy**". The element can be provided with a frame and a background colour to suit your personal requirements. If the element needs to be returned to its original condition, this can be done using the "**Reset**" button. Alternatively, you can alter the size and shape of the element using the mouse (see menu item "**Output preferences/Move objects**", Section 0).

The heading "**Shear test**" shown in the title element can be edited in the menu item "**Output preferences/Texts**" button "**Output sheet**" (see Section 5.4.2). The texts "**Project (1st line)**" to "**Project (3rd line)**" are entered immediately after double-clicking the element or using the menu item "**Edit/General**" (see Section 5.2.4).

5.4.6 "Shear diagram" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Proceed as described there to alter the position or layout of the "**Shear diagram**" element.

5.4.7 "Shear parameters" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Proceed as described there to alter the position or layout of the "**Shear parameters**" element.

5.4.8 "Shear stress-path diagram" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Proceed as described there to alter the position or layout of the "**Shear stress-path diagram**" element.

5.4.9 "Settlement-path diagram" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Proceed as described there to alter the position or layout of the "**Settlement-path diagram**" element.

5.4.10 "Table test texts" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Proceed as described there to alter the position or layout of the "**Test texts**" element.

If rows have been deactivated by clicking the "**Test texts**" button in the "**Output preferences/Texts**" menu item (see Section 5.4.2, Page 21), they are completely hidden in the table.

5.4.11 "Company" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). Simply proceed as described there to edit the "**Company**" element.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/Company**" (see Section 5.2.6).

5.4.12 "Test no., etc." menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). To edit the "**Test no., etc.**" element, simply proceed as described there.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/General**" (see Section 5.2.4). For this element you also have the option of adapting the texts in front of the input boxes to suit your needs. Go to the menu item "**Output preferences/Texts**" button "**Output sheet**" (see Section 5.4.2).

5.4.13 "Annex and report" menu item

Almost exactly the same dialog box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.5). To edit the "**Annex and report**" element, simply proceed as described there.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/General**" (see Section 5.2.4). For this element you also have the option of adapting the texts in front of the input boxes to suit your needs. Go to the menu item "**Output preferences/ Texts**" button "**Output sheet**" (see Section 5.4.2).

5.4.14 "Reset all" menu item

With this button, all preferences for the aforementioned elements, which may have been edited with the previous menu item, will be reset to the program defaults.

5.4.15 "Move objects" menu item

When you go to this item you can move the various objects with the aid of the mouse. Move the mouse over the object to be moved. When you are located above a moveable object the mouse pointer appears in the shape of a cross. You can now press and hold the left mouse button and drag the object to the required position.

> After going to this menu item only one object at a time can be moved using the mouse or its size be altered.
>
> In order to move or edit several objects, this function can be more quickly activated by pressing [**F11**] or the icon.

The size of an object can also be altered using this menu item or the [**F11**] key. If you move over the frame of a changeable object after activating this function the mouse assumed the shape of a double-headed arrow. Hold the left mouse button and move the frame until the object has reached the required size. To retain the ratio of the sides, pull at one corner only. If on one side only is pulled the object will become higher or wider.

The last change made in the position or size of an object can be undone using [**Backspace**] or by clicking the icon.

5.5.1 "Copyright" menu item

You will see a copyright message and information on the program version number.

The "**System**" button shows information on your computer configuration and the folders used by **GGU-DIRECTSHEAR**.

5.5.2 "Maxima" menu item

Information on the maximum number of tests possible is displayed in a message box

5.5.3 "Help" menu item

The **GGU-DIRECTSHEAR** manual is opened as a PDF document. The help function can also be accessed using the [**F1**] function key.

5.5.4 "GGU on the web" menu item

Using this menu item you can access the GGU Software website: www.ggu-software.com.
Keep in touch with new program versions and the regular ***download*** offers.

If you would like to be automatically notified about program innovations, please register for the Newsletter in our Knowledge Base. Go to the following website: http://kbase.civilserve.com.

5.5.5 "GGU support" menu item

This menu item takes to the GGU-Software Support area at www.ggu-software.com.

5.5.6 "What's new?" menu item

You will see information on program improvements in comparison to older versions.

5.5.7 "Language preferences" menu item

This menu item allows you to switch the menus and the graphics from German to English and vice versa. To work in German, deactivate the two check boxes "**Dialoge + Menüs übersetzen (translate dialogues, menus)**" und "**Graphiktexte übersetzen (translate graphics)**".

Alternatively, you can work bilingually, e.g. with German dialog boxes but with graphic output in English. The program always starts with the language setting applicable when it was last ended.

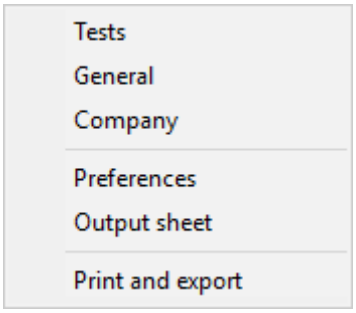
6 Tips and tricks

6.1 Keyboard and mouse

You can scroll the screen with the keyboard using the cursor keys and the [**Page up**] and [**Page down**] keys. By clicking and pulling with the mouse, with [**Ctrl**] pressed, you activate the zoom function, i.e. the selected section will fill the screen. Furthermore you can use the mouse wheel to zoom in/out or scrolling the screen presentation. The following mouse wheel functions are available:

- Mouse wheel up = move screen image up
- Mouse wheel down = move screen image down
- [**Ctrl**] + mouse wheel up = enlarge screen image (zoom in)
- [**Ctrl**] + mouse wheel down = shrink screen image (zoom out)
- [**Shift**] + mouse wheel up = move screen image right
- [**Shift**] + mouse wheel down = move screen image left

If you click the right mouse button anywhere on the screen a context menu containing the principal menu items opens.



By double-clicking the left mouse button on output sheet or **Mini-CAD** objects, the editor for the selected object immediately opens, allowing it to be edited. By double-clicking output sheet elements while holding the [**Shift**] key, the preferences for the position, size and appearance of the element open for editing in the editor.

6.2 Function keys

Some of the function keys are assigned program functions. The allocations are noted after the corresponding menu items. The individual function key allocations are:

- [**Esc**] refreshes the screen contents and sets the screen back to the given format (A4/A3). This is useful if, for example, you have used the zoom function to display parts of the screen and would like to quickly return to a complete overview.
- [**F1**] opens the manual file.
- [**F2**] refreshes the screen without altering the current magnification.
- [**F11**] activates the menu item "**Output preferences/Move objects**".

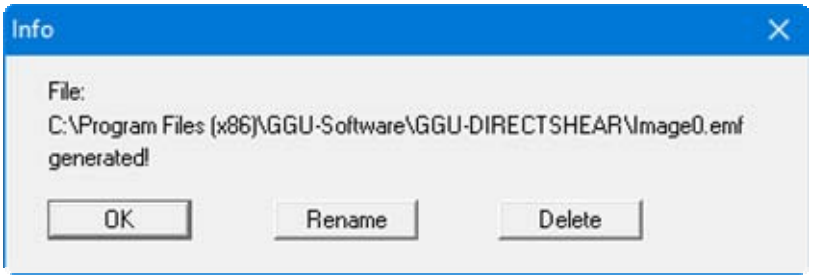
6.3 "Copy/print area" icon

A dialog box opens when the "**Copy/print area**" icon in the menu toolbar is clicked, describing the options available for this function. For example, using this icon it is possible to either copy areas of the screen graphics and paste them into the report, or send them directly to a printer.

In the dialog box, first select where the copied area should be transferred to: "**Clipboard**", "**File**" or "**Printer**". The cursor is displayed as a cross after leaving the dialog box and, keeping the left mouse button pressed, the required area may be enclosed. If the marked area does not suit your requirements, abort the subsequent boxes and restart the function by clicking the icon again.

If "**Clipboard**" was selected, move to the MS Word document (for example) after marking the area and paste the copied graphics using "*Edit/Paste*".

If "**File**" was selected, the following dialog box opens once the area has been defined:



The default location of the file is the folder from which the program is started and, if several files are created, the file is given the file name "**Image0.emf**" with sequential numbering. If the "**Rename**" button in the dialog box is clicked, a file selector box opens and the copied area can be saved under a different name in a user-defined folder. Saving can be aborted by pressing the "**Delete**" button.

If the "**Printer**" button was pressed in the first dialog box, a dialog box for defining the printer settings opens after marking the area. Following this, a dialog box for defining the image output settings opens. After confirming the settings the defined area is output to the selected printer.

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