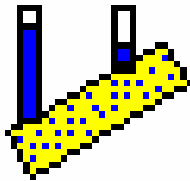


Evaluation and visualisation of permeability tests

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# GGU-LABPERM

VERSION 7



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Last revision: June 2018  
Copyright: Prof. Dr. Johann Buß  
Technical implementation and sales: Civilserve GmbH, Steinfeld

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## 1 Preface

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The **GGU-LABPERM** program allows evaluation and visualisation of tests to determine permeability. Tests with constant head and with falling head can both be evaluated using this program.

The program is designed to allow simple data input. The system is permanently displayed on the screen. Every alteration to the data is shown on the screen, so that optimum control of input data is guaranteed. Graphics 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 thoroughly tested on numerous examples from the literature and in engineering practice. 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

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

By going to the "**File**" menu, a previously saved file can be loaded by means of the "**Load**" menu item, or a new one created using "**New**". After clicking "**File/New**" an empty form is displayed on the screen. The menu bar will then show five menus:

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

After clicking one of these menus, the so-called 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-LABPERM** 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 1.5, corresponding to an A4 sheet in landscape format.

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## 5 Description of menu items

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### 5.1 File menu

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#### 5.1.1 "New" menu item

All data entered will be deleted after a confirmation prompt. You can then define new tests.

#### 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 "Append" menu item

Using this menu item it is possible to load the results of a number of permeability 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.

Please note that the information concerning the page format, general entries (e.g. company name, project description, report no.) and preferences (e.g. permeability graph pens) are not imported with the appended file.

Any annotations or preferences should therefore be defined after appending.

#### 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. Loading again later creates exactly the same presentation as was present at the time of saving.

#### 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 ".kwr" 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, ".kwr" will be used automatically.

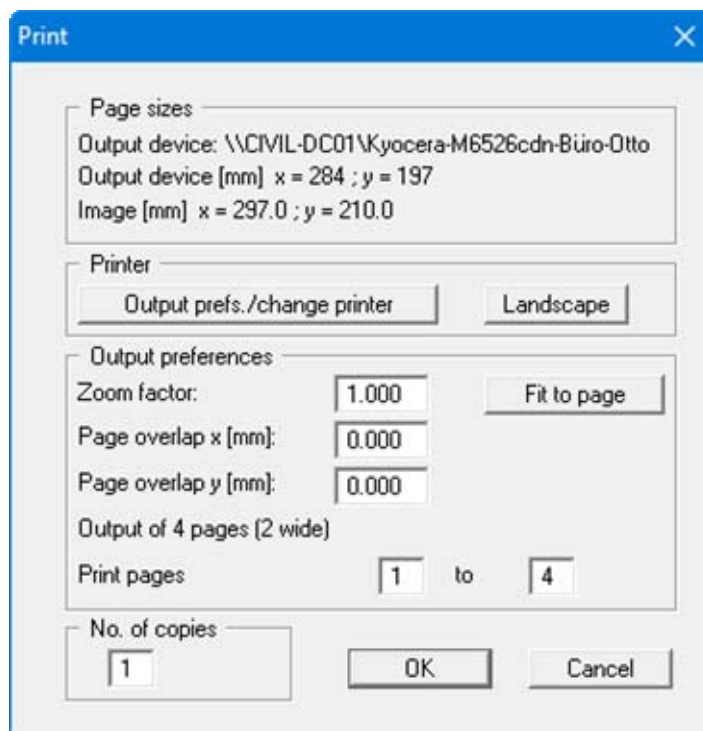
### 5.1.6 "Output preferences" menu item

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

### 5.1.7 "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 default 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 varieties 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).

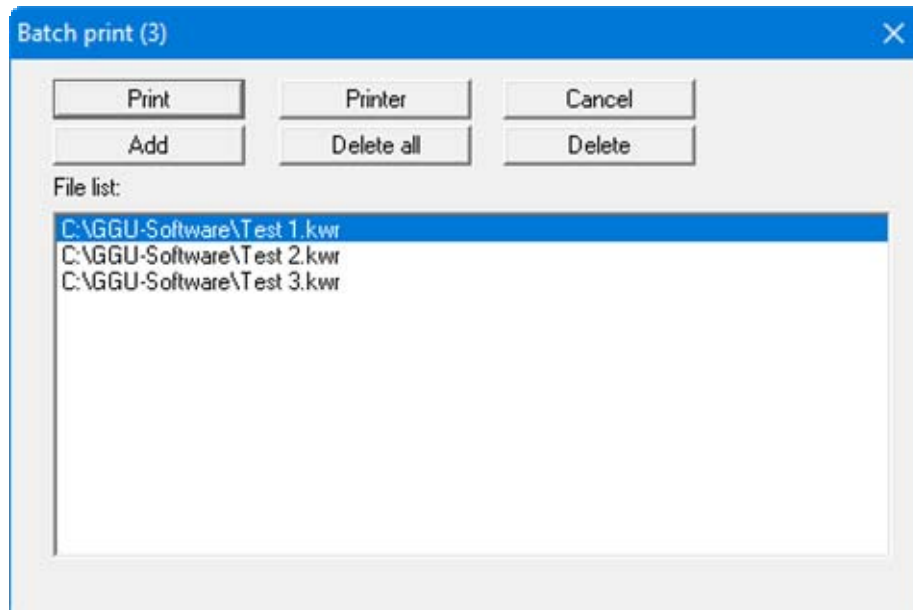
Using the **"Mini-CAD"** program module you can also import EMF files generated using other GGU applications into your graphics.

- **"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.



### 5.1.8 "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.

### 5.1.9 "Exit" menu item

After a confirmation prompt, you can quit the program.

### 5.1.10 "1, 2, 3, 4" menu items

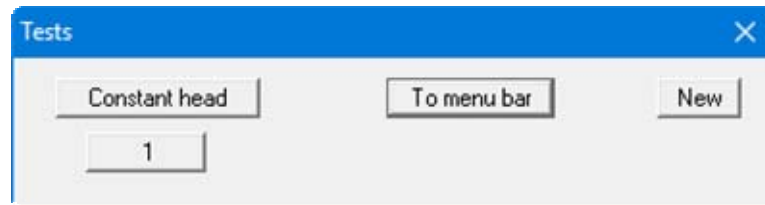
The "**1, 2, 3, 4**" menu items show the last four files worked on. By selecting one of these menu items the listed file will be loaded. If you have saved files in any other folder than the program folder, you can save yourself the occasionally onerous *rummaging* through various sub-folders.

## 5.2 Edit menu

---

### 5.2.1 "Constant tests" menu item

You can enter permeability tests with constant head using this menu item. The following dialog box appears:



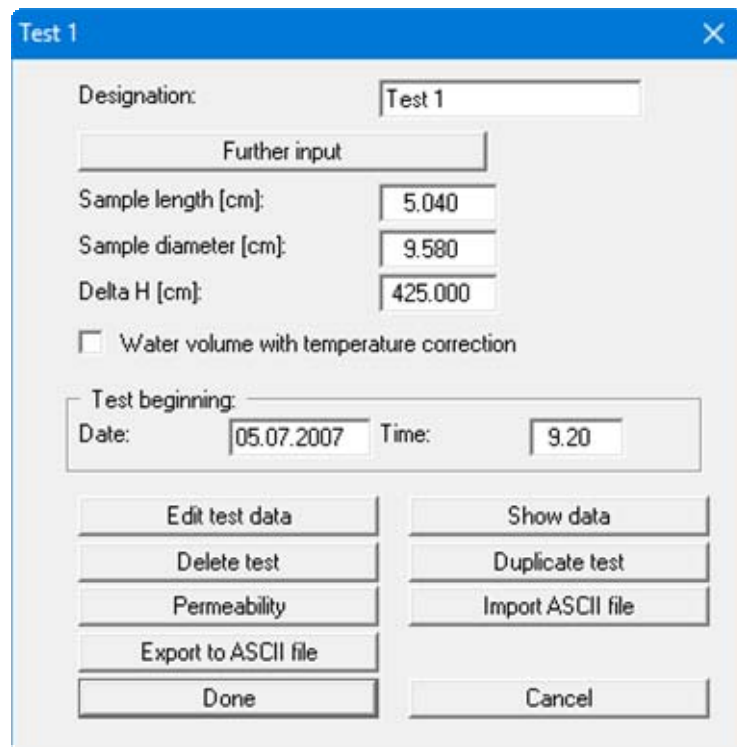
One test is already present in this example. The tests are automatically numbered and the test numbers ("1, 2, 3, ...") shown on the respective buttons. The following actions are possible:

- **"Constant head"**  
The button shows that you have opened the editor for tests with a constant head. Move to the menu item **"Edit/Falling tests"** (see Section 5.2.2) by pressing this button and enter further tests. It is possible to incorporate both standpipe tests and triaxial tests on one output sheet. Move quickly between dialog boxes to enter and edit the different test types using this button.
- **"To menu bar"**  
You return to the original menu bar.
- **"New"**  
You can now enter data for a new test.
- **"1", "2", ...**  
By clicking the buttons labelled with the test numbers you can open and edit the data for the corresponding test.

Presentation of the permeability graphs and the corresponding columns or rows in the diagram table always follows the sequence of the test numbers.

The presentation sequence can be altered by going to **"Swap"** (see Section 5.2.3). The selected tests are then assigned the specified new test numbers.

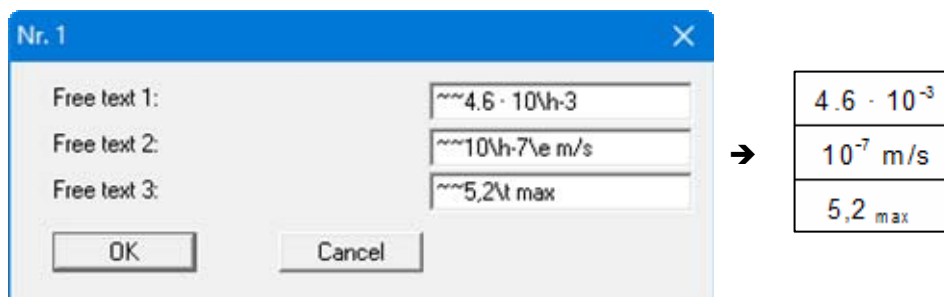
After clicking on "New" or on the button of an existing test a dialog box opens for entering the test data. You can access the editor quickly by double-clicking in the table region containing the required permeability graph. The following dialog box opens:



In the input boxes define the sample via length, diameter and delta H. By activating the "**Water volume with temperature correction**" check box, a temperature correction can be accomplished for test evaluation. Date and time of the test beginning can be entered below.

After clicking the "**Further input**" button it is possible to enter further sample properties (e.g. soil type, sampling location, etc.). These additional input boxes can be specified using the menu item "**Output preferences/Texts + table**", "**Edit texts and allocations**" button. Specify "**Free text**" as the allocation for the input boxes (see Section 5.4.2, page 25).

In the **Free texts** you can make input with superscript or subscript numbers or letters using the conventions described below. To start the text enter two '~' characters. Superscripts and subscripts are activated using the backslash combinations '\h' and '\t'. If you need to use normal characters again following the superscripts or subscripts, follow them by '\e' before continuing normally (see file "**Free texts with superscript-subscript.kwr**").



Furthermore, the following actions can be carried out:

- **"Edit test data"**

You see a dialog box allowing sequential input of the results of the permeability test (date, time, temperature, water volume).

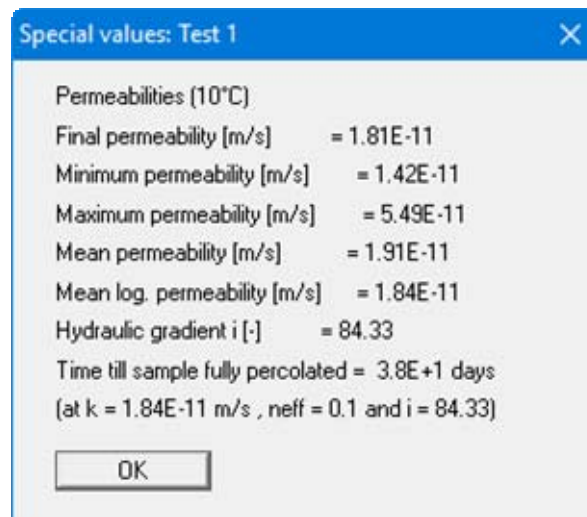
A comma will also be accepted in the place of a point for date input, allowing faster input using the numeric keypad. Moreover, for a continuous series of readings within any given month, input of the day date only is sufficient; the month and year are automatically completed by the program. The time is entered in hours (before the comma) and minutes (after the comma).

Press the **"Info"** button to read further information on the input required.

**"Edit no. of values"** allows you to generate any number of new test values. If you enter values in addition to those already given in the list, the times of which lie between the times of the old values, the new ones can be automatically brought to the correct position in the list by pressing the **"Sort"** button. The end of the test is designated by a negative water volume. If measurements recommence at zero during a test enter **"0.0"** for the water volume. Further measured values can then be entered as described. Leave the dialog box using **"OK"**; all changes made will be accepted. If you leave the dialog box using **"Cancel"** all changes made will be rejected.

- **"Show data"**

A dialog box presents the results calculated by the program.



- **"Delete test"**

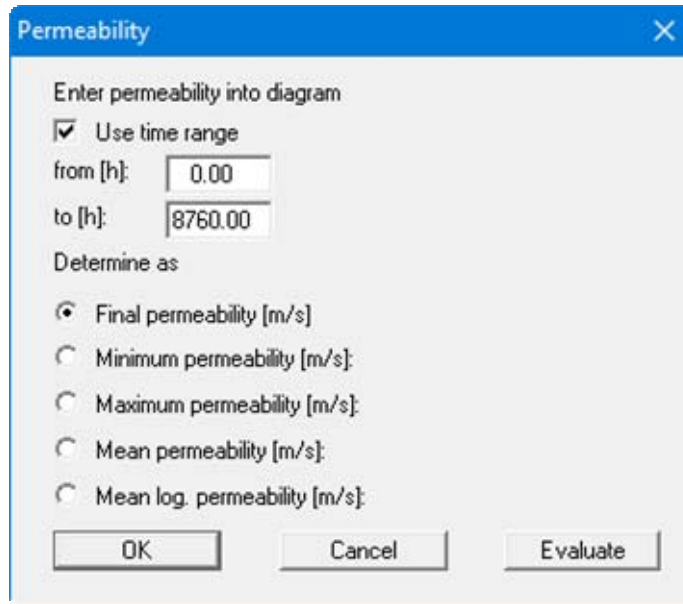
After a confirmation prompt the single test is deleted.

- **"Duplicate test"**

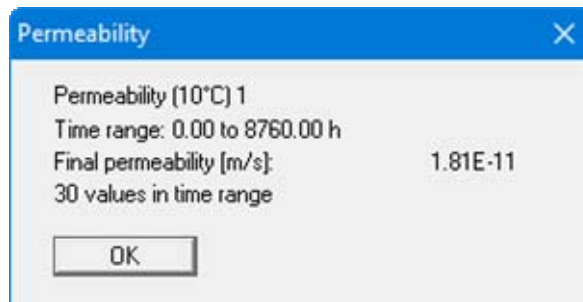
You can duplicate the test. All input made for the test to be duplicated will be transferred to the new one.

- **"Permeability"**

Normally, the permeability at the end of the test is shown in the diagram table. A different evaluation type can be selected in a dialog box after pressing this button. The time range used to determine permeability can also be edited.



Clicking the **"Evaluate"** button displays a result box with the corresponding permeability data, as it is also shown in the diagram table.



- **"Import ASCII file"**

Using this menu item it is possible to import data recorded by a datalogger manufactured by Wille or Trifolium.

- **"Export to ASCII file"**

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

- **"Done"**

You will arrive back at the previous dialog box. All data entered will be accepted.

- **"Cancel"**

Exit the dialog box without accepting any changes made.

### 5.2.2 "Falling tests" menu item

You can enter permeability tests with falling head (standpipe test) using this menu item.

Input is analogous to the input in menu item "**Edit/Constant tests**" (see Section 5.2.1); however, the height of the water level in the standpipe must also be given. Test numbering follows the existing tests (constant head), i.e. if you have already entered two tests, the new test is given the number "3". As a result, the previous tests (with constant head) cannot be selected using this menu item. However, by selecting the "**Falling head**" button it is possible to change to the "**Edit/Constant tests**" in order to work on the corresponding tests.

### 5.2.3 "Swap" menu item

Important permeability test data (e.g. sampling point, depth) are displayed in the table below the diagram. For several permeability tests, the presentation sequence corresponds to the input sequence, from left to right. If you would like to change this sequence you can do so after selecting this menu item.

### 5.2.4 "Edit measured data graphically" menu item

After selecting this menu item you will see an info box with operating notes. Here, you select the curve which measured data points are to be edited. Then, you can move individual measured data points on the selected permeability graph with the left mouse button pressed.

### 5.2.5 "Delete all" menu item

After a security request, all tests will be deleted. After this, you can enter a new test using the "**Edit/Constant tests**" or "**Edit/Falling tests**" menu items (see Section 5.2.1 or Section 5.2.2).

## 5.2.6 "General" menu item

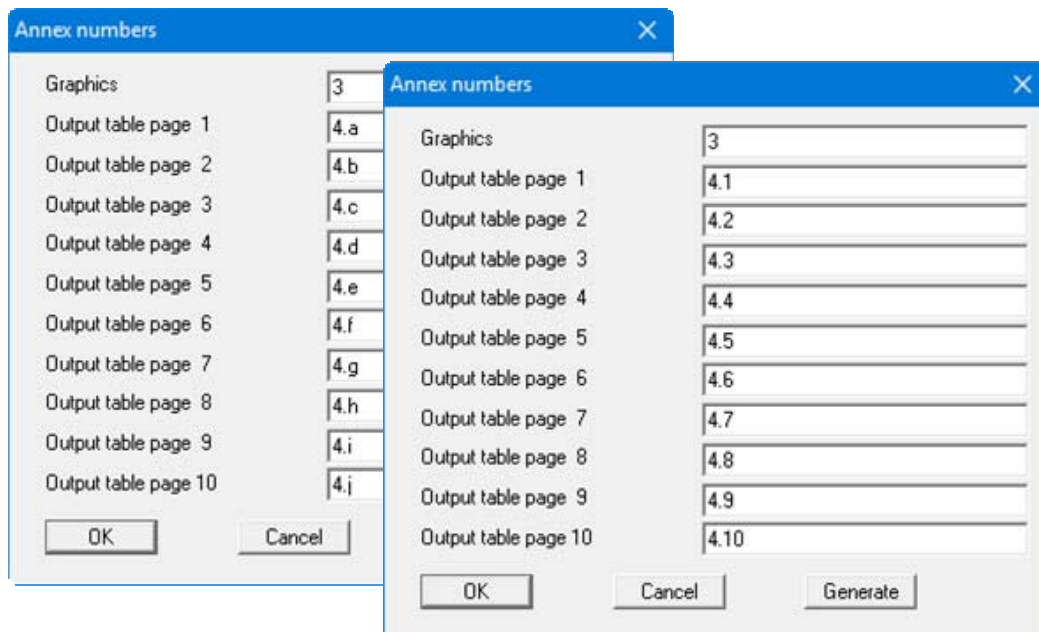
Go to this menu item to enter general data such as the project identification, report number, etc. This data is displayed in the correct elements of the output sheet.

Field Label	Value
Project (1st line):	Sampletown
Project (2nd line):	Example Road
Project (3rd line):	
Edited by:	Ko
Edit date:	22.05.17
Test number:	
Sample taken on:	21.05.17
Sampling method:	Disturbed
Testing method:	Standpipe test
Location:	
Station:	
Report:	2017

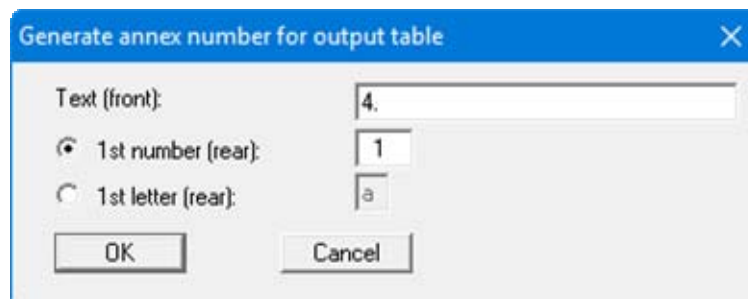
The marked texts in the dialog box also appear in the output sheet. Input boxes can be altered or switched off such as "Test number:" as shown in the above dialog box by going to the menu item "Output preferences/Texts + table" and pressing the "Diagram header" button (see Section 5.4.2).

### 5.2.7 "Annex numbers" menu item

Here it is possible to define the numbering of the permeability graphs annexes and output table sheets. The numbers can be either user-defined or determined automatically by the program.



The numbers for the output sheets can be easily generated by the program using the "Generate" button. You will then see a dialog box similar to this one:



Enter the text to appear in front of the automatic numbering in the first input box; this can be a different number to the annex number for the graphics. It is then possible to select between numbering with numerals or a letter sequence. Activate the required command button and enter the first number or letter (in lower or upper case).

### 5.2.8 "Remarks" menu item

Using this menu item it is possible to enter remarks to the tests in four lines of text, which are displayed at the lower right of the form.

### 5.2.9 "Company" menu item

You can enter your company address in four lines. These lines will be entered at the top left of the form.

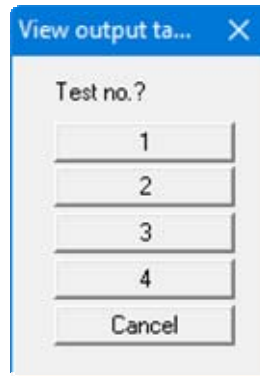


### 5.3 Graphics preferences menu




---

#### 5.3.1 "View output table"/"View diagram" menu items

The default screen visualisation depicts your permeability tests. Change to output table visualisation using the "View output table" menu item. If several tests have been conducted, the following dialog box will first appear, in which you select the respective tests for output table visualisation using the buttons "1", "2", etc.

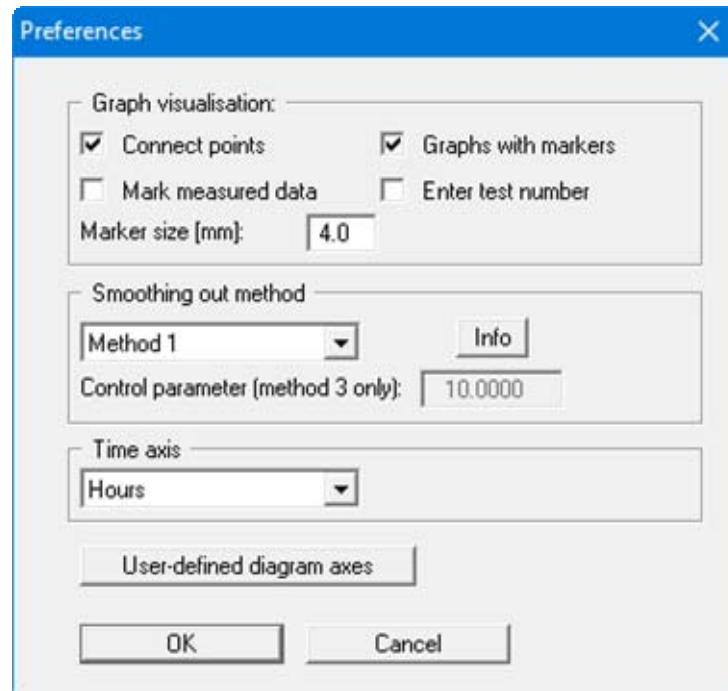


The "1", "2" etc. buttons represent the tests entered. The most important test data can be viewed for every test.

If you are viewing the output table you can navigate between the output tables for the individual tests using the arrow tools   in the Smart icon bar. In order to return to the graphical visualisation of the permeability tests, click on the now active menu item "View diagram" or simply on the  tool in the Smart icon bar. You can move between the output table and the graphical visualisation using this tool.

### 5.3.2 "Preferences" menu item

After selecting this menu item a dialog box appears, in which you can edit preferences for graphical presentation.



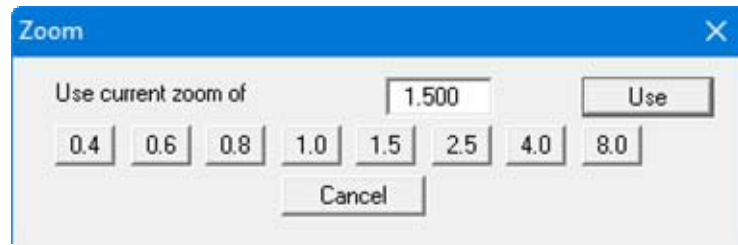
- **"Graph visualisation"** group box:  
By activating the appropriate check boxes the measured data can be visualised as a permeability graph, provided with markers at given intervals or directly attached to the measured data. Each permeability graph uses a different marker, thus ensuring simple differentiation between several permeability graphs, even on monochrome printouts. Instead of markers, the graphs can also be labelled at their start and finish with the test numbers they represent. The marker size or font size of the test numbers is user-defined.
- **"Smoothing out method"** group box  
You can select from four smoothing out methods: A message box provides information on the type of smoothing:
  - No smoothing = no smoothing
  - Method 1 = strict Bezier spline
  - Method 2 = "loose" Bezier spline
  - Method 3 = rational spline interpolationVery rounded graphs are generated using smoothing out methods 2 and 3. Deviations between the measured data and the permeability graphs are visible when the measured test data is marked.  
For method 3, smoothing can be influenced with the **"Control parameter"**. The value of the control parameters may only be in the range between  $> -1.0$  and  $< 1000$ .
- **"Time axis"** group box  
Enter the required time format (seconds, minutes, hours or days) for permeability graph visualisation.

- **"User-defined diagram axes"** button  
The program automatically selects a sensible axes scale for the graphical visualisation of the permeability graphs. If the **"User-defined diagram axes"** button is clicked a dialog box opens in which the check box **"Use the following axes values"** must be activated. The required minimum and maximum values for time and permeability can then be entered.

### 5.3.3 "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.

### 5.3.4 "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.

### 5.3.5 "Legend font selection" menu item

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

### 5.3.6 "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.

### 5.3.7 "Toolbar preferences" menu item

After starting the program a horizontal toolbar for menu items 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-LABPERM.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) for menu items 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 alteration with this tool.



"Restore move object"

If you have previously undone an alteration, you can restore with this tool.

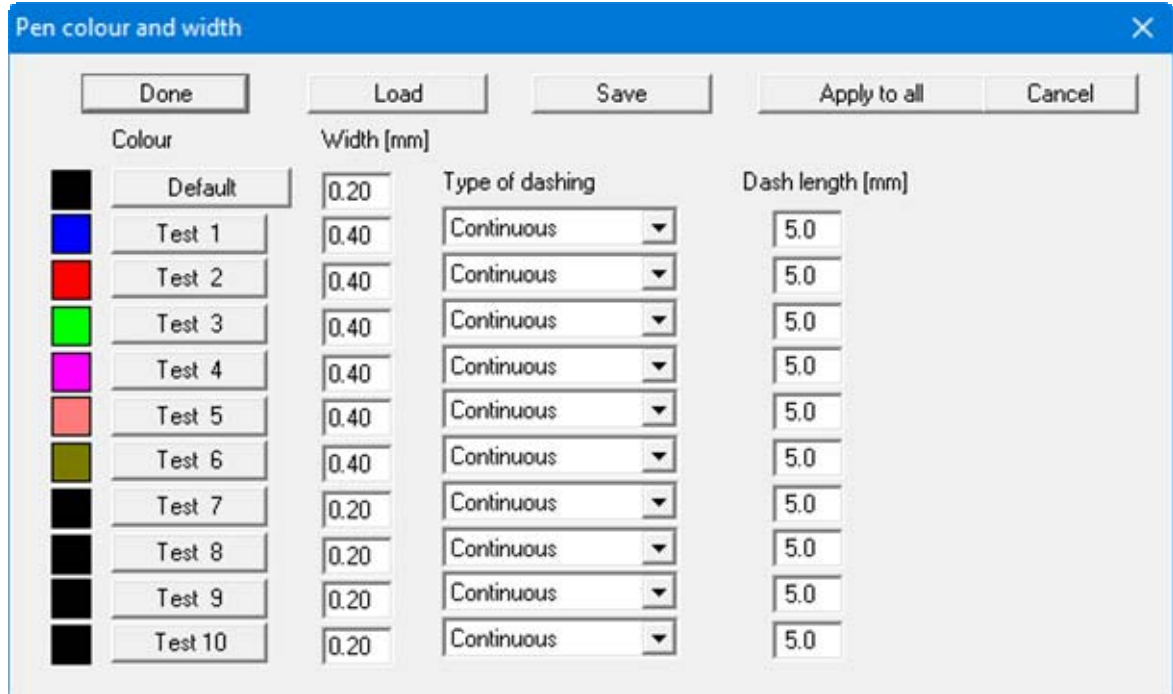


"Copy/print area"

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).

### 5.3.8 "Pen colour and width" menu item

For reasons of clarity, different colours are used as default for graphic presentation of the permeability graphs, 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 permeability graphs and, after clicking the buttons with the test numbers, the pen colours be adapted. The pen preferences can be saved as an ".stf" file, or be loaded from such, using "Save" and "Load", in order to give a variety of pen combinations.

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.

### 5.3.9 "Font size selection" menu item

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

### 5.3.10 "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-LABPERM.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**".

### 5.3.11 "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

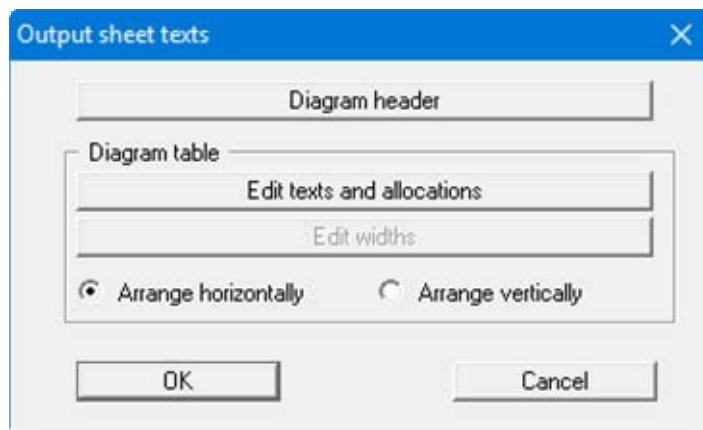
---

### 5.4.1 "Page size" menu item

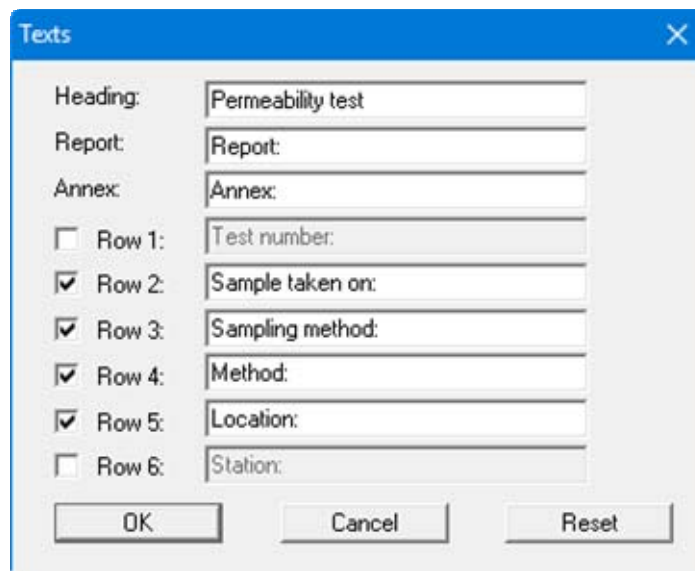
The default page set-up is A4 (landscape) when the program is started. You can edit the page format in the dialog box.

### 5.4.2 "Texts + table" 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 the "**Diagram header**" button the following dialog box opens:



Your input in lines 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 lines are deactivated in the above dialog box, the corresponding input boxes in the "**Edit/General**" menu item dialog box are also deactivated (see Section 5.2.6).

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.

In the **"Diagram table"** group box in the above **"Texts + table"** dialog box the required texts, text allocations and type of visualisation can be edited.

- **"Edit texts and allocation"**

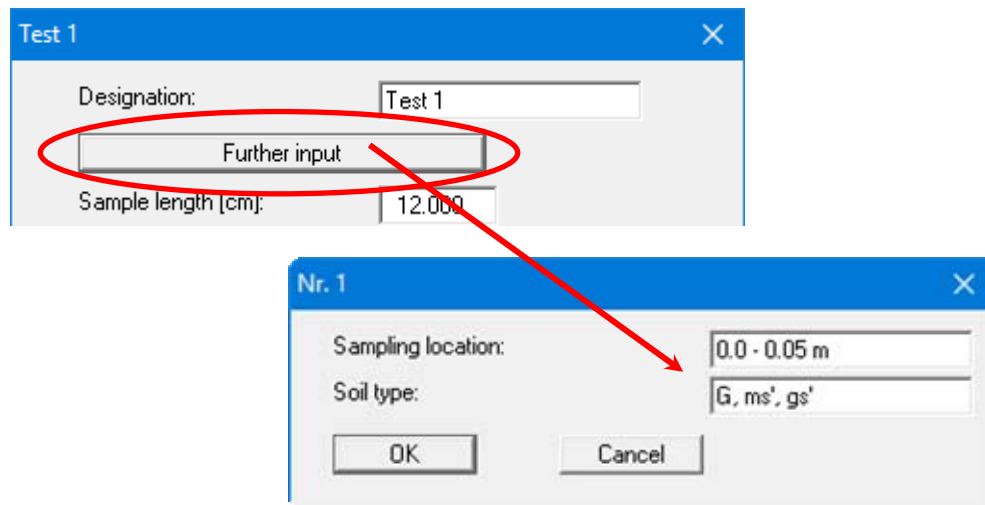
A dialog box opens for specifying the parameters and properties to be displayed in the diagram table. It is possible to display up to a maximum of 17 lines. The sequence corresponds to the numbering in the following dialog box.

Line	Text	Enter what?
1	Test no.:	Designation
2	Signature:	Signature
3	Sampling location:	Free text
4	Depth:	Free text
5	Soil type:	Free text
6	Length / Area:	Length/area
7	Hydraulic gradient:	Hydraulic gradient
8	k (10 <sup>-9</sup> ) [m/s]:	Permeability
9	No. 9	None
10	No. 10	None
11	No. 11	None
12	No. 12	None
13	No. 13	None
14	No. 14	None
15	No. 15	None
16	No. 16	None
17	No. 17	None

In the **"Text"** boxes a text must be entered by hand which is later used as a description. After clicking the arrows in the **"Enter what?"** column the values or text in the drop-down list entered or determined by the program can be allocated to the rows of the diagram table. Lines with a **"None"** allocation are not displayed.



If information needs to be added to the table that is not found in the default texts in the table, a **"Free text"** can be used. In the menu items **"Edit/Constant tests"** or **"Edit/Falling tests"** you will then see an additional **"Further input"** button and can enter text according to your requirements in the dialog box.

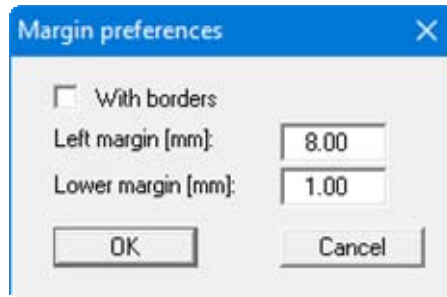


The **"Reset"** button resets the labelling and allocations of the results table to the defaults. If you have retroactively changed the language you will get the internal program translations. Your texts and allocation can be saved in a **"\*.ktx"** file using the **"Save"** button and opened again using the **"Load"** button. In addition, you can specify whether the current texts and properties allocations

- **"Edit widths"**  
If the table is arranged vertically, a fixed width for each column can be defined using this button. Please note, however, that the total width of the table needs to fit into the layout of your output sheet. In order to achieve a uniform distribution within the specified total width, e.g. as defined using [F11], click the **"All the same width"** button.
- **"Arrange horizontally"/"Arrange vertically"**  
This command button defines the alignment of the diagram table.

### 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.



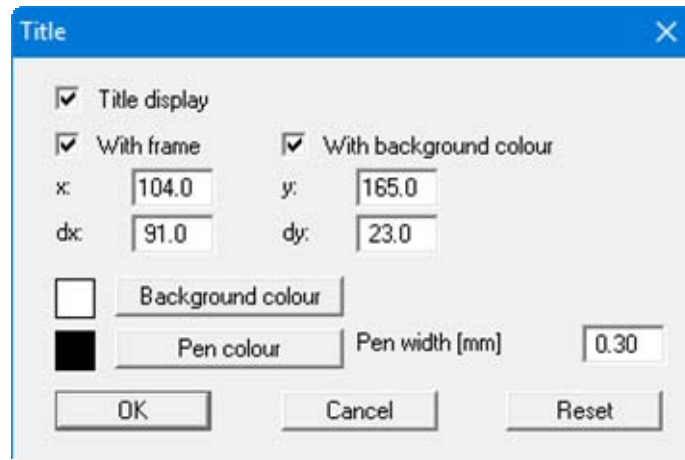
By deactivating the "**With borders**" check box and with an appropriate choice of left and lower margins, it is generally possible to create a non-reduced printer output. It is necessary to also adapt the page height and width (see Section 5.4.1).

### 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 element 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 5.4.16).

The heading "Permeability test" shown in the title element can be edited in the menu item "Output preferences/Texts + table", "Diagram header" button (see Section 5.4.2). The texts "Project (1<sup>st</sup> line)" to "Project (3<sup>rd</sup> line)" are entered immediately after double-clicking the element or using the menu item "Edit/General" (see Section 5.2.6).

#### 5.4.6 "Permeability graphs" 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). Because the permeability graphs are the central graphical element, it cannot be switched off. Proceed as described above to alter the position or layout of the "Permeability graphs" element.

#### 5.4.7 "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 5.2.9).

#### 5.4.8 "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 5.2.6). 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 + table**", "**Diagram header**" button (see Section 5.4.2).

#### 5.4.9 "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 directly by double-clicking the element or by going to the menu items "**Edit/General**" and "**Edit/Annex numbers**" (see Sections 5.2.6 and 5.2.7). 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 + table**", "**Diagram header**" button (see Section 5.4.2). In addition, the report and annex numbers can be rotated by 90° in the diagram view, if the "**Annex and report**" element is opened directly by double-clicking.

#### 5.4.10 "Remarks" 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 "**Remarks**" 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/Remarks**" (see Section 5.2.8).

#### 5.4.11 "Edited by + date" 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 "**Edited by + date**" 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 5.2.6).

#### 5.4.12 "Diagram table" 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 "**Diagram table**" element, simply proceed as described there.

#### 5.4.13 "Output table (test data)" 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 "Output table (test data)" element, simply proceed as described there.

#### 5.4.14 "Output table (results)" 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 "Output table (results)" element, simply proceed as described there.


#### 5.4.15 "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.


#### 5.4.16 "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 [Back] or by clicking the  icon.

## 5.5 Info menu

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### 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-LABPERM**.

### 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-LABPERM** help 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](http://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](http://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.

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## 6 Tips and tricks

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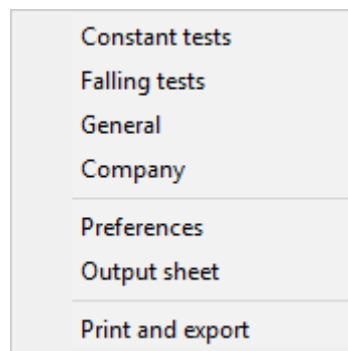
### 6.1 Keyboard and mouse

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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 elements 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


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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 landscape). 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

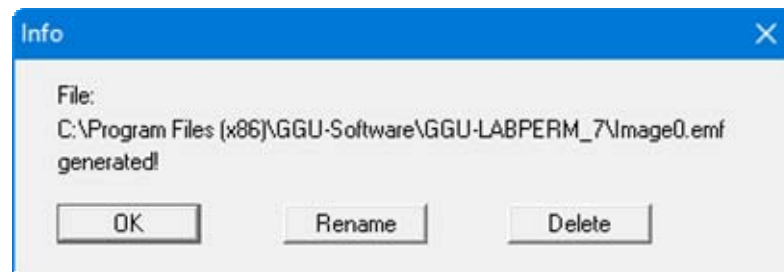
---

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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