

GGU-LABPERM manual

Determination of permeability

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1 GGU-LABPERM: Preface

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 includes convenient data input. The system is permanently displayed on the screen. Every change to the data is displayed on the screen, so that optimum control of the input data is guaranteed.

There are "?" and "Info" buttons in the dialog boxes for many technical and program-specific questions. Click on the "?" buttons or "Info" buttons to obtain the necessary information.

The graphic output supports the true type fonts provided by WINDOWS, so that an excellent layout is guaranteed. Colour output and numerous graphic formats (BMP, TIF, JPG etc.) are supported. PDF and DXF files can also be imported via the integrated **Mini-CAD** system (see "**Mini-CAD**" manual).

The program has been extensively tested. No errors 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 GGU-LABPERM: Licence protection

To protect the GGU software from unauthorised access, each GGU program is equipped with the **CodeMeter software protection system** from WIBU-Systems. Each GGU program is bound to a so-called **CmContainer** via a licence with the corresponding product code.

To be able to use the GGU licences in a CmContainer, a runtime environment, the **CodeMeter Runtime Kit**, must be installed on your computer via driver software. You can obtain the current version from [Software for Users - Wibu-Systems](#) (CodeMeter User Runtime for Windows).

You can work with the following CmContainer types on your PC with the CodeMeter Runtime Kit installed (= **CodeMeter licence server**):

- **CmStick**
The licence for your GGU program is stored in a USB dongle.
- **CmActLicense** (soft licence, not for virtual PC/servers)
The licence for your GGU program is stored in a licence file that is linked to the hardware of a computer.
- **CmCloudContainer**
The licence is located on a CmCloud server of WIBU-Systems and is mirrored to your CodeMeter licence server. The advantages of this type of licence binding are described on the following website: [Licence binding | GGU Software](#).

The GGU programs check at start-up and during runtime whether a corresponding license is available in a CmContainer.

3 GGU-LABPERM: Language selection

The GGU programs can be used in German and English. The program always starts with the language in which it was terminated.

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 GGU-LABPERM: Starting the program

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

File

Info

After clicking on the "**File**" menu, a previously entered test can be loaded by means of the "**Load**" menu item, or a new one created using "**New**".

After clicking on "**File/New**" an empty form is shown on the screen. Five menus now appear at the top of the window:

- 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 screen is not refreshed after every alteration.

If you would like to refresh the screen contents, press either [F2] or [Esc]. The [Esc] key also resets the screen display to your current image zoom, which is usually preset to 1.0, which corresponds to an A3 or A4 sheet in most GGU programs (see menu item "**Graphics preferences/Refresh and zoom**").

5 Tips and tricks

5.1 GGU-LABPERM: Keyboard and mouse

By double-clicking the left mouse button on legends or **Mini-CAD** objects, the editor for the selected element immediately opens, allowing it to be edited.

If you double-click in the system graphics with the left mouse button you will see a message box with the results at the selected depth. This gives you a quick overview of the results for any desired depth.

In most dialog boxes, the buttons for leaving the box or buttons for decisive functions are marked thickly and can be reached by clicking the **[Enter]/[Return]** key.

In dialog boxes in which you have to make entries, e.g. change soil properties, the quickest way to jump to the next input box is to use the **[Tab]** key. The previous value is marked and can be overwritten directly with the new entry. You do not have to move to the box with the mouse and delete the old entry in advance.

In input boxes with numerical values, you can use the calculation operations listed in “**Tips and tricks: Mathematical functions in input boxes with numbers**” to change them.

You can scroll the screen with the keyboard using the cursor keys and the **[Page up]** and **[Page down]** keys. After activating the zoom functions, click on an area of the screen to enlarge or reduce the display by a factor of 2. Alternatively, by clicking and dragging the mouse while holding down the **[Ctrl]** key, you define a window section which is then displayed in full screen. By clicking and dragging the mouse while holding down the **[Shift]** and **[Ctrl]** keys, you zoom into your system graphic, i.e. you change the scale of your system representation.

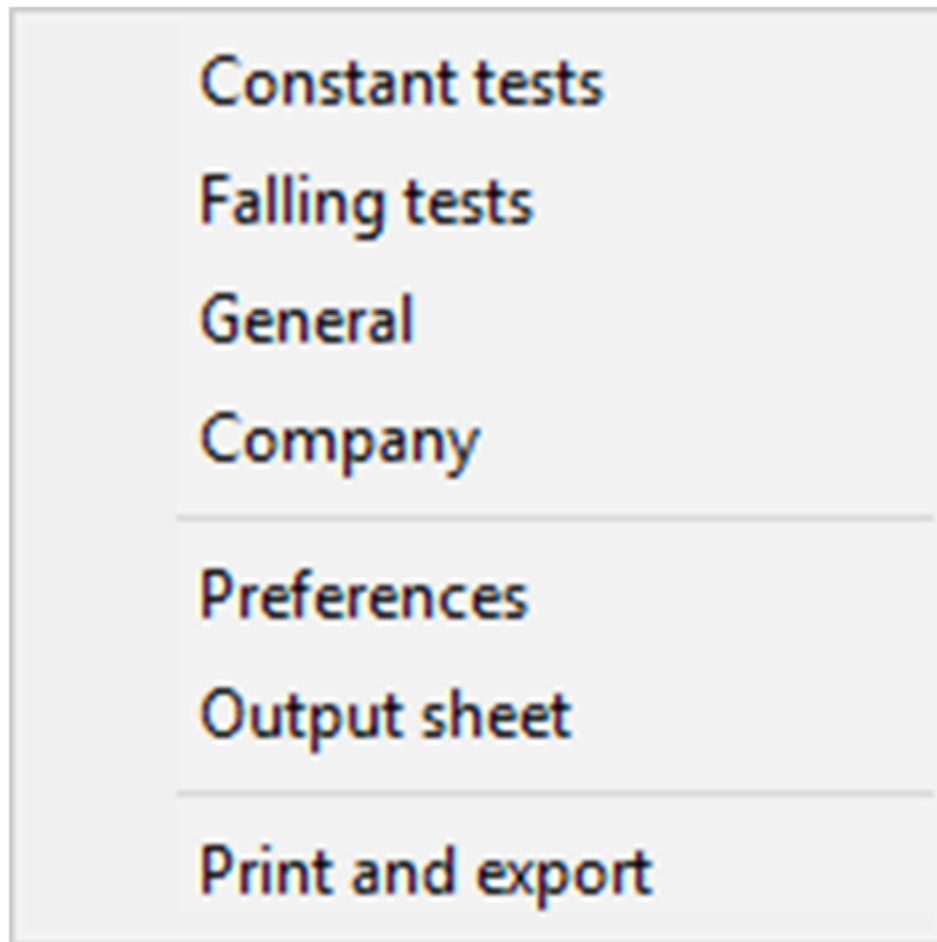
You can also use the mouse wheel to zoom in or out or to move the screen display. When the program is started for the first time, the default setting for mouse wheel operation is activated according to Windows conventions:

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

[Strg] + mouse wheel down = reduce screen image (zoom out)

From a zoomed representation you return to the full screen with **[Esc]**.

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.

5.2 GGU-LABPERM: 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 content and resets the screen section to your current image zoom, which is preset to 1.0. This is useful, for example, if you have used the magnifying glass function to display sections of the drawing on the screen and want to quickly return to the overall view.
- **[F1]** opens the manual file.
- **[F2]** refreshes the screen without altering the current magnification.
- **[F11]** activates the menu item "**Move objects**", which appears in the GGU programs under various menu titles, e.g. "**Page size + margins**", "**Graphics preferences**" or "**Output preferences**".

In this GGU program, the following function keys are also assigned to program functions:

5.3 GGU-LABPERM: "Copy/print area" icon

A dialog box opens when the **"Copy/print area"** icon

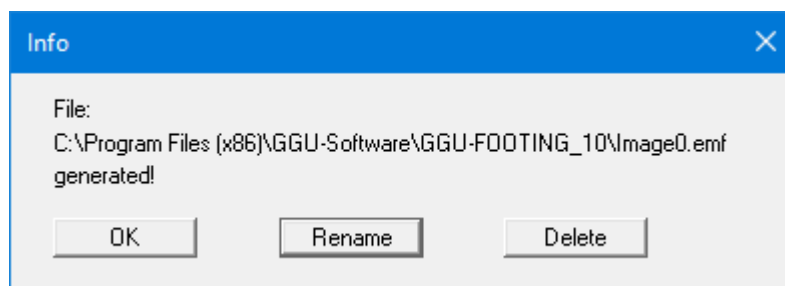


in the menu toolbar is clicked, describing the options available for this function. For example, using this icon it is possible to either copy areas of the screen graphics and paste them into the report, or send them directly to a printer.

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 appears after defining the area, shown here as an example for the **GGU-FOOTING** program:



The default location of the file is the folder from which the program is started (here: GGU-FOOTING_10) 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.

6 File menu

6.1 GGU-LABPERM: "New" menu item

All data entered will be deleted. You can then define new tests.

6.2 GGU-LABPERM: "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.

6.3 GGU-LABPERM: "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.

6.4 GGU-LABPERM: "Save" menu item

You can save data entered or edited during program use to a file, 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.

6.5 GGU-LABPERM: "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.

6.6 GGU-LABPERM: "Output preferences" menu item

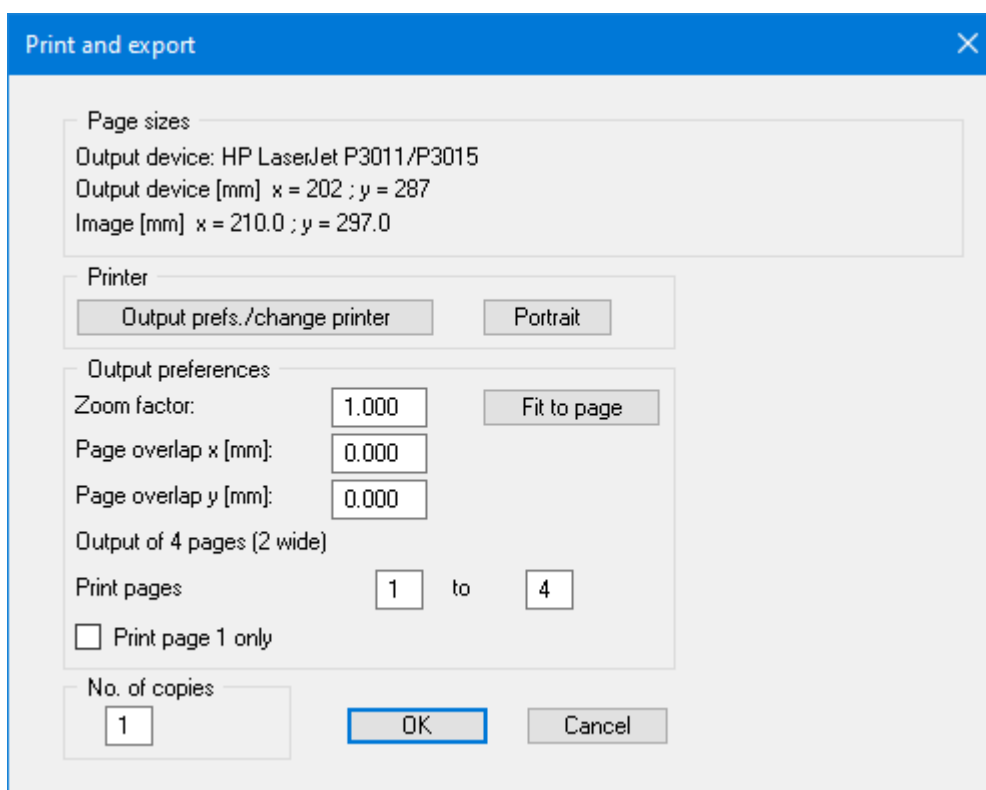
You can edit output preferences (e.g. swap between portrait and landscape) or change the printer in accordance with WINDOWS conventions.

6.7 GGU-LABPERM: "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 contents (**graphical representation**) 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). 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. You can also print only the 1st page with zoom factor = 1.0, in which case the bottom left-hand area is printed. 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



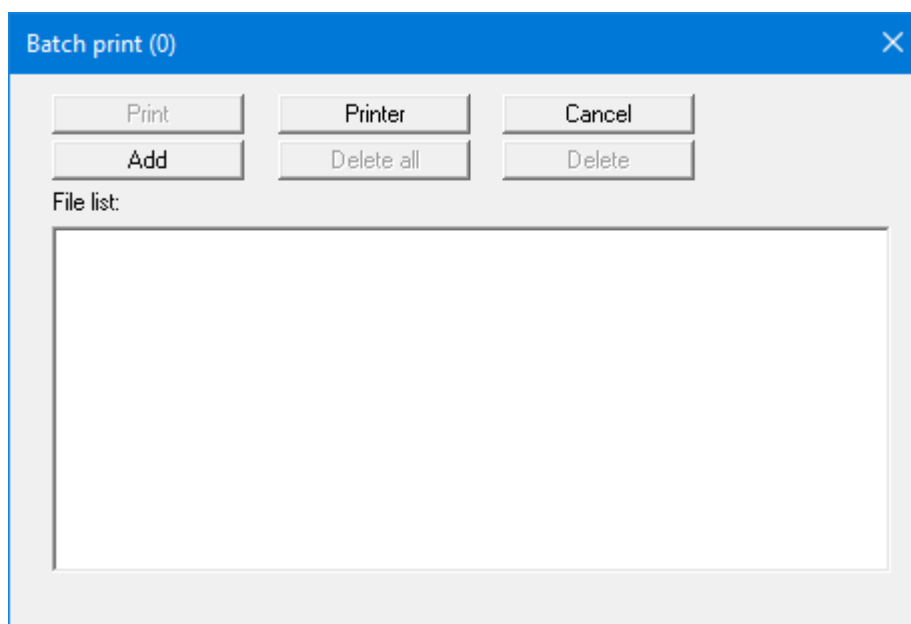
from the toolbar, you can copy parts of the graphics to the clipboard or save them to an EMF file. Alternatively you can send the marked area directly to your printer (see **"Tips and tricks"**).

Using the **"Mini-CAD"** program module you can also import EMF files generated using other GGU applications into your graphics (see menu item **"Graphics preferences/Mini-CAD"**).

- **"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.

6.8 GGU-LABPERM: "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 printer 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.

6.9 GGU-LABPERM: "Exit" menu item

After a confirmation prompt, you can quit the program.

6.10 GGU-LABPERM: "1, 2, 3, 4" menu items

If you have not stored a working directory for the program icon, the program jumps to the program directory after starting to load or save a file.

Under the menu items of the File menu, the most recently edited files are listed with the respective storage path ("**1, 2, 3, ...**"). Selecting one of these files loads the selected file. The next time the **"File/Load"** or **"File/Save"** menu items are called up in the same program session, the program automatically jumps to the directory of the last file loaded.

7 Edit menu

7.1 GGU-LABPERM: "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"** 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.

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**").

4.6 · 10 ⁻³
10 ⁻⁷ m/s
5,2 _{max}

Furthermore, the following actions can be carried out:

- **"Edit test data"**

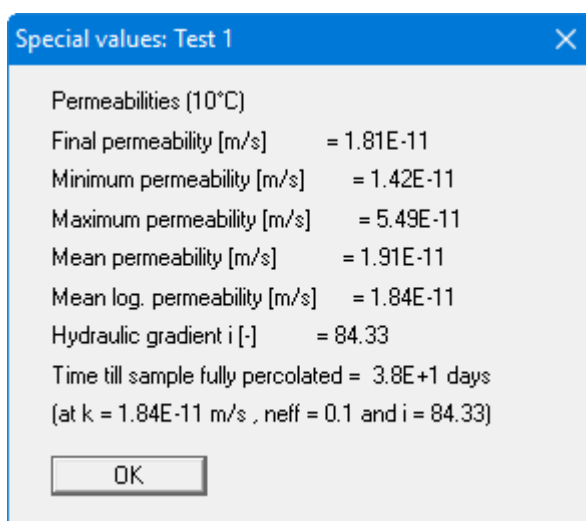
You see a dialog box allowing sequential input of the results of the permeability test (date, time, temperature, water volume).

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"**

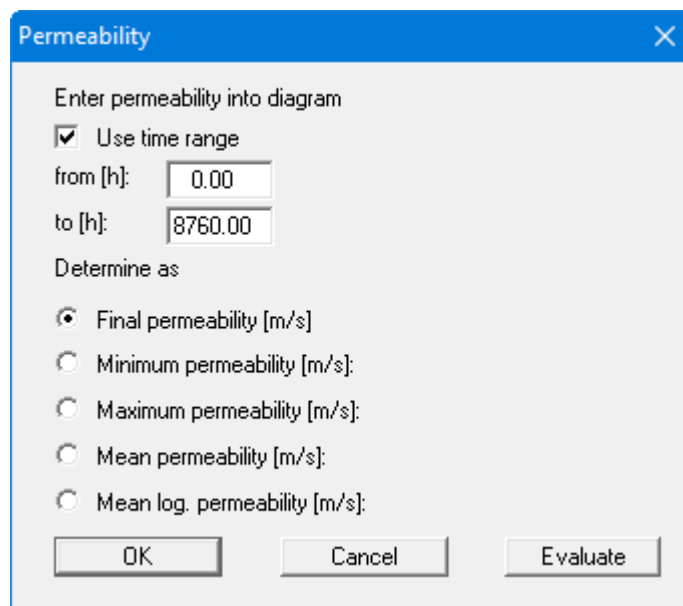
After a confirmation prompt the single test is deleted.

- **"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.



Permeability

Enter permeability into diagram

☒ Use time range

from [h]: 0.00

to [h]: 8760.00

Determine as

☒ Final permeability [m/s]

☐ Minimum permeability [m/s]:

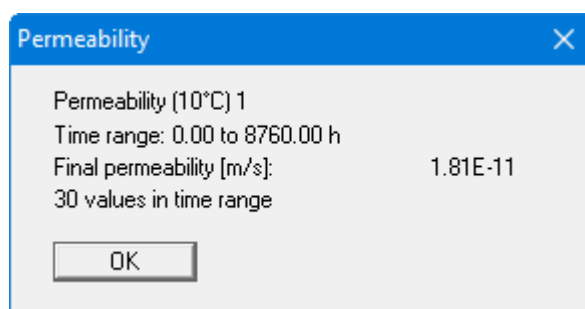
☐ Maximum permeability [m/s]:

☐ Mean permeability [m/s]:

☐ Mean log. permeability [m/s]:

OK Cancel Evaluate

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



Permeability

Permeability (10°C) 1

Time range: 0.00 to 8760.00 h

Final permeability [m/s]: 1.81E-11

30 values in time range

OK

- **"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.

7.2 GGU-LABPERM: "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**"; 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.

7.3 GGU-LABPERM: "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.

7.4 GGU-LABPERM: "Edit measured data graphically" menu item

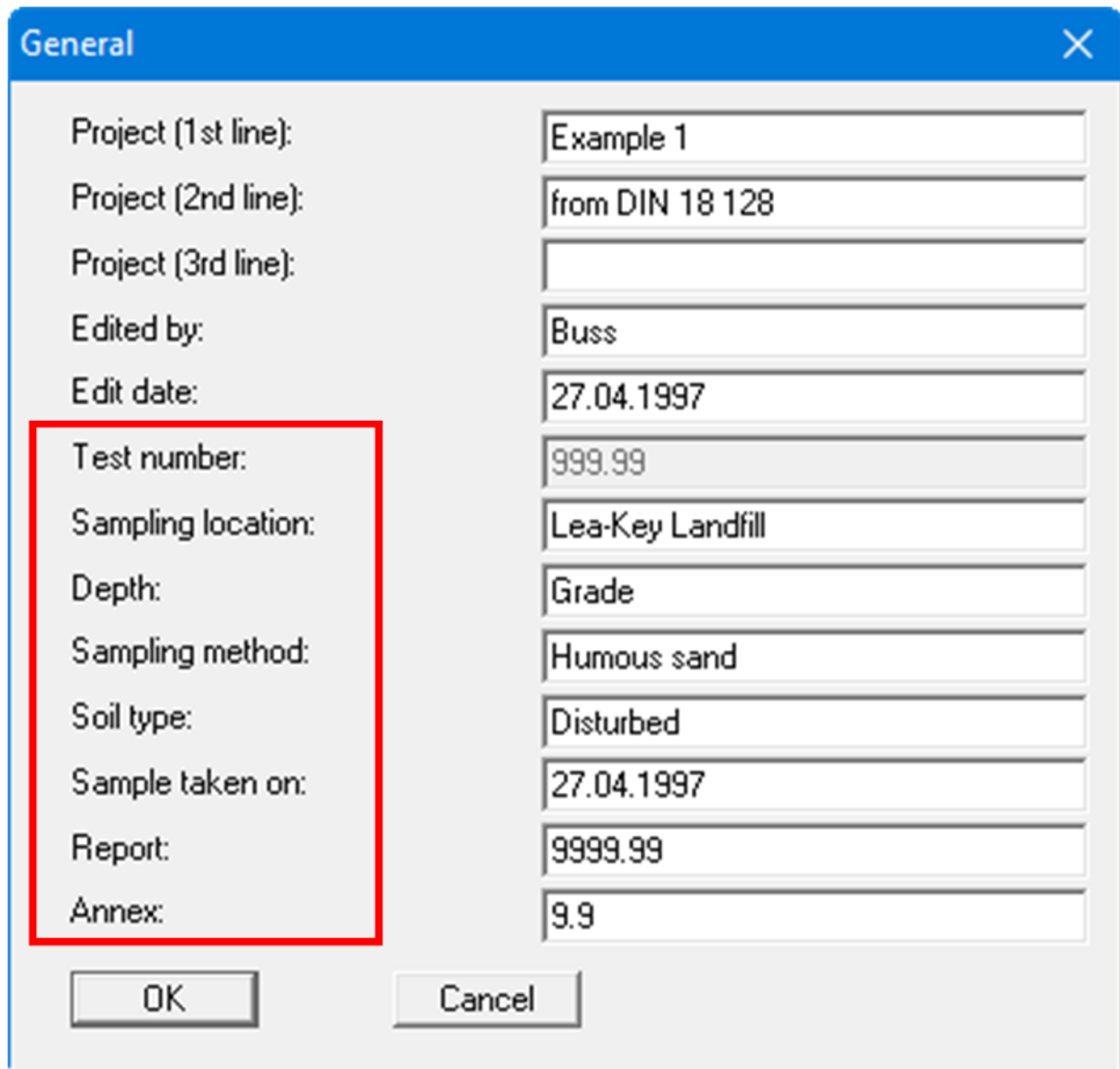
After selecting this menu item you will see an info box with operating notes. Here, you select the curve which measured data points are to be edited. Then, you can move individual measured data points on the selected permeability graph with the left mouse button pressed.

7.5 GGU-LABPERM: "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.

7.6 GGU-LABPERM: "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.



General	
Project (1st line):	Example 1
Project (2nd line):	from DIN 18 128
Project (3rd line):	
Edited by:	Buss
Edit date:	27.04.1997
Test number:	999.99
Sampling location:	Lea-Key Landfill
Depth:	Grade
Sampling method:	Humous sand
Soil type:	Disturbed
Sample taken on:	27.04.1997
Report:	9999.99
Annex:	9.9

OK Cancel

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.

7.7 GGU-LABPERM: "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 image shows two overlapping 'Annex numbers' dialog boxes. The left box is the initial state, and the right box shows the result after clicking 'Generate'.

Item	Initial Value	Generated Value
Graphics	3	3
Output table page 1	4.a	4.1
Output table page 2	4.b	4.2
Output table page 3	4.c	4.3
Output table page 4	4.d	4.4
Output table page 5	4.e	4.5
Output table page 6	4.f	4.6
Output table page 7	4.g	4.7
Output table page 8	4.h	4.8
Output table page 9	4.i	4.9
Output table page 10	4.j	4.10

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:

The 'Generate annex number for output table' dialog box contains the following fields and options:

- Text (front):
- ☒ 1st number (rear):
- ☐ 1st letter (rear):
- Buttons: OK, Cancel

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).

7.8 GGU-LABPERM: "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.

7.9 GGU-LABPERM: "Company" menu item

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

8 Graphics preferences menu

8.1 GGU-LABPERM: "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.

8.2 GGU-LABPERM: "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 interpolation

Very 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 parameter 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.

8.3 GGU-LABPERM: "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. image-20240920-121835.png 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.

8.4 GGU-LABPERM: "Zoom info" menu item

An info box informs you about the activation and options of the zoom function.

The quickest way to enlarge a specific section of the screen is to open a zoom window by holding down the [Ctrl] key and the mouse button.

8.5 GGU-LABPERM: "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.

8.6 GGU-LABPERM: "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. PDF files can also be imported as images. A pop-up menu opens, the icons and functions used are described in more detail in the Mini-CAD manual saved in the 'C:\Program Files (x86)\GGU-Software\Manuals' folder during installation..

8.7 GGU-LABPERM: "Toolbar preferences" menu item

By clicking on the tools (smart icons) for the 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 cannot be called up via normal menu titles and menu entries.

Not all of the icons described below are available in all GGU programs.



"Next page"/"Previous page"

You can use these icons to scroll forwards and backwards between individual pages. In many GGU programs, you can use this in the **output table representation**.



"Select page" or "Diagram/Output table"

If you are in the **output table representation**, you can use this symbol to jump to a specific page or switch back to the normal display, i.e. your graphic display.

**"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.

**"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"**).

**"Colour on/off" or "Colour/hatching"**

If you want to remove the colour from the system display, e.g. to create a black and white printout, you can do this using this on/off switch.

In several GGU programs, 4 colour and hatching settings are possible via this icon, which you can click through in sequence. A colour filled representation is the default setting, the next click shows the hatching, then coloured and hatched. The fourth click shows a representation with neither colour nor hatching. The next click starts again.

**"Move object"**

Use this icon to position legends and diagrams at the desired position on the output sheet.

**"Undo move object"**

By clicking this icon the last performed movement of graphical elements made using the [F11] function key or the menu item **"Output preferences/Move objects"** can be undone.

**"Restore move object"**

By clicking this symbol, the last object movement undo carried out using "Undo move object" can be restored.

**"Construction phase back"/"Construction phase forward"**

If you are in the display of construction phases, you can use these icons to scroll back and forth between the individual construction phases.

8.8 GGU-LABPERM: "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.

8.9 GGU-LABPERM: "Font size selection" menu item

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

8.10 GGU-LABPERM: "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**".

8.11 GGU-LABPERM: "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.

9 Output preferences menu

9.1 GGU-LABPERM: "Page size" menu item

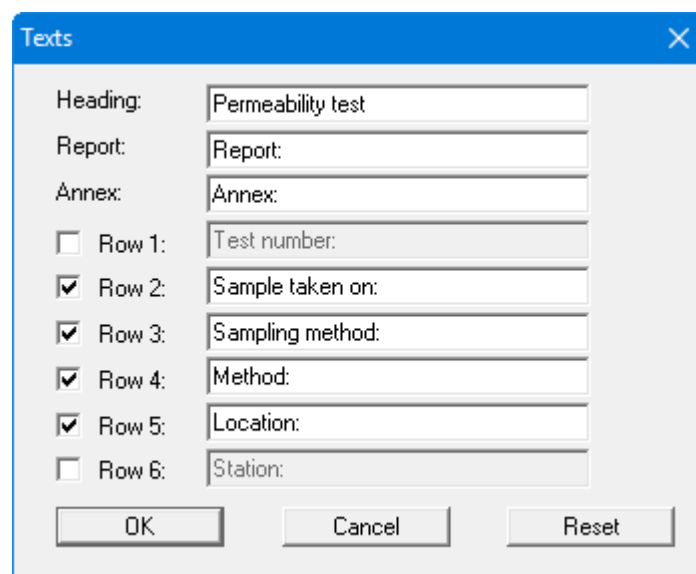
The default page set-up is A4 (landscape) when the program is started. You can edit the page size in the dialog box.

9.2 GGU-LABPERM: "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 .

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.

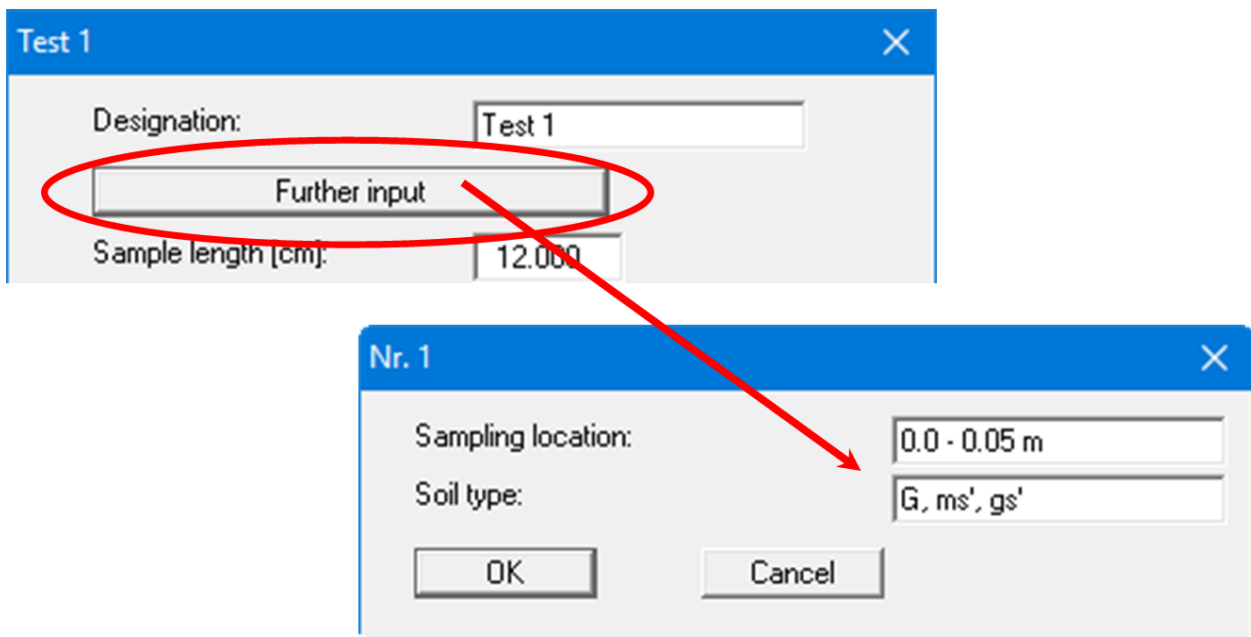
Line	Text	Enter what?
1	Test no.:	Designation
2	Signature:	Signature
3	Sampling location:	Free text
4	Depth:	Free text
5	Soil type:	Free text
6	Length / Area:	Length/area
7	Hydraulic gradient:	Hydraulic gradient
8	k (10°) [m/s]:	Permeability
9	No. 9	None
10	No. 10	None
11	No. 11	None
12	No. 12	None
13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

Buttons: OK, Cancel, Reset, Save, Load

Adopt for: Diagram + t

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"**

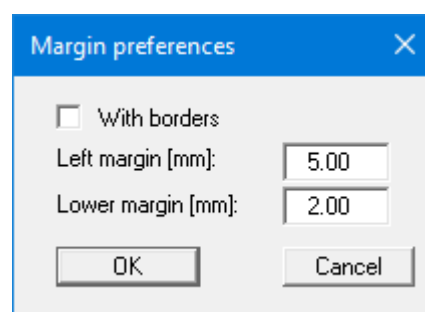
If the table is arranged vertically, a fixed width for each column can be defined using this button. Please note, however, that the total width of the table needs to fit into the layout of your output sheet. In order to achieve a uniform distribution within the specified total width, e.g. as defined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

- **"Arrange horizontally"/"Arrange vertically"**

This command button defines the alignment of the diagram table.

9.3 GGU-LABPERM: "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.



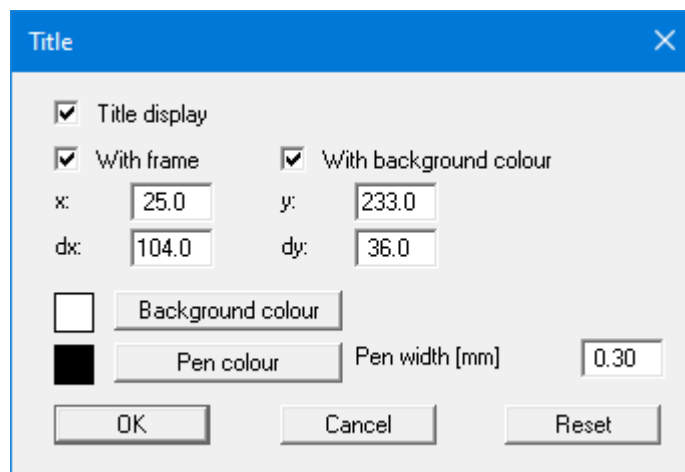
By deactivating the **"With borders"** check box and with an appropriate choice of left and lower margins, it is generally possible to create a non-reduced printer output. It is necessary to also adapt the page height and width .

9.4 GGU-LABPERM: "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.

9.5 GGU-LABPERM: "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"**).

The heading **"Uniaxial test to DIN 18136"** shown in the title element can be edited in the menu item **"Output preferences/Texts"**. The texts **"Project (1st line)"** to **"Project (3rd line)"** are entered immediately after double-clicking the element or using the menu item **"Edit/General"**.

9.6 GGU-LABPERM: "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 . 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.

9.7 GGU-LABPERM: "Company" menu item (output)

You will see an almost identical dialog box with the same settings options as described in the menu item **"Output preferences/Title (change position)"**. Proceed as described there if you want to make changes to the position or layout of the element in this menu item.

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

9.8 GGU-LABPERM: "Test no. etc." menu item

You will see an almost identical dialog box with the same settings options as described in the menu item **"Output preferences/Title (change position)"**. Proceed as described there if you want to make changes to the position or layout of the element in this menu item.

The input for this element can be edited immediately after double-clicking on the element or via the menu item **"Edit/General"**. 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.

9.9 GGU-LABPERM: "Annex and report" menu item

You will see an almost identical dialog box with the same settings options as described in the menu item **"Output preferences/Title (change position)"**. Proceed as described there if you want to make changes to the position or layout of the element in this menu item.

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"**. 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. 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.

9.10 GGU-LABPERM: "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. 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"**.

9.11 GGU-LABPERM: "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 . 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"**.

9.12 GGU-LABPERM: "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 . To edit the **"Diagram table"** element, simply proceed as described there.

9.13 GGU-LABPERM: "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 . To edit the **"Output table (test data)"** element, simply proceed as described there.

9.14 GGU-LABPERM: "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. To edit the **"Output table (results)"** element, simply proceed as described there.

9.15 GGU-LABPERM: "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.

9.16 GGU-LABPERM: "Move objects" menu item

If you select this entry, you can then use the mouse to move the various objects and legends. Move the mouse over the object of your choice. If you are over a movable object, the mouse pointer will take on the shape of a cross. Now press the left mouse button and drag the object to the desired position while holding down the button.

After going to this menu item **only one object** at a time can be moved using the mouse or its size be altered.

If you want to edit several objects, you can also activate the function more quickly by pressing the **[F11]** key or the symbol



. An info box will then no longer appear.

In many GGU programs you can also alter the size of an object using this menu item or the **[F11]** function key. If you are positioned over the frame of a resizable object after activating the function, the mouse takes on the shape of a double arrow. Hold down the left mouse button and drag the frame until the object has reached the desired size. Drag a corner to maintain the aspect ratio of the sides. If you drag on one side, the object becomes taller or wider.

Using the **[Back]** key or by clicking on the icon



you can undo the last change to the position or size of an object.

In programs in which you can position the diagrams yourself (menu item "**System/Graph positioning preferences**"), the result diagrams can also be moved using this function if you have switched to "**Manual graph positioning**".

10 Info menu

10.1 GGU-LABPERM: "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 the GGU program.

10.2 GGU-LABPERM: "Maxima" menu item

Here you can check the defaults for maximum values of the program.

10.3 GGU-LABPERM: "Help" menu item

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

10.4 GGU-LABPERM: "GGU on the web" menu item

Using this menu item, you can access the [GGU Software website](#).

Check the page of your program module at regular intervals for information about updates and changes. On the "**Changelogs**" subpage, you can also subscribe to an e-mail notification that informs you of all changes on a monthly basis.

10.5 GGU-LABPERM: "GGU support" menu item

This menu takes you directly to the [GGU Software Support Portal](#).

Here you can enter your support request directly and upload your edited GGU program file.

10.6 GGU-LABPERM: "What's new?" menu item

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

10.7 GGU-LABPERM: "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.