

GGU-OEDOM manual

Oedometer / compression tests

Exported on 23.7.2026

Table of contents

1 Preface

2 Licence protection

3 Language selection

4 Starting the program

5 Tips and tricks

5.1 Keyboard and mouse

5.2 Function keys

5.3 "Copy/print area" icon

6 Theoretical principles

6.1 General

6.2 Constrained modulus evaluation

6.3 Compression index evaluation

7 File menu

7.1 "New" menu item

7.2 "Load" menu item

7.3 "Save" menu item

7.4 "Save as" menu item

7.5 "Import ASCII file" menu item

7.6 "Export to ASCII file" menu item

7.7 "Output preferences" menu item

7.8 "Print and export" menu item

7.9 "Batch print" menu item

7.10 "Exit" menu item

7.11 "1, 2, 3, 4" menu items

8 Edit menu

8.1 "Base data" menu item

8.2 "Tests" menu item (using Constrained modulus evaluation)

8.3 "Tests" menu item (using Compression index evaluation)

8.4 "Show test data" menu item

8.5 "Delete all tests" menu item

8.6 "General" menu item

8.7 "Company" menu item

9 Graphics preferences menu

9.1 "Preferences" menu item

9.2 "Refresh and zoom" menu item

9.3 "Zoom info" menu item

9.4 "Legend font selection" menu item

9.5 "Font size selection" menu item

9.6 "Pen colour and width" menu item

9.7 "Mini-CAD toolbar" menu item

9.8 "Toolbar preferences" menu item

9.9 "Load graphics preferences" menu item

9.10 "Save graphics preferences" menu item

10 Output preferences menu

- 10.1 General note
- 10.2 "Page size" menu item
- 10.3 "Texts" menu item
- 10.4 "Output sheet" button
- 10.5 "Test results table" button
- 10.6 "Base data table" menu item
- 10.7 "Loading increments" button
- 10.8 "Margins" menu item
- 10.9 "Position info" menu item
- 10.10 "Title (change position)" menu item
- 10.11 "Load-settlement graph" menu item
- 10.12 "Constrained modulus graph" menu item
- 10.13 "Base data table" button
- 10.14 "Compression graph" menu item
- 10.15 "Test data" menu item
- 10.16 "Test results" menu
- 10.17 "Symbol descriptions" menu item
- 10.18 "Company" menu item
- 10.19 "Test no. etc." menu item
- 10.20 "Annex and report" menu item
- 10.21 "Output table" menu item
- 10.22 "Reset all" menu item
- 10.23 "Move objects" menu item

11 Info menu

- 11.1 "Copyright" menu item
- 11.2 "Maxima" menu item
- 11.3 "Help" menu item
- 11.4 "GGU on the web" menu item
- 11.5 "GGU support" menu item
- 11.6 "What's new?" menu item
- 11.7 "Language preferences" menu item



Theorie. Und Praxis.

Geotechnische Softwarelösungen können so einfach sein. Denn Theorie und Praxis lassen sich mit **GGU-Software** und den neuen Angeboten der **civilserve Academy** prima kombinieren: Knackige theoretische Aufgaben lösen und als Sahnehäubchen Ihr

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1 GGU-OEDOM: Preface

The **GGU-OEDOM** program allows the evaluation and visualisation of compression tests to determine the deformation behaviour caused by changes in stress with restrained lateral strain, and to determine the constrained modulus. Alternatively to determination of the constrained modulus, an evaluation of the compression index can be performed.

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-OEDOM: 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-OEDOM: 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-OEDOM: 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-OEDOM: 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.

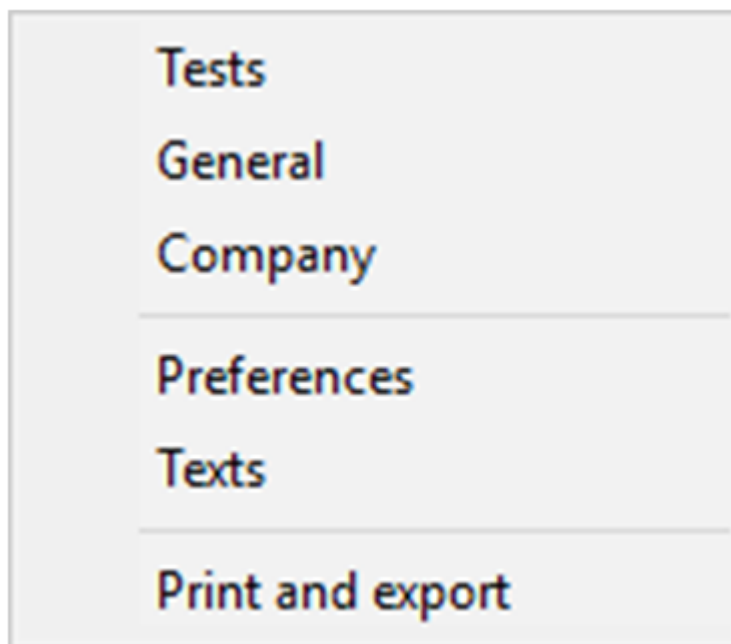
You can also use the mouse wheel to zoom in or out or to move the screen display. When the program is started for the first time, the default setting for mouse wheel operation is activated according to Windows conventions:

- 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.



5.2 GGU-OEDOM: 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-OEDOM: "Copy/print area" icon

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

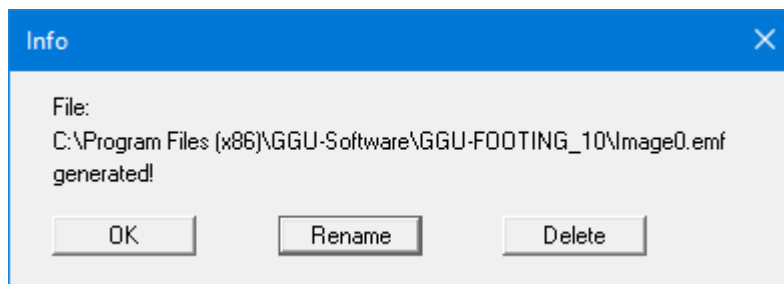


in the menu toolbar is clicked, describing the options available for this function. For example, using this icon it is possible to either copy areas of the screen graphics and paste them into the report, or send them directly to a printer.

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 Theoretical principles

6.1 GGU-OEDOM: General

When evaluating a test we can differentiate between:

- Constrained modulus evaluation
- Compression index evaluation

You can specify the type of evaluation using the menu item "**File/New**".



6.2 GGU-OEDOM: Constrained modulus evaluation

The standard evaluation method is by means of the constrained moduli. The constrained moduli are calculated using:

$$E_s = (\sigma_i - \sigma_{i-1}) / (s_i - s_{i-1}) * h$$

σ_i = stress at loading stage i

σ_{i-1} = stress at loading stage $i-1$

s_i = settlement at loading stage i

s_{i-1} = settlement at loading stage $i-1$

h = sample height at loading stage $i-1$

If you activate the "**Calculate constrained moduli with initial height**" check box in the dialog box of the "**Edit/Tests**" menu item, the initial height is used as " h ", but this is generally unusual.

The graphical visualisation of the test results is shown in Figure 1.



6.3 GGU-OEDOM: Compression index evaluation

This evaluation method makes use of the following data and relationships, beside the stresses and settlements of the individual loading stages:

Input data:

h_0 = initial height

A = sample area

m_f = wet mass

ρ

S = grain density

w_0 = initial water content

Relationships:

Mass of solid substance $m_s = m_f / (1.0 + w_0)$

Solid volume $V_s = m_s /$

ρ

S

Void volume $V_v = A * h_0 - V_s$

Void ratio $e = V_v / V_s$

Compression index $CC = (e_i - e_{i-1}) * \ln($

σ_i

$/$

σ_{i-1}

$- 1)$

e_i = void ratio at loading stage i

e_{i-1} = void ratio at loading stage $i - 1$

σ_i = stress at loading stage i

σ_{i-1}

σ_{i-1} = stress at loading stage $i - 1$

The graphical visualisation of the test results is shown in Figure 2.



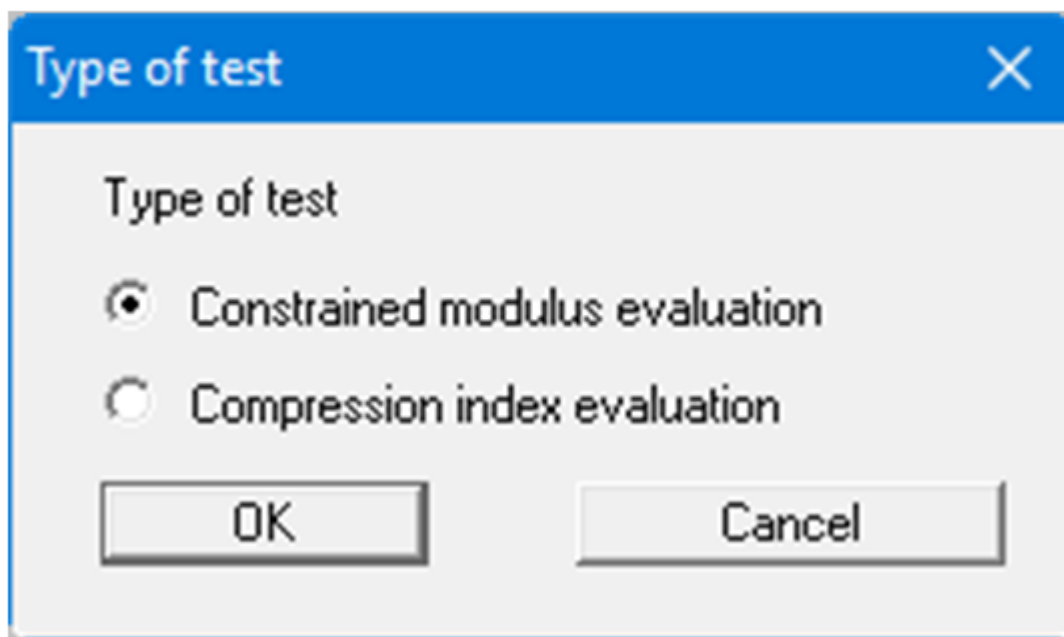
In contrast to the evaluation by means of constrained moduli, the void ratio is shown in the above diagram instead of the settlement. In the lower diagram the compression indices are drawn instead of the constrained moduli.

An evaluation by means of compression indices is generally very useful for normally consolidated soils, when the void ratio changes linearly with increasing stress on a semi-logarithmic scale. In this case the compression index remains constant. This makes a time-settlement analysis, for example, using compression indices, quite useful. This can be done using the **GGU-CONSOLIDATE** program, for instance.

7 File menu

7.1 GGU-OEDOM: "New" menu item

To enter a new test first specify the type of test evaluation in a dialog box; the default method employs evaluation using constrained moduli.



Test data already entered can be easily adopted if the type of evaluation is changed.

7.2 GGU-OEDOM: "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.

7.3 GGU-OEDOM: "Save" menu item

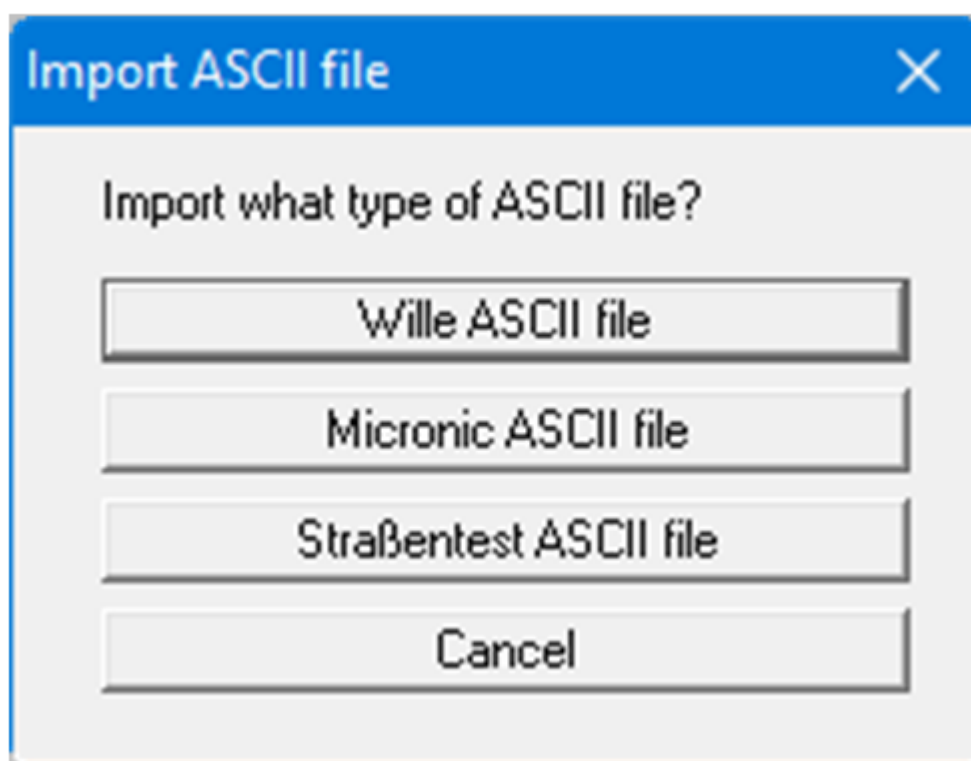
You can save data entered or edited during program use to a file, to have them available at a later date, or to archive them. The data is saved without prompting with the name of the current file.

7.4 GGU-OEDOM: "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 ".dsv" 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, ".dsv" will be used automatically.

7.5 GGU-OEDOM: "Import ASCII file" menu item

It is possible to import ASCII files from selected device manufacturers using this menu item.



By clicking the respective buttons, you can automatically import either "**Wille**", "**Micronic**" or "**Straßentest**" data. If you need to read data in a format provided by a different company, please contact **CIVILSERVE** (info@civilserve.com).

7.6 GGU-OEDOM: "Export to ASCII file" menu item

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

7.7 GGU-OEDOM: "Output preferences" menu item

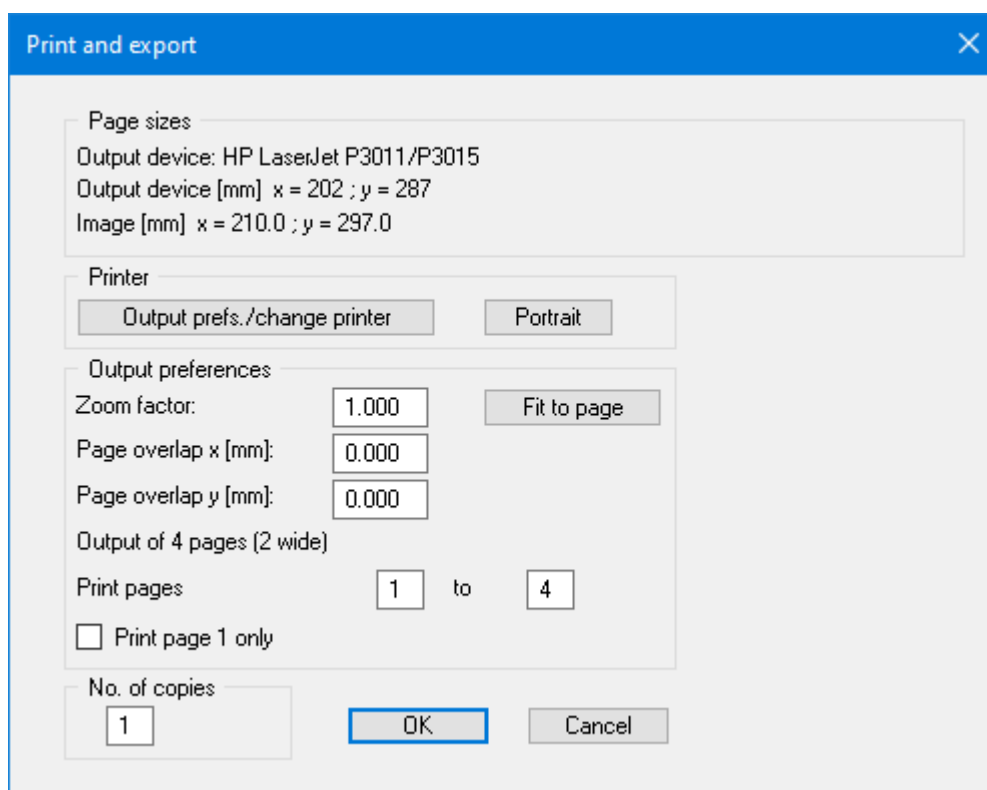
You can edit output preferences (e.g. swap between portrait and landscape) or change the printer in accordance with WINDOWS conventions.

7.8 GGU-OEDOM: "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



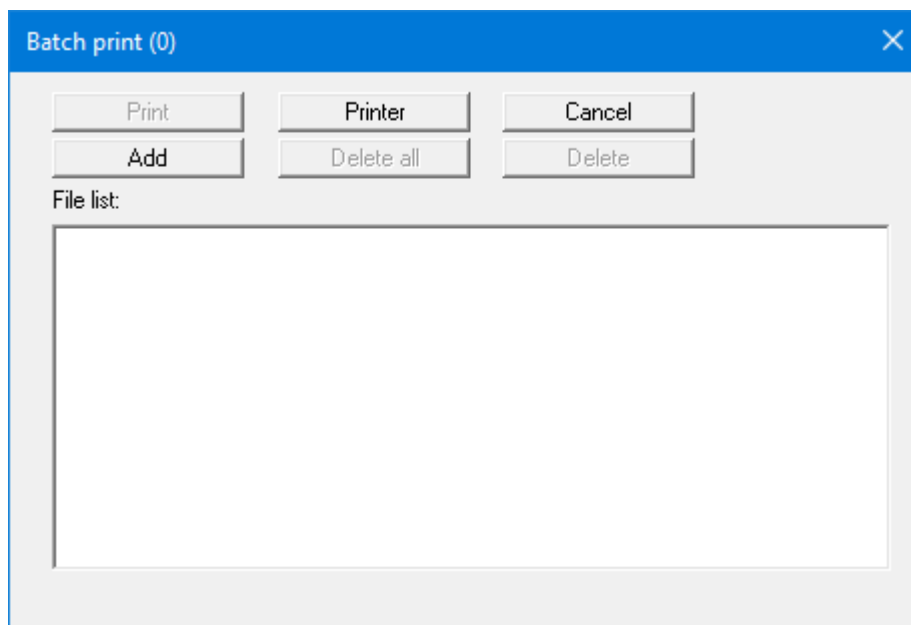
from the toolbar, you can copy parts of the graphics to the clipboard or save them to an EMF file. Alternatively you can send the marked area directly to your printer (see **"Tips and tricks"**).

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.

7.9 GGU-OEDOM: "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.

7.10 GGU-OEDOM: "Exit" menu item

After a confirmation prompt, you can quit the program.

7.11 GGU-OEDOM: "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.

8 Edit menu

8.1 GGU-OEDOM: "Base data" menu item

This menu item can only be selected when using constrained moduli. The following dialog box opens:



The sample diameter and the water content before and after the test can be entered in the input boxes. These values are displayed on the output sheet. They serve no purpose in the evaluation. Texts can be altered, or input boxes can be switched off such as " **Sample diameter [mm]** =" as shown in the above dialog box by going to the menu item "**Output preferences/Texts**" button "**Base data table**".

8.2 GGU-OEDOM: "Tests" menu item (using Constrained modulus evaluation)

If the **constrained moduli** evaluation method is selected, the following dialog box opens immediately after clicking this menu item:



There are different opinions on whether the constrained moduli must be calculated using the initial height for every loading stage or using the height at the beginning of each respective loading stage. Using the "**Calculate constrained moduli with initial height**" check box you can bring to life your own personal judgment on this.

The central data input box is reached by pressing the "**Edit test data**" button. The following dialog box opens for the example given above:

Tests		
Forw. Back Cancel Done		
7 values to edit		
No.	Normal stress [kN/m²]	Clock reading [mm]
1	0.0	0.0000
2	10.0	0.0260
3	50.0	0.1220
4	100.0	0.2130
5	200.0	0.3980
6	400.0	0.7240
7	800.0	1.2080

The test results relevant to the calculation of deformations and constrained moduli, the normal stress [kN/m²] and the corresponding gauge readings [mm] are entered in this dialog box.

In the example used here 7 value pairs have already been entered. By pressing the "**x values to edit**" button you arrive at a further dialog box for editing the number of value pairs. If no values have been entered (new test), the box will contain a 0. Value pairs are added by increasing the number, and existing value pairs deleted by decreasing the number.

A maximum of 12 value pairs can be represented. If more data pairs than this are used the list can be navigated using the "**Forw.**" and "**Back**" buttons. Return to the previous dialog box without saving the changes using "**Cancel**". Input is accepted by clicking the "**Done**" button.

8.3 GGU-OEDOM: "Tests" menu item (using Compression index evaluation)

The following dialog box opens for evaluation using **compression indices**:



First, enter the test base data here in accordance with the theoretical principles discussed in Section 5.3 and then enter or edit the test data via the "**Edit test data**" button in analogy to the dialog box for evaluation using constrained moduli.

8.4 GGU-OEDOM: "Show test data" menu item

A dialog box opens showing the test data entered and the calculated settlements and **constrained moduli**.



You can navigate through the list using "**Forw.**" and "**Back**". You can move directly to a test number by entering the corresponding number and clicking "**Go to no.:**".

When evaluating using **Compression indices** a column for the compression index C_c appears in the dialog box in place of the constrained modulus E_s .

8.5 GGU-OEDOM: "Delete all tests" menu item

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

8.6 GGU-OEDOM: "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.

Project (1st line):	GGU-TRIAXIAL
Project (2nd line):	
Project (3rd line):	
Edited by:	Example
Edit date:	10.05.18
Test number:	2
Sampling location:	
Depth:	15.0 m
Soil type:	M, fs, c'
Sampling method:	
Sample taken on:	09.05.18
Report:	9999 / 18
Annex:	

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" button "Main form".

8.7 GGU-OEDOM: "Company" menu item

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

9 Graphics preferences menu

9.1 GGU-OEDOM: "Preferences" menu item

This menu item allows settings to be specified for the graphics. The following dialog box opens for **constrained modulus** evaluation. The dialog group boxes are adapted to suit the corresponding evaluation diagrams when evaluating using **compression indices**.

Preferences

Settlements

- ☒ Markers
- ☐ Settlement with spline
- ☐ Settlement in %
- ☐ Test number
- ☒ Connect load-settlement
- ☒ 1st settlement value = '0.0'

Constrained mod.

- ☐ Constrained mod. with spline
- ☒ Constrained mod. graph
- ☐ 'Unloading Constrained mod.'

Constrained mod. graph as:

- ☐ Steps
- ☒ Line (central)
- ☐ Line (right)

Axes divisions:

- ☐ Linear
- ☒ Logarithmic
- ☐ Root scale

Marker size [mm]:

- **"Settlements"** group box:

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

Activate the **"Connect load-settlement"** check box to get a graph. The graph can be displayed as a spline, the settlement in either [mm] or in [%]. When evaluating using **compression indices** the void ratio can be visualised as an alternative to the settlements

- **"Constrained modulus"** group box:

If the **"Constrained modulus graph"** check box is activated the graph is also visualised here with or without a spline. In addition, the unloading can be visualised. When evaluating using **compression indices** the **"Compression index"** group box is visible here, with the same options as the constrained modulus visualisation

- **"Constrained mod. graph as:"** group box:

A number of visualisation types can be selected (**"Steps"**, **"Line (central)"** and **"Line (right)"**). The position of the marker in the graphics is appropriately adapted. Graph settings can be specified here when evaluating using **compression indices**.

- **"Axes divisions"** group box:

The required axes divisions for visualisation of the normal stress can be selected in this group box. The type of visualisation selected always applies to all displayed diagrams.

- **"User-defined axes"** button:

The program automatically selects a sensible axes scale for the graphical visualisation of the evaluation diagram. If this 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 can then be entered.

9.2 GGU-OEDOM: "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.

9.3 GGU-OEDOM: "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.

9.4 GGU-OEDOM: "Legend font selection" menu item

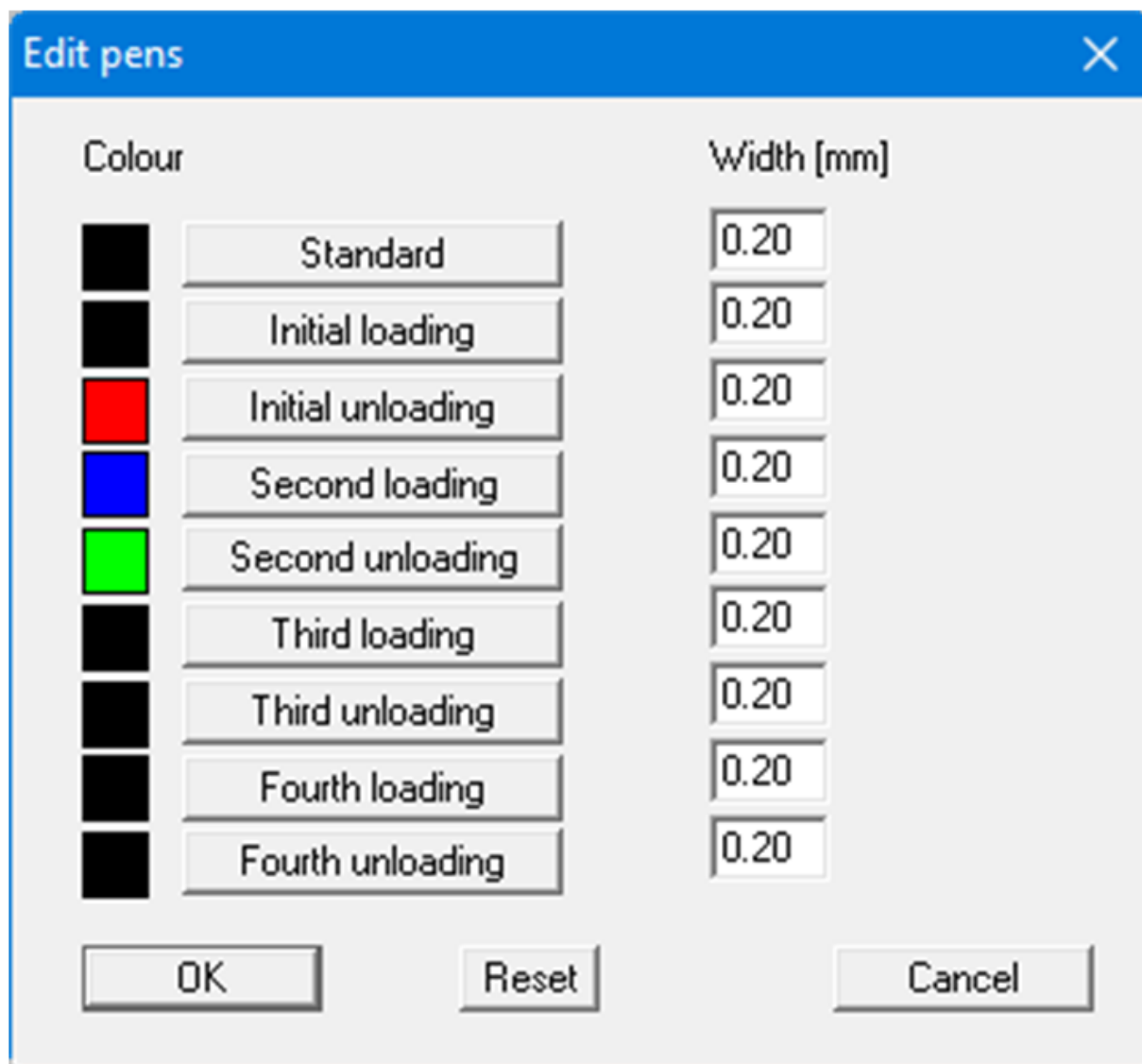
With this menu item you can switch to a different true-type font. All available true-type fonts are displayed in the dialog box.

9.5 GGU-OEDOM: "Font size selection" menu item

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

9.6 GGU-OEDOM: "Pen colour and width" menu item

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



The pen widths can be edited for the lines of the different loading stages and, after clicking the appropriate buttons, the pen colours be adapted.

The "**Standard**" colour, for example, is used to represent the data entered using "**Edit/Company**" and "**Edit/General**". Use "**Reset**" to restore the default pen colours.

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.

9.7 GGU-OEDOM: "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..

9.8 GGU-OEDOM: "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.

9.9 GGU-OEDOM: "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.

9.10 GGU-OEDOM: "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-OEDOM.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"**.

10 Output preferences menu

10.1 GGU-OEDOM: General note

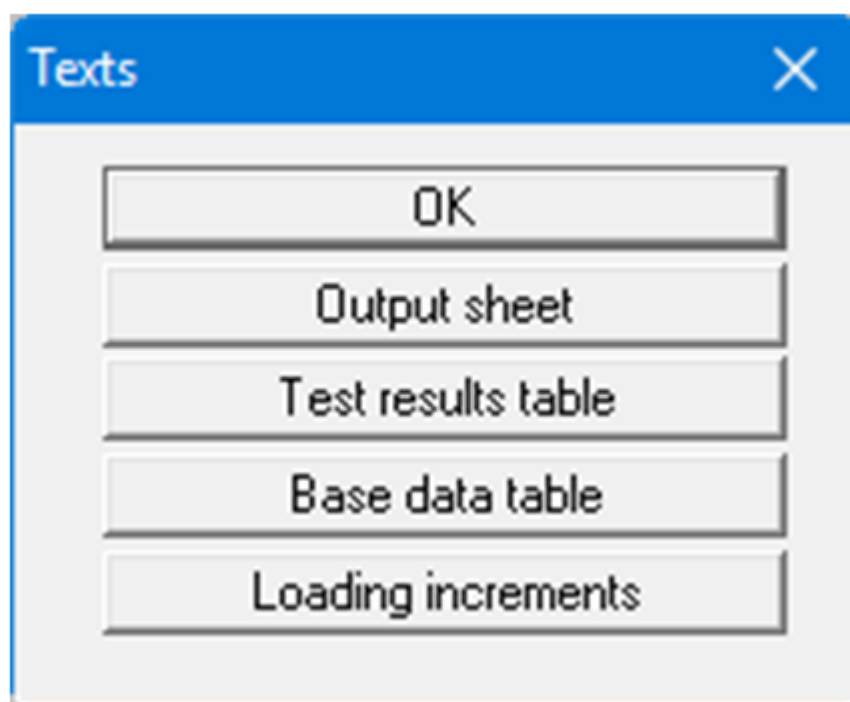
The design of the output sheet can be defined by the user. After selecting the type of evaluation a variety of tables with test data and test results are available, as well as the different evaluation diagrams, for example the load-settlement graph or the constrained modulus graph. Choose A4 or A3 format for the output sheet, depending on the diagrams to be displayed, and arrange the tables and diagrams as required.

10.2 GGU-OEDOM: "Page size" menu item

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

10.3 GGU-OEDOM: "Texts" menu item

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



- [GGU-OEDOM: "Output sheet" button](#)

- GGU-OEDOM: "Test results table" button
- GGU-OEDOM: "Base data table" menu item
- GGU-OEDOM: "Loading increments" button

10.4 GGU-OEDOM: "Output sheet" button

After clicking this button the following dialog box opens:

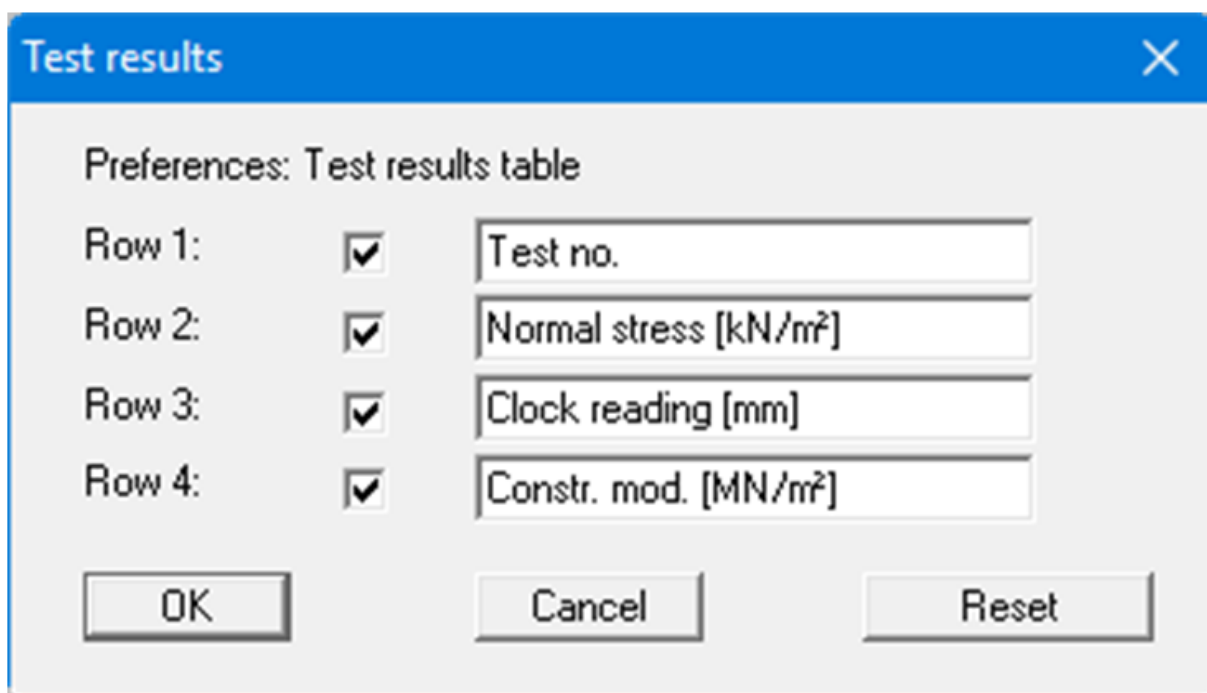


Your input in rows 1 to 6 of the above dialog box, as well as the input for "**Report:**" and "**Annex:**" also represent the designations for the input boxes in the "**Edit/General**" menu item dialog box. If rows are deactivated in the above dialog box, the corresponding input boxes in the "**Edit/General**"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

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.

10.5 GGU-OEDOM: "Test results table" button

If this button is clicked in the above option box the following dialog box opens, allowing labelling of the test data input boxes and the test results output table:



Preferences: Test results table		
Row 1:	☒	Test no.
Row 2:	☒	Normal stress [kN/m²]
Row 3:	☒	Clock reading [mm]
Row 4:	☒	Constr. mod. [MN/m²]

OK Cancel Reset

If rows are deactivated in the dialog box, the texts are not displayed in the table on the output sheet. In order to hide the table completely the element must be deactivated using the menu item "**Output preferences/Test results**".

The "**Reset**" button resets the labelling and allocations of the results table to the defaults. If you have retroactively changed the language to English you will see the internal program translations.

10.6 GGU-OEDOM: "Base data table" menu item

If evaluation using constrained moduli is selected, labelling of the input boxes for the base data and of the base data table on the output sheet can be edited. Press the "**Base data table**" button in the above combo box.

Base data table

Preferences: Base data table

Row 1:	☒	Initial height [mm] =
Row 2:	☒	Sample diameter [mm] =
Row 3:	☒	w (before) [%] =
Row 4:	☒	w (after) [%] =
Row 5:	☒	Density (before) [g/cm ²] =
Row 6:	☒	Density (after) [g/cm ²] =

OK Cancel Reset

If rows are deactivated in the dialog box, the texts are not displayed in the table on the output sheet. In order to hide the table completely the element must be deactivated using the menu item "**Output preferences/Base data table**".

The "**Reset**" button resets the labelling of the base data table to the defaults. If you have retroactively changed the language to English you will see the internal program translations

10.7 GGU-OEDOM: "Loading increments" button

If this button is clicked in the above option box the following dialog box opens, allowing labelling of the loading increments:

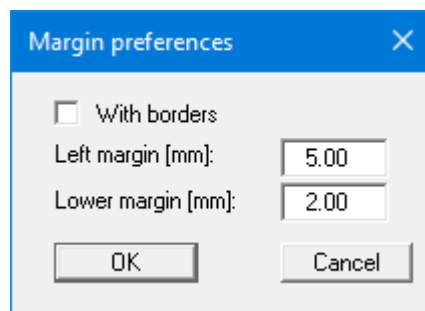


This labelling is used in the legend with the symbol explanations, which describes the curves in the load-settlement diagram and in the compression diagram.

The "**Reset**" button resets the labelling of the loading increments to the defaults. If you have retroactively changed the language to English you will see the internal program translations

10.8 GGU-OEDOM: "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.



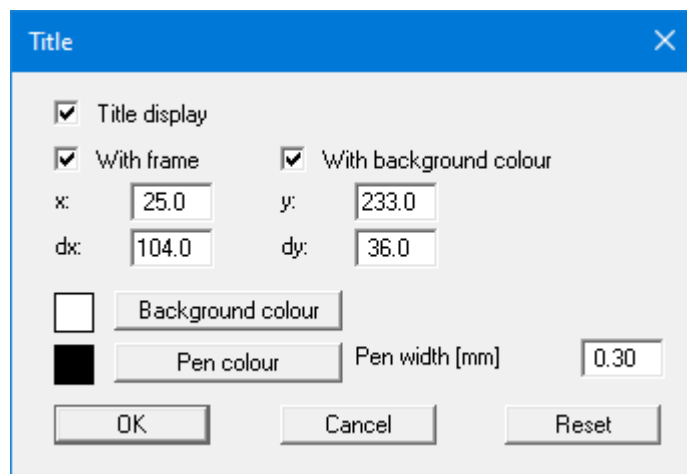
By deactivating the "**With borders**" check box and with an appropriate choice of left and lower margins, it is generally possible to create a non-reduced printer output. It is necessary to also adapt the page height and width.

10.9 GGU-OEDOM: "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.

10.10 GGU-OEDOM: "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 **"Load-settlement test"** shown in the title element can be edited in the menu item **"Output preferences/Texts"** button **"Main form"**. The texts **"Project (1st line)"** to **"Project (3rd line)"** are entered immediately after double-clicking the element or using the menu item **"Edit/General"**.

10.11 GGU-OEDOM: "Load-settlement graph" 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 . Proceed as described there to alter the position or layout of the **"Load-settlement graph"** element.

10.12 GGU-OEDOM: "Constrained modulus graph" menu item

This menu item is only active if you have selected test evaluation using **constrained moduli**.

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

10.13 GGU-OEDOM: "Base data table" button

This menu item is only active if you have selected test evaluation using **constrained moduli**.

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

The input for this element can be edited via the menu item **"Edit/Base data"**. For this element you also have the option of adapting the texts in front of the input boxes to suit your needs. Go to the menu item **"Output preferences/Texts"** button **"Base data table"**.

10.14 GGU-OEDOM: "Compression graph" menu item

This menu item is only active if you have selected test evaluation using **compression indices**.

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

10.15 GGU-OEDOM: "Test data" menu item

This menu item is only active if you have selected test evaluation using **compression indices**.

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

The input for this element can be edited via the menu item **"Edit/Tests"**.

10.16 GGU-OEDOM: "Test results" menu

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

10.17 GGU-OEDOM: "Symbol descriptions" 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 . Proceed as described there to alter the position or layout of the **"Symbol descriptions"** element.

10.18 GGU-OEDOM: "Company" 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/Company"**.

10.19 GGU-OEDOM: "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"** button **"Main form"**.

10.20 GGU-OEDOM: "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 immediately after double-clicking on the element or via the menu item **"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"** button **"Main form"**.

10.21 GGU-OEDOM: "Output 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. Proceed as described there to alter the position or layout of the **"Output table"** element.

10.22 GGU-OEDOM: "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.

10.23 GGU-OEDOM: "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**".

11 Info menu

11.1 GGU-OEDOM: "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.

11.2 GGU-OEDOM: "Maxima" menu item

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

11.3 GGU-OEDOM: "Help" menu item

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

11.4 GGU-OEDOM: "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.

11.5 GGU-OEDOM: "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.

11.6 GGU-OEDOM: "What's new?" menu item

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

11.7 GGU-OEDOM: "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.