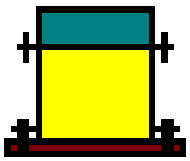
Evaluation and visualisation of Proctor compaction tests to German Standard DIN 18127

GGU-COMPACT

VERSION 8



Last revision: September 2008
Copyright: GGU Zentrale Verwaltung mbH, Braunschweig
Technical implementation and sales: Civilserve GmbH, Steinfeld

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1 Preface

The **GGU-COMPACT** program system allows evaluation and visualisation of Proctor compaction tests according to German Standard DIN 18127

Beside visualisation of the current Proctor compaction test, it is possible to visualise up to 15 further tests using the "**Special**" menu. A legend is shown for these tests (henceforth known as extra tests), allowing allocation of a line type to the test designations. For example, boundary curves can be entered via the extra tests.

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

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

2 Licence protection and installation

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

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

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

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

3 Language selection

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

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

4 Starting the program

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

- File
- ?

After clicking the "**File**" menu, either an existing file can be loaded by means of the "**Load**" menu item, or new tests can be entered using "**New**". After clicking "**File/New**" an empty form according to DIN 18127 is displayed on the screen. Then, the menu bar will show six menus:

- File
- Edit
- Graphics preferences
- Output preferences
- Special
- ?

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

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

If you would like to refresh the screen contents, press either [**F2**] or [**Esc**]. The [**Esc**] key additionally sets the screen presentation back to your current zoom, which has the default value 1.0, corresponding to an A4 format sheet.

5 Description of menu items

5.1 File menu

5.1.1 "New" menu item

All data entered are deleted after a confirmation prompt. New tests can then be entered.

5.1.2 "Load" menu item

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

5.1.3 "Save" menu item

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

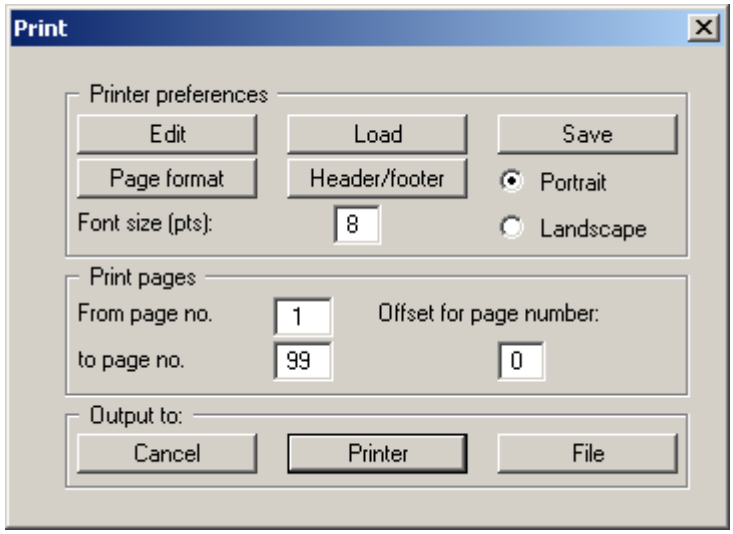
5.1.4 "Save as" menu item

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 "**.prc**" 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, "**.prc**" will be used automatically.

5.1.5 "Print 'simple' output table" menu item

A result table containing the current test results can be printed or saved in a file (e.g. for further editing in a word processing application). Output consists of a type of laboratory protocol of the Proctor tests, as entered in the menu item "**Edit/Tests**". By going to the menu item "**Graphics preferences/View output table**" (see Section 5.3.1) you can view and print the laboratory output table in the shape of a submission quality output sheet.

After going to this menu item you will see the following dialogue box for specifying the simple table output:



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

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

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

- "**Output to:**" group box
  Start output by clicking on "**Printer**" or "**File**". The file name can then be selected from or entered into the box.

5.1.6 "Export to ASCII" menu item

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

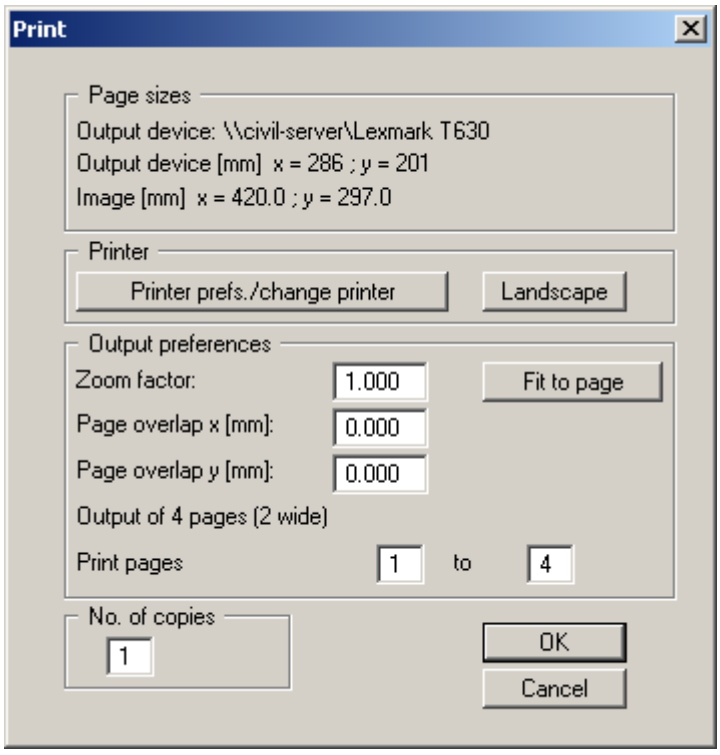
5.1.7 "Printer preferences" menu item

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

5.1.8 "Print and export" menu item

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

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



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

- "**DXF file**"
  allows output of the graphics to a DXF file. DXF is a common file format for transferring graphics between a variety of applications.
- "**GGUCAD file**"
  allows output of the graphics to a file, in order to enable further processing with the GGUCAD 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.

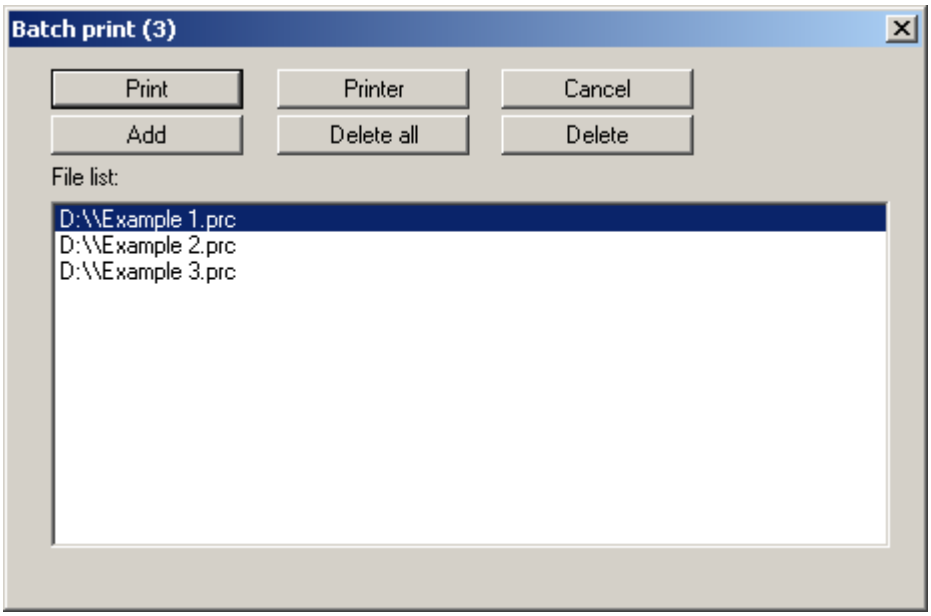
If you select the "**Copy/print area**" tool from the toolbar, you can copy parts of the graphics to the clipboard or save them to an EMF file. Alternatively you can send the marked area directly to your printer.

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

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

5.1.9 "Batch print" menu item

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



Create a list of files for printing using "**Add**" and selecting the desired files. The number of files is displayed in the dialogue 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 dialogue box which then appears you can select further preferences for printer output such as, e.g., the number of copies. These preferences will be applied to all files in the list.

5.1.10 "Exit" menu item

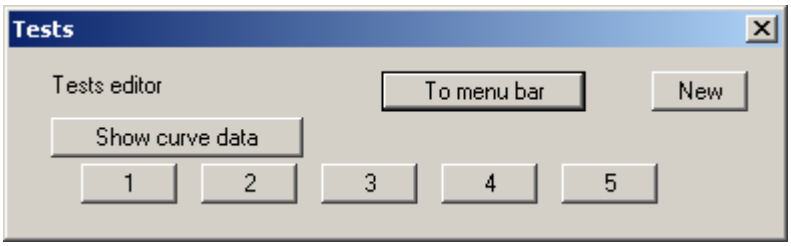
After a confirmation prompt, you can quit the program.

5.1.11 "1, 2, 3, 4" menu items

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

5.2.1 "Tests" menu item

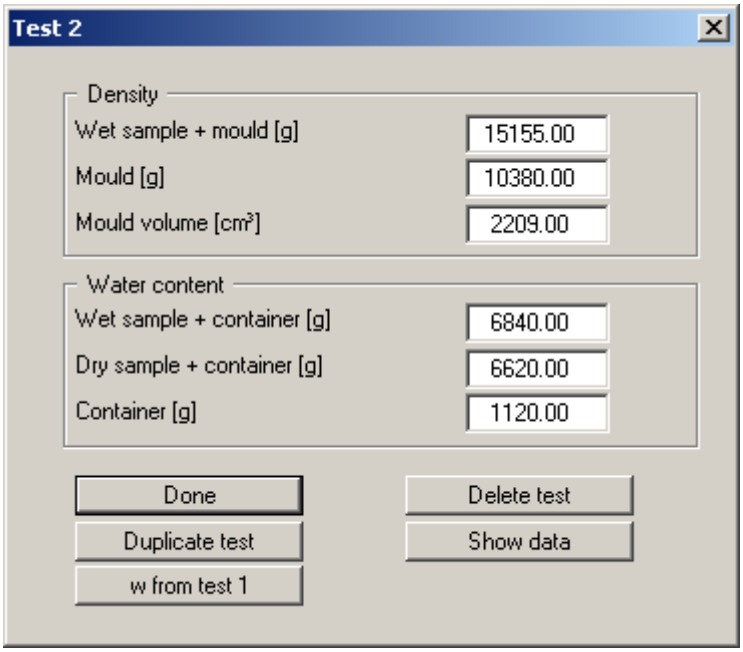
This point represents the program's central menu item. Almost all the fundamental data for the Proctor compaction test are entered here. After clicking this menu item or double-clicking in the Proctor curve area the following dialogue box opens (example):



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

- "**To menu bar**"
  You return to the original menu bar.
- "**New**"
  You can now enter data for a new test.
- "**Show curve data**"
  The Proctor data corresponding to any entered single tests are computed and displayed.
- "**1**", "**2**", **...**
  By clicking the buttons labelled with the test numbers you can open and edit the data for the corresponding test.

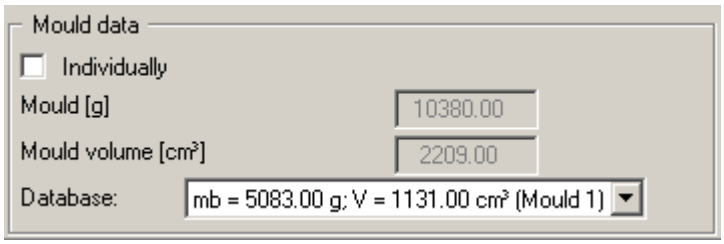
After clicking on "**New**" or on the button of an existing test a dialogue box opens for entering or editing test data.



The following input or actions can be carried out:

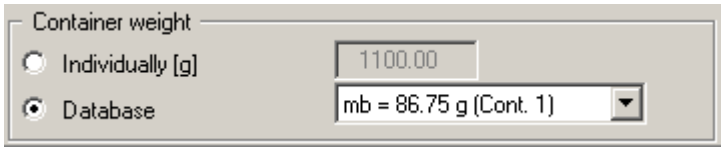
- "**Density**" group box
  Enter the unit weights and the volume of the mould for density determination. However, if you use moulds with standard weights for your tests it is recommended to store the weight and volume of the respective moulds in a database. This saves repeated input by hand. The database can be stored using the menu item "**Edit/Container database**" (see Section 5.2.12).

  If a container database exists a "**Mould data**" group box is automatically displayed in the dialogue box. If the "**Individually**" check box is deactivated the mould used can be selected from the drop-down combo box.



- "**Water content**" group box
  Enter the unit weights for the sample and container for water content determination. If containers with standard weights are used for your tests it is recommended to store the weights of the respective containers in a database (see "**Density**" group box).

  In the place of the input box "**Container [g]**" an extended group box is shown in the dialogue box. After activating the "**Database**" option button the containers used can be selected from the drop-down combo box.

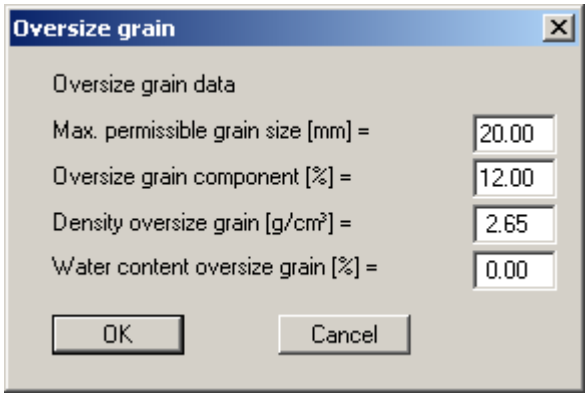


> The container database can also be accessed when using other GGU laboratory programs.

- "**Done**"
  You will arrive back at the previous dialogue box. All values entered will be accepted.
- "**Delete test**"
  The currently displayed test will be deleted.
- "**Duplicate test**"
  The currently displayed test will be duplicated. You will automatically find yourself in the next test.
- "**Show data**"
  Result data (density and water content) for the current test will be calculated and displayed in a dialogue box.
- "**w from Test 1**"
  If the 2nd individual test was created using "**Duplicate test**", the water content can be simply increased by a user-defined difference by pressing "**w from Test 1**", without the need to enter the real data for wet sample, etc. Each subsequent test then refers to the previous test, i.e. the button for the 3rd individual test reads "**w from Test 2**".

5.2.2 "Oversize grain" menu item

You enter the necessary oversize grain data using a dialogue box.

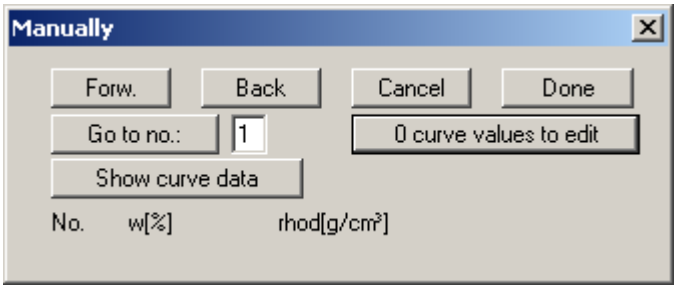


5.2.3 "Delete all tests" menu item

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

5.2.4 "Test data input via editor" menu item

Beside input of the test data determined in the laboratory and the subsequent computation of the Proctor curve, it is also possible to enter the water content and associated dry density directly. This is useful, e.g., if you have a graphical Proctor curve from a different laboratory which you would like to use as an appendix in your own report. The following dialogue box opens after a confirmation prompt:



First select the "**x curve values to edit**" button and enter the number of values to be edited (e.g. "**3**"). You can then enter the three value pairs (water content and density). After selecting the "**Done**" button, the test results will be graphically displayed. Existing data pairs can be deleted from the end of the list by reducing the number of entries, but a minimum of two data pairs must remain. The data pairs entered using this menu item are deleted following a confirmation prompt when you go to the menu item "**Edit/Tests**" for a second time.

The dialogue box shows a maximum of 8 value pairs simultaneously. If more than 8 data pairs have been entered you can move through the table with the "**Forw.**" and "**Back**" buttons or jump directly to the required data pair after entering the number using the "**Go to no.:**" button. Using the "**Show curve data**" button the Proctor data for the tests entered can be computed and displayed.

5.2.5 "Edit test data graphically" menu item

Occasionally, the Proctor curve may contain outliers, hindering proper evaluation of the data. Using this menu item, these outliers can be easily corrected using the mouse.

The Proctor curve is continuously corrected during displacement. If necessary, the correction can be undone using the [**Back**] button after releasing the left mouse button..

5.2.6 "Proctor densities" menu item

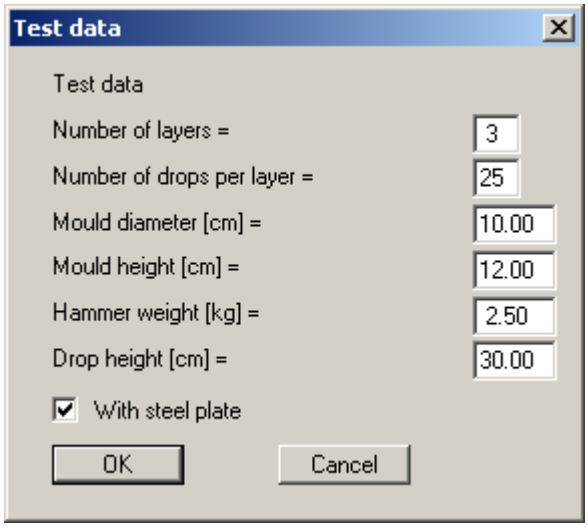
Two Proctor densities can be entered in the dialogue box (e.g. 97% and 95%). These Proctor values and the corresponding water contents are computed and entered in the subsequent visualisation. Input of negative data prevents output.

5.2.7 "Saturation + air space ratio" menu item

Two saturation values (e.g. 100% and 97%) and an air space ratio may be given. The corresponding zero air space curves are then computed and entered for the subsequent visualisation. Input of negative data prevents output. If coastal defence investigations are being performed, the compaction requirements of the Hamburg coastal defence guidelines can be entered.

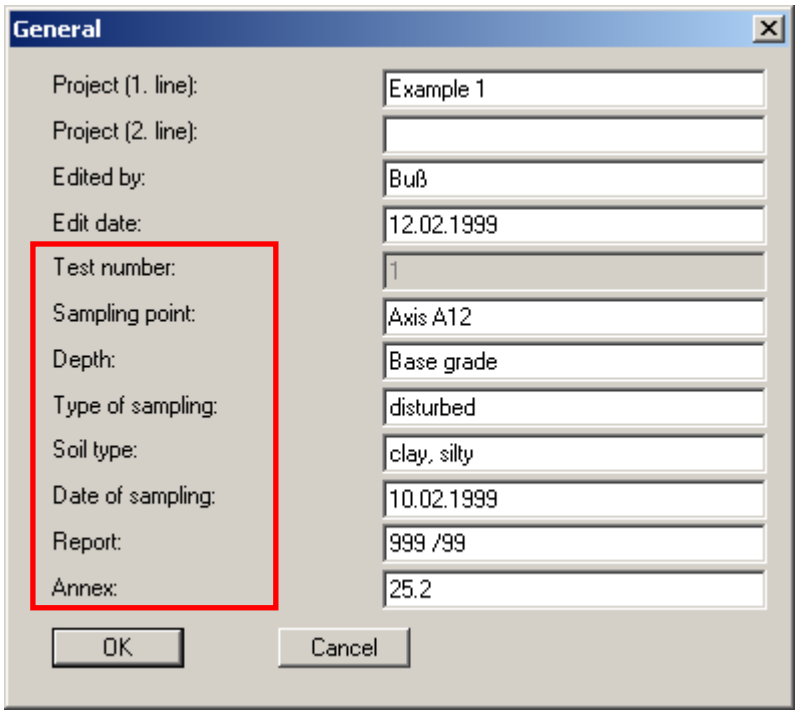
5.2.8 "Test data" menu item

The test data (blows per layer, etc.) can be entered in the dialogue box. The data are not taken into consideration for the visualisation. They are only relevant to the test report output. Visualisation is activated using the menu item "**Output preferences/Test data**" (see Section 5.4.14).



5.2.9 "General" menu item

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



The marked texts in the dialogue box also appear in the output sheet. Input boxes can be altered or switched off such as "**Test number:**" as shown in the above dialogue box by going to the menu item "**Output preferences/Texts**" (see Section 5.4.3).

5.2.10 "Company" menu item

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

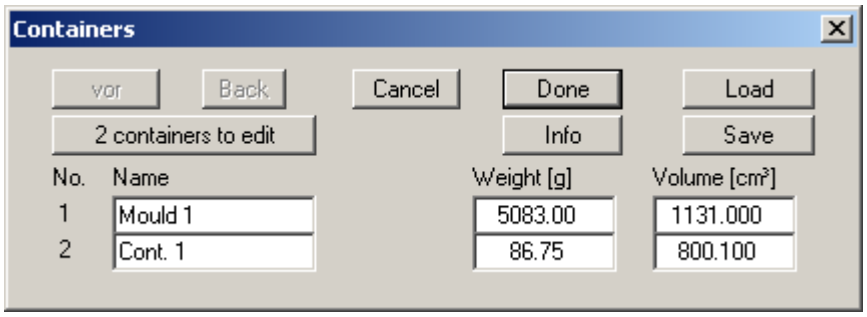
5.2.11 " Individual densities " menu item

If densities from field tests are available for a Proctor compaction test, these individual densities and water contents may be entered using this menu item. The marker size can be defined in this menu item's dialogue box and whether the relative compaction is also displayed. The text for the individual densities legend, which can be activated via the menu item "**Output preferences/Individual densities**" (see Section 5.4.12), is also defined.

The individual densities entered here are only displayed in the Proctor curve diagram, if the "**Show individual densities**" check box in the "**Graphics preferences/Preferences**" menu item is activated (see Section 5.3.2).

5.2.12 "Container database" menu item

If you use containers with standard weights for your tests, their weights and volums can be stored in a container database using the dialogue box in this menu item.



Enter the number of containers to be defined via the "**x containers to edit**" button. The corresponding number of rows for input will then be shown. If more than 8 containers are defined you can navigate through the list using the "**Forw.**" and "**Back**" buttons.

If you work with several databases you can save the containers to a database or load a different database using the appropriate buttons. The database file is first searched for in the program folder, then at the working level and finally in the Windows folder. It is generally practical to store the container database in the Windows folder if it is also to be accessed by other GGU laboratory programs. If the database file is saved using the default name of "**GGU-Database.bh_**" it is automatically loaded when the program starts. This information is also stored behind the "**Info**" button.

The containers stored in the database can be accessed in a drop-down combo box in the menu item "**Edit**/**Tests**" (see Page 12).

5.3 Graphics preferences menu

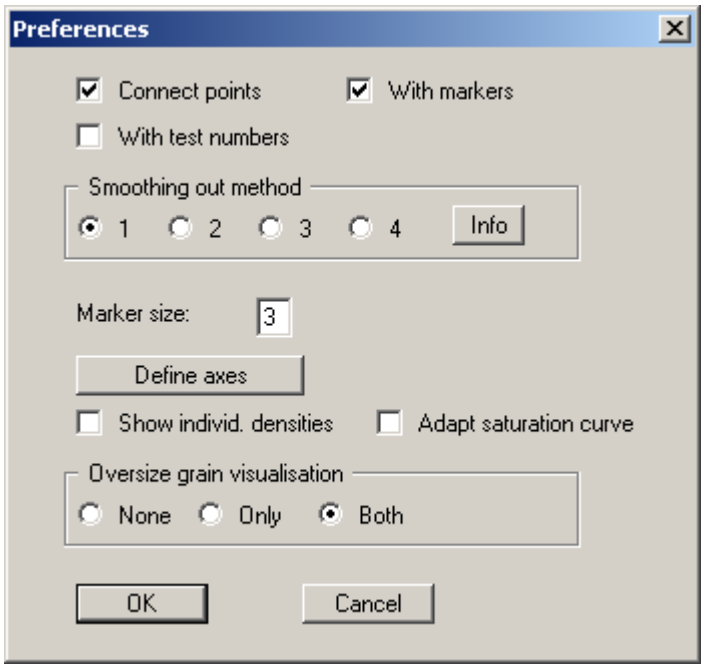
5.3.1 "View output table"/"View diagram" menu items

The default screen visualisation depicts the Proctor curve. If the menu item "**View output table**" is selected the results computed by the program are displayed in the shape of a report table with the most relevant test data and can then be printed as a laboratory report.

In order to return to the graphical visualisation of the Proctor curve, click on the now active menu item "**View diagram**" or simply on the tool in the Smarticon bar. You can move between the output table and the graphical visualisation using this tool.

5.3.2 "Preferences" menu item

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



By selecting the "**Connect points**" check box the measured data are connected to form a Proctor curve. This check box will only be deactivated in rare cases, if a Proctor curve is drawn ***by hand***, for example. Define how the measured data points appear using the "**With markers**" and "**With test numbers**" check boxes. The marker size is user-defined. If neither of these check boxes are selected the measured data will not be marked.

Any one of four smoothing out methods can be applied to the Proctor curve visualisation. A message box provides information on the type of smoothing:

Method 1	= strict Bezier spline
Method 2	= "loose" Bezier spline
Method 3	= Newton interpolation
Method 4	= rational spline interpolation

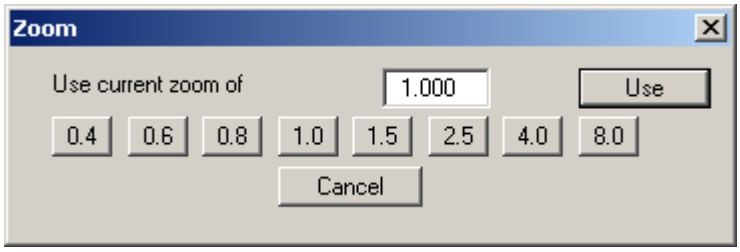
The best method may depend on the individual Proctor compaction test. A general recommendation cannot be given. However, all the examples used in the DIN 18127 can be almost exactly reproduced using the ***strict*** Bezier spline. This method is therefore activated by default.

The program automatically selects a sensible axes scale for the visualisation of the Proctor curve. If you select the "**Define axes**" button you are first offered the automatic scaling values in a further dialogue box, which you can then edit as wished. In addition, visualisation of the individual densities, zero air space curve and oversize grain component can be activated and preferences defined.

5.3.3 "Refresh and zoom" menu item

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

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



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

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

5.3.4 "Zoom info" menu item

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

5.3.5 "Legend font selection" menu item

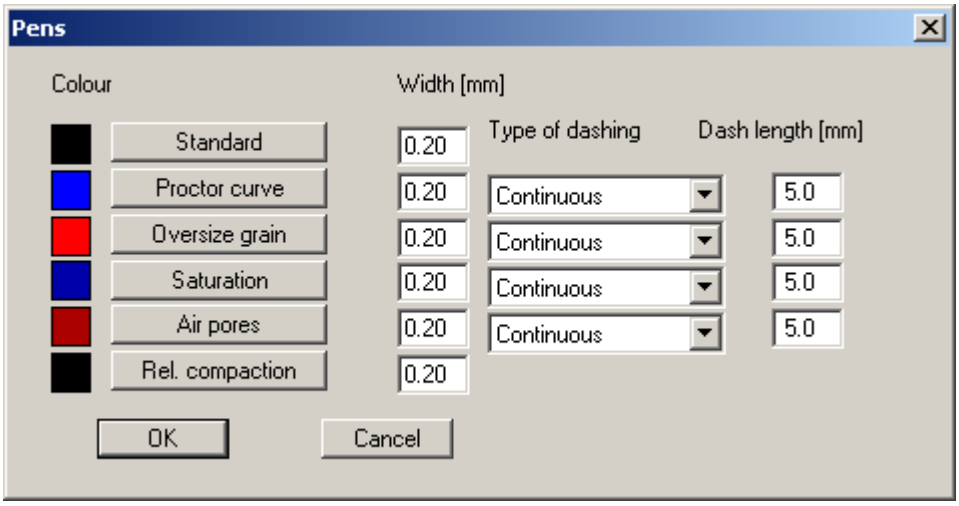
With this menu item you can switch to a different true-type font. All available true-type fonts are displayed in the dialogue box.

5.3.6 "Font size selection" menu item

You can edit font sizes of texts [in mm] within the various input areas. Font size values > 2.0 mm may lead to the report table texts overflowing to one side. The report should therefore be optically examined if greater values are used. The default values are restored using the "**Reset**" button.

5.3.7 "Pen colour and width" menu item

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



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

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

5.3.8 "Mini-CAD toolbar" menu item

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

5.3.9 "Toolbar preferences" menu item

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

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

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

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

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

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

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

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

"**Output table/Diagram**"
By clicking on this icon you can switch between the ***tabular representation*** and the ***graphics representation***.

5.3.10 "Load graphics preferences" menu item

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

5.3.11 "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-COMPACT.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.

5.4.1 "Page size" menu item

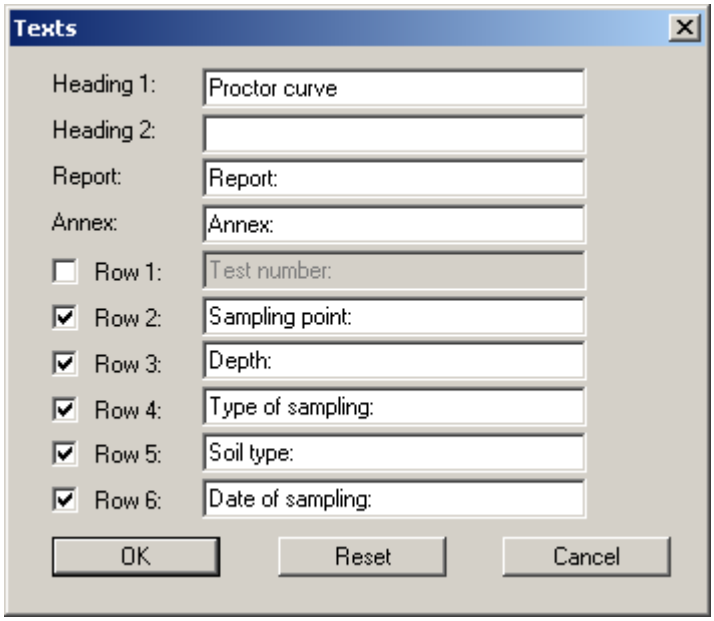
The default page set-up is A4 (portrait) when the program is started. You can edit the page size in the dialogue box.

5.4.2 "Output table where?" menu item

Specify in a dialogue box whether the output table is to be integrated in the main graphics. If the "**Reset diagram positions**" query is then confirmed the output sheet is automatically set to A3 format. The output sheet elements are sensibly distributed on the new output sheet; however, they can also be redistributed according to the user's requirements

5.4.3 "Texts" menu item

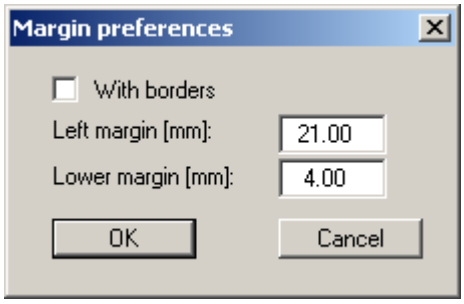
The default labelling of some output sheet elements can be edited in this menu item's dialogue box. Among other things, the name of the output sheet can be specified here.



Your input in rows 1 to 6 of the above dialogue box, as well as the input for "**Report:**" and "**Annex:**" also represent the designations for the input boxes in the "**Edit/General**" menu item dialogue box. If lines are deactivated in the above dialogue box, the corresponding input boxes in the "**Edit/General**" menu item dialogue box are also deactivated (see Section 5.2.9). Use "**Reset**" to restore the default labelling settings.

5.4.4 "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 dialogue box.



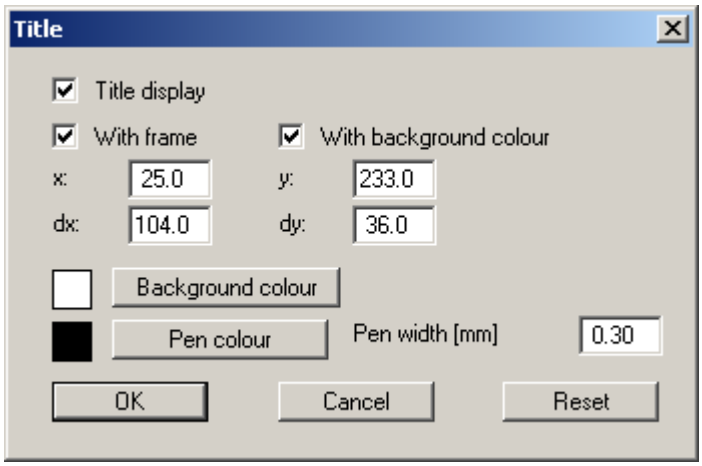
By deactivating the "**With borders**" check box and with an appropriate choice of left and lower margins, it is generally possible to create a non-reduced printer output. It is necessary to also adapt the page height and width (see Section 5.4).

5.4.5 "Position info" menu item

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

5.4.6 "Title (change position)" menu item

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



The position of the element on the output sheet and its size can be defined or edited by means of the variables "***x***" and "***y***", "**dx**" and "**dy**". The element can be provided with a frame and a background colour to suit your personal requirements. If the element needs to be returned to its original condition, this can be done using the "**Reset**" button. Alternatively, you can alter the size and shape of the element using the mouse (see menu item "**Output preferences/Move objects**", Section 5.4.18).

The heading "**Proctor curve**" shown in the title element can be edited in the menu item "**Output preferences/Texts**" (see Section 5.4.3). The texts "**Project (1. line)**" and "**Project (2. line)**" are entered immediately after double-clicking the element or using the menu item "**Edit/General**" (see Section 5.2.9).

5.4.7 "Proctor densities" menu item

A dialogue box opens that is almost identical to that for the previous menu item. The same preferences can be specified in this box as in that described in Section 5.4.6. Proceed as described there to alter the position or layout of the "**Proctor densities**" element.

5.4.8 "Company" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). Simply proceed as described there to edit the "**Company**" element.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/Company**" (see Section 5.2.10).

5.4.9 "Test no., etc." menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the "**Test no., etc.**", element, simply proceed as is described there.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/General**" (see Section 5.2.9). 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**" (see Section 5.4.3).

5.4.10 "Annex and report" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the "**Annex and report**" element, simply proceed as described there.

The input for this element can be edited immediately after double-clicking on the element or via the menu item "**Edit/General**" (see Section 5.2.9). 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**" (see Section 5.4.3).

5.4.11 "Proctor curve" menu item

Because the grading curve is the central graphical element, it cannot be switched off. Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the "**Proctor curve**" element, simply proceed as described there.

5.4.12 "Individual densities" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the individual densities legend, simply proceed as described there

The legend is deactivated in the program default setting. If the check box "**Display individual densities**" is activated in this menu item's dialogue box, the legend is shown in the Proctor curve diagram on the output sheet. The legend labelling and the marker size for the individual densities can be edited directly by double-clicking the legend or using the menu item "**Edit/Individual densities**" (see Section 5.2.10).

5.4.13 "Output table" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the "**Output table**", element, simply proceed as is described there.

5.4.14 "Test data" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the "**Test data**" element, simply proceed as described there.

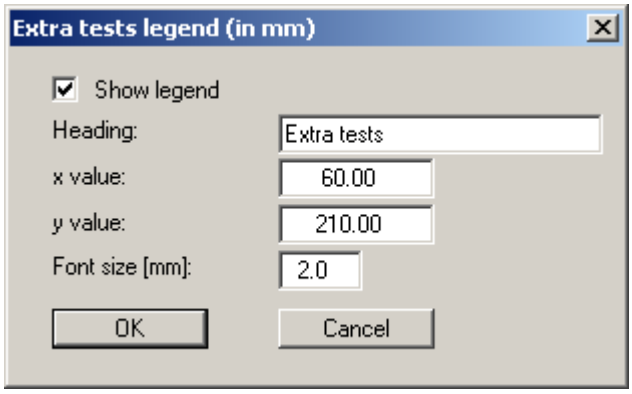
This element is deactivated in the program default setting. If the check box "**Display test data**" is activated in this menu item's dialogue box, the legend is shown in the output table representation on the output sheet. The input for this element can be edited via the menu item "**Edit/Test data**" (see Section 5.2.8)

5.4.15 "Oversize grain" menu item

Almost exactly the same dialogue box opens with the same preference options as that described in the "**Output preferences/Title (change position)**" menu item (see Section 5.4.6). To edit the oversize grain legend, simply proceed as described there

5.4.16 "Extra tests" menu item

The legend for the extra tests is activated by default when the program starts up; however, it is only shown if extra tests are loaded using the menu item "**Special/Define extra tests**" (see Section 5.5.3). In this menu item the following dialogue box opens for defining the legend:



The legend heading is defined in the first input box. Labelling of the extra tests in the legend is specified in the menu item "**Special/Define extra tests**" (see Section 5.5.3). You can define and edit the position of the legend using the "**x value**" and "**y value**". The size of the legend is controlled using "**Font size**".

5.4.17 "Reset all" menu item

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

5.4.18 "Move objects" menu item

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

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

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

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

5.5.1 General notes

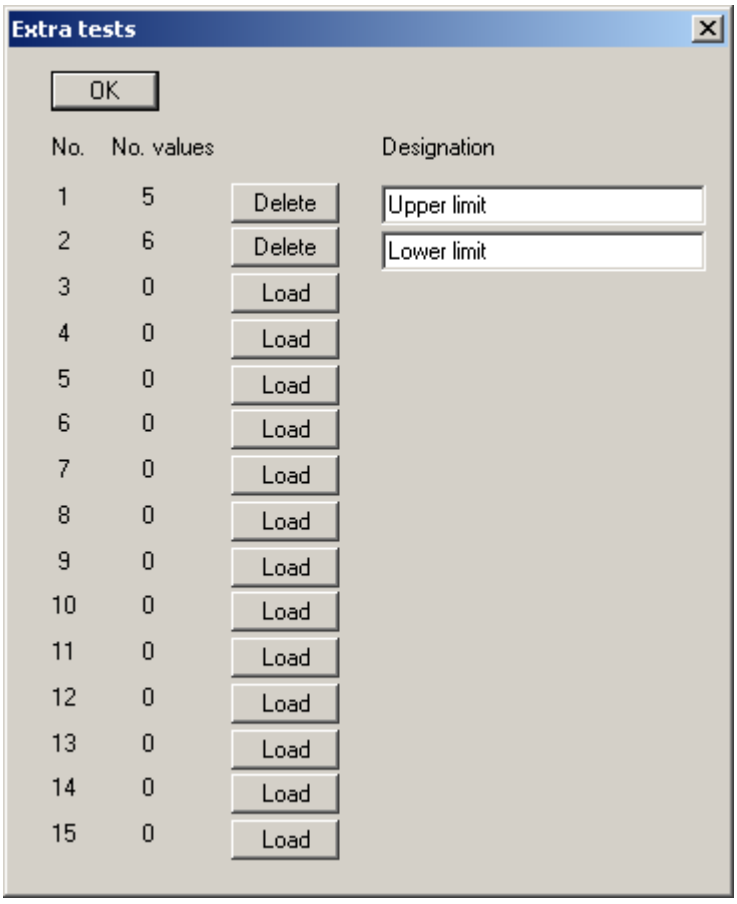
Beside visualisation of the current Proctor test, it is possible to visualise up to 15 further tests using the "**Special**" menu. A legend is shown for these tests (henceforth known as extra tests), allowing allocation of a line type to the test designations. For example, boundary curves can be displayed via the extra tests.

5.5.2 "Project identification" menu item

A project identification can be entered in this menu item's dialogue box; it is then saved with the current data. If this file is loaded into a different test as an extra test using "**Special/Define extra tests**", the project identification is automatically entered there as the name of the extra test.

5.5.3 "Define extra tests" menu item

In order to use further tests in the visualisation, previously defined tests can be loaded using this menu item. The following dialogue box appears:

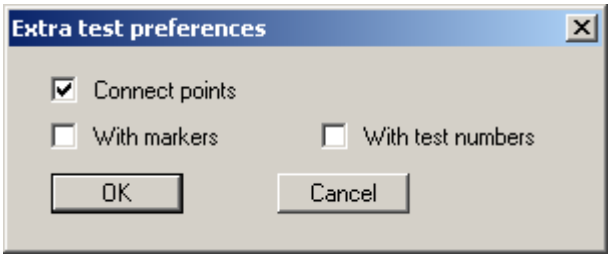


Select the required Proctor compaction test after clicking the "**Load**" button. The "**Designation**" box then appears for the selected test; enter a fitting test description. In the example above 2 Proctor curves have been loaded, representing the upper and lower boundaries of the permissible region. The designations entered are later adopted as curve descriptions in the extra tests legend (see Section 5.4.16). If a file with a project identification is loaded as an extra test (see Section 5.5.2), this is automatically entered into the "**Designation**" box.

The number of respective individual tests in the loaded extra tests is displayed in the dialogue box. Once a file has been loaded the "**Load**" button changes to a "**Delete**" button. This allows extra tests that are no longer needed to be deleted again.

5.5.4 "Extra tests preferences" menu item

Visualisation of the extra tests can also be influenced. The following dialogue box appears:



Here, the individual tests can be connected and provided with markers or test numbers.

5.5.5 "Extra tests pen colour and width" menu item

The colour, width, type of dashing and dash length can be defined for the individual curves visualising the extra tests, in analogy to the menu item "**Graphics preferences/Pen colour and width**" (see Section 5.3.7).

5.5.6 "General legend" menu item

This legend is deactivated in the program default setting. If the "**Display legend**" check box is activated in the dialogue box for this menu item, the element is displayed in the visualisation on the output sheet. A heading can be entered in this menu item's dialogue box and the type of file name display selected. When using the "**Complete file name**" setting the file name is displayed with the complete path. You can define and edit the position of the legend using the "**x value**" and "**y value**". The size of the legend is controlled using "**Font size**".

5.6.1 "Copyright" menu item

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

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

5.6.2 "Maxima" menu item

Information on the maximum number of tests, extra tests and individual densities possible is displayed in a message box.

5.6.3 "Help" menu item

The **GGU-COMPACT** online-help is opened using an installed browser (e.g. MS Internet Explorer). The help function can also be accessed using the [**F1**] function key.

5.6.4 "GGU on the web" menu item

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

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

5.6.5 "GGU support" menu item

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

5.6.6 "What's new?" menu item

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

5.6.7 "Language preferences" menu item

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

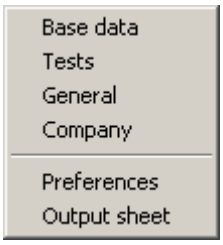
Alternatively, you can work bilingually, e.g. with German dialogue boxes but with graphic output in English. The program always starts with the language setting applicable when it was last ended.

6 Tips

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

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

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



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

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

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

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