

## **GFA CAD Windows**

Professional version.

This help file is constructed around the menu structure of GFA-CAD.

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Menu

Plotter/Printer Drivers

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## **Help**

GFA-CAD invokes this help function with Shift F1. The F1 function key is used for symbols.

## **New/Change Project**

Creates a new project or changes over to another project.

Automatic management of drawing layers and pages.

Automatic creation of new directories to receive drawing layers and pages belonging to the project.

Click with the mouse cursor on the input box Path: or press [Alt]-[P]. The input cursor (a vertical bar) is then placed on this line. Using the [Backspace] key you can now delete the line. Next, enter the subdirectory path in which you wish to have your 'Project' drawings saved.

### **Example:**

C:\GFACAD\PROJECT1

The C: is the drive on which the subdirectory is to be created.

\GFACAD is a subdirectory created during GFA-CAD Windows installation to contain all GFA-CAD files.

\PROJECT1 is the name of the catalogue which is to contain your drawing project.

From then on, all drawings will be saved in the subdirectory Project1. If the subdirectory you've specified does not yet exist GFA-CAD Windows will create it.

To enter a file name click with the cursor on the line File: and the input cursor will be placed there. Type in the name of your drawing.

**Keyboard equivalent:** [Ctrl] + N

**Reference:** Chapters 5.4 and 5.4.1

## **Save Project**

Saves current work to disk.

Presets such as scale, unit, snap grid and dimension objects are also saved. When the project is reloaded they are all available again.

**Keyboard equivalent:** [Shift] + [F3]

**Reference:** Chapter 5.4.2

## **Save Page**

Saves individual drawing layers under a different name.

To save the current layer under a new name use the Save Page... function. The dialog box Save Page... appears next. Enter a name for the page and confirm this with OK to save the current layer under this file name. At the same time, the current layer switches automatically to this new page.

### **Keyboard equivalent:**

**Reference:** Chapter 5.4.3

## **Change Page**

Professional version only:

Changes current working page. After clicking on the option the page number (0 - 999) is specified in an edit dialog box.

You only need to enter the extension number of the page. GFACAD Windows then searches for the drawing and loads it into the memory of the currently selected layer. At the same time the old layer is saved.

**Keyboard equivalent:** [Ctrl] + A

**Reference:** Chapter 5.4.4

## **Insert Page**

Professional version only:

This function inserts individual pages in between existing pages within a drawing.

The page name (including extension) is entered from a dialog box.

The necessary renumbering is automatically performed by GFACAD Windows.

If you enter the numerical extension of an already existing page all subsequent pages are moved. An empty file is then created for the given page number. The current layer is thereby automatically saved so that the work with the newly created page can commence right away.

**Keyboard equivalent:**

**Reference:**

Chapter 5.4.5

## **Save Presets**

After clicking on this menu item any presets made from within GFA-CAD Windows, such as scale, grid presets etc., are saved in the GFACAD.INF file so that they are available next time the program is run.

**Keyboard equivalent:**

**Reference:**

Chapter 5.4.6

## **Convert**

Selecting this menu item displays a dialog box with following converters:

GFCAD	to	Metafile
GFADRAFT	to	GFCAD
GFCAD	to	DXF
DXF	to	GFCAD

Professional version only:

GFCAD	to	DBF(List)
GFCAD	to	ASCII(List)

**Keyboard equivalent:**

**Reference:**

Chapter 8.

**Notice**

Text editor for project notes.

You may enter your own notes here concerning the project.

**Keyboard equivalent:****Reference:**

Appendix C

## **Database**

Professional version only:

Select a data base using the file selector. This function can be used to search and modify a data base file (DBF-File).

**Keyboard equivalent:**

**Reference:**

Appendix B

**Delete File**

Invoking this menu item deletes the drawing chosen in the file selector box.

**Keyboard equivalent:**

**Reference:**

Chapter 5.4.7

**Rename File**

This function is used to rename drawing files.

The files are chosen in a file selector box.

**Keyboard equivalent:**

**Reference:** Chapter 5.4.8

**Copy File**

This function is used to copy drawing files. The files are chosen in a file selector box.

**Keyboard equivalent:**

**Reference:**

Chapter 5.4.9

**Quit**

Terminates GFA-CAD Windows. You are returned to the Windows desktop.

**Keyboard equivalent:**

**Reference:**

Chapter 5.4.10

**About GFACAD**

Displays the copyright notice and the current version number.

**Keyboard equivalent:****Reference:**

Chapter 5.4.11

## **Output**

Outputs the drawing to the output device.

Depending on the Windows installation, the bottom of the File menu may contain one or more output devices and their assignments. A click on one of these menu items prints out the drawing on the chosen device.

### **Keyboard equivalent:**

**Reference:** Chapter 7

## Lock Reference Layer

A switch to set the current drawing layer as reference layer.

The reference layer can be changed by holding down the [Shift] and [Ctrl] keys, and then clicking on one of menu items 1 - 16. The reference layer is indicated by an R in front of the number.

When the Lock Reference-Layer switch is inactive, selecting a new layer automatically also makes it the reference layer. Activating the switch by clicking on the menu item with the |LM| makes the current working layer the reference layer. If you subsequently change layers this layer remains the reference layer.

A second way of setting the reference layer is to click on the menu item with [Shift + Ctrl]-|LM|. The layer selected in this way then becomes the reference layer. Which layer is the current working layer and which the reference layer is shown on the GFA-CAD Windows status line. This is displayed after the name of the current drawing function as follows:

W 1 R 6

This means that the current working layer is layer number 1 in the Layer menu. The reference layer is layer number 6. On color monitors this information is shown using the current layer color.

Working and reference layers are always shown on screen simultaneously even when the Show Layers switch in the Preset menu is off.

When working and reference layers are not the same the GFA-CAD Windows snap functions always work on the reference layer.

### Example:

You wish to draw a line in the working layer. The line should start exactly on the end of a line in the reference layer. Activate the Snap Line End function, move the cursor with the snap radius to the end point of the line in the reference layer. Click with the |LM|. The line is placed in the working layer but on the coordinates of the end point of the selected line in the reference layer.

### Note:

In order to be able to again use the snap functions on the current working layer, set in the Layer menu the reference layer to be the same as the working layer. By using the working and reference layers it is also possible to copy parts of the reference layer to the working layer. Mark the area to be copied on the reference layer with a window. Confirm the window by clicking with the |LM|. The segment is then transferred to the window. If you now fix it the segment is inserted in the working layer.

**Keyboard equivalent:** [Shift] + [Ctrl] - menu item

**Reference:** Chapter 5.24.4

## **Layer Table**

A menu of functions to assign and change working layers.

Menu items 1 - 16 allow for up to 16 presets.

Function keys [Ctrl]-[F1] to [Ctrl]-[F16] can be used as shortcuts for working layer change.

Under the title Layer Table there are 16 menu items (10 in the standard version) which can be assigned with layers for a drawing.

The layers are assigned from a file selector which appears when one of the menu items is clicked on. Selected layers are then shown as menu items.

### **Note:**

When working with layers do observe the instructions about managing drawing projects given in Chapter 5.4.

### **Warning:**

In the following explanations there are differences between the standard and professional versions. In its standard version GFACAD Windows can only use up to 10 layers simultaneously.

GFA-CAD Windows (professional version) can use and display up to 16 layers simultaneously.

Each of these layers can incorporate up to 256 KB of drawing data. Within the drawing the current working layer is always shown in the status line. In the Layer menu the working layer is indicated by a check-mark. To change a working layer click on the relevant menu item. The chosen layer must be a memory resident layer.

If you wish to change the layer in a menu item click on this menu item with <hold>-|RM| <click>-|LM|. This will take you back to the file selector and you can select another layer from there.

**Keyboard equivalent:** [Ctrl]+[F1]...[Ctrl]+[F16]

**Reference:** Chapter 5.24.2

## **Load Symbol**

This function inserts a symbol in the drawing.

By using the Load Symbol function you can recall previously saved symbols and insert them within the drawing.

After selecting this menu item, you will be presented with a file selector. A symbol is chosen in the directory field. Confirming with the OK field closes the file selector and shows the symbol in a window in the bottom-left corner of the drawing.

The symbol can now be manipulated as a normal window. If you hold the [LM] down the symbol is placed at the current cursor position and can be fixed there by pressing the [Return] key or by clicking with the [LM].

### **Note:**

If a symbol is saved without a snap point, the bottom-left corner of a window is used as a reference when the symbol is placed (for definition of snap points refer to the Chapter 5.23.3

Saving symbols with snap points).

### **Keyboard equivalent:**

**Reference:** Chapter 5.23.1

## **Save Symbol**

This function saves a previously marked segment of the drawing as a symbol.

A previously marked portion of the drawing can be saved as a symbol by using the Save Symbol function.

To mark an area of the drawing draw a window around it and click with the [LM].

Next, go to the Symbol menu and select the Save Symbol option.

A file selector box appears in the middle of the screen. Select first the directory where you want to save the symbol, either by using the directory field or by typing the path in the Path box.

Enter the name of the file for the symbol in the File box.

The symbol is saved following your confirmation either by clicking on the OK box or by pressing the [Return] key.

### **Note:**

Since the file names under MS-DOS are limited to eight characters no special extensions are used for symbols.

In this way you can expand names to 11 places. This gives a better overview in case of large symbol libraries.

### **Keyboard equivalent:**

**Reference:** Chapter 5.23.2

## Symbol Library

Places for up to 4 libraries for symbols 1-10 (the standard version has only 1 library path).

In the standard version only 10 symbols are available to be assigned to function keys.

In the Symbol menu there are four menu items named Library. Using these menu items you can define access to four different subdirectories.

You can assign 10 symbols to function keys F1-F10 from one of the directories. From then on you don't need to invoke the symbols from the file selector any longer. Instead, you only need to press the relevant function key.

To set a directory click first on a menu item with the |LM|. Then, select a directory from the file selector which appears next. After the confirmation this directory is shown in the menu item.

If you wish to redefine a menu item click on it with [Shift]-|LM| and select another directory from the file selector.

The currently active directory is indicated with a check-mark. To switch between directories click on the menu item with the |LM| or press [Shift]-[F9] - [F12].

**Keyboard equivalent:** [Shift] + [F9...F12]

**Reference:** Chapter 5.23.4

## Symbol Table

Places for up to 10 symbols per library path.

To assign keys in a menu item for the first time proceed as follows:

Click on the desired menu item with the |LM|. Select in the file selector the desired symbol. The symbol name appears as a menu item after you close the file selector.

If you wish to redefine a symbol click on it with [Shift]-|LM|. From then on proceed as described above.

The defined symbols are invoked either by clicking on a menu item with the |LM| or by pressing the relevant function key.

However, there is one difference between these two methods.

- Invoking a symbol from the menu

The symbol is loaded, placed in window in the lower-left corner of the screen and is then available for further processing. You can perform all window manipulations on this window.

- Invoking a symbol with a function key

When you invoke a symbol with a function key the symbol is immediately fixed at the current cursor position.

**Keyboard equivalent:** [F1]...[F10]

**Reference:** Chapter 5.23.5

## **Zoom Work Window**

Selects preset zoom steps for enlargement of screen display.

The user can set individual zoom steps in the dialog box shown in Figure 5.13. This dialog box can be invoked at any time. Clicking on one of the eight buttons redraws the screen using the new zoom factor value. Pressing the [Esc] terminates this dialog box without any further action.

All zoom steps can be changed in their boxes individually. The editing cursor (a vertical bar) can be moved from one field to the next by using the Tab key. Pressing the [Tab] key moves the cursor to the next lower field. To get to a field above the current one press [Shift] and [Tab].

The actual values are changes in the usual manner. Use [Backspace] key to delete a value and the keyboard to enter a new one.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.4

## **Scale**

Sets units for the scale in the drawing.

You can select the drawing units. The selected units are surrounded with a frame and an active radio button.

The scale is set in the Scale field. Click on the box with the mouse to have the cursor placed in this field. You can delete the existing value with the [Backspace] key and then type in the desired scale.

GFA-CAD Windows allows for a zoom-out scale of up to 10:1 and a zoom-in scale of down to 1:1000. The zoom-out value should be smaller than 1 and the zoom-in value must be greater than 1. The dialog box is terminated in the usual way with the OK button or the return key. Clicking on Cancel ignores any changes you have made and restores all fields to their old values.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.1

## **Drawing**

Sets parameters for screen display.

The presets you set here are mostly to do with the way the program interface is presented.

### **Grid Display**

This setting defines the grid which overlays the drawing area. The value entered here depends on the current scale and unit settings.

When selecting the value for the grid you should observe the following rule:

Always select a grid which is as coarse as possible and only as detailed as needed. Too fine a grid slows down the screen redraw.

### **Zoom Text**

This switch is on when its box contains a cross.

When the switch is off the text remains unaffected during zooming. This means you can perform scaled object changes while the text maintains its size in accordance with DIN guidelines.

When the switch is on the text changes size in accordance with the currently set zoom factors. During the zooming in/out of objects you can maintain the text size relative to the current zoom factors.

### **Change Color on Layer**

If the Change Color on Layer option is off, each layer gets the color for lines and text from the Layer Color boxes. In this mode it's not possible to use different colors within one layer.

If this switch is on, it is possible to use different colors for individual line and text styles.

The colors are set in the Line Parameters and Text Parameters dialog boxes

Assigning different colors to individual line and text styles is useful in certain custom applications. In general, however, to improve clarity the color assignment should be limited to layers.

### **Background Color**

This field is used to set the desired background color of the drawing surface. The current color is shown in the field between the two arrows. The color can be changed by clicking on the arrows.

The selection of background color is more a case of taste than that of technical innovation. In individual cases choosing the right background color can improve the contrast lacking in certain monitors and graphic cards. Select your own favourite color by trial and error.

### **Ending the dialog box**

Having set the presets in this dialog box you can perform them by clicking on the OK button or by pressing the [Return] key.

If, on the other hand, you click on Cancel all changes you have made are ignored and all fields are restored to their old values valid before the dialog box was invoked.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.2

## Cursor

Setting of mouse and cursor key presets.

This dialog box is used to set the mouse and cursor key resolutions. These values specify the steps with which the cursor moves when the mouse is moved or the cursor keys are pressed.

To change a value proceed as already explained above:

- click on the field
- perform the corrections by using the keyboard

For example, if you set the mouse resolution to the same value as the grid resolution the mouse will only move to grid intersections. Although this may be useful in some applications, in general the mouse resolution should be less than that of the grid resolution.

The best mouse resolution setting is when it is a full fraction of a grid resolution. In that way the grid intersections can still be used as reference points. Furthermore, it's also a good idea to set the cursor resolution to less than that of the mouse resolution. It's always easier to use the keyboard for exact positioning since using the mouse may try your patience.

### Snap Radius

The purpose of the snap functions is explained elsewhere. At this point it is sufficient to say that the snap functions are search functions which automatically put the graphic cursor on specific drawing objects. This spares the user from fiddling with exact mouse positioning,

e.g. connecting a line exactly to an already existing line.

The Snap Radius specifies an area around the current cursor position within which area the program can find drawing objects automatically. When a snap function is on, the size of this area is indicated by a square around the current cursor position. The specified value has nothing to do with the current scale or units settings but is an absolute value for the screen display in mm. The advantage of this is that the snap radius is always shown in the same size regardless of the current zoom value.

### Small Cursor

In this field you can select a cursor shape. You can choose between a cross-hair cursor [+ ] or an intersection of moving help lines.

### Keyboard equivalent:

**Reference:** Chapter 5.5.3

## **Reference Point**

Changes the location of the coordinate system origins.

[Ctrl]+Z sets the coordinate origins to cursor position.

The Reference Point refers to the origins of the coordinate system. You yourself can set this point.

In this dialog box you can now move the origins of the coordinate system in both X and Y directions. The actual values are entered in the X - Value and Y - Value boxes. Entering 0,0 sets the origins back to the lower-left corner. Transposing the origins of the coordinate system makes it possible to enter negative coordinate values from the keyboard.

### **Note:**

Do note that changing the origins of the coordinate system affects the parameters values entered from the keyboard.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.5

**Fill**

Toggle. When on, filled objects are shown.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.6

**Filter Line**

Toggle. When on, lines are not displayed.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.7

**Filter Text**

Toggle. When on, text is not displayed.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.8

## **Line Width**

Toggle for setting of line width display on the screen.

GFA-CAD Windows is capable of displaying the actual line width. When this switch is on, the individual lines are displayed as thick as specified for each line type. However, you should use this switch only for the purpose of checking the drawing since displaying real lines slows down the display.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.9

## **Help Lines**

Toggle for display of help lines and markers on the screen.

Using the Helpline X and Helpline Y options from the Line menu you can set the help lines within a drawing. When this switch is on the help lines are displayed, when it's off the lines are suppressed.

### **Important:**

If you use help lines during drawing you should use this switch to turn them off before outputting or they will be output as well.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.10

## **Ungroup Objects**

Ungroups objects so that they can be modified.

When saving symbols, the identification of their subordinate parts are deleted.

This switch is necessary for subsequent manipulation of symbols. When this switch is on individual lines can be deleted from symbols and subsequent changes can be made to these symbols. However, the grouping of symbols into an object is thereby lost.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.11

## **Move Object**

Toggle. When on, the contents of a window are moved; when off, they are copied.

If this switch is on the window contents are moved when window manipulation functions are used or a new position is set with the mouse.

If this switch is off the marked drawing areas in a window are copied. This area can then be copied to other locations as often as desired. In this way you can create copies of an area of the drawing.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.12

**Cut Object**

Toggle. When off, accepts only vectors within a window; when on, trims objects to window borders.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.13

## **Grid Display**

Toggle to activate the help grid.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.14

## **Cursor on Grid**

When on, the cursor moves only on grid points.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.15

**Slider**

Activates sliders on bottom and righthand side of the screen.

**Keyboard equivalent:**

**Reference:** Chapter 5.5.16

## **Buttons**

When on, icon bars are shown on the screen at the right.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.17

## **Overview**

When on, an additional overview window is displayed showing the full drawing.

This window can be placed anywhere on the screen and it can also be resized. The overview window always shows the current drawing in full. The current zoom value and the zoomed drawing segment are indicated with a rectangle. If, for example, you wish to view another segment of the drawing in the same zoom setting just click within the overview window with the |LM|. The chosen area of the drawing is then displayed maintaining the same zoom value.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.18

## **Show Layers**

When on, all layers are overlaid and shown on the screen.

GFA-CAD Windows normally simultaneously shows a maximum of two layers: the work layer and the reference layer. Depending on the amount of memory in your computer you can use up to 16 layers simultaneously. They are created and shown on the screen by activating the Show Layers switch. However, the drawing operations still cover only the work and reference layers.

### **Keyboard equivalent:**

**Reference:** Chapter 5.5.19

## **Line**

Draws a line between two given endpoints.

**Keyboard equivalent:** [Ctrl] + L

**Reference:** Chapter 5.8.1.1

**Double Line**

Draws two parallel lines simultaneously.

The distance between them is specified in the Double Line Distance parameter.

**Keyboard equivalent:**

**Reference:** Chapter 5.8.1.2

## **Fine Sketch**

Create a wavy line using the spline function.

A random number generator is used to set points along a straight line between the start and end points. These points are then used to calculate a spline function. The result of this is a wavy line. The waviness of the line is determined by a constant in the GFACAD.INF file

**Keyboard equivalent:**

**Reference:** Chapter 5.8.1.3

## **Coarse Sketch**

Draw a zigzag line.

Coarse Sketch is similar to Fine Sketch. Here too a random number generator is used to set points along a straight line between two locations. However, these points are connected directly so that the result is a zigzag line. The width of this line is also determined by a value in the GFACAD.INF file.

### **Keyboard equivalent:**

**Reference:** Chapter 5.8.1.4

## **Freehand**

Free hand drawing.

Set a starting point for a line. Move the cursor using the mouse. With each movement of the cursor a line is immediately drawn between the old and new positions. By moving slowly you can create wavy lines and by moving rapidly you create zigzag lines. Clicking on the |LM| again has no effect for this line since the line drawing is a direct result of cursor movements. You can terminate this function only by clicking on the |RM| button.

### **Keyboard equivalent:**

**Reference:** Chapter 5.8.1.5

## **Help Line X**

Set help lines on X axis.

This function makes it possible to create a horizontal help line at the current cursor position by clicking with the [LM]. You can use such lines in your drawings as reference lines. A help line is drawn across the total width of the drawing.

### **Note:**

Help lines are saved together with all of the other drawing data. The advantage of this is that you can always continue where you left off. To suppress the help lines you should turn off the switch Help Lines in the menu Preset. Otherwise, the help lines will also appear on your printer or plotter output.

### **Keyboard equivalent:**

**Reference:** Chapter 5.9.1

## **Help Line Y**

Set help lines on Y axis.

The Helpline Y function is similar to the Helpline X function. Clicking with the [LM] creates a vertical help line at the current cursor position.

### **Note:**

Help lines are saved together with all of the other drawing data. The advantage of this is that you can always continue where you left off. To suppress the help lines you should turn off the switch Help Lines in the menu Preset. Otherwise, the help lines will also appear on your printer or plotter output.

### **Keyboard equivalent:**

**Reference:** Chapter 5.9.2

## Help Markers

Set and delete help markers.

The Help - Markers function offers an additional option of marking points in a drawing and referring to them directly by using parameter entry. There are ten help markers in total and they are numbered 0-9. The actual positions of individual markers are saved in ten variable pairs (X0,Y0) - (X9,Y9).

Having first selected this function you can then set a help marker by moving the cursor to the desired position, typing in the number of the help marker and clicking with the |LM|. A small cross with a number then appears at that position.

A help marker can be deleted by moving the cursor to the marker and clicking again with the |LM|.

If during the positioning of a marker you enter a number of an already existing help marker, that marker is moved to the current cursor position.

As already indicated the position of a marker is saved in a pair of variables containing its X and Y coordinates. When using the keyboard parameter entry ([TAB key]) you only need to type in the coordinates of the relevant marker (e.g. X3,Y3 for the marker number 3).

Using help objects facilitates marking of a particular area of a drawing with help lines. At the same time, you can also mark another area by using the help markers and have access to it with direct parameter entry.

**Keyboard equivalent:** [Ctrl] + Q

**Reference:** Chapter 5.9.3

## **Break Line**

Break a line in two segments.

Breaking a line means splitting a solid line in two. The splitting is only possible at the point where a line intersect with another object. This other object can be another line, a circle or a symbol.

In order to be able to use this function one of the snap functions must be on. The snap functions can be invoked from the [F12] popup menu or by clicking on the icon bar at the right. When a snap function is on, the program automatically searches for certain object parts such as a point of intersection between different objects.

First you must identify the object. Objects are identified by clicking on them directly with the cursor or when they are located within the snap radius.

### **Example:**

You wish to break a line that intersects with another line. The line should be broken off at the intersection of the two lines.

Move the cursor to the line to be broken off and click on it with the [LM]. The line is then shown as a dashed line.

Next, select the snap function Snap Cross from the [F12] popup menu. Then move the cursor to the intersection staying within the snap radius. Click again on the [LM].

Move the cursor to the right part of the line to be broken and press the [Delete] key. That portion of the line is deleted up to the intersection

Because this function is so comprehensive it's particularly handy for correction of lines when other objects are connected to it.

**Keyboard equivalent:** [Ctrl] + D

**Reference:** Chapter 5.10.2

## **Trim Line**

Subsequent adjustment to line length by trimming.

This function is very similar to Break Line in its operation. Here too a snap function must be on for it to work. In contrast to Break Line this function can delete the surplus portions of a line directly.

### **Example:**

Repeat the example given for Break Line function.

You've probably figured out that you don't have to execute the last part, the deletion of the broken line. You determine the part of the line to be broken in advance. The part of the line you identify is always the one that gets deleted. If you identify the part of the left of the intersection the left part is deleted, if you identify the other one than the part on right is deleted.

The Trim Line function is very useful for construction of parallel projections. Since quite often the lines do not fit exactly you can use longer lines and then trim the excess later

### **Keyboard equivalent:**

**Reference:** Chapter 5.10.3

## **Join Lines**

Joins two lines into one line.

If a solid line is broken in two using the Break Line function, the two lines can again be joined together by using the Join Lines function. The new line is then drawn from the start of the first line to the end of the second line

### **Example:**

Draw any two lines at an angle.

To straighten these lines, first of all, activate the function Join Lines from the Line menu.

Next, click on both lines with the [LM].

This function can be used to join broken lines again or to straighten joined lines.

### **Keyboard equivalent:**

**Reference:** Chapter 5.10.4

## **Adjust Length**

Subsequent adjustment to line length by enlargement or reduction.

Lines are often created too long or too short. The Adjust Length function has been created to subsequently change the length of a line. It's very simple to use.

### **Example:**

Invoke the Adjust Length function from the Line menu. Identify the line by clicking on it with the |LM|. The line is then shown as dashes. By moving the cursor you can now change the length of the line. Having reached the correct length fix the line by clicking the |LM| again.

**Keyboard equivalent:** [Ctrl] + V

**Reference:** Chapter 5.10.5

## **Angle to Line**

Places new line at a given angle to another, existing line.

This function depends on the value specified in Angle to Line in the Line Parameter dialog.

To perform this function click with the |LM| on a line in relation to which you wish to draw another line at an angle. A new line is drawn on the screen as dashes. This line is at the specified angle to the selected line.

You can move this line with the mouse. The line can be fixed at a location by clicking with |LM| again. However, the new line must not intersect with the selected line.

After you've fixed the line another line is drawn parallel to it. This line can be fixed at another location. To terminate the function click the |RM|.

**Keyboard equivalent:** [Ctrl] + W

**Reference:** Chapter 5.10.6

## **Bi Sect Angle**

Divides an angle in half.

By using this function you can draw a line through the middle of an angle formed by two intersecting lines or between two joined lines.

### **Example:**

Select the function and identify the two lines by clicking on them with the [LM]. The program calculates the position of a line between the two selected lines and draws it using dashes.

In case of intersecting lines the intersection automatically becomes the starting point for the new line. You can then adjust the length of the new line and fix at the desired location. The function then returns to its original state.

### **Keyboard equivalent:**

**Reference:** Chapter 5.10.8

## **Parallel**

Draws parallel lines.

After the function has been selected you have to identify the line to which you want to draw a parallel by clicking on it with the |LM|. A dashed line which is parallel to the selected line is drawn first. You can then also set several parallel line before terminating the function with the |RM|.

**Keyboard equivalent:** [Ctrl] + P

**Reference:** Chapter 5.10.7

## **Parallel Polygon**

Draws a parallel polygon.

By using this function you can move polygons so that the distance of individual lines to the original polygon remains the same.

You can mark a polygon with three different functions activated from popup menu [F11] with switches described below:

### **Indent - Polygon**

When this switch is on, only closed polylines are accepted. If you attempt to use this function on an open polyline the error appears.

### **Indent - Line**

You can use this function to select individual lines which are then combined into a closed polyline. The sides of the new polygon will be parallel to the selected lines.

The lines are selected by moving the cursor to a line clicking with the [LM]. Selected lines are shown using dashes.

### **Indent from to**

Using this function you can select several connected lines in a polyline in order to move them in parallel.

### **Example:**

Select the function Line from the menu Line. Next, to draw lines without a default direction, click on the item any from the popup menu [F11].

Now draw an open polyline. Choose a starting point and click with the [LM]. Draw a line out of this point and fix it somewhere else by clicking with the [LM] again.

Draw another line in a different direction. Repeat this procedure several times until you have a long zigzag polyline on the screen.

Change the function by clicking with the [LM] on the item Parallel Polygon from the menu Line.

Finally, turn the switch Indent from to in the popup menu [F11] to on.

Select the snap function Snap Line End from the popup menu [F12].

Move the cursor to the first line in the vicinity of the end of your polyline and click with the [LM]. This will mark the end of the line with a cross.

Select the snap function Snap Line End once again and click with the [LM] on the last line in the vicinity of the end of the polyline. All lines from the first marker to the last marker are then shown as dashes.

Press the [Return] key. A second polyline is then drawn parallel to the selected polyline. You can move it with the graphic cursor and fix it at the desired location by clicking with the [LM]

### **Summary of how to use Parallel Polygon function:**

1. Select the function with Line Parallel Polygon.
2. Activate one of three switches (Indent..) for the type of marking to be used.
3. Select polygons by clicking on them directly with the [LM]. Select polylines by clicking with the [LM] on the start and end points (snap function Snap Line End must be set to on).
4. Press the [Return] key.
5. Using the cursor draw the polygon and determine its position. 6. Fix the new Polygon

by clicking with the |LM|.

7. Draw additional Polygons or terminate the function by clicking on the |RM| button.

**Keyboard equivalent:**

**Reference:** Chapter 5.10.9

## **Face**

Chamfers two intersecting lines.

By using this function, two intersecting lines can be chamfered. After selecting the function you must identify the two lines to be chamfered.

After the second line has been clicked on the bevel is created depending on the current presets. Do note that the order in which you click the lines is important. If you use this function on intersecting lines the intersection is converted into a bevel. The surplus line parts are cut off.

### **Keyboard equivalent:**

**Reference:** Chapter 5.10.10

## **Round Corner**

Rounds the corner formed by two joined lines.

Having activated the function, identify both lines by clicking on them with the [LM]. After marking the second line the two lines will be connected with an arc whose radius depends on the Softline Radius preset. The order in which you click on the lines plays no part in this function. In case of intersecting lines the surplus line parts are cut off.

### **Keyboard equivalent:**

**Reference:** Chapter 5.10.12

## **Circle with Radius**

Draw a circle whose size is determined by the given radius.

The Circle with Radius function is used to draw circles whose size is determined by their radius. To draw such a circle proceed as follows:

Having selected the function move the cursor to a point where you want to set the center of the circle and click with the [LM].

Next, move the cursor away from this point and a circle will appear. Once this circle reaches the desired size click again with the [LM]. The circle is then fixed and drawn according to currently selected line parameters.

**Keyboard equivalent:** [Ctrl] + K

**Reference:** Chapter 5.12.1

### **Circle with Diameter**

Draw a circle whose size is determined by the given diameter.

Having selected the function, move the cursor to a point where you want a point of the circle and click with the [LM]. As you move the cursor away the line between this point and the cursor then forms the diameter of the circle. You fix the circle by clicking on the [LM] again.

**Keyboard equivalent:**

**Reference:** Chapter 5.12.2

### **Circle 3 Points**

Draw a circle whose size and position are determined by three previously set points.

Select three points one after the other by using the mouse. Each of these points is marked by a click with the |LM|. After you select the second point a circle appears on the screen. The third point is assumed to be the current cursor position. When you mark the third point the circle is fixed

**Keyboard equivalent:**

**Reference:** Chapter 5.12.3

### **Arc 3 Points Middle**

Draw an arc whose endpoints are specified on the arc and whose size is determined by a point on the circumference.

This function is used to draw an arc. An arc is defined with 3 points . The first and second point marked on the drawing area determine the start and end of the arc. The third point is located between the first two and determines the curvature of the arc.

#### **Keyboard equivalent:**

**Reference:** Chapter 5.12.4

### **Arc 3 Points End**

Draws an Arc on 3 points

Draw an arc whereby its starting point and one other point are specified on the circumference of the circle. The arc size is set by the endpoint.

**Keyboard equivalent:**

**Reference:** Chapter 5.12.5

## **Circle/Elliptic Segment**

Draws a circular or an elliptical arc out of existing objects.

Often you require only a portion of a circle in your drawings. Such circle segments can be created out of existing circle objects with Circle/Elliptic Segment.

Select the Circle/Elliptic Segment function from the Object menu. Move the cursor to the circumference of an existing circle or circle segment. Click briefly with the |LM|.

A line is then drawn between the circle object and the cursor. This line is used to facilitate the setting of the beginning of the segment. Move the line to the point where your segment is to start. After you've clicked on the |LM| again you can draw a segment in a counter-clockwise direction.

Having reached the desired segment size you can fix it by clicking on the |LM| again.

### **Note:**

If you've selected the menu item "polar" from the popup menu [F12] you can now see the segment angle in the coordinate display on the status line.

**Keyboard equivalent:** [Ctrl] + S

**Reference:** Chapter 5.12.6

## **Ellipse with Radius**

Draw an ellipse. The size of the ellipse is determined by radii on both ellipse axis.

The way this function draws an ellipse resembles the way the Circle with Radius function draws a circle. Since in contrast to a circle an ellipse does not have a single center the ellipse origin is the point where both axis intersect

Select the function from the Object menu. Move the cursor to a point on the drawing area where you want the ellipse to originate from and click with the |LM|. You can now draw the ellipse by moving the mouse.

The ellipse is defined by a distance from the relevant axis. One axis is defined by the distance between the X coordinate reference point and the cursor X coordinate. The second axis is calculated from the distance between Y coordinates.

Once you've defined the desired size of the ellipse you can fix it by clicking with the |LM|.

**Keyboard equivalent:** [Ctrl] + E

**Reference:** Chapter 5.12.7

## **Ellipse with Diameter**

Draw an ellipse. The size of the ellipse is determined by diameters on both ellipse axis.

When creating ellipses with the Ellipse with Diameter function, you define the start and reference point with the first |LM| click on the ellipse circumference. As you draw the ellipse out the current cursor position is a reference point on the opposite side of the ellipse. This point can be fixed in the usual way by another |LM| click.

### **Keyboard equivalent:**

**Reference:** Chapter 5.12.8

## **Open Spline**

Draw an open spline curve.

To mark a point for spline interpolation move the cursor to the point on the drawing area and click with the [LM]. Up to 180 points can be specified for one spline interpolation.

If you make an error while marking points you can delete them in reverse order by pressing the [Backspace] key. You can then set the points again with the mouse. In other words, the curve interpolations can be corrected.

Having marked the last point, confirm it with the [Return] key. The program then begins with spline calculations.

**Keyboard equivalent:** [Ctrl] + J

**Reference:** Chapter 5.13.3

## **Closed Spline**

Draw a closed spline curve. (Connects the first and last defined points.)

To mark a point for spline interpolation move the cursor to the point on the drawing area and click with the [LM]. Up to 180 points can be specified for one spline interpolation. If you make an error while marking points you can delete them in reverse order by pressing the [Backspace] key. You can then set the points again with the mouse. In other words, the curve interpolations can be corrected.

Having marked the last point, confirm it with the [Return] key. The program then begins with spline calculations.

### **Keyboard equivalent:**

**Reference:** Chapter 5.13.4

## **Rectangle from Center**

Draws rectangles.

Set the center of the rectangle as a reference point by clicking with the |LM|. You can then use the mouse to draw a square or a rectangle out of the center. Clicking with the |LM| again fixes the rectangle.

### **Keyboard equivalent:**

**Reference:** Chapter 5.14.1

## **Rectangle from Hypotenuse**

Draws a rectangle. The rectangle is defined by two diagonal corners.

First, set one corner point by clicking with the |LM|. You can then draw a rectangle out of this point. The cursor position defines the diagonal corner. Clicking with the |LM| again fixes the second corner.

**Keyboard equivalent:** [Ctrl] + R

**Reference:** Chapter 5.14.2

## **Square from Center**

Draws squares. The location of squares is specified by the point where the two diagonals intersect.

Set the center of the square as a reference point by clicking with the |LM|. You can then use the mouse to draw a square out of the center. Clicking with the |LM| again fixes the square.

### **Keyboard equivalent:**

**Reference:** Chapter 5.14.3

## **Square from Hypothenuse**

Draws a square. The square is defined by two diagonal corners.

First, set one corner point by clicking with the |LM|. You can then draw a square out of this point. The cursor position defines the diagonal corner. Clicking with the |LM| again fixes the second corner.

### **Keyboard equivalent:**

**Reference:** Chapter 5.14.4

## **Text**

Enters text into a drawing.

This function provides for input of text from the keyboard. The text is inserted at the current graphic cursor position. Text attributes and orientation depends on which text buttons are activated. Text input is terminated by pressing the [Return] key.

However, before terminating text input you can still delete characters from right to left by pressing the [Backspace] key and make corrections. Pressing the [Del] key deletes everything, but, the [Ins] key can restore it all again.

When the text input is terminated with the [Return] key the last entered string is first stored in a buffer. You can then copy this text into the drawing as many times as you wish by pressing the [LM].

**Keyboard equivalent:** [Ctrl] + T

**Reference:** Chapter 5.16.1

## Insertion

Used for labelling of drawing elements with repetitive descriptions.

The Insertion function inserts labels automatically in the drawing. In this way repetitive descriptions need be defined only once and then inserted at any place within the drawing as many times as necessary.

An Insertion is composed of up to four lines:

Line 1 max. 40 characters

Line 2 max. 40 characters

Line 3 max. 40 characters

Line 4 max. 11 invisible characters

### Note:

The invisible Insertion on line 4 can only be viewed with the status function Object Parameter or evaluated with a utility (e.g. parts list generator in the professional version). Individual characters are entered in the Ident Parameter dialog box. This dialog box is invoked by clicking with <hold>-|RM| <click>-|LM| on the menu item Insertion or the menu item Insertion within Object.

You can enter text strings for various insertion lines in the usual way. Having entered the desired descriptions you terminate the dialog box by clicking on the OK button. Next, move the cursor to the desired position within the drawing where the insertion is to take place. Click briefly with the |LM|. The first three lines of the insertion are then written to the drawing according to the settings in the text switches.

The Insertion function has other useful options. Often you will require insertions with incrementing numbers. For example, you may have a number of resistors with the same value in an electronic diagram so they need to be numbered. Such an entry could then look as follows:

```
R100  
1.2 KOhm  
1/4 Watt
```

You can use the Insertion function to label 10 resistances with 10 different resistance description but with the same resistance value. The insertion lines are then created as follows:

```
R10|0|1
```

This line creates an insertion with the description R100. Each subsequent insertion increments the resistance number i.e. it become 1 higher. An insertion for R105 should therefore look like this:

```
R10|5|1
```

The last number on the line specifies by how much should the next insertion be incremented. If you leave this value out the subsequent insertions are automatically incremented by 1. Vertical bars are used as dividers on the insertion line. This character is typed in by holding the [Alt] key down and then entering the number 124 from the numeric pad on the keyboard.

### Note:

Depending on your Windows settings for the character set you may get a split vertical bar instead of a solid vertical bar. However, this does not effect the operation of the Insertion function.

**Keyboard equivalent:** Ctrl + G

**Reference:** Chapter 5.16.2

**Insertion within Object**

Used for labelling of drawing elements with repetitive descriptions. The descriptions are assigned to a symbol.

**Keyboard equivalent:**

**Reference:** Chapter 5.16.3

## **Contact Object**

Professional version only:

Enters identification and contact numbers in symbols.

### **WARNING:**

"Ungroup Objects" preset must be off.

The Insertion within Object function works basically the same as the Insertion function. The procedure to change an insertion is identical. The only difference in operation is that insertion can be tied directly to an object.

### **Example:**

To begin with select the Insertion within Object function from the Text menu. Enter the text for the insertion in the Ident Parameter as described in the Insertion paragraph. Having entered the text identify the object to which the insertion is to be tied by clicking on it with the |LM|. Next, move the cursor to the place where you want the insertion to be. Click again with the |LM|. The text is then inserted at that location within the drawing. The advantage of this variation of the Insertion function is that all texts tied to a symbol are deleted automatically when the symbol itself is deleted. In this way, after editing complex drawings you have no "orphan" texts left over in the drawing.

### **Note:**

The insertion strings are saved by GFA-CAD Windows in one of the two available INF files. If you're already working on a project created with New/change Project... menu item the insertion texts are saved in the DEFAULT.INF file of the project in question. Otherwise, the text lines are saved in the GFACAD.INF file by using the Save Presets menu item. They will then be available whenever you resume working or start a new job.

Keyboard equivalent:

Reference: Chapter        5.16.4

## Contactgroup Object

Professional version only:  
Enters identification and contact numbers in symbols.

### **WARNING:**

"Ungroup Objects" preset must be off.

When you click on the Contact group Object with <hold>-|RM| <click>-|LM| a dialog box shown in in Figure 5.60 appears:  
Using this dialog box you can specify how large the group of contact identifiers should be.

### **Example:**

You wish to identify an 8-bit data bus on a circuit diagram. Enter an 8 in the Contact Parameter dialog box. Next, select a point with the symbol, as was the case for Contact Object function, and confirm it by clicking with the |LM|. A contact identifier is then set at this point. You can subsequently determine that this is actually a group of 8 identifiers (contacts) from the data extracted into a list. This data can then be processed further using utilities.

### **Keyboard equivalent:**

**Reference:** Chapter 5.16.5

**Date**

Enters the system date in a drawing.

**Keyboard equivalent:**

**Reference:** Chapter 5.16.6

**Page Number**

Enters the current page number in a drawing.

**Keyboard equivalent:**

**Reference:** Chapter 5.16.7

**Page Name**

Enters up to 40 characters of page name in a drawing.

**Keyboard equivalent:**

**Reference:** Chapter 5.16.8

## **Change Text**

Subsequently changes contents of a text string.

By using the Change Text function you can change text already in the drawing, for example after making a typing error. Select this function from the menu and click on the text line to be changed with the [LM]. A Dialog box appears with the text on the selected line shown in reverse. By pressing the [Backspace] key you can delete the complete line. By pressing the [Return] key you can then enter a new text, which is inserted in the drawing where the old text used to be.

If you only wish to make corrections press one of the cursor keys. The text is again shown normally. You can then use the cursor keys to move the input cursor to the place where you wish

to make the changes. Typing a letter or a number then inserts it at the current cursor position. The [Del] key can be used to delete the character under cursor. Pressing the [Return] key moves the modified text to the drawing.

**Keyboard equivalent:** Ctrl + U

**Reference:** Chapter 5.16.9

## **Change Insertion**

Subsequently changes contents of an insertion.

This function is used to change the insertions inserted in the drawing with Insertion and Insertion within Object functions.

The two options for this function can be invoked either from the icon bar at the right or from the F11 popup menu.

### **Change Insertion - use Dialog**

Having activated the Change Insertion function and selected this option, click on the insertion to be changed with the [LM]. The dialog box Ident Parameter appears on the screen.

You can now change individual lines and values in this dialog box. Clicking on OK or pressing the [Return] key transfers all the changes to the drawing.

### **Change Insertion - use Database**

This function is only available in the professional version of GFA-CAD Windows.

If you select use Database option from the [F11] popup menu and then click on the insertion to be changed you'll get the GFACAD Windows data base dialog box .In this dialog box you can select subsets out of the currently active data base. Which records from a subset are actually transferred to the insertion depends on the presets in the GFACAD.INS parameter file.

### **Keyboard equivalent:**

**Reference:** Chapter 5.16.10

## **Stretch Compress**

Stretches and compresses contents of a window depending on the current cursor position (the stretching/compression is performed only in positive X and Y directions in relation to the lower-left window corner).

The Stretch/Compress function enables you to stretch and compress the contents of a window in relation to the cursor position. Proceed as follows:

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|.

Fix the window by clicking with the |LM|. Invoke the function Stretch/Compress from the Window menu. Move the cursor above-right to the window and click the |LM|. The window contents are appropriately distorted in both X and Y direction.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.1

## **Zoom**

Enlarges/reduces contents of a window depending on preset factors for X and Y direction.

The parameters Zoom Factor - X and Zoom Factor - Y from the Window Parameters dialog box determine the operation of this function.

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|.

If you now click the |LM| again the window contents change their size in both X and Y directions in accordance with the presets in the Window Parameters dialog box.

If you click the |LM| repeatedly the window content sizes are changed every time by the same factor.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.2

## **Skew**

Skews window contents in positive X direction depending on current cursor position.

Draw a window around area to be skewed.:

Move the cursor to a point above and to the left of the area to be marked. Press the [LM]. While holding the [LM] down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the [LM].

Next, select the function Skew. Move the cursor some distance to the right of the window and click again with the [LM].

The window is stretched to the cursor position in the X direction and the window contents are distorted while the Y direction remains the same.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.3

## **Rotate 90 Deg**

Rotates window contents by 90 degrees counter-clockwise.

Draw a window around area to be rotated:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|.

By using this option you can rotate the window contents by 90° with each click of the |LM|. The center of rotation is the current location of the graphic cursor. Mathematically the rotation is in the positive direction i.e. a left rotation is performed. A repeated click with the |LM| repeats the selected function.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.4

## **Rotate in Deg**

Rotates window contents by the amount specified for the angle.

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|.

Select the function Rotate in Deg. Move the graphic cursor to the lower-left corner of the window so that the cursor lines overlap the window edge. Click once with the |LM| and then press the [Return] key.

The window is rotated by the amount specified in the Rotation Angle field and then fixed at this new position.

A repeated click with the |LM| and pressing of the [Return] key repeats the function.

Invoke the Window Parameters dialog box by clicking with <hold>|RM| <click>-|LM| on Rotate in Deg. menu item from the Window menu. Enter in the Rotation Angle field the same value but reverse the sign. Exit from the dialog box by clicking on OK or by pressing the [Return] key.

Once again draw a window around the rectangle on the drawing area. Move the cursor to the lower-left corner of the window and click the |LM|.

The window contents are rotated back by the same amount used for the last rotation.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.5

## **Reflection free Axis**

Mirrors window contents around a previously selected axis.

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.6

## **Reflection X Axis**

Mirrors window contents around the X axis.

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the [LM]. While holding the [LM] down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the [LM]. Select this function to reflect the window contents around the X axis.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.7

## **Reflection Y Axis**

Mirrors window contents around Y axis.

Draw a window:

Move the cursor to a point above and to the left of the area to be marked. Press the |LM|. While holding the |LM| down move the cursor diagonally to the lower-right corner of the desired drawing section. As you move the mouse a dashed window is drawn on the drawing surface. When this rectangle encompasses the desired area let go of the |LM|. Select this function to reflect the window contents around the Y axis.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.8

## **Group Objects**

Groups previously selected drawing elements in a window.

In case of complex drawings it may happen that a window encompasses more than the desired objects. To get around this problem you can use the Group Objects function. In this way you'll be able to select individual vectors for inclusion in a window.

For selection of a vector you only need to click on it with the |LM|. The vectors which are so selected are then shown using dashed lines, and after the pressing of the [Return] key are included in a window which is drawn automatically.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.3.9

**Insert**

Fixes a window at current cursor position by clicking with the |LM|.

This function is used to make multiple copies of window contents. The contents of a window are placed at the current cursor position by clicking with the |LM| instead of pressing of the [Return] key. This simplifies the placing of windows and symbols.

**Keyboard equivalent:**

**Reference:** Chapter 5.17.3.10

## **Move Area**

Moves the area marked with a frame.

The X and Y amounts are entered in a dialog box which is invoked by clicking on the menu item with:

<hold>-|RM| <click>-|LM|.

### **WARNING:**

When "Show Layers" is set to on this function affects all layers.

If you invoke the Move Area menu item by <hold>-|RM| <click>-|LM| you'll see a dialog box.

In this dialog box you can enter the amount by which a portion of the drawing contained within a window should be moved.

### **Example:**

Move the graphic cursor to a point on the left above the area to be moved. Press the |LM| and hold it down. Draw a window by moving the cursor to a point on the lower-right of the area to be moved.

Do not confirm the position by letting go of the mouse button and then clicking on the |LM|. Instead, click in the Window menu on the Move Area function with the |LM|. The contents of the window will be moved by the amounts specified in the dialog box. The vectors outside of the marked area remain unaffected.

### **Keyboard equivalent:**

### **Reference:**

Chapter 5.17.3.11

## **Copy**

Copies marked portion of the screen as a bitmap to the clipboard.

This function is used to copy the contents of a window which marks an area of the screen into the Windows Clipboard. This area can then be processed further as pixel data in programs such as Paintbrush.

**Keyboard equivalent:**

[Ctrl] + [Insert]

**Reference:**

Chapter 5.17.3.12

## **Move All**

Moves everything by a preset amount in X and Y directions. The X and Y amounts are entered in a dialog box which is invoked by clicking on the menu item with:

<hold>-|RM| <click>-|LM|.

### **WARNING:**

When "Show Layers" is set to on this function affects all layers.

When you invoke the Move all menu item you are presented with the Move Drawing dialog box.

You can enter amount by which the drawing is to be moved in both X and Y direction. The amount of movement on the X axis is specified in the X - Difference field and the amount on the Y axis in the Y - Difference field. The actual amount depends on the currently used unit settings. The available range is shown in brackets in front of the input field.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.4.1

## **Erase All**

Deletes a drawing after requesting confirmation in a dialog box.

### **WARNING:**

When "Show Layers" is set to on this function affects all layers.

By using Erase all function you can delete a complete layer. When you click on this menu item or the appropriate icon the dialog box appears in the middle of the screen: If you click on Yes the complete layer is deleted. The memory is totally erased. It is not possible to undelete it afterwards.

The default for the [Return] key is the No field. This prevents deletion of the drawing inadvertently.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.4.2

## **Zoom All**

Enlarges/reduces everything in X and Y direction by a preset amount. The X and Y amounts are entered in a dialog box which is invoked by clicking on the menu item with:  
<hold>-|RM| <click>-|LM|.

### **WARNING:**

When "Show Layers" is set to on this function affects all layers.

Clicking on this menu item with <hold>-|RM| <click>-|LM| shows the dialog box. In this dialog box you can enter separate zoom factors in both X and Y directions. The zoom factor for X direction is entered in the X - Factor field and the corresponding value for the Y direction in the Y - Factor field. The values are entered using the same procedure as in all other dialogs.

Do note that in order to achieve a proportional enlargement/reduction you need to enter the same factor in both X and Y directions.

### **Keyboard equivalent:**

**Reference:** Chapter 5.17.4.3

**Rotate All**

Rotates everything counter-clockwise by 90 degrees.

**WARNING:**

When "Show Layers" is set to on this function affects all layers.

Clicking on this menu item rotates the complete drawing 90°. The center of rotation is the middle of the drawing area.

**Keyboard equivalent:**

**Reference:** Chapter 5.17.4.4

## **Hatch 1**

The hatching is performed using parameters set for this type.

To get to the hatching dialog box click on the Hatch 1 menu item with <hold>-|RM| <click>-|LM|:

The first four fields in this dialog box are for the angle at which the hatching is to be done and the distance between individual lines. The range for each field in current units is shown in brackets before each input field.

The fields Angle Hatch 1 and Distance Hatch 1 affect the options Hatch 1 and Hatch 3 and 4.

These hatching modes are selected by using relevant menu items from the Special menu.

### **Defining areas for hatching:**

Having selected one of the above described hatch options you must then select the marking method from one of the following options:

- Ident - Polygon
- Ident - Line
- Ident from to
- Ident - Objects

These options can be selected either from the [F11] popup menu or by selecting its icon from the icon bar. The Ident functions are used to determine the area to be filled.

### **Ident - Polygon**

If you select an element in a polyline the program attempts to find a closed polygon. When the search is successful the question Polygon OK? appears in the upper-left corner of the screen

Confirming with OK accepts this polygon as the first polygon. By repeating this procedure you can select additional polygons. Pressing the [Return] key hatches the selected polygon.

When you attempt to use this function on an open polygon the error message.

### **Ident - Line**

By using this function you can select individual lines by clicking with the |LM|. The lines must be select in the counterclockwise direction. After you select all lines and press the [Return] key the program checks if by connecting all of the line intersections it can create a closed polygon. The intersections are sometimes created by making the lines longer.

If it's impossible to create a polygon you get an appropriate message in a dialog box on the screen. On the other hand, if it is possible you are presented with the dialog box. If you click on OK in this dialog box you can then hatch this polygon by pressing the [Return] key.

On the other hand if you click on next the program tries to create additional polygons.

Select three intersecting lines in succession. The triangle built by these lines is recognized by the program as a closed polygon and is hatched when the [Return] key is pressed. If you use the Ident - Line function to select only two lines the area in between is also hatched when the [Return] key is pressed.

As you can see the Ident - Line function can create virtual lines which are used by the program to treat a closed polygon as a surface to be hatched.

### **Ident from to**

By using the Ident from to function a polyline within a closed object can be selected. However, you must use the Snap Line End or Snap Object snap functions. By combining various Ident functions you can select a closed object. This object is then hatched by pressing the [Return] key.

### **Ident - Objects**

The Ident - Objects function is used to mark objects like circles and ellipses for hatching. This option can also be selected either from the icon bar or from the [F11] popup menu. For example, move the cursor to a circle and click with the [LM]. The circle is then drawn using dashes and is hatched after the [Return] key is pressed.

**Keyboard equivalent:** [Ctrl] + O

**Reference:** Chapter 5.18.2.1

## **Hatch 1 + 2**

The hatching is performed twice: once using parameters set for Hatch 1, and the second time using parameters set for Hatch 2.

By using this hatching type you can do cross-hatching since the selected area is hatched twice. First, the area is hatched using the parameters in Angle Hatch 1 and Distance Hatch 1 fields. Next, the second hatching takes place using the parameters in the Angle Hatch 2 and Distance Hatch 2 fields. The line types depend on the values previously selected with the line switches.

### **Keyboard equivalent:**

**Reference:** Chapter 5.18.2.2

## **Hatch 2**

The hatching is performed using parameters set for this type.

This hatching type is identical to Hatch 1 except that the parameters for inclination and line spacing are obtained from the Angle Hatch 2 and Distance Hatch 2 fields.

### **Keyboard equivalent:**

**Reference:** Chapter 5.18.2.3

### **Hatch 3**

Professional version only:

The hatching is performed using parameters set for Hatch 1 and using the line type set for this hatching.

Selecting Hatch 3 uses the inclination and line spacing from the Angle Hatch 1 and Distance Hatch 1 fields. The actual hatching is performed by alternating line types which are set in the Hatch 3 field.

**Keyboard equivalent:**

**Reference:** Chapter 5.18.2.4

## **Hatch 4**

Professional version only:

The hatching is performed using parameters set for Hatch 2 and using the line type set for this hatching.

The usage of Hatch 4 is the same as that of Hatch 3. However, the line types are obtained from the the Hatch 4 field in the Hatch Parameter dialog box.

**Keyboard equivalent:**

**Reference:** Chapter 5.18.2.5

## **Fill Symbol 1**

Professional version only:

Pattern fill. The pattern is defined by the given symbol.

You can also use other symbols for either of these two functions by specifying them in the Fill Parameter dialog box.

**Keyboard equivalent:**

**Reference:** Chapter 5.18.2.6

## **Fill Symbol 2**

Professional version only:

Pattern fill. The pattern is defined by the given symbol.

You can also use other symbols for either of these two functions by specifying them in the Fill Parameter dialog box.

**Keyboard equivalent:**

**Reference:** Chapter 5.18.2.6

**Solid Fill**

Fills surfaces (circles, rectangles, polygons) with current color.

**Keyboard equivalent:** [Ctrl] + F

**Reference:** Chapter 5.18.2.7

## **Construction Line**

Used for manual setting of construction lines.

The Construction Line function is used to prepare your drawing for a manual entry of dimensions.

### **Example:**

Select a function for drawing of rectangles from the Object menu and draw an arbitrary rectangle. To do this use one of the available rectangle functions. Next, click using the |LM| on the option Construction Line from the Special menu. Click with the |LM| on the side of the rectangle where you wish to enter the dimensions. The program draws a dashed line to indicate the position of the dimension help line. You can set the length of the dimension help line by moving the cursor to the side where the dimension is to be entered.

The position of the dimension help line is set by moving the cursor parallel to the side in question.

Position the cursor so that the dashed line exactly overlaps one side of the rectangle. Next, by moving the cursor in the opposite direction set the length of the dimension help line.

Clicking with the |LM| fixes the line in this place. You can simplify the positioning of the second dimension help line by using a snap function.

### **Example:**

Select the option Snap Line End from the [F12] popup menu. The snap radius appears around the current cursor position. Click on the relevant line in the vicinity of the other end. The program then automatically sets a second dimension help line at this end. This line is the same length as the first dimension help line. In this way, and by using an appropriate snap function, you can place a dimension help line in the middle of or on an intersection with a second line. To this end please refer to descriptions of different snap functions in Chapters 5.22.10 - 16.

### **Summary of important steps on how to use this function:**

1. Invoke the Construction Line function.
2. Click with the |LM| on the line where the dimension is to be entered.
3. Set the location and length of a dimension help line with the cursor.
4. Fix the first dimension help line with a click on the |LM|.
5. Set the second dimension help line by repeating the above procedure or by using a snap function.

### **Keyboard equivalent:**

**Reference:** Chapter 5.19.2.1

## Dimension Manual

Used for manual measuring of the distance between two lines or two construction lines.

### Example:

Click with the |LM|, one after the other, on both dimension help lines in the example from the previous chapter.

A dimension line is then created between these two lines with the dimension in current units placed in the middle of it

By using this function you can also draw dimension lines between two sides of a body.

To do this, click with the |LM| on two opposite sides of a rectangle. A dimension line is then drawn from the position where the first line was selected to the opposite side.

The dimension line is always set 2 mm below the ends of both dimension help lines. The distance of the dimension line to the side being measured can be varied by varying the length of the dimension help lines.

### Note:

In GFACAD it is possible to enter dimensions on different layers (e.g. draw an object on a reference layer, dimensions on current working layer). When doing this please note the following:

You can snap dimension help lines to the reference layer. However, in order to use the Dimension-Manual you must first make sure that both the reference and working layers are set the same. If this is not the case the program searches for the necessary dimension help lines on the reference layer.

**Keyboard equivalent:** [Ctrl] + B

**Reference:** Chapter 5.19.2.2

## **Dimension Multi Linear**

Professional version only:  
Automatic creation of multi-linear measurements.

### **Example:**

Draw a number of rectangles next to each other by using the Rectangle from Hypotenuse function.

Next, invoke the Dimension Multi-Linear function from the Special menu.

Using the <shift>-|LM| key combination click on the last icon in the right icon bar. This turns on the Snap Line End function for subsequent drawing functions.

By clicking with the |LM| mark the top side of the first rectangle. This sets the selected line as the side where the dimension is to be entered.

Next, move the cursor above this line at the distance you wish to have the dimension and click the |LM|.

The program marks the spot with an 'x' to indicated the orientation of the dimension line. Now click in succession on all those places where the dimension help lines are to be set.

The program places an 'x' at every point you mark. If you mark a spot by mistake you can delete the markers in reverse order by pressing the [Backspace] key.

Having marked all points for dimensions press the [Return] key. The program then automatically creates dimension help lines and dimension lines between all points

### **The usage of this function can be summarized as follows:**

1. Select the side where the dimension is to be set
2. Determine the orientation of Multi-Linear dimensions and the distance of the dimension help lines by placing the first marker.
3. Mark all other dimension sections with additional points.
4. Terminate the function by pressing the [Return] key.

### **Keyboard equivalent:**

**Reference:** Chapter 5.19.2.3

## Dimension Step

Professional version only:  
Automatic creation of step measurements.

The Dimension Multi-Linear function enables automatic creation of multi-linear dimensions after the relevant reference points have been identified.

### Example:

Draw a number of rectangles next to each other by using the Rectangle from Hypotenuse function.

Next, invoke the Dimension Multi-Linear function from the Special menu.

Using the <shift>-|LM| key combination click on the last icon in the right icon bar. This turns on the Snap Line End function for subsequent drawing functions.

By clicking with the |LM| mark the top side of the first rectangle. This sets the selected line as the side where the dimension is to be entered.

Next, move the cursor above this line at the distance you wish to have the dimension and click the |LM|.

The program marks the spot with an 'x' to indicated the orientation of the dimension line. Now click in succession on all those places where the dimension help lines are to be set.

The program places an 'x' at every point you mark. If you mark a spot by mistake you can delete the markers in reverse order by pressing the [Backspace] key.

Having marked all points for dimensions press the [Return] key. The program then automatically creates dimension help lines and dimension lines between all points

### The usage of this function can be summarized as follows:

1. Select the side where the dimension is to be set
2. Determine the orientation of Multi-Linear dimensions and the distance of the dimension help lines by placing the first marker.
3. Mark all other dimension sections with additional points.
4. Terminate the function by pressing the [Return] key.

### Keyboard equivalent:

Reference: Chapter 5.19.2.4

## **Dimension Radius**

Measuring of radii in arcs etc.

This function is used to mark the dimensions of angles. Its usage is limited to clicking on circles, circle segments and rounded corners. The program then enters the dimensions automatically.

A dimension line is drawn to the center of the circle and the measurement is marked with an arrow pointing to the circumference of the circle.

### **Keyboard equivalent:**

**Reference:** Chapter 5.19.2.5

## **Dimension Angle**

Measuring of angles.

This function is used to mark an angle formed by two lines. All you need to do is click with the |LM| on both lines that form the angle. The order in which you click is significant. It must be counter-clockwise.

### **Keyboard equivalent:**

**Reference:** Chapter 5.19.2.6

## **Dimension Diameter**

Measuring of diameters.

This function is used in exactly the same way as the Dimension Radius function. After you select a circle by clicking on it with the |LM| a diameter with a dimension line is drawn through the center of the circle. The orientation of the dimension line is always at an angle of 45° to the horizontal axis through the center of the circle.

### **Keyboard equivalent:**

**Reference:** Chapter 5.19.2.7

## Load Text

Professional version only:

Using the Load Text function you can insert ASCII text as comments or explanations in your drawings. The text is loaded into the integrated editor and the commands for positioning of lines are automatically inserted.

### Example:

Let's assume that by using an editor you have created the following text to be used for frequent insertions and saved it as an ASCII file on your hard disk:

```
Number of loops in a spiral spring is 3,  
there is one loop at each end and  
they are filed down to d/4  
total number of loops is 5  
and stretched out wire is 236 mm long.
```

Select the option Load Text from the Special menu. In the file selector box which appears next select the filename you used to save the above text.

After clicking on OK or confirming with the [Return] key the program returns to the user interface. Next, press the [#] key to get into the editor dialog box.

As you can see the macros for text output are automatically inserted in the loaded text and it all looks as follows:

```
LB Number of loops in a spiral spring is 3,;PU;PR 0.0,-7.064;  
LB there is one loop at each end and;PU;PR 0.0,-7.064;  
LB they are filed down to d/4;PU;PR 0.0,-7.064;  
LB total number of loops is 5;PU;PR 0.0,-7.064;  
LB and stretched out wire is 236 mm long.;PU;PR 0.0,-7.064;
```

The text read in by the program is prepared for character output in macro mode. This is necessary because due to different character sizes the distance between lines may vary. The required distance between lines is determined based on the current line switches when the loading took place.

### Note:

- when the text is transferred to a macro only lines ending with a carriage return are transferred.
- invoking such a macro repeatedly can lead to unforeseen problems should the text switches be changed in the meantime. This can disturb the distance between lines. If you wish to use the same text repeatedly, change the desired text switches first and then load the macro again with Load Text.

### Keyboard equivalent:

**Reference:** Chapter 6.1.1

## **Load Macro**

Professional version only:

Loads macros from disk into the macro editor.

Invoking this menu item presents you with a file selector box. Using this dialog box you can choose one of the existing macros. Having selected a macro and clicked on the OK field the macro is loaded temporarily i.e. it's available for further processing in your computer's memory

### **Keyboard equivalent:**

**Reference:** Chapter 6.1.2

## **Save Macro**

Professional version only:

Saves text currently in the macro editor to disk.

Using the Save Macro function you can save to disk a macro temporarily in memory. After selecting this option you will be presented with a file selector. The subdirectory where the macro is to be saved can be specified in the Path: box. The macro name is entered in the File box. When you confirm the entry by clicking on the OK field or by pressing the [Return] key the macro is save as an ASCII file.

### **Note:**

The macro currently in memory is also saved when you invoke the Save Project... function from the File menu. In this case the macro is saved in the current project directory as MACRO.TMP. When you load the project back again, this macro is automatically loaded as temporary.

### **Keyboard equivalent:**

**Reference:** Chapter 6.1.3

## **Run Macro**

Professional version only:

Selecting this function opens the macro editor. A click on the Run option in this editor then executes the macro.

After selecting this option from the Special menu you will end up in the GFA-CAD Windows editor. The current temporary macro is automatically loaded and is available in the editor.

You can now process or run this macro. You have the following options:

### **Editing functions**

You can place the input cursor (a vertical bar) anywhere within your text by moving the mouse cursor to the desired point and clicking with the [LM].

You can delete the characters in front of the cursor by pressing the [Backspace] key. The [Delete] key deletes the characters behind the cursor.

The editor is always in insert mode i.e. typing does not overwrite any characters but inserts new ones. By holding down the [LM] and moving the cursor you can mark paragraphs. These marked paragraphs can then be deleted by pressing the [Delete] key or copied to the clipboard by pressing [Ctrl]-[Delete].

### **Buttons**

-OK- The changes made in the editor are temporarily performed. By clicking on the OK button you can leave the editor and then save the macro with the Save Macro function.

-Run- Clicking on this button executes the macro currently in memory. If an error occurs during the execution of the macro it's displayed on the screen in a dialog box.

**Keyboard equivalent:** [Ctrl] + C

**Reference:** Chapter 6.1.4

## Line Parameters

Clicking on a line with the |LM| shows information about its length, thickness, type and endpoints.

After invoking this function and clicking on a line with |LM|, a dialog box appears on the screen. This dialog box provides information about the line. The dialog box can be closed by clicking on the OK field.

This dialog box supplies the following information:

The first line of text shows the line status. This is an attribute assigned to the line in the Line Parameter dialog box

The second line of text shows the angle of the line to the horizontal axis.

The third line of text contains the surface area which is composed of line length and line width.

The fourth line of text shows the line start coordinates.

### **Note:**

The coordinates in the dialog box are based on the origins of the coordinate system being in the lower-left corner of the drawing. However, if you've changed the origins of the coordinate system by using the Reference Point option from the Preset menu, the given values will then not correspond to real coordinates.

**Keyboard equivalent:** [Ctrl] + X

**Reference:** Chapter 5.20.1

## Object Parameters

Clicking on an object with the |LM| shows information about its location and size.

This function shows information about a previously selected object. The dialog box contains four lines, the first of which identifies the chosen object. The meaning of other lines changes depending on the type of the object.

There are dialog boxes for the following objects:

- Spline
- Hatch
- Symbol
- Rectangle
- Circle

The **Spline** and **Hatch** dialog boxes inform you only that the line you have selected belongs either to a spline or hatching. No further information is given about these objects. Nevertheless, this information can come in handy when using a high zoom value and you lose the global overview of the drawing.

If you click on **Symbol**, the resulting dialog box shows you the file name of the symbol.

The dialog boxes for **Rectangles** and circles contain more information. As was the case for other dialog boxes, the first line identifies the selected object. The second line can, for example, be as follows:

**Example:**

141.000,128.000

These are the X and Y coordinates of the upper-right corner of the rectangle.

The third line is not used.

The fourth line shows the X and Y coordinates of the lower-left corner of the rectangle.

When you read the coordinates with a cross, you get the coordinates of the upper-left and lower-right corner. The width and height of a rectangle can be calculated from these coordinate values.

The information in the **Circle** dialog box is composed as follows:

The first line is not used.

The second line contains the radii on both axis in a circle or ellipse. In case of a circle they are both the same. In case of an ellipse the larger radius is given first and the smaller radius second.

Since the selected object can also be a circle or ellipse segment, the third line gives the start and end angle of the segment. In case of full circles the values given here are 0.000°, 360.000°.

The fourth line shows the X and Y coordinates of the center of the circle.

**Keyboard equivalent:** [Ctrl] + Y

**Reference:** Chapter 5.20.2

### **Free Space in Layer**

Shows in a dialog box the amount of available memory in current layer. The amount of free memory is given in bytes and as a percentage.

GFA-CAD makes 64 KByte of memory available for each layer. By using the Free Space in Layer function you can inquire about the amount of remaining memory in case of complex drawings.

#### **Keyboard equivalent:**

**Reference:** Chapter 5.20.3

## **Measure Object Area**

Determines the surface area of a polygon or an area bordered by lines. However, one of the available Ident functions must be active.

The calculated surface area is shown in a dialog box and can be transferred to the drawing as a character string.

This function returns the surface area of closed polygons or objects. The result of calculation is presented in a dialog box. The value is given in current units.

First, invoke the Ident - Polygon function from the [F11] popup menu and then click on the desired polygon. The polygon can be composed of several lines or a spline function. In the middle of the screen you will first be presented with the Polygon dialog box.

After clicking on the OK field another dialog box appears giving the surface area.

This second dialog box can also be terminated by clicking on the OK field.

To get the surface area of circles, ellipses or rectangles you must select the Ident - Objects function from the [F11] popup menu.

The calculated surface area value can be transferred to your drawing. Having closed the dialog box move the cursor to the location where you wish to place the value. Press the [Return] key. The value is then written into the drawing using the currently set text parameters.

**Keyboard equivalent:**

**Reference:** Chapter 5.20.4

## **Measure Angle**

Shows the angle between two lines. The angle is shown in a file selector box and can be transferred to the drawing.

You can use this function to show a dialog box containing an angle formed by two lines. To use this function you must first select the Ident - Line function from the [F11] popup menu. Next, click with the |LM| on both lines that form the angle. The shown angle can also be transferred to the drawing as was the case with the surface area.

### **Keyboard equivalent:**

**Reference:** Chapter 5.20.5

## **Measure Line Distance**

Determines the distance between two parallel lines. The distance is shown in a dialog box using current units and can be transferred to the drawing as a character string.

This function can be used to determine the distance between two parallel lines. However, before using this function you must first select the correct Ident function. To get the distance between two parallel lines select the Ident - Line function. Next, click with the |LM| on both lines whose distance you wish to establish. The distance is shown in a dialog box. Here too, the distance can be written into the drawing as was the case for the surface area.

**Keyboard equivalent:**

**Reference:**

Chapter 5.20.6

## **Measure Point Distance**

Determines the distance between two points. The distance is shown in a dialog box using current units and can be transferred to the drawing as a character string.

The Measure Point Distance is used to determine the distance between two points. Move the cursor to the first point from which you wish to measure the distance and click with the |LM|. Next, click with the |LM| on the point to which you wish to perform the measurement. Having set the second point you will then be shown the distance in a dialog box with regard to current scale and units

To specify exact points such as line ends, intersections etc. use the available snap functions.

These distances values can also be transferred into the drawing.

**Keyboard equivalent:**

**Reference:**

Chapter 5.20.7

## Change Line

Makes subsequent corrections to line parameters. After clicking on a line the parameters in active switches for this line can be set.

Using this function you can change line parameters of an already drawn line.

### **Example:**

First of all select one of six line switches with the parameter in question. Next, click on the Change Line function.

Move the graphic cursor to the line whose parameters you wish to change and click with the |LM|. The line parameters such as line width, line color etc. are then changed to the values in the selected switch.

Keyboard equivalent:

Reference:

Chapter 5.20.8

## **Change Object**

Makes corrections to display parameters of an object e.g. circles.

The Change Object function enables you to change parameters of an already drawn object. Objects that can be changed with this function are circles, rectangles and splines. The procedure is similar to the Change Line function. The parameters are also determined by selecting one of the line switches.

**Keyboard equivalent:**

**Reference:**

Chapter 5.20.9

## **Change Text Parameters**

Makes subsequent corrections to text strings. After clicking on a text string the parameters in active switches for this string can be set.

Lines and text in the drawing can also be modified. For example, to change the height of a text string select first the relevant switch from the [F11] popup menu or from the left icon bar. Next, using the Change Textpara. click on the desired text string. The text parameters are then changed to the switch parameters.

**Keyboard equivalent:**

**Reference:**

Chapter 5.20.10

## **Icon Bar**

Icon Bar Left

Icon Bar Right

## Icon Bar Left

Function: Line 1 - 6

Using menu items Line 1 - Line 6 the preset, default line parameters can be invoked.

This dialog box gives you access to one of six possible switches. The six switches can, depending on the selected drawing function, be invoked from the popup menu which appears after pressing the [F11] function key. The switches are named Line 1..6. Another way of changing the line presets is by clicking on one of the six icons at the right.

Function key: [F11]

Reference: Chapter 5.7.2

Function: Kavalier

The default setting for drawing of parallel projections in the Kavalier perspective.

Function key: [F11]

Reference: Chapter 5.8.2.1

Function: Isometric

The default setting for drawing of isometric parallel projections.

Function key: [F11]

Reference: Chapter 5.8.2.2

Function: Dimetric

The default setting for drawing of dimetric parallel projections.

Function key: [F11]

Reference: Chapter 5.8.2.3

Function: Any

The default setting for drawing of lines in any direction.

Function key: [F11]

Reference: Chapter 5.8.2.4

Function: Text 1 - 6

Using menu items Text 1 - Text 6 the preset, default text parameters can be invoked.

Function key: [F11]

Reference: Chapter 5.15.2

Function: use Dialog

This function is used to subsequently correct insertions within a drawing made with Insertion or Insertion within Object functions.

Function key: [F11]

Reference: Chapter 5.16.10.1

Function: use Database

Professional version only:

This function is used to subsequently correct insertions within a drawing made with Insertion or Insertion within Object functions.

Function key: [F11]

Reference: Chapter 5.16.10.2

Function: Ident - Polygon

Identifies closed polygons for functions such as Measure Object Area, Hatch, Parallel

Polygon etc.

Function key: [F11]

Reference: Chapters 5.10.9.1 and 5.18.3.1

Function: Ident - Line

Selects individual lines for functions such as Measure Angle.

Function key: [F11]

Reference: Chapters 5.10.9.2 and 5.18.3.2

Function: Ident from to

Identifies polyline areas for functions such as Parallel Polygon.

Function key: [F11]

Reference: Chapters 5.10.9.3 and 5.18.3.3

Function: Ident - Objects

Identifies objects such as circles for functions such as Measure Object Area or Hatch.

Function key: [F11]

Reference: Chapter 5.18.3.4

Function: All of the work-window

Displays full drawing surface (roughly DIN-A0).

## **Icon Bar Right**

Function: Work-window A3

Displays a segment of the drawing the size of a DIN-A3 page.

Programming of a displayed segment by clicking on the icon with [Shift]-[LM].

Function key: [F12]

Reference: Chapter 5.22.2

Function: Work-window A4

Displays a segment of the drawing the size of a DIN-A4 page.

Programming of a displayed segment by clicking on the icon with [Shift]-[LM].

Function key: [F12]

Reference: Chapter 5.22.3

Function: Work-window manual 1

Menu item or icon for programming of a segment of the drawing. The displayed drawing segment is programmed by clicking on the icon with [Shift]-[LM].

Second function:

The screen segment marked with a rectangle is shown in its largest size.

Function key: [F12]

Reference: Chapter 5.22.4

Function: Work-window manual 2

Menu item or icon for programming of an arbitrary segment of the drawing. The displayed drawing segment is programmed by clicking on the icon with [Shift]-[LM].

Second function:

The screen segment marked with a rectangle is shown in its largest size.

Function key: [F12]

Reference: Chapter 5.22.5

Function: absolute

Shows coordinate values using absolute coordinates in reference to the origins of the coordinate system.

Function key: [F12]

Reference: Chapter 5.22.6

Function: relative

Shows relative coordinates in relation to the origins of the last drawing operation.

Function key: [F12]

Reference: Chapter 5.22.7

Function: polar

Shows coordinates using the polar form in relation to the origins of the last drawing operation. The angle is given in positive direction, i.e. counter-clockwise from the horizontal axis.

Function key: [F12]

Reference: Chapter 5.22.8

Function: geopolar

Shows coordinates using the geopolar form in relation to the origins of the last drawing operation. The angle is given in negative direction, i.e. clockwise from the vertical axis.

Function key: [F12]

Reference: Chapter 5.22.9

Function: Snap Tangent

Snap function to join circles and tangents.

Function key: [F12]

Reference: Chapter 5.22.10

Function: Snap Center Object

A snap function which automatically locates the center of an object. The object is either a rectangle or a circle.

Function key: [F12]

Reference: Chapter 5.22.11

Function: Snap Cross

A snap function which automatically locates the intersection between lines or object.

Function key: [F12]

Reference: Chapter 5.22.12

Function: Snap Perpendic

A snap function used to automatically create a line perpendicular to another line.

Function key: [F12]

Reference: Chapter 5.22.13

Function: Snap Center Line

This function sets the middle of a line as a reference point for a drawing or line function.

Function key: [F12]

Reference: Chapter 5.22.14

Function: Snap Object

When using this snap function, new lines are drawn exactly on existing lines without having to enlarge them using zoom.

Function key: [F12]

Reference: Chapter 5.22.15

Function: Snap Line End

When using this snap function the endpoints of a drawing function are placed exactly on endpoints of an existing line.

Function key: [F12]

Reference: Chapter 5.22.16

## **Plotter/Printer Drivers**

GFA-CAD Windows is insulated from the Printer and Plotter hardware. Should you not obtain the desired output for your installed plotter or printer, normally it is the driver at fault. Some hardware manufacturers have released their own driver, while others rely on the Microsoft driver. Should you suspect that you have an incorrect driver set up, please consult your hardware dealer or manufacturer.