

How to use CasCADE

Here you find all necessary information to work with **CasCADE**.

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Here you can [order!](#) **CasCADE** and symbol libraries for it.

The Status Lines

\sb120The status lines contain important information about the current settings and offers some commands as well. All Together there are three status lines. Their components will be explained one by one in this chapter.

You can toggle visibility of the status lines by pressing <Ctrl>+<Y>.


Upper Status Line




The upper status line offers the following possibilities:


On the leftmost position is a system menu with these commands:



- Object Edit Line Visible** Toggles display of object edit line
- Ruler visible** Toggles display of rulers
- Scroll Bars visible** Toggles display of scroll bars
- Toolboxes visible** Toggles display of toolboxes
- Close** Removes the status lines from the desktop

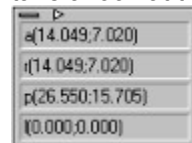
\sb120The next element is the  button to escape from an active command. You can also use the <ESC> key on your keyboard for the same purpose.

Then comes a box displaying the currently active command or function. If no other command is active automatically "Select Objects" will be active. If more than one command is active their number will be displayed in this box.

 This button repeats the last command. If you have been starting several commands you can use this button to switch between them. You can also use the <Backspace> key on your keyboard for the same purpose.


 This button indicates that there is a mouse-dialogue to control the options of the active command. You get into that dialogue by pressing the right mouse-button or by clicking with the left mouse-button on this button.

Here the current coordinates   in your currently chosen format are displayed. If you click on the arrow a little freely positionable window will open and display all kinds of coordinates (please take a look at the coordinate chapters as well):



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By clicking the Undo-button  you can revoke your last command.

With the Redo-button  you can repeat your last command.

Right Status Line

\sb120This line contains some of the most important features for controlling the view and the cursor

position.

This button  opens the freely positionable overview window . You can also use the command **View-Overview** from the menu for this purpose:



\sb120The shape and size of the overview window can be changed by clicking on the small triangles.



etc.

\sb120In the overview window you always see whole your drawing. The part of the drawing currently displayed on the screen inside the main window will be inverted. By moving the mouse pointer in the overview window you can choose which part to display inside the main window.

The overview window also contains a local menu with the following commands:

- Page :** Displays whole the page. You can also use the command **View-Full Page** from the main menu.
- Full Drawing:** Displays whole the drawing. You can also use the command **View-Full** Drawing from the main menu.
- Actualize :** The overview window will not automatically be changed when you change your drawing. So after you have changed your drawing decisively you should actualize the overview as well.
- Close :** Closes the overview window.

The Lower Status Line



\sb120Here you get four informations:

To the left you find a help text to the currently active command (in our example above: ***Draw-Freehand***), telling you what input is expected next.

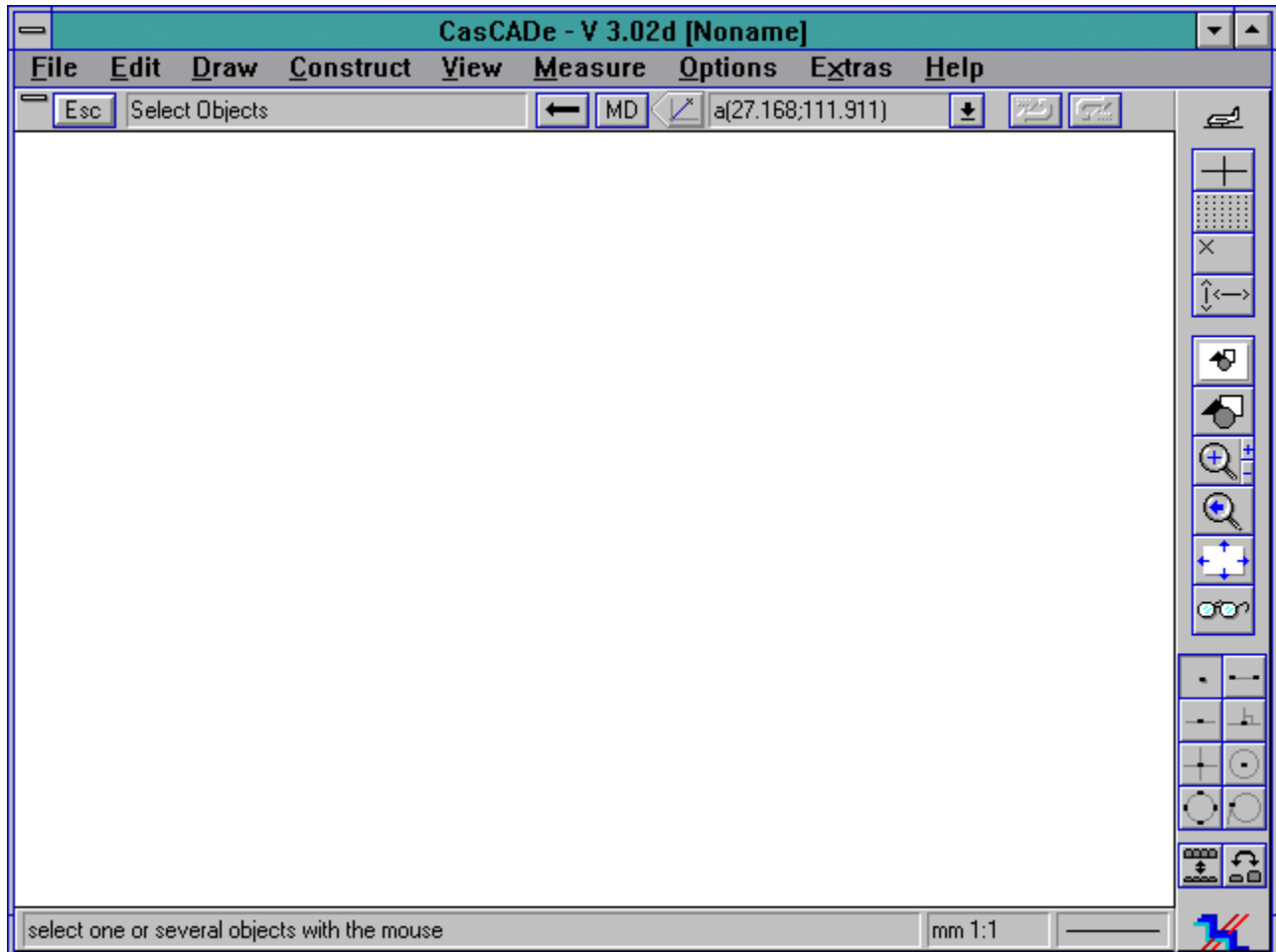
Then comes the unit of the drawing and its scale. A double-click here opens the page control window.

To the right of it you see the currently active line-style. If you double-click on the line you get into the Pencil control dialogue where you might choose a different pencil.

In the right corner the number of currently selected objects (in our example: none) is displayed.

The Desktop at the first Start

\sb120The first time you run **CasCADE** the desktop will be quite empty and look similar to this:

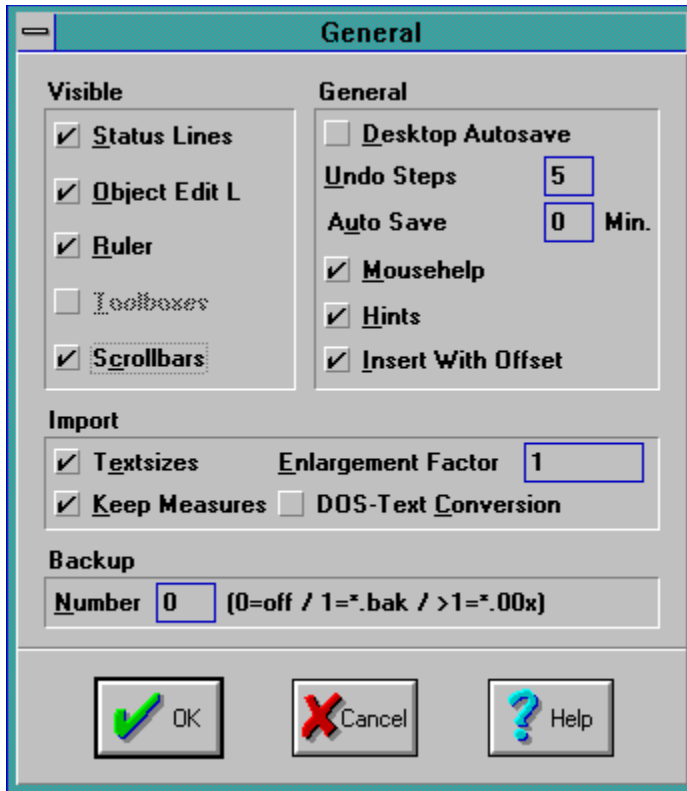


\sb120This initial desktop is made up of only the menu bar and the three status lines - the upper one under the menu bar, the right one and the lower one. The rest of the screen is left blank for the drawing - and for your own individual desktop. You can add to your personal desktop toolboxes with all the commands you need for a certain job and of course save this desktop as well into an initialization file (*.INI) to reload later when you have to do the same job again.

Please continue to learn how to create your own desktop:

My personal desktop

\sb120To create your personal desktop it is best to first use all the standard features **CasCADE** is offering. Please choose from the menu the command **Options-General** to get the following window:



\sb120By clicking with the mouse you can choose which desktop elements shall be visible. Please check all of them, as there are:

Status Lines

Object Edit Line

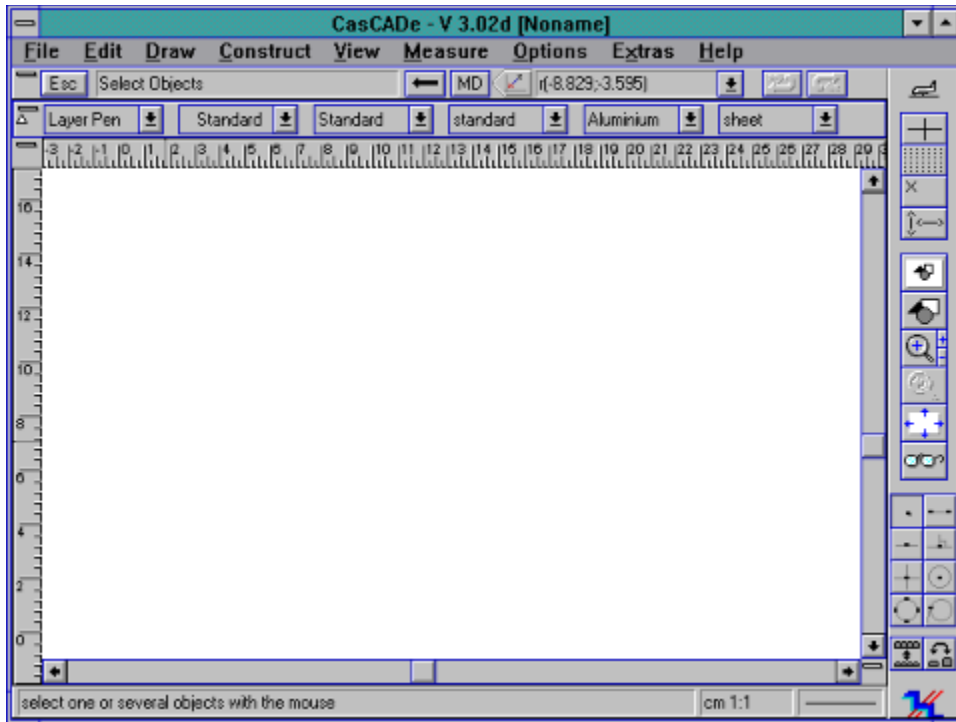
Ruler

Scroll Bars

\sb120If you want to work with the same desktop settings the next time you use **CasCADE** please check the **Desktop Auto Save** switch. This is only for the desktop. If you also want whole your drawing to be saved automatically please choose here how often this shall happen.

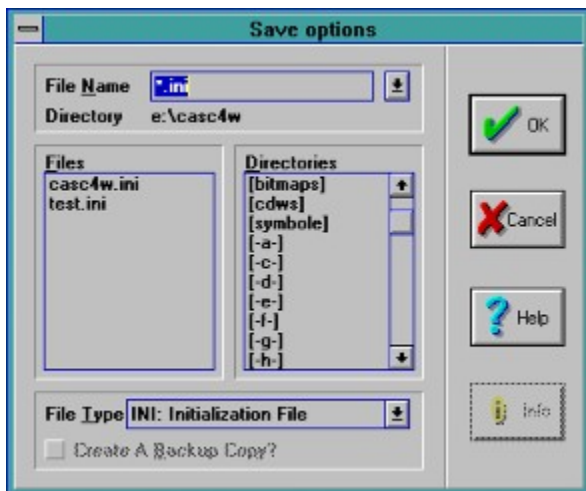
If you press **OK** your desktop could by now look like this:

:



Save Desktop

Now we want to save our desktop (plus other preferences) not just automatically but under a specific name for later use. Please choose from the menu the command **Options-Save As** to get the following window:



Please enter a filename or - if you already have saved before - choose one from the list.

If you use the name CASC4W.INI the saved options will automatically be loaded after each start - but for this we have a special command in the menu: **Options-Save CASC4W.INI**.

Please choose a file type. Two are possible:

INI - Initialization file

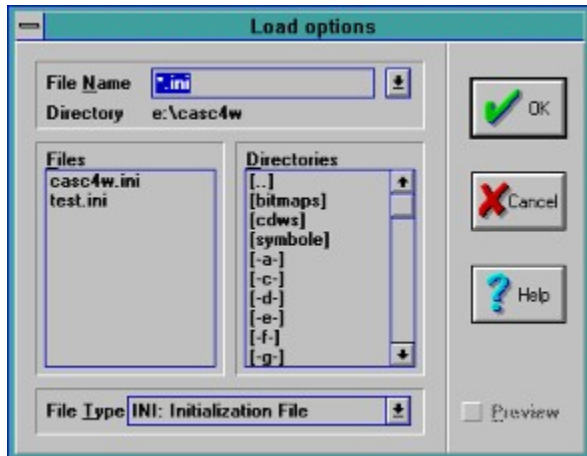
TBR - Toolbox file

\sb120An initialization file contains desktop plus toolbox preferences, a toolbox file contains only toolbox settings.

Of Course you can also choose a directory where to store your files.

If you click OK your desktop will be saved.

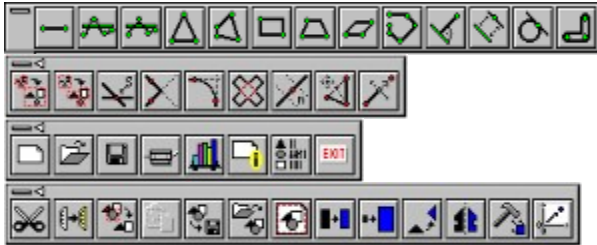
Load Desktop



\sb120If you have already saved desktop preferences you can load them by choosing the command **Options-Load** from the menu. Please make sure the file type is set to *INI*, click on the file you want to load and press **OK**.

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The Toolboxes

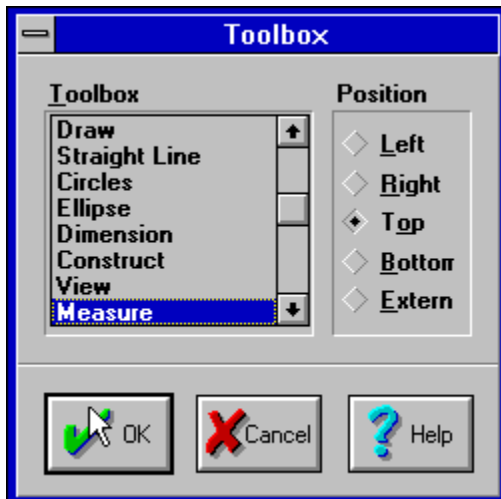


CasCADE doesn't only offer to choose commands from the pull-down menu or with keyboard-shortcuts but you can also place the commands you will need more often visible onto the screen as icons to gain immediate access to them by just one mouse-click. These sets of icons are called toolboxes.

By pressing **<Ctrl>+<T>** you can toggle the visibility of the toolboxes.

CasCADE already contains some ready made toolboxes (above you see the ones called 'Draw', 'Construct', 'File' and 'Edit'), you can easily make new toolboxes according to your personal needs.

With the command **Options-Toolbox** from the menu you can choose one or more toolboxes and also choose where they are placed on the desktop by using this window:



Just click on a toolbox and on a position for it. If you close this window by clicking on the **OK**-button or by pressing **<Enter>** on the keyboard the toolbox will be placed on your desktop.

The Toolbox Menu

In the left upper corner of every toolbox is a local menu containing the following commands:

- Put To Left:** Moves the toolbox to the left side of the program window
- Put To Right:** Moves the toolbox to the right side of the program window.
- Put To Top:** Moves the toolbox to the top of the program window - but still below object edit line and status line (if these are visible).
- Put To Bottom:** Moves the toolbox to the bottom of the program window - but still above object edit line and status line (if these are visible).

these are visible).

With this command you can move the toolbox out of the **CasCADE** program window and freely position it anywhere on your screen.

Closes the toolbox and removes it from memory.

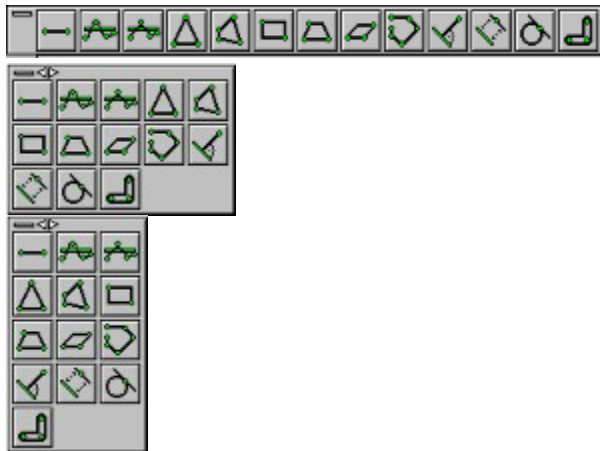
Opens the dialogue **Toolbox** from the **Options**-menu. If you choose another tool-collection it will be added to the ones already present.

Opens the same dialogue as the menu command **Options-General**.

External Toolboxes

If you activated the option **External** when you chose your toolbox or if you chose External from the local menu of a toolbox you can freely position it on the screen. Just click on the border of the toolbox, keep the mouse-button pressed and move it to a new position - no matter inside or outside the program window of **CasCADE**.

External toolboxes also can change their shape if you click on the small triangles (they will show up as soon as the toolbox is declared external). Here are some examples, the first one is a still internal one):

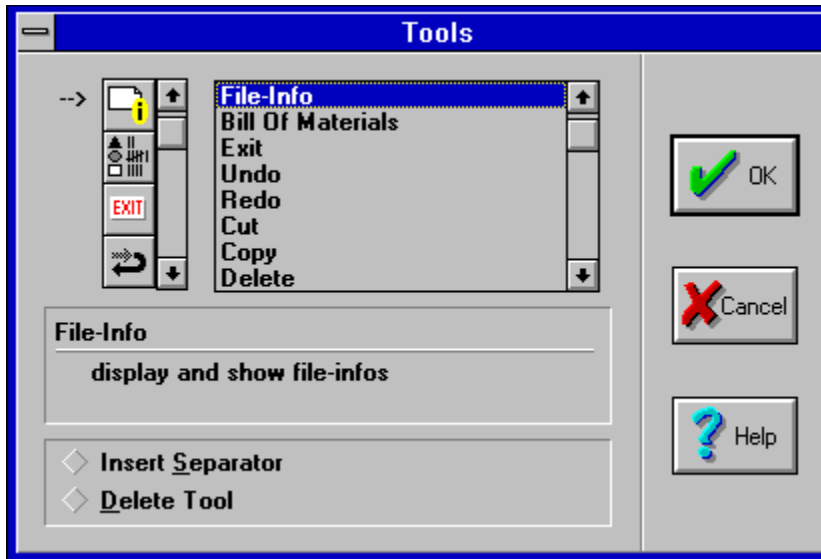


You can make an external toolbox internal by simply choosing one of the internal positions (Top, Bottom, Left or Right) from its local menu.

Working with Toolboxes

Please be aware of the fact that toolboxes are just helping you to easily access the commands you need more often. There are no special commands available only with toolboxes - all the toolbox commands are part of the pull-down menu as well.

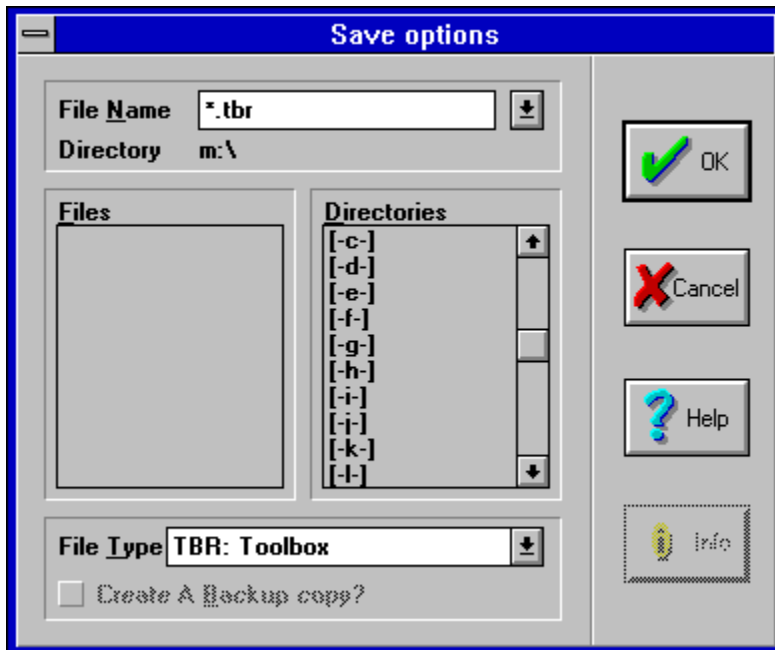
To edit a toolbox please open it, press **<Ctrl>+<Shift>** on the keyboard and press the right mouse-button while the mouse pointer is on the toolbox. The following window will appear:



In the upper part all available commands are displayed (to the left as an icon marked by an arrow, to the right as text). Beneath this list you get a short explanation about the command.

At the bottom you can select if you want to insert a separator or delete one of the tools. If none of these switches is checked a new tool will be added to your toolbox if you select it from the list and close the window by clicking **OK** or pressing **<Enter>** on the keyboard.

To save your toolbox please choose **Options-Save As** from the menu. The following window will open:



Please take care that the file type is set to TBR: Toolbox.

The Switches

Switches on the Right Side of the Screen



This switch toggles visibility of spider lines moving along with the cursor on the screen.



These switches control the grid. The upper one toggles visibility of the grid, the lower one toggles the snap mode of the grid.



This switch toggles the orthogonal mode.



This switch changes the display to full page. You can also use the command **View-Full Page** from the menu for the same purpose.



This switch changes the display to the full drawing. You can also use the command **View-Full Drawing** from the menu for the same purpose.



This switch is made up of three elements. If you click on the plus or the minus on the right side you can zoom in or out of the drawing. The current cursor position is used as a center. If you click on the magnifier you can freely choose a part of the drawing to be viewed enlarged. Just click with the left mouse-button on one corner of the part you want to zoom into. A rectangle will appear. Now move the mouse until the rectangle encloses everything you want to look at and click again. You can also use the menu commands **View-Choose View** and **View-Zoom In** or **View-Zoom Out** respectively for the same purpose.



If you click here you get back to your last view. You can also use the command **View-Undo Change View** from the menu for the same purpose.



This switch lets you move the display inside the program window. After clicking on the switch you can click inside the drawing on a new mid point or click on any existing point and move it by keeping the left mouse-button pressed. You can also use the command **View-Move** from the menu for the same purpose.



This switch actualizes the view in the drawing window. You can also use the command **View-Actualize** from the menu for the same purpose.

The Snap Switches

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These switches control which objects will be snapped. If they are displayed low (pressed) they are active and move the cursor to the desired object.



Snaps points.



Snaps end points of lines.



Snaps mid points of lines.



Snaps perpendicular points referring to the last point.



Snaps intersections referring to the last point.



Snaps mid points of arcs.



Snaps quadrant point of arcs.



Snaps tangent points of arcs.

\sb120The last two switches only control the snap switches itself:



Switches all snap switches on or off.



Toggles all snap switches: The active ones are deactivated, the non active ones are activated.

Object Edit Line, Ruler and Scroll Bars

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Object Edit Line



This line displays the most important settings influencing the objects you are currently creating or editing. This line can be made invisible or invisible by pressing **<Ctrl>+<A>**.

If you double-click on any of the titles you can change the options for the corresponding elements. If any object is currently selected it will change immediately. If no object is selected your changes will be applied on the next object you create.

In the left upper corner is a local menu offering you the following choices:

Move To Top Moves the object edit line to the top of the drawing window

Move To Bottom Moves the object edit line to the bottom of the drawing window

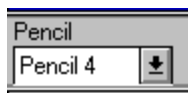
Close removes the object edit line from the screen.

\li357Toolbox Opens a dialogue to create new toolboxes.

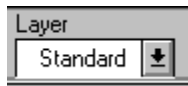
General Opens a dialogue controlling the overall outlook of your desktop

\sb120With the small arrow below the local menu you can toggle display of the names above the boxes.

With the boxes you can control the following the corresponding elements:



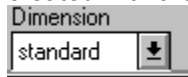
Pencil: This box displays the pencil currently active. By pressing the small arrow you get a list of all available pencils. By clicking on one of it you can switch to it. New pencils can be created with the command **Option-Pencil** from the menu or by double-clicking on the title.



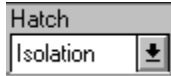
Layer: Here the currently active layer is displayed. If you click on the small arrow a list of all layers is displayed. By clicking on one of it you can switch to it. New layers can be created with the command **View-Layers** from the menu or by double-clicking on the title.



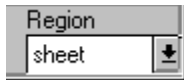
Text: Here the currently active text style is displayed. If you click on the small arrow a list of all available text styles is displayed. By clicking on one of it you can switch to it. New text styles can be created with the command **Options-Text** from the menu or by double-clicking on the title.



Dimension: Here the currently active dimension style is displayed. If you click on the small arrow a list of all available dimension styles is displayed. By clicking on one of it you can switch to it. New dimension styles can be created with the command **Options-Dimension** from the menu or by double-clicking on the title.



Hatch: Here the currently active hatch style is displayed. If you click on the small arrow a list of all available hatch styles is displayed. By clicking on one of it you can switch to it. New hatch styles can be created with the command **Options-Hatch** from the menu or by double-clicking on the title.



Region: Here the currently active region is displayed. If you click on the small arrow a list of all available regions is displayed. By clicking on one of it you can switch to it and the display will immediately switch to it. New regions can be created with the command **View-Regions** from the menu or by double-clicking on the title.

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Rulers

\sb120On the left and the top of your drawing rulers can be placed. To toggle their visibility please press **<CTRL>+<L>**.

By pressing **<Alt>+<L>** you can change the base point of the ruler to the current cursor position.

On top of the vertical ruler or the left side of the horizontal ruler is a local ruler menu containing the following commands:

On the left end of the horizontal and on the top end of the vertical ruler there is a local menu containing the following commands:

Horizontal Ruler : Toggles visibility of the horizontal ruler.

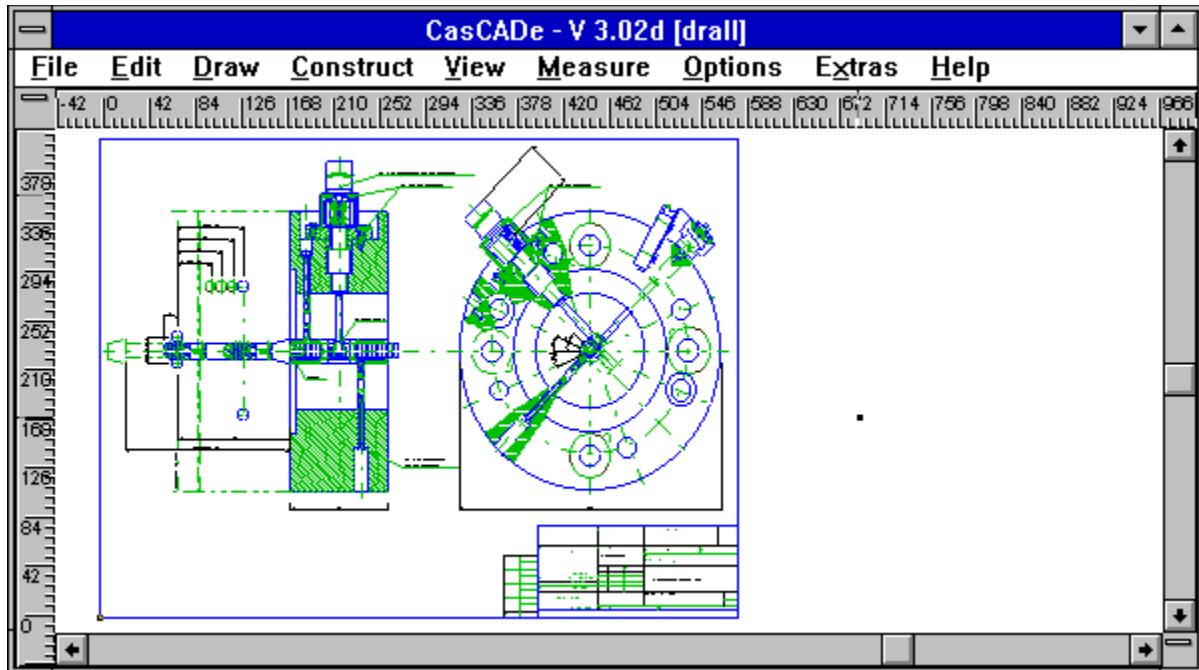
Vertical Ruler : Toggles visibility of the vertical ruler.

Close : Switches off both rulers.

Snap : Toggles the snap mode of the rulers.

Ruler : Opens the Grid / Ruler control dialogue.

Here you see a **CasCADE** desktop displaying only the two rulers and the scroll bars:



Scroll Bars

The scroll bars are on the right side and the bottom of the window. You can move the visible part of the drawing with them by using the mouse or the cursor keys. They cover whole your paper.

You can toggle the visibility of the scroll bars by pressing **<Ctrl>+<S>**.

At the right bottom is a local scroll bar menu containing the following commands:

Horizontal Scroll Bar: Toggles visibility of the horizontal scroll bar.

Vertical Scroll Bar: Toggles visibility of the vertical scroll bar.

Close: Removes both scroll bars.

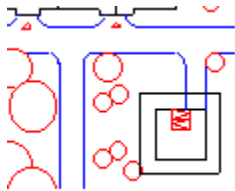
Help on CasCADE

Working with Coordinates

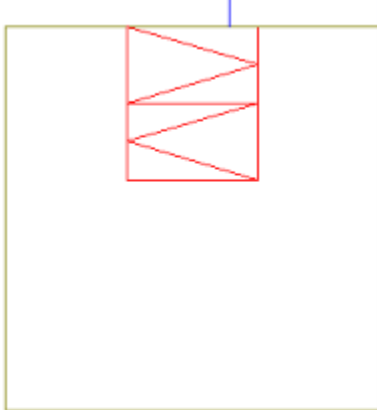
In this chapter we like to introduce you into the usage of coordinates with **CasCADE**.

In this example from geodesy a simple, four-corner building of which three corners were recorded polar from one point shall be traced out. For all **non-surveyors**: The three corners were recorded with a theodolite (geodetic measuring instrument measuring angles and distances) which means the distances and angles (referring to the north) from the machine to the corners of the building were recorded for a later evaluation in a computer.

This example helps to demonstrate how you can use CasCADE to reproduce the nature on a map, maybe one like this:



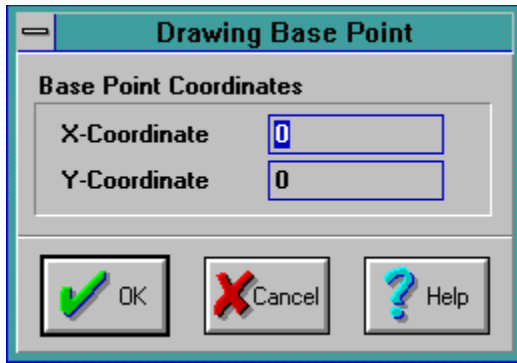
As it is rather complex we just take a small clipping off it, our four cornered building:



Normally surveyors are working with Gauss-Krueger, which means global, coordinates. To make it more easy for the beginners we are working here with our paper coordinates only.

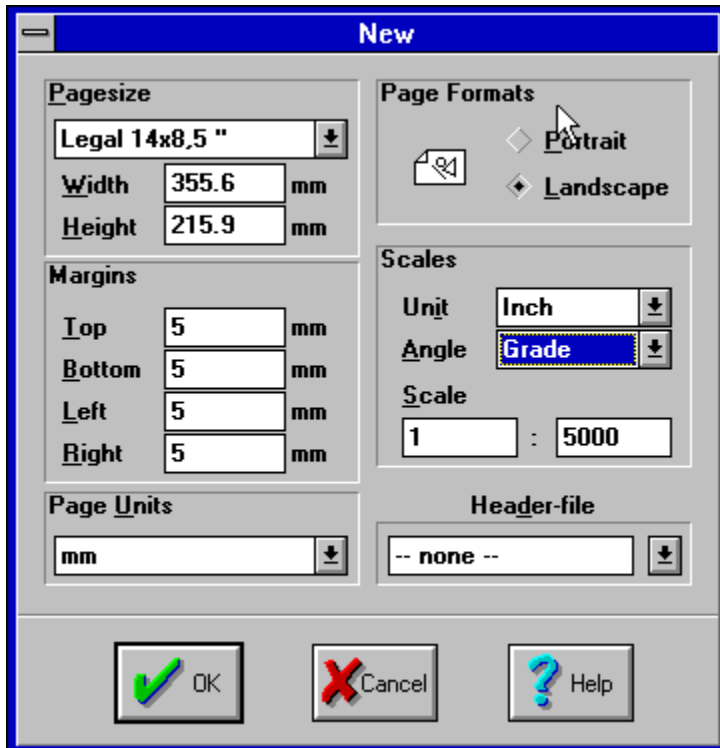
All surveyors should note that of course they can use global coordinates with **CasCADE** - you can simply change the base point into such coordinates (e.g. $x=5402044,54$ and $y=3514058,64$) by using the command **Edit-Base Point** from the menu and after that clicking the right mouse-button to produce the following window

:



Please choose a new base point there to make CasCADE suitable for surveyors as well.

Now we have to setup our drawing. The suitable control window for that is produced by CasCADE when we choose **File-New** from the menu:

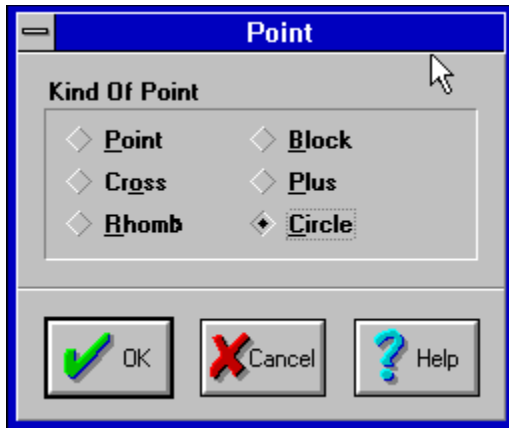


Here you can change various settings - for our example it is only important that you set the Scale to 1:5000 and set the angle measuring unit to *Grade*. If this is done please click **OK**.

Now back to our actual task: drawing with coordinates.

1. Step: Defining the kind of point to display the viewpoint.

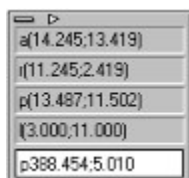
Please choose **Draw-Point** from the menu and click the right mouse-button to open the Point control window:



For our example please choose the circle as the typical kind surveyors are using to mark the viewpoint.

2. Step: Entering the coordinates of the viewpoint

In our example the absolute coordinates of the viewpoint are 3 and 11 (3 to the right; 11 up). To put the viewpoint to this coordinates just enter with the keyboard a **3 11** followed by **<Enter>**. Now the mouse is set to this position and if you press **<Enter>** again the point will be set there. Please be careful not to move the mouse in the meantime as this might change the position of the point. The safest way is to use the keyboard and to press **<Enter>** twice directly after entering the coordinates.



Now we can end the command **Draw-Point** by pressing **<ESC>**. To check if the viewpoint coordinates were entered correctly just open the coordinate window by clicking on the little arrow to the right of the coordinate display in the upper status line. Please be careful that our coordinates are displayed in the

fourth line as all the value, which are to be entered polar, are referring to that point. If this not true please repeat the last steps.

To enter coordinates just click on the coordinate display window and an input line will open.

3.Step: Position of the building

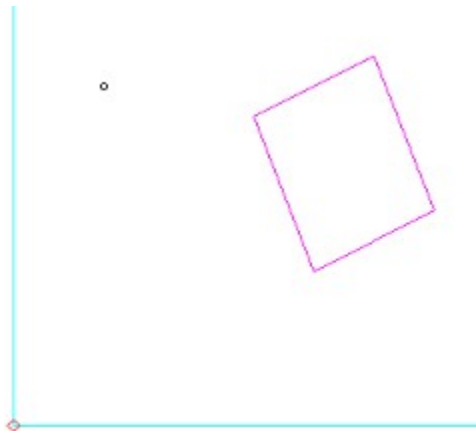
The three corners (named 1, 2 and 3) have the values:

- 1 Direction angle $t = 92,955$ gon Distance $s = 9,055$ m
- 2 Direction angle $t = 112,567$ gon Distance $s = 5,099$ m
- 3 Direction angle $t = 145,113$ gon Distance $s = 9,220$ m

In geodesy the direction angles are calculated in reference to the north pole but in CasCADE angles are referring to the horizontal. So we have to adjust the angles and get the following values:

- 1 Angle $a = 7,045$ gon
- 2 Angle $a = 387,433$ gon
- 3 Angle $a = 354,887$ gon

Now that we know the values we can start to draw them. Please choose the command **Draw-Line-Parallelogram** from the menu. In the coordinate window the coordinates of the last point (a 3, 11) should be displayed (otherwise please correct them) and you can now simply enter the polar coordinates starting with the angle of the first corner of our building (point 1): If you press **<Enter>** the cursor is moved to this position but the point is not defined yet. If you press **<Enter>** again the point is set. In the coordinate display window now new coordinates are shown for last point. To change this just type "a 3, 11" on the keyboard or click on the coordinate display and use the cursor down key to go back to your previous input. If again the last point is 3, 11 you can set the second point of the parallelogram by entering the polar coordinates via the keyboard and pressing **<Enter>** twice. Please repeat the process for the third point and you should see a result like this:



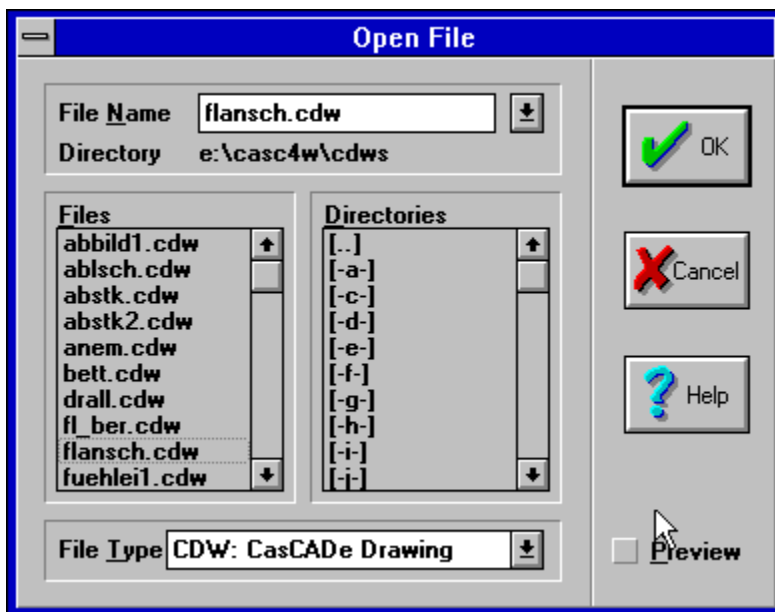
The Dialogue with CasCADE

CasCADE offers you many ways to adjust the program to your personal needs and preferences. To get customized **CasCADE** often enters into a 'dialogue' with you. Many dialogues are of course already known to you from MS-Windows and other Windows-programs, some dialogues of **CasCADE** are different.

To explain all possibilities of this dialogues to you we will now describe all the different kinds of dialogue windows used by **CasCADE**.

Windows for Loading and/or Saving

An example for this is the window Open File from the menu file:



Windows of this type are divided into the following components:

File Name: Please enter here the name of an existing file you want to load from or save to (overwriting) or a new filename of a file you want to save to. If you click with the left mouse-button on the arrow a list of existing filenames will be displayed.

Directory: Displays the name of the current directory

Files: Here all files of the chosen format (see file types below) are displayed.

Directories: Here you find a list of all your drives and a list of all the sub-directories of the current directory.

With a double-click of the left mouse-button on any directory name you can switch into that directory.

If you double-click on the two points in brackets you can move up one directory.

If you double-click on any drive name you can switch to that drive.

1701 File Type: Here the current file type is displayed. By clicking on the arrow you get a list of all possible file formats and you can choose one by simply clicking on it.

The switches on the right side are part of nearly every dialogue window:

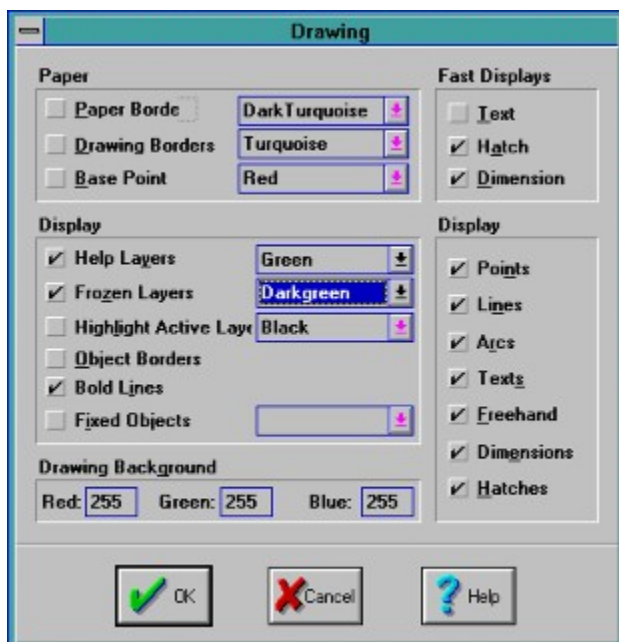
OK: Click here to accept all choices or instead of clicking with the mouse just press **<Enter>** on the keyboard.

Cancel: If you click here no changes will be recorded, no matter what you clicked in the window.

Help: If you click here you get a help on the current window.

\sb120 Windows to control options

\sb120 An example for this type of windows is the one you open by choosing **View-Drawing** from the menu:



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In windows like this you can control which features are active or not.

To switch on an option just click with the left mouse-button on the little box to the left of the option to let it be marked by a small hook.

To switch off the option just click again on the box. If the hook disappears the option is not active anymore.

For some options offering different features you can open a list of possibilities by clicking on the small arrow. Now you can choose one of the listed features by clicking on it with the left mouse-button.

Windows to choose commands




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In windows like this from the command **Options-Toolboxes** you can choose commands and their position on the screen.

Please choose a command on the left side and on the right side choose its position.

Switches

\sb120  Switches like this are to be found in the status lines.

With a click of the left mouse-button you can activate or de-activate such switches.

An active switch will be displayed deeper (like a pressed button) and thus is easy to recognize as active.

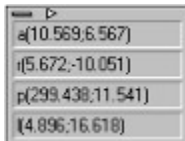
It will stay active as long as it is clicked again or another switch rivaling it is activated.

Some switches like the overview-switch might change their design when active.

Freely positionable windows

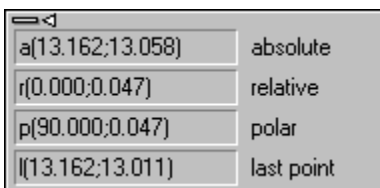
\sb120 These external windows can be put anywhere on the screen. Just click with the left mouse-button on the top of the window, keep the button pressed and move the mouse.

As an example we see here the coordinate display window:



\sb120

The small arrow on top changes the window. In our case the displayed kinds of coordinates will get a descriptive text:



To demonstrate how a window can change its outlook we use a toolbox:



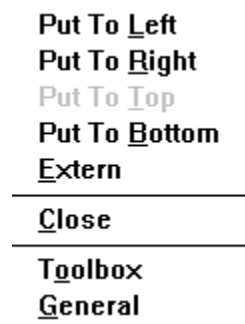
If there are two small arrows it means the outlook can still be changed again. In this case the toolbox can be displayed horizontally or vertically, like this



or like this:



Also these windows have a local menu which can be accessed by clicking on the left top. Here the menu of our toolbox:



\sb120

There are menu entries having effect only on the external window and also commands from the main program.

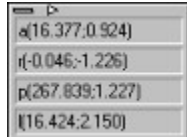
How to use CasCADE

Display of Coordinates

The current coordinates are displayed in the upper status line.



If you click on the arrow to the right of the coordinates a small, freely movable window opens and displays the current coordinates:



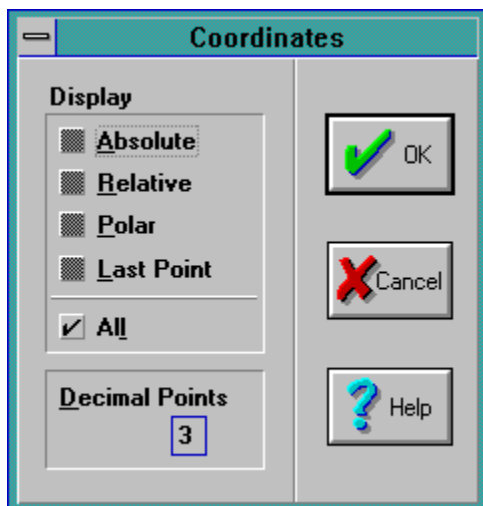
If you click on any of the displays a single input box for coordinates of this kind will open and let you enter coordinates. The leading identifiers are:

- a = absolute
- r = relative
- p = polar
- l = last point

A click of the left mouse-button on the button to the left of the coordinates will switch to the display of another kind of coordinates (if you have chosen more than one kind to be displayed) or switch off the display at all.

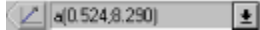
The kinds of coordinates to be displayed can be chosen inside the menu of this window itself or in the **Coordinates** control window which is to be found inside the menu of this window as well.

The **Coordinates** control window looks like this:



In the **display** box you can control which kinds of coordinates shall be displayed. In case you only use absolute coordinates you should of course deactivate the display of polar and relative coordinates. Also you can choose here how many **decimal points** you want.

Now back to the display in the status line. Here you see a display of absolute coordinates:

 (0.524, 0.290)

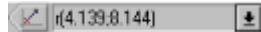
The absolute point is the base point of your drawing which normally does not change except when you decide so by choosing the command **Edit-Base Point** from the menu and clicking the right mouse-button to open the window **Drawing Base Point**:



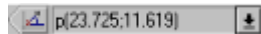
If you want to move the base point of your drawing please enter the new absolute coordinates here.

Hint for all surveyors: The coordinate system used by CasCADE is the mathematical one.

The function of the base point is simple: it always is the origin of the coordinate values. They are measured from this point in two directions: horizontally (>0 to the right) for the first value and vertically (>0 up) for the second value.

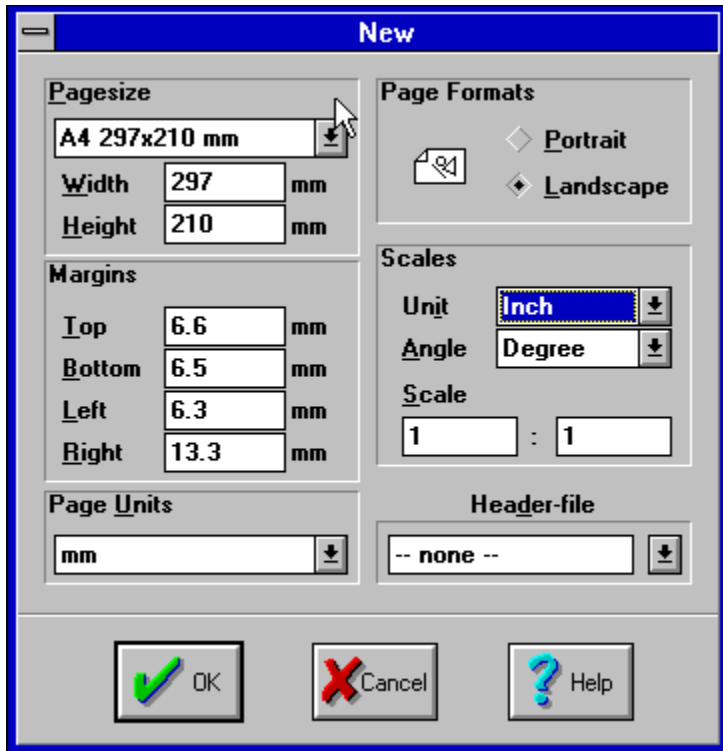
 r(4.139, 0.144)

Here you see a pair of relative coordinates. They are calculated from the last point (which is not the base point). The first value is the horizontal position (>0 to the right), the second one the vertical position (>0 above last point).

 p(23.725, 11.619)

A small *p* is the leading identifier for polar coordinates. Polar coordinates, like relative coordinates, are measured from the last point. The first value is the angle between the current cursor position, the last point and the horizontal (from the last point to the right). This angle is calculated counter-clockwise.

The second value is the distance between the current and the last point. It is - like the angle - measured in the units you have chosen in the menu **File-New** or **Options-Page**. This is the dialogue **File-New**:



This display shows the position of the last point in absolute coordinates. The leading identifier is a /
 This display is very important as you might want to calculate several distances from your last point and might need to restore it.

Notes: The last 20 coordinates you have entered in the input window will be archived to a list. You can scroll up and down in this list by pressing the arrow-keys **<Up>** or **<Down>** . Also you can insert the results of the calculator here or even an arithmetic expression - it will be calculated and the result will be used as coordinates.

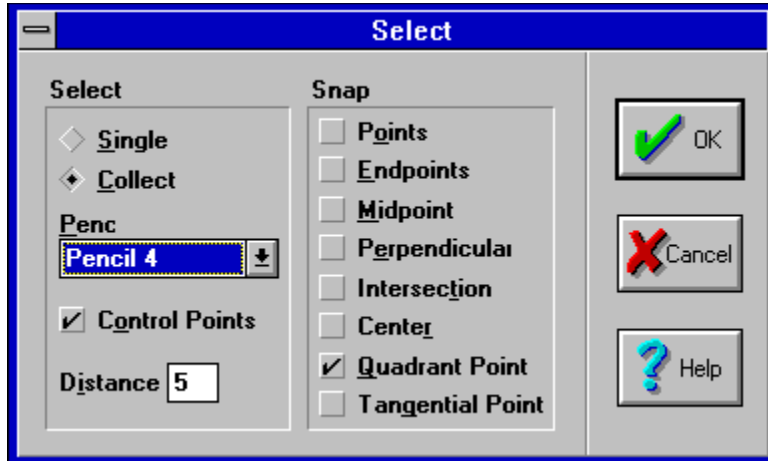


This is the way the coordinate display window looks like if you have chosen to display no coordinates at all.

Selecting Objects

This option always is on when no command is active.

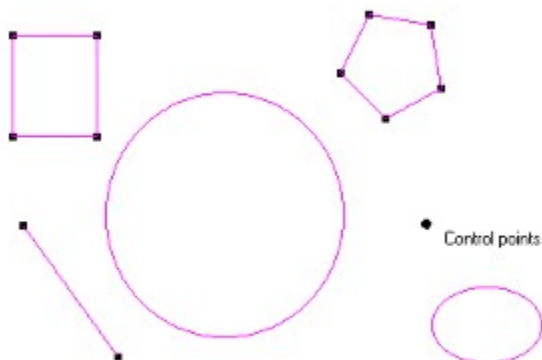
You can control the method for selecting with the command **Options-Select/Snap** from the menu.



There are two methods to select: *Single* and *Collect*. If you choose *Single* only one object can be selected (except when you press the **<Shift>** key while selecting). If you select another object all previously selected objects become deselected. If you choose *Collect* you can select as many objects as you want at the same time.

Also you can choose with which pencil a selection shall be indicated. If you click on the arrow beside the pencil box a list of all available pencils will open and you can choose one by clicking on it with the left mouse-button.

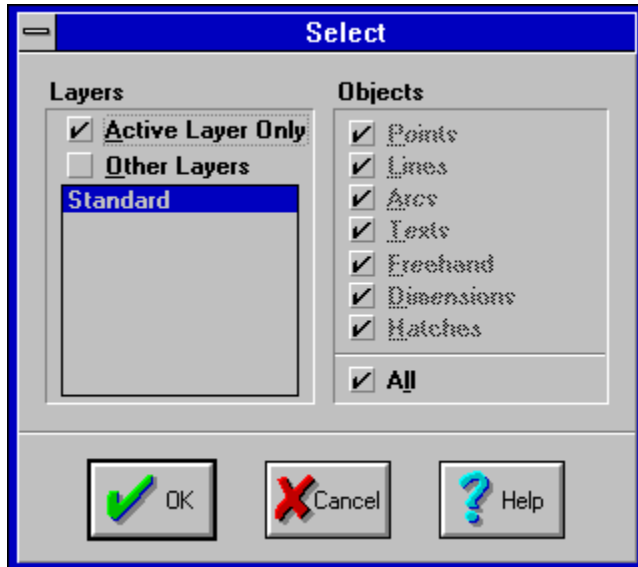
Also you can choose if control points shall be displayed or not. Here an example:



In the *distance* box you can define how far away the cursor can be from an object and still select it. The unit is pts (picture points). In case you have problems to select small objects please just zoom into the drawing.

In the snap-part of this window you can choose by which objects the cursor is snapped when you move it close to them (see also grid and ruler).

You can also control the selection options by clicking with the right mouse-button while in select-mode. This window will open:



On the left side you can choose if you want to select in the active layer only or in other layers as well and if so in which of them. On the right side you can choose which objects can be selected.

To select an object you can just click on it with the left mouse-button.

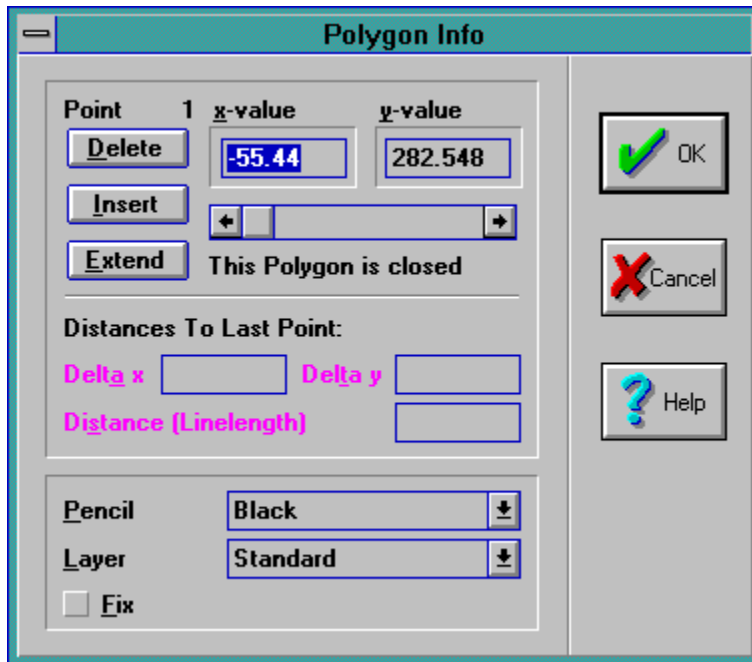
2. To select several objects at once you can keep the left mouse-button pressed and move the mouse. A rectangle will open. If you moved the mouse to the left this rectangle will select all objects just touching it partially. If you moved the mouse to the right the objects to be selected have to be totally inside the rectangle.

Selections and Object Edit Line

If you change any attribute in the Object Edit Line all selected objects will change accordingly - if no objects are selected your changes will have effect on the next objects you create.

Changing Objects with Double-Click

If you double-click with the left mouse-button on any object a control window will open and you can view and change the object attributes. If for example we draw a simple line and double-click on it the following window will open:

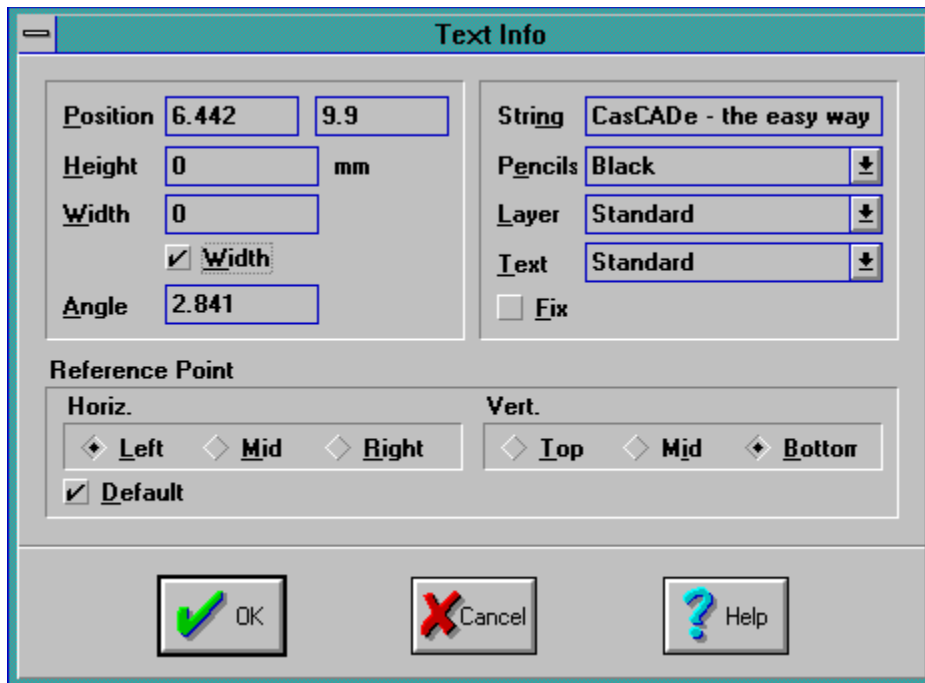


CasCADE treats lines as polygons with two control points. The upper part of the window is referring to one of these control points, here on the first point. Its coordinates are displayed and can be changed in the *x*- and *y-value* boxes. With the scroll bar below you can switch the control points.

By using the buttons on the left you can *delete* a point, *insert* a new single point or *extend* the object.

In the lower part of the window you can choose the *pencil* the object is drawn with, the *layer* it belongs to and also control whether it is *fixed* or not.

Now lets say you wrote a text and want to edit it later. If you double-click on it with the left mouse-button, the Text-Info window opens:



On the left we find the *position* of the text, its *height* and *width* and the *angle*. All these attributes can be changed here just like the attributes on the right: The text (*string*) itself, the *pencil* it is drawn with, the *layer* it is belonging to and the *text* style as well as its *fix*-status.

Basically **all** characteristics of an object can be viewed and changed later if you double-click on it.

|

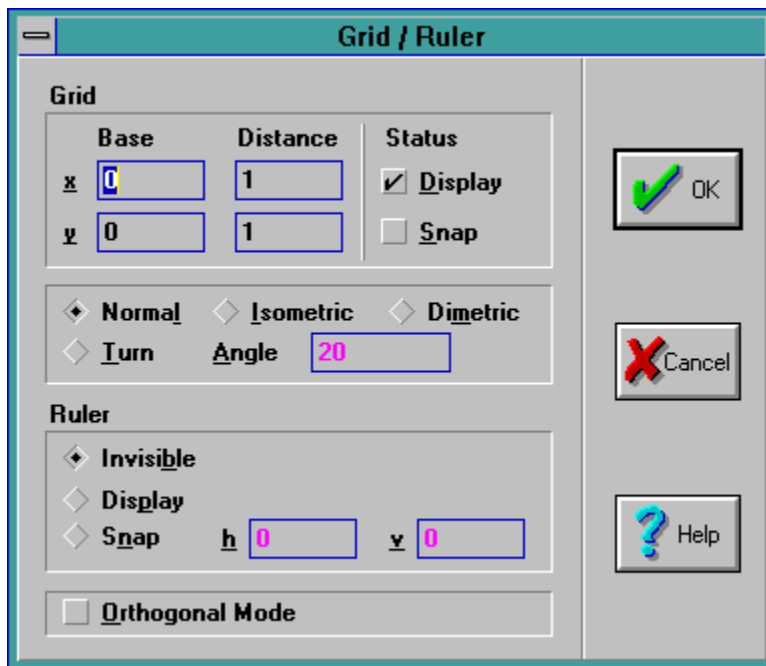
Entering Coordinates

Coordinates can be entered in many ways.

Mouse:

The easiest way to enter coordinates is with the mouse. Just choose from the menu the command **Draw-Point** and now by clicking with the left mouse-button you can set as many points (enter coordinates) as you like. The mouse is easy to use but it is not precise. So **CasCADE** offers several help functions, esp. the **snap modes** of grid and ruler. If these are active the cursor moves only on the points of the grid or the lines of the ruler. If the cursor is supposed to automatically snap already drawn lines this special object snap mode has to be activated in **Options-Select/Snap**. The object snap mode always has more relevance than the grid or ruler snap mode.

Also you can choose an **orthogonal mode** allowing only horizontal and vertical movements. If you turn the orthogonal mode you can also draw diagonals. Beside the orthogonal mode you can also choose an isometric or dimetric mode. These choices are done with the command **options-grid/ruler** from the menu where you get the following dialogue window:



Grid / Ruler: A grid or ruler can be simply displayed or it snaps the cursor and moves it to the next point of the grid or the ruler.

Snap: You can choose where the cursor will be set by using the control switches in the right status line:



The icons are representing (from left to right and up to down) : next point / end point / mid point / perpendicular point / center / intersection / quadrant point / tangent point.

Keyboard:

Coordinates can be entered with the keyboard as well. In this case the snap functions will have no effect.

If you press any **number** or the **<Space>**-key a small input window in the upper status line opens where normally the cursor coordinates are displayed. If you click there the input window opens too. This window closes when you finish the input by pressing **<Enter>** or when you cancel the operation by pressing **<ESC>**. The input window also opens if you click with the left mouse-button on the coordinates display.

If the coordinate display window is opened you can also enter coordinates by clicking with the left mouse-button on any coordinate. Again an input window opens and stays open until you confirm by pressing **<Enter>** or cancel with **<ESC>**.

The last 20 coordinates you have entered in this input window will be archived to a list. You can scroll up and down in this list by pressing the arrow-keys **<Up>** or **<Down>** . Also you can insert the results of the calculator here or even an arithmetic expression - it will be calculated and the result will be used as coordinates.

Please choose one of the following input ways:

a(x;y): Absolute

r(x;y): Relative

p(w;l): Polar (absolute; referring to base point)

l(x;y): Last Point (absolute; referring to base point)

x(x): Changes only the x-value (absolute; referring to base point)

y(y): Changes only the y-value (absolute; referring to base point)

rp(w;l): Polar (relative; referring to last point)

rl(x;y): Last Point (relative, referring to last point)

rx(x): Changes only the x-value (relative, referring to last point)

ry(y): Changes only the y-value (relative, referring to last point)

pa(x;y): (Page absolute) Moves the cursor to a page coordinate, defined by x,y of the current page size. The page size is defined in the menus **File-New** and **Options-Page**.

If no leading identifier like a, p, etc. is entered the coordinate will be interpreted as absolute. The brackets can be left out, the semicolon can be exchanged by a **<Space>** but if you enter an arithmetic expression for one of the values the semicolon has to be used. Numbers can be written with a true decimal point or - as common in some countries - a decimal comma.

Cursor Keys :

While you are in the coordinate input function you can also use the cursor keys to move the cursor. If you press once the cursor will move by one step, If you press **<Ctrl>** these steps are bigger and if you keep **<Shift>** pressed it will move by one whole coordinate unit. If you are outside the coordinate input function the cursor keys are working like the scroll bars and move the drawing.

