

# Additional Manuel of the new features of PowerCADD 2000 version (5.0.12)

## Table of contents

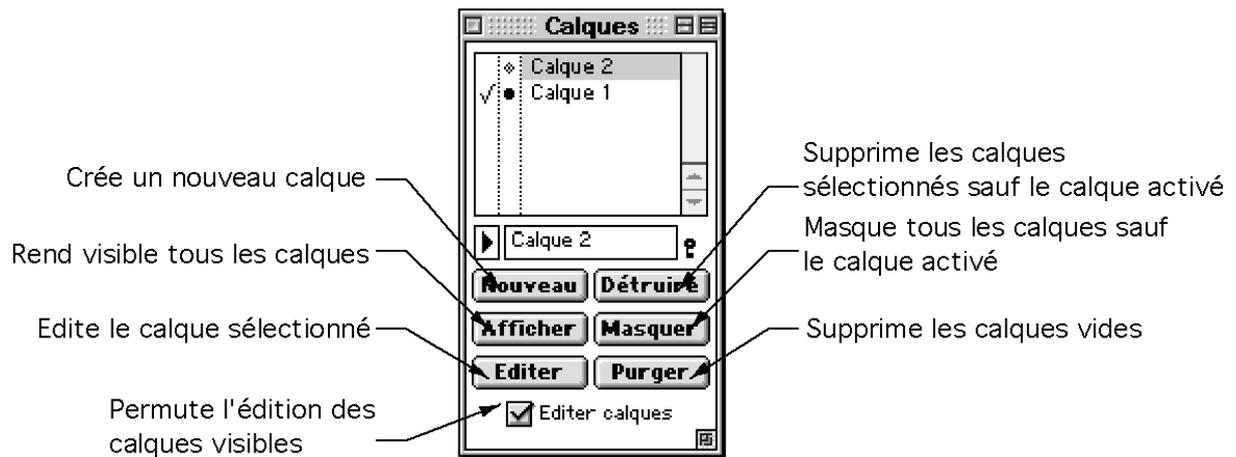
Layer floating window: .....	2
New system of printing in PowerCADD .....	3
Quality of the outputs.....	5
High Quality Printing .....	7
Fast Quality Printing .....	8
Printing at Draft quality .....	9
High Quality Printing .....	10
Best Quality Printing .....	11
How it works in detail?.....	12
Different examples of parameters for 3 different devices .....	14
New features.....	15
Snap Offset X, Y .....	15
Snap Distance (off object) .....	15
Snap Distance (in object).....	16

# Modifications brought to the user manual further to the update PowerCADD 5.0.12

## **Layer floating window:**

The dimension of the Layer window is modified according the dimensions of the other floating windows Move, Status, Dimension. You will then be able to organize more simply your opened floating windows.

The features of buttons and options of the window were not modified.



The width of the floats windows: layers, move, dimension, status have been optimized to allow superimposing

Superimposing of four floating windows: Layers, Move, Dimension, and Status.

## New system of printing in PowerCADD

The printing system in PowerCADD is particular and postpones classic methods used in the world of CAD. This system is directly connected to the method of PowerCADD's drawing and is similar to the manual drawing of the drawing board.

In brief the drawing complies directly on the size of paper used for the output. You know in advance what your drawing is going to look like once printed.

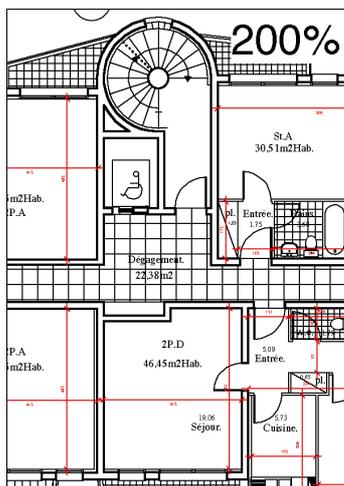
However if this principle prevails for a big majority of users, mainly those that make technical drawings, it is less for certain corporate work. They want to obtain outputs at various ratios of scale on the same paper size or another size from their original drawing.

Solution is completely practicable with PowerCADD and any printing driver compatible with the Apple interface. It is enough to modify the scale or the ratio of printing in the **Page Setup** dialog box.

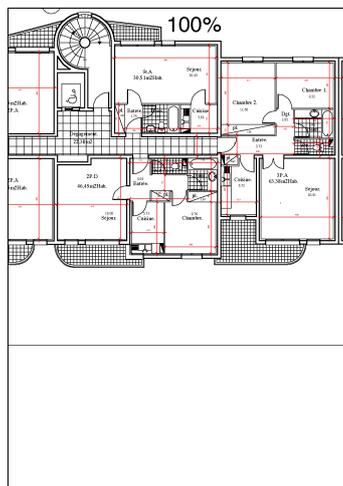
It works that way in photography or with a modern powerful photocopier, you can change the factor of scale and enlarge edition or copy on the same size of paper or use another size of paper.

The following Illustrations show you various outputs using this method. In the example below the original drawing is realized at scale 1/100 and the printing is made on a A4 paper size. Two other outputs are generated, one simulate a printing at scale 1/50 and the other one at 1/200 from the same original drawing without modifying anything.

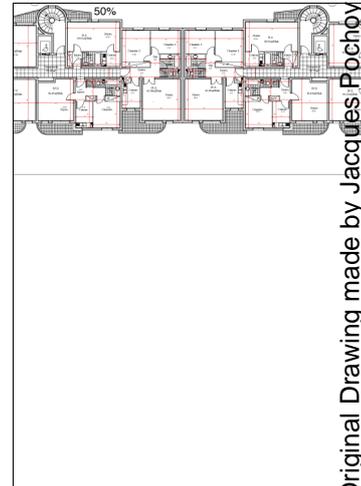
**Note:** the purists will say that the true 1/50 contains more detail and that the true 1/200 has to provide with less. It's true, but we just want to bring to you here the way to get printings at various scale ratios. You can if you want create 2 copies of the original drawing and cleanup it or add more details to it according to the edition that you want to obtain. This can be realized on different layers.



**Printing at 1/50**  
Printing Scale Ratio 200%



**Printing at 1/100**  
Printing Scale Ratio 100%



**Printing at 1/200**  
Printing Scale Ratio 50%

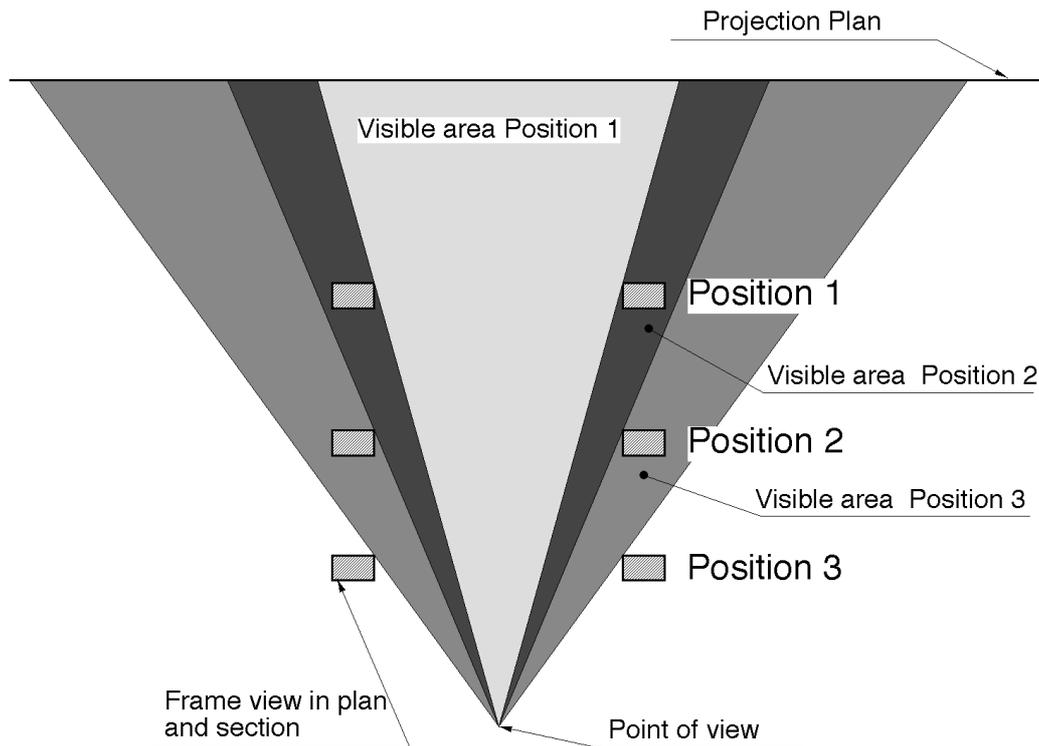


Original Drawing made by Jacques Pochéy

In the case of the printing at scale  $1/50$ , the drawing area is twice less important than the original drawing printed at 100 %. On the other hand printing at  $1/200$  shows that the drawing area is twice as important as original printing at 100 %. It's as if you looked through a window of a fixed dimension and that you approached a certain distance. The more you move back less you see elements in the field of vision, the more you get closer more the number of visible elements is important.

Make the following experiment by taking a hollow frame:

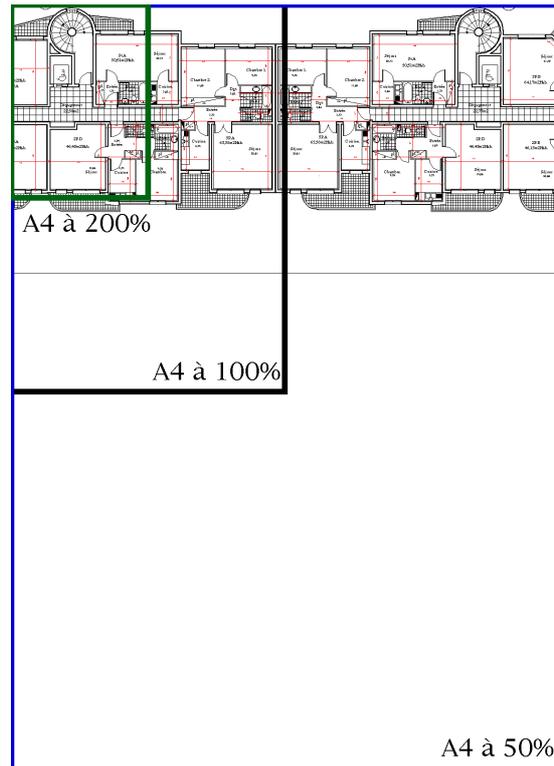
1. Place this frame at the end of arm and verify the visible zone inside the frame.
2. Move this frame closer to of your eye at halfway and verify the visible zone situated inside the frame.
3. Still approach this frame near your eye and notice the size of the visible.



It is exactly how the printing system described here works, when you want to get an increase or a reduction of the printing area.

In our example:

- case #1 corresponds to the printing at  $1/50$  (200 % of the original view),
- case #2 corresponds to the original printing at scale  $1/100$  (100 % of the original view)
- case #3 corresponds to the printing at  $1/200$  (50 % of the original view)



The figure above handles the different frames gotten, depending of the percentage of reduction or magnificence used by the printing ratio.

## Quality of the outputs

All this will be perfect, but another problem arises in printing, it is the "bead" or the resolution of the outputs.

If you make comparison with the photography, you know that from a certain factor of magnification you will see sharply the "bead" of the film. In computer world the display and printing system use a matrix principle to display or to paint the paper or the screen. More points are small, better will be quality of your printing. However the more points you use to increase the quality of the output, the more you need information to store and to display or to print this number of points. In brief more the matrix is fine more you need performed computer and device.

In the computer industry one often makes so compromises between the quality, the speed and the cost of elements.

PowerCADD due to the interface of Macintosh allows you to obtain a perfectly acceptable compromise whatever the level of printing equipment, which you have. However it is necessary that these elements satisfy certain criteria notably their perfect compatibility with the Apple printing system or mechanism.

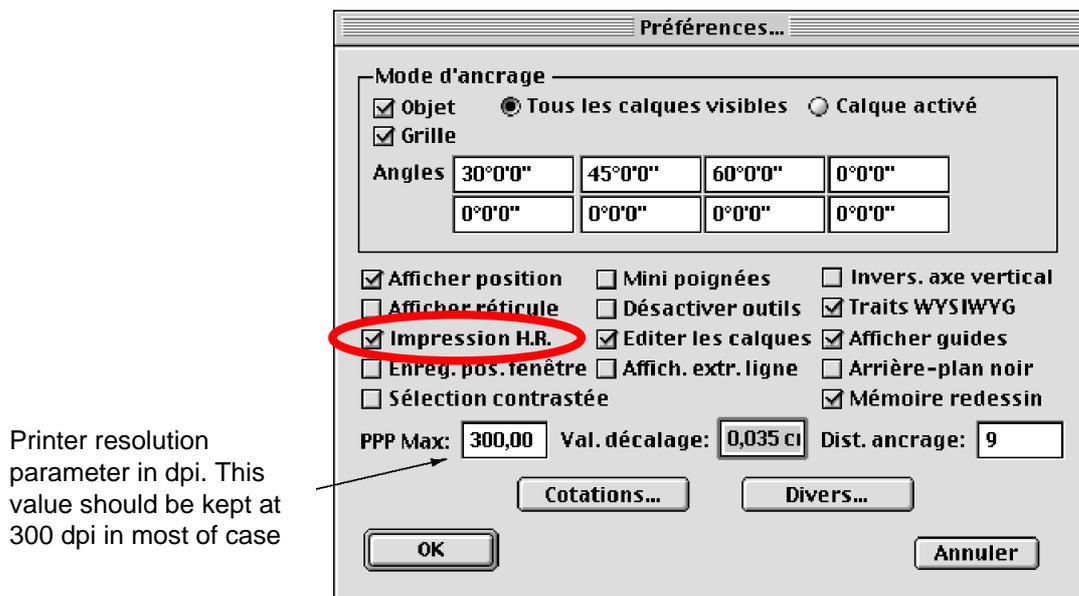
PowerCADD uses as most of Macintosh applications the standard matrix of the graphic system of Macintosh. This graphic system names QuickDraw. It is used for the displaying but also for the printing. Everything would be perfect, but QuickDraw's standard matrix gets a resolution of 72 x 72 dpi. That means that the minimal resolution of a point, more collectively called pixel, will make 0.3527 mm. If in the majority of cases, it agrees for the text or the other simple graphics, this lack of sharpness prevents the printings of the fine lines of the technical drawings.

The manufacturers of devices made enormous progress since the beginning of Macintosh and propose higher resolution printers at affordable prices. From the beginning of the sell of printers Laser, PowerCADD allowed to use the maximal resolution of these devices by authorizing, by means of it own system of graphic matrix of calculation, "High res printing" with a matrix of 300 dpi.

This system is satisfactory in most of cases whatever the Laser printer used, including the one that has resolutions of the range of 600 or 1200 dpi.

With the starting of high resolution Ink jet printers, were noticed variations in the quality of printings. That is why from PowerCADD 2000 (version 5.0.12), Engineered Software decided to rebuild this system of conversion and to allow the user to modify the value of resolution of the matrix which will be used for the calculation of points during printings.

As a general rule this does not concern Laser printers except specific case. The user of ink jet printers should modify the new parameter in association to the printing in high resolution. This new parameter is located in the dialog box of the "Preferences" command in the menu "Layout". It is directly associated to the other option "HiRes Printing" formally a checkbox, as showed in the following illustration.



To perfectly understand why this parameter influences the quality of printings, we encourage you to consult the paper outputs presented in the following illustrations. They were realized from the digitalization of the printed sheet.

They are a combination of various useful parameters in PowerCADD to obtain a printing. Certain values were exaggerated here in purposes of demonstration.

In the end of this section, you will find a more exhaustive table) showing the influence of the other parameters: WYSIWYG, resolution mode (interpolation) of the device.

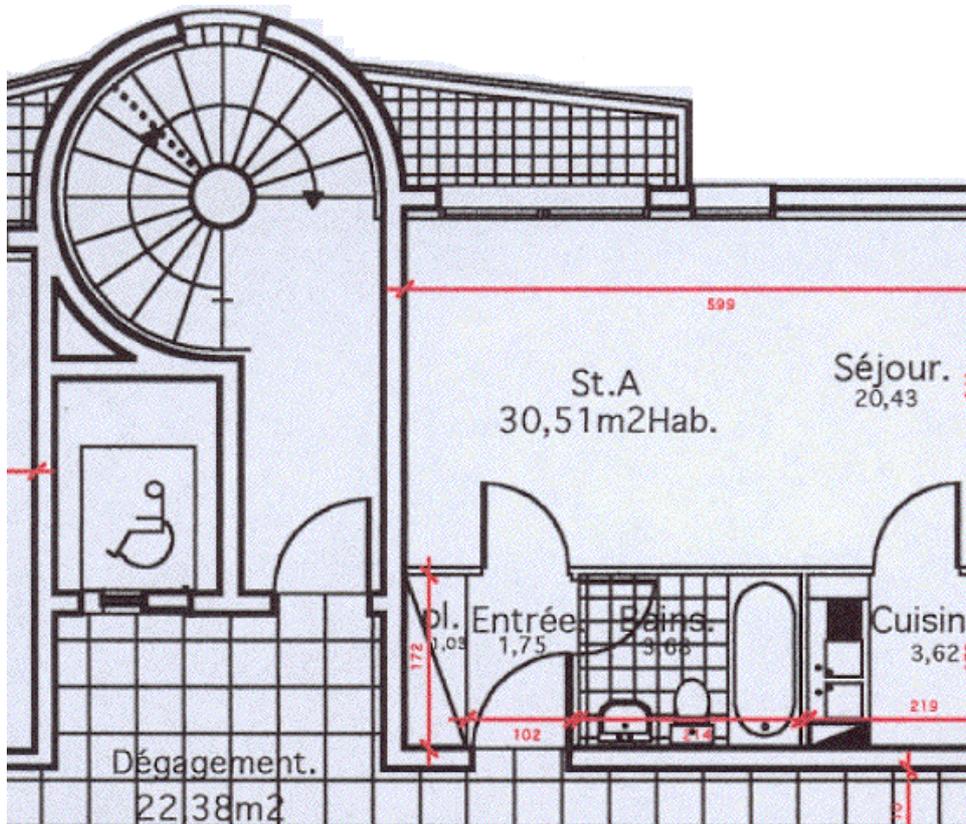
## High Quality Printing

- Settings of the dialog box of the Preference command in the Layout. The value of the calculation resolution is set to : 720 dpi.

<input checked="" type="checkbox"/> Afficher position	<input type="checkbox"/> Mini poignées	<input type="checkbox"/> Invers. axe vertical
<input type="checkbox"/> Afficher réticule	<input type="checkbox"/> Désactiver outils	<input checked="" type="checkbox"/> Traits WYSIWYG
<input checked="" type="checkbox"/> Impression H.R.	<input type="checkbox"/> Editer les calques	<input checked="" type="checkbox"/> Afficher guides
PPP Max: 720,00	Val. décalage: 0,035 ci	Dist. ancrage: 9

- The scale setting of the Page Setup dialog box is: 100%.
- The settings of the dialog box of the Print command:

Zone d'impression	<input type="checkbox"/> Ajuster à la page	<input type="checkbox"/> Légende
<input type="radio"/> Normale	<input type="checkbox"/> Impression standard	
<input type="radio"/> Sélection	<input type="checkbox"/> Imprimer les points	
<input type="radio"/> Fenêtre		



The quality of the print output is correct.

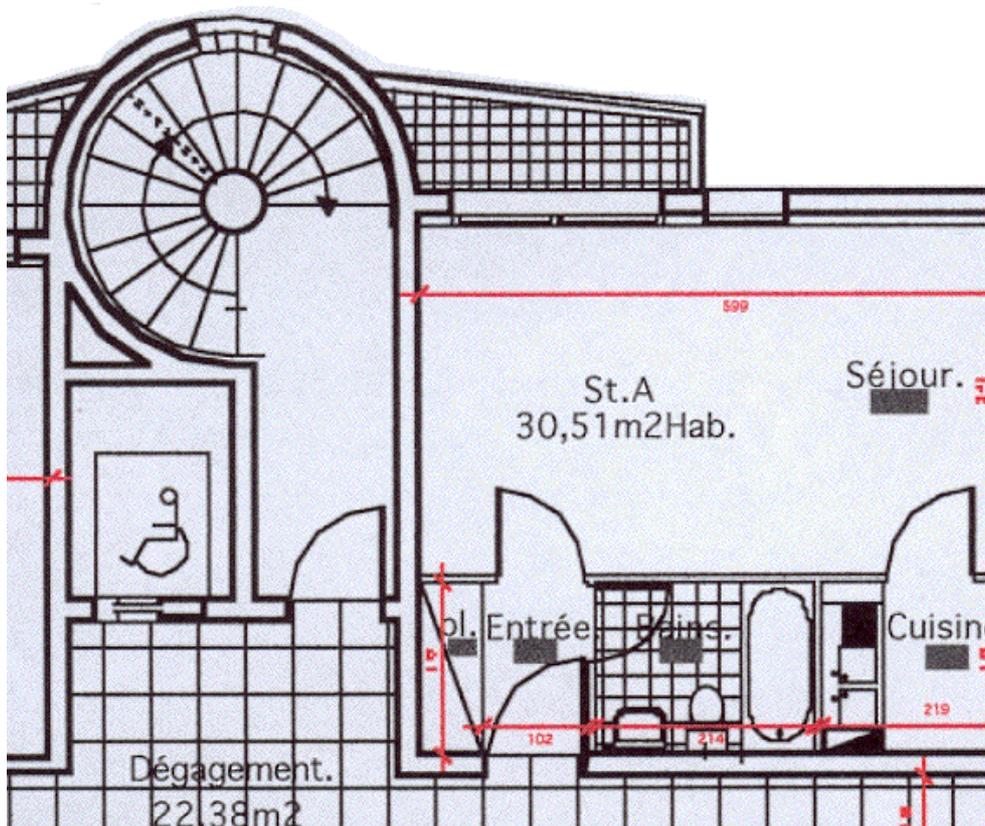
## Fast Quality Printing

- Settings of the dialog box of the **Preferences** command in the **Layout** menu. The value of the calculation resolution is set to: 300 dpi.

<input checked="" type="checkbox"/> Afficher position	<input type="checkbox"/> Mini poignées	<input type="checkbox"/> Invers. axe vertical
<input type="checkbox"/> Afficher réticule	<input type="checkbox"/> Désactiver outils	<input checked="" type="checkbox"/> Traits WYSIWYG
<input checked="" type="checkbox"/> Impression H.R.	<input type="checkbox"/> Editer les calques	<input checked="" type="checkbox"/> Afficher guides
PPP Max: 300,00	Val. décalage: 0,035 ci	Dist. ancrage: 9

- The scale setting of the **Page Setup** dialog box is: 100%.
- The settings of the dialog box of the **Print** command:

Zone d'impression	<input type="checkbox"/> Ajuster à la page	<input type="checkbox"/> Légende
<input type="radio"/> Normale	<input checked="" type="checkbox"/> Impression standard	
<input type="radio"/> Sélection	<input type="checkbox"/> Imprimer les points	
<input type="radio"/> Fenêtre		



The arcs are segmented, the smaller text size are grayed. The dimension lines are thick and the dimension texts are not always visible.

**Note:** If the option “Classic Imaging” is unchecked, the text will be grayed but the arcs will be still segmented.

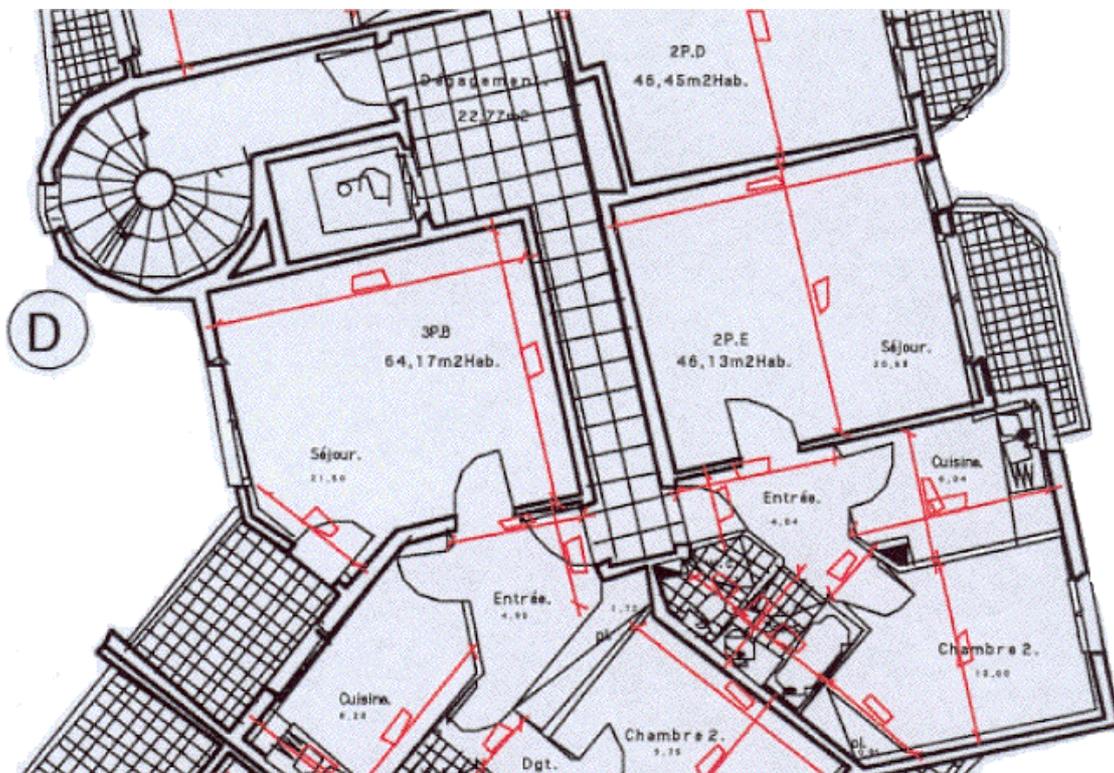
## Printing at Draft quality

- Settings of the dialog box of the **Preferences** command in the **Layout** menu. The value of the calculation resolution is set to: 300 dpi.

<input checked="" type="checkbox"/> Afficher position	<input type="checkbox"/> Mini poignées	<input type="checkbox"/> Invers. axe vertical
<input type="checkbox"/> Afficher réticule	<input type="checkbox"/> Désactiver outils	<input checked="" type="checkbox"/> Traits WYSIWYG
<input checked="" type="checkbox"/> Impression H.R.	<input type="checkbox"/> Editer les calques	<input checked="" type="checkbox"/> Afficher guides
PPP Max: <b>300,00</b>	Val. décalage: <b>0,035 ci</b>	Dist. ancrage: <b>9</b>

- The scale setting of the **Page Setup** dialog box is: 50% (to print a large area of drawing on the same paper size). i.e. to output a 1/48 drawing to get a 1/96 paper output.
- The settings of the dialog box of the **Print** command:

Zone d'impression	<input type="checkbox"/> Ajuster à la page	<input type="checkbox"/> Légende
<input type="radio"/> Normale	<input type="checkbox"/> Impression standard	
<input type="radio"/> Sélection	<input type="checkbox"/> Imprimer les points	
<input type="radio"/> Fenêtre		



The arcs are segmented the patterned hatches are distorted. The dimension lines are irregular and the dimension texts are framed with a rectangle.

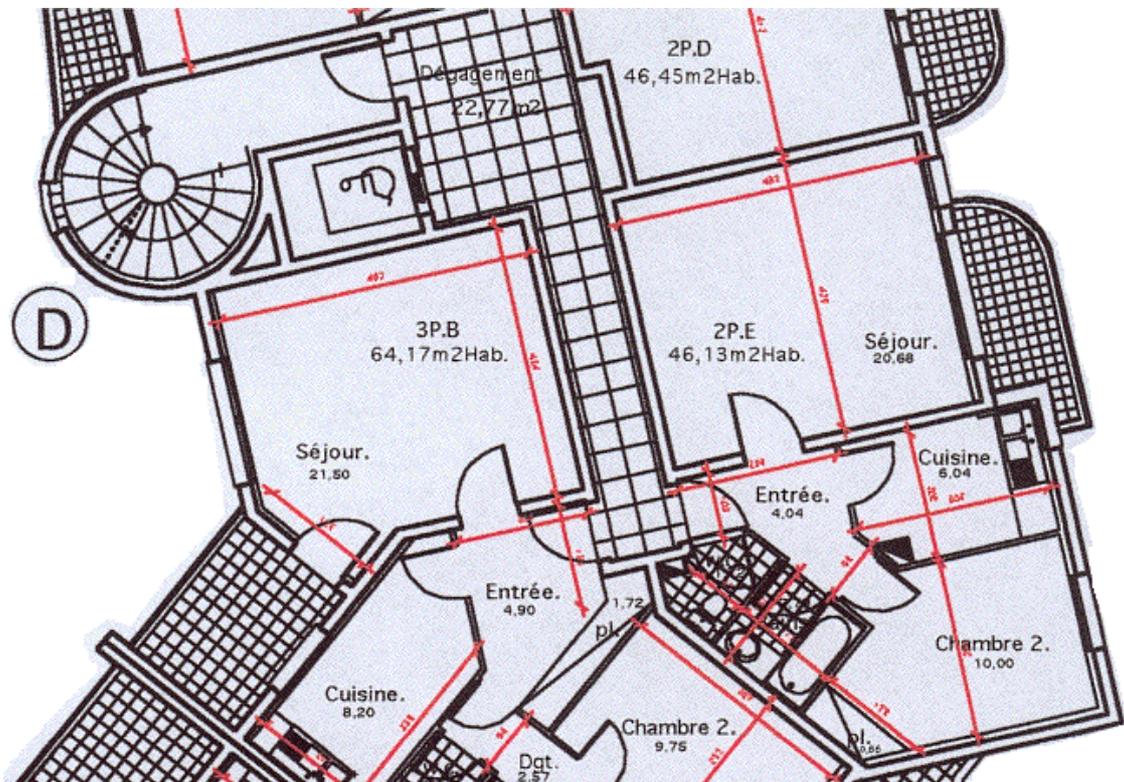
## High Quality Printing

- Settings of the dialog box of the **Preferences** command in the **Layout** menu. The value of the calculation resolution is set to: 720 dpi

<input checked="" type="checkbox"/> Afficher position	<input type="checkbox"/> Mini poignées	<input type="checkbox"/> Invers. axe vertical
<input type="checkbox"/> Afficher réticule	<input type="checkbox"/> Désactiver outils	<input checked="" type="checkbox"/> Traits WYSIWYG
<input checked="" type="checkbox"/> Impression H.R.	<input type="checkbox"/> Editer les calques	<input checked="" type="checkbox"/> Afficher guides
PPP Max: <b>720,00</b>	Val. décalage: <b>0,035 ci</b>	Dist. ancrage: <b>9</b>

- The scale setting of the **Page Setup** dialog box is: 50% (to print a large area of drawing on the same paper size). i.e. to output a 1/48 drawing to get a 1/96 paper output.
- The settings of the dialog box of the **Print** command.

Zone d'impression	<input type="checkbox"/> Ajuster à la page	<input type="checkbox"/> Légende
<input type="radio"/> Normale	<input checked="" type="radio"/> Impression standard	
<input type="radio"/> Sélection	<input type="checkbox"/> Imprimer les points	
<input type="radio"/> Fenêtre		



The arcs are correct, the hatched patterns are thick. The dimension lines are also thick.

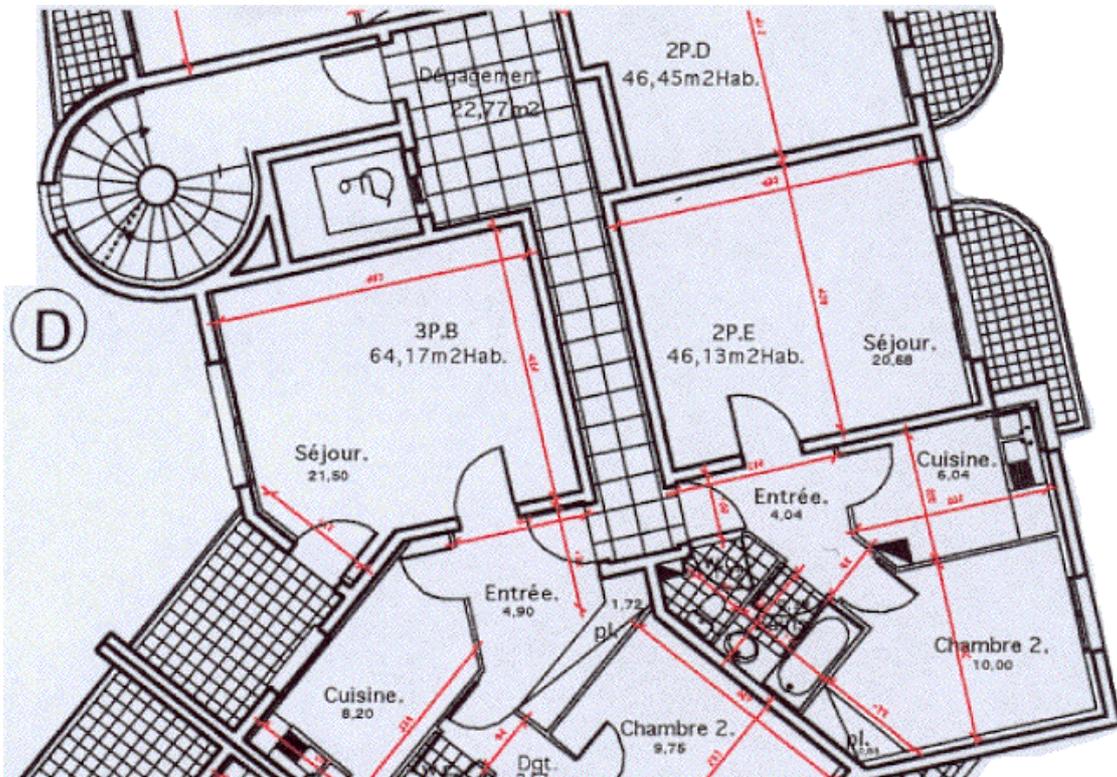
## Best Quality Printing

- Settings of the dialog box of the **Preferences** command in the **Layout** menu. The value of the calculation resolution is set to: 720 dpi.

<input checked="" type="checkbox"/> Afficher position	<input type="checkbox"/> Mini poignées	<input type="checkbox"/> Invers. axe vertical
<input type="checkbox"/> Afficher réticule	<input type="checkbox"/> Désactiver outils	<input checked="" type="checkbox"/> Traits WYSIWYG
<input checked="" type="checkbox"/> Impression H.R.	<input type="checkbox"/> Editer les calques	<input checked="" type="checkbox"/> Afficher guides
PPP Max: 720,00	Val. décalage: 0,035 ci	Dist. ancrage: 9

- The scale setting of the **Page Setup** dialog box is: 50% (to print a large area of drawing on the same paper size). i.e. to output a 1/48 drawing to get a 1/96 paper output.
- The settings of the dialog box of the **Print** command:

Zone d'impression	<input type="checkbox"/> Ajuster à la page	<input type="checkbox"/> Légende
<input type="radio"/> Normale	<input type="checkbox"/> Impression standard	
<input type="radio"/> Sélection	<input type="checkbox"/> Imprimer les points	
<input type="radio"/> Fenêtre		



The arcs are correct and the hatched patterns are thin. The dimension lines are fine and correct.

**Note:** tests above were realized with a printer Epson 760. The optimal value of the resolution of calculation DPI is 360 dpi. The value of 760 is superfluous.

## How it works in detail?

Without entering in deep of the graphic printing systems we will try to clarify quickly this to you with a few illustration.

First of all it is not necessary to confuse the resolution of calculation used by PowerCADD on 2000 and resolution selected in the printer driver. With the printing driver, you select a value of "smoothing" or interpolation of the printing. This corresponds to a quality: draft, normal or superior and will have no influence on the segmentation of arcs or the quality of the printing of dimension text.

When you ask for printing, PowerCADD converts its geometrical data in point mode (pixel) through a standard matrix of the resolution 72 x 72 points. During this projection pixels situated under the curve are confirmed. If the curve is "overlapping" on two pixels it is the pixel, which is closer, which is used. Figure #1 shows this principle. In the figure #2 (we imagined here a projector which throws in Chinese shadow on the paper size). You notice that with the standard grid, the "outlines" of the arc are irregular because of the used resolution.

Projection of a PowerCADD drawing on a low resolution grid to print

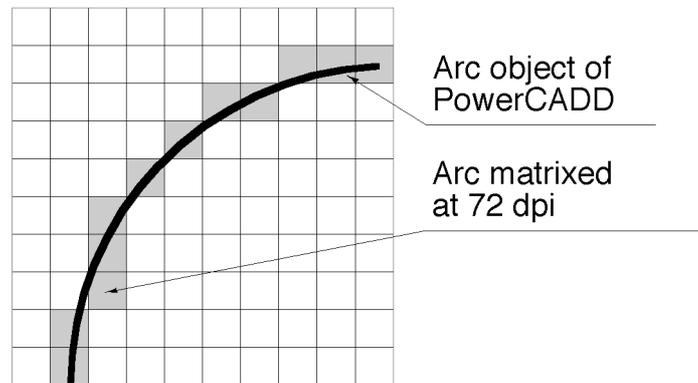


Figure - 1

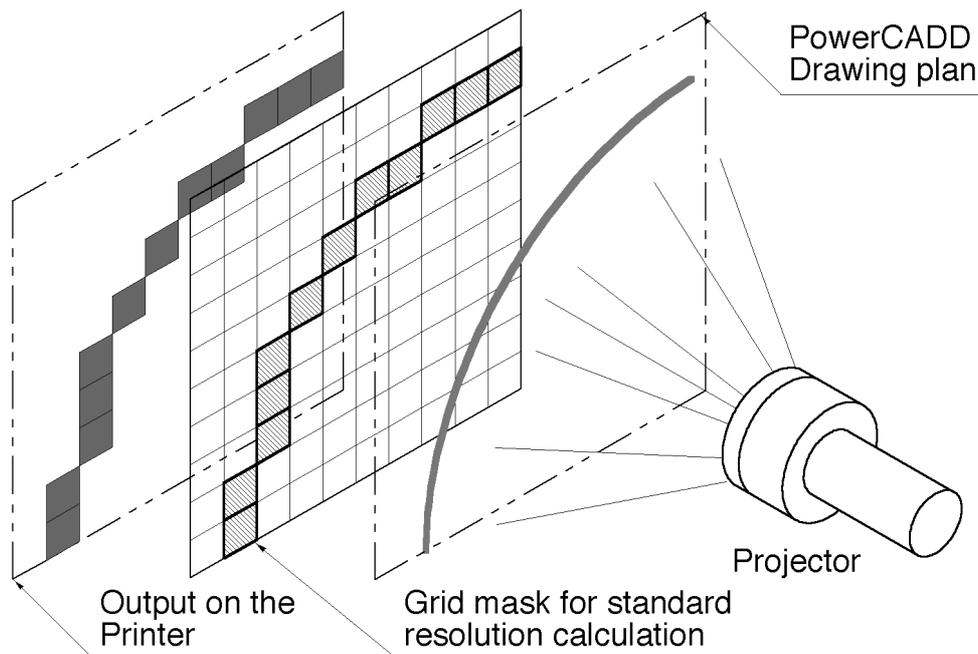


Figure - 2

In the figure #3, you found that the grid or matrix is narrowest. The resolution is highest. The matching principle between the drawing path of the PowerCADD's object and the pixel of the matrix of resolution is still used. In this case you must check the "Hi Res printing" option in the PowerCADD dialog box to get a higher quality resolution printing.

Projection of a PowerCADD drawing on a high resolution grid to print

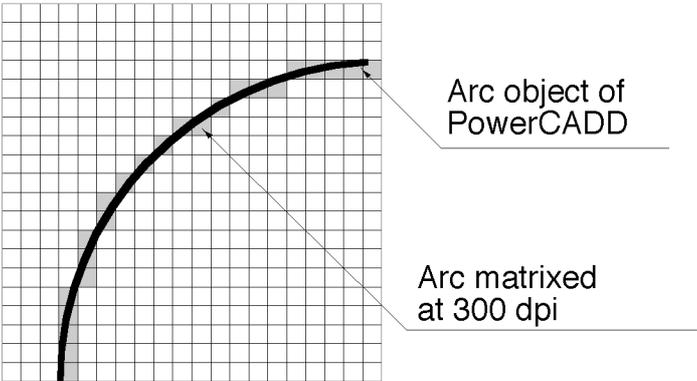


Figure - 3

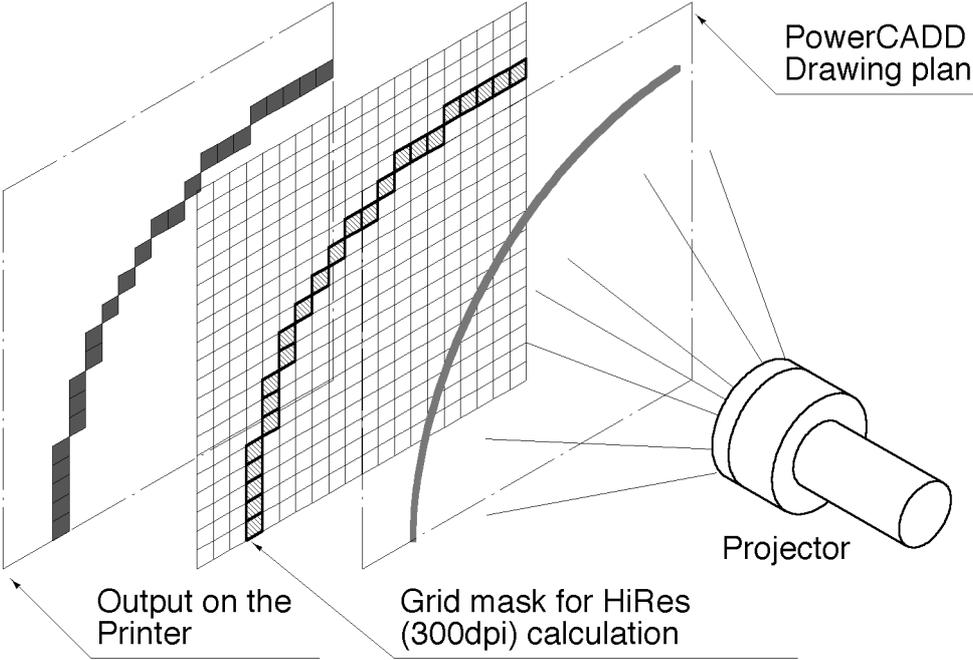


Figure - 4

The projected arc seems to be here "more rounded off". The sharpness of the matrix allows printing fine lines whatever the printing scale used.

**Note:** We noticed that on certain ink Jet printers as the value of 360 dpi is necessary to obtain a qualitative printing. The value of 300 dpi with the option "Hi Res Printing" selected generates a printing identical to the standard printing in 72 dpi.

## Different examples of parameters for 3 different devices

Test on LaserWriter Xerox DC230

% Print Scale	DPI	Round Pen	WYSIWYG	HR Printing	Result
200	300	ON	ON	ON	accurate
200	300	ON	OFF	ON	acceptable
200	300	ON	OFF	OFF	acceptable
200	300	ON	ON	OFF	accurate - thin
200	600	ON	ON	ON	accurate
200	600	ON	OFF	ON	acceptable
200	600	ON	OFF	OFF	acceptable
200	600	ON	ON	OFF	accurate - thin
100	300	ON	OFF	ON	mediocre
100	300	ON	ON	ON	accurate
100	600	ON	OFF	OFF	mediocre
100	600	ON	ON	ON	accurate
50	300	ON	OFF	ON	mediocre
50	300	ON	ON	ON	accurate
50	600	ON	ON	ON	accurate
50	600	ON	OFF	ON	mediocre

Test on Printer Epson Photo EX

% Print Scale	DPI	Round Pen	WYSIWYG	HR Printing	Printer Res (dpi)	Classic	Results
100	360	-	ON	ON	360	OFF	accurate
100	720	-	ON	ON	360	OFF	accurate
100	720	-	ON	ON	720	OFF	accurate
200	360	-	ON	ON	360	OFF	accurate
200	720	-	ON	ON	360	OFF	accurate
200	720	-	OFF	ON	360	OFF	accurate - thin
200	360	-	OFF	ON	360	OFF	accurate - thin
200	360	-	OFF	ON	360	OFF	accurate - thin
200	360	-	OFF	OFF	360	OFF	mediocre
200	360	-	OFF	ON	360	ON	accurate - thin
200	360	-	ON	ON	360	ON	accurate

Test on Printer Epson 760

% Print Scale	DPI	Round Pen	WYSIWYG	HR Printing	Printer Res (dpi)	Classic	Results
200	300	-	ON	ON	360	OFF	mediocre
200	720	-	ON	ON	360	OFF	acceptable - thick
200	720	-	ON	ON	360	ON	accurate
100	720	-	ON	ON	360	ON	accurate
100	300	-	ON	ON	360	ON	mediocre

## Conclusion

- PowerCADD's printing is a good compromise between the qualitative printing and the speed of printing. In every case it is necessary to leave the "Hi REs Printing" option checked. It is not necessary with Inkjet printers to indicate a too much higher value of resolution of calculation, use rather the first value of resolution of your printer. For example 360 dpi if it allows (360, 720 and 1440 dpi).
- Useless to put a resolution of calculation very high, the check box " Standard Imaging " will be reserved in very particular cases, for example on plotter with printing drivers others than PostScript.
- At 200 % for PostScript outputs you can get a right result with the "Hi Res Printing" box unchecked.

## New features

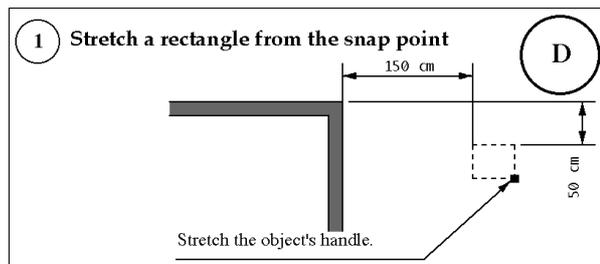
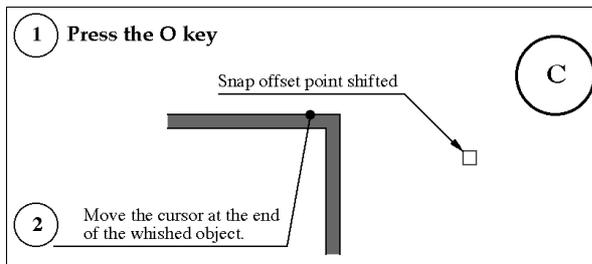
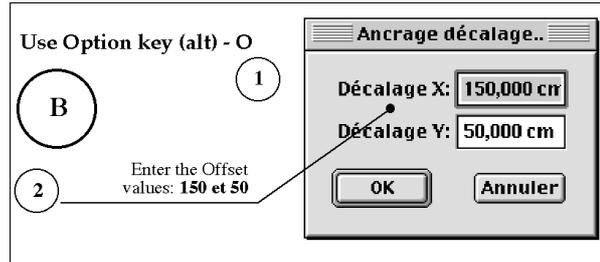
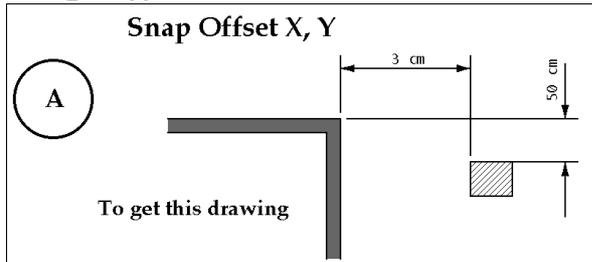


Two new snaps are available with this version. The snap distance and the snap offset. These snaps work like the snap percentage.

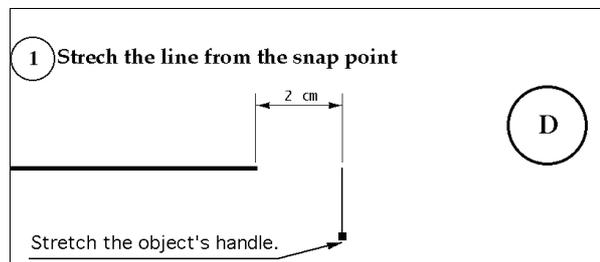
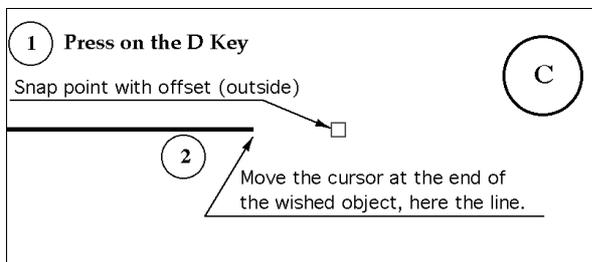
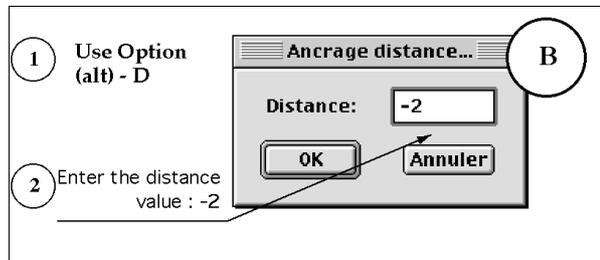
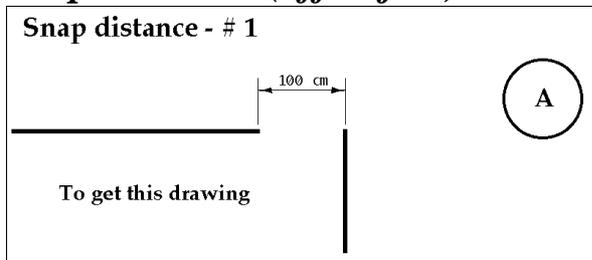
They used by default the keyboard key "D" for the snap Distance and "O" for the snap Offset. To set the values of these snaps, press simultaneously the keyboard key "Option" (Alt) and the wished snap: D or O.

Different illustrations below show you possible cases:

### Snap Offset X, Y

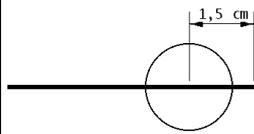


### Snap Distance (off object)



## Snap Distance (in object)

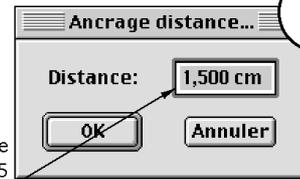
### Snap distance - # 2



To get this drawing

A

1 Use Option (alt) - D



2 Enter the distance value :1,5

B

1 Press on the D Key

Snap point with offset (inside)

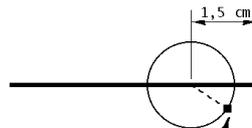


2

Move the cursor at the end of the wished object, here the line.

C

1 Stretch the circle by the center from the snap point



Stretch the object's handle

D