Mouldings
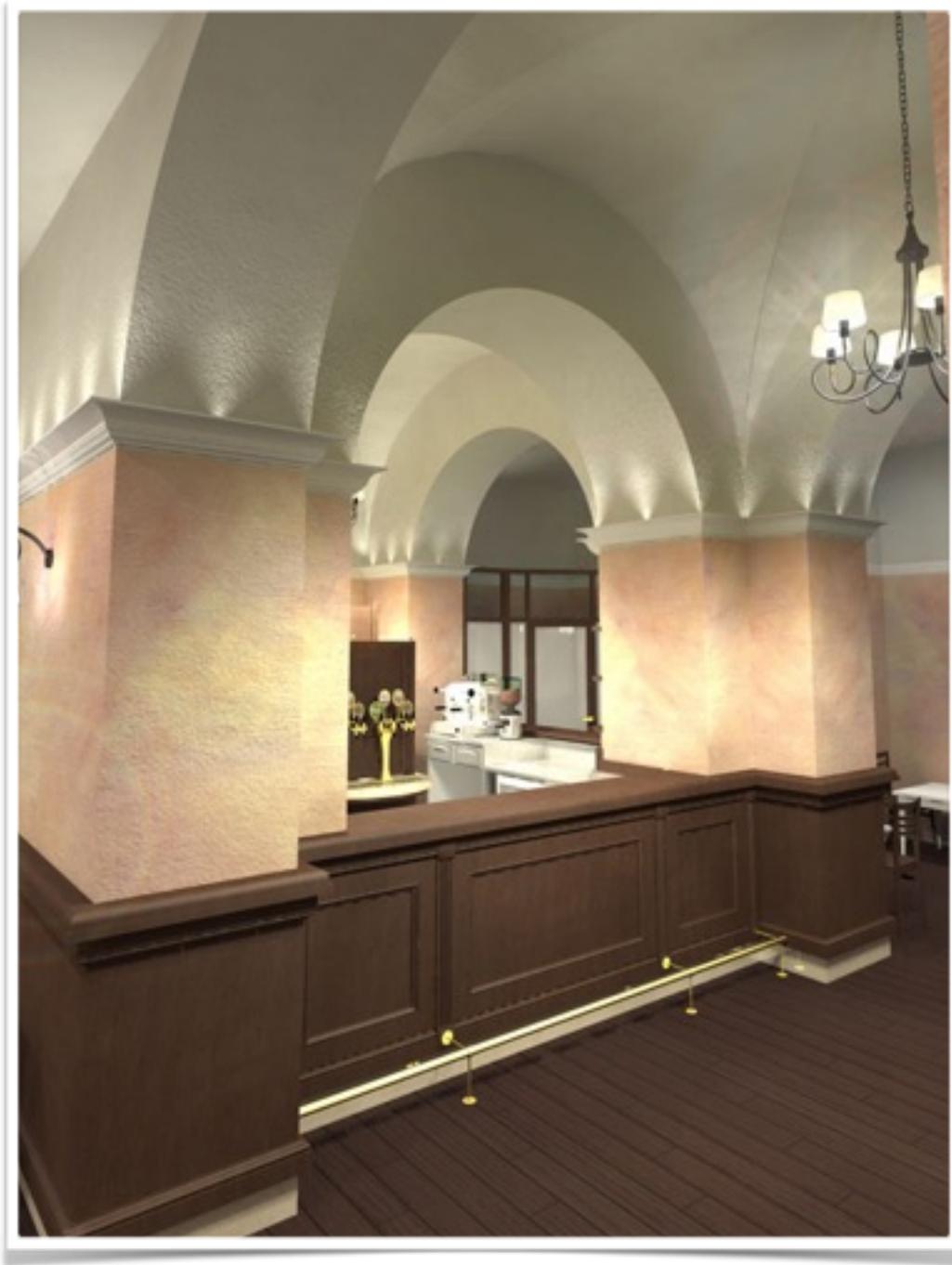
Set of parametric objects (PlugIns) and tools for VectorWorks®

Version 3.0 English

Indix of contents

Overview

The moulding plugins are a set of tools to make life easier!

They take advantage of the built-in VectorWorks "extrude along path" bringing an easy to learn user interface, a vaste parameter customization and a well furnished Moulding Library.

Despite the "extrude along path", you can easily edit your creations:

• create cornices, mouldings, ornaments, elaborate mitre - jointed frames for your doors, panels, paintings etc., following custom paths in plan view or in 3D space…

• change the path (represented by a line, a polygon / polyline or a NURBS)

• set one from 500 and more profiles with just few clicks

• easily create new profiles for a later use

The Mouldings Plugins Package List:

These are the plugins included in the set (contained in the "Mouldings" folder)

Moulding on 2D Path

2D Path -> Moulding

Moulding on 3D Path

NURBS -> Moulding

Frame (Rectangular)

Profile -> File.cpf

The Cornici folder (profiles coming from *New England Classic® Molding line*, see credits) containing 496 files divided by the following categories:

Applied Mouldings

Base Mouldings

Bead Board

Casing

Chair rails

Classic

Counter Top

Crown Mouldings

Half Round

Picture Frames

All these profiles (except the ones in Classic folder) are printed in a PDF file (Scale 1:4):
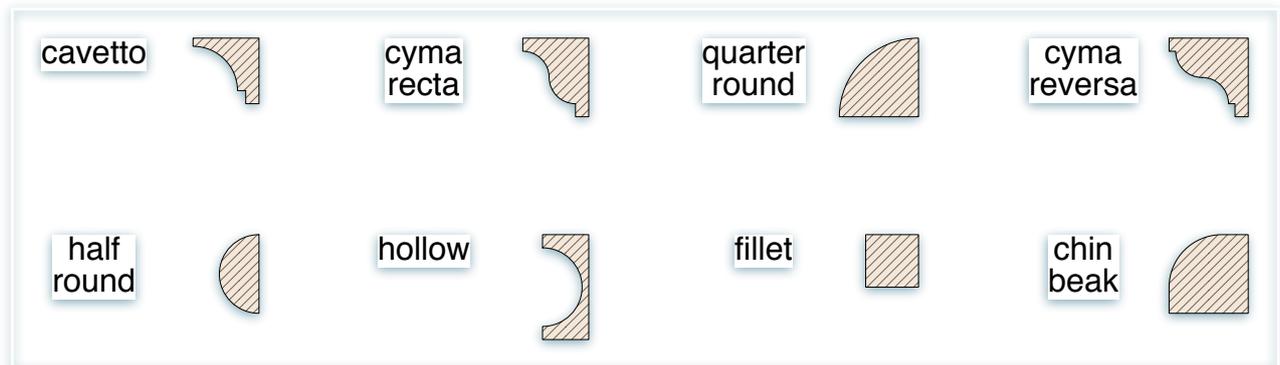
Mouldings.pdf

And, last but not least, the present document

Mouldings plugins Manual.pdf

Moulding on 2D Path

Select the plugin "**Moulding on 2D Path**" and start to trace a path or use an existing path (polygon or polyline) to convert it into an object "**Moulding on 2D Path**" using the tool .

A set of classic sections are ready for you to choose in the profile popup…

… or you can select a profile from the provided libraries (push button **Profiles libraries…**) (with sections derived from the *New England Classic® Molding line*, see *credits*, ported to VectorWorks by Matthew Swett,)

… or you can create and use your customized profile from scratch, following the suggested procedure shown below .

In the end you'll get an hybrid object (2D/3D) suitable for renderings and plan views, easily editable in its path and in its section profile, despite the more complicated extrusion along path..

2D (plan view)
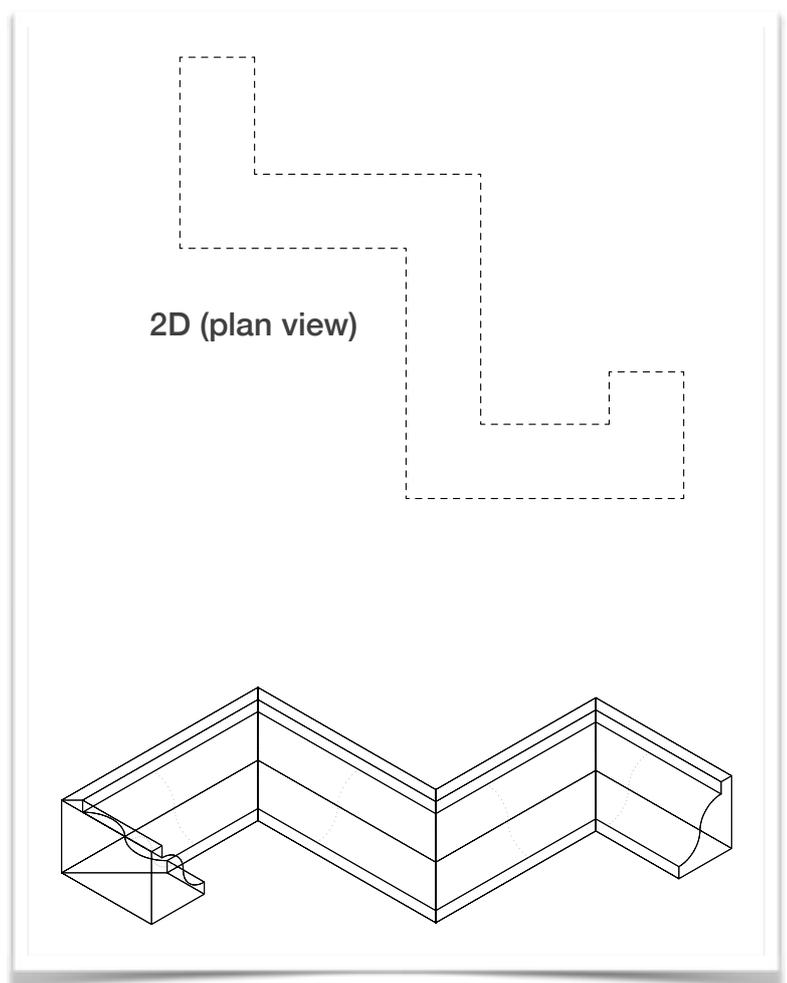
The plugin "**Moulding on 2D Path**" has a complementary tool: "**2D Path ->**
Moulding" .

You can use this tool to convert an existing polygon / polyline in a "**Moulding on**
2D Path" object. Just use the habitual VectorWorks drawing methods to obtain
the desired path, then use this tool to convert it in a cornice.

IMPORTANT NOTE:

Sometimes, the object 3D may be not created, this is due to geometries that
are impossible to get. This cause an alert message.

The most common situation happens when the cornice path crosses itself
creating eyelets. As long as you edit the path to avoid the crossings, the
solid should appear correctly.

Moulding on 3D path

With this plugin ![NURBS] you can spread a moulding profile along a 3D path (NURBS or 3D polygon). In this way you can realize solids as the one in the following picture:
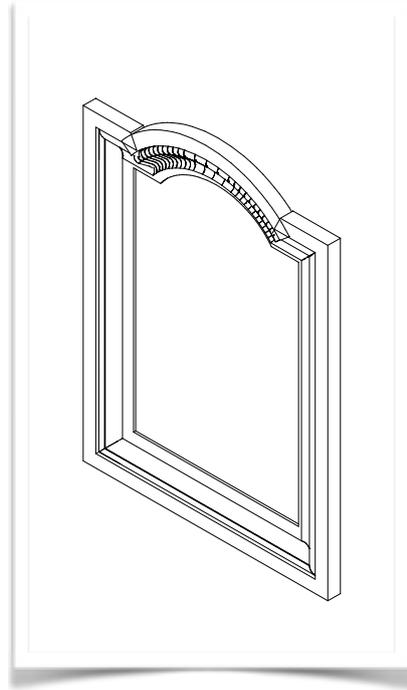
Also this plugin has its complementary tool that can be used to convert a 3D path (NURBS or 3D polygon) into a parametric object **"Moulding on 3D path"**.

This tool is called **"NURBS -> Moulding"** ![NURBS].

This tool is essential since it is often easier to obtain the 3D path using the usual VectorWorks drawing methods (polylines converted to NURBS curves or NURBS obtained by 3D points interpolation and so on) than draw it directly with the 3D path tool interface.

For example, the frame above is easily obtained by combining a rectangle and a circle, getting a polyline then converting it to a NURBS (in the end, if necessary, we rotate it to lay on the desired plane, the X-Z plane in this case).

The plugin provides also a plan 2D representation of the object, consisting in red points (vertexes) and, optionally, a line following the NURBS path in plan view.

It is also possible, when it is necessary, insert the object into a wall creating an opening.

In plan, the wall will be interrupted (optionally) from the minimum and maximum X points, while in 3D the interruption will be given by a series of 3D points suitably created, based on the curve resolution settings.
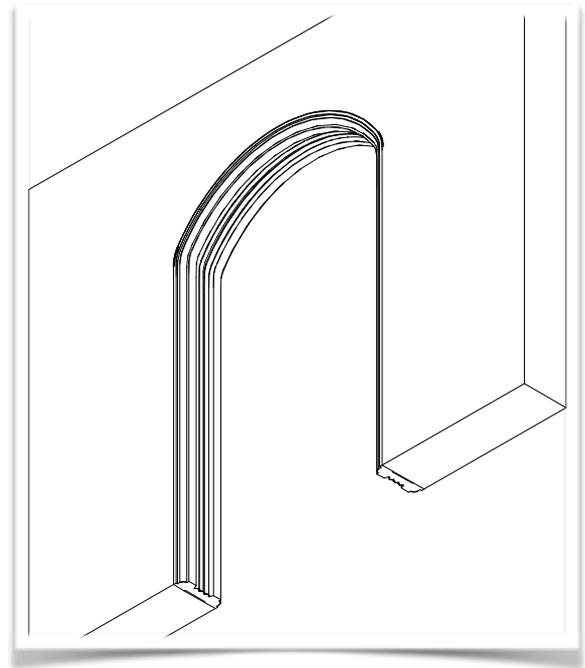
IMPORTANT NOTE :

Sometimes, the object 3D may be not created, this is due to geometries that are impossible to get. This cause an alert message.

The most common situation happens when a NURBS curve crosses itself. Especially when drawing the path in plan view (all Z values are set to zero), and an eyelet is present, an error occurs. As long as you edit the path to avoid the crossing (remove all eyelets or edit the Z of involved control points), the solid should appear correctly.

Frame (Rectangular)

With this parametric object, **Cornice (rettangolare)** it is possible to draw a line representing the frame width, then use the info panel to set the height and to choose the section profile. The program will provide to create a rectangular vertical 3D frame suitable for doors, panel decorations, paintings etc..

The plugin provides also a plan 2D representation of the frame section.

Crown-333.txt

quadrant 1
flipped

Picture-Frame-855.txt

quadrant 1

Base_160.txt

quadrant 2
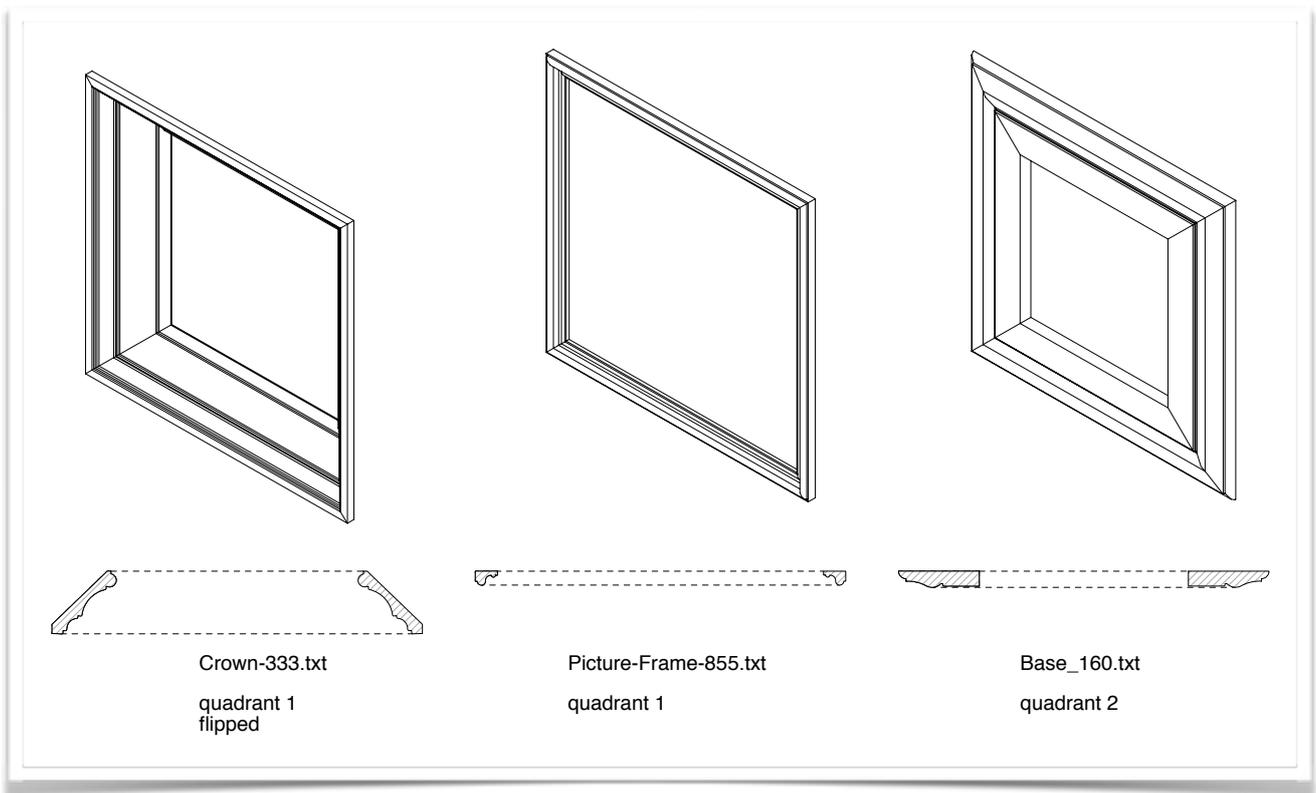
Customizing the profiles

With the tool **Profile -> File.cpf** , it is possible to create custom sections that can be used with the moulding plugins.

The package includes a rich variety of profiles (about 500), but with this tool you can easily create yours, anytime you need.

Explanations on this subject are provided below.

Installation

The package content has been listed before in the paragraph *"The mouldings plugins package list"*. Here we indicate where to put the components for a correct usage:

• The folder Mouldings, contains the *plugins* and *"files includes"*, and you should put it inside the VectorWorks Plug-Ins folder.

• The folder Mouldings - Models, containing the Cornici folder, should be placed inside the Resources/Defaults folder of VectorWorks

• The pdf containing all the sections should be printed for a quick reference and should be placed, together with this manual, just a click away.

Organization

The folder at Mouldings - Models/Cornices contains various folders with the sections ([.cpf] acronym of *cornice parametric file*) classified by category.

You can organize your personal sections here, creating the needed folders in which you'll put the profiles each time you want to save them.

The names you give here to the folders will be the titles appearing in the pop-up in the Library profiles… dialog, and, of course, their contents will fill the profiles pages in the same dialog.
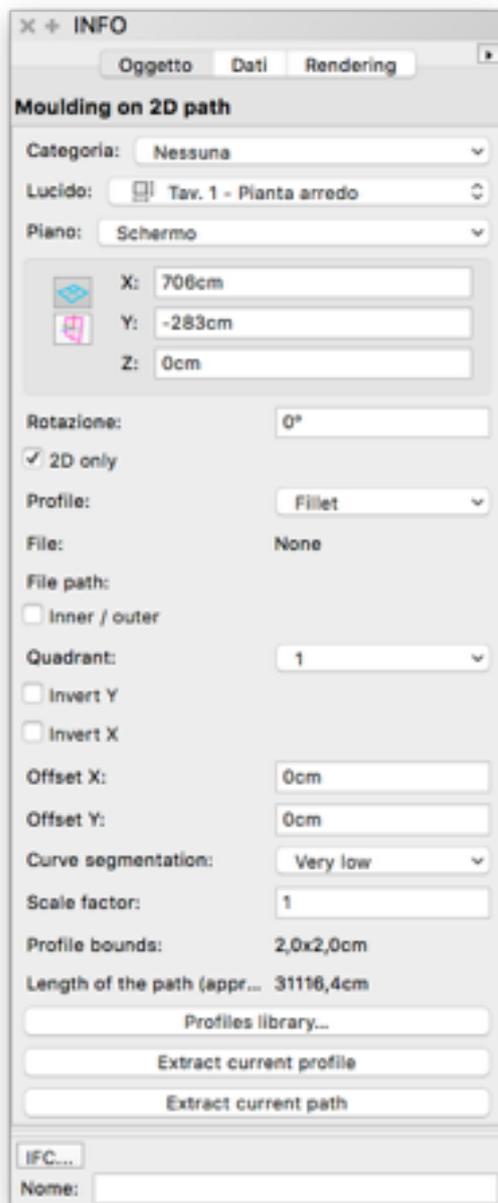
> **ATTENTION!**
>
> Be careful to put in these folders **only files of type .cpf**.
>
> Other kind of files inside the libraries folders may give rise to *Vectorscript* errors.

Moulding on Path Parameters

In this paragraph I'll show you the list of items and parameters available in the control panel of the plugins Mouldings on path 2D and 3D
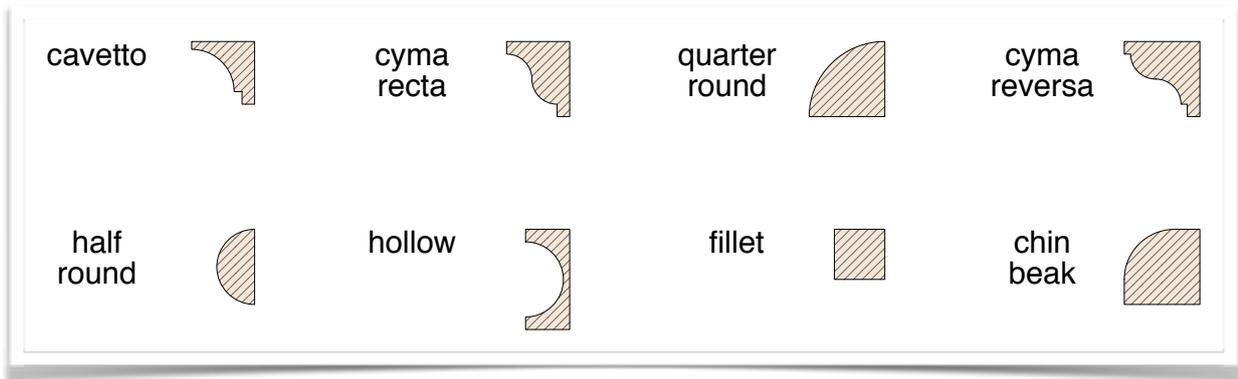
2D only:

(ON by default) It allows to speed up the path drawing, avoiding all 3D calculations. Use this option ON when tracking the path for the first time or for path modifying, turn it OFF (enable 3D) when the path is ok.

Profile:

In this popup button you can access the "classic" sections, and a rectangular profile where you can set the two sides independently.

The latest choice in the pop-up is "From file…". Selecting "From file…" you can browse and select a previously saved profile .cpf.

File:

The name of the used profile (when the profile is from library or from file) or none if the profile is one of the "classics".

File path:

The full path of the used profile path (when the profile is from library or from file).
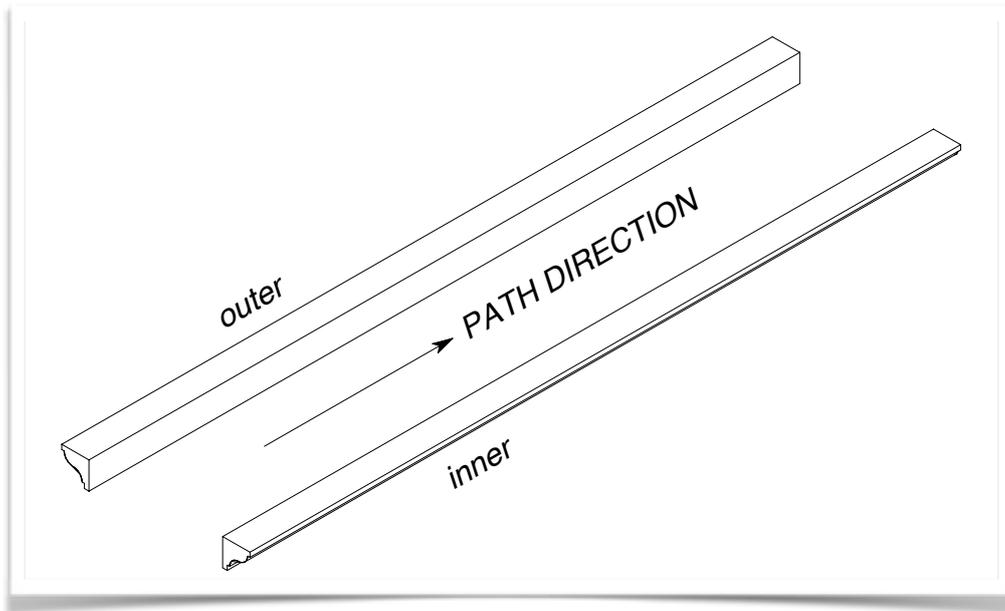
Inner / outer:

This check box controls the direction of the path.

The profile leans on the track based on the path direction.

By definition the profile is extruded with the left side in the sense of the path direction *(see also the paragraph Profile -> File.cpf)*.

Clicking on this check box you change the side that leans on the path, causing the effect shown in the following figure:

Quadrant:

With this button you are able to rotate the section profile in the four quadrant (0, 90, 180 and 270 degrees) around its point of origin. This, together with the flip control, offsets controls and inner / outer checkbox, makes possible any combination of orientation of the section profile.
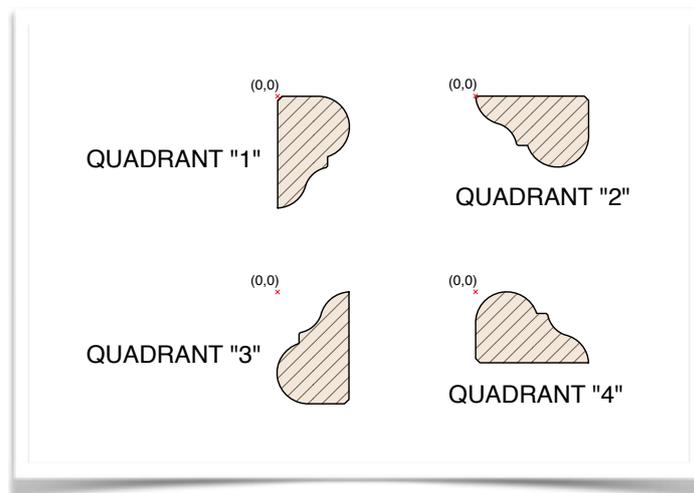
Invert X / Y:

These controls flip the profile on the median axis (X or Y).

Offset X/Y:

These two fields move the profile of the given value of X and Y from the origin point.

Values of X different from 0 will change the overall perimeter.
There will be, therefore, differences from the virtually calculated perimeter (see "Length of the path") and the effective one.

Y offset will move the profile insertion point vertically respect to the frame line.

Curve segmentation:

This pop-up regulates the subdivision of curved paths into straight segments. It starts from very low, through various levels, until continuous (without segmentation). You can choose what it is best for you (for example, if you have to realize a curved path with marble it is preferable to use many straight pieces joined together more than sculpting a curved one).

Of course a low segmentation speeds up the redrawing.

Here below an example of curve segmentation:

RESOLUTION "LOW" RESOLUTION "MEDIUM" RESOLUTION "HIGH"
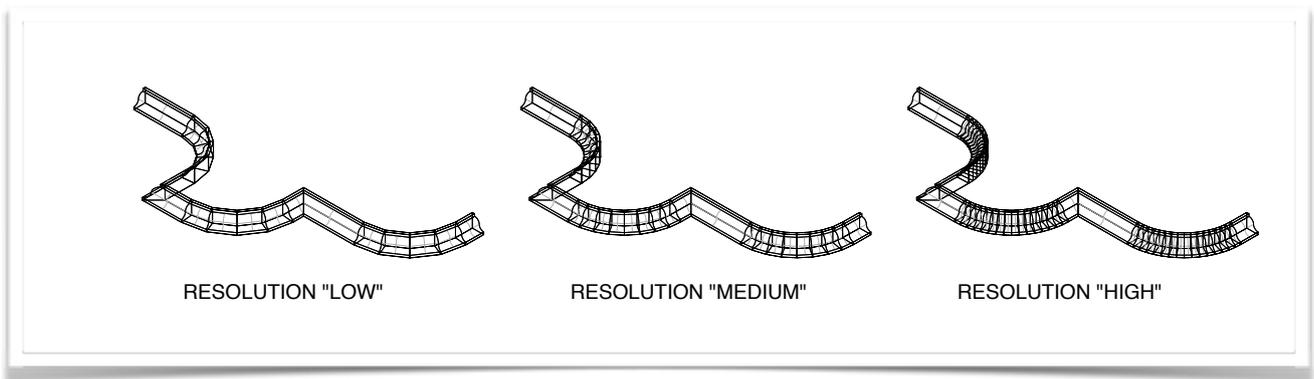
Scale factor:

Any section profile can be resized by a scale factor.

For example, if a section is initially 4x4 (with scale factor 1) and I want it to become 5x5, it is sufficient to do this way: in VectorWorks all input fields accept mathematic operations, so type "5/4" and press the enter key. To reset the original scale, just type 1 (that is the default).

Profile bounds:

This field (read only) denotes the real size of the minimal rectangle that contains the section profile in the current unit of measure (taking into account the scale factor).

It is useful also when used with the scale factor field; let's have an example: if you have a profile denoting an height of 3 cm (at scale factor 1) and you want to obtain the same profile resized with height 5 cm, just type "5/3" in the scale factor field. Check the new size height, it should be 5 now!

Length of the path (approx.):

This field (read only) indicates the length developed by the profile.

The path length is just an approximation of how many cornices it will be effectively needed. Usually you'll have to take into account this "linear" quantity together with the various needed cuttings / joints *(see curve segmentation)* and any deviation from the path *(see offset X)*.

2D line:

This control is available only for the moulding on 3D path and allows to show the path projection in the plan view as a stroked or dashed (or none) line.

In the moulding on 2D path the plan view representation is actually the real projection of the cornice along the path. Its graphical attributes are ruled, as usual in VectorWorks, by the class or the attributes palette.

Profiles library...:

With this push button you bring up the Profile selection dialog, where you can browse the profiles contained into the Cornici folder.
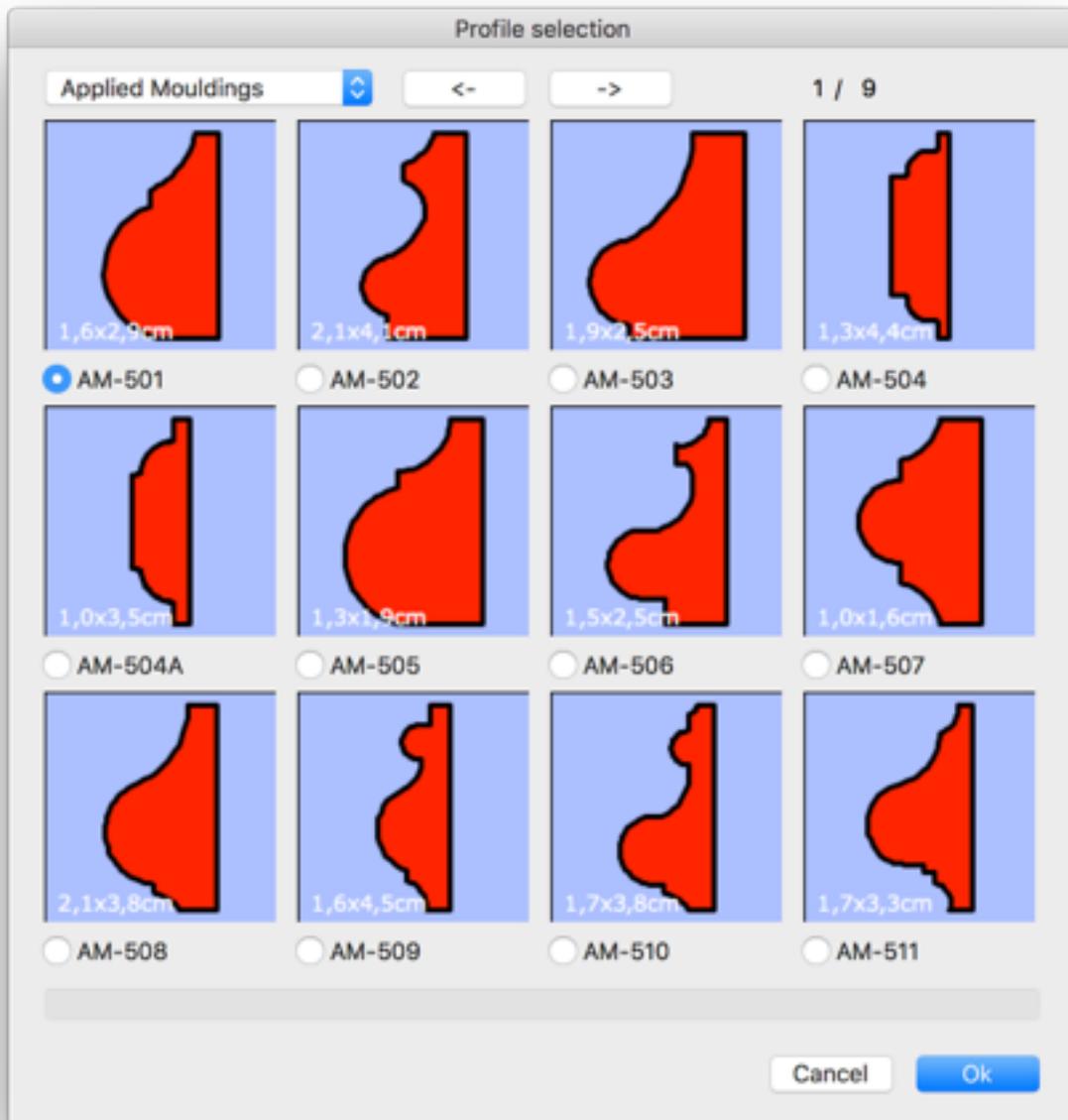
Up-left, there is the pop-up to choose the folders in the Cornici folder.

These folders are subdivided in categories as from the **New England Classic® Molding line**, see *credits*, ported into VectorWorks by Matthew Swett.

The last item in the pop-up is "Choose profile…" and allows to browse the HD in search of previously saved .cpf files.

Moving the eye to the right there are the two buttons to turn the pages forward / backward in the categories / folders with many profiles.

Up-right there is the page number indicator, showing current page / number of pages for the selected folder / category.

In the middle of the dialog are well represented the profiles (in red) each with relative bounds sizes.

Each profile has, at his base, a push button with the profile code name. To choose / use a profile it is necessary to click on the profile button.

Toward the dialog base there is a strip reserved to the dynamic help / hints that changes when the mouse move on each dialog clickable item.

Of course there are the usual buttons, OK and cancel:

Cancel: the plugin keeps the profile it had.

OK: the profile indicated will be used in the parametric moulding object.

A symbol with the same profile name will be imported in the drawing. This allows a "persistency" of the used profiles when you save the file. Whenever you copy or send the drawing to other VectorWorks users, they can rely (using the moulding plugins) on that symbol, even if they do not own the original .cpf file.

Extract current profile:

Clicking this button will "extract" and place on your drawing the original 2d profile currently used by the plugin, including modifies to the parameters such as scale factor, quadrant, inversion etc.. Together with the profile (polyline) it is created a text block with the profile name.

Extract current path:

Clicking this button will "extract" and place on your drawing a copy of the original path (a NURBS curve / 3D polygon or a 2D polyline / polygon) currently used by the plugin.

# Frame (Rectangular) Parameters

Many items in this plugin are the same, just seen above, of moulding on 2D / 3D path objects, so it is recommended to refer to the above paragraph "Moulding on Path Parameters".

Here below are showed only the parameters specific to this plugin object "Frame (Rectangular)"

Length / Height:

The length of the drawn line represents the frame width (in plan view), referencing the point [0,0] in used the profile definition. The extremities of the line will be indicated by two red points.
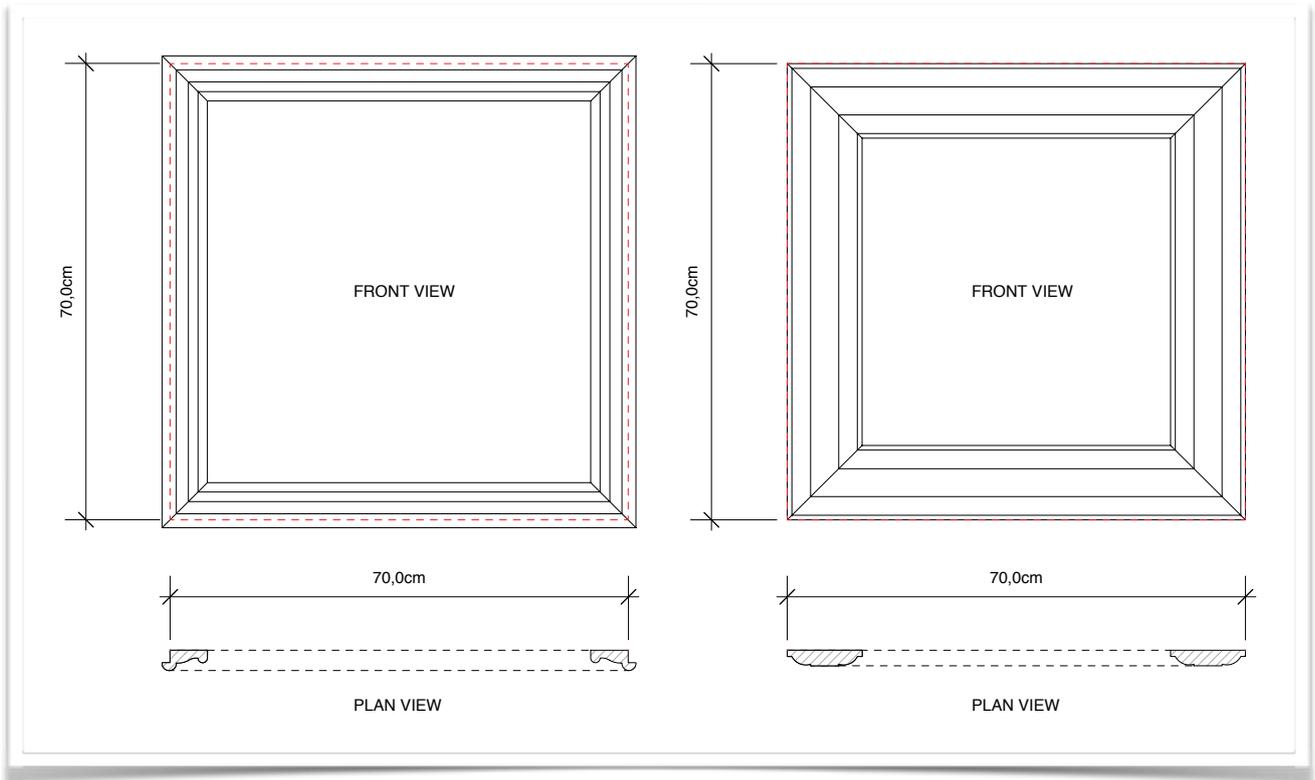
The height is, as for the length referenced to the [0,0] point.

See the figure above, where both height and width are set to 70 cm.

As you can see the leftmost frame uses a profile with an origin inside the section bounds, therefore the total width will be more than 70 cm (and the height too).

The right frame shows a most common case, where the origin point coincides with the top left extremity of the profile.

Lower side:

Set the lower base [on / off].

With this option is possible, for example, to frame an opening such a window or a door (see next figure):
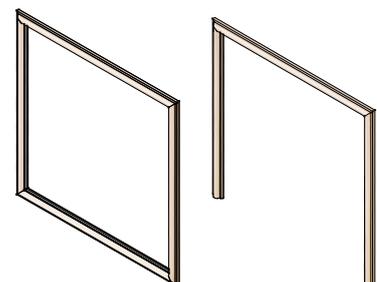
Classes:

These two popups are provided to let you choose different classes for horizontal and vertical components (think of a wood frame, with horizontal and vertical veins respectively for horizontal and vertical components).

In plan view you can use the plugin class and the attributes palette to get your best results.

Other parameters:

As said before, the majority of these parameters are the same explained in the usage of plugins "moulding on path" paragraph. Here below an example of application of various profiles and quadrants applied to the same squared frame:

Crown-333.txt

quadrant 1
flipped

Picture-Frame-855.txt

quadrant 1

Base_160.txt

quadrant 2
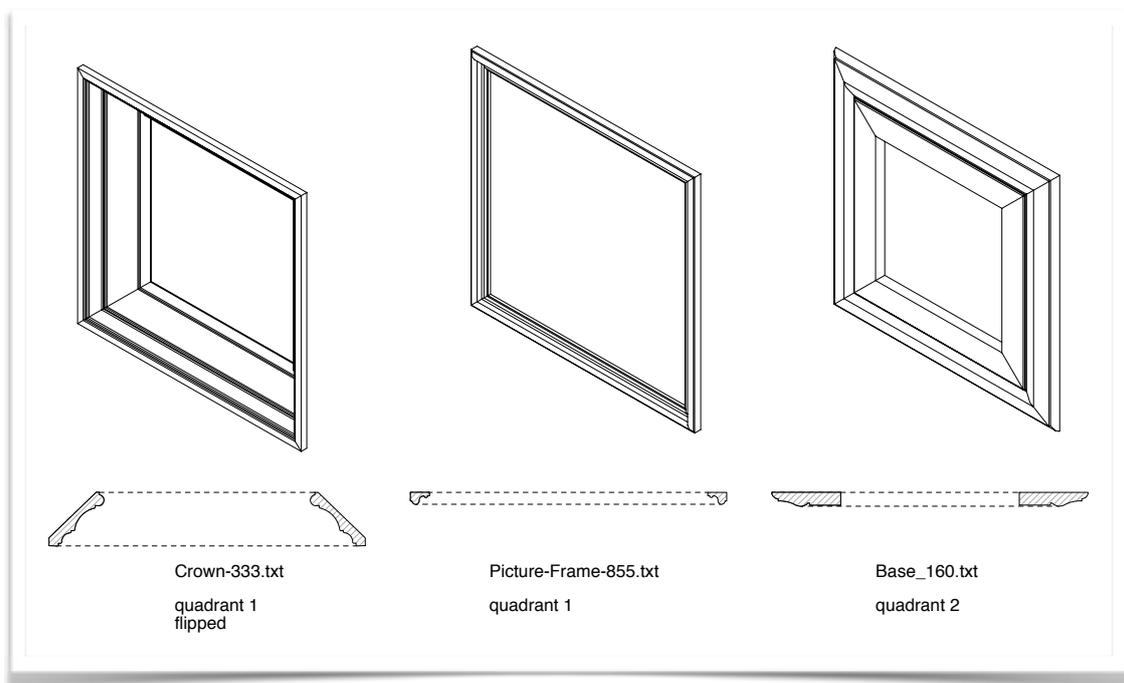
2D Path → Moulding

By the tool "**2D Path -> Moulding**" you can transform an existing 2D path in a parametric object "**Moulding on 2D Path**" customizable in all the variables explained in the pages before.

The utility of this tool is evident, since create / modify complex moulding paths by points (in the same way you use for polylines creation / editing), sometimes is not practical at all. It is easy if your cornice runs on straight walls, but when there are curves, the all thing is much less intuitive.

Sometimes we can obtain a complex track in an easier way using composition operations like sum, subtraction, difference, intersection between elementary forms as circles, rectangles etc..

Once we get the complex path, just activate the tool "**2D Path -> Moulding**" and click on the polyline.

> **NOTE**
>
> To be able to "select" the polyline with a click, it is needed to be in plan view
> (key 0 in the numeric keypad)

After selection it is asked if we want to keep or not the original polyline, once the parametric object is created.

In the end we obtain a cornice along the path. If the profile develops in the opposite way we wished, it is sufficient to modify the inner / outer checkbox.
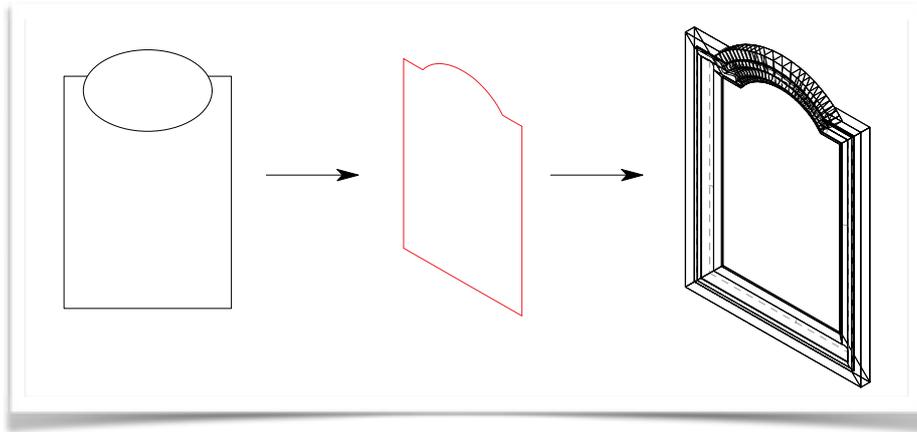
Finally we can modify all the parameters we like to complete the job.

The reverse operation (get the 2D path of the parametric object) is obtainable from the Extract path… push button, just seen in the paragraph before (Moulding on Path Parameters).

NURBS → Moulding

As just seen in **Moulding on 2D path**, it is possible also to start from a 3D path to obtain a **Moulding on 3D path**.

Here, much more so, it is much easier to get complex shapes from operations on simpler forms, then convert the obtained shape in NURBS and, in case, rotate it in the right orientation:

Once obtained the desired shape (3D polygon or NURBS), activate the tool "**NURBS -> Moulding**" , set the view of the drawing to plan view, then click on the 3D path.

> **NOTE**
>
> To be able to "select" the NURBS with a click, it is needed to be in plan view (key 0 in the numeric keypad)

A dialog will ask if we want to keep or not the original path after the parametric object creation. After the answer we get a Moulding on 3D path object. If the profile develops in the opposite way we wished, it is sufficient to modify the inner / outer checkbox.

Finally we can modify all the parameters we like to complete the job.

The reverse operation (get the 3D path of the parametric object) is obtainable from the Extract path… push button, just seen in the paragraph before (Moulding on Path Parameters).

Profile ↠ File.cpf

All the plugins of the Mouldings package use a custom file format (.cpf) that encodes the section. *Cornici Profile File* (hence the the acronym .cpf) is the format that encase the instructions to reconstruct the shape in it saved.

The Mouldings package comes with a vaste library of mouldings (files .cpf), suitable for most cases, but it's quite probable that you need to use your custom moulding, or even create your own moulding library based on other available commercial items / tools.

Profile -> File.cpf is the right tool to perform this task.

Draw your shape describing the section profile in your usual way, just be careful that the final result must be a **closed** polygon / polyline.

When you are finished, use the tool **Profile -> File.cpf** and click on the shape.

You'll be asked to indicate the origin point [0.0] of the shape, this point will be used as reference point by all the moulding plugins.

Finally, name the file and save it where you like. You'll be able to choose it from the info panel of the moulding parametric object (button Profiles library…, categories pop-up, select the "From file…" item, or from the Profiles pop-up, select the "From file…" item).

Hints and e conventions

Here below some conventions adopted by the author while creating the libraries provided with the package:

Conventionally, all profiles are X negative; as you can see from the figure, the [0,0] points denotes the origin and the profile extends to the left of this point (domain X ≤ 0).

About the Y, there are cases where is convenient to place the origin below (domain Y ≥ 0) and other above (Y ≤ 0).

For a better understanding, look at the two cases in figure, considering the field "Z" available in the info panel of Vectorworks for all the 3D parametric objects:
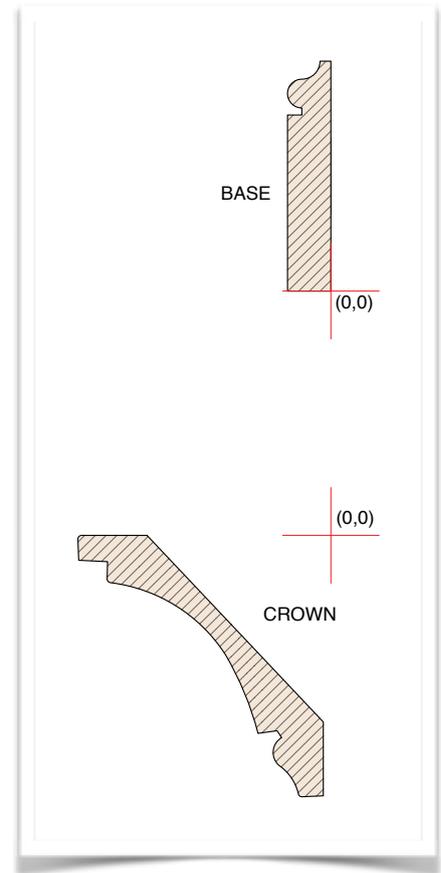
In the first example (base). when the "Z" of the parametric object is set to 0, also the point indicated as origin will be placed at Z=0.

In the second example (crown), when the "Z" of the parametric object is set to 240 cm (for example), also the point indicated as origin (the upper part of the crown) will be placed at Z=240 cm;

You should not bother, however, to draw your profile this way, an appropriate use of this tool will assure a correct creation of the file .cpf.

Let's have a quick descriptions of the options for the tool

Profilo -> Documento.cpf.

Profile → File.cpf Options

Invert X

When checked [ON], the X coordinates will be flipped on the X-clicked origin axis. Use this if the shape is X-positive.

Invert Y

When checked [ON], the Y coordinates will be flipped on the Y-clicked origin axis. Use this if the shape need to be upside down.

Rotation

By default this button is set to NO (rotation). There may be some cases you need to rotate 90 CW or 90 CCW around the clicked origin to have the shape correctly positioned according with the convenience behaviour listed above..

Ask origin (0,0)

By default this check is ON. Onece clicked on the shape object, a dialog shows up alerting you that you are about to click the origin point of the object. Once learned this step, it may be preferable to uncheck this, so the sequence will be: click the shape, then (a cross cursor appears) click the 0,0 point.
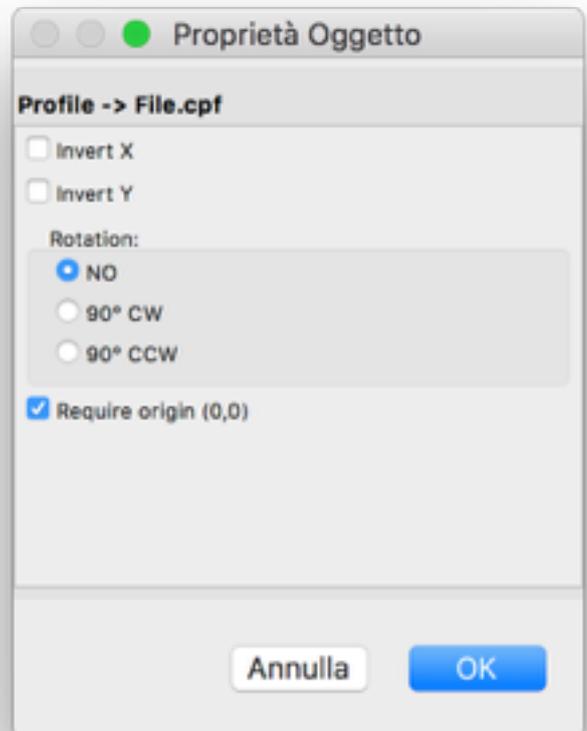
Credits

All the profiles contained in the Cornici folder (except for the Classic folder) are brought here thanks to **Matthew Swett** who has converted to VectorWorks® polylines and polygons the collection coming from the **New England Classic® Molding line**.

These profiles are representative of the New England Classic® Molding line. Therefore, the profile number can in fact be used for specification purposes (at least within the U.S.). More information on the moulding materials can be found at:

www.newenglandclassic.com

Disclaimer

DISCLAIMER OF WARRANTY:

THE AUTHOR HAS MADE NO EXPRESS WARRANTIES, ORAL OR WRITTEN, TO YOU REGARDING **Mouldings Plugins**.

Mouldings Plugins ARE BEING PROVIDED TO YOU 'AS IS' WITHOUT WARRANTY OF ANY KIND.

THE AUTHOR SHALL NOT BE LIABLE FOR DIRECT OR INDIRECT DAMAGES RESULTING FROM THE USE OF **Mouldings Plugins**.

YOU USE **Mouldings Plugins** SOLELY AT YOUR OWN RISK.

The author is here at your disposal on an e-mail base for help, bug corrections and suggestions.

Regular users will be kept informed of future releases.

Contact the author at:

fitplot@gmail.com