

APPARELBASE

SHOE CAD 사용설명서

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Mind**CAD** 2D Design & Engineering
for Footwear
User Manual

2016

mind
:: technology

MindCAD 2D Design & Engineering

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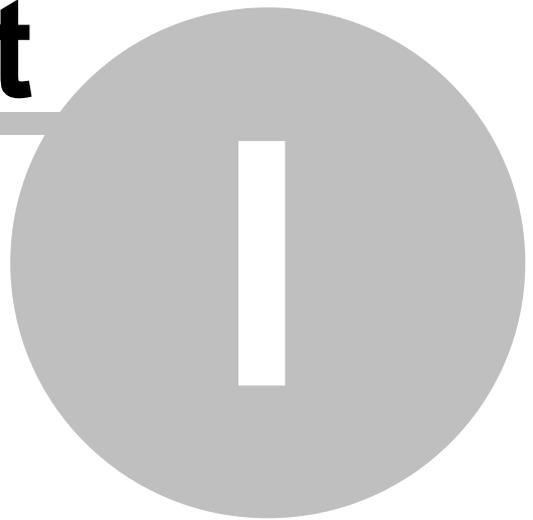
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Part



1 Getting Started

1.1 What is MindCAD?

MindCAD is a suite of specialist programs that have been developed specifically for shoe design and manufacturing.



Last Design & Engineering - For input, modification and flattening of lasts.

3D Design & Engineering - Allows lines to be drawn on a last in 3D and 2D. These lines can then be used to create parts with thickness, and textures. Accessories, punches, holes and padding can also be added, as well as laces and soles.

The final design can be output to:

2D Design & Engineering - For 2D part creation, grading, cutting and specification

Viewer - This is a free package of visualization software from Mind and can be downloaded from Mind Technology website.

1.2 Before you begin

IMPORTANT NOTE: A valid product authorization file must be installed before MindCAD can be used.

If you'd like some sample data to use in **MindCAD 2D Design & Engineering** :

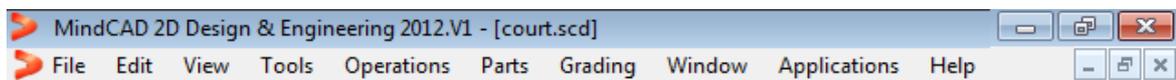
1. From the **File** menu, select **Open** to load example projects.
2. Select a file and press "Open" (or double click the file).

- All instructions in this manual are correct at the time of printing. Some sections may not be up to date due to subsequent updates to **MindCAD 2D Design & Engineering**.

1.3 How do I start MindCAD 2D Design & Engineering?

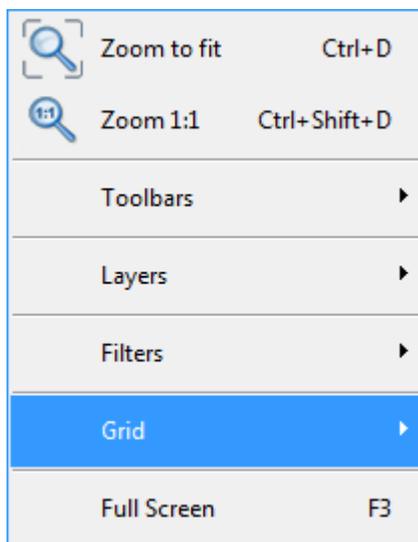
Double click the **MindCAD 2D Design & Engineering's** icon  on your desktop. **MindCAD 2D Design & Engineering** will start shortly after.

1.4 How do I use the menus?

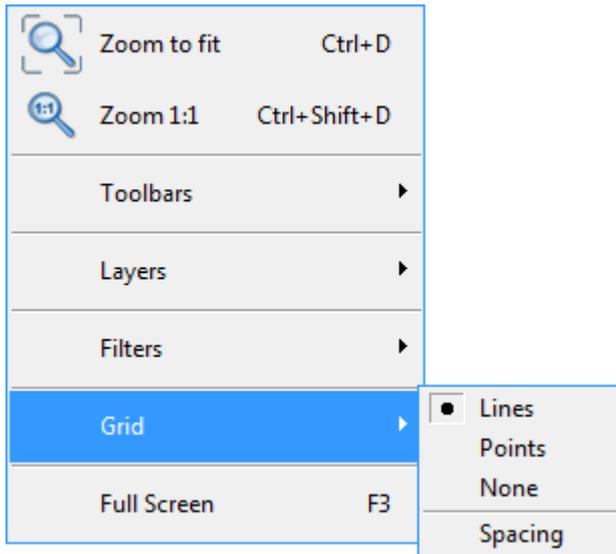


Almost everything in **MindCAD 2D Design & Engineering** can be accessed through the main menu. This is shown in the picture above and is displayed at the top of the **MindCAD 2D Design & Engineering** screen.

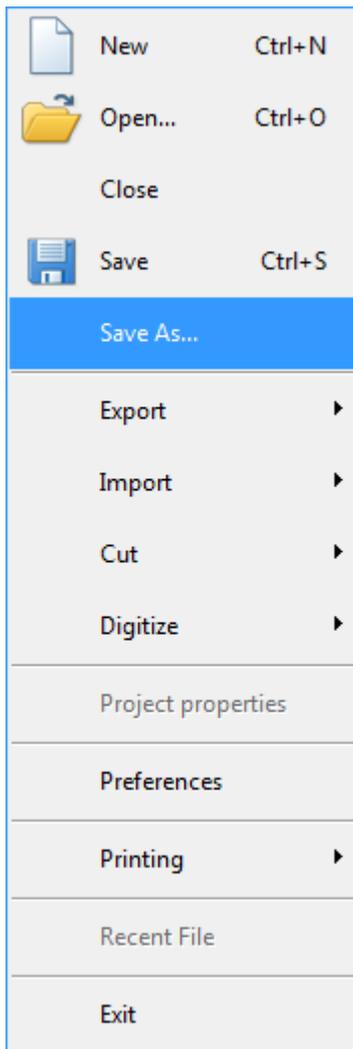
1. Select an item from the main menu. A drop down list is displayed, showing a list of sub-items, each corresponding to specific program action. Greyed out sub-items mean that a specific program action is not available (e.g. a paste action will not be available if no copy action was previously executed).



2. If you move your mouse to an item that has an arrow alongside, as highlighted above, an additional list of sub-items will appear.

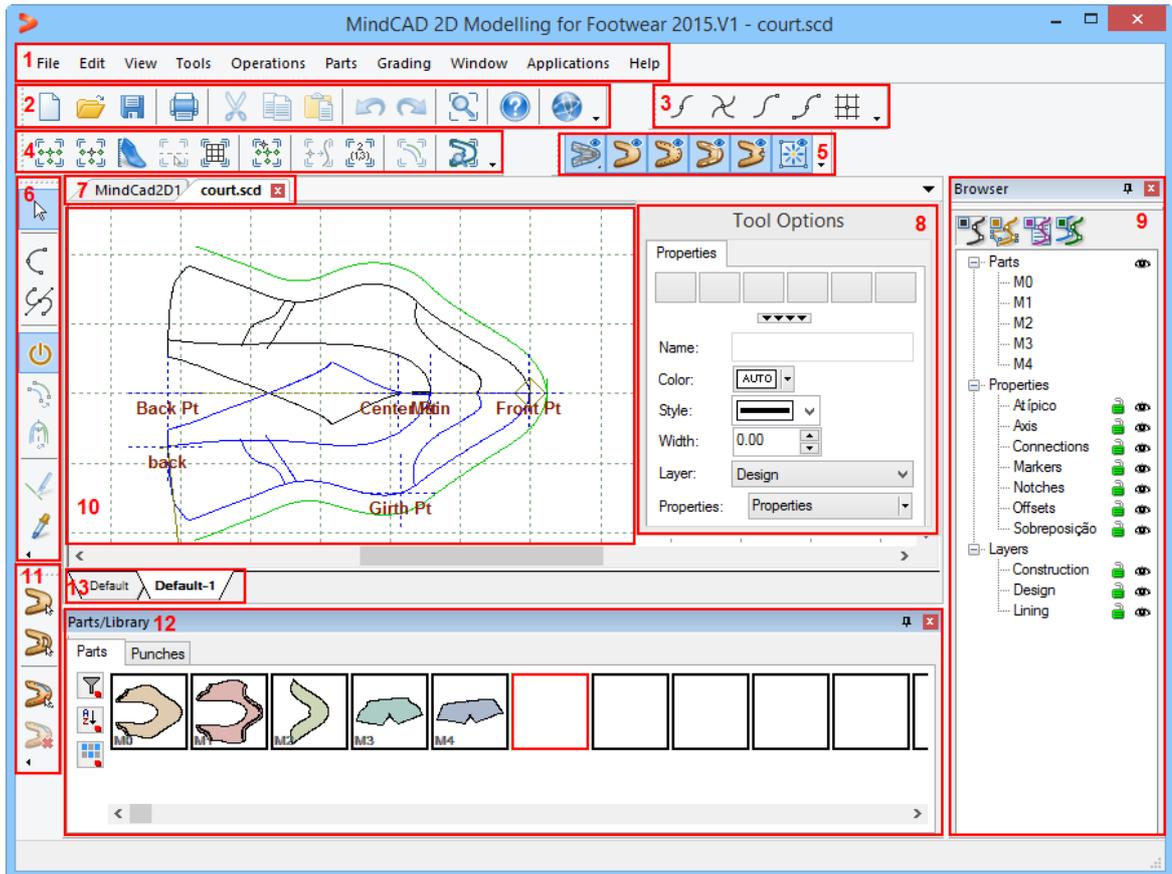


3. If the item is followed by just ... (for example, **Save as...** below), selecting the item will display a dialog box so that you can enter data and make selections.



1.5 MindCAD2D Design & Engineering Layout

The image below show the **MindCAD 2D Design & Engineering** interface.



1. **Menu Bar** - Most of **MindCAD 2D Design & Engineering's** functionality may be accessed through this menu.
2. **Main Bar** - This toolbar allows a user to open a new project or an existing one, save a project, print, cut, copy, paste, undo, redo, zoom to fit, go to help topics and open Mind's web site.
3. **Constrain Bar** - This toolbar have the options to let you 'snap' editing or drawing operations to specific points.
4. **Grading Bar** - This toolbar allows a user to open all the grading options.
5. **Layers Bar** - This toolbar have the options to let you turn on/off the layers of the project.
6. **Tools Bar** - This toolbar allows a user to select the draw lines tool, on/off the links, create offsets, mirror selected lines, cut lines and copy objects properties.
7. **Change sweet** - In **Mind 2D Design & Engineering** it's possible to have more that one sweet open
8. **Tool Options** - This window shows the options available for the tool that are selected in the moment, i.e., if you select the option draw lines the tool option will show the type off lines available but if you select for example the tool create parts the tool option will show the treatments that are available among other things.
9. **Object Browser Bar** - This toolbar shows the elements' hierarchy, through this toolbar it's possible to freeze/unfreeze and show/hid elements, layers among other things.
10. **Draw area** - Is in this area that the 2D part creation, grading and specification are made and

seen.

11. **Parts Bar** - This toolbar have the options to let you create parts, holes, add lines and remove lines.
12. **Parts/Library Bar** - This toolbar have two tabs, the Parts where you can see the created parts, access their proprieties among other things and the Punches tab where you can see the existing punches, you can remove or add punches from the toolbar.
13. **Change Page** - In **MindCAD 2D Design & Engineering** it's possible to have more that one page, its possible to Create, Duplicate, Import and Delete.

1.6 How do I manipulate the view contents?

There are two main interaction classes for direct manipulation of the 2D environment:

- Scaling
- Moving (Panning)

1.6.1 Scaling

To scale the view, in both 3D and 2D windows,

1. Press the **Ctrl** key and hold down the middle mouse button. View contents will scale up/down as the mouse is moved up/down.
2. Releasing the middle mouse button will end the scaling process.

If you have a wheel mouse, you can also use the wheel to change the scale.

1.6.2 Moving (Panning)

To move the view contents, in 2D windows,

1. Hold down the middle mouse button. As the cursor is moved, view contents will move with it.
2. Releasing the middle button will end the process.

1.7 Getting Help with MindCAD 2D Design & Engineering

Help in **MindCAD 2D Design & Engineering** is available in the following ways:

- Tool Tips
- Status Bar Help
- Standard online Help

1.7.1 Tool tips

Placing the cursor over a button will display a brief description of the function of the button.

1.7.2 Status Bar Help

Placing the cursor over a button will display information about the button in the status bar.

1.7.3 Standard online Help

1. Select **Help** from the **MindCAD 2D Design & Engineering** toolbar.
2. Select **Contents and Index** and then the item you require. There is a separate section in the help for each option on the main toolbar.

1.7.4 Interaction with MindCAD 3D Design & Engineering

You can make **MindCAD 2D Design & Engineering** interact with **MindCAD 3D Design & Engineering**. This will happen if both programs are open and working on models that have the same source. This would normally be a file that is exported from **MindCAD 3D Design & Engineering** to **MindCAD 2D Design & Engineering**, but it can be the reverse.

Any edits done in either program will update the other program.

Ensure that the lines in both programs have the correct Export to options set. If you do not want lines to update, make sure that they are not exported.

- *If only one program is open and you wish to update the corresponding data in the other program, you must export the BGD file and import it to the other program.*

1.8 What's New!

1.8.1 2008

Lots of enhancements and new features were added to **2D Design & Engineering**. The following list explains briefly what is changed and provides direct linkage to the manual section where you can get further information.

Import Pictures

Option to import picture in several formats (*jpg, bmp, gif, tif, png...*) . For details please check File - Import - Image.

Alignment Points

Option to align the reference points of the current shell and the physical reference points on the digitizer. For details please check Edit - Alignment Points.

Line Editing

- **Offset Original Line**

Option to make change to original line instead of creating a new one. For details please check Creating and offset to a line.

- **Virtual Mirror**

It is possible to do a mirror of selected geometry without having to select an axis. For details please check Tools - Drawing - Line.

Grading

- **Faster interaction**

Faster grading by automatically creating a primary axis. For details please check Grading - Basic Steps for Grading.

- **Grading types**

Option to create grading types. For details please check Adding a Grading Type.

- **Easier interaction for Parallel Restriction**

Easier operation for Parallel Restriction option. For details please check Grading - Apply Parallel Restriction.

- **Ask for base size when creating model**

Option for when creating a new model, asking for the base size. For details please check File - Preferences - Grading.

Printing

New options to control printing of the shell. For details please check File - Page Setup.

Parts

- **Simulate Cut**

A new interface to simulate part cutting paths. For details please check Simulate Cut.

- **Invert code**

The operator can define the code position which has the option of being inverted (outside or inside). For details please check Editing Parts - Points.

Markers

Parameter for side indicator size. For details please check Operations - Markers.

Punches

- **More Parameters**

More punch parameters are available like **Number of lines** and **Rotation**. For details please check Operations - Punches.

- **Grading behaviour**

New options to control punch behaviour while grading. For details please check Punches Grading Behaviour.

Parts Bar

- **Filter and sort**

New functionality to filter parts by material, sorting parts by alphabetic order and hiding empty part thumbnails. For details please check Editing Parts - Parts Bar.

- **Quick Properties**

When we hover the cursor on the part, a quick properties window appears. For details please check Editing Parts - Parts Bar.

1.8.2 2009.JUL

Lots of enhancements and new features were added to **2D Design & Engineering** for this update. The following list explains briefly what is changed and provides direct linkage to the manual section where you can get further information.

Popup menus

Options to customize popup menus. Please refer to Popup Menus.

Enhanced editing

- **Rectangles**

Extra control point added to rectangle primitive. For details please check Tools - Drawing - Rectangle.

- **Faster springing**

Modification to the rotation tool enables for faster operations like springing. The new **Space to rotate** option is used to determine which points of the selected lines will be affected. Please refer to Tools - Change - Rotate for details.

- **Wrapping lines**

A new scale length factor (% / mm) could be used to extend or decrease the wrapped lines lengths. Please refer to Tools - Change - Wrap Lines for details

- **Multiple part picking**

Now it is possible to control picking of multiple parts. For details please check File - Preferences - Options.

New Shapes

- **Symmetric Shapes**

Support for intrinsic symmetric shapes. Circles, Ellipse and regular shapes are included in this set. Please refer to Symmetric Shapes for details.

- **Sawtooth Lines**

Support for sawtooth lines. Please refer to Tools - Drawing - Sawtooth for details.

Parts

- **Creating an unfolded mirrored part (2 axis)**

Create parts with 2 axis. Please refer to Creating unfolded mirrored part (2 axis) for details.

- **Support for multiply folded parts**

This new tool allows adding extra material for folded parts.

- **Notches**

Faster creation of notches using an accelerator (**SHIFT** key). Please refer to Editing Parts - Notches for details.

- **Corners**

Added parameters for radius on square corners. Please refer to Editing Parts - Corners for details.

- **Treatments**

Dedicated **Stretch** tabulator for supporting new part stretching capabilities. Please refer to Editing Parts - Stretch for details.

Part Assessment and Costing

Integrated part assessment for fast efficiency tuning. For details please check Parts - Costing and Editing Parts - Costing.

1.8.3 2009.SEP

Lots of enhancements and new features were added to **2D Design & Engineering** for this update. The following list explains briefly what is changed and provides direct linkage to the manual section where you can get further information.

Tools

Wrapping tool

New absolute offset parameter for the wrapping tool. For details please check Tools - Change - Wrap Lines.

Parts

Part collection

Enhanced part collection algorithm handling collinear lines properly.

Cutting

Faster generation of cutting model file.

1.8.4 2010.V1

Lots of enhancements and new features were added to **2D Design & Engineering** for this update. The following list explains briefly what is changed and provides direct linkage to the manual section where you can get further information.

Generic

- Works on Windows7 (x86, x64)
- Memory leaks fixed due to shell protection
- Notes window with autopen option.
- Grading table values lock option.
- Multiple speed and stability bug.

Editing

- Multiple offset lines in a single operation
- Sawtooth parameters in tool parameters box
- Switch side interface now applied to offsets, markers and punches.
- Multiple punch lines tool.
- Snap to geometric center on symmetry tool.
- Retrieval of last tool used.
- Several new accelerators for Scale and Move tools.

Parts

- Bug fixing on label positioning over parts.
- Part window pre-selection for part collection
- Oblique line notches on treatments
- Ability to force smooth corners on treatments.

Export/Import

- Import from 2D Design & Engineering file with multiple pages and improved selection.

1.8.5 2011.V1

Lots of enhancements and new features were added to **2D Design & Engineering** for this update. The following list explains briefly what is changed and provides direct linkage to the manual section where you can get further information.

Part Design

• Parts

Single click support for part collection tool and holes tool.

Enhanced part collection tool with information about last collected parts.

• Markers

New markers trimming options.

- **Cuts**
New tool for placing cuts in parts created with multiple axes.
- **Notches**
Enhanced notches tools allowing individual control and distribution dependencies amongst other features.
- **Part points**
Automatic placement of special part points when changing part geometry.
- **Part labels**
Revised interface for custom part labels.

Line Design

- **Sawtooth lines**
Sawtooth lines in sections.
- **New tool to shorten lines**
Option Extend/Shorten Line, to short the line simply enters a negative value

Editing Accelerators

- **Layers**
Reposition of Image layer to the bottom most.
- **Constrains**
Enhanced constrains on orthogonal restriction.
- **Keyboard editing**
It's now possible to add a step value for line movement control: when the keyboard arrows are pressed, the line will be moved by the predefined value. This option is available by doing a right click over a selected line.
- **Text drawing over line**
It's now easier to place the text in the right position: moving the line the text will follow.
- **Distance dependency tool**
A new tool to control line position based on extracted length property from other elements.
- **Selection**
Automatic element selection after creation.
Multiple handle selection on lines.

Design Accelerators

- **Massive reuse of developed patterns**
Import of selected sheet/geometry from other projects.
- **Digitize from images**
It's now possible to digitize from images; this option is available in the option Digitize form File menu.

User Interface Enhancements

- **Grading table**

General revision of grading table: When the values from the Detailed grading table are changed by the user, the Main grading table will change to yellow, as a warning.

- **Show/Hide images and notches**

This option is available in View – Layers.

- **Zoom to fit to selected elements**

Just select the desired element and click Zoom to fit.

- **Keyboard shortcuts**

New keyboard shortcut for Join Lines, CTRL+J.

Interoperability

- **Revised import infrastructure**

Possibility for manage importers: new Manage Importers option in File > Import menu. You can now include new predefined importers, such as MDB, IbertecXMaker SPF, DimensionsPro and DXF(Teseo).

- **Revised DXF import**

Enhanced DXF import, now including corner smoothing.

- **Revised options for importing from images**

General revision of options and processes while importing from images. It is now possible to vectorize directly from images and have a better control of DPI (resolution in dots per inch) for imported materials.

Costing

- **Costing for knives**

General revision on interface and new options: new report's format, PDF and CSV.

It's also possible to add costing options, like Currency, Area cost, Margin, etc.

Cut Engineering

- **Punch groups**

Property inheritance for punch groups while exporting for cutting.

- **New cutting machines available**

It's possible to access them in the option Manage Cutters.

1.8.6 2013.V1

MindCAD 2D Design & Engineering® software offers the following new features and benefits:

User Interface Enhancements

- **Revised icons dimensions**

By default, the icons are now smaller.

If you prefer the larger icons, you can enable them on Customize > Options.

- **Interface customization**

New options for advanced interface customization (menus, toolbars, buttons, etc.)

- **More options and shortcuts**

More options and shortcut keys available at the contextual menu of some tools (markers, e.g.).

- **Toolbox Line Thickness**

New line width selection, available from the toolbox.

- **Line Coloring**

New line coloring modes: by layer, properties, normal or dependencies.

- **Image transparency**

Support for transparency for imported images enabling stencil type usage when doing referenced modelling.

- **Windows resize**

You can now resize the Export and Open File panels, thus improving the interaction with the file system.

Editing Accelerators

- **File locking**

A file locking mechanism prevents multiple users open simultaneously the same file.

- **Average lines tool**

Quick modification of two lines to establish a mean plus blend region effect.

- **Punches insertion fix**

Fixed the automatic assignment of side on the insertion of intersecting punches.

- **Export validation**

Notification of potential errors during the export of parts for cutting, namely “Tabs with non-graded parts”, “Sizes do not match”, “Equal parts name between tabs”.

Part Design Accelerators

- **Point assignment interface**

New interfaces for assignment of entry points, code points and orientation points. Includes assignment of entry points into holes.

- **Coding system using marks**

New industry standard coding system using marks. This is needed when classic notch coding approach is not suitable due to production requirements.

- **Improved tool for boundary line's insertion**

- **New median tool**

It is now possible to generate multiple bisection lines with distinct distances from parent lines.

- **Part boundary replacement**

It is now possible to replace completely a part boundary.

- **Sawtooth on section with margins**

Initial and final margins for saw-toothed sections. Negative margins for sectioned markers.

- **Sub-grading base number**
Alias definition for the base number of a sub-grading.
- **Boundary lines into plan**
Drag boundary lines from several parts into plan.
- **Destroyed parts notification**
Notification of destroyed parts during the line edition process (with possible rollback).
- **Parts Variants**
Variants of parts by size (for manual scaling).
- **Offset distance value preview**
You can watch the offset distance change while you move the offset point.
- **Offset by size group**
You can now define different offset values for different size groups.
You can also apply the distance dependent operation to those size groups.
- **Saving default settings**
Save the default settings for markers, parallels, etc.
- **Scaling of rectangles**
Problems on rectangle scaling are now fixed.
- **Corner and notches selection**
New option for selecting all corners or notches of the entire piece, to change simultaneously their parameters.
- **Bounding box fix**
Fixed incorrect scaling bounding box for partially hidden lines.
- **Hole removal**
Automatic removal of holes placed outside the part.
- **Markers on parts with more than 2-axes**
You can now add markers and punches on parts with more than 2-axes (as it was already possible with lines and cuts).
- **Snapping on Cut Line tool**
The Cut line tool is now sensitive to snapping rules.
- **Notches in treatments**
You have now offset automatic notches in treatments
- **Sub grading assigned to an axis**
You can now assign sub grading to an axis.

1.8.7 2015.V1

MindCAD 2D Design & Engineering® 2015.V1 release offers the following new features and fixes:

Design Accelerators

- **New springing tool**

Semi-automatic springing process allowing for a coordinated rotation and offsetting of parts. Full undo/redo functionality provides valuable guidance in this complex process.

- **New grid tool for parts**

Enhanced grid tool for quick setup of grid distributions of markers and punches over parts.

- **Enhanced stitch line tool**

Optional automatic insertion of corners while stitching multiple lines to ensure smooth transitions.

- **Enhanced wrinkles tool**

Now it includes not only the previous deformation concept but also torsion areas. Optional insertion of markers and lines is added for production reference. Also for visual consistency, previously added stencils through treatments will also be twisted following added deformation specific to this tool.

- **Enhanced trim tool**

New approach on trim tool interface. This will allow for a wider range of line trimming scenarios.

- **Enhanced punches tool**

Enabled symmetry in punches distribution. This provides consistency against the previous process which was difficult to understand and heavily based on parameter tweaking.

- **Enhanced cut assignment tool**

Revision of this tool for better handling of mirrored parts.

- **History of geometric modification of parts**

Visual history tracking of line previous geometry.

Usability and Productivity

- **New search engine for parts**

Included in MindGEST PDM for Modelling. It is now possible to search for similar parts from a specific project. Results are ordered by matching confidence level. Parts are imported to current project on-demand.

- **Enhancements in parts labeling**

Improved creation and automatic positioning of multiple labels to a part. Since there is also a template support approach, it is easy to quickly configure automatic assignment of each factory standard labels.

- **Enhanced copy of elements between parts**

Improved copying process of any element from a part to another. This will massively reduce development time for parts that share many internal features.

- **Revised Material and Cost Groups concept**

Previous configured Material and Cut Groups are automatically merged into the single group concept. This group concept is now the basis for automatically setting up Variants and Options of the model. Like before, group assignment can be modified at Part Properties.

- **Support for positioning of parts on materials**

In order to support automatic and manual positioning of parts on materials in MindCUT product family, creation and editing of alignment points for parts is introduced.

Interoperability

- **New generic exporter**
New generic multi-format exporter, script-based.
- **Enhanced support for several exporters**
Including DXF, CNC, HPGL, Graotec and JingWei formats.
- **Enhanced support for parts and shells import**
Better import for external file formats like IBA/VET. Tuning of the automatic filtering of high point density lines.
- **Additional file save or export validation**
Warning about saving over an existing file and about exporting parts with the same name.

1.8.8 2016.V1

MindCAD 2D Design & Engineering © 2016 release offers the following new features and enhancements:

MODELLING FEATURES

Modelling Accelerators

- **Filling closed shapes**
Support color selection and filling of closed shapes, like circles and rectangles.
- **New punch block tool**
New parametric punch block tool, including size and property settings.
The punches can now be created by parameters – e.g. size, distance to the center, angle. The punches thus defined can be stored in a file for later use.
- **New sawtooth definition method**
Variable wavelength parameter for sawtooth.
- **Spring adjustments**
Footwear specific. Spring adjustment tool enhancements: semi-automatic adjustments; precise move control.
- **Reference points**
Automatic creation of reference points.
- **Rotation angles parameters**
Setup default values for base angle and angle restrictions - Rotation angles.
- **Stencil margins**
Setup default stencil trim margin - Default stencils margin.
- **Quick selection of dependent parts**
Select and display dependent parts, directly from Line Properties, Dependencies Tab.
- **New Change tools**
Break Line by Angle and Join Lines by Distance.

Usability and Productivity

- **Text alignment**

New text alignment options: left or right.

- **Font style preview**

Preview of selected font style for text parametrization.

- **Interior stencil line separation**

On Manage Cutters – Properties – Model 1 you can define interior stencil line separation. Applies only to laser cutters.

- **Label placement on parts**

Automatic label placement on part allowance border.

- **Show/ hide image layer**

Added visibility control of image layer.

- **Parts information**

On Parts/ Library, you can now add a part orientation arrow.

You can now add a Dimension label into the part text.

Interoperability

- **Easier model save into PDM**

Fill helper while saving model into PDM

- **New export interface for cutting parts**

Resized selection table. Selection highlight displayed on the model export window. Select from first to last part, using the SHIFT key.

- **Enhanced Importers management interface**

Importers/Controllers management interface redesigned for coherence and usability.

- **Support for multiple machine export**

Send a model for more than a cut machine, simultaneously.

GRADING FEATURES

Usability and Productivity

- **Revised interface for grading table**

Larger grading table, displaying all grading sizes.

- **New variants from graded sizes**

You can now modify part geometry for each graded size.

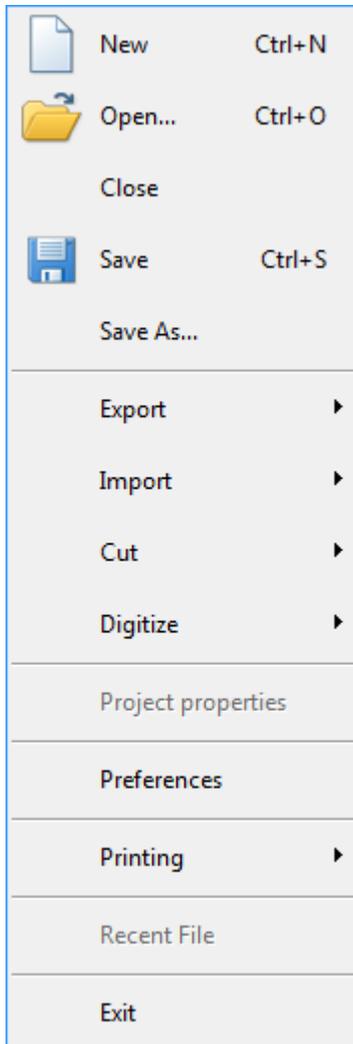
Part



2 File Overview

This menu lets you create new files, open existing files, close and save files. It also lets you import and export data, set your preferences, print and cut files.

Use this option to open a recently used project. The names of the last five files are displayed at the bottom of the menu for quick selection.



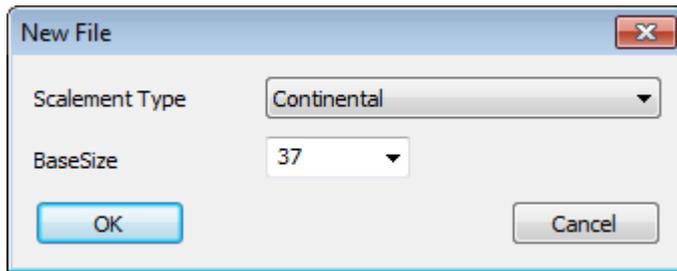
2.1 File - New

Use this option to create a new file.

This is the same as clicking the **Create new file** button  in the **Main** toolbar or pressing **Ctrl+N**



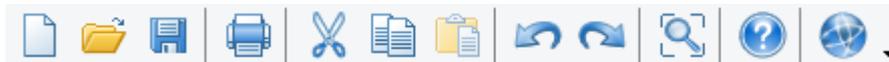
A dialog appears for configuration of grading type and base size (those values are populated from parameters available on preferences).



2.2 File - Open

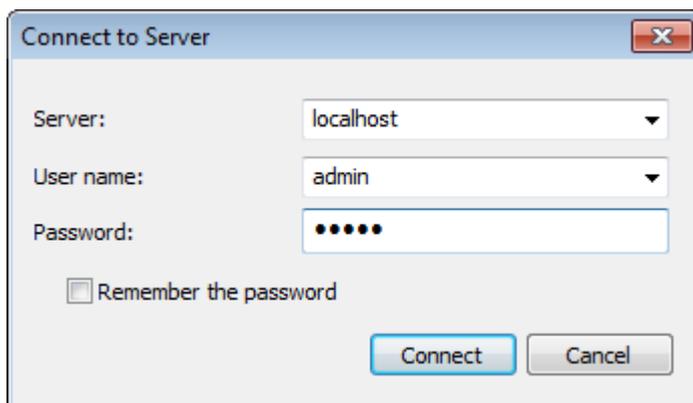
Use this option to open any of your files.

This is the same as clicking the **Open File**  button in the **Main** toolbar or pressing **Ctrl+O**

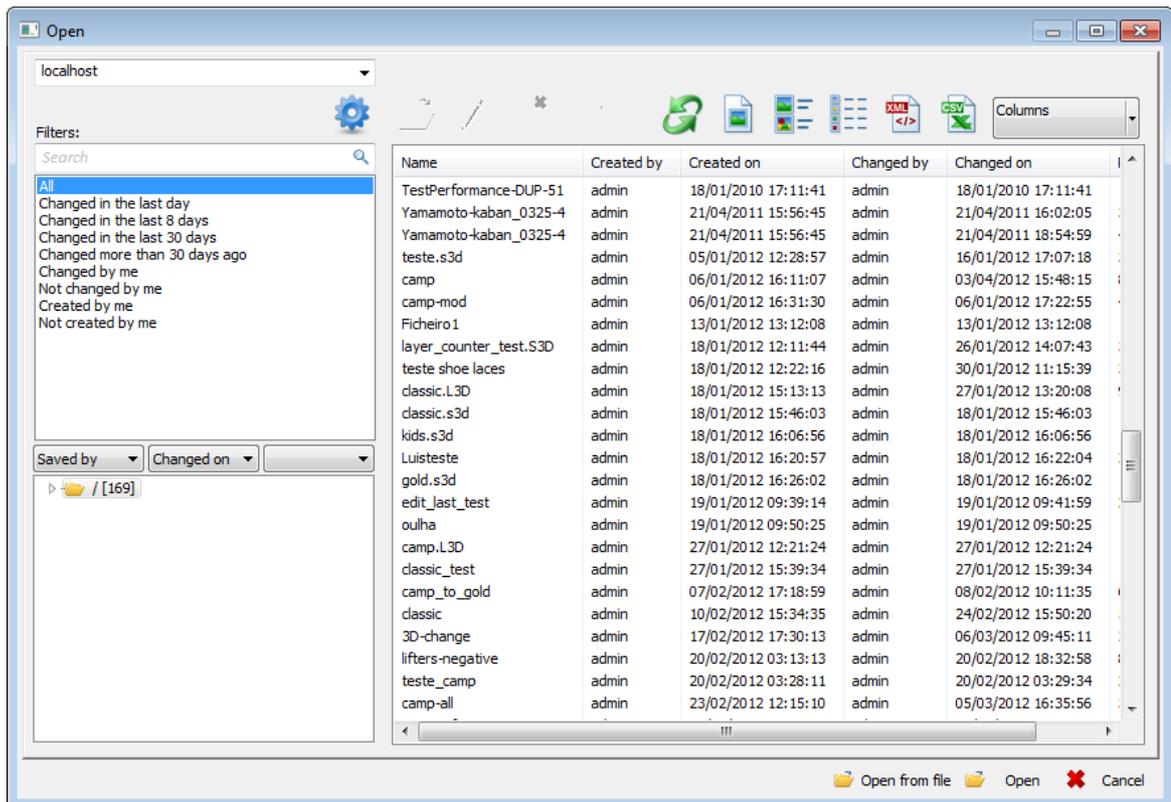


Use this option to open any of your projects from a central **database**.

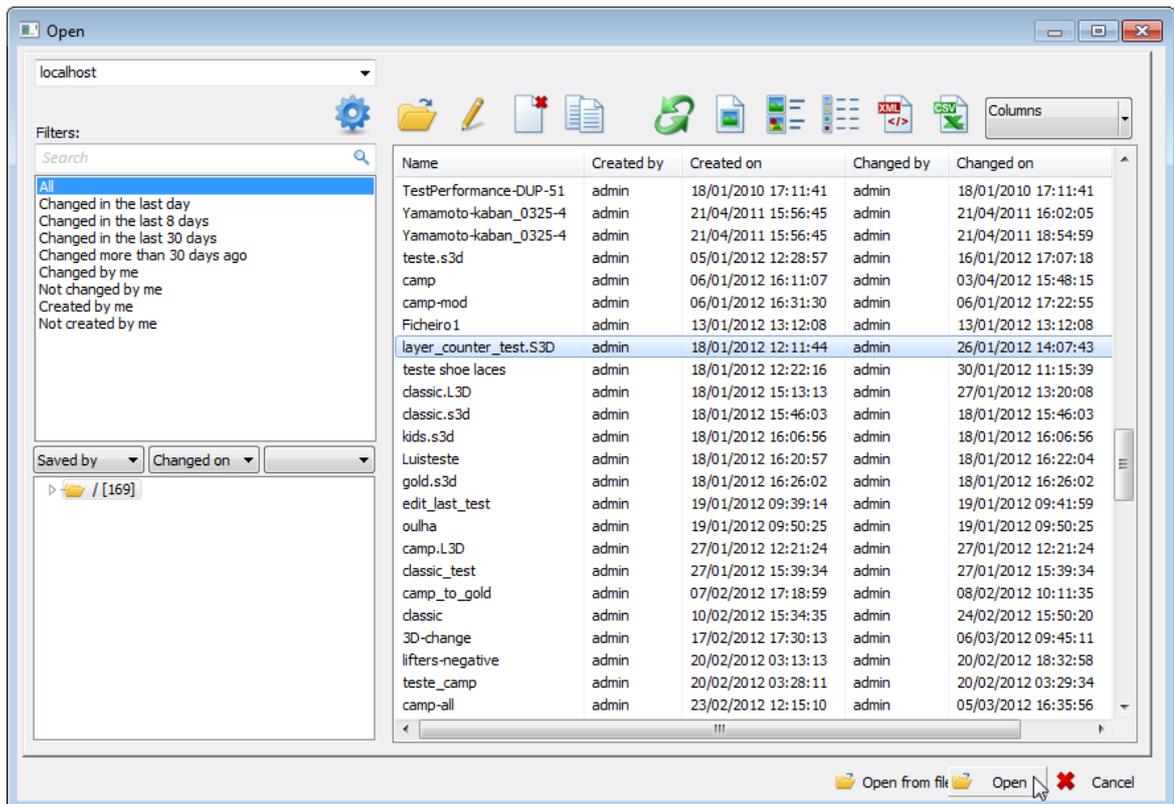
Insert the server, user and password and press Ok.



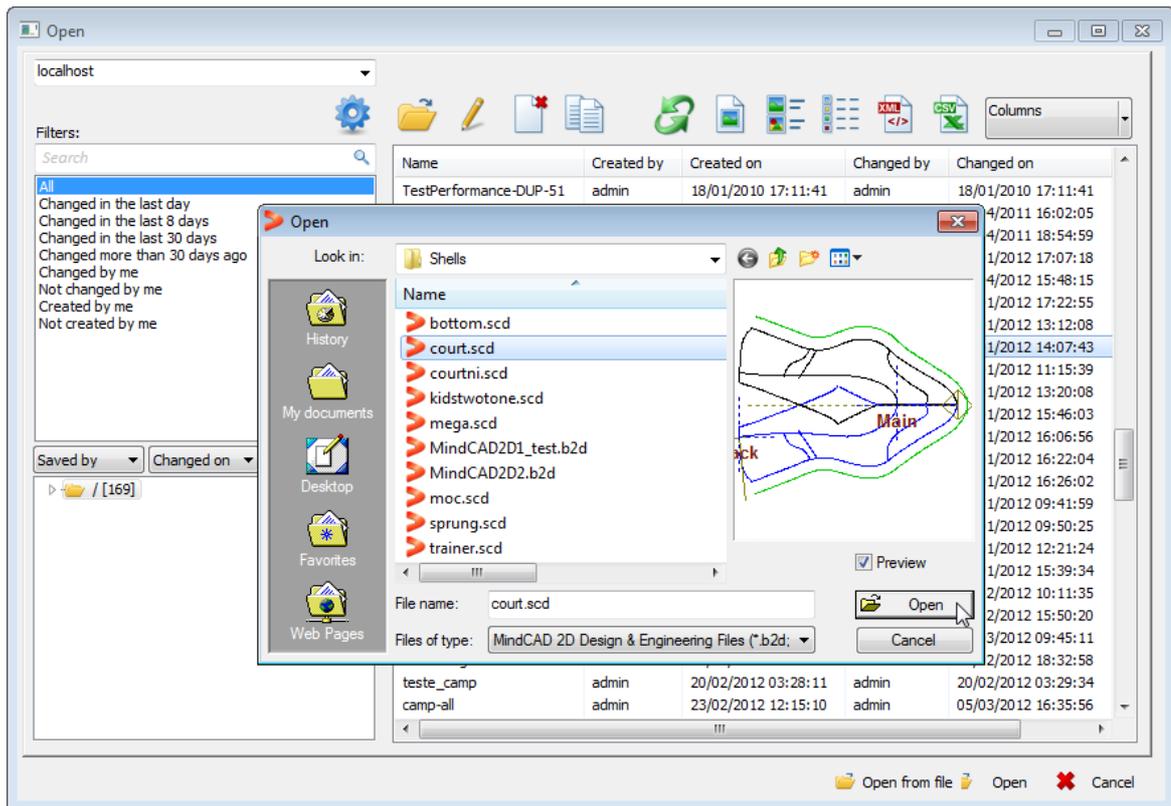
The follow window will appear.



To open a file from pdm, select the desired one and select **Open**.



To open a stand alone file, select the **Open from file** button and select the file to open.



Note: If the project is opened by other user, it will open in ready only mode.

2.2.1 Re-open

This is one of the options that can be added to the customised toolbar.

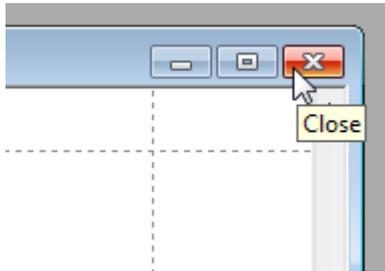


Re-open File - Use this option to re-open the current shell. The shell will be opened as it was when last saved.

2.3 File - Close

Use this option to close the current file.

This is the same as clicking the **X** button in the corner of any window.



2.4 File - Save

Use this option to save the current file with the current name.

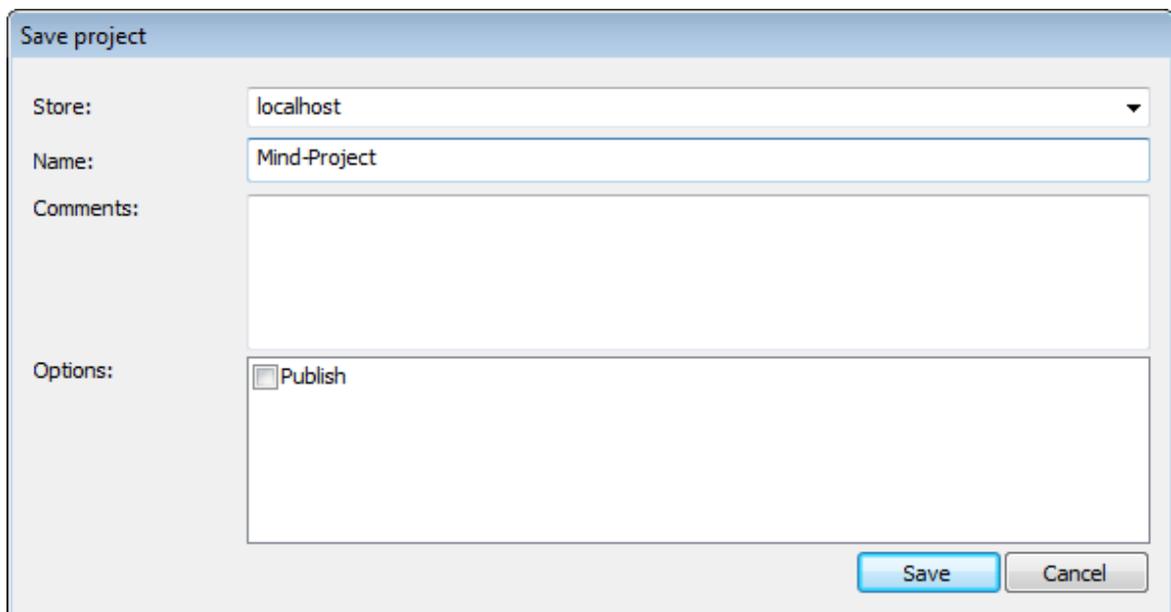
This is the same as clicking the **Save**  button in the **Main** toolbar or pressing **Ctrl+S**



Use this option to save the current project with the current name to a central **database**.

2.5 File - Save As

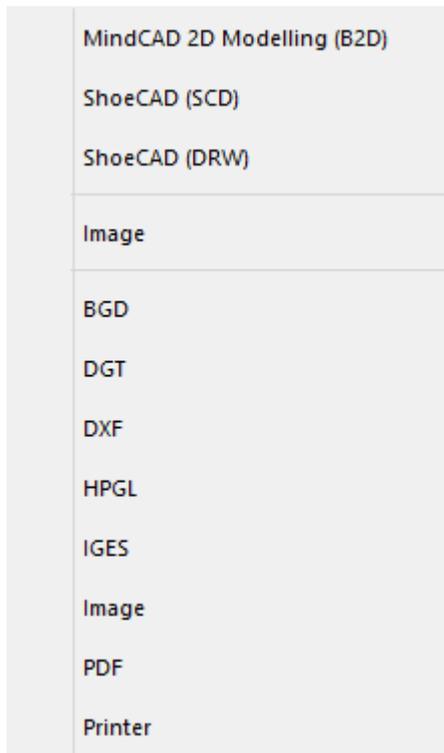
This option allows you to **save** the current project in a different **store** and with a different **name**.

A screenshot of a 'Save project' dialog box. The dialog has a title bar and several fields: 'Store:' with a dropdown menu showing 'localhost', 'Name:' with a text box containing 'Mind-Project', 'Comments:' with a large empty text area, and 'Options:' with a checkbox labeled 'Publish' that is currently unchecked. At the bottom right, there are 'Save' and 'Cancel' buttons.

Enable the **publish** option to export the created parts to the PDM.

2.6 File - Export

Use these options to export the current file to other software packages.



2.6.1 File - Export - MindCAD 2D Design & Engineering (B2D)

Use this option to export the current project in **B2D** format.

2.6.2 File - Export - ShoeCAD (SCD)

Use this option to export the current project in **SCD** format.

2.6.3 File - Export - ShoeCAD (DRW)

Use this option to export the current project in **DRW** format.

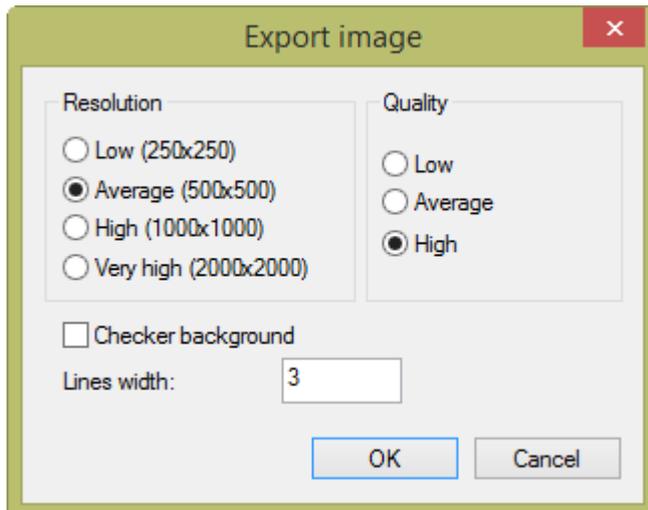
2.6.4 File - Export - Image

This option allows to export the current project as an image. It's possible to configure the image resolution and quality.

The image can be output in the following formats:

- **PNG**
- **JPG**
- **BMP**

After selecting the image name and location, the Export image window will appear:



Select the image **resolution** and **quality**.

Check if a **checker background** is required.

And insert the **lines width** for the lines that are being exported to the image.

2.6.5 File - Export - BGD

Use this option to export the current project to **3D Design & Engineering**.

2.6.6 File - Export - DGT

Use this option to export the current project in **DGT** format.

2.6.7 File - Export - DXF

Use this option to export the current project in **DXF** format.

2.6.8 File - Export - HPGL

Use this option to export the current project in **HPGL** format.

2.6.9 File - Export - IGES

Use this option to export the current project in **IGES** format.

2.6.10 File - Export - Image

This option allows to export the current project as an simplified image.

The image can be output in the following formats:

- Bitmap Files(*.bmp)
- JPEG Files(*.jpg;*.jpeg;*.jpe)
- Ico Files(*.ico)
- Tif Files(*.tif)
- Gif Files(*.gif)
- Png Files(*.png)
- Pcx Files(*.pcx)
- Tga Files(*.tga)

2.6.11 File - Export - PDF

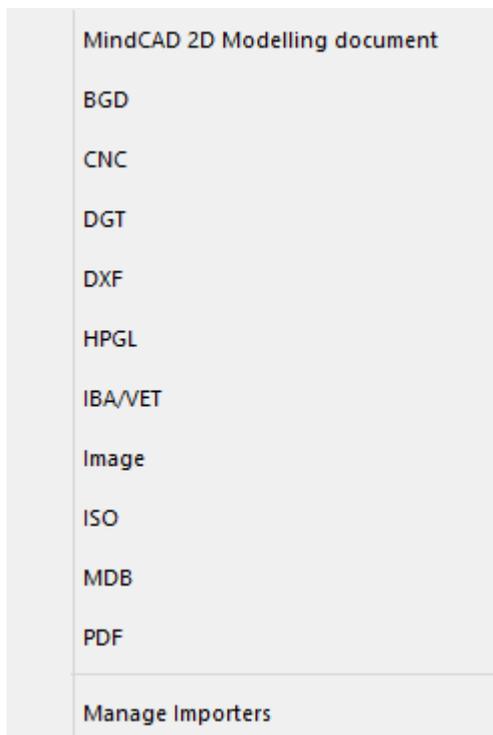
Use this option to export the current project in **PDF** format.

2.6.12 File - Export - Printer

Use this option to export the current project to Printer.

2.7 File - Import

Use these options to import data from other software packages.

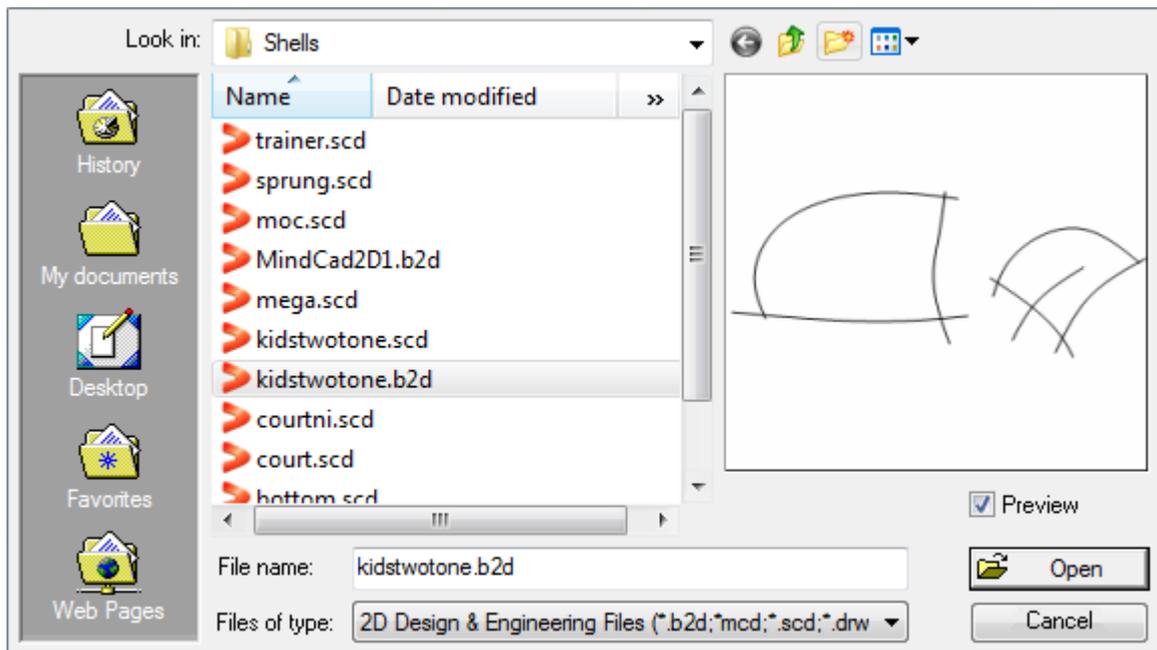


After selecting the file to import, the imported geometry will appear attached to the cursor allowing the operator to choose the appropriate position. When done, just do a left click and the content will be pasted.

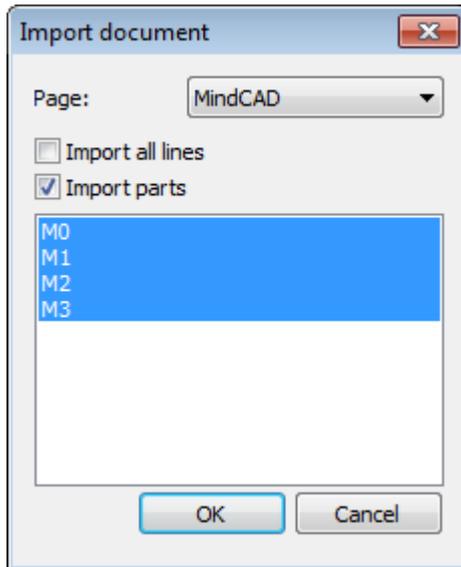
2.7.1 File - Import - MindCAD 2D Design & Engineering document

This option lets you import data in **2D Design & Engineering document** format with multiple pages.

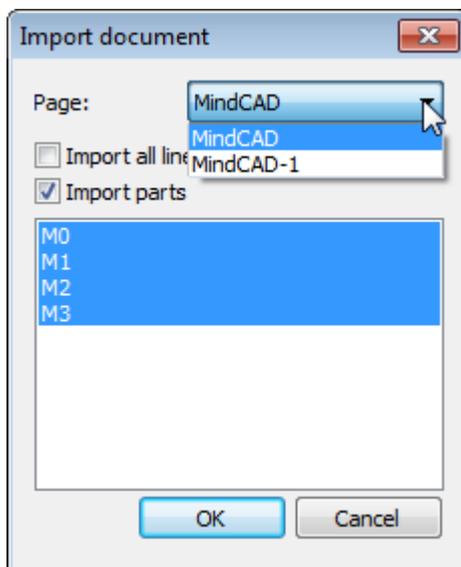
1. Select **2D Design & Engineering document** form the **Import** options on **File** menu.
2. Select the file to be imported and press **Open**.



3. Select the components you which to import.



4. If the imported document has multiple pages and .



2.7.2 File - Import - BGD

Use this option to import data from **3D Design & Engineering**.

2.7.3 File - Import - CNC

Use this option to import data in **CNC** format.

2.7.4 File - Import - DGT

Use this option to import data in **DGT** format.

2.7.5 File - Import - DXF

Use this option to import data in **DXF** format.

2.7.6 File - Import - HPGL

Use this option to import data in **HPGL** format.

2.7.7 File - Import - IBA/VET

Use this option to import data in **IBA/VET** format.

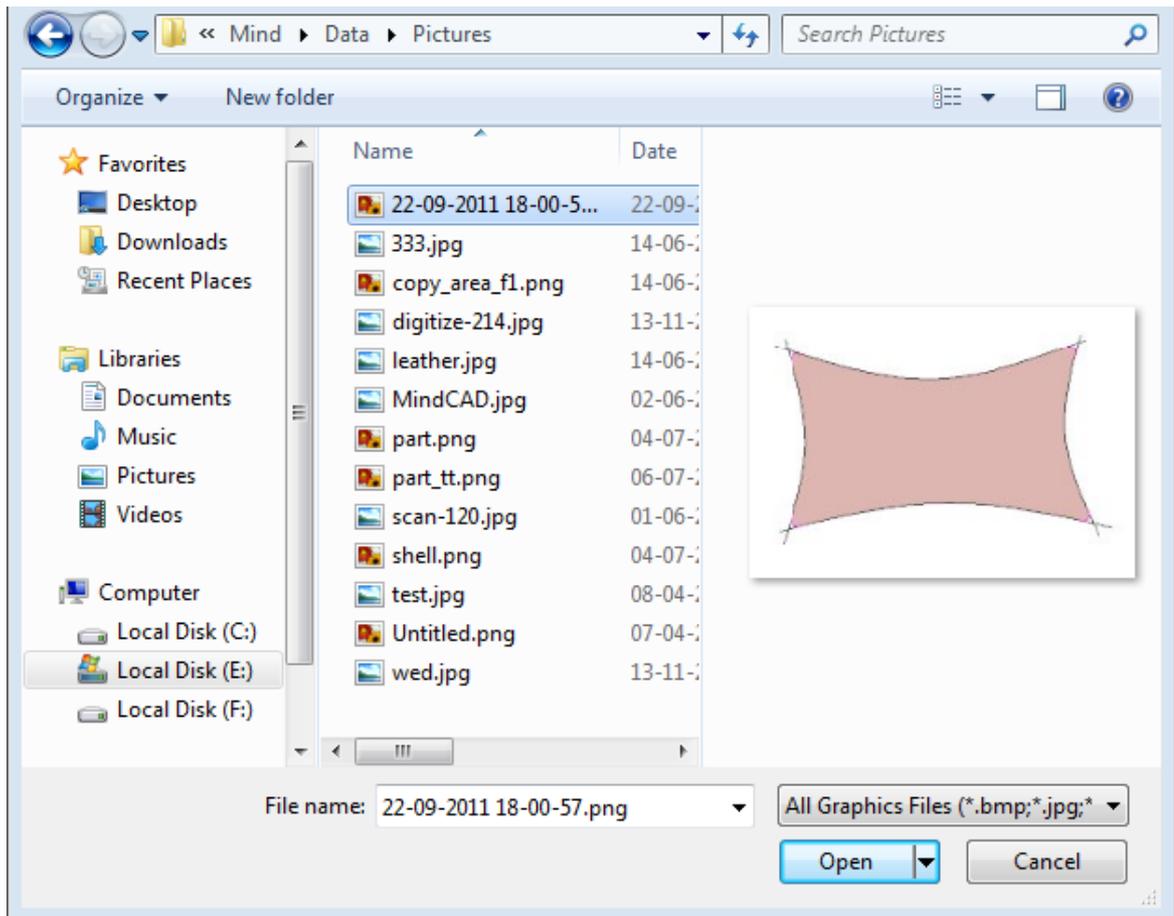
2.7.8 File - Import - Image

Use this option to import images. The image can be input in the following formats:

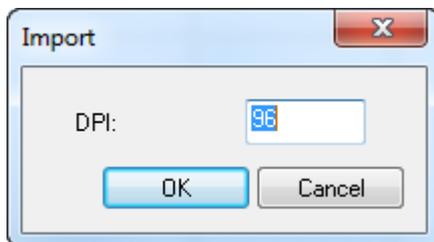
All Graphics Files (*.bmp;*.jpg;*.jpeg;*.jpe;*.ico;*.tif;*.gif;*.png;*.pcx;*.tga)
Bitmap Files (*.bmp)
JPEG Files (*.jpg;*.jpeg;*.jpe)
Ico Files (*.ico)
Tif Files (*.tif)
Gif Files (*.gif)
Png Files (*.png)
Pcx Files (*.pcx)
Tga Files (*.tga)
All Files (*.*)

Note: The image layer will be repositioned to the bottom most, to allow a better parts view.

1. Select **Image** from the **Import** options of the **File** menu.
2. Select the image to import and click **Open**.



3. Insert the DPI value.



4. The imported image will appear attached to the cursor allowing the operator to choose the appropriate position. When done, just do a left click and the content will be pasted.

This image could then be used as a tracing image for manual digitizing of lines and parts.

2.7.9 File - Import - ISO

Use this option to import data in *ISO* format.

2.7.10 File - Import - MDB

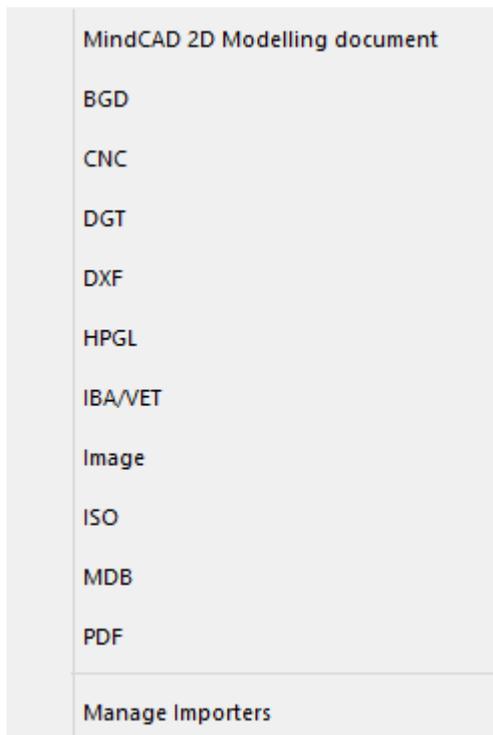
Use this option to import data in **MDB** format.

2.7.11 File - Import - PDF

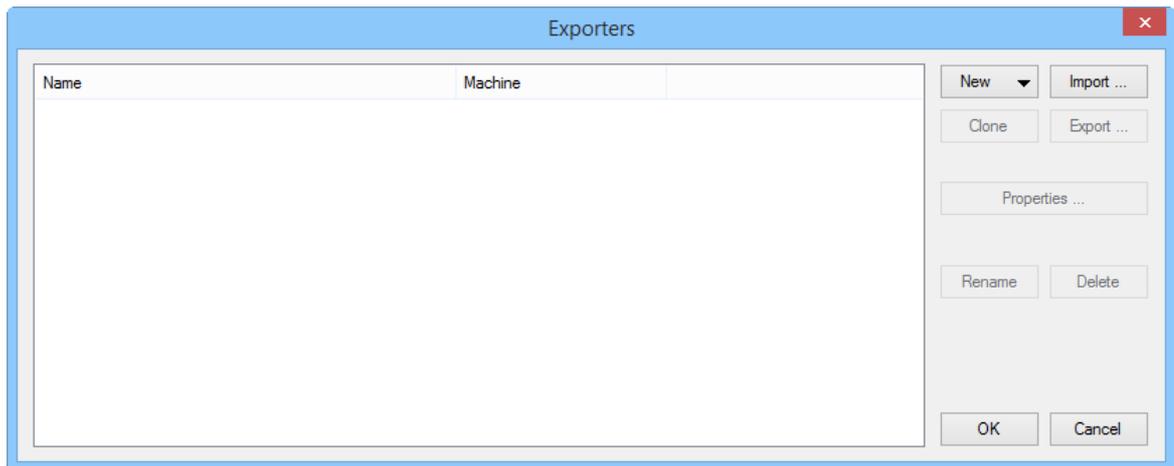
Use this option to import data in **PDF** format.

2.7.12 File - Import - Manage Importers

1. Select **Manage Importers** from the **Import** options of the **File** menu.



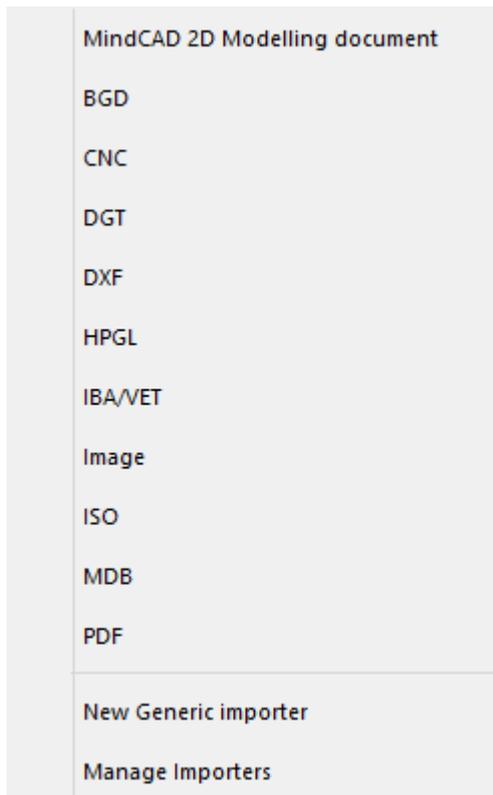
2. We could now either select the button **New** or **Import**.



3. Select **New**, and then the required import type from the menu.



4. That option will now be available in the import menu.



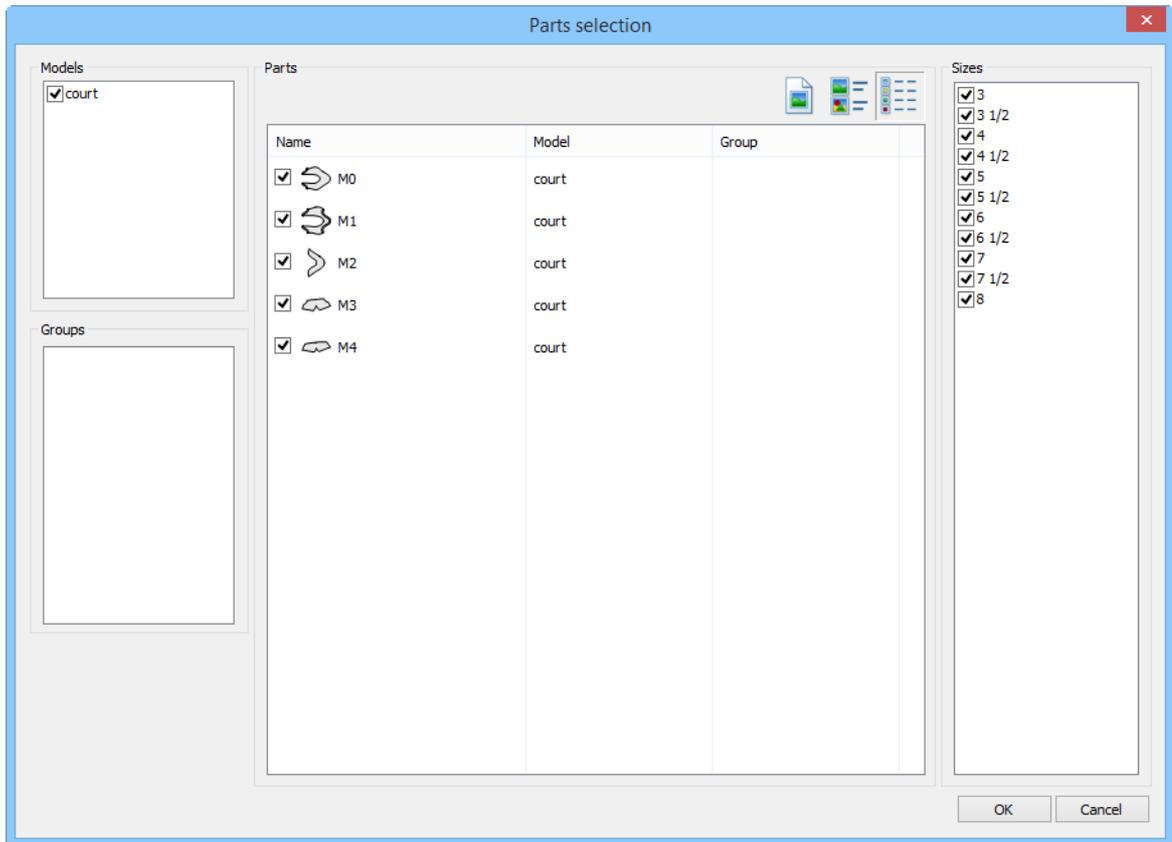
2.8 File - Cut

This option allows to export parts for cut and to manage the cutters.



2.8.1 File - Cut - Cut

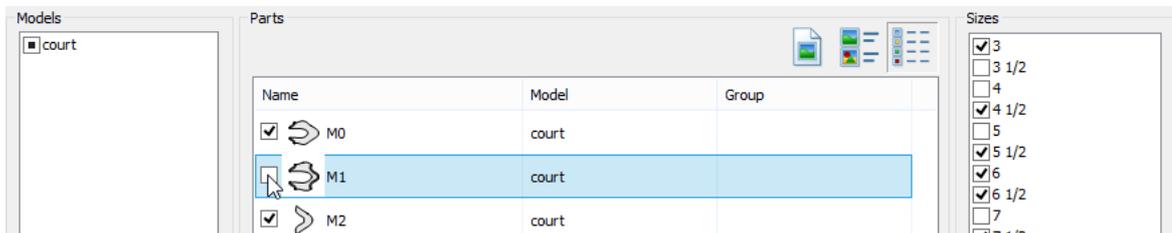
This is the same as pressing F8.



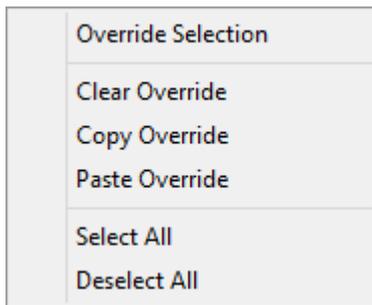
1. Use these buttons  to change the visualization format.

a. Choose between **Icons View** , **Tiles View**  or **Details View** .

2. Select/deselect the required **parts** and **sizes** by clicking in the check boxes. To **select/deselect all option**, do a right click over it, to access the options from the contextual menu.

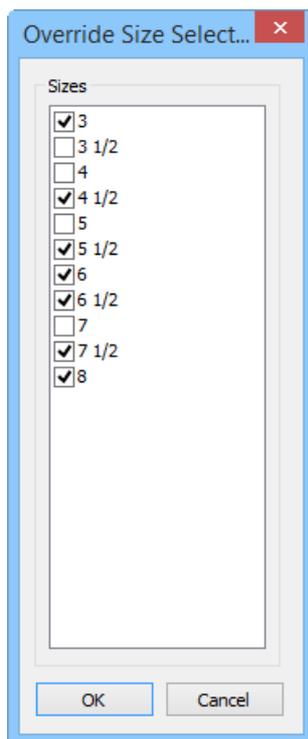


3. Do a **right click** to access the **contextual menu**:



- **Override Selection** - Allows to change the selected sizes for the selected part.

The **Override Size Selected Part** window will open, **select/deselect the desired sizes** and press **Ok** confirm.

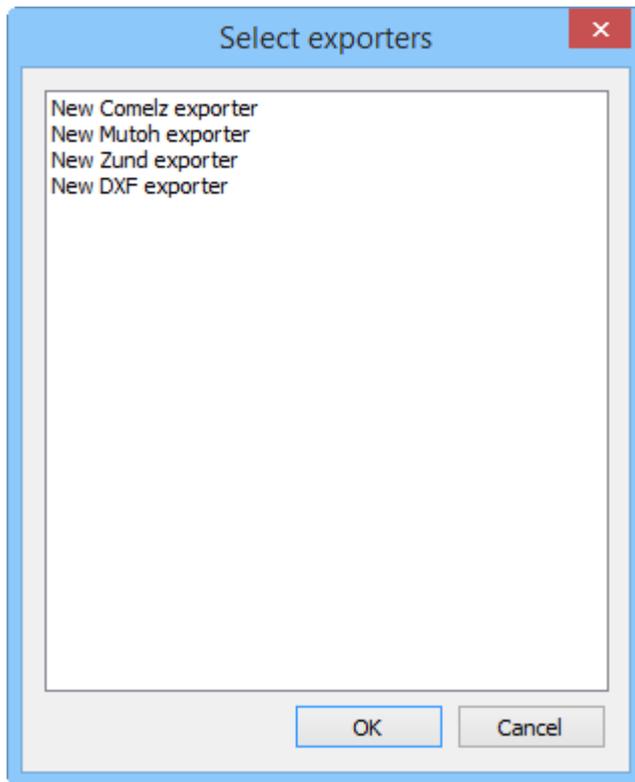


Note: When the override selection is used in a part, the part info will change for red.

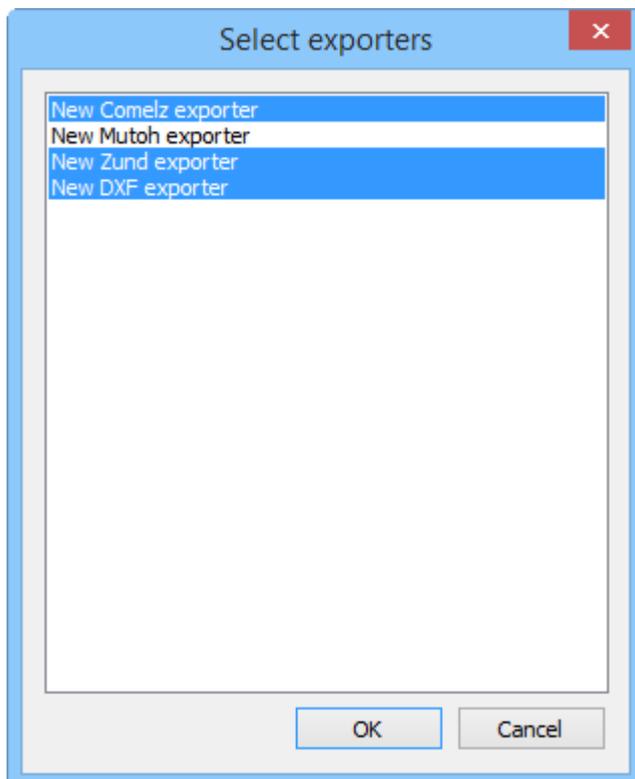
<input checked="" type="checkbox"/>		M3	court	
<input checked="" type="checkbox"/>		M4	court	

- **Clear Override** - Delete the override changes.
- **Copy Override** - Copy the override changes.
- **Paste Override** - Paste the override changes, previous copied.
- **Select All** - Select all parts.
- **Deselect All** - Deselect all parts.

4. Press **Ok** when finished, now its possible to select the exporter.



5. It's possible to select several exporters at once. Do a left click over the required exporters.



6. Press OK and will be asked to save each one of the exported file formats separately.

2.8.2 File - Cut - Manage Cutters

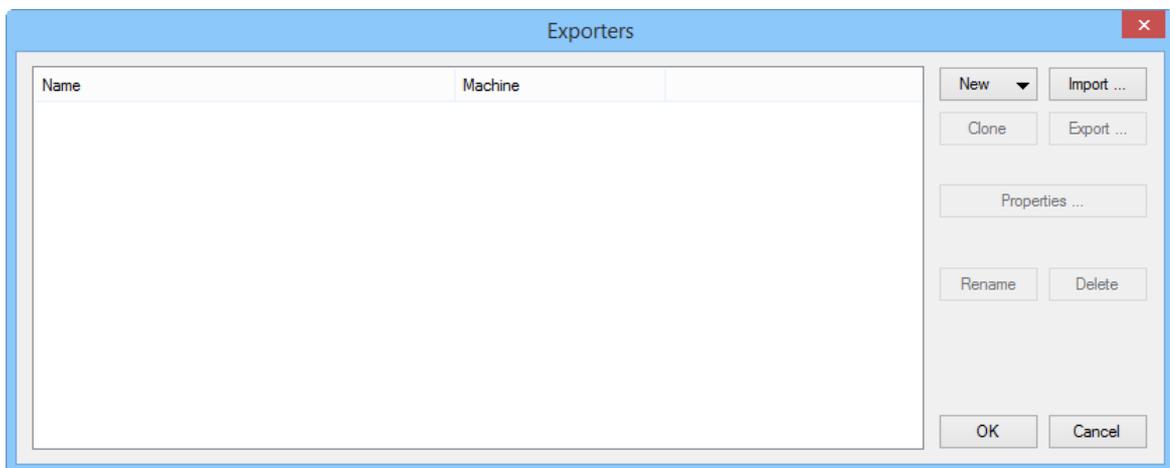
Use this option to create a cutter manager for your cutting table

1. From the **Cut** option of the **File** menu, select **Manage Cutters**

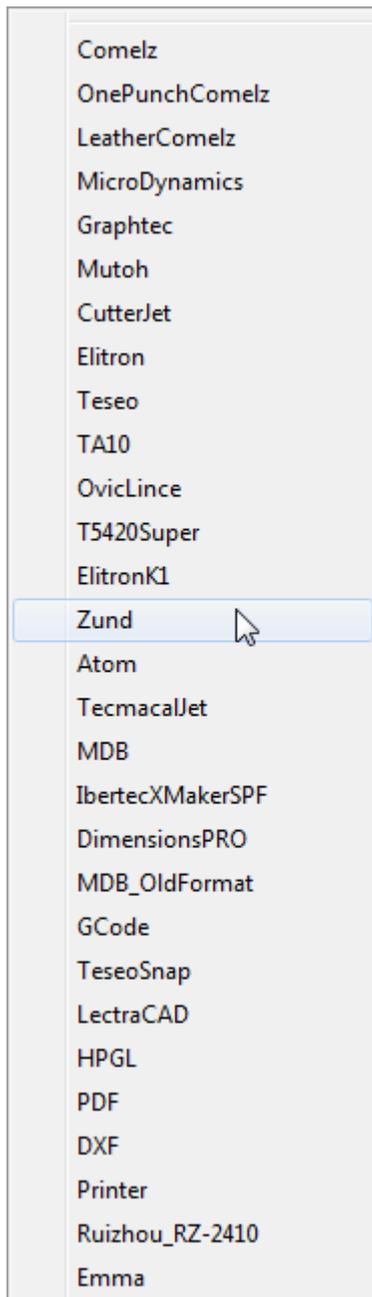


A dialogue box is displayed. At this stage the list of options is empty.

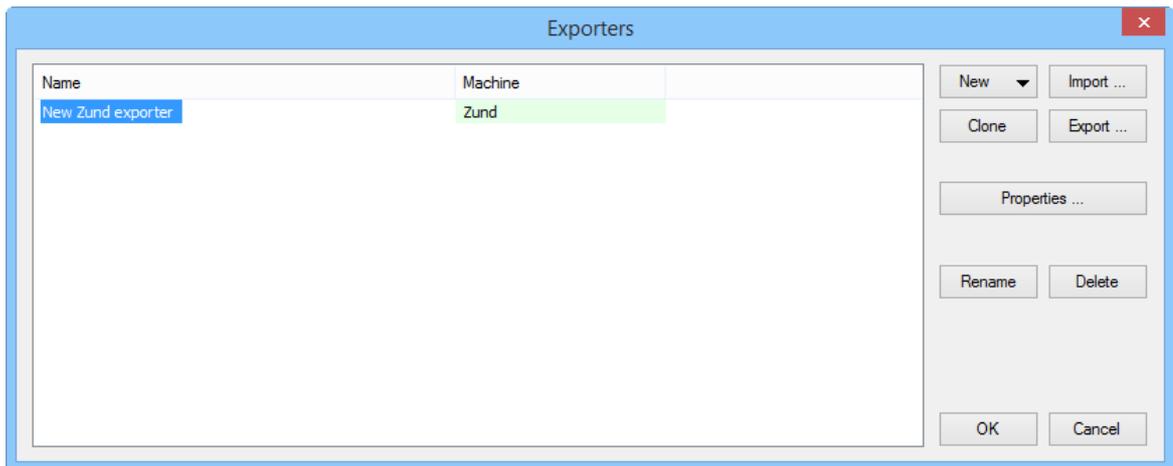
2. You to buttons available **New** or **Import**. As we are showing the full process, we select New. In other scenarios, the user can import the predefined settings of an exporter previously saved to a mcf file. This option is useful to share exporter definitions within or between organizations.



3. Select the required cutter from the menu.



The exporter you have chosen is displayed in the dialogue box.



4. Click **OK**

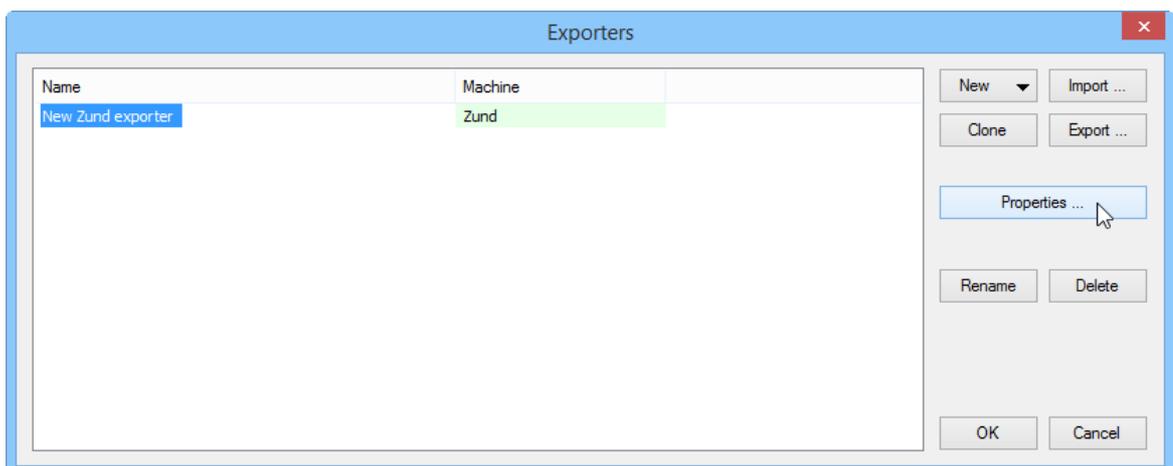
- *The next time the Cut menu is selected the exporter you selected will be displayed as an option on the menu.*



2.8.2.1 File - Cut - Properties

Use this option to adjust the setup cutters.

Select the exporter and press the button **Properties**.

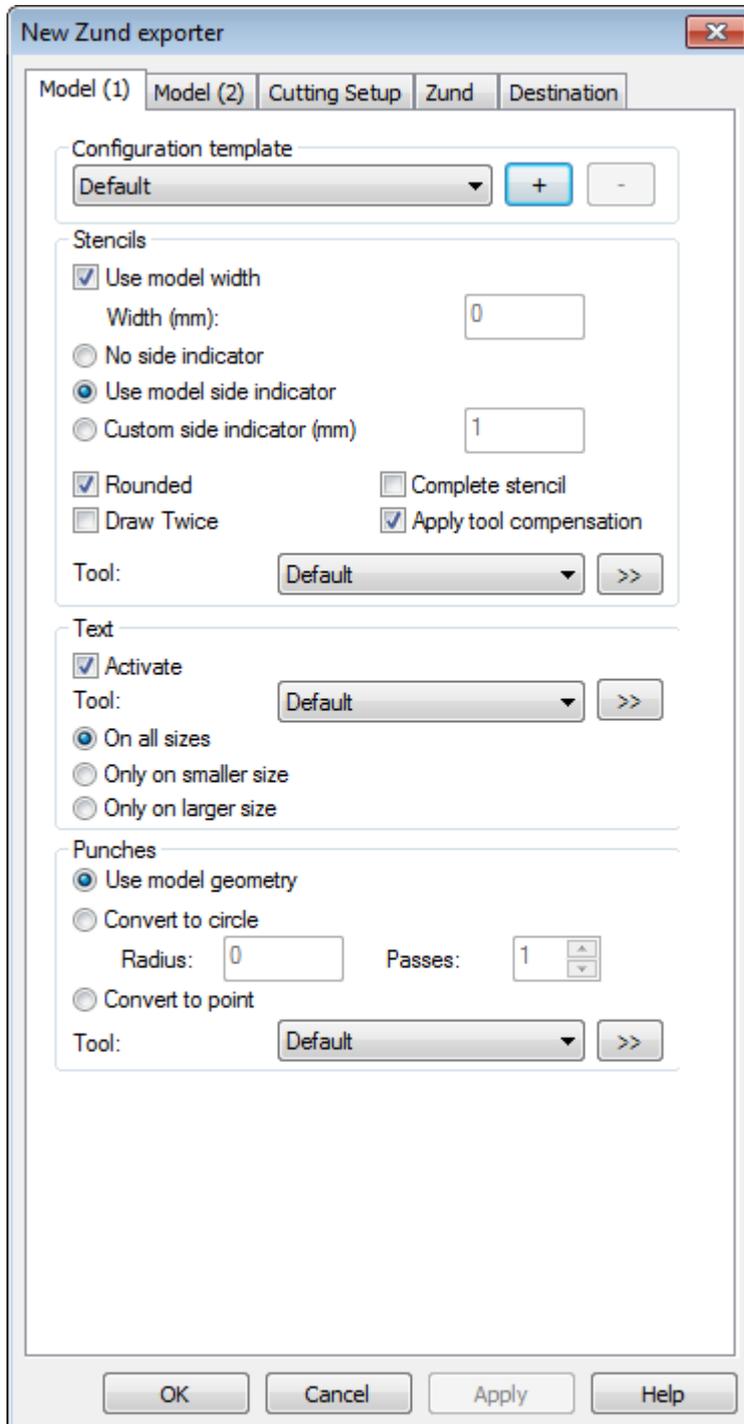


A short reference about the available options:

- **Clone** - Creates a copy of the selected exporter.
- **Export...** - Save the parameters of this exporter to a file in *mcd* format.

- **Delete** - Delete the selected exporter.
- **Rename** - Rename the selected exporter.
- **Properties** - Inspect and change parameters of the selected exporter.

Select **Properties** and a configuration dialog appears:



Several properties under the tabs could be adjusted to control the cutting.

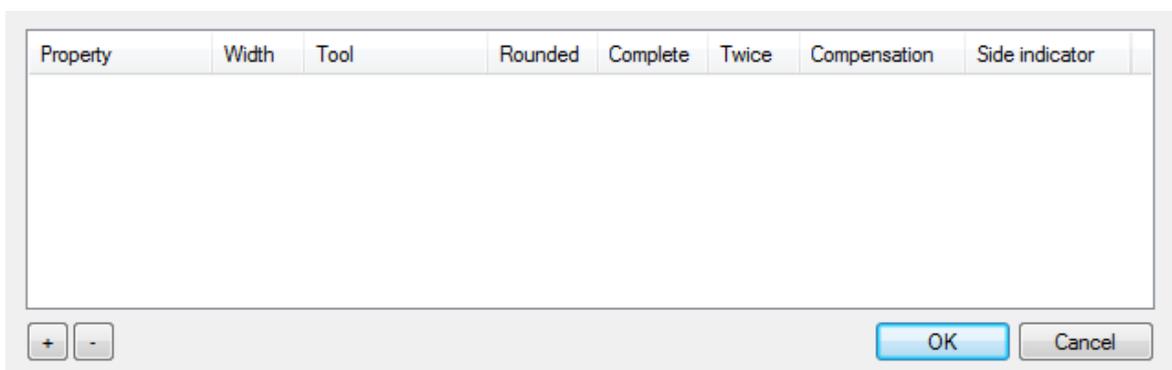
- **Model(1)**
- **Model(2)**
- **Cutting Area**
- **ZUND**
- **Destination**

Please refer to the corresponding sections for details on those tabs.

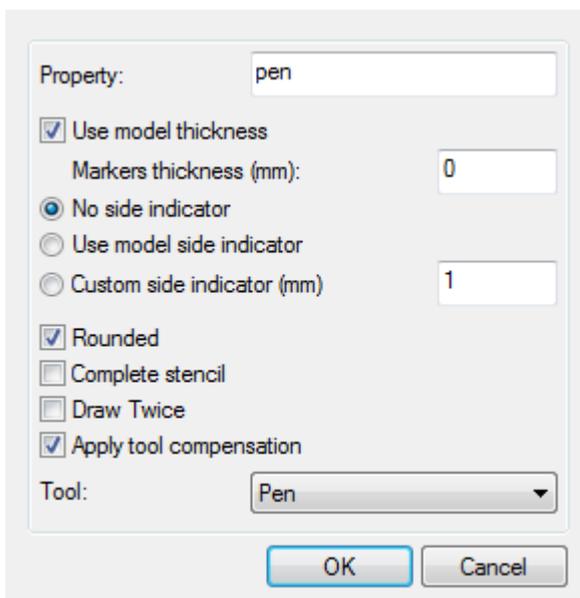
2.8.2.1.1 File - Cut - Using Property Rules

On some parameters tabs, a **Property Rules**  button allows the creation of rules that override the default configuration.

For example, if you have stencils using the **Knife** tool by default but you want, for some of the lines, to use the **Pen** tool, you need to create a rule. Activate **Property Rules**  button; a dialog appears.



Press **+** to add or **-** to remove rules. Press **+**. A dialog appears.



Now we create a rule with targeting a property named *pen*.

This property should previously exist and be used on some lines of the model to be visible. Properties are managed using File - Preferences - Default Properties menu option and the user should apply the properties to the lines.

All the options should be selected as needed to change the behaviour.

Property	Width	Tool	Rounded	Complete	Twice	Compensation	Side indicator
pen	Auto	Pen	Yes	No	No	Yes	None

+

-

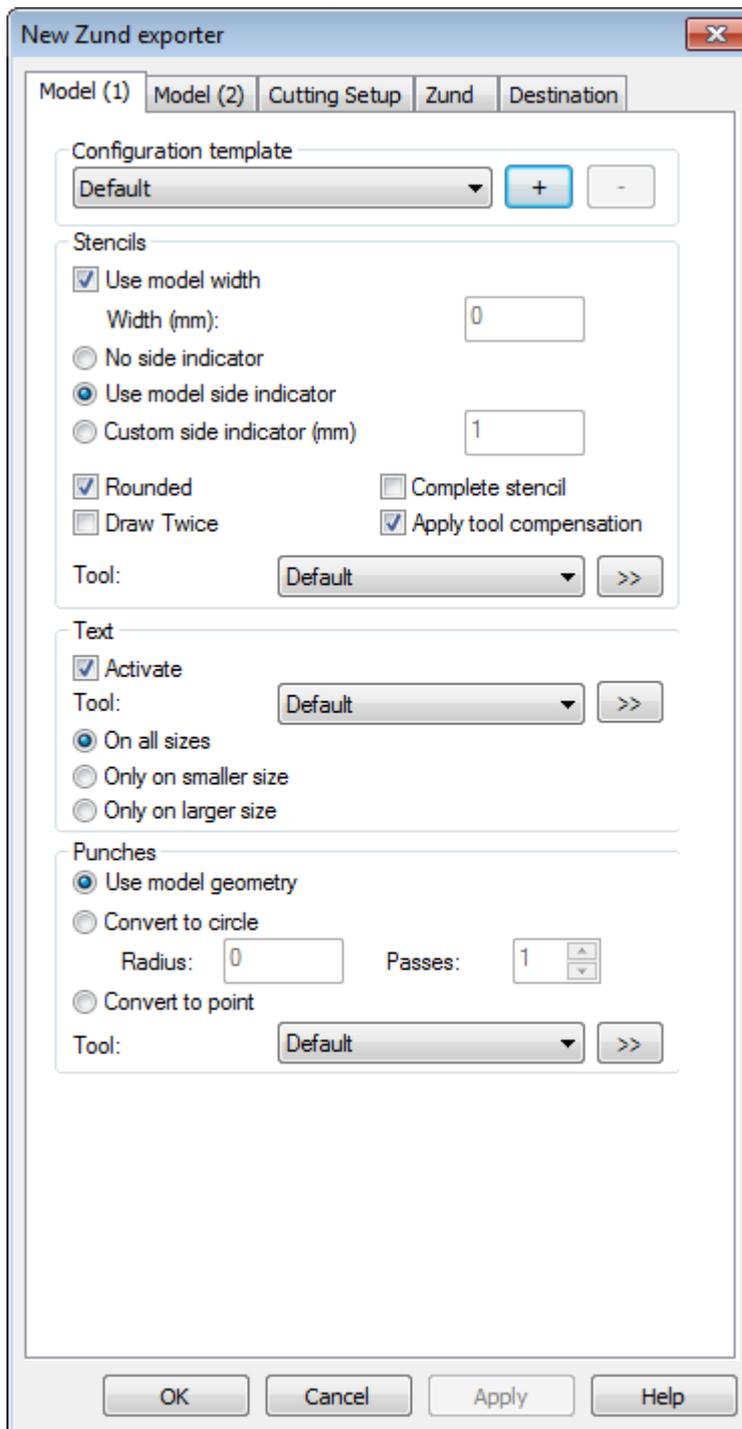
OK

Cancel

In this sample setup, sending stencils with the property *pen* will use the pen tool instead of the default knife.

2.8.2.1.2 File - Cut - Model(1)

Use this **Model(1)** tab to adjust the first subset of Model parameters



Stencils

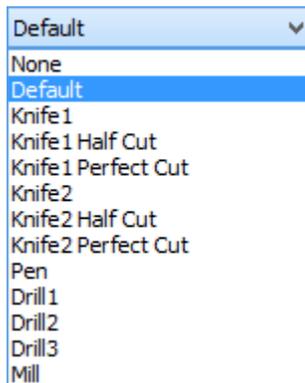
- **Apply model width** - Enable or disable usage of model width for stencils. If unchecked, the width

of the stencil is defined on the stencil **Width (mm)** field

Width (mm):

1.2

- **Rounded** - Enable or disable rounded stencils.
- **Complete Stencil** - Enable or disable complete stencils. If checked all the sections of a stencil will be connected resulting in a single one.
- **Draw twice** - Enable or disable draw twice. If checked, a double pass with the tool will be done. Typically used for hard to draw materials.
- **Apply tool compensation** - Enable or disable tool compensation.
- **Tool** - Select default tool.



Text

- **Activate** - Enable or disable text.
- **Tool** - Select default tool.
- **On all sizes** - Enable text on all sizes.
- **Only one smaller size** - Enable text only one smaller size.
- **Only one larger size** - Enable text only one larger size.

Punches

- **Use model geometry** - Enable model geometry.
- **Convert to circle** - Enable convert to circle
 - **Radius** - define circle radius
 - **Passes** - define passes number
- **Convert to point** - Enable convert to point
- **Tool** - Select default tool.

In case the exporter is for a Laser machine, an option to control if the Stencils are printed or not is also available.

Stencils

Activate

2.8.2.1.3 File - Cut - Model(2)

Use this **Model(2)** tab to adjust the second subset of Model parameters

The screenshot displays the 'Model(2)' tab in the software's configuration window. The window has several tabs: 'Model (1)', 'Model (2)', 'Cutting Setup', 'Zund', and 'Destination'. The 'Model(2)' tab is active. The configuration is organized into several sections:

- Configuration template:** A dropdown menu set to 'Default', with '+', 'Edit', and '-' buttons.
- Lines:** A 'Tool:' dropdown set to 'Default' with '>>' and '<<' buttons, and a 'Break angle:' input field set to '0'.
- Borders:** A 'Tool:' dropdown set to 'Default' with '>>' and '<<' buttons, an unchecked checkbox for 'Ignore size code geometry', and 'Notches:' options: 'Cut with the border' (selected), 'Don't cut', and 'Use specified tool' (with a 'None' dropdown). There is also an unchecked checkbox for 'Allow inside extensions'.
- Holes:** A 'Tool:' dropdown set to 'Default' with '>>' and '<<' buttons, and an unchecked checkbox for 'Allow inside extensions'.
- Line Filtering:** An unchecked checkbox for 'Activate' and an 'Amount:' input field set to '0'.
- Corner Filtering:** An unchecked checkbox for 'Activate', a 'Curvature:' input field set to '2', a 'Max Angle:' input field set to '180', and a 'Smooth Factor:' input field set to '0.5'.
- Other:** An unchecked checkbox for 'Cardboard'.

Lines (inside parts)

- **Tool** - Select default tool.

Borders (perimeter of parts)

- **Tool** - Select default tool.

-
- **Ignore size code geometry** - Enable or disable size code geometry.

Notches

- **Cut with the border** - Enable cut with border.
- **Don't cut** - If checked notches will not be cut.
- **Use specified tool** - Enable specified tool

Holes (inside parts)

- **Tool** - select default tool.

Line filtering

- **Activate** - enable or disable line filtering. Control the number of points on the filtered lines using the **Amount** field.

Corner filtering

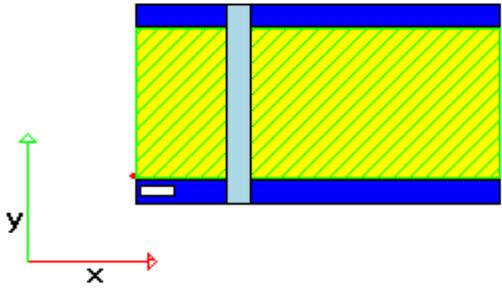
- **Activate** - enable or disable corner filtering. Control the curvature using the **Curvature** field, the angle using the **Max Angle** field and the smoothness using the **Smooth factor**.

Other

- **Cardboard** - Enable or disable cardboard cutting mode. Group grading is applied to parts.

2.8.2.1.4 File - Cut - Cutting Area

Use this is the option to adjust the **cutting area**.

Model (1)	Model (2)	Cutting Setup	Zund	Destination
Machine Configuration				
Dimensions		Cutting area		
Width(x):	<input type="text" value="2400"/> mm	Width(x):	<input type="text" value="2400"/> mm	
Length(y):	<input type="text" value="1000"/> mm	Offset(x):	<input type="text" value="0"/> mm	
Nesting Area		Pickup Area		
Width(x):	<input type="text" value="2400"/> mm	Width(x):	<input type="text" value="0"/> mm	
Offset(x):	<input type="text" value="0"/> mm	Offset(x):	<input type="text" value="0"/> mm	
				
Cutting offset X:		<input type="text" value="0"/> mm		
Cutting offset Y:		<input type="text" value="0"/> mm		

Machine Configuration:

- Dimensions

Width (X) - Machine working area width (in mm);

Length (Y) - Machine work area length (in mm);

- Cutting Area

Width (X)- Width of the cutting area (in mm);

Offset (Y) - Offset of the cutting area, relative to the defined origin (in mm);

- Nesting Area

Width (X)- Width of the nesting area (in mm);

Offset (Y) - Offset of the nesting area, relative to the defined origin (in mm);

- **Pickup Area**

Width (X)- Width of the pickup area (in mm);

Offset (Y) - Offset of the pickup area, relative to the defined origin (in mm);

- **Cutting offset X** - Apply an horizontal (X) offset to the cutting plane (in mm);

- **Cutting offset Y** - Apply an vertical (Y) offset to the cutting plane (in mm);

2.8.2.1.5 File - Cut - Zund \ Other Cutters

Use this is the option to adjust the setup for the specific machine. This tab is different for each machine type, in this case we are displaying it for a **Zund** machine. Proper setup of the parameters on this tab is only needed if the machine is connected to the local computer.

Zund

For a Zund machine, the available parameters are:

General

- **Wait before start cutting** - Select the value in seconds.
- **Plotter curve Quality** - Select the plotter quality, take in consideration that a lower velocity gives a better quality.
- **On End Cut** - Select the tool and if available the up position and down position in mm.
- **General delay instruction** - Enable/disable the delay before cut instruction.
- **General tool waiting times default value** - Enable/disable the waiting times before and after the

tool moves.

Vaccum

- **Vacuum Off to move cells** - Turn off the pump to mode the cells configuration.
- **Use Vacuum Curtain** - Active this option for machines with vacuum curtain.
- **Turn off Cells along cut** - Check this option to close vacuum cells outside cutting area to improve material hold.
- **Turn On Vacuum Before Start Cutting** - Turn on the pump before start cutting.
- **Turn Off Vacuum After End Cutting** - Turn off the vacuum after end cutting. Define the time in milliseconds.
- **Turn Off Vacuum when idling more than** - Turn off the vacuum when the machine is park more than, define the value in seconds.
- **Enable G3 vacuum support** - Enable this option when using the vacuum system specific of a G3 machine.

Conveyor

- **Has Conveyor** - Check this box if the machine has a conveyor and you intend to use it.

Milling

- **Mill Radius** - Define the radius of the mill (in mm).

Tool Assignment - Select the tool for each slot.

Machine Park - Select from Top Left, Top Right, Bottom Left or Bottom Right.

- **Auto Park** - Enable or disable the machine Auto Park.

Part Sorting Order - This parameter allows the operator to choose the sequence the parts will be cut on the table.

- **Half parts first** - Checking this option allows that parts divided by a conveyor advance – parts that don't fit on the cutting window – to be cut first.

Sequential

- **Sequential Cut** - Check this option to active the sequential cut order mode. Select the number of parts to be cut in each group and the tool order.
- **Group** - The parts will be cutted in groups of X parts.
- **Dynamic tool switching** - Checking this option, makes the machine stop to allow a tool change.

Tool Order - Tooling order defines the order of operation of each tool during the cutting job.

Click on the **Up** and **Dn** buttons to change the order. To enable this option check Sequential Cut option.

Comelz

On a Comelz machine, the available parameters are:

Model (1) Model (2) **Comelz** Destination

Configuration template
 Default ▾ + Edit -

Punch

Micro Punch

Punch - Radius of the punch tool.

Micro Punch - Radius of the micro punch tool.

Cutter Jet

For a cutter jet machine, the available parameters are:

Model (1) Model (2) **CutterJet** Destination

Configuration template
 Default ▾ + Edit -

Assign Qualities to Materials
 Leather Red 1 ▾ New

Material	Quality
Leather Red	1
Linning	6

Use floats

Assign Qualities to Materials - Allow to setup different qualities for template materials.

Use floats - Disable - The exported coordinates can only be integers.

- Enable - Allow the use of non-integer values.

PDF

For the PDF exporter, the available parameters are:

Model (1)	Model (2)	PDF	Destination
Virtual sheet dimensions			
Length (mm)		<input type="text" value="277"/>	
Width (mm)		<input type="text" value="380"/>	
Real sheet dimensions			
Length (mm)		<input type="text" value="287"/>	
Width (mm)		<input type="text" value="200"/>	
<input checked="" type="checkbox"/> Draw alignment circles			
Radius:		<input type="text" value="2"/>	
Thickness:		<input type="text" value="0.1"/>	
<input checked="" type="checkbox"/> Draw alignment lines			
Thickness:		<input type="text" value="0.25"/>	
Page overlap (mm)		<input type="text" value="5"/>	
Default line thickness (mm):		<input type="text" value="0.2"/>	

Virtual sheet dimensions:

- **Length (mm)** - Enter the virtual sheet length in mm.
- **Width (mm)** - Enter the virtual sheet width in mm.

Real sheet dimensions:

- **Length (mm)** - Enter the real sheet length in mm.
- **Width (mm)** - Enter the real sheet width in mm.

Draw alignment circles: Enable or disable draw alignment circles.

- **Radius** - Enter the circles radius.
- **Thickness** - Enter the circles thickness.

Draw alignment lines: Enable or disable draw alignment lines.

- **Thickness** - Enter the alignment lines thickness.

Page Overlap (mm) - Enter the page overlap in mm.

Default Line Thickness (mm) - Enter the default line thickness in mm.

Printer

For the Printer exporter, the available parameters are:

Parameter	Value
Length (mm)	277
Width (mm)	380
Draw alignment circles	<input checked="" type="checkbox"/>
Radius	2
Thickness	0.1
Draw alignment lines	<input checked="" type="checkbox"/>
Thickness	0.25
Page overlap (mm)	5
Default line thickness (mm)	0.5

Virtual sheet dimensions:

- **Length (mm)** - Enter the virtual sheet length in mm.
- **Width (mm)** - Enter the virtual sheet width in mm.

Draw alignment circles: Enable or disable draw alignment circles.

- **Radius** - Enter the circles radius.
- **Thickness** - Enter the circles thickness.

Draw alignment lines: Enable or disable draw alignment lines.

- **Thickness** - Enter the alignment lines thickness.

Page Overlap (mm) - Enter the page overlap in mm.

Default Line Thickness (mm) - Enter the default line thickness in mm.

HPGL

For the HPGL exporter, the available parameters are:

Model (1)	Model (2)	Cutting Area	HPGL	Destination																																	
Configuration template																																					
Default																																					
<table border="1"> <thead> <tr> <th>Tool Assignment</th> <th>Speed</th> <th>Machine Park</th> </tr> </thead> <tbody> <tr> <td>Pen1</td> <td>500</td> <td><input checked="" type="radio"/> Top Left</td> </tr> <tr> <td>Pen2</td> <td>500</td> <td><input type="radio"/> Top Right</td> </tr> <tr> <td>Pen3</td> <td>500</td> <td><input type="radio"/> Bottom Left</td> </tr> <tr> <td>Pen4</td> <td>500</td> <td><input type="radio"/> Bottom Right</td> </tr> <tr> <td>Pen5</td> <td>500</td> <td><input checked="" type="checkbox"/> Auto Park</td> </tr> <tr> <td>Pen6</td> <td>500</td> <td>Units: 100</td> </tr> <tr> <td>Pen7</td> <td>500</td> <td>Pen down command: PR;PD0.0;</td> </tr> <tr> <td>Pen8</td> <td>500</td> <td>Pen up command: PU;</td> </tr> <tr> <td colspan="3">Pre-cut custom HPGL:</td> </tr> <tr> <td colspan="3">Post-cut custom HPGL:</td> </tr> </tbody> </table>					Tool Assignment	Speed	Machine Park	Pen1	500	<input checked="" type="radio"/> Top Left	Pen2	500	<input type="radio"/> Top Right	Pen3	500	<input type="radio"/> Bottom Left	Pen4	500	<input type="radio"/> Bottom Right	Pen5	500	<input checked="" type="checkbox"/> Auto Park	Pen6	500	Units: 100	Pen7	500	Pen down command: PR;PD0.0;	Pen8	500	Pen up command: PU;	Pre-cut custom HPGL:			Post-cut custom HPGL:		
Tool Assignment	Speed	Machine Park																																			
Pen1	500	<input checked="" type="radio"/> Top Left																																			
Pen2	500	<input type="radio"/> Top Right																																			
Pen3	500	<input type="radio"/> Bottom Left																																			
Pen4	500	<input type="radio"/> Bottom Right																																			
Pen5	500	<input checked="" type="checkbox"/> Auto Park																																			
Pen6	500	Units: 100																																			
Pen7	500	Pen down command: PR;PD0.0;																																			
Pen8	500	Pen up command: PU;																																			
Pre-cut custom HPGL:																																					
Post-cut custom HPGL:																																					

Tool assignment:

- **Speed** - Enter the tools speed (pen1, pen2,...).

Machine Park: Select from Top Left, Top Right, Bottom Left or Bottom Right.

- **Auto Park** - Enable or disable the machine Auto Park.

Units - Enter the units.

Pen down command - Insert the HPGL command or sequence of HPGL commands used to lower the tool.

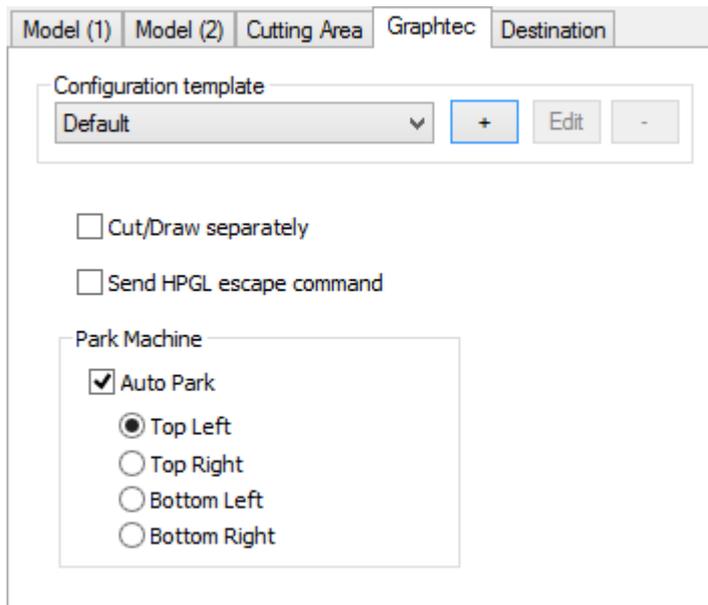
Pen up command - Insert the HPGL command or sequence of HPGL commands used to raise the tool

Pre-cut custom HPGL - HPGL instructions to be sent to the machine before parts.

Post-cut custom HPGL- HPGL instructions to be sent to the machine after parts.

Graphtec

For the graphtec exporter, the available parameters are:



Cut/Draw separately - Enable or disable cut/draw separately .

Send HPGL escape command - Enable or disable send HPGL escape command.

Machine Park: Select from Top Left, Top Right, Bottom Left or Bottom Right.

- **Auto Park** - Enable or disable the machine Auto Park.

2.8.2.1.6 File - Cut - Destination

Use this is the option to adjust the destination of the generated data for cutting/plotting.

Model (1) Model (2) Cutting Setup Zund Destination

To File
 Always use the same file/directory
... D

To Comm Port
COMM 1 Baud 9600
Parity None Stop Bits 1
Data Bits 8 Flow Control Hardware

To LPT Port
LPT 1

To Printer Port (as raw)

To Remote Service
Server:
Configuration:

To TCP/IP port
Address: 0.0.0.0 Port: 50000

To File:

- **Always use the same file/directory** - Enable or disable always use the same file/directory.

To Comm Port:

- **COMM** - Enter the comm.
- **Parity** - Enter the parity.
- **Data Bits** - Enter the data bits.
- **Baud** - Enter the baud.
- **Stop Bits** - Enter the stop bits.
- **Flow Control** - Enter the flow control.

To LPT Port: Enter the LPT port.

To Printer Port: Enter the printer port.

To Remote Service:

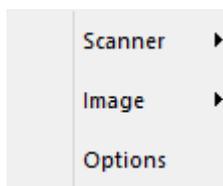
- **Server** - URL of the server with the remote service
- **Configuration** - Insert the configuration name that was defined in CuttingServices.

To TCP/IP port - Insert the **Address** and **Port**.

2.9 File - Digitize

Use these options to import from:

- Scanner
- Image



2.9.1 File - Digitize - Scanner

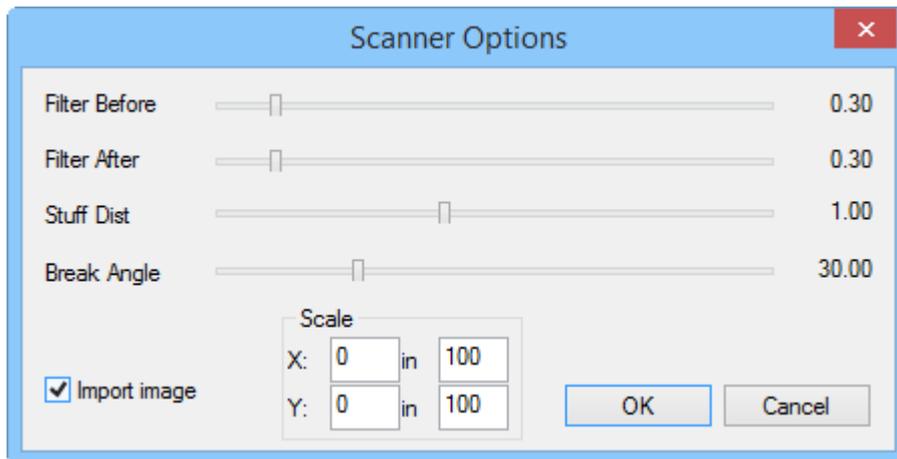
This menu allows to choose if you digitizing a Shell or Parts and to select the source.



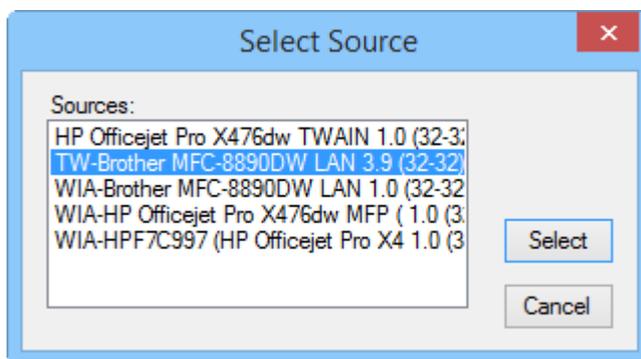
2.9.1.1 File - Digitize - Scanner - Shell

This is the option to scan a shell into the software.

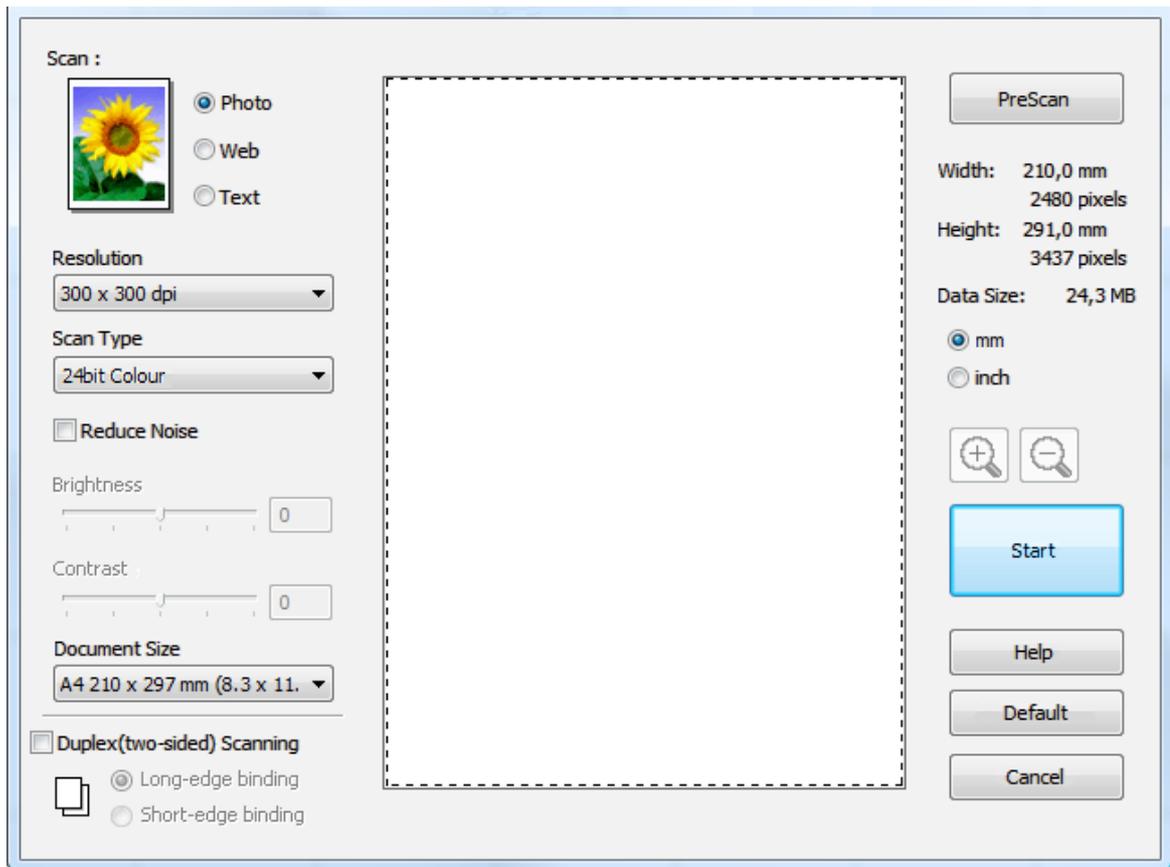
1. Select **Options** from **Digitize** option of the **File** menu to adjust the properties, before you start digitizing the shell; however, it's recommended to use the **default values**.



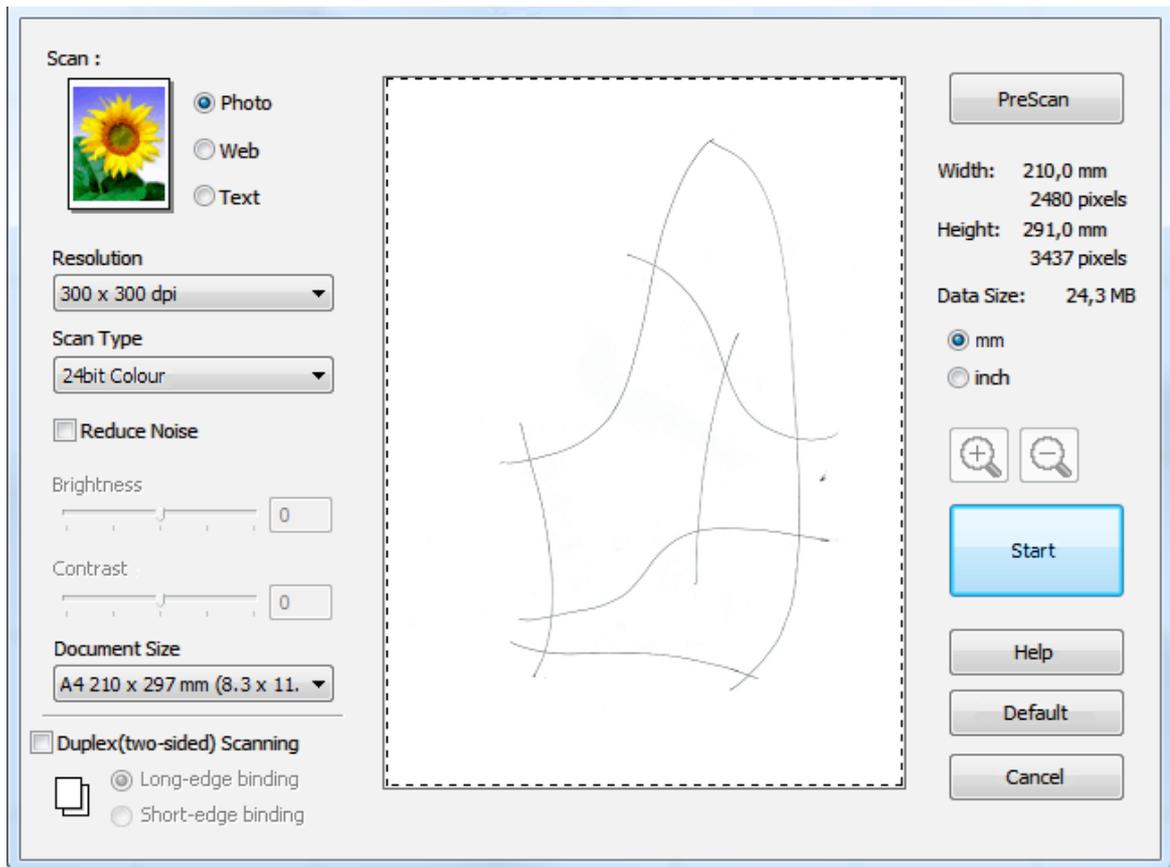
2. Open **Select Source** from **Digitize** option of the **File** menu to select the right scanner.



3. Select **Shell** from the **Digitize** option of the **File** menu. Your scanner software will be launched.

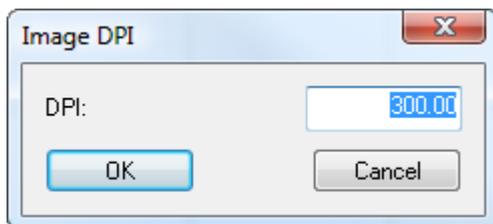


4. Adjust the scan properties and select **PreScan**.

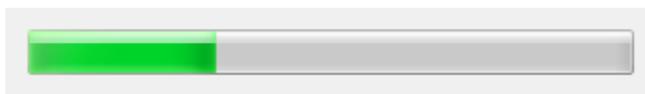


5. To finish the shell scanning press **Start**.

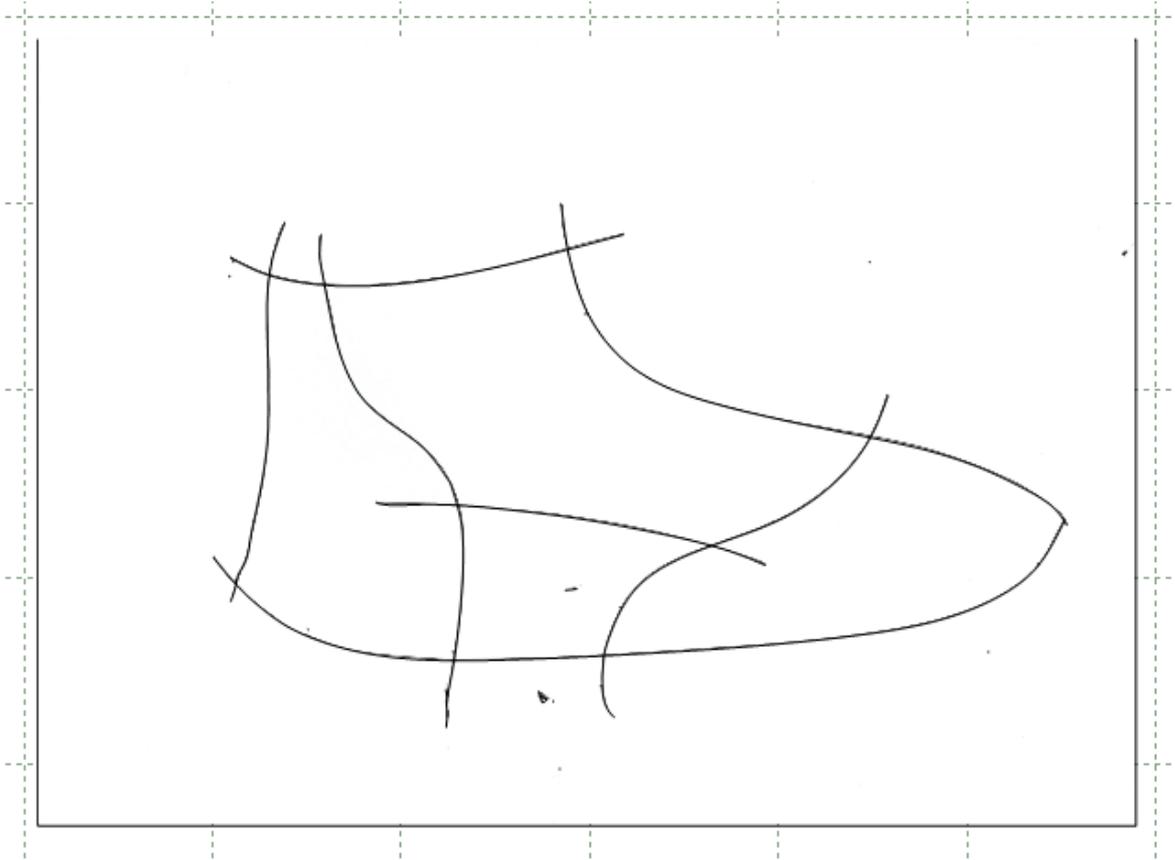
6. A dialog box will appear, insert the DPI value and click **OK**.



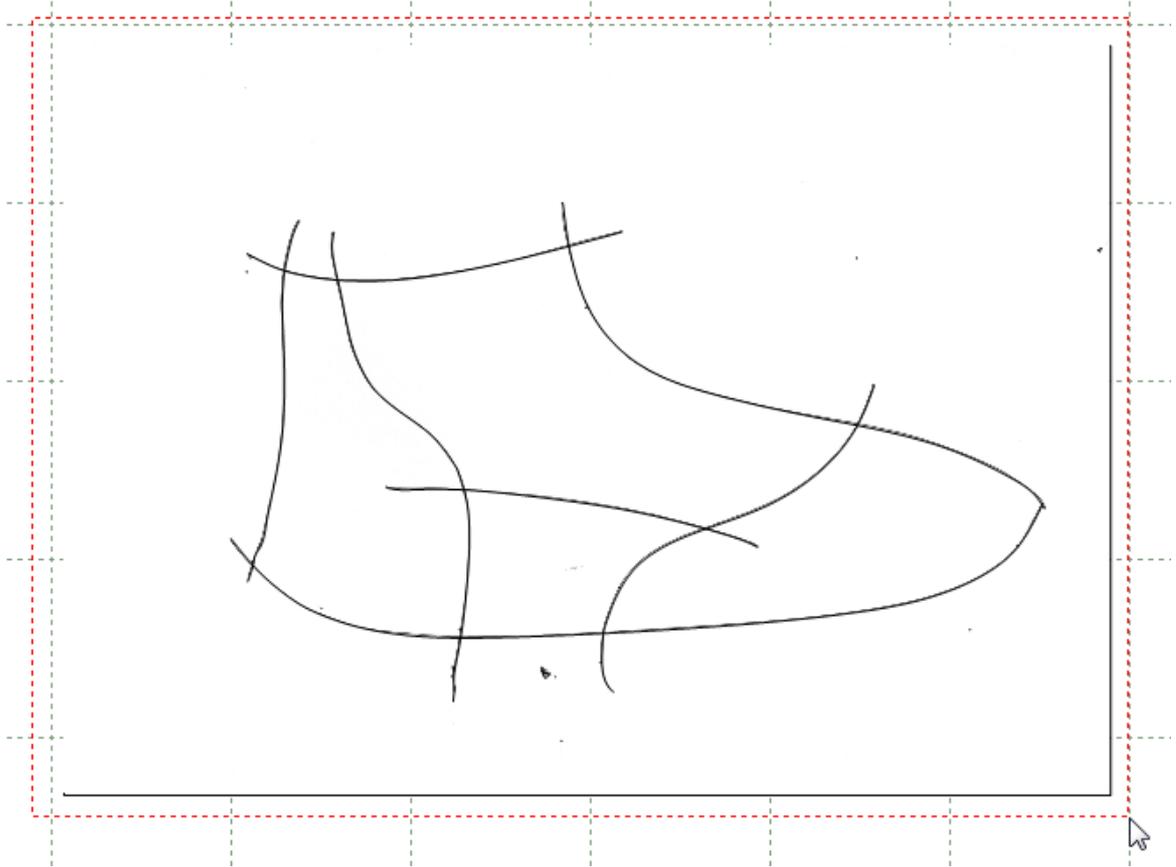
7. The load bar will appear during the scanning process.



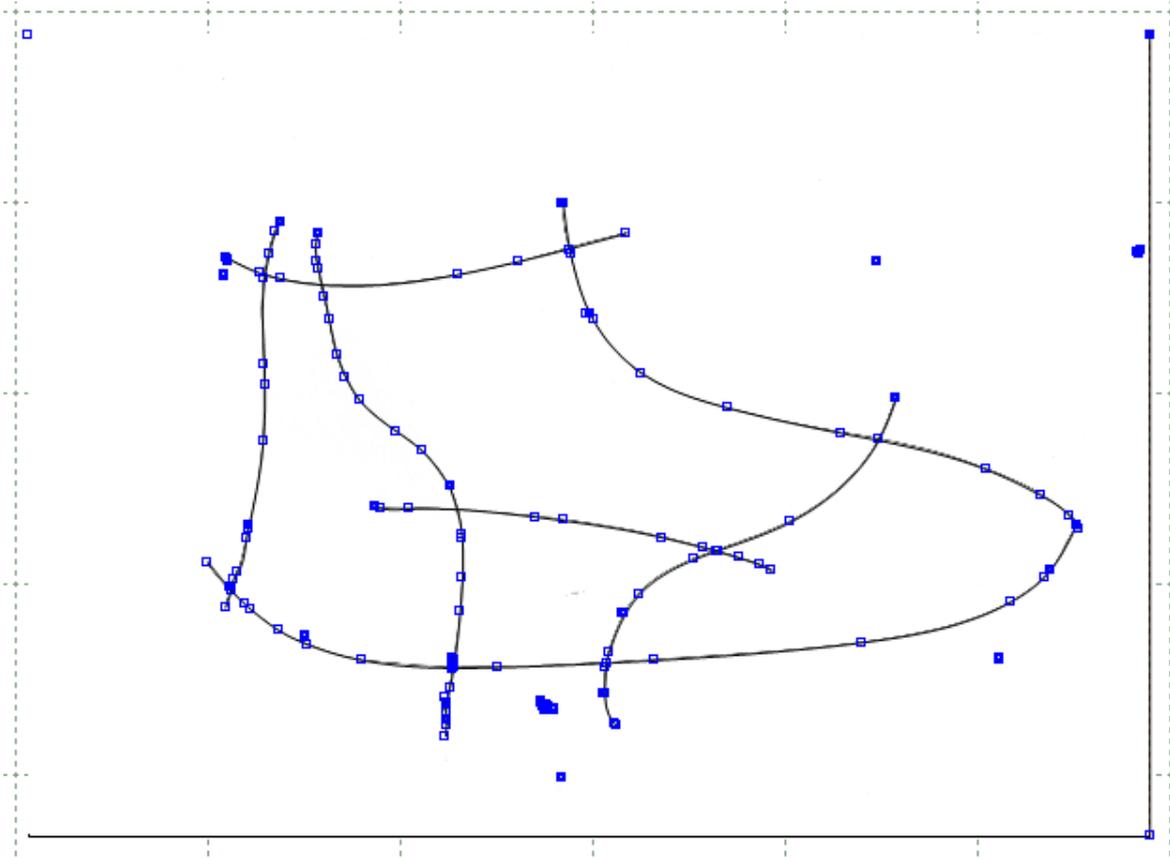
8. After the loading is finish the lines will be displayed on the screen.



9. Select all the image.



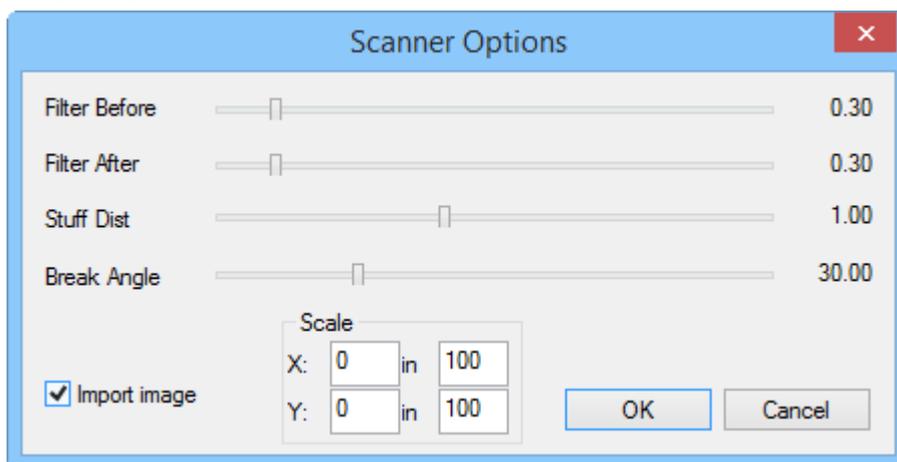
10. Now it's possible to see the lines.



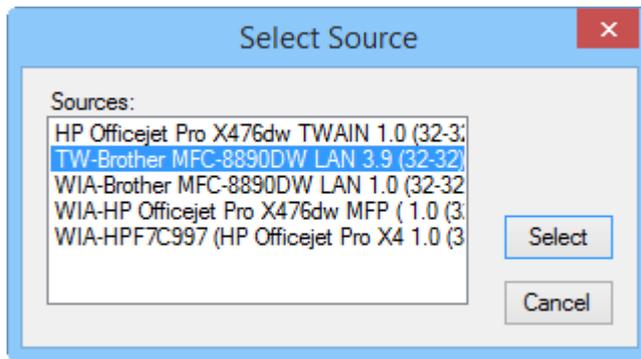
2.9.1.2 File - Digitize - Scanner - Parts

This option lets you scan one or more parts into the software.

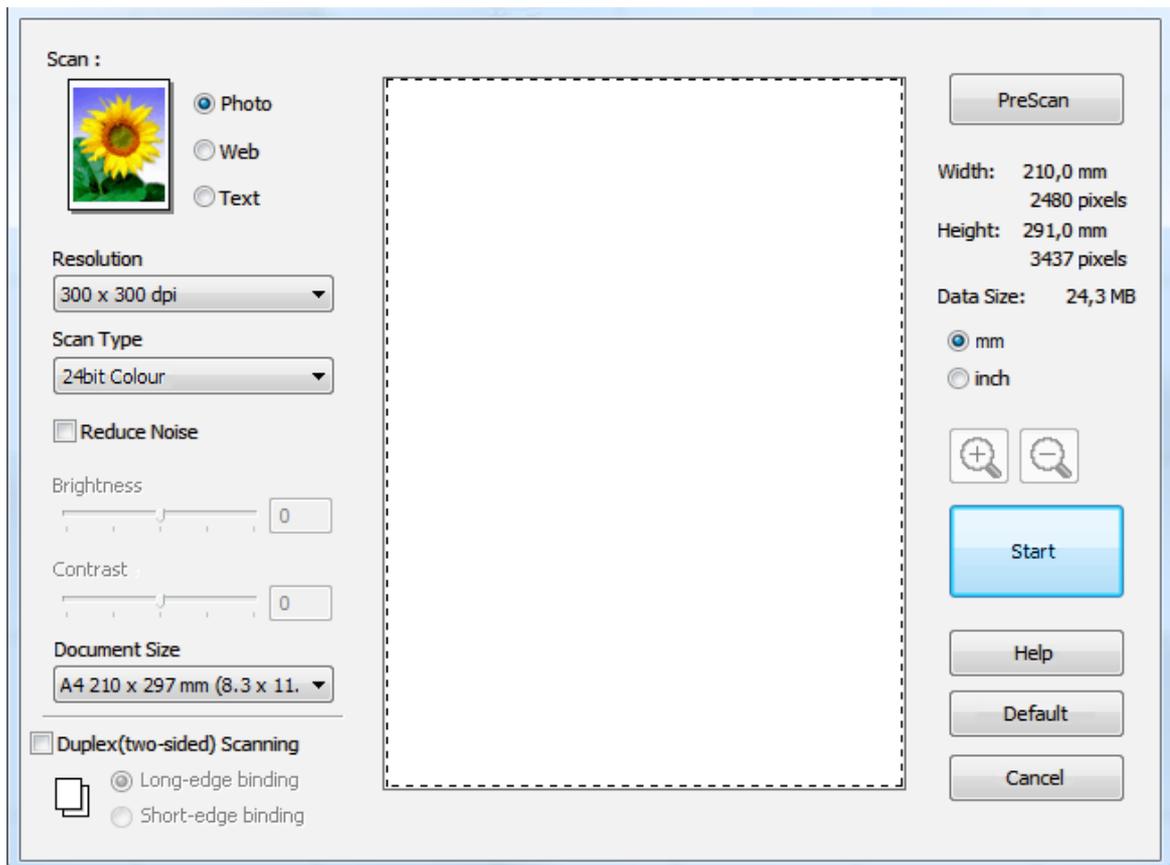
1. Select **Options** from **Digitize** option of the **File** menu to adjust the properties, before you start digitizing the part; however, it's recommended to use the **default values**.



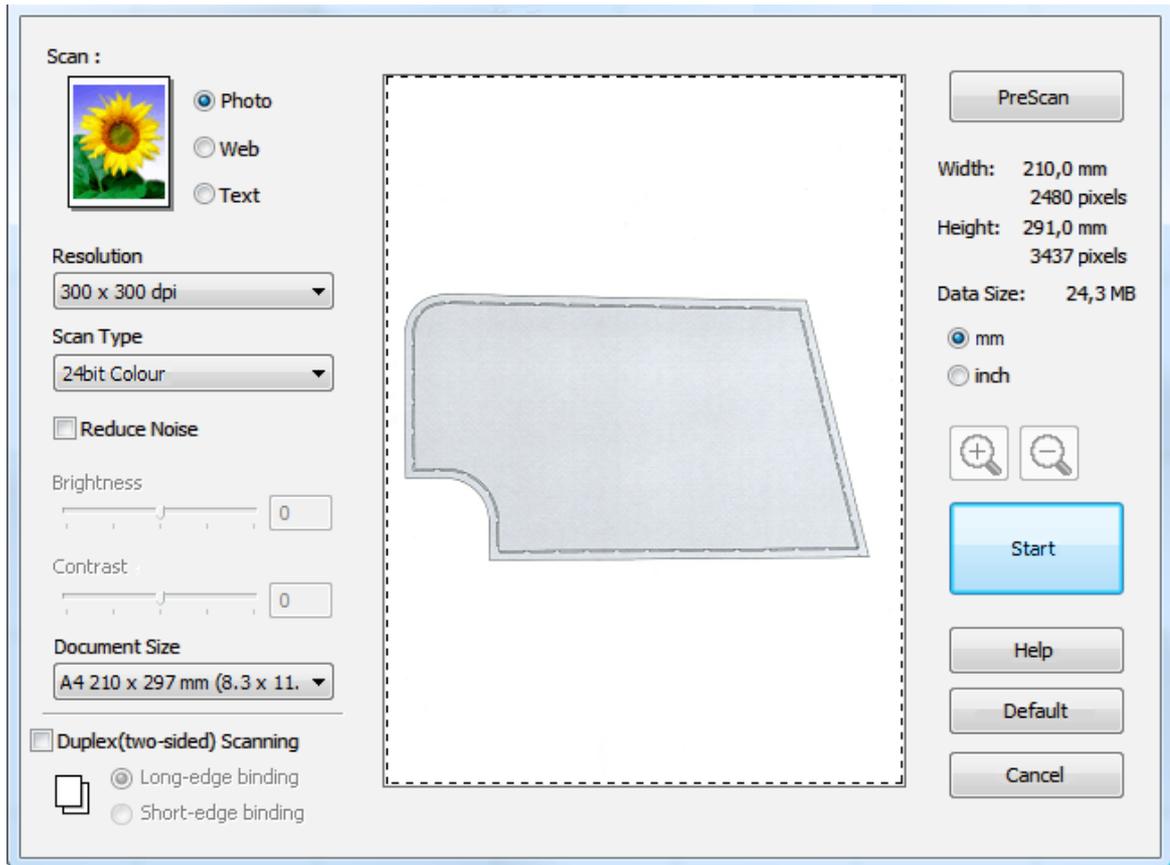
2. Open **Select Source** from **Digitize** option of the **File** menu to select the right scanner.



3. Select **Parts** from the **Digitize** option of the **File** menu. Your scanner software will be launched.

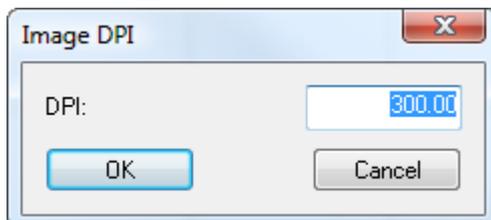


4. Adjust the scan properties and select **PreScan**.

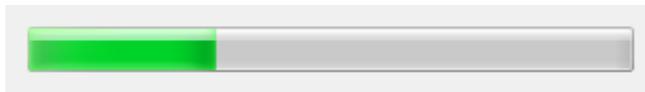


5. To finish the shell scanning press **Start**.

6. A dialog box will appear, insert the DPI value and click **OK**.



7. The load bar will appear during the scanning process.



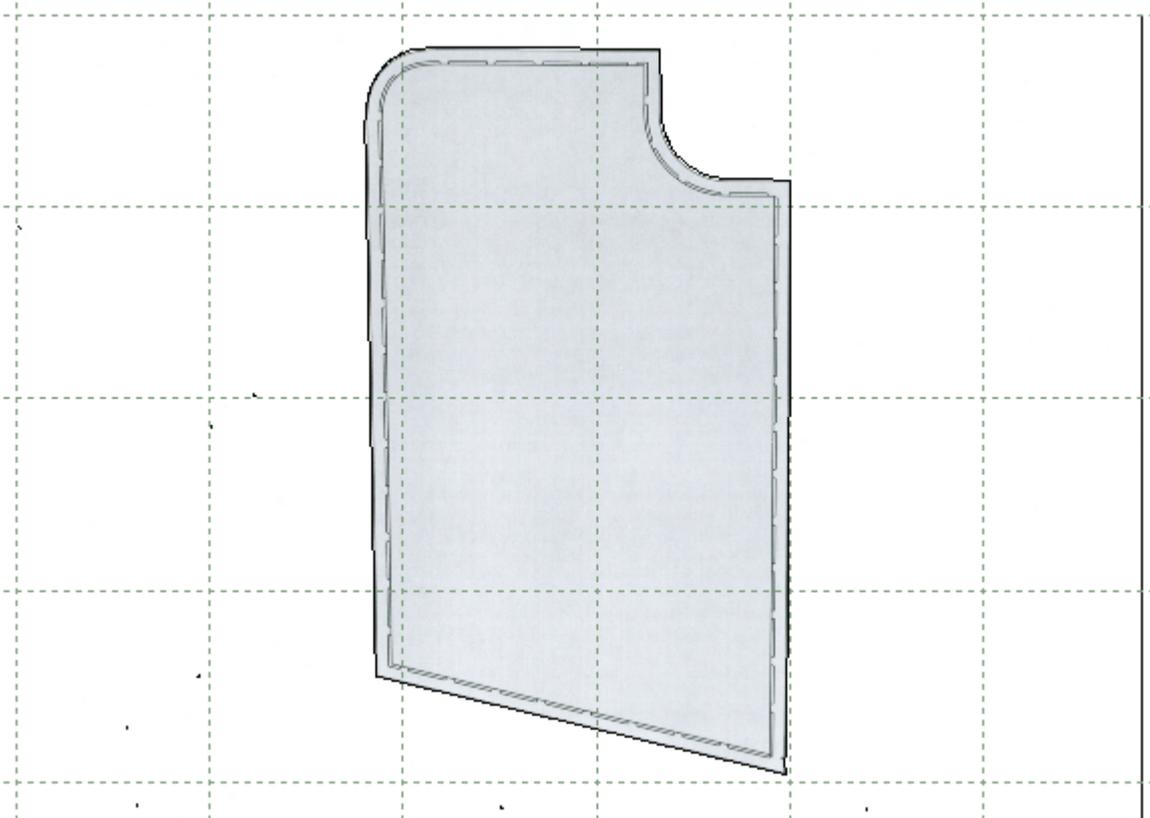
8. Select if the part is or isn't face down.

 Is your part facing down?

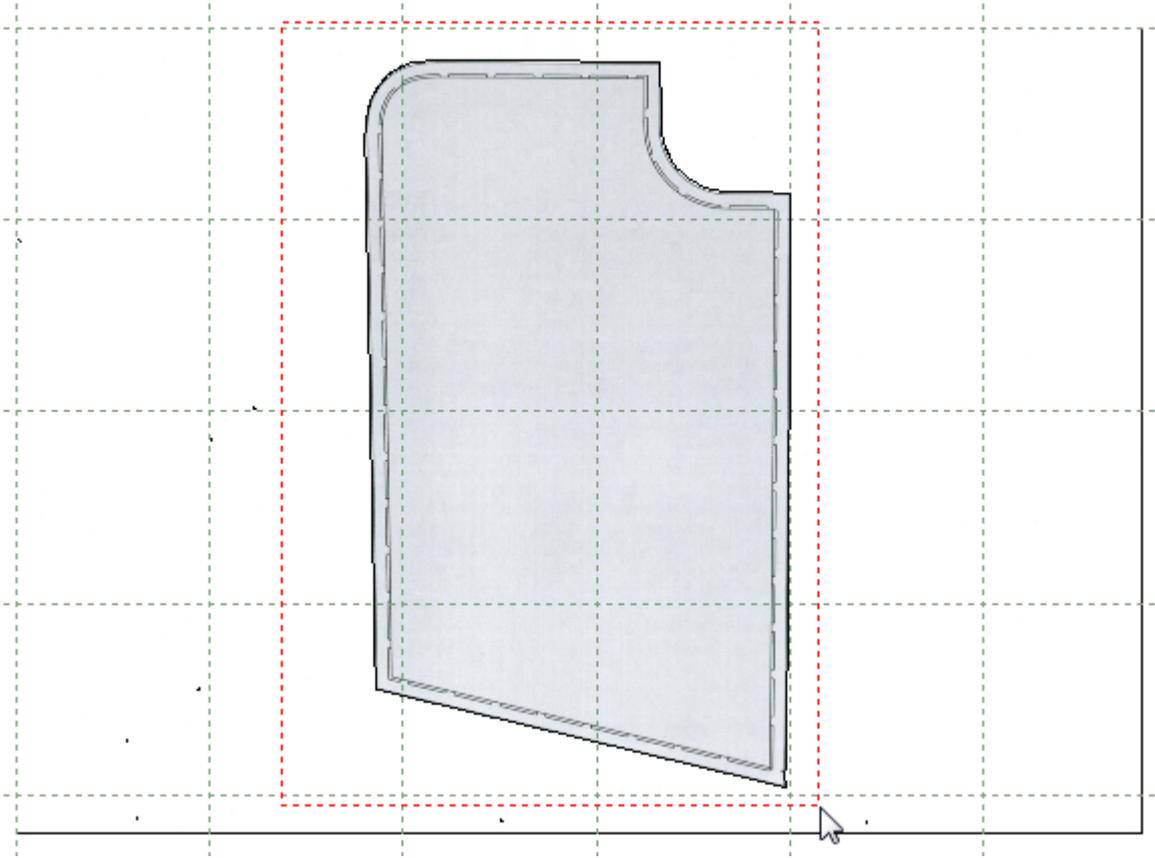
Yes

No

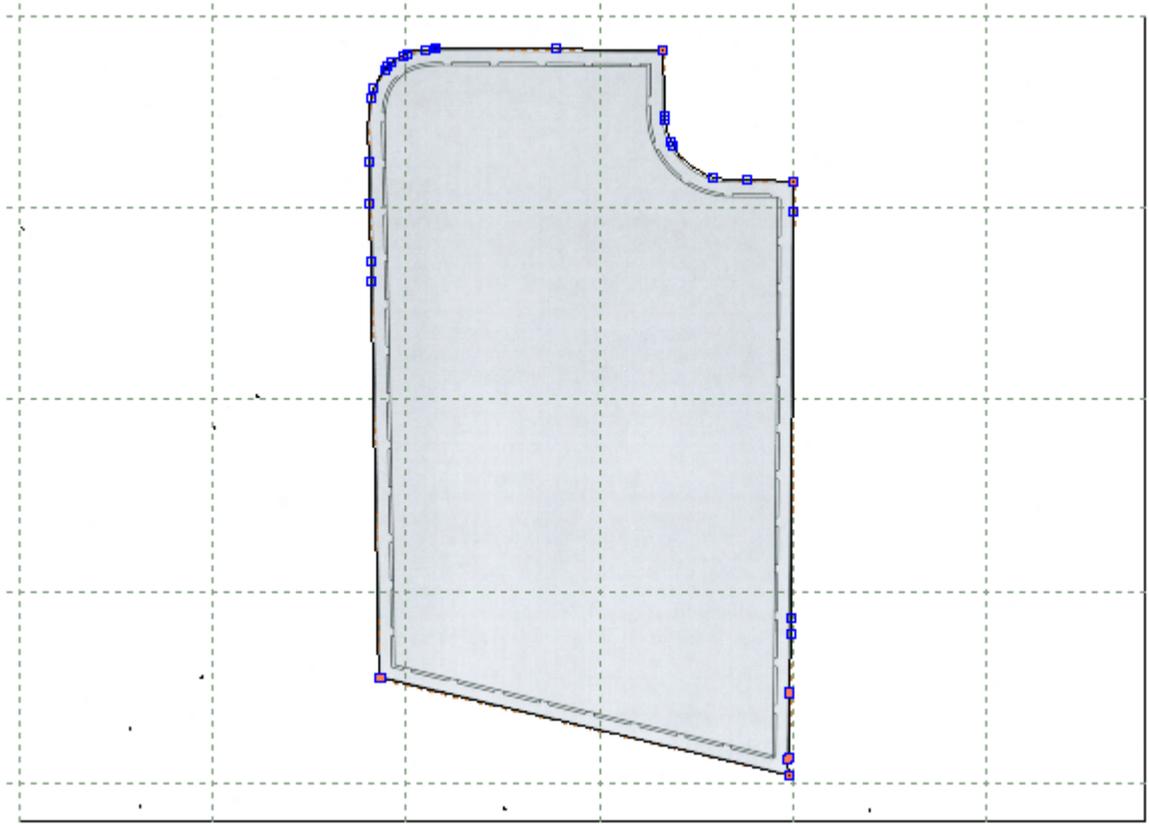
9. After the loading is finish the part will be displayed on the screen.



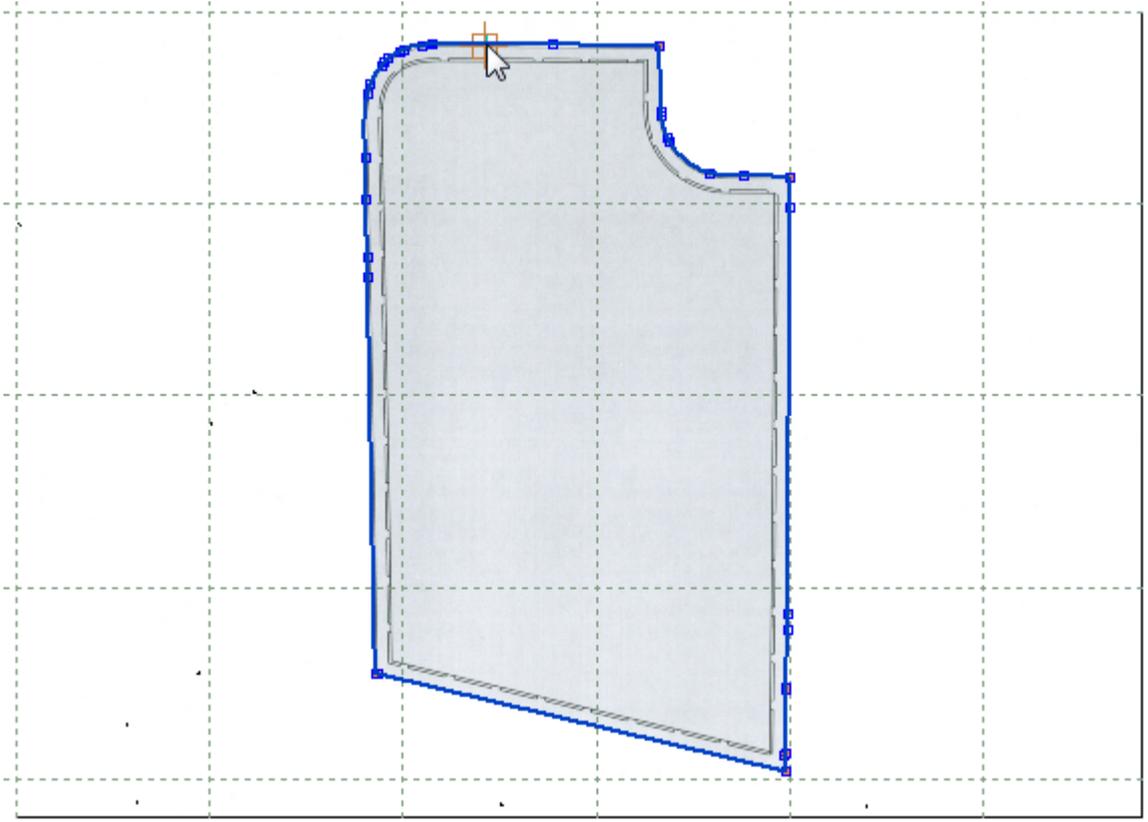
10. Select all the image.



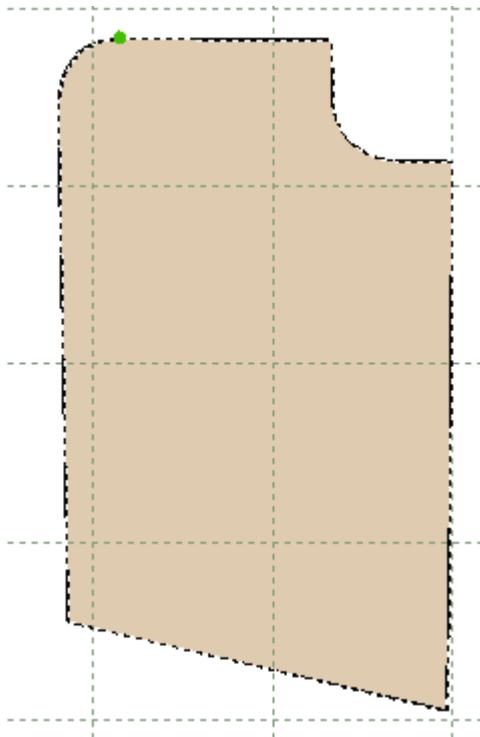
11. Now it's possible to see the line that composes the part.



12. Select **Create Part** from the **Parts** menu, select the line, do a right click and select **Finish**.



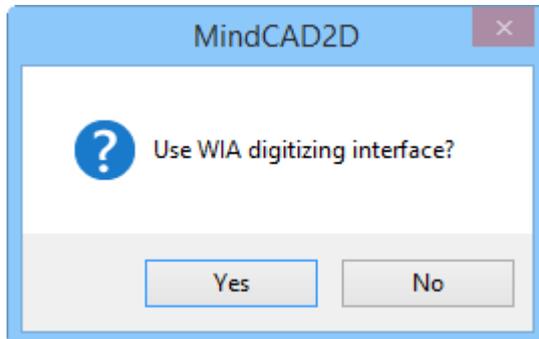
13. The part will be added to the Parts/Library Bar. Double click the part you just created to see it now standalone.



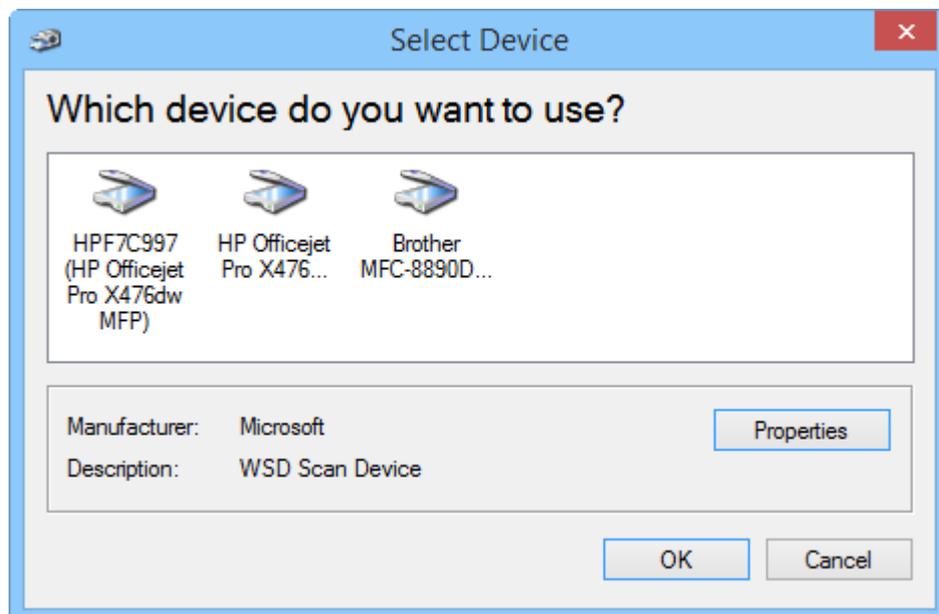
2.9.1.3 File - Digitize - Scanner - Select Source

This option lets you select the scanner to use.

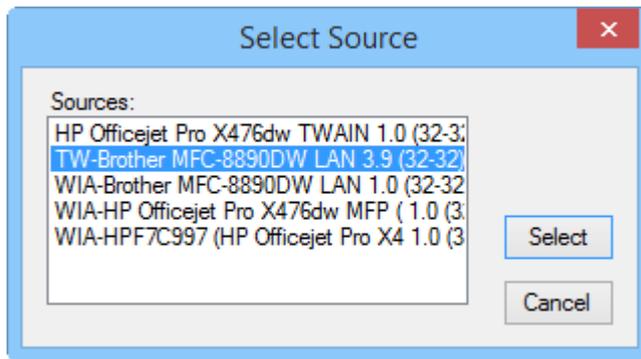
1. Select the **Select Source** from the **Digitize** option of the **File** menu.
2. Select if you want to use the Windows Image Acquisition or the normal interface.



3. Using the WIA to select the source
Select the device to use and press Ok.



4. Using the normal interface to select the source, a list of available scanners will be displayed.
Select the required scanner and press **Select**.



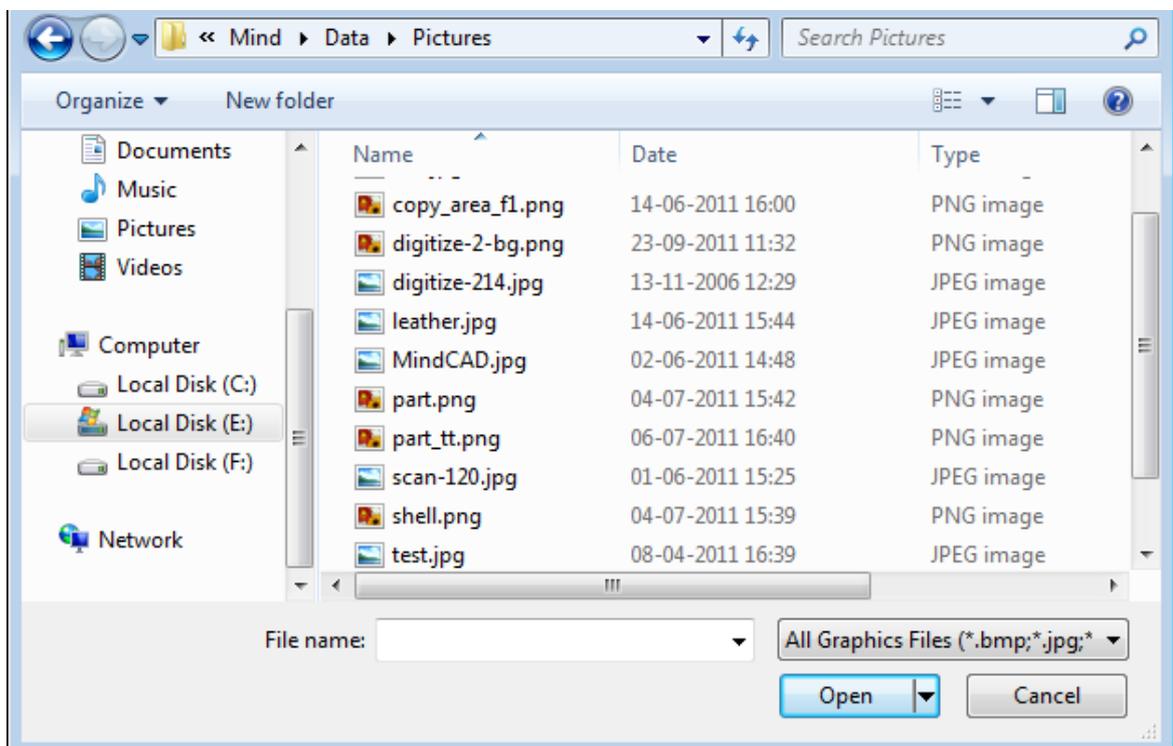
2.9.2 File - Digitize - Image

This menu allows to choose if you selecting an image of a Shell or a Parts.

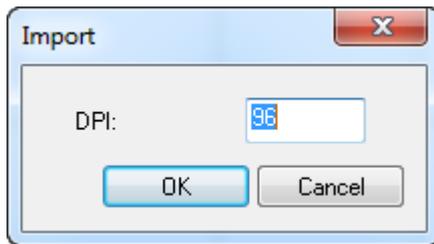


2.9.2.1 File - Digitize - Image - Shell

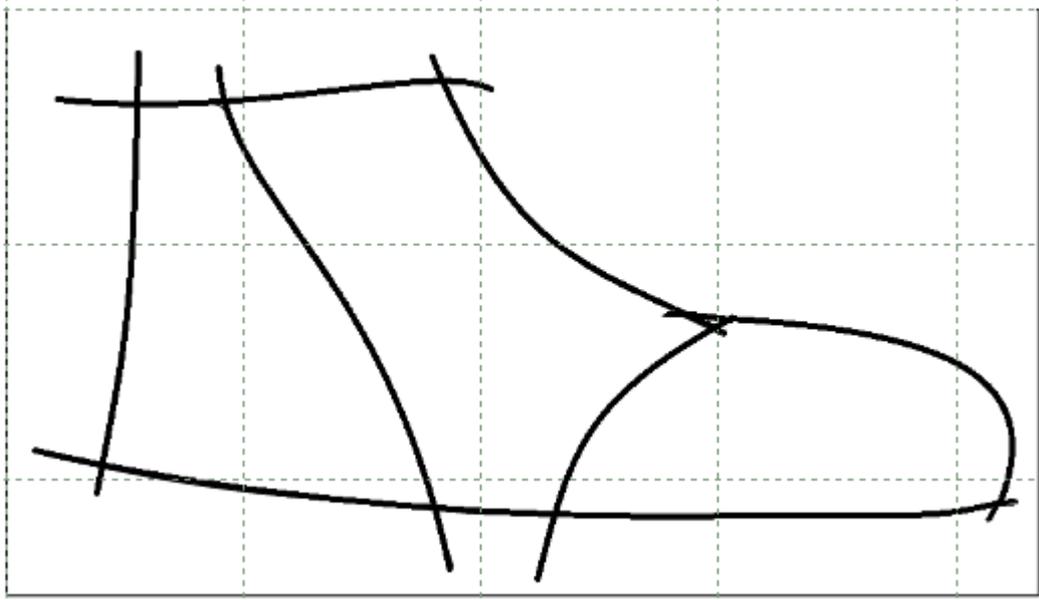
1. Select **Digitize - Image - Shell** options of the **File** menu.
2. Select the file.



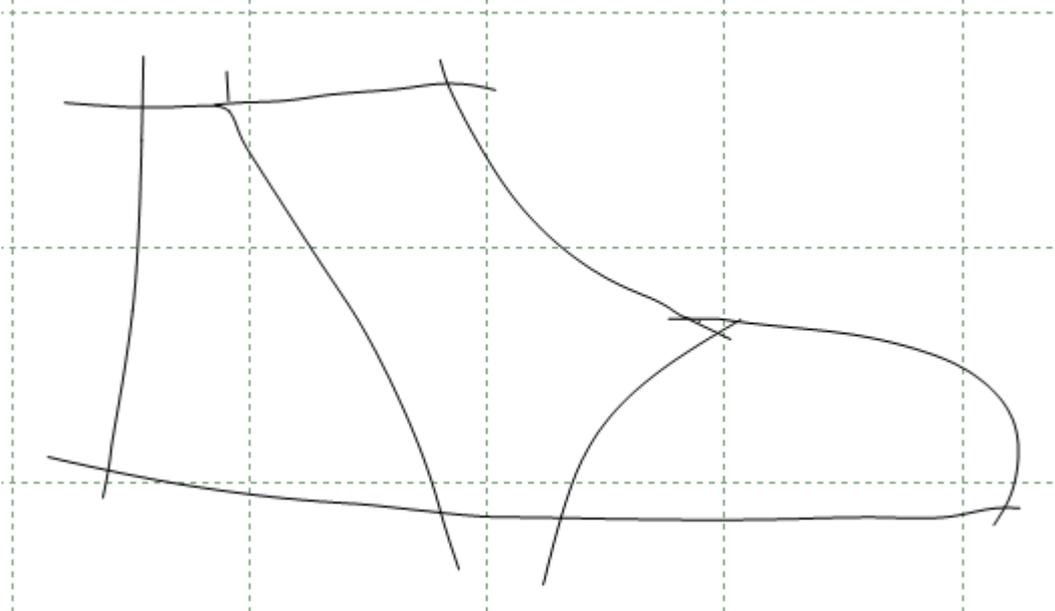
3. Insert the **DPI**.



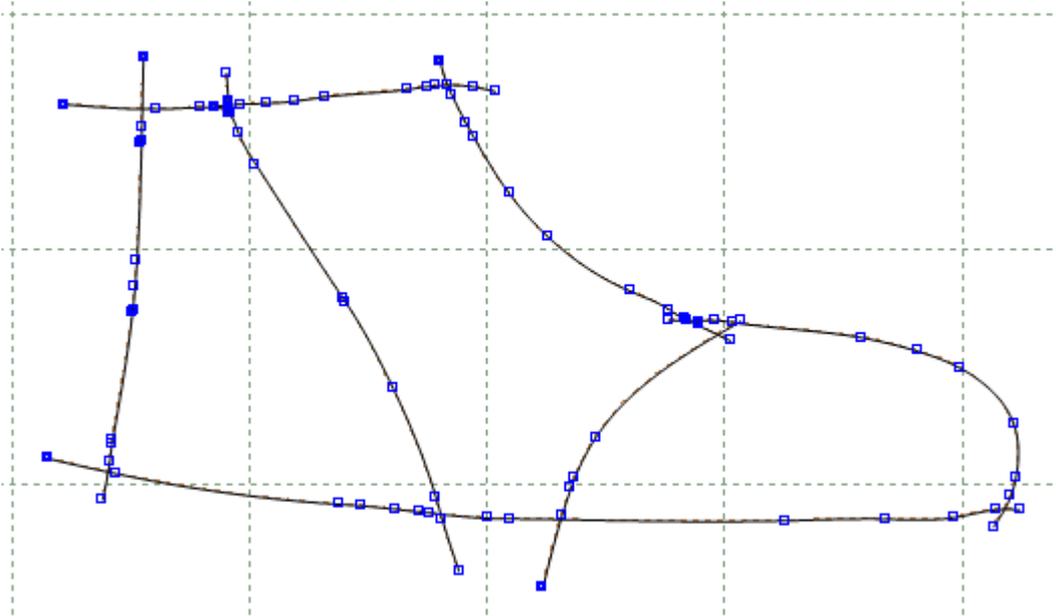
4. After the loading is finish the image will be displayed on the screen.



5. Select show/hide **Images** from the **Layers** options on the **View** menu.

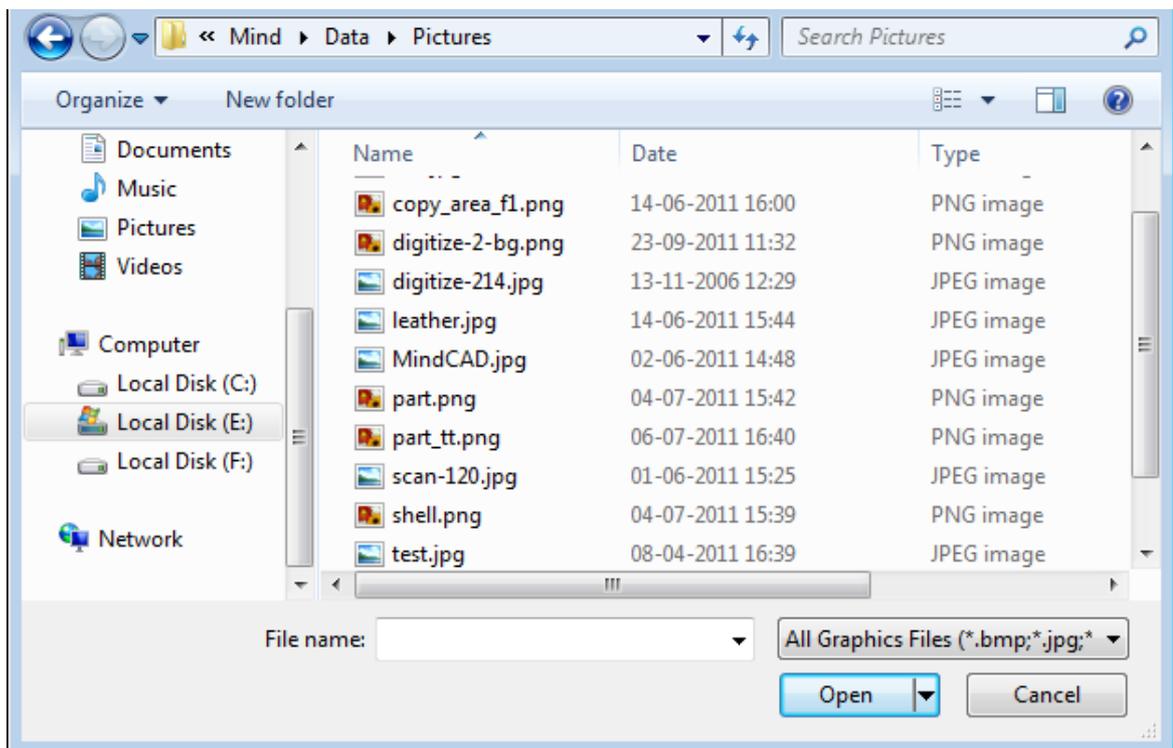


Behind the image are the lines, which are editable.

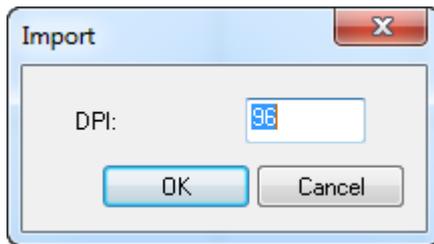


2.9.2.2 File - Digitize - Image - Parts

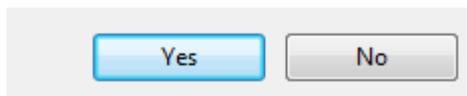
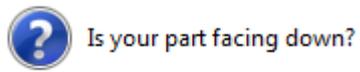
1. Select **Digitize - Image - Parts** options of the **File** menu.
2. Select the file.



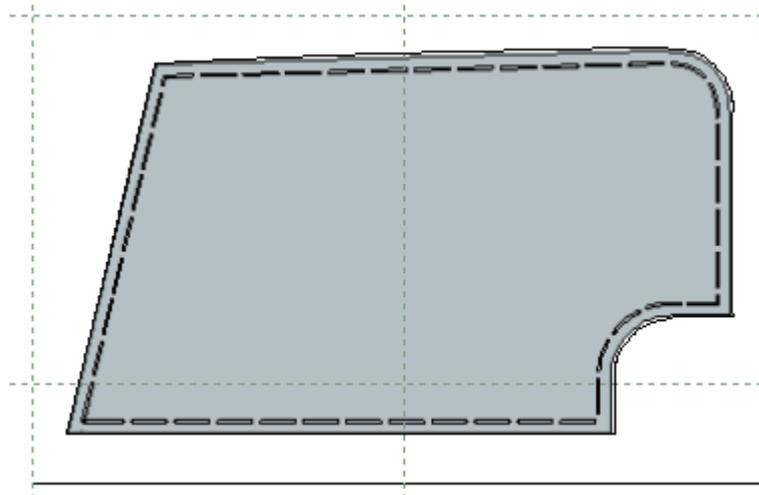
3. Insert the **DPI**.



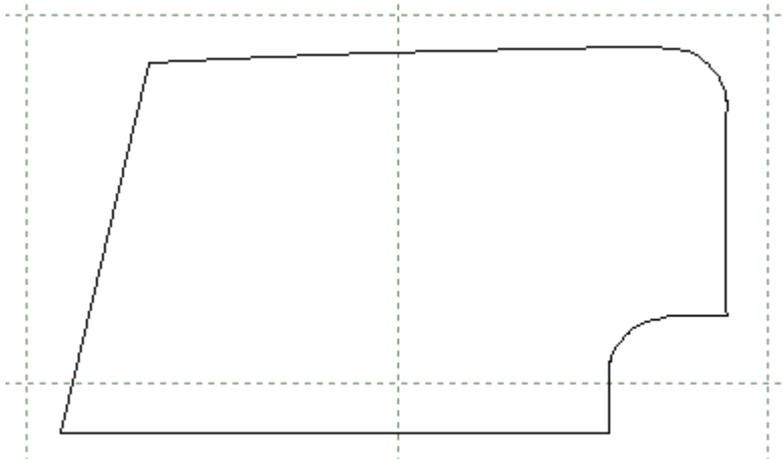
4. Select if the part is or isn't face down.



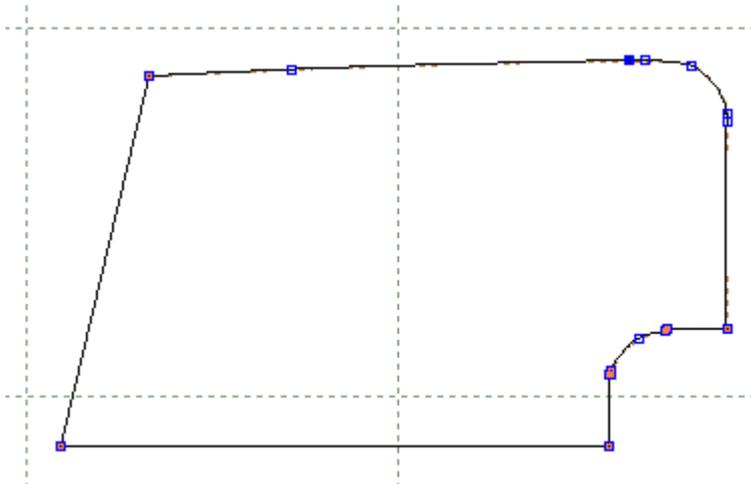
5. After the loading is finish the image will be displayed on the screen.



6. Select show/hide **Images** from the **Layers** options on the **View** menu.

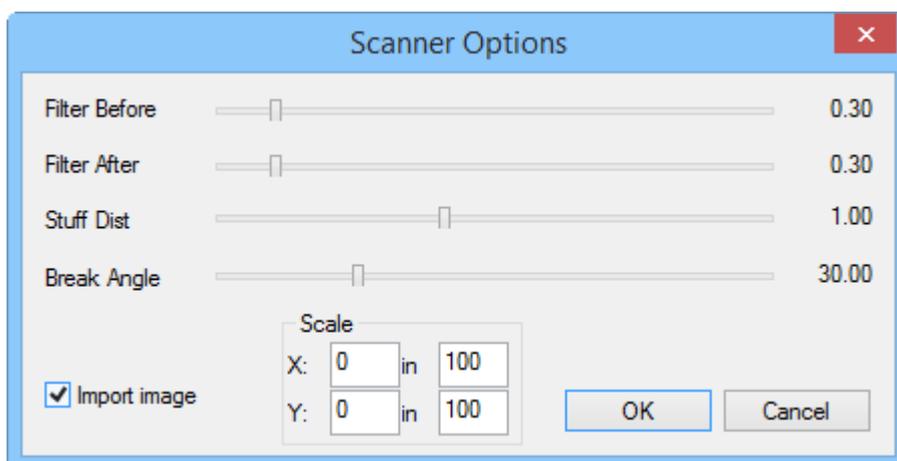


7. Behind the image are the lines, which are editable.



2.9.3 File - Digitize - Options

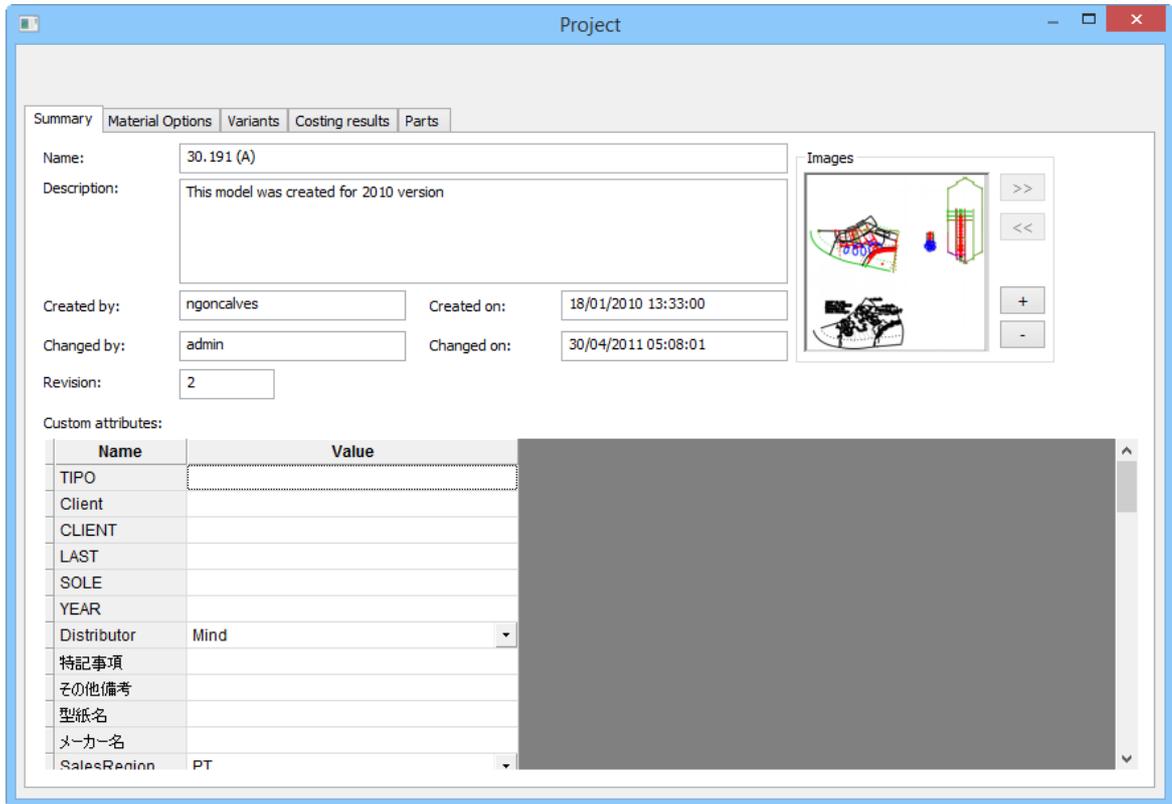
Use this is the option to adjust the properties of the scanning software.



Filter Before	Filter the points to a maximum of this value, before a spline is created
Filter After	Filter the points to a maximum of this value, after a spline is created
Stuff Dist	Distance between points between filter operations
Break Angle	The angle between points above which a corner will be inserted in the line
X Y	Define the X and Y scale when using the scanner
Import Image	Enable or disable import image

2.10 File - Project Properties

Select **Project Properties** from **File** menu, this lets you keep a record of any information regarding your project.



Project

Summary | Material Options | Variants | Costing results | Parts

Name: 30.191 (A)

Description: This model was created for 2010 version

Created by: ngoncalves Created on: 18/01/2010 13:33:00

Changed by: admin Changed on: 30/04/2011 05:08:01

Revision: 2

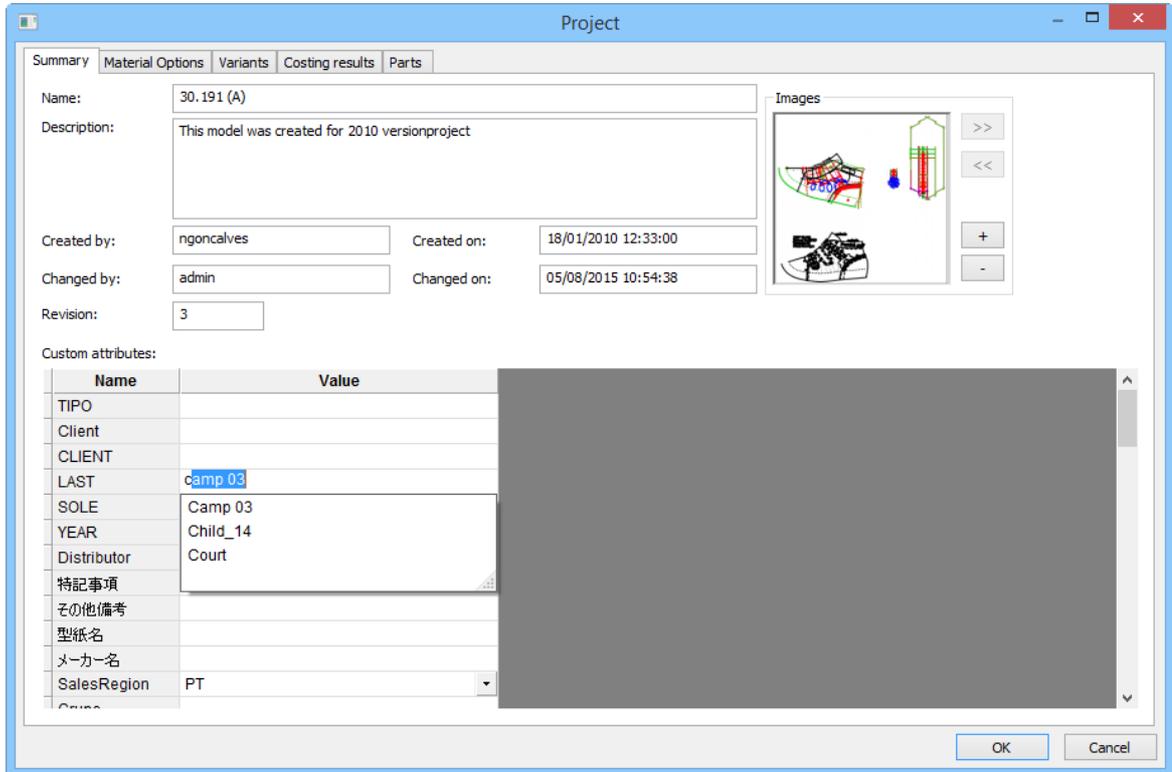
Images

Custom attributes:

Name	Value
TIPO	
Client	
CLIENT	
LAST	
SOLE	
YEAR	
Distributor	Mind
特記事項	
その他備考	
型紙名	
メーカー名	
SalesRegion	PT

2.10.1 Project Properties - Summary

This tab allows to consult the project data, to add personal comments, change the project image or any other information in this area.



The screenshot shows the 'Project' dialog box with the 'Summary' tab selected. The dialog has a title bar with 'Project' and standard window controls. Below the title bar are tabs for 'Summary', 'Material Options', 'Variants', 'Costing results', and 'Parts'. The 'Summary' tab contains the following fields:

- Name: 30.191 (A)
- Description: This model was created for 2010 versionproject
- Created by: ngoncalves
- Created on: 18/01/2010 12:33:00
- Changed by: admin
- Changed on: 05/08/2015 10:54:38
- Revision: 3

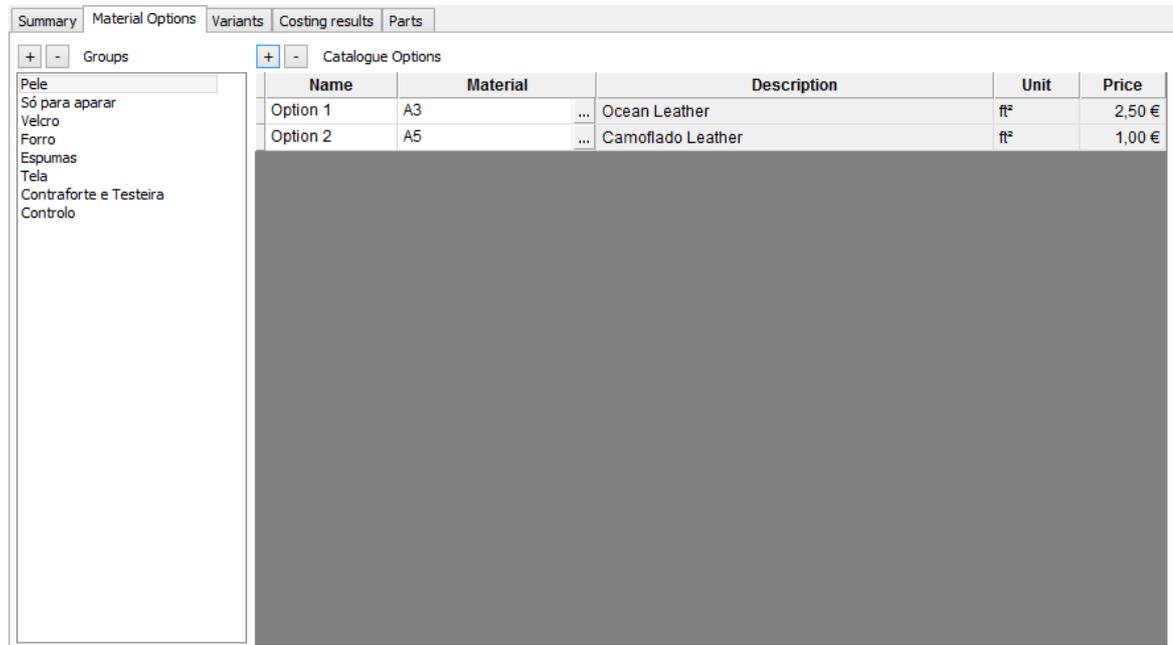
There is an 'Images' section on the right with a preview of three images and navigation buttons (>>, <<, +, -). Below these is a 'Custom attributes' table:

Name	Value
TIPO	
Client	
CLIENT	
LAST	camp 03
SOLE	Camp 03
YEAR	Child_14
Distributor	Court
特記事項	
その他備考	
型紙名	
メーカー名	
SalesRegion	PT
Cruse	

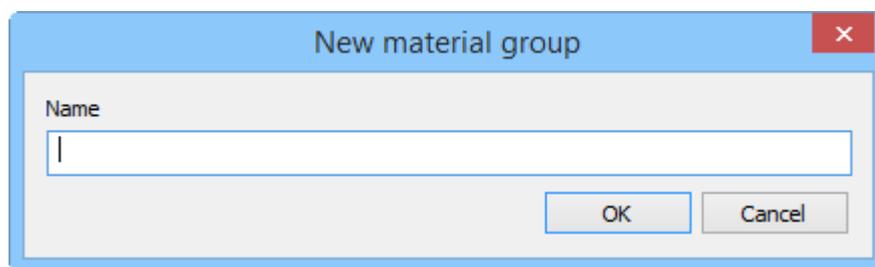
At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

2.10.2 Project Properties - Material Options

Shows the material groups associated to this project and the material details.

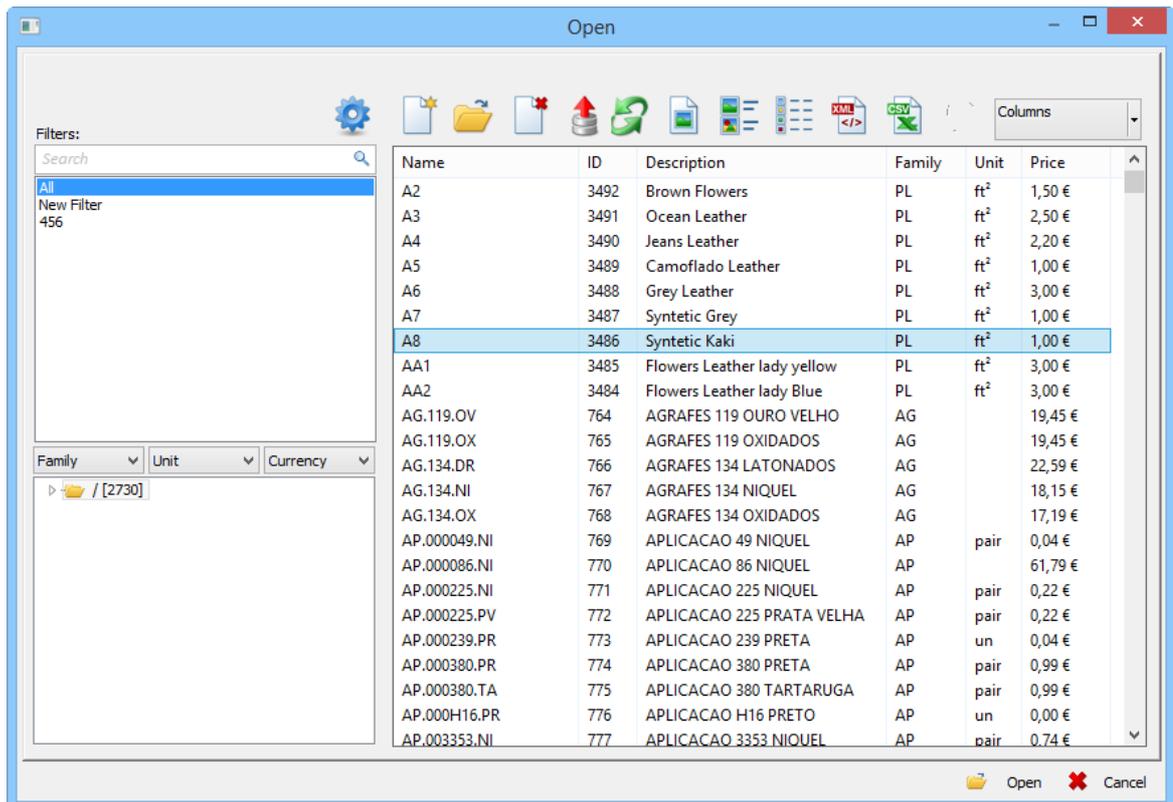


1. To create a new Material Group, press the button **Groups**; The window new material group will appear;
2. Insert the new material group name and press **OK**.



3. The group will be created, now to add material to the group, press the button **Catalogue options**; A window with all available material will open.
4. Select the required material, press Ok and the material will be added to the group. Its possible to add several material to the same group, to do that repeat the same process.

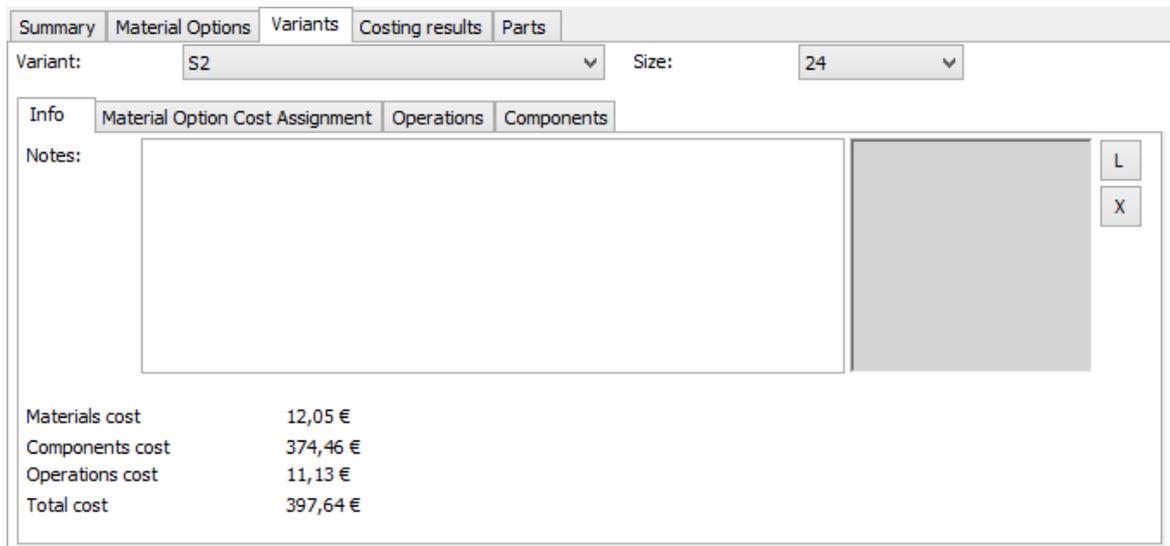
Note: Use **CTRL** to select more than one material at the same time.



5. It's possible to edit the name and material group of the material added to the group, just do a double click over the field to edit.

2.10.3 Project Properties - Variants

In this tab you can find the projects variants available in the selected project.



Variants Types:

• Material Options Cost Assignment

Summary Material Options Variants Costing results Parts									
Variant:		S2		Size:		24			
Info Material Option Cost Assignment Operations Components									
Group	Option	Source Material	Unit	Price	Costing group	Area	Section	Total price	
Pele	Option 1	Ocean Leather	ft²	2,50 €	{Pele}	2.0783 ft²	Costura	5,19 €	
Só para aparar	Option 1	Brown Flowers	ft²	1,50 €	{2D\lilmbre gola}	0.0487 ft²	Pré-Costura	0,07 €	
	Option 1	Flowers Leather lady Blue	ft²	3,00 €	{Pele}	2.0783 ft²	Pré-Corte	6,23 €	
Forro	Option 1	Brown Lines	ft²	2,00 €	{2D\Tira de forro}	0.0121 ft²	Pré-Costura	0,02 €	
Espumas	Option 1	AQUILINE SV COLA 04 (DARK BROWN)	m²	2,56 €	{2D\Biqueira}	0.0044 m²	Pré-Costura	0,01 €	
Tela	Option 1	Brown Lines	ft²	2,00 €	{2D\Cano}	0.1916 ft²	Montagem	0,38 €	
Contraforte e Tes	Option 1	Camoflado Leather	ft²	1,00 €	{2D\Taloeira}	0.0509 ft²	Pré-Corte	0,05 €	
Controlo	Option 1	Brown Lines	ft²	2,00 €	{2D\Taloeira}	0.0509 ft²		0,10 €	
Total								12,05 €	

• Operations

Summary Material Options Variants Costing results Parts									
Variant:		S2		Size:		24			
Info Material Option Cost Assignment Operations Components									
Add Operation Remove Operation Copy from variant									
Operation	Description	Unit	Price	Quantity	Overhead	Section	Size	Total price	
Embalamento	Embalamento	min	0,31 €	10.000000	1.0 %	Corte	[19.5; 20]	3,13 €	
OP03	Operação 03 (III)	min	4,00 €	2.000000	0.0 %	Pré-Corte		8,00 €	
Total								11,13 €	

• Components

Summary Material Options Variants Costing results Parts									
Variant:		S2		Size:		24			
Info Material Option Cost Assignment Operations Components									
Add Components Remove Component Copy from variant									
Component	Description	Unit	Price	Quantity	Section	Size	Total price		
AG.119.OV	AGRAFES 119 OURO VELHO		19,45 €	1.000000			19,45 €		
AG.119.OX	AGRAFES 119 OXIDADOS		19,45 €	2.000000			38,90 €		
AG.134.DR	AGRAFES 134 LATONADOS		22,59 €	3.000000			67,77 €		
AG.134.NI	AGRAFES 134 NIQUEL		18,15 €	8.000000			145,20 €		
AG.134.OX	AGRAFES 134 OXIDADOS		17,19 €	6.000000			103,14 €		
Total							374,46 €		

2.10.4 Project Properties - Costing results

In this area you have two automatic values, the Netresult and Fullresult of each image.

Netresult - Value obtained by the consuming calculation.

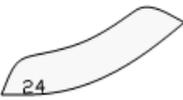
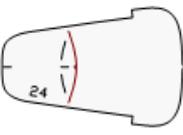
Fullresult - Is the Netresult with the factors defined by the user.

You can order by Variant or Group.

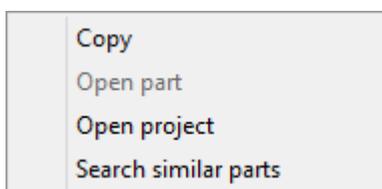
Image	Size	Method	Efficiency	Parts	Overhead1	Overhead2	PartsArea	NetResult	FullResult
	24	ConvexHull	94.1%	1			0.00 m ² / 0.05 ft ²	0.00 m ² / 0.05 ft ²	0.00 m ² / 0.05 ft ²

2.10.5 Project Properties - Parts

Allows to consult all the parts in the project.

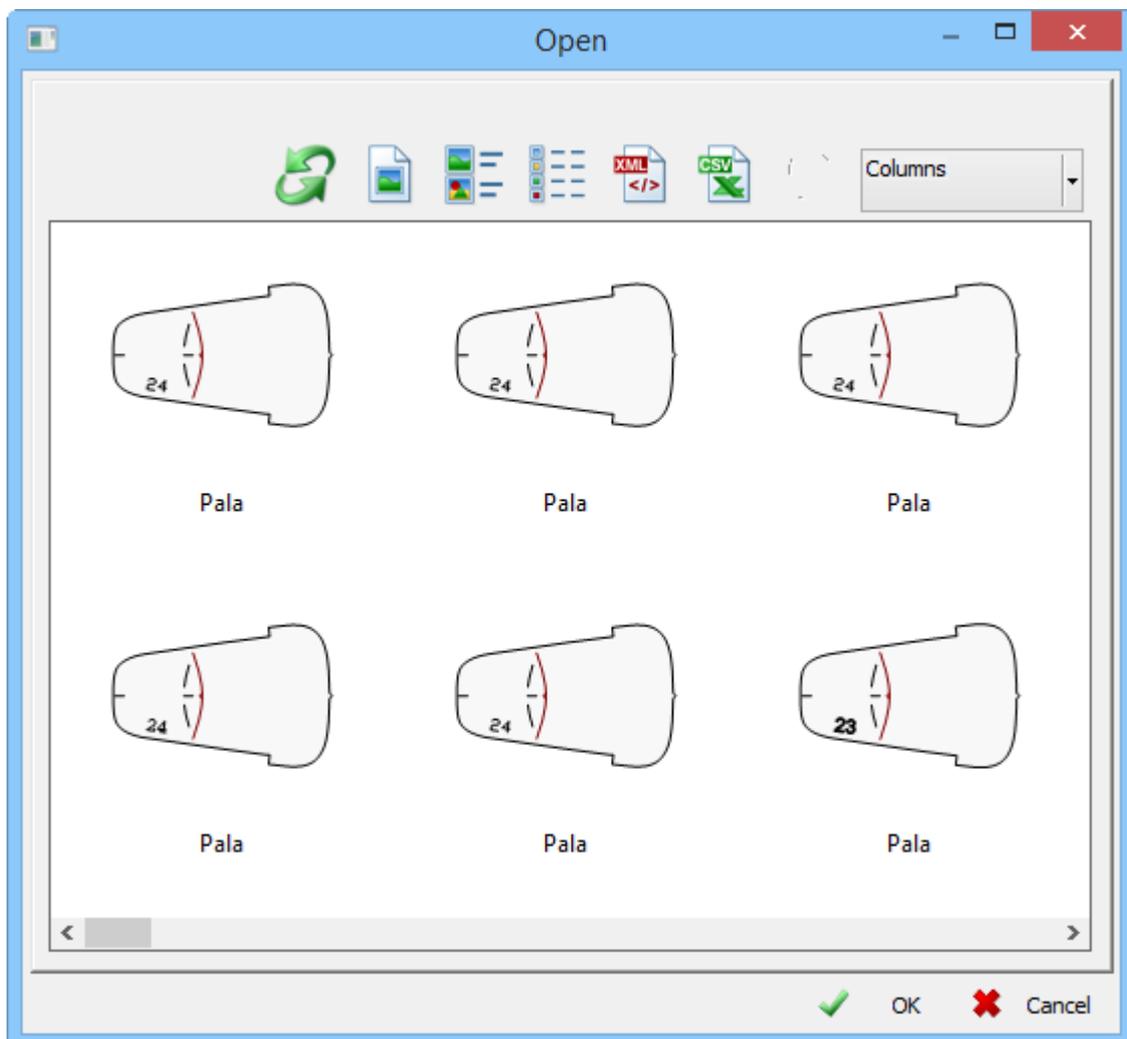
Summary	Material Options	Variants	Costing results	Parts
<div style="display: flex; justify-content: space-between;"> Variant: 2D Group: Taloeira </div>				
      Columns				
   				
Biqueira Vista Cano Taloeira				
   				
Pala Vista-3 Gola flor				

Right click over a part to access the contextual menu:



- **Copy** - Allow to copy the selected part and past directly into **MindCAD 2D Design & Engineering**.

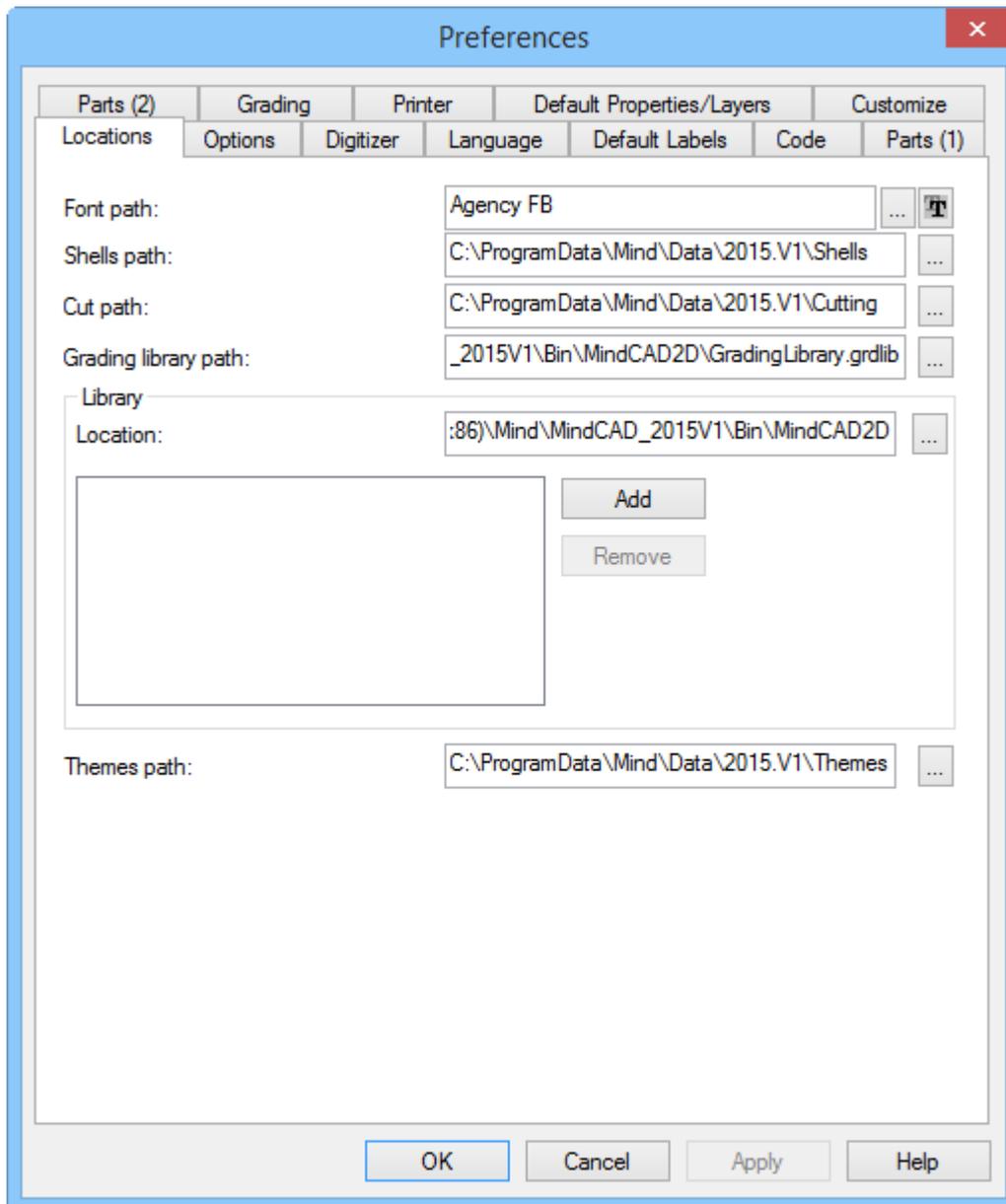
- **Open project** - Opens the part project.
- **Search similar parts** - It will use a search engine to search for parts similar to the selected one, and show them in a new tab, Similar parts.



2.11 File - Preferences

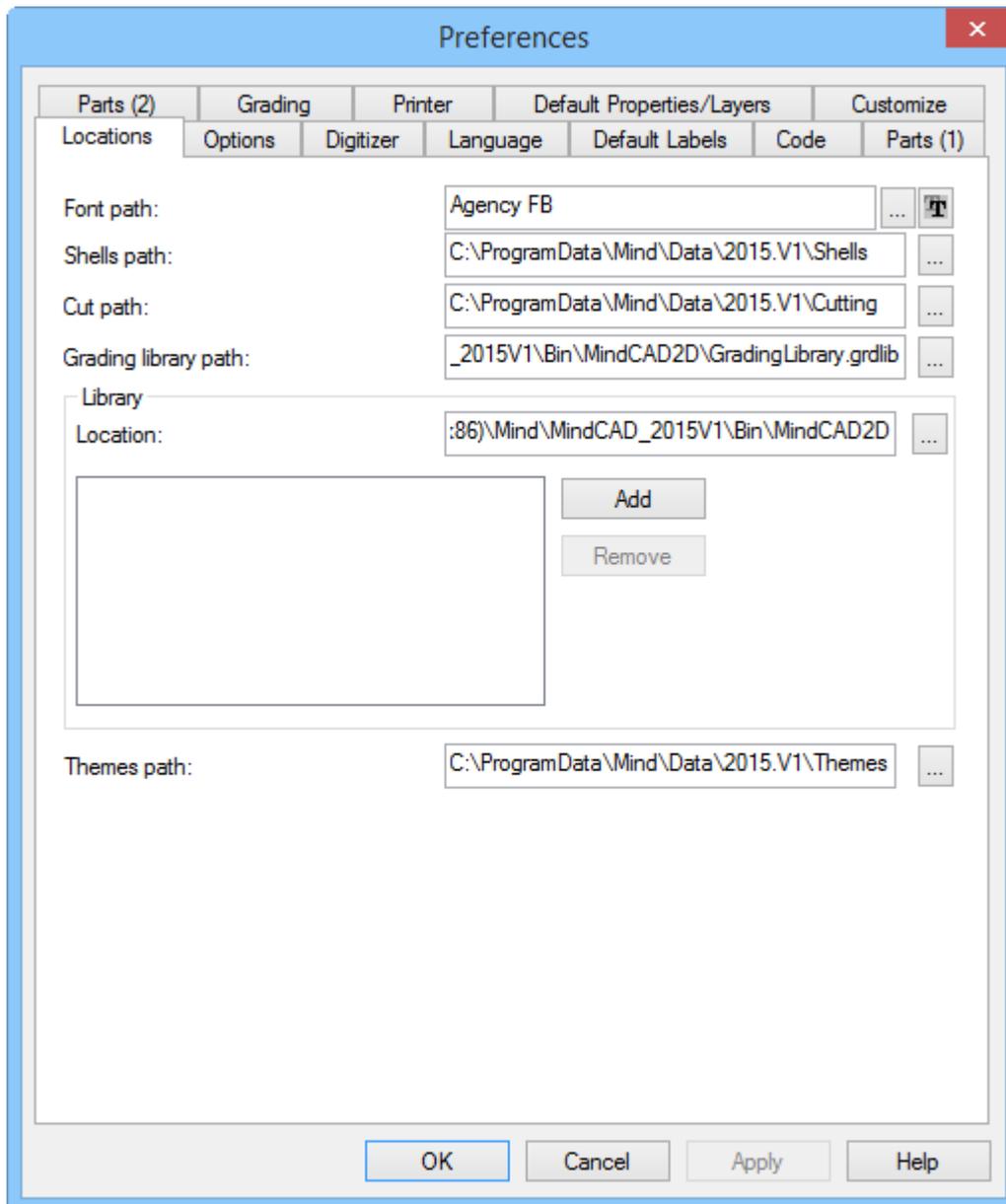
Use this option to define the default settings of things like:

- file locations
- colors
- language



2.11.1 File - Preferences - Locations

Use these options to set your default file locations.



Font Path - The directory where you keep the font that is loaded by the software on startup; it is recommended that this option is not changed.

Shells Path - The directory where you keep your shells. Select the directory by clicking  to display the **Browse for folder** dialogue box

Cut Path - The directory where you keep your files for cutting. Select the directory by clicking  to display the **Browse for folder** dialogue box

Grading Library Path - The directory where your grading library is kept. Select the directory by

clicking  to display the **Browse for folder** dialogue box

Library Location - The directory where your punch library is kept. Select the directory by clicking  to display the **Browse for folder** dialogue box

Add - Use this option to create a new library. A lines library could be added to hold standard lines such as heel curves. The library will be displayed in the Parts toolbar. Use the added tab in the same way as the punch library

Remove - Use this option to remove any libraries that you have added.

Themes Path - The directory where your themes are kept. Select the directory by clicking  to display the **Browse for folder** dialogue box

2.11.2 File - Preferences - Options

Use these options to set personal preferences for:

- autosave
- line deletion
- drawing margins
- export
- line widths of model when drawing
- default document size
- keep multiple versions of documents
- side
- showing grading points

Grading	Printer	Default Properties/Layers	Customize
Locations	Options	Digitizer	Language
Default Labels	Code	Parts	
<p>Auto-save</p> <p><input checked="" type="checkbox"/> Activate Time (min): <input type="text" value="1"/></p> <p><input checked="" type="checkbox"/> Confirm deletion of dependent lines</p> <p><input checked="" type="checkbox"/> Show Scalement Points</p> <p>Continuous Drawing Margin: <input type="text" value="0.5"/></p> <p><input checked="" type="checkbox"/> New lines are not exported to 3D</p> <p><input checked="" type="checkbox"/> Use line widths of model when drawing</p> <p><input checked="" type="checkbox"/> Pick multiple parts</p> <p><input type="checkbox"/> Auto center view when zooming</p> <p>New document properties</p> <p>Width (mm): <input type="text" value="2000"/> Height (mm): <input type="text" value="2000"/></p> <p>Side: <input type="text" value="Left"/> ▾</p> <p><input checked="" type="checkbox"/> Keep multiple versions of documents</p> <p>Number of versions to keep: <input type="text" value="0"/></p> <p>Information on the shell</p> <p><input type="checkbox"/> Grading information <input type="checkbox"/> Model side</p> <p>Draw mode</p> <p><input checked="" type="radio"/> Fast</p> <p><input type="radio"/> Quality</p> <p><input type="checkbox"/> Auto-degrade quality</p> <p>Monitor</p> <p><input type="checkbox"/> Override</p> <p>Width (mm): <input type="text" value="473"/></p>			

A comprehensive description on available options follows:

Autosave	If <i>ON</i> , your work is automatically save at the specified time interval
Confirm deletion of dependent lines	If <i>ON</i> , you will be warned if the line you are trying to delete has other lines dependant on it
Show Scalement Points	If <i>ON</i> , show the grading points by default
Continuous Drawing Margin	Parts can be digitized from a tablet using a mouse with a small 'follower'. The special cursor is tracked around the outline of the part and this option is used to give the offset required to offset the input points back to the original part boundary
New lines are not exported	If <i>ON</i> , all new lines will not be exported to 3D Design & Engineering

to 3D	
Use line widths of model when drawing	If <i>ON</i> , line drawing is done with the thickness specified by the user. If <i>OFF</i> the thickness is equivalent to zero, the thinnest possible line is displayed
Pick multiple parts	If <i>ON</i> , activates pick multiple parts
Auto center view when zooming	Enable to auto center when applying zoom.
New Document Properties	set the default document size in millimetres
Side	set the default document side (right or left)
Keep multiple versions of documents	If <i>ON</i> , activates versioning which allows for retrieval of old versions
Number versions to keep	number of versions to be kept in the history of a document
Information on the shell - Grading	If <i>ON</i> , the grading information will be displayed on shell by default
Information on the shell - Model Side	If <i>ON</i> , the model side information will be displayed on shell by default
Draw Mode	Select Fast or Quality mode. Enable or disable Auto-degrade quality .
Monitor	If the Override option are <i>ON</i> the user as to specify the dimensions of is monitor in mm.

2.11.3 File - Preferences - Digitizer

Use these options to set the cursor keys actions when digitising with a tablet.

Digitizer

Digitizer: Digitizer not found

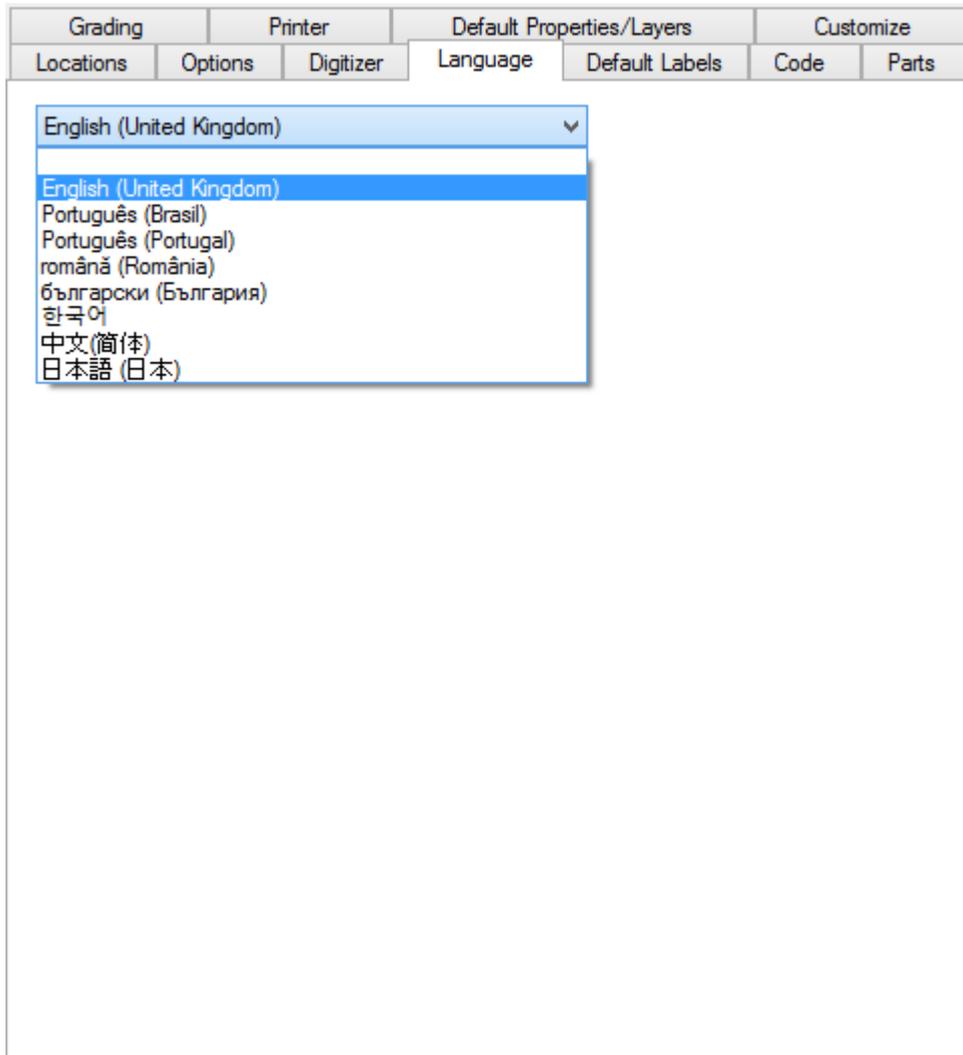
Dimensions:

Key Setup:

canvas/screen mode:	<input type="text" value=" "/>	Change	Erase
Select:	<input type="text"/>	Change	Erase
Finish:	<input type="text"/>	Change	Erase
Next tool:	<input type="text"/>	Change	Erase
Previous tool:	<input type="text"/>	Change	Erase

2.11.4 File - Preferences - Language

Use this option to select your preferred language.



2.11.5 File - Preferences - Default Labels

Use these options to create default text on your parts.

The screenshot shows a dialog box titled "Default Labels". Inside the dialog, there is a section labeled "Default labels" containing the following controls:

- Text:** A dropdown menu with the selected value "%Part%".
- Auto add on part creation:** A dropdown menu with the selected value "Border".
- Size (mm):** A text input field containing the number "3".
- Properties:** An empty text input field.

At the bottom of the dialog, there are two buttons: "Create" and "Delete".

Text - The drop down list contains the following standard text components.

%Part%
%Number%
%Model%
%Area%m2
%Length%mm
%FileDate%
%FileName%
%Component%
%Dimension%mm

%Part% - Part name

%Number% - Part size (you need to have graded sizes for this to show)

%Model% - Shell name

%Area%m2 - Part area in square meters.

%Length%mm - Part boundary length in millimeters.

%FileName% - The name of the scd file.

%FileDate% - Date of last modification of the file.

%Component% - Material name.

%Dimension%mm - Provide parts dimensions.

Auto add on part creation - If *ON*, the text components you have selected will be automatically added when the part is created, in the **border** or in the **inside**, depending of witch option is chosen.

Size (mm) - Height of the text in millimetres

Properties - Set a property for your text. The property will be sent to the cutter and can be used to define the tool that is used to produce the text.

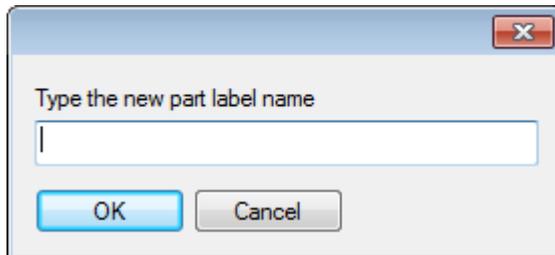
Create - Use this to add a text string to the drop down list. For further details see Adding a new text string.

Delete - Remove unwanted strings by selecting the text and clicking this option.

2.11.5.1 Adding a new text string

New text strings can be added to the default labels dropdown

1. Select **Create** on the **Default Labels** tab.
2. Type in the required text in the dialogue box



3. Click **OK**

The text is added to the dropdown list and can be applied to parts.

2.11.6 File - Preferences - Code

Use this option to enable or disable the code and select or create your preferred size codes for your parts.

The screenshot shows the 'Code' preferences dialog box. It includes the following elements:

- Code system:** A dropdown menu set to 'Default' with buttons for '+', '-', 'E', and 'I'.
- Name:** A text input field containing 'Default'.
- Rounded Code:** A checked checkbox.
- Code Spacing:** A text input field set to 0.0.
- Code width:** A text input field set to 4.0.
- Code height:** A text input field set to 4.0.
- Code List:** A list of 13 code shapes, each with a checkmark. The shapes are numbered 1 through 13. To the right of the list are 'Add' and 'Remove' buttons.

You can select a code file in the SCS format. Storing of a size code definitions file is possible in the editing process using the **Add** button.

Custom - Create you own custom size codes, using the **Add** button.

Rounded Code - Set a small round on all the code shapes. When the code is cut, the cutter will not keep lifting the knife.

Code spacing - Sets the spacing between elements of the size code

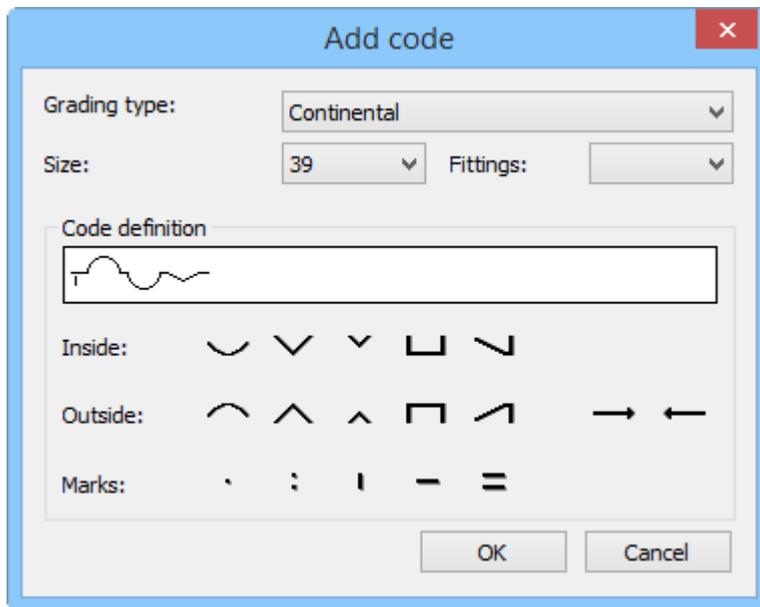
Code width - Sets the width of the size code in millimetres

Code height - Sets the height of the size code in millimetres

2.11.6.1 Custom size codes

You can create and edit custom size codes button

1. Activate **Add**, a code definition dialog appears



2. Select the grading type.
3. Select the size.
4. Create the code definition using the symbol buttons



5. to remove already inserted symbols use the arrow buttons



The code file should be saved with a SCS file extension.

2.11.7 File - Preferences - Parts 1

Use these options to set the default settings for:

- Groups
- Names
- Inside indicator
- Last allowance
- Notches on Mirrored Parts
- Generate quality areas automatically

Parts (2)	Grading	Printer	Default Properties/Layers	Customize
Locations	Options	Digitizer	Language	Default Labels
				Code
Parts (1)				
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Groups</p> <p>leather AUTO + -</p> <hr/> <p>Names</p> <p>Name: toecap v</p> <p>Group: v</p> <p>Color: AUTO v</p> <p style="text-align: center;">Create Delete</p> </div> <div style="width: 45%;"> <p>Last allowance</p> <p><input type="checkbox"/> Create lasting allowances</p> <div style="border: 1px solid gray; height: 100px; width: 100%;"></div> <p style="text-align: center;">Add Remove</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Inside Indicator</p> <p>Type:</p> <p><input type="radio"/> None Width: <input type="text" value="7"/></p> <p><input type="radio"/> Triangular Depth: <input type="text" value="2"/></p> <p><input type="radio"/> Rectangular Curvature: <input type="text" value="0"/></p> <p><input checked="" type="radio"/> Arc</p> <p><input type="checkbox"/> Generate quality areas automatically</p> </div> <div style="width: 45%;"> <p>Notches on Mirrored Parts</p> <p>Type:</p> <p><input checked="" type="radio"/> None Depth: <input type="text" value="0"/></p> <p><input type="radio"/> Oblique Curv: <input type="text" value="0"/></p> </div> </div>				

2.11.7.1 File - Preferences - Parts - Groups

Use this option to create materials. These materials can be applied as a section of the text on your finished parts.

Groups

leather v ■ + -

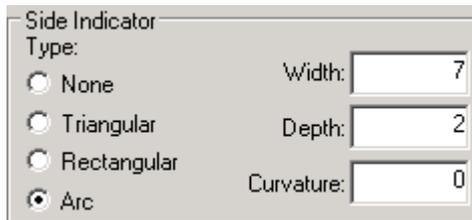
Groups - Select the required group from group from the drop down list.

Color - Select this option if you want parts with the same group to be the same color.

+ - Click "+" to open a dialogue box that allows you to create a new group name that will be added to the **Groups** drop down list. Enter the name in the dialogue box and click **OK**.

2.11.7.2 File - Preferences - Parts - Inside Indicator

Use this option to give the default values for your inside indicator.



Side Indicator
Type:

None Width:

Triangular Depth:

Rectangular Curvature:

Arc

Select one of the following as the **Inside Indicator**. Specify the appropriate value in the corresponding box.

None - No inside indicator

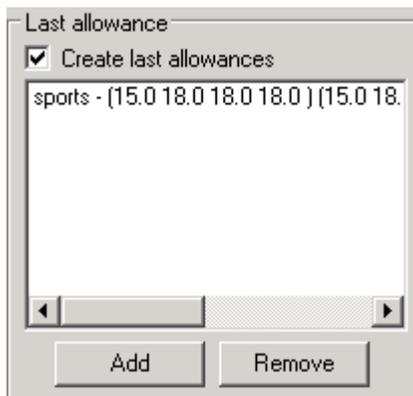
Triangular - Display notch as the inside indicator.

Rectangular - Display rectangle as the inside indicator.

Arc - Display arc as the inside indicator.

2.11.7.3 File - Preferences - Parts - Last allowance

Use these options to create default lasting allowance tables.



Last allowance

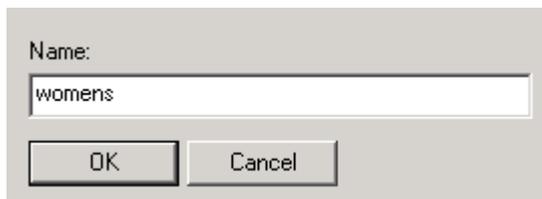
Create last allowances

sports - (15.0 18.0 18.0 18.0) (15.0 18.0

Add Remove

Create last allowances - Select this option if you want to automatically add a lasting allowance when importing a BGD file from **3D Design & Engineering**. Lasting allowances do not grade.

Add - Click to create a new lasting allowance. The lasting allowance is defined using a series of dialogue boxes.

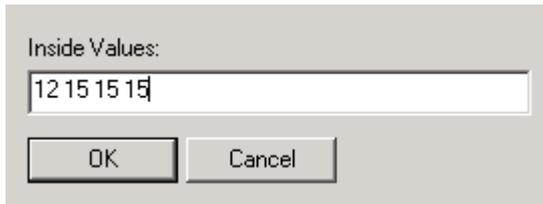


Name:

womens

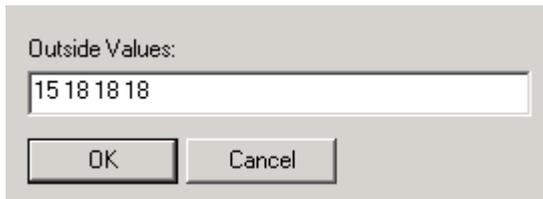
OK Cancel

1. **Name** - Enter a **Name** and click **OK**.



2. Inside Values: - Enter values for the lasting allowance on the inside of the shoe. The first value is at the toe and the last value is at the heel. Any other values are spaced equally along the feather edge.

Click **OK**



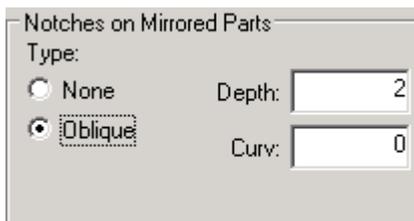
3. Outside Values: - Enter values for the lasting allowance on the outside of the shoe. The first value is at the toe and the last value is at the heel. Any other values are spaced equally along the feather edge.

Click **OK**

The name and associated values of the lasting allowance you have defined is displayed in the dialogue box and can be selected when a *MCD* file is imported.

2.11.7.4 File - Preferences - Parts - Notches on mirrored parts

Use this option to automatically create centre notches on parts. This only works if the shell is 'folded'.



None - If *ON*, do not create centre notches on parts.

Oblique - If *ON*, add an oblique notch to the centre of a part automatically. If you use this option you will need to set a default depth and curvature.

Depth - Depth of the notch in millimetres.

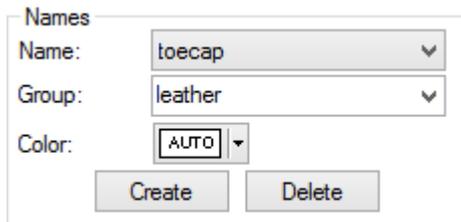
Curve - This value makes the notch angular or curved. A value of *0* will result in sharp corners on the notch.

2.11.7.5 File - Preferences - Generate Quality Areas Automatically

Use this option to enable or disable automatically generation of quality areas.

2.11.7.6 File - Preferences - Parts - Names

Use this option to select the names and materials to be applied as a section of the text on your finished parts.



The image shows a dialog box titled "Names". It contains three dropdown menus: "Name:" with the value "toecap", "Group:" with the value "leather", and "Color:" with the value "AUTO". Below the dropdowns are two buttons: "Create" and "Delete".

Name - Select the required name from the drop down list.

Material - Select the required material from the drop down list. The parts with the Name you have selected will use the material you select in this option.

Color - Select this option if you want parts with the same material to be the same color.

Create - Click **Create** to open a dialogue box that allows you to create a new name that will be added to the **Name** drop down list. Enter the new material name in the dialogue box and click **OK**

2.11.8 File - Preferences - Parts 2

Use these options to set the default settings for:

- Rotation
- Reference points
- Post-processing part filtering
- Default stencils margin
- Name template
- Part assessment

Parts (2)

Rotation	Name template
Base angle: 90	M%S
Allowed rotation: 180 degree step	Use %S for slot number Use %P for part index Use %C for number of parts Use %M for model name
Tolerance: 0	
Reference points	Part assessment
Create: On vertical axis	Method: Convex Hull
Shape: Round chess	Parts margin: 0 mm
Size: 30	
Margin: 10	
<input checked="" type="checkbox"/> Post-processing part filtering	
Default stencils margin: 0	

2.11.8.1 File - Preferences - Rotation

Allows to define the **rotation angles for auto nesting**.

After inserting the Angle and Range, click "+" button, to add the new angle range.

To delete an angle range, select it and press "-" button.

All the parts created after this change will be by default with this rotation angles. This can be also configured individually in the parts properties.

2.11.8.2 File - Preferences - Reference points

This option allows to add predefined reference points automatically when creating parts.

Reference points

Create: On vertical axis

Shape: Round chess

Size: 30

Margin: 10

Create: Select where to create the points, On Center (one point in the part center), On Vertical Axis (two points in the part vertical axis), On Horizontal Axis (two points in the part horizontal axis), by Bounding (four points, one in each corner of parts the bounding box).

Shape: Select the points shape from, Circle, Square, Cross, Square chess or Round chess.

Size: Select the points size.

Margin: Select the points margin (from the part) in mm.

2.11.8.3 File - Preferences - Post-processing part filtering

Enable or disable the post-processing part filtering option for the. This is effective for new parts (created after handling this settings).

The post-processing is defined in the parts properties tab.

2.11.8.4 File - Preferences - Default stencils margin

Allows to control the stencils margins, when cutting the part.

This can be also configured individually in the parts properties.

Default stencils margin: 0

2.11.8.5 File - Preferences - Name template

This option allows to assign automatically names to parts.

Name template

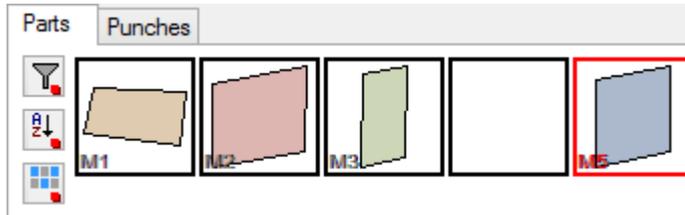
M%S

Use %S for slot number
Use %P for part index
Use %C for number of parts
Use %M for model name

The default value is M%S in this case the parts name will appear, like M1, M2 depending in which slot they are assigned.

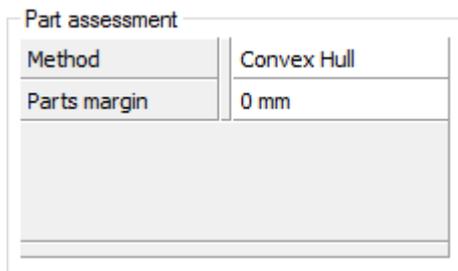


If the part changes to other slot, the name will change, in this example from M4 to M5.



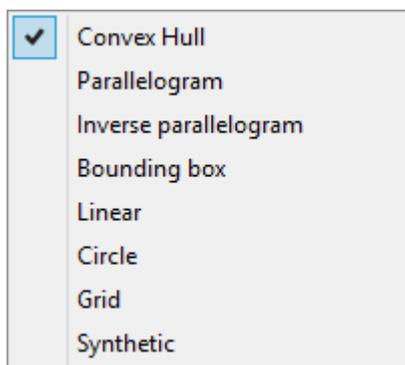
2.11.8.6 File - Preferences - Part assessment

Use this option to define a preferred part assessment method and part margin.



- **Method:** Several interlock costing techniques can be used;

There are several methods:



- **Parts Margin:** Adds a margin in mm between parts;

2.11.9 File - Preferences - Grading

Use these options to set (default) grading.

- default grading type and complexity
- show advanced grading options
- show grading information on shell
- ask for base size when creating model
- group grading

Default grading type

Use the drop down list to select your default grading system as English or Continental

Grading types defaults

Activating this button will allow the configuration of a custom scale where increments could be inserted in the following dialog

Always show advanced grading options

If *ON*, the grading table in the 'advanced' mode will be displayed by default

Ask for base size when creating

If *ON*, when we create a new model, the base size

model	will be asked
Group grading	create and edit grading groups for special grading applied to parts and lines
Type	select grading type for a group
From	initial group size
To	final group size
Use	grade group like for this size

2.11.9.1 Adding a Grading Type

Using the Grading Types Defaults button under **Preferences/Grading** tabulator a dialog will appear to manage the process

Grading: Continental

New Clone Delete

Name: Continental

Stepping

Double sizes Half sizes

Third sizes Quarter sizes

Size ranges

Name	Start	End	Incr. X	Incr. Y
	1,00	55,00	6,66	1,50

- +

Sizes

Size	Name	Abbr. Name
1,00	1	1
1,25	1.25	1 / 4
1,50	1.5	1 /
1,75	1.75	1 3/4
2,00	2	2
2,25	2.25	2 / 4

Set default base number

Fittings

Name
AAA
AA
A
B
C
D

- +

OK Cancel

New It allows the creation of new grading types

Name	enter the name of new grading type
Stepping	enable the stepping
Size ranges	Define values of the start, end, inc.X and inc.Y
Clone	Duplicate a grading type
Delete	Delete a grading type
Abbr. Name	Shorthand for size when outputting to cutting machines (ex. size 37 -> short 7)

2.11.9.2 Adding a Group Grading Rule

Activate **Add Group** button to insert another group grading rule.

Group grading

Type: Continental

From: 19 To: 19.75 Use: 19

Add Group Remove Group < >

19 (19 - 19.75)

As a sample do input the displayed values

Group grading

Type: Continental

From: 20 To: 20.75 Use: 20

Add Group Remove Group < >

19 (19 - 19.75); 20 (20 - 20.75)

14.5 (14 - 15.75); 16.5 (16 - 17.75); 18.5 (18 - 19.75); 20.5 (20 - 21.75); 22.5 (22 - 23.75); 24

< >

Add Rule Remove Rule Edit Rule

2.11.9.3 Adding a Grading Rule

Activate **Add Rule** button and a new group grading rule is inserted on the list.

Group grading

Type:

From: To: Use:

14.5 (14 - 15.75); 16.5 (16 - 17.75); 18.5 (18 - 19.75); 20.5 (20 - 21.75); 22.5 (22 - 23.75); 24
19 (19 - 19.75); 20 (20 - 20.75)

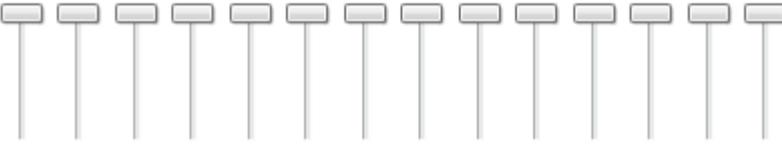
Remove Rule - remove the selected grading group rule.

Edit Rule - edit the selected grading group rule.

2.11.10 File - Preferences - Printer

Use these options to set some printer control:

- Control colour
- Control scale
- Enable or disable use lines widths of model when printing
- Pen width
- Enable or disable print file data
- Enable or disable print file name



Black & White Original

Use line widths of model when printing

Pen width (mm):

Print file date
 Print file name

Scale

X: 0	in	100
Y: 0	in	100

2.11.11 File - Preferences - Default Properties/Layers

Use these options to create and set default properties and Layers for lines, parts, punches.

Default Properties/Layers

Properties

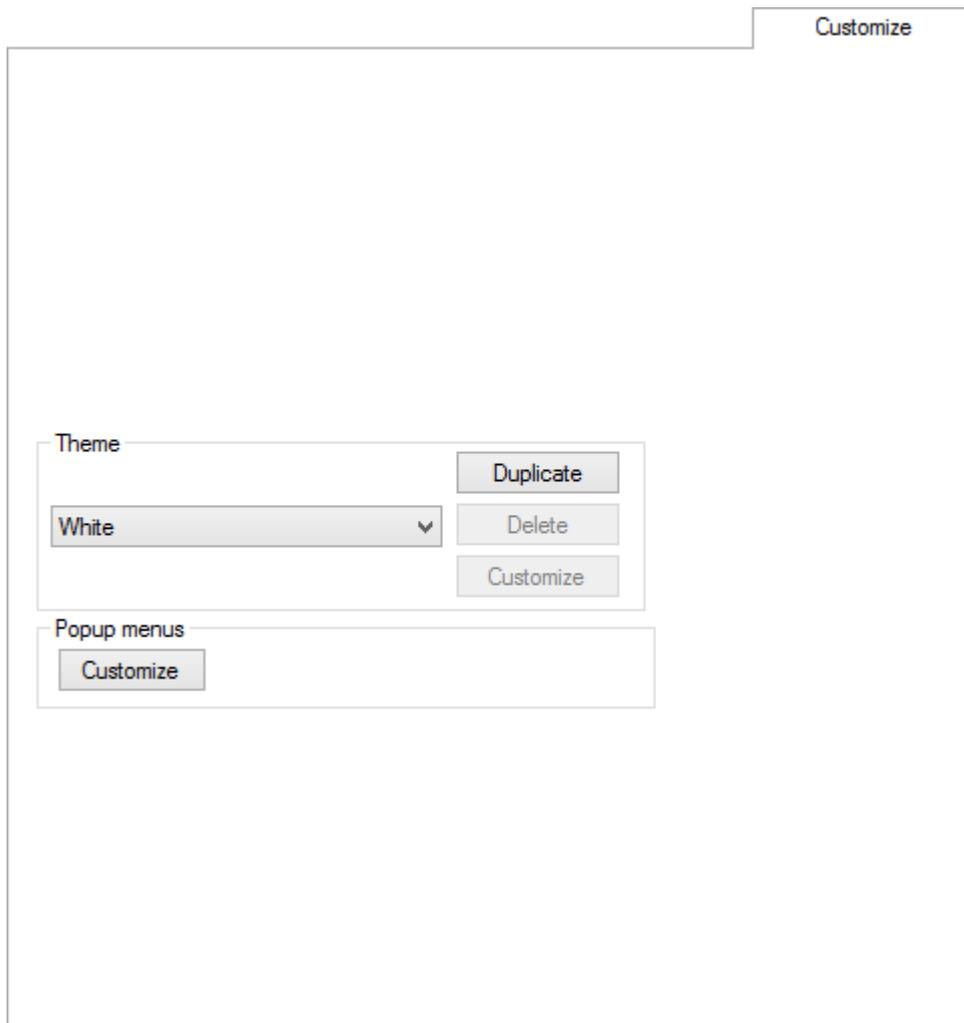
Halfcut
Pen

Layers

Linning
Reforce

2.11.12 File - Preferences - Customize

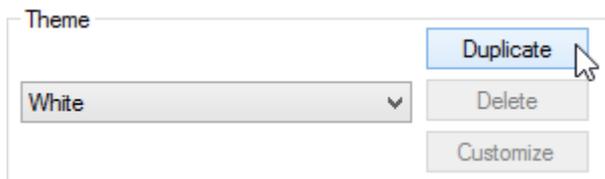
Use these options to choose or configure the application theme, and the popup menus.



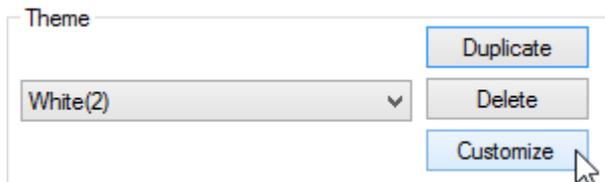
2.11.12.1 Editing Theme

Use these options to edit a theme.

1. To duplicate a theme, select one of the existing one and press **Duplicate**.

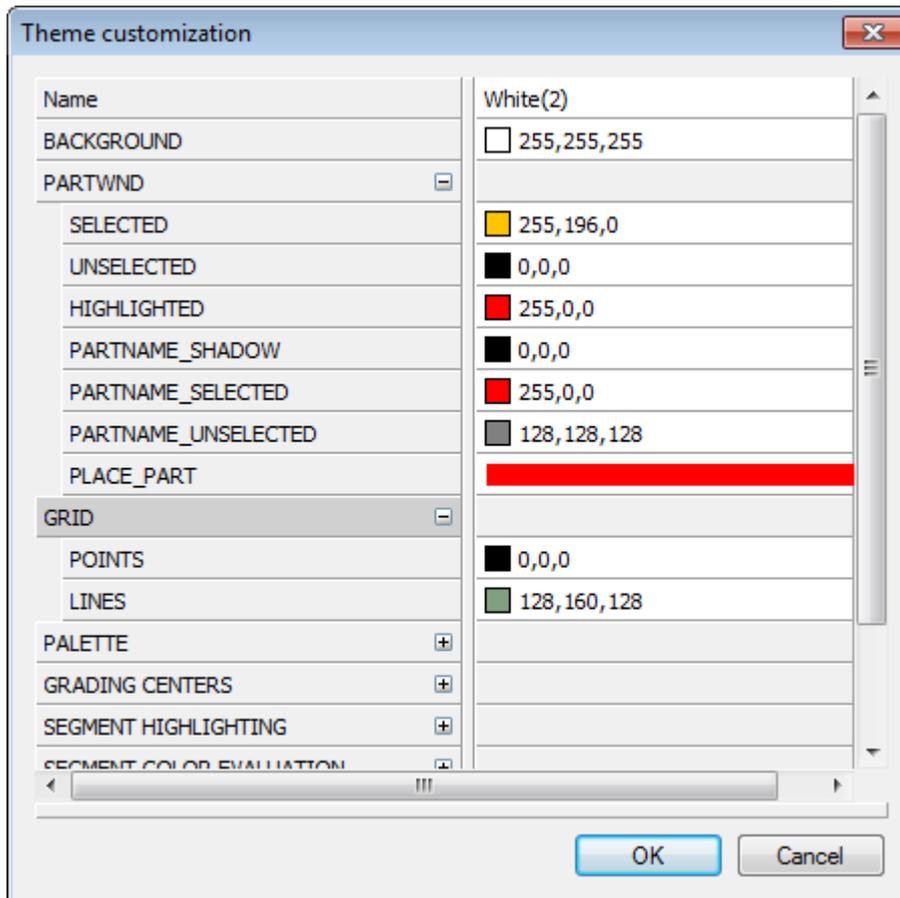


2. To customize a theme, select **Customize**.



Note: If the buttons of the theme option aren't available, it's because the themes path is not defined yet. So please go to File - Preferences - Location and select the themes path.

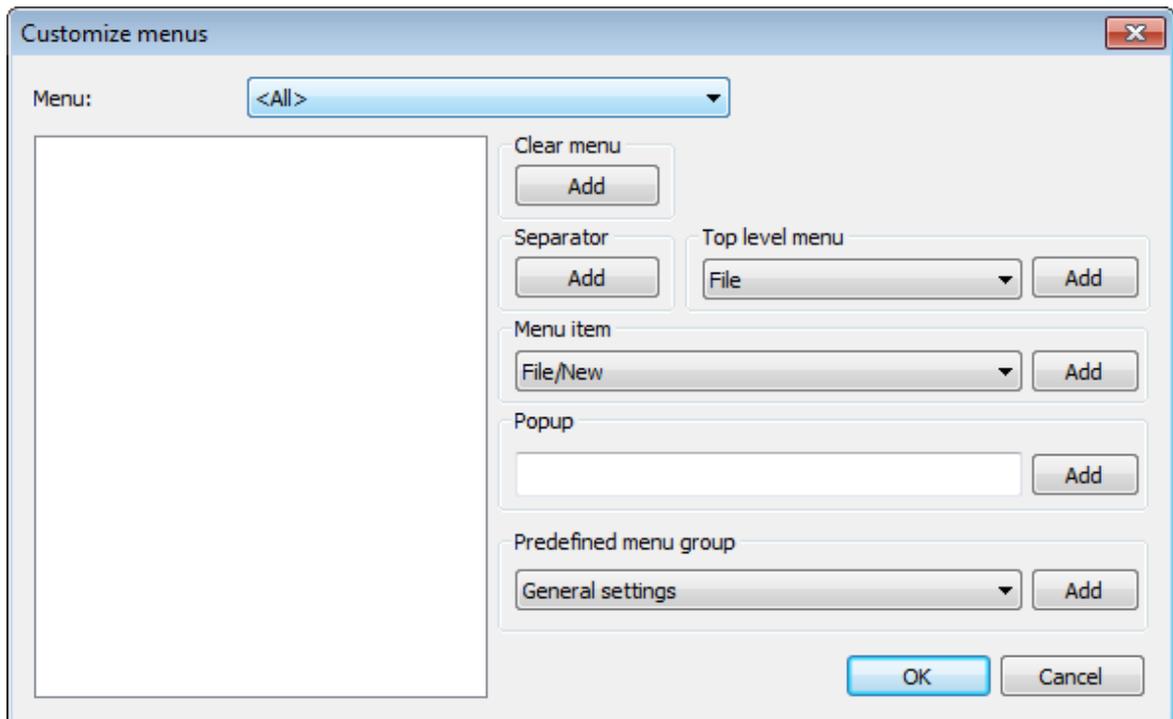
3. All the visual environment parameters can be changed for this new theme.



2.11.12.2 Popup menus

Use these options to customize popup menus .

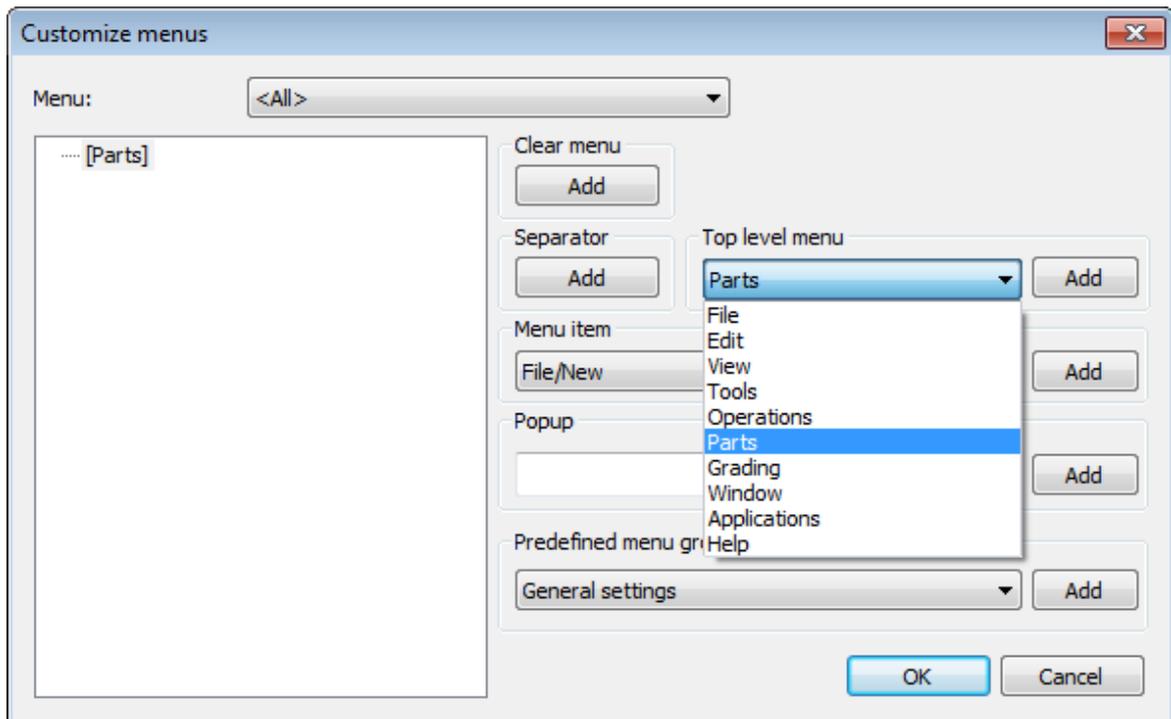
1. Select customize (popup menus) and open the **Menu** drop down list.



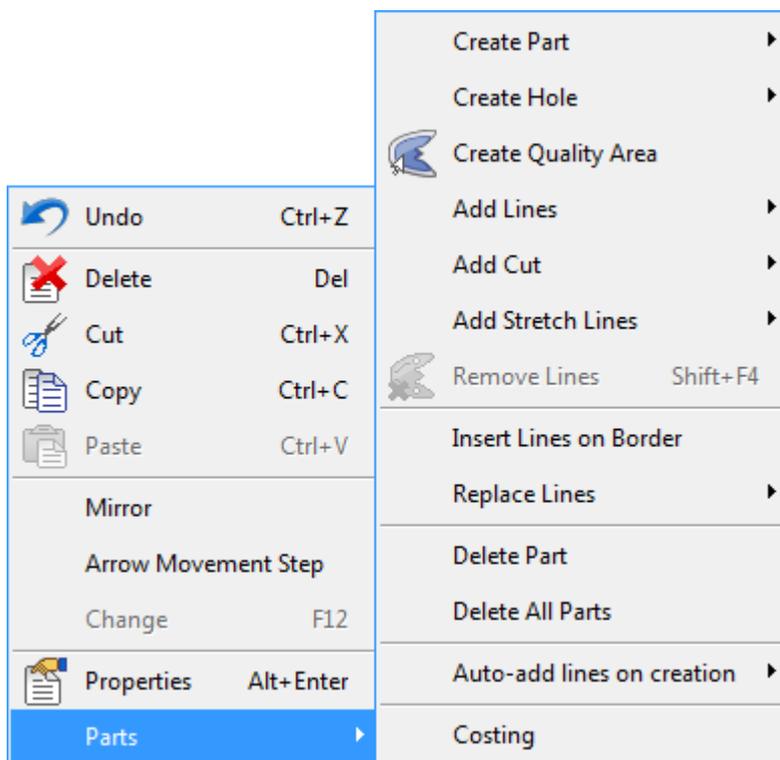
In this list, the available tools in which the popup menu could be configured.

<All>
 Selection tool
 Create lines tool
 Create markers tool
 Create punches tool
 Create parts tool
 Measurement tool
 Create circles tool
 Create rectangles tool
 Rotate lines tool
 Scale lines tools
 Modify parts tool
 Create symmetric shapes tool

2. Using the **Clear Menu** button will in fact, remove all the default items of the menu.
3. Using the **Add Separator** button will add a separator for better organization of the menu
4. On the **Top Level Menu** section a drop down list is available with the default top level menus. After selection, use the **Add** button for insertion of the entire top level menu and its children. To remove the item, just select it on the tree view on the left and press the **Del** key.

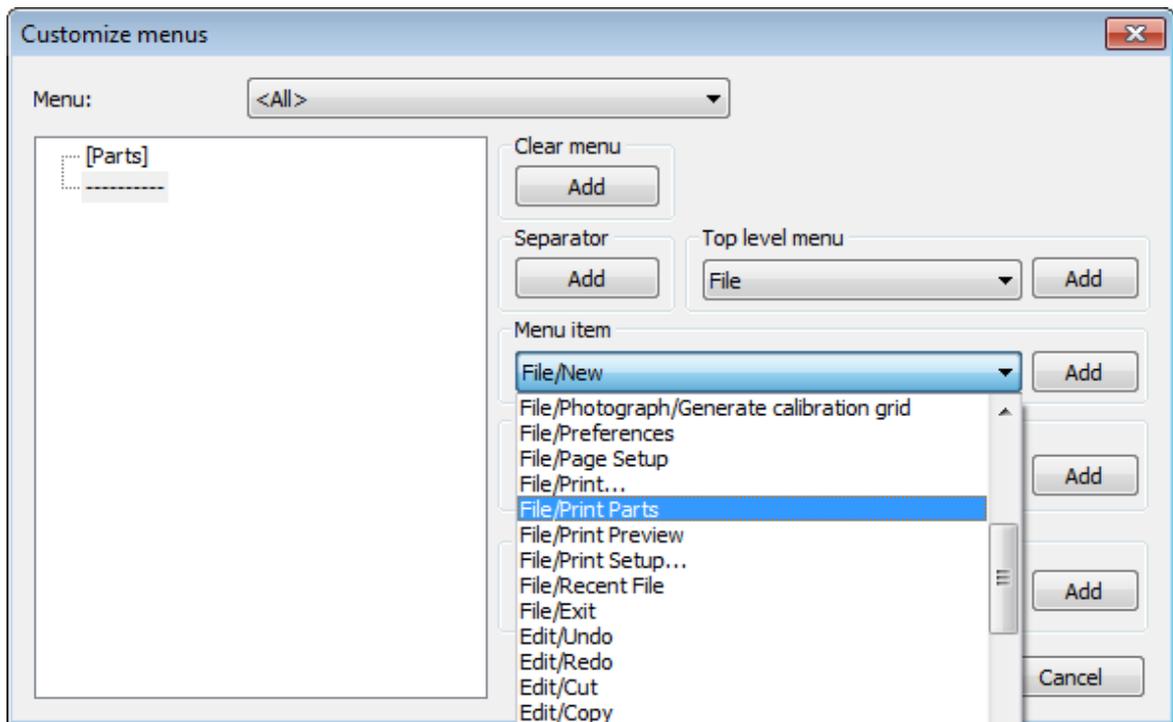


Follows a sample of an insertion of the top level menu **Parts** on a popup menu.

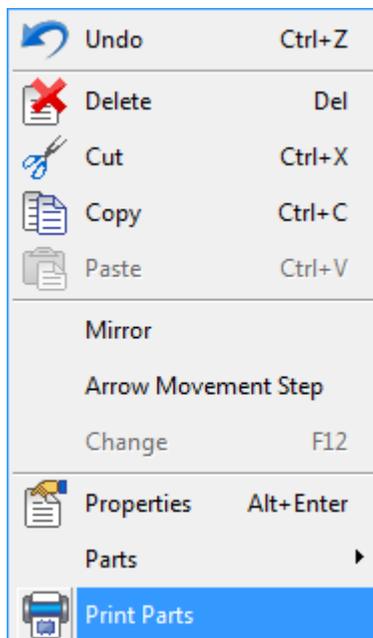


5. On the **Menu item** section a drop down list is available with all the menu entries. After selection,

use the **Add** button for insertion. To remove the item, just select it on the tree view on the left and press the **Del** key.

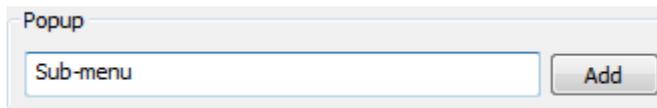


Follows a sample of an insertion of the **Print Parts** menu entry on a popup menu.

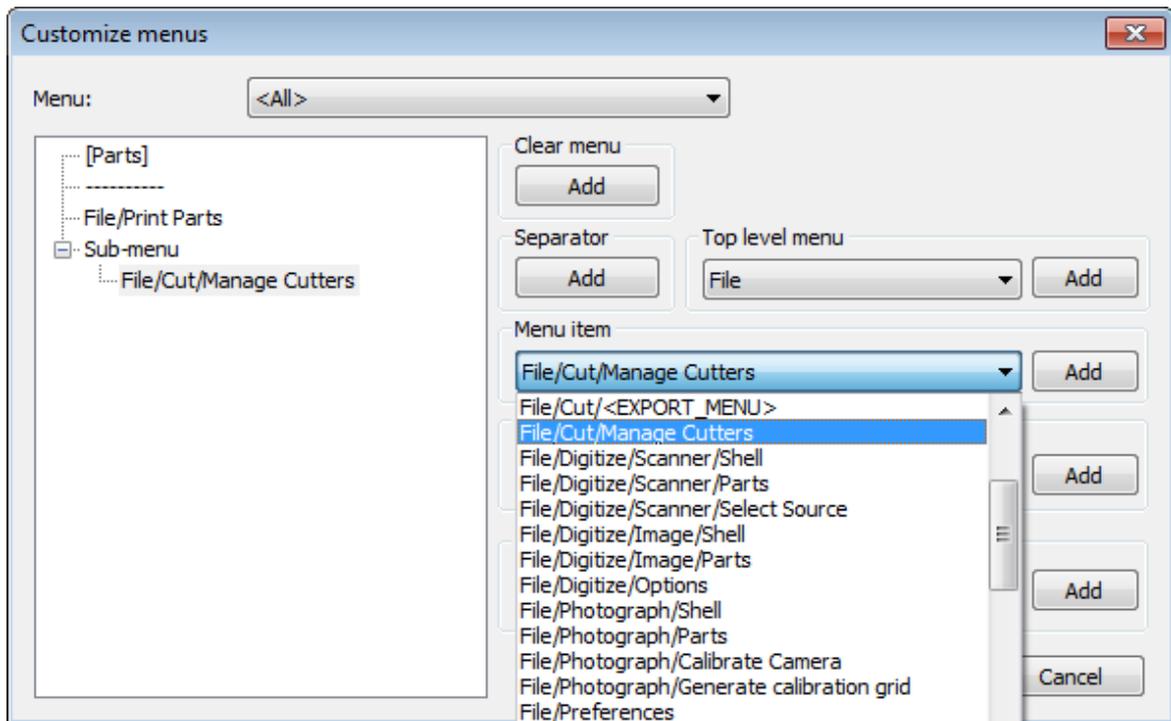


6. On the **Popup** section it is possible to create a new sub menu by simply writing its name and

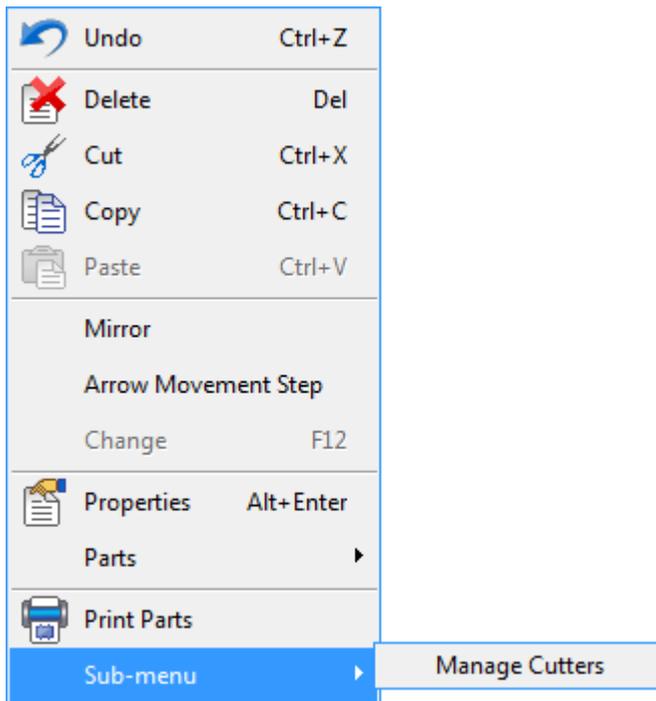
pressing the **Add** button. To remove the item, just select it on the tree view on the left and press the **Del** key.



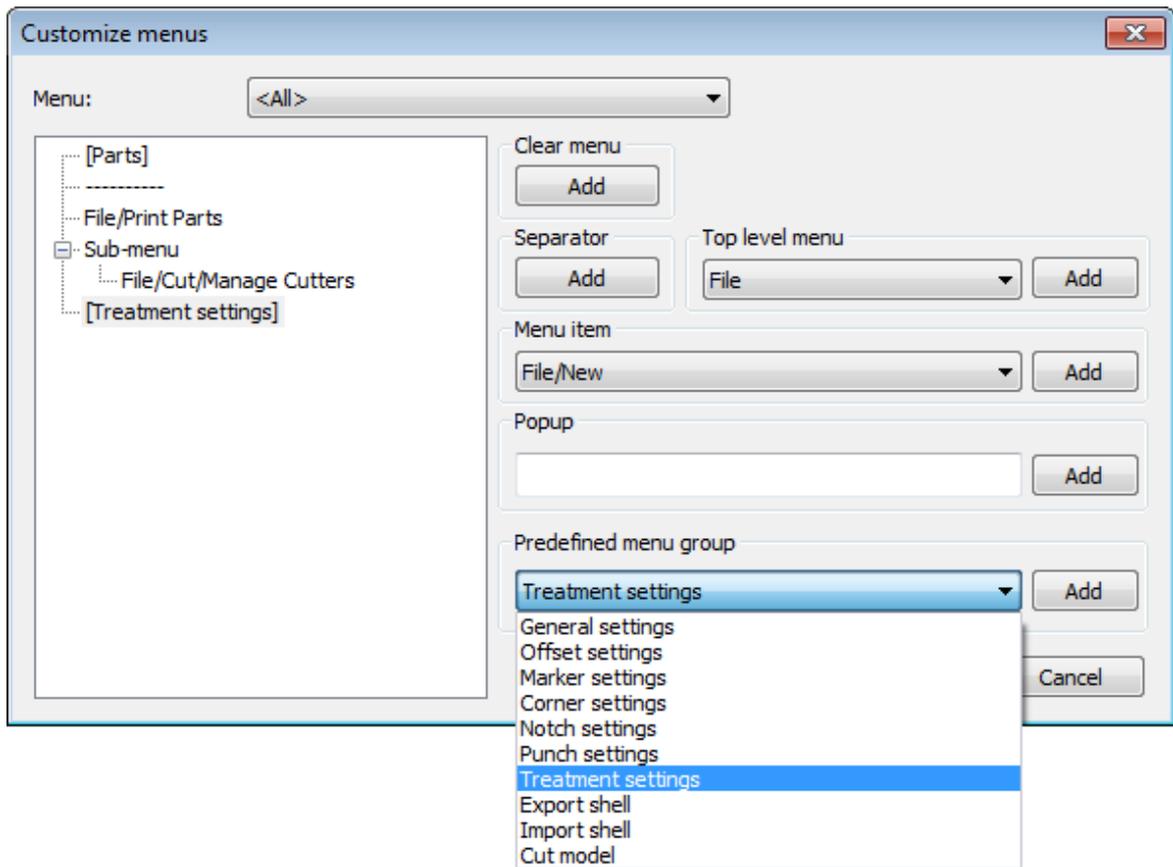
It's possible to add child items using the previously described options, by selecting the created sub menu on the tree view on the left.



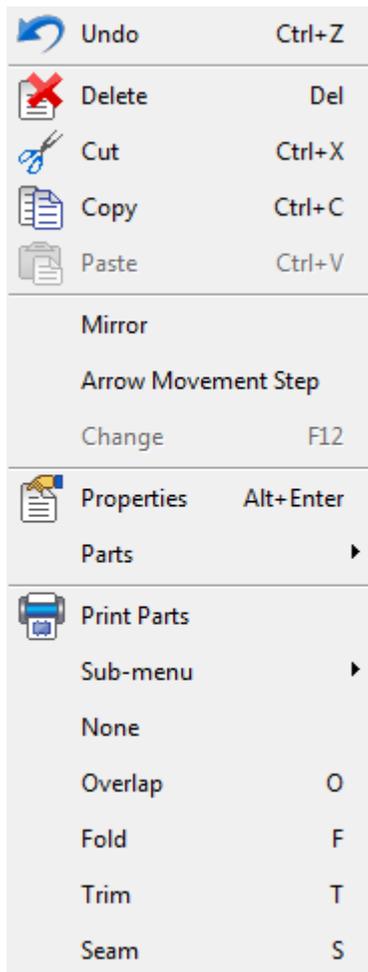
Follows a sample of an insertion of the **Manage Cutters** menu entry on the sub menu called **Sub Menu** on a popup menu.



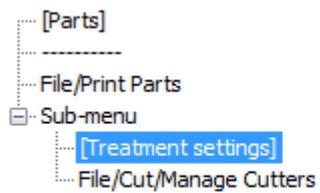
7. On the **Predefined menu group** section a drop down list is available with the available settings groups. After selection, use the **Add** button for insertion. To remove the item, just select it on the tree view on the left and press the **Del** key



Follows a sample of an insertion of the **Treatment settings** group, just after the sub menu called **Sub Menu**, on a popup menu.

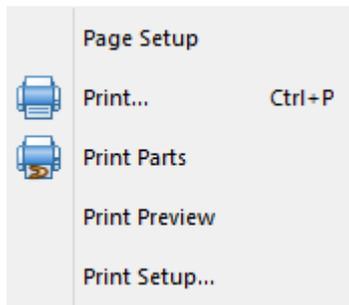


8. It's possible to change the order of the inserted items by simply selecting and drag-and-dropping it in the new position.



2.12 File - Printing

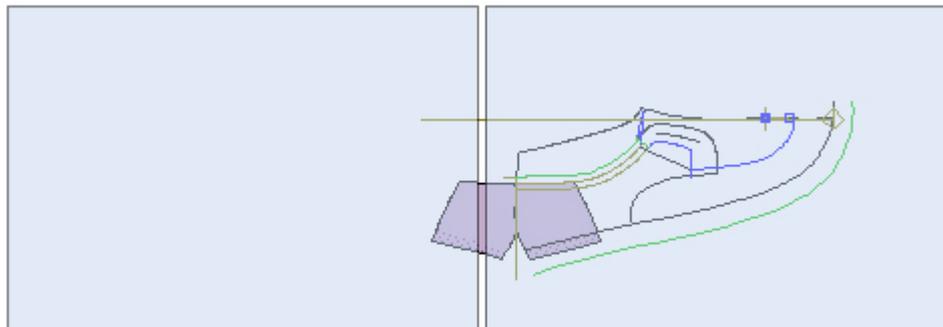
This menu allows to control the printing options.



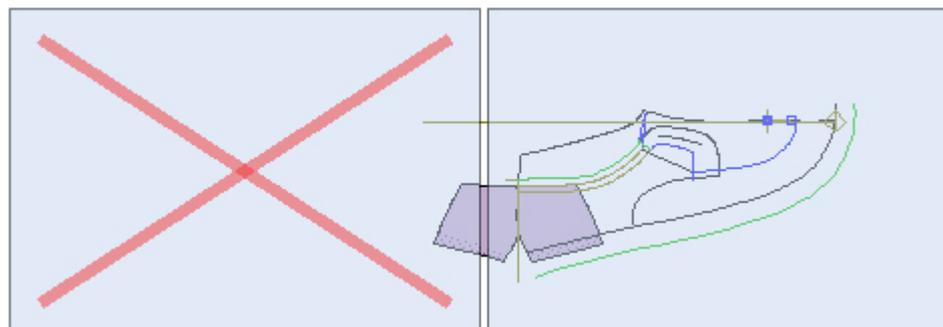
2.12.1 File - Page Setup

Use this option to control the printing of the current shell.

1. with the mouse we can control the pages locations related to the model, click over the page and drag it.



2. with **Shift** and mouse left click the operator can enable or disable the pages to be printed.



2.12.2 File - Print

Use this option to print the current shell.



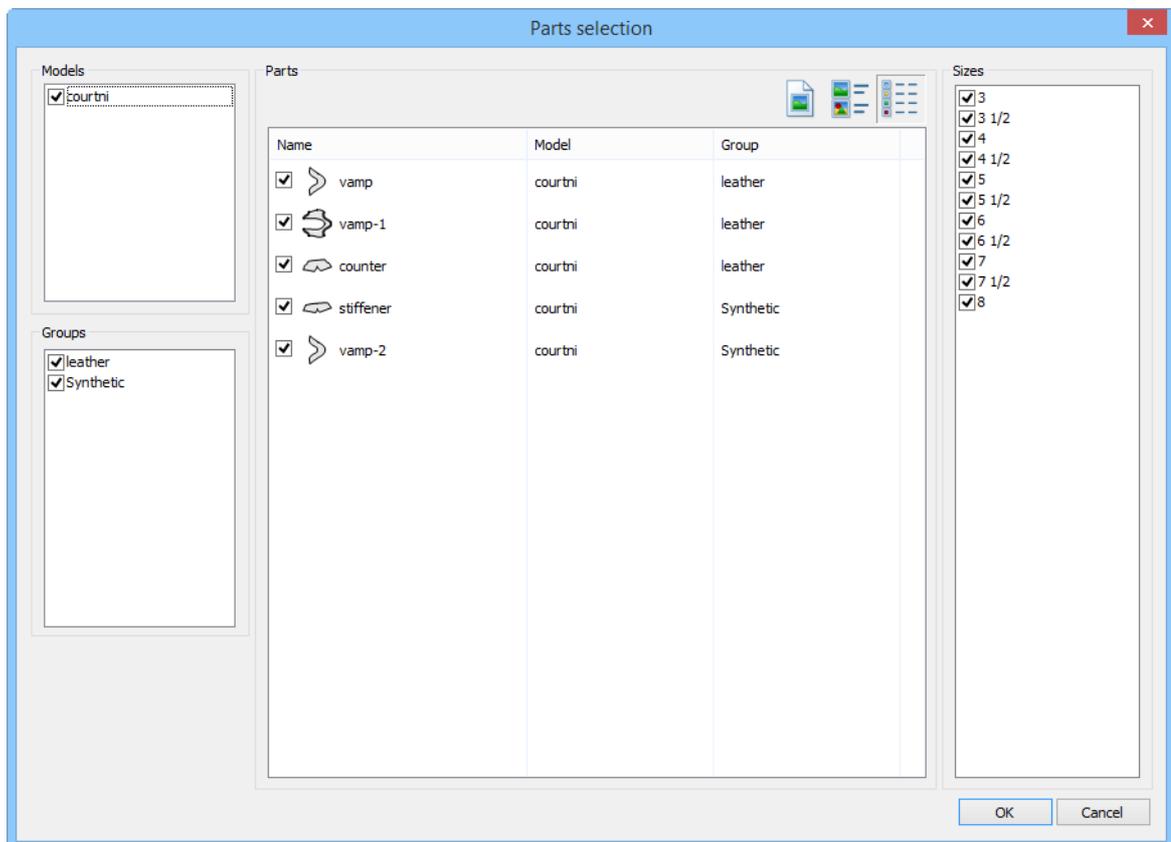
This is the same as clicking the **Print** button in the **Main** toolbar or pressing **Ctrl+P**



2.12.3 File - Print Parts

Use this option to print your parts.

Select Models, Groups, Parts and Sizes to print.



2.12.4 File - Print Preview

Use this option to preview a print out.

2.12.5 File - Printer Setup

Use this option to set up your printer.

2.13 File - Exit

Use this option to exit the program.

Part



3 Edit Overview

This menu lets you carry out some of the editing commands, it also allows you to undo edits that have been made, and restrict editing of items that are correct.

	Undo	Ctrl+Z
	Redo	Ctrl+Y
	Cut	Shift+Delete
	Copy	Ctrl+C
	Paste	Ctrl+V
	Fixed Paste	Ctrl+Shift+V
	Delete	Delete
	Select All	Ctrl+A
	Reverse Selection	Ctrl+Shift+W
	Group	
	Ungroup	
	Freezings	▶
	Constrain Edit	▶
	Drag Constrain	F11
	Pre-Copy	Ctrl+Shift+C
	Digitize	
	Alignment Points	▶
	Properties	

3.1 Edit - Undo

This option undoes the last editing command.

This is the same as clicking the **Undo**  button in the **Main** toolbar or pressing **Ctrl+Z**.



3.2 Edit - Redo

This option redoes the last undo command.

This is the same as clicking the **Redo**  button in the **Main** toolbar or pressing **Ctrl+Y**



3.3 Edit - Cut

This option cuts the currently selected items. Cut copies the selected items to the clipboard, then deletes the selected items.

This is the same as clicking the **Cut**  button in the **Main** toolbar or pressing **Ctrl+X**



3.4 Edit - Copy

This option copies the currently selected items into the clipboard.

This is the same as clicking the **Copy**  button in the **Main** toolbar or pressing **Ctrl+C**



3.5 Edit - Paste

This option pastes the contents of the clipboard (filled by **Cut** or **Copy**) into the current window and leaves it active so it can be moved to a new position. Drag the contents of the clipboard and place using the left mouse button.

This is the same as clicking the **Paste**  button in the **Main** toolbar or pressing **Ctrl+V**



3.6 Edit - Fixed Paste

This option pastes the contents of the clipboard (filled by **Cut** or **Copy**) into the current window in its original position

3.7 Edit - Delete

This option deletes the currently selected items.



This is the same as pressing the **Delete** key on your keyboard.

3.8 Edit - Select All

This option selects all items. This is the same as pressing **Ctrl+A**

3.9 Edit - Reverse Selection

This option reverses the current selected items. If you want to select all items except a number of lines, select the lines you do not want to select and use this option. This is the same as pressing **Ctrl+Shift+W**

3.10 Edit - Group

This option lets you treat a number of lines as a single object. If any line within a group is selected all the other lines in the group will be selected as well.

1. Select the lines that you wish to make into a group.



2. Select **Group** from the **Edit** Menu .

3.11 Edit - Ungroup

This option lets you return lines within a group to individual lines.

1. Select any line in a group.



2. Select **Ungroup** from the **Edit** Menu .

3.12 Edit - Freezings

This option lets you **Freeze** and **Unfreeze** lines. If lines are frozen, they cannot be edited, use Unfreeze to make them available for editing.

Freeze all	
Freeze selection	Ctrl+F
Freeze all but selection	
Unfreeze all	Ctrl+Shift+F

Freeze all - Freeze all lines.

Freeze selection - Freeze the selected lines or pressing **Ctrl+F**.

Freeze all but selection - Freeze all lines except the selected lines.

Unfreeze all - Unfreeze all lines or pressing **Ctrl+Shift+F**.

3.13 Edit - Constrain Edit

Set of options that enable you 'snap' editing or drawing operations to specific points. You can use any combination of the **Nearest** options together. This lets you select all options if you want the snap options to work to their full capabilities.

	Nearest line	H
	Nearest intersection	K
	Nearest end	L
	Nearest point	J
	Nearest grid	G

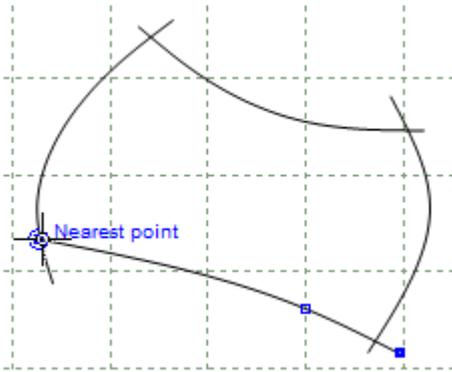
3.13.1 Edit - Constrain Edit - Nearest Line

Use this option to make all editing and drawing operations snap to the nearest line, when the cursor is close to it.



This is the same as clicking the **Constrain Edit Nearest Line**  button in the **Constrain** toolbar or pressing **H**

Snap to the **Nearest Line**:



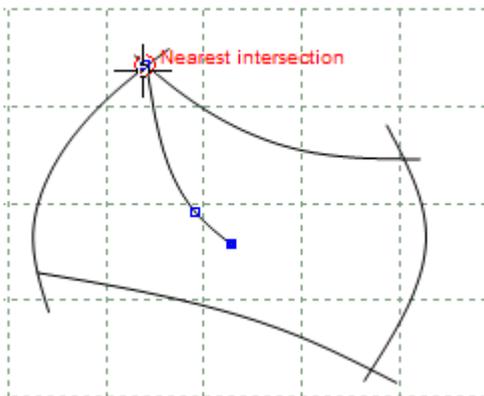
3.13.2 Edit - Constrain Edit - Nearest Intersection

Use this option to make all editing and drawing operations snap to the nearest intersection between lines, when the cursor is close to it.



This is the same as clicking the **Constrain Edit Nearest Intersection**  button in the **Constrain** toolbar or pressing **K**

Snap to the **Nearest Intersection**:



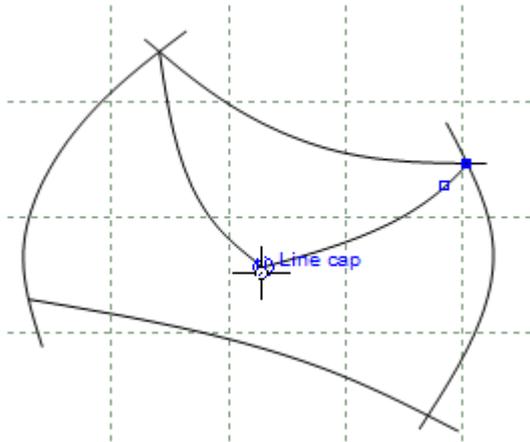
3.13.3 Edit - Constrain Edit - Nearest End

Use this option to make all editing and drawing operations snap to the nearest line end, when the cursor is close to it.



This is the same as clicking the **Constrain Edit Nearest End**  button in the **Constrain** toolbar or pressing **L**

Snap to the **Nearest End**:



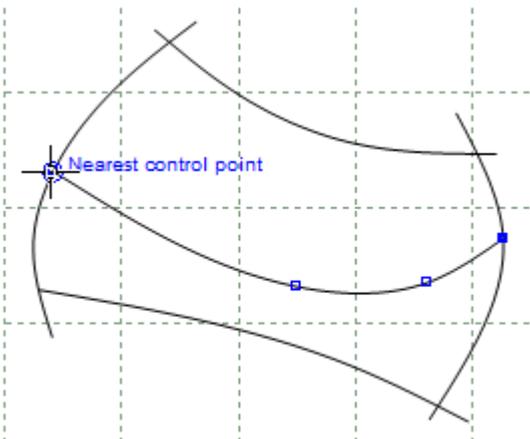
3.13.4 Edit - Constrain Edit - Nearest Point

Use this option to make all editing and drawing operations snap to the nearest point on a line and to the geometric centre on symmetry shapes when the cursor is close to it.

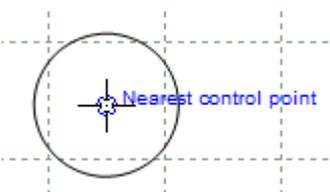


This is the same as clicking the **Constrain Edit Nearest Point** button in the **Constrain** toolbar or pressing **J**

Snap to the **Nearest Point**:



Snap to the **geometric centre** on symmetry shapes:



3.13.5 Edit - Constrain Edit - Grid

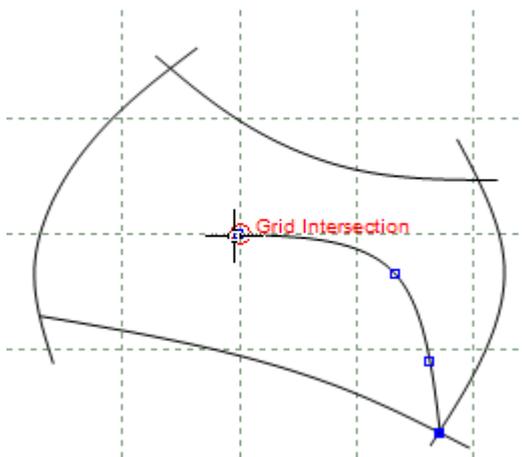
Use this option to make all editing and drawing operations snap to the grid when the cursor is close to it. In addition,

- When the cursor is on a grid line, the *grid* is displayed in blue.
- When the cursor is on a grid intersection, *grid intersection* is displayed in red.



This is the same as clicking the **Constrain Edit Nearest Grid** button in the **Constrain** toolbar or pressing **G**

Snap to the **Nearest Grid**:

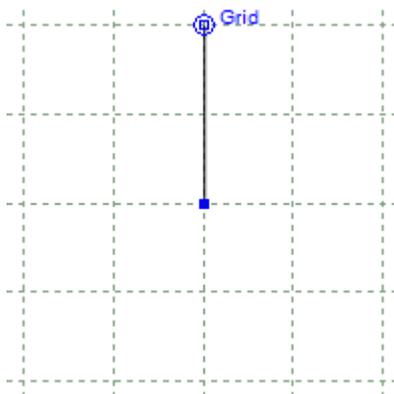


3.13.6 Edit - Constrain Edit - Orthogonal Restriction

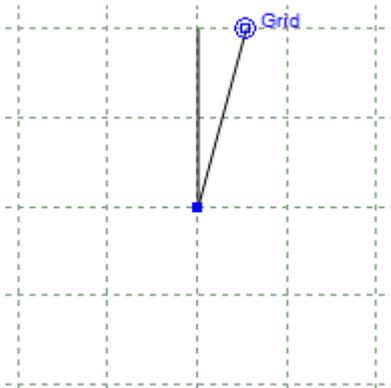
1. Select the desired constrain editions.



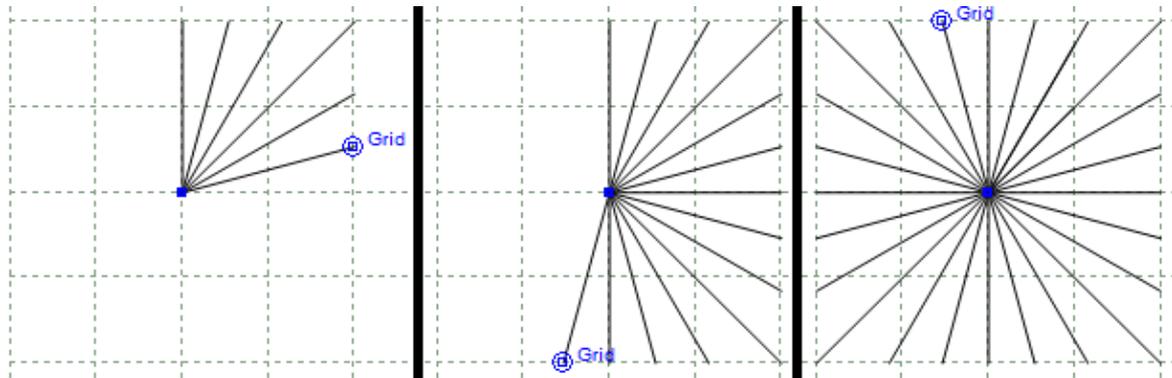
2. Start drawing a line, after doing the first point if you move the mouse cursor the line will move freely, but if you press **SHIFT** key the orthogonal restriction is activated.



3. With the **SHIFT** key pressed, when you're moving the line, it will just move the specific places.



4. In the image below you can see the possible angles with the orthogonal restriction activated.



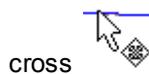
3.14 Edit - Drag Constrain

This lets you control whether a line(s) can be dragged (moved), rotated or scaled.

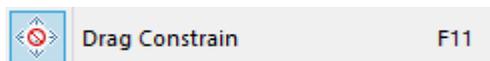


If **Drag Constrain** is *OFF*,

- Lines can be dragged, rotated and scaled when the cursor is over a line(s) and displayed as a



cross



If **Drag Constrain** is *ON*,

- Lines cannot be dragged, rotated or scaled.
- It is only possible to move points in a line. This means whole lines do not accidentally get dragged to a new position.

3.15 Edit - Pre-copy

Use this option to copy a line or lines before editing them.

1. Select the lines.



2. Select **Pre-copy** from the **Edit** menu or pressing **Ctrl+Shift+C**.

3. Edit the lines as required. The original lines are left untouched and the new lines are modified.

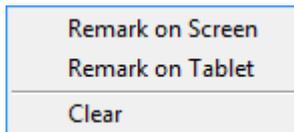
3.16 Edit - Digitize



This lets you digitize lines from a tablet. To return to using the cursor, select the option again.

3.17 Edit - Alignment Points

Use this option to align the reference points of the current shell and the physical reference points on the digitizer.

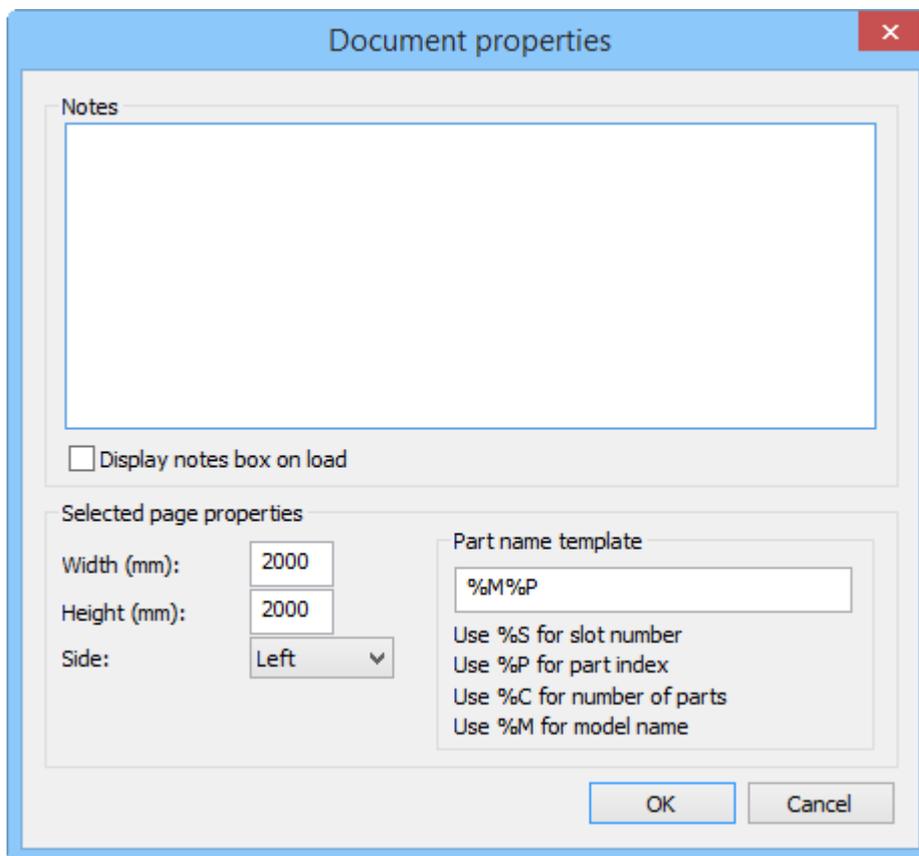


A sample sequence follows:

1. define two reference points on the working shell.
2. define the same two points now on the digitizer for the alignment.
3. clear the alignment points.

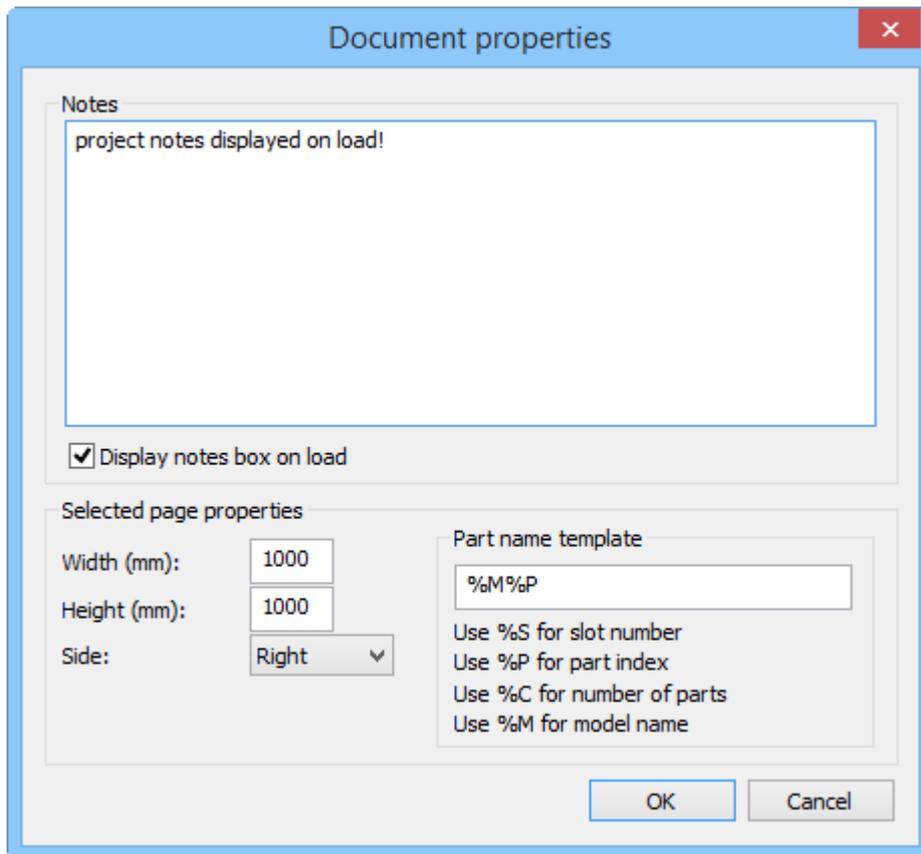
3.18 Edit - Properties

This displays the current document size in mm and side. To change the document size, type in the new values required and side.

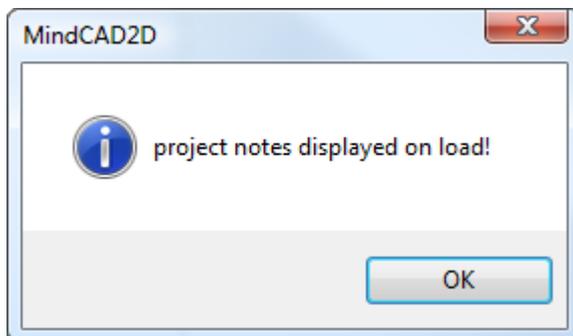


It's possible to display notes in the project load, in order to do that:

1. Write the notes for the project in the text box.
2. Select the option **display notes box on load**.



3. Press **Ok** and save the document changes.
4. When someone opens the project the message will be displayed.

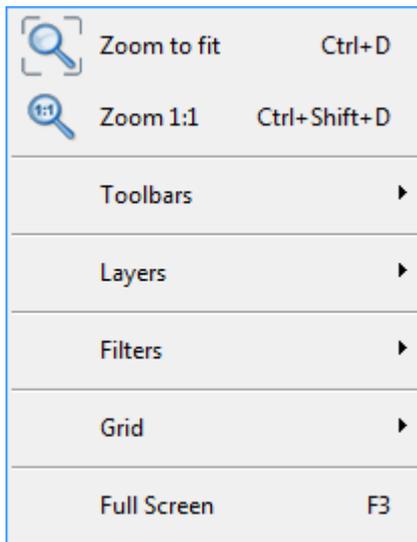


Part

IV

4 View Overview

This menu lets you control what is displayed on the screen



You can use it to turn on or off the following

- toolbars
- layers
- filters
- grid

4.1 View - Zoom to Fit

This option lets you scale any graphics, so that it fits onto the screen. This is the same as clicking

the **Zoom to fit** button  in the **Main** toolbar or pressing **Ctrl+D**



In addition to Zoom to fit, you can add the following buttons to your customised toolbar



Zoom in x 2 - A rectangle is displayed with a magnifying glass at the centre, place the magnifying glass at the point you want to centre, and press the left mouse button. The scale will be increased by 2.



Zoom in x 4 - A rectangle is displayed with a magnifying glass at the centre, place the magnifying glass at the point you want to centre, and press the left mouse button. The scale will be

increased by 4.



Zoom out x 2 - select this option to reduce the scale by a factor of 2.

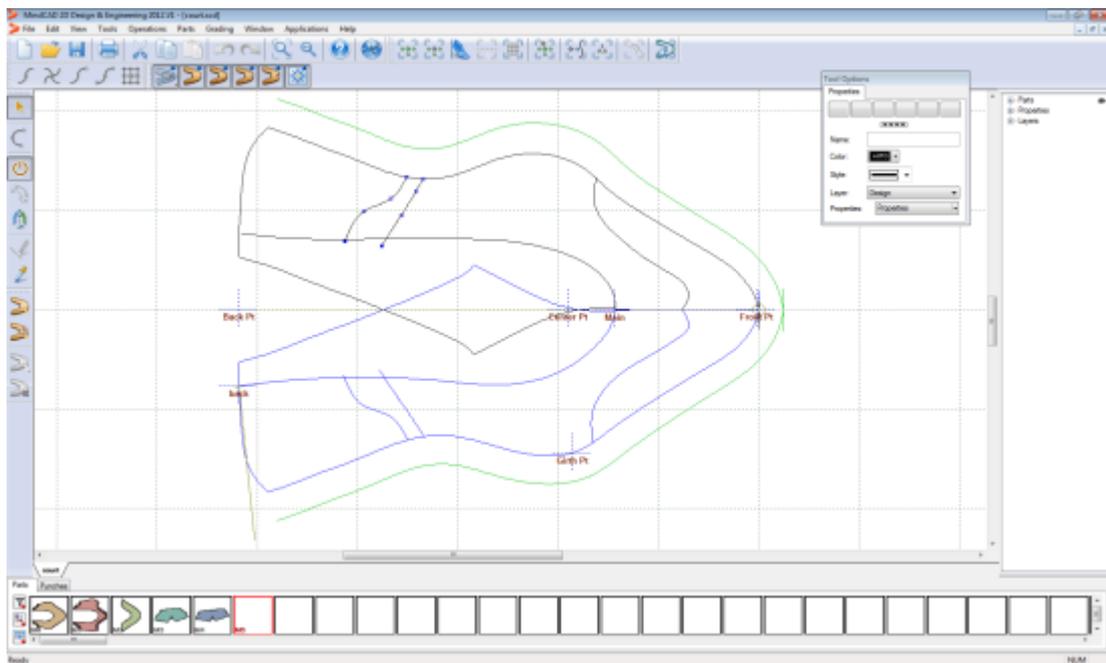


Zoom out x 4 - select this option to reduce the scale by a factor of 4.

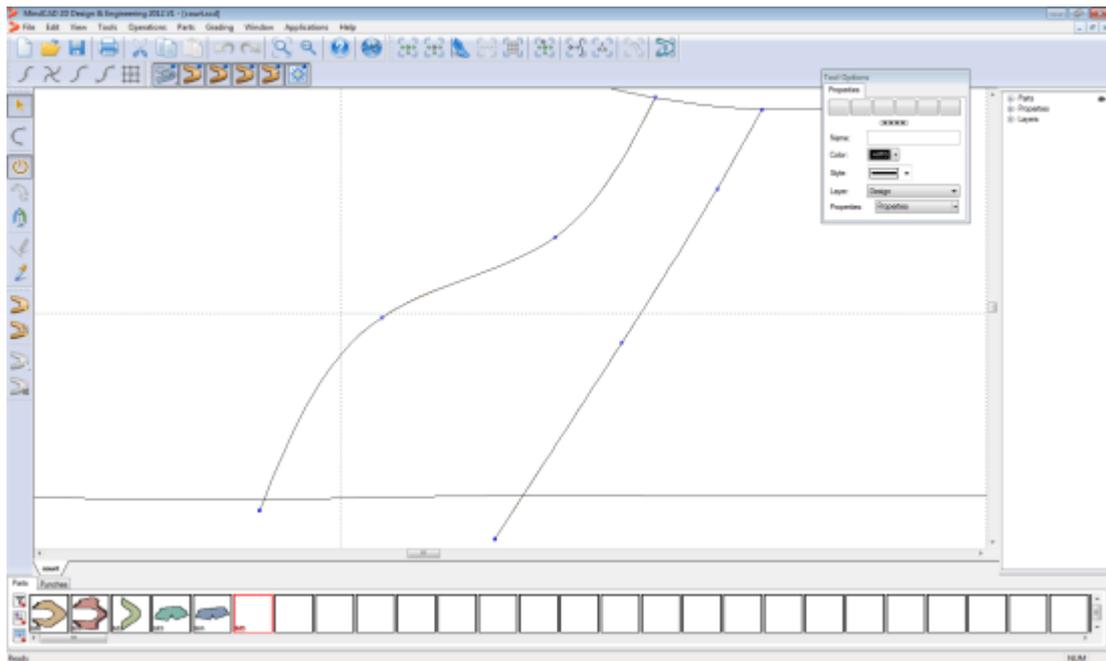
4.1.1 View - Zoom to Fit to selected elements

To zoom to fit to selected elements:

1. Select the desired elements.



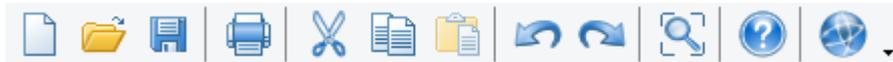
Click the **Zoom to fit** button  in the **Main** toolbar or pressing **Ctrl+D**



4.2 View - Zoom 1:1

When this option is used, the graphics are scaled to the correct physical dimensions. This is the

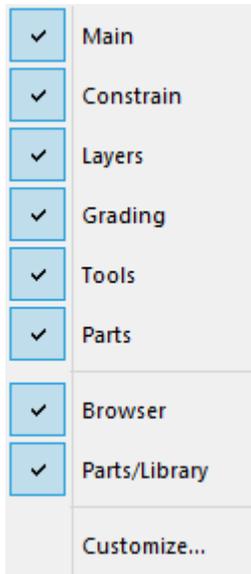
same as clicking the **Zoom 1:1** button  in the **Main** toolbar or pressing **Ctrl+Shift+D**.



If Zoom 1:1 doesn't work correctly please go to the File-Preferences-Options and specify the correct value (in mm) of your monitor.

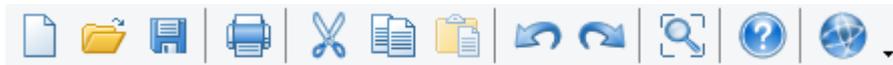
4.3 View - Toolbars

Use this option to select the toolbars that are displayed.



4.3.1 View - Toolbars - Main

Use this option to turn on/off the main toolbar. It is recommended that this menu is displayed at all times.



4.3.2 View - Toolbars - Constrain

Use this option to turn on/off the constrain toolbar. It is recommended that this menu is displayed at all times.



4.3.3 View - Toolbars - Layers

Use this option to turn on/off the layers toolbar. It is recommended that this menu is displayed at all times.



Where there is more than one project open, there will be one layer toolbar for each project.

4.3.4 View - Toolbars - Grading

Use this option to turn on/off the grading toolbar. It is recommended that this menu is displayed at all times.



4.3.5 View - Toolbars - Tools

Use this option to turn on/off the tools toolbar. It is recommended that this menu is displayed at all times.



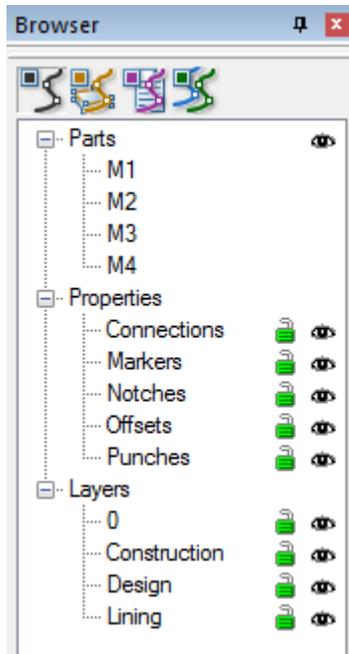
4.3.6 View - Toolbars - Parts

Use this option to turn on/off the parts toolbar. It is recommended that this menu is displayed at all times.



4.3.7 View - Toolbars - Browser

Use this option to hide/display the browser bar.



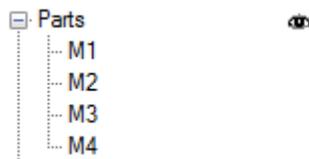
Click in  to see the **normal line coloring**

Click in  to see the **line coloring by layer** (to add more layers go to File - Preferences - Default Properties/Layers)

Click in  to see the **line coloring by properties** (to add more properties go to File - Preferences - Default Properties/Layers)

Click in  to see the **line coloring by dependencies**

Use this option to turn On /Off  the **parts** layer.



Use this option to turn On /Off  the parts properties layer.



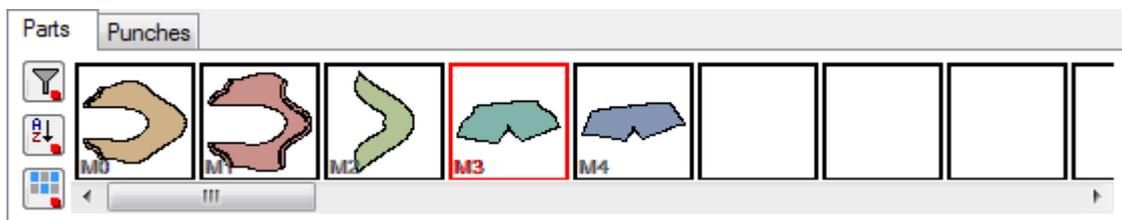
Use this option to turn On /Off  layer by layers, those are:

- **image layer** (0), **construction lines** (Construction), **style lines** (Design) and **lining lines** (Lining).



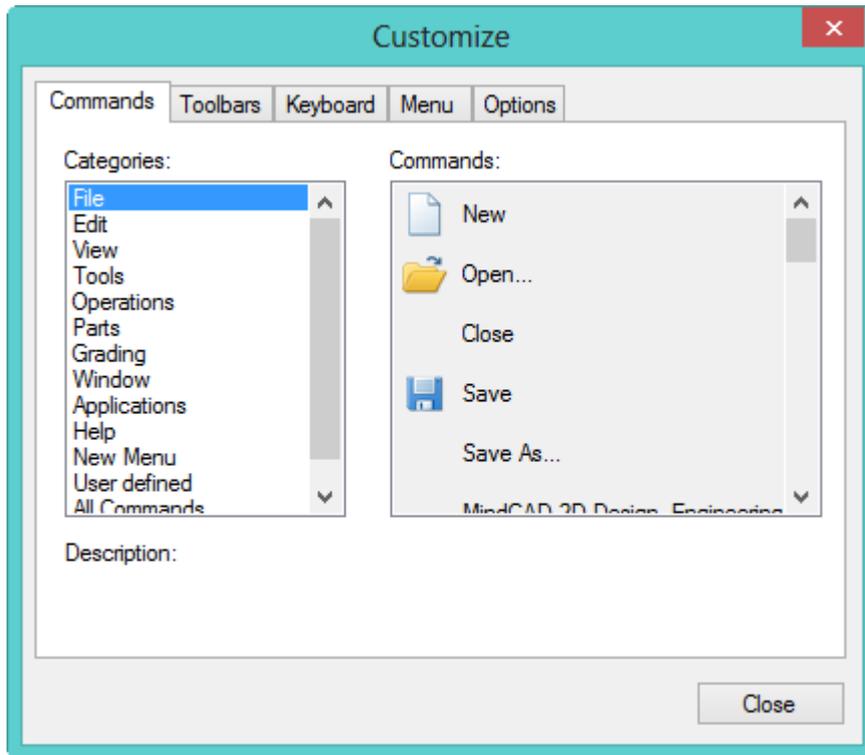
4.3.8 View - Toolbars - Parts/Library Bar

Use this option to turn on/off the Parts/Library toolbar. It is recommended that this menu is displayed at all times.



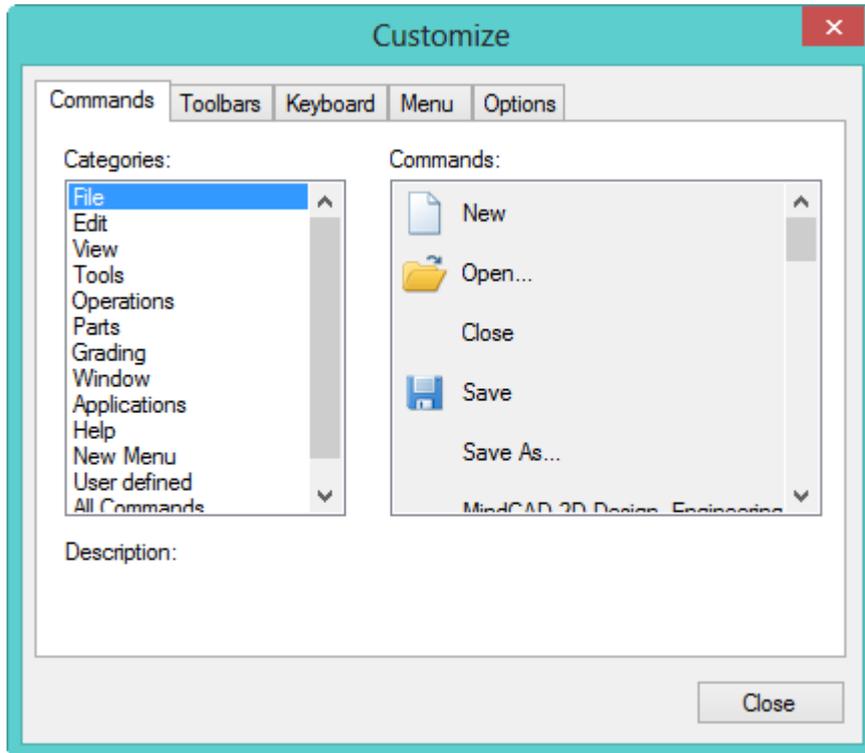
4.3.9 View - Toolbars - Customize

This allows advanced interface customization.



4.3.9.1 View - Toolbars - Customize - Commands

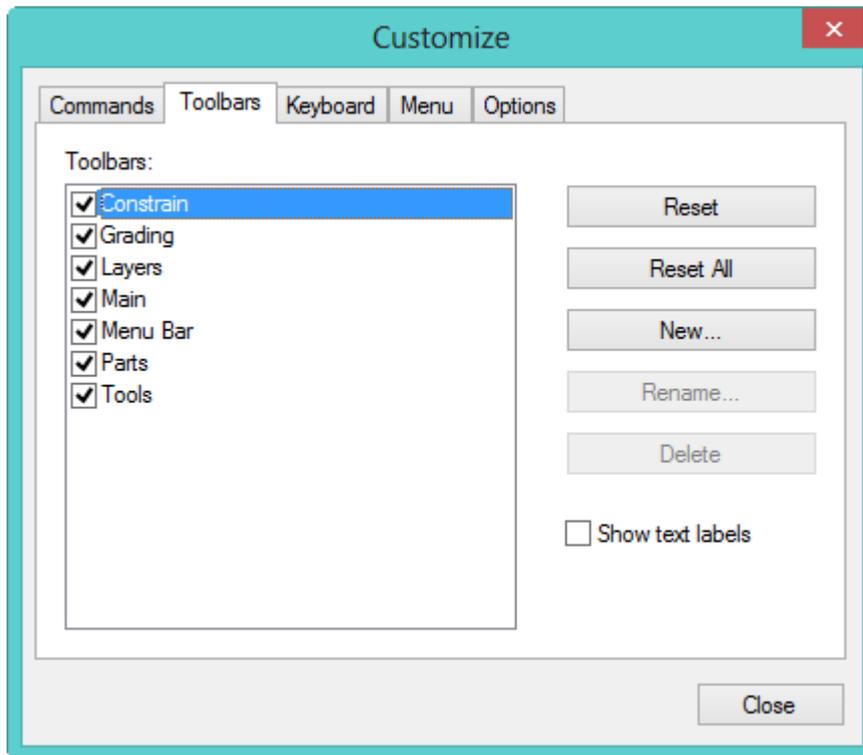
In the commands tab are available all the program commands, arranged by Categories.



The user can drag any command to the toolbars.

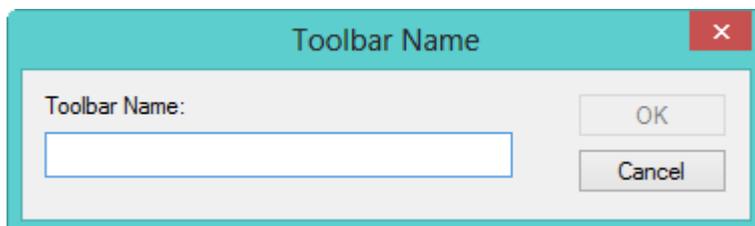
4.3.9.2 View - Toolbars - Customize - Toolbars

Use these options to create your own toolbars and to reset the existing ones.



To add a customized toolbar please follow this sequence:

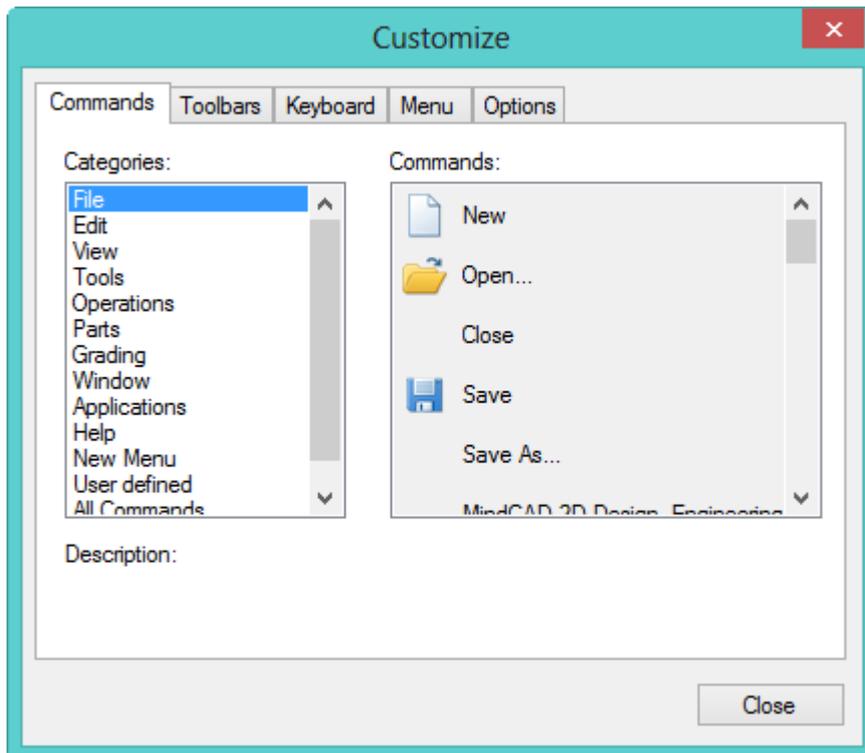
1. On the Toolbars tab, click New



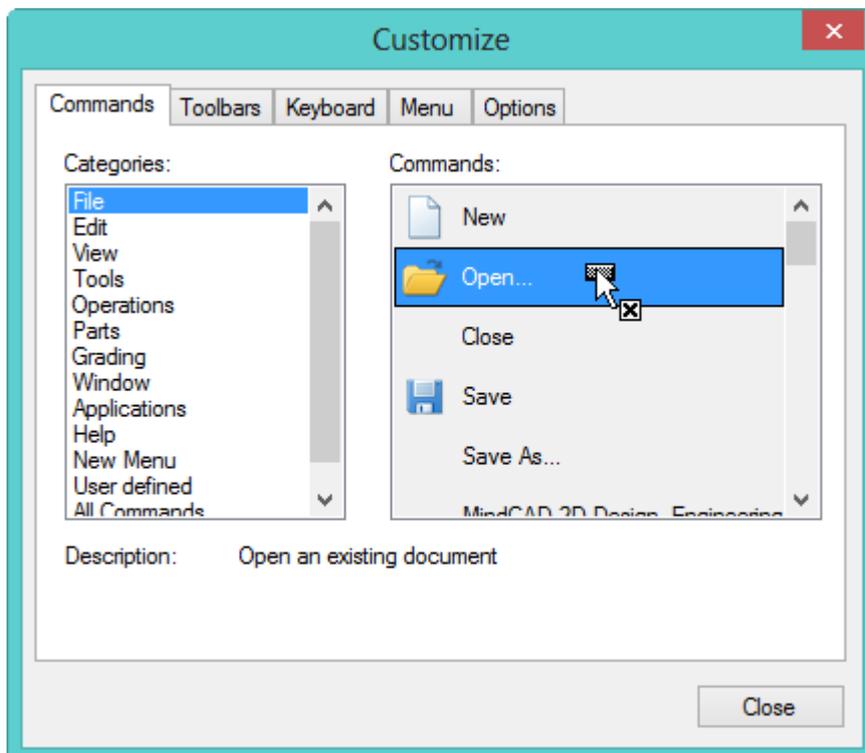
2. Insert the name and press OK, the new bar will appear.



3. In the commands tab are available all the program commands, arranged by Categories



4. Select the required command button and Drag and drop to the toolbar. To drag the command, click over it with the left mouse button and keep it pressed



5. When the mouse button is over the toolbar, you can let go of the left mouse button



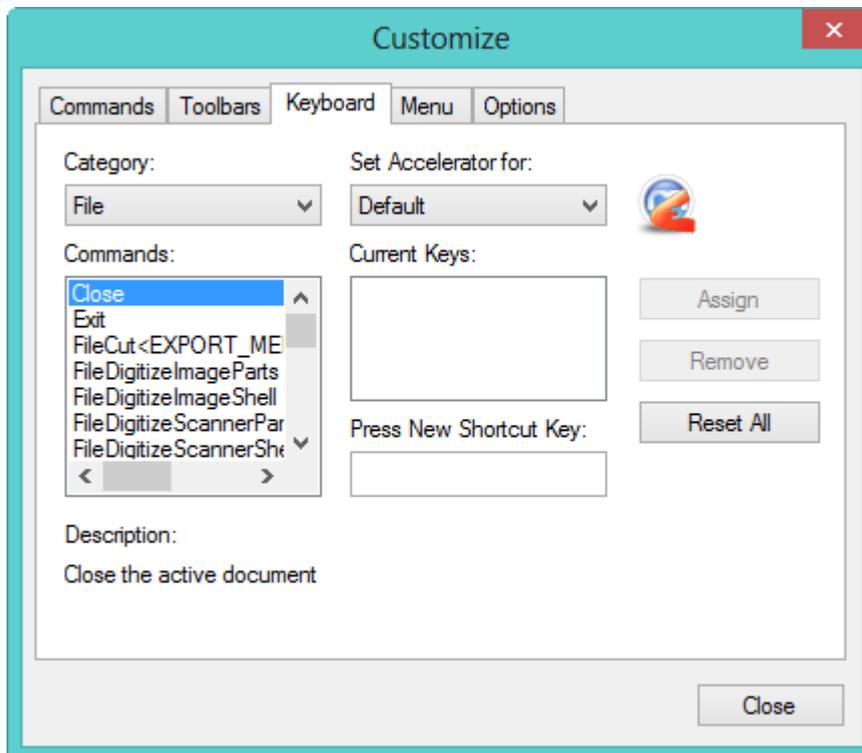
6. The button will be added to the toolbar



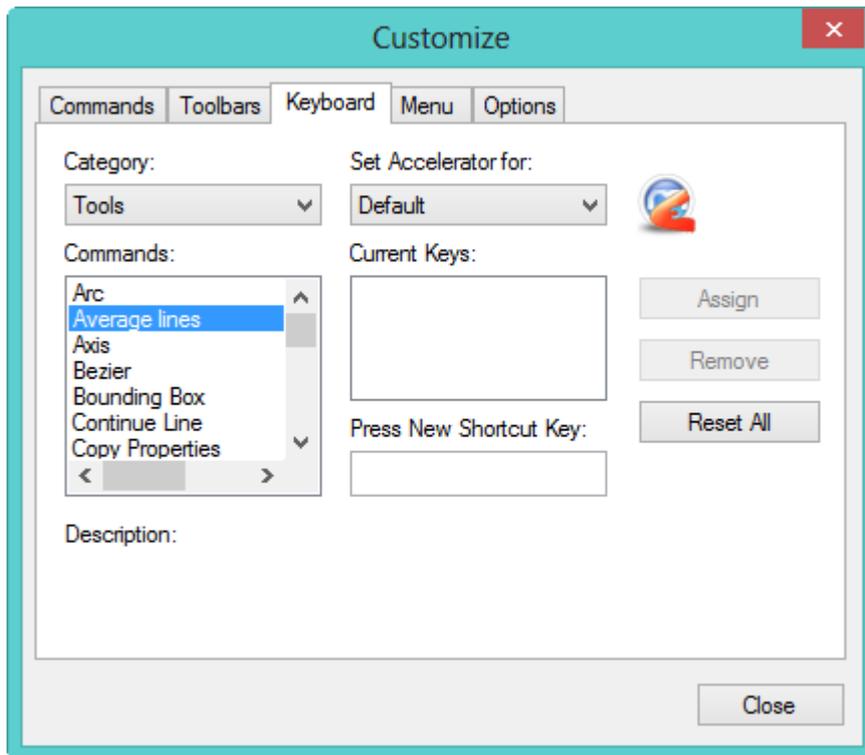
7. To remove a button from the **current toolbar**, select the button and drag and drop it to the commands list.

4.3.9.3 View - Toolbars - Customize - Keyboard

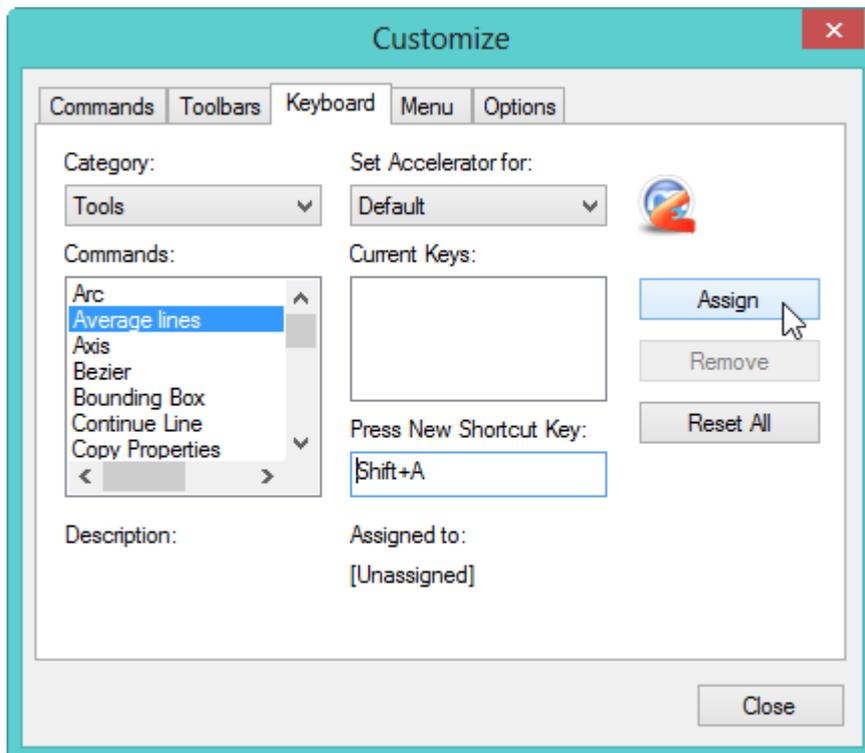
This option allows you to create your one keyboard shortcuts.



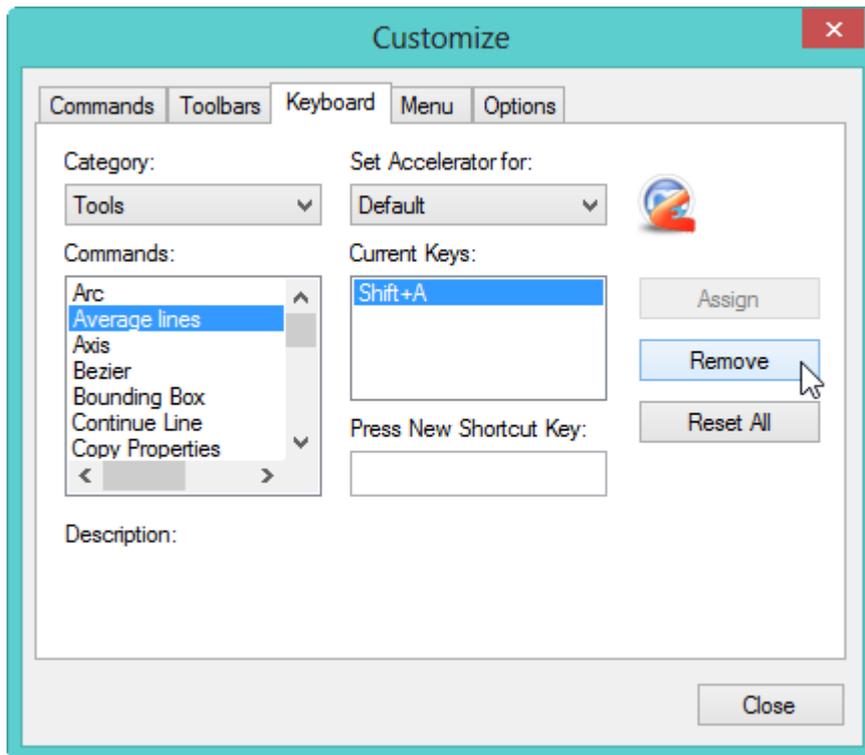
1. Select the **Category** and the **Command** to add the shortcut.



2. Select the text box **Press New Shortcut Key** and press keys to assign to add the shortcut.

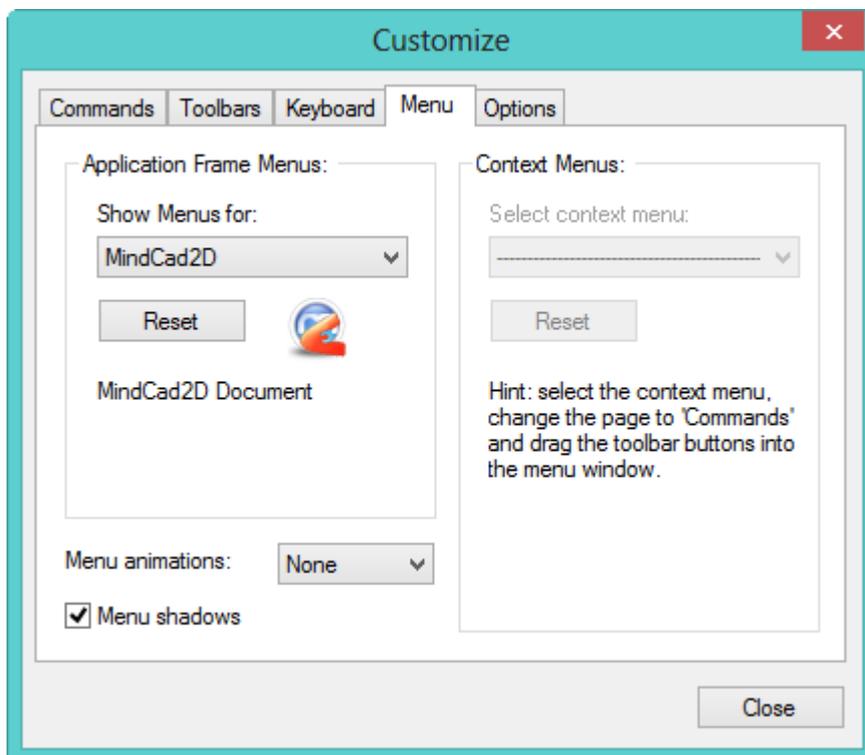


3. To remove the shortcut, select it and press **Remove**.



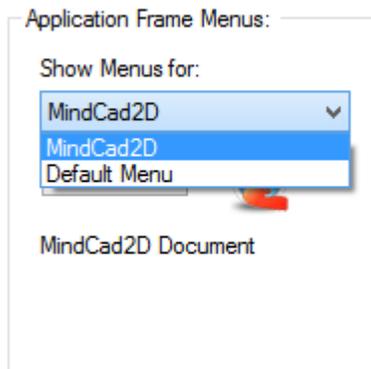
4. The button **Reset All** allows to set the original shortcut and delete the custom ones.

4.3.9.4 View - Toolbars - Customize - Menu



Application Frame Menus

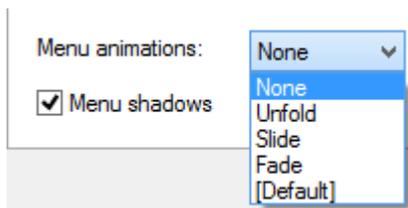
Select the desired menu to reset from the "Show menus for:"



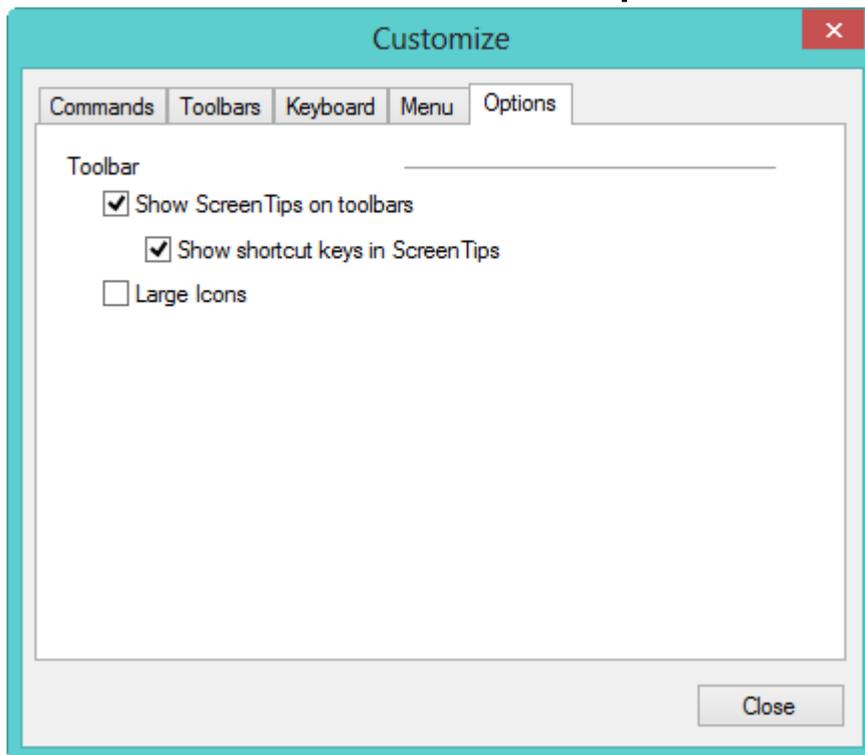
After selecting the menu, press the **Reset** button, when you do that the menus will return to the original state.

Menu Animations

It's possible to select animations for the menus.



4.3.9.5 View - Toolbars - Customize - Options



Toolbar

Show Screen Tips on toolbars - Enable/ Disable the tooltips

- **Show shortcut keys in Screen Tips** - This option is available only when the **Show Screen Tips on toolbars** is enable.

Large icons - Select this option to see the icons larger.

Normal icons

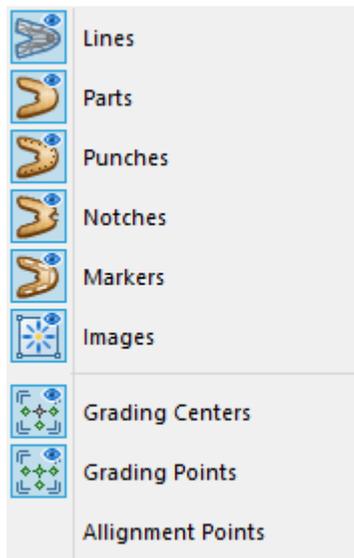


Large icons



4.4 View - Layers

Use this to show the options for displaying layers



The available layers are:

- Lines
- Parts
- Punches
- Notches
- Markers
- Images
- Grading Centres
- Grading Points
- Alignment Points

4.4.1 View - Layers - Lines

Use this option to turn on/off all lines. This is the same as clicking the **All Lines**  button in the **Layers** toolbar.



4.4.2 View - Layers - Parts

Use this option to turn on/off the parts layer.

This is the same as clicking the **Parts**  button in the **Layers** toolbar



4.4.3 View - Layers - Punches

Use this option to turn on/off the punches layer.

This is the same as clicking the **Punches**  button in the **Layers** toolbar



4.4.4 View - Layers - Markers

Use this option to turn on/off the markers layer.

This is the same as clicking the **Markers**  button in the **Layers** toolbar.



4.4.5 View - Layers - Notches

Use this option to turn on/off the notches layer.

This is the same as clicking the **Notches**  button in the **Layers** toolbar



4.4.6 View - Layers - Images

Use this option to turn on/off the images layer.

This is the same as clicking the **Images**  button in the **Layers** toolbar



4.4.7 View - Layers - Grading Centres

Use this option to turn on/off the grading centres layer. 

Note: If this option is not available, please go to File-Preferences-Customize and the layer to a customized toolbar.

4.4.8 View - Layers - Grading Points

Use this option to turn on/off the alignment points.



Note: If this option is not available, please go to File-Preferences-Customize and the layer to a customized toolbar.

4.4.9 View - Layers - Alignment Points

Use this option to turn on/off the reference points.

4.5 View - Filters

Use this to hide or show lines.

Hide all	
Hide selection	Ctrl+U
Hide all but selection	Ctrl+R
Show all	Ctrl+W
Reverse	Ctrl+Shift+U

Hide all - Hide all lines.

Hide selection - Hide the selected lines, or press **Ctrl+U**

Hide all aut selection - Hide all lines except the selected lines. Alternatively, press **Ctrl+R**

Show all - Show all lines. Alternatively, press **Ctrl+W**

Reverse - Reverse the show/hide selection. Alternatively, press **Ctrl+Shift+W**

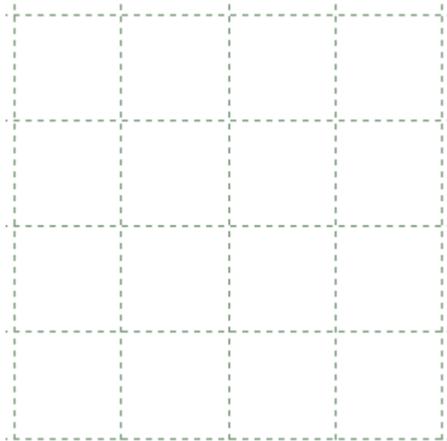
4.6 View - Grid

Use this option to control how the grid is displayed and the spacing of the lines within the grid.

<input checked="" type="checkbox"/>	Lines
<input type="checkbox"/>	Points
<input type="checkbox"/>	None
<hr/>	
<input type="checkbox"/>	Spacing

4.6.1 View - Grid - Lines

Use this option to display the grid as a series of dashed lines.



4.6.2 View - Grid - Points

Use this option to display the grid with points at the grid intersections only.

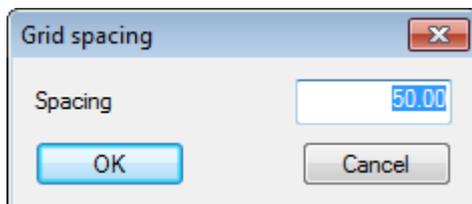


4.6.3 View - Grid - None

Use this option to turn off the grid.

4.6.4 View - Grid - Spacing

Use this option change the spacing of the lines within the grid.



Spacing - Enter the in the value required.

4.7 View - Full Screen

Use this option to view only graphics, so that it fits onto the screen.

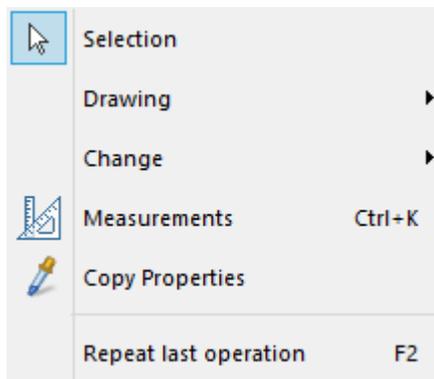
This is the same as pressing **F3**, repeat the operation to return to normal viewing mode.

Part



5 Tools Overview

This menu lets you carry out all selection operations, draw lines, edit lines, make measurements and copying properties between objects.



The available options are:

- Make selections
- Draw lines
- Edit lines
- Measure on screen
- Copy Properties

5.1 Tools - Selection

Use this option to select any object (for example, line, part, punch).

This is the same as clicking the **Selection**  button in the **Tools** toolbar.

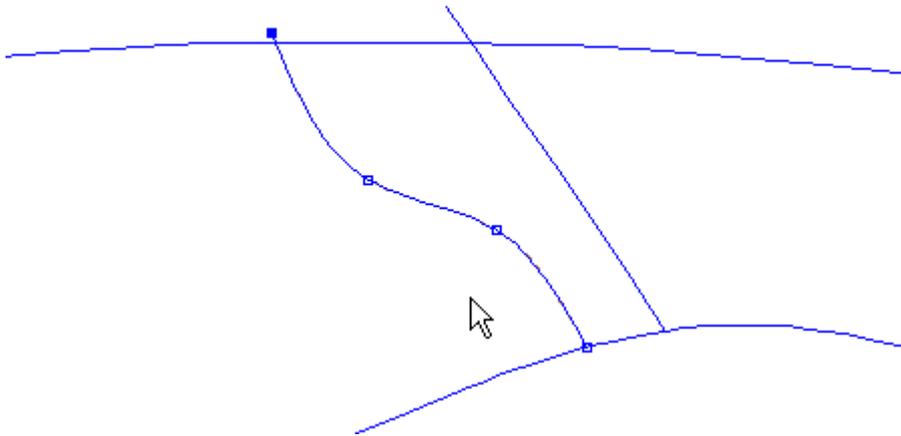


1. select Selection from the **Tools** menu. The cursor will be displayed 
2. select the object using the left mouse button. The selected object will highlight.

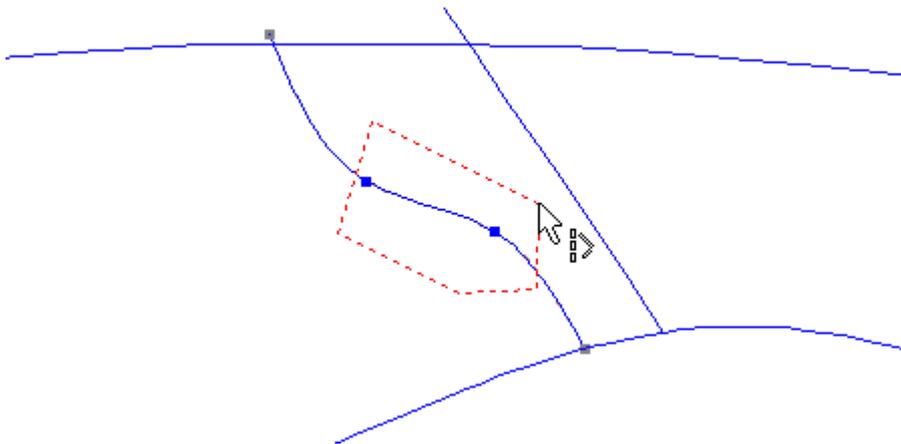
5.1.1 Tools - Selection - Point selection

It is possible to select an individual point or points on a line. This is required in some operations.

1. Select **Selection** from the **Tools** menu. The cursor will be displayed 
2. Select the line with the point(s) to be selected.



3. Hold down the **Shift** key and click the left mouse button to make a polygon around the required points. As the points are selected they highlight.



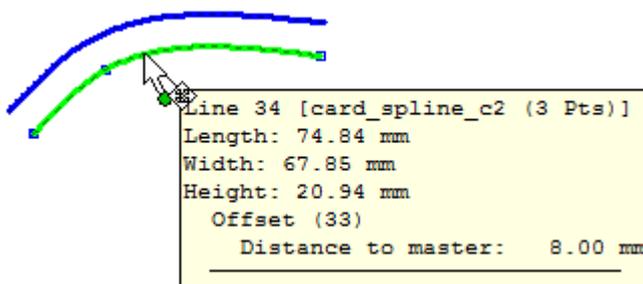
4. Releasing the **Shift** key will finish the polygon creation; these points can now be edited.

5.2 Tools - Drawing

This menu contains all the options for drawing lines.



To quickly visualize some information about any object, simply press the I key and hover on the object (to deactivate this query mode just press the I again).



For detailed information do a right click over the object and select **Properties**.

In the properties window there are two tabs:

- **Properties:**

Properties	Dependencies
ID	22
Name	_inside topline
Color	AUTO
Style	
Width	0 mm
Layer	Design
Side	Inside
Linked to 3D	<input checked="" type="checkbox"/>
Properties	Offsets

ID: Number representing the object identity.

Name: Is possible to assign a name to the object.

Color: Select the line color, from the available options.

Style: Choose the style for the line.

Width: Allows to change the line width in mm.

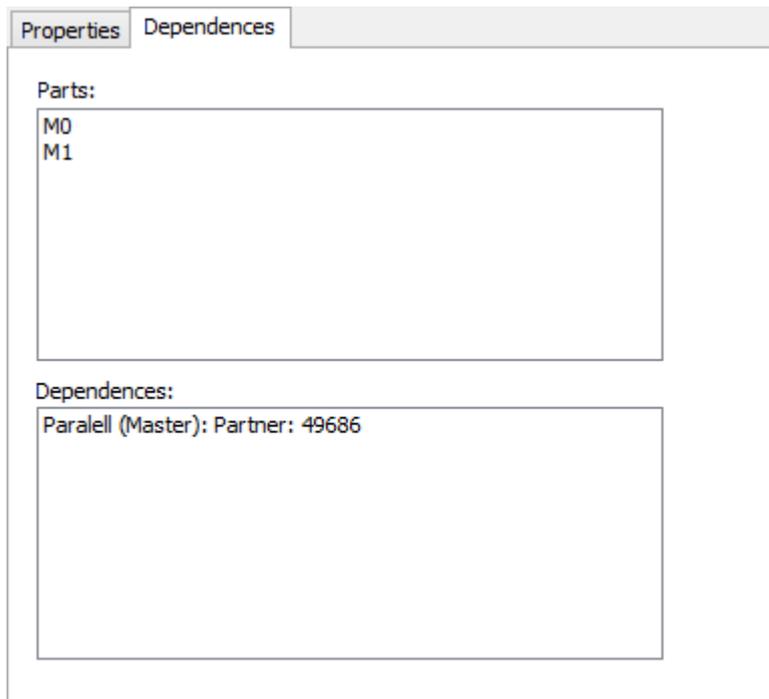
Layer: Select the object layer, press button [...] to see the available layers.

Side: Allows to define in what side the object should be. Press button [...] to choose the side.

Linked to 3D: Check to link with 3D.

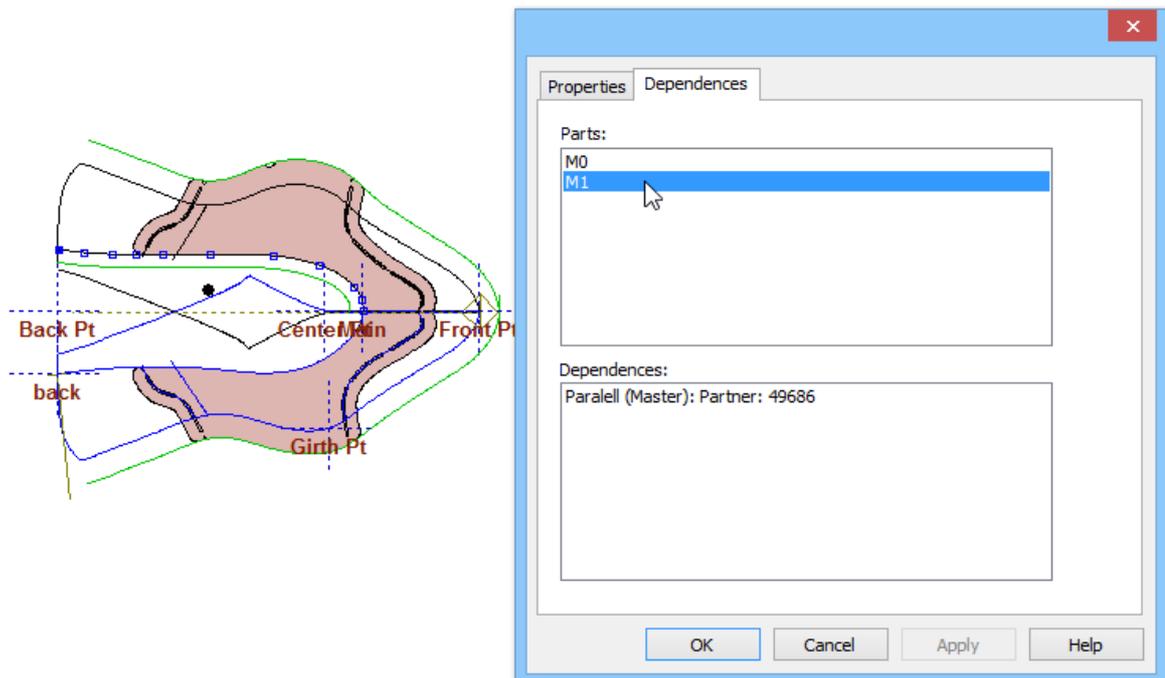
Properties: Allows to add properties to the object.

- **Dependencies:**



In this tab is visible if the object as dependencies, this is, if is used in parts, if as parallels associated, etc.

Is also possible to quick select the dependent parts. The matching part will be visible on the model.



5.2.1 Tools - Drawing - Line

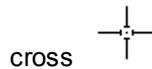
Use this option to draw lines. By default the lines will be curved, but corners can be added at any time, using the **Tool Options** menu.

This is the same as clicking the **Create Line**  button in the **Tools** toolbar or pressing **Ctrl+L**.



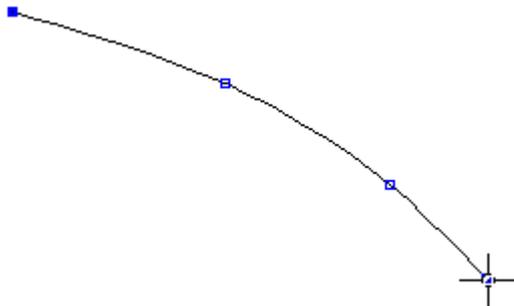
5.2.1.1 Creating a curved line

1. Select **Line** from the **Drawing** options of the **Tools** Menu. The cursor will be displayed as a



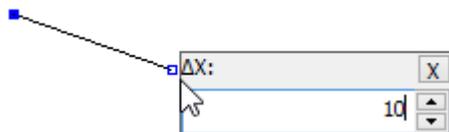
cross

2. Insert points using the left mouse button.

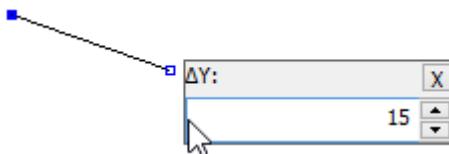


3. It's possible to insert the line points in a specific places, based in X,Y coordinates. To do that, press the key **A** or do a right click and select **Add point** from the contextual menu.

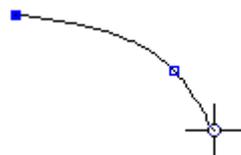
a. Insert the **X** coordinates and press **Enter**.



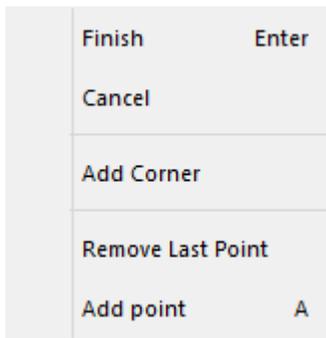
b. Insert the **Y** coordinates, press **Enter**.



c. The point will be placed.

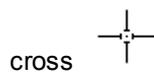


4. To finish the line, do double click with the left mouse button, or press **Enter**, or do a right click and select **Finish** from the contextual menu.

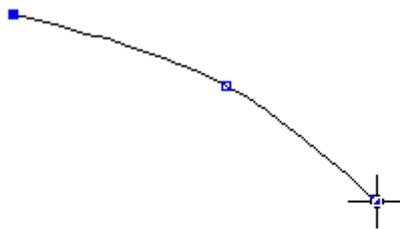


5.2.1.2 Creating a curved line with corner

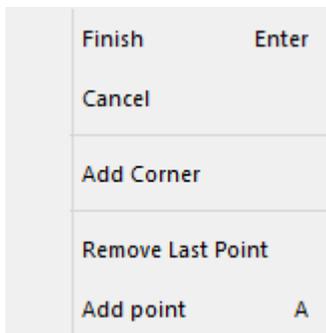
1. Select **Line** from the **Drawing** options of the **Tools** menu. The cursor will be displayed as a



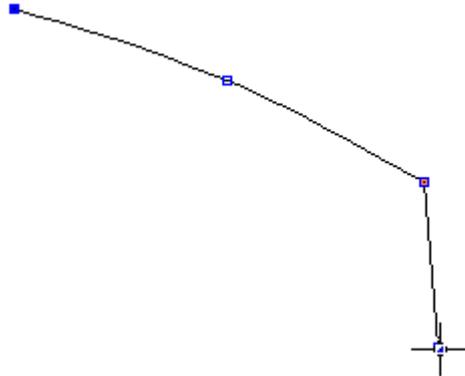
2. Insert points using the left mouse button.



3. To add a corner,
- § Press **Ctrl** as you add the point
 - § With the cursor in the correct position for the point, press the right mouse button and select **Add Corner** from the menu



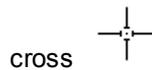
4. Continue drawing the line. The corner option can be used repeatedly in any line to create a zigzag effect.



5. To finish the line either double click the left mouse button or press the right mouse button and select **Finish** from the menu

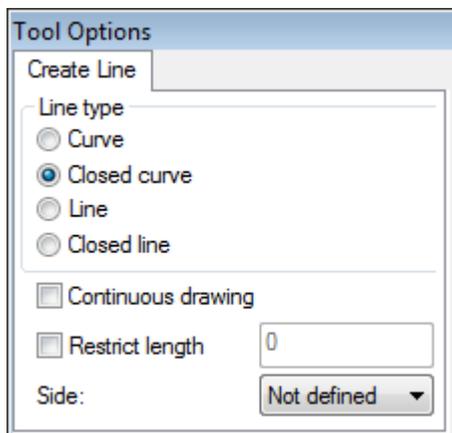
5.2.1.3 Creating a closed curve

1. Select **Line** from the **Drawing** options of the **Tools** menu. The cursor will be displayed as a

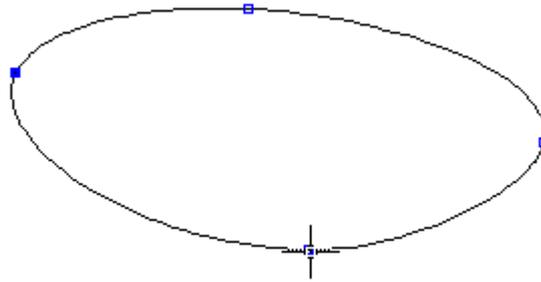


cross

2. Select **Closed Curve** from the **Tool Options** toolbar.



3. Insert points using the left mouse button.



4. To finish the line either double click the left mouse button or press the right mouse button and select **Finish** from the menu

Finish	Enter
Cancel	
Add Corner	
Remove Last Point	
Add point	A

- **Tips**

1. Use as few points as you can to create your desired curve.
2. Avoid drawing across the centre line if possible, as these lines will not be give the desired result when 'mirrored'
3. Use the snap functions in the Constrain menu to keep lines (points) accurate.

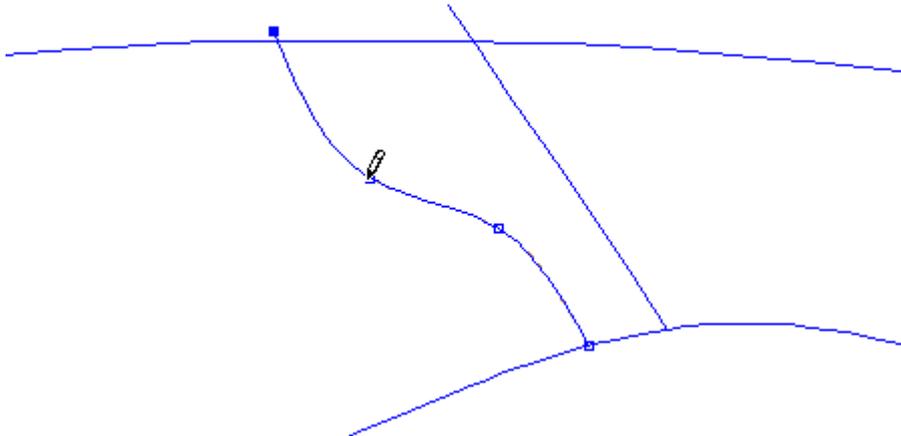
5.2.1.4 Line editing

You can edit a line in the following ways:

- Move a point
- Add/Delete a point
- Changing a Corner/Curve point
- Dragging/Scaling/Rotating lines/Mirror

5.2.1.4.1 Line editing - Move point

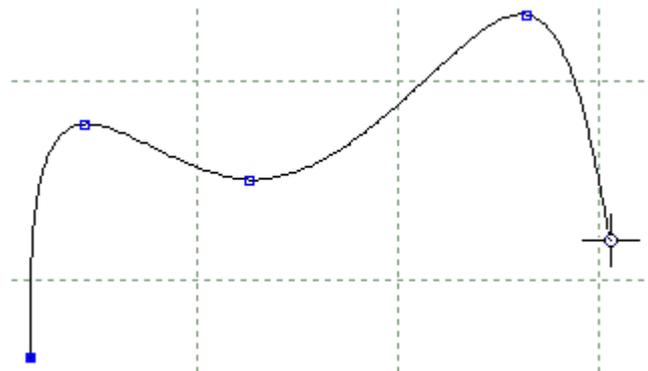
1. Select **Object selection** from the **Selection** options on the **Tools** menu. The cursor will be displayed 
2. Select the line to be edited. As you approach a point on the selected line the cursor will change to a pen.



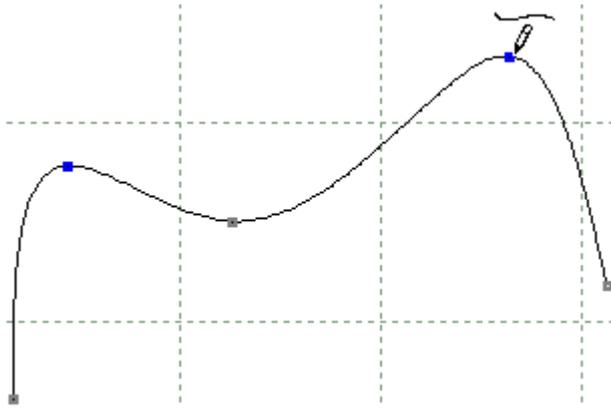
3. Press and hold down the left mouse button, as you move the mouse the point will move.
4. To finish the edit release the left mouse button.
5. Repeat on any point on the selected line.

5.2.1.4.2 Line editing - Select points

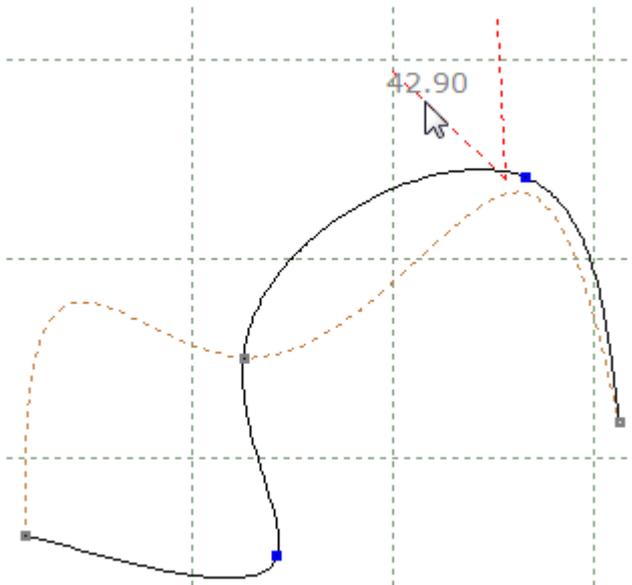
1. Draw a line



2. Hold down the CTRL button, approach the point to be selected the cursor will change to a pen ().
3. Select the desired point.



4. The selected points are shown in blue.
5. It's possible to edit just the selected points. For example rotate just the select points.



5.2.1.4.3 Line editing - Add/Delete point

To add a point to a line

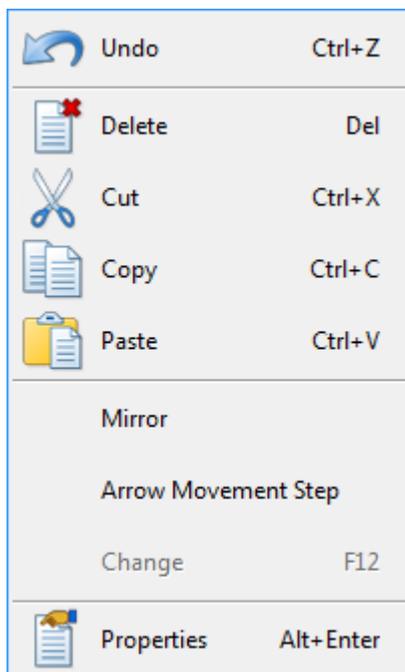
1. Select **Object Selection** from the **Selection** options on the **Tools** menu. The cursor will be displayed .
2. Select the line to be edited.
3. Hold down the **Shift** key, approach the selected line between original points, the cursor will change to a pen with a plus sign. .
4. Press the left mouse button to add a point at this position.

To delete a point from a line

1. Select **Object Selection** from the **Selection** options on the **Tools** menu. The cursor will be displayed .
2. Select the line to be edited.
3. Hold down the **Shift** key, approach the point to be deleted, the cursor will change to a pen with a minus sign. .
4. Press the left mouse button to delete the point.

5.2.1.4.4 Line editing - Changing a Corner/Curve point

1. Select **Object Selection** from the **Selection** options on the **Tools** menu. The cursor will be displayed .
2. Select the line to be edited.
3. Move the cursor towards the point to be edited and get the pen cursor displayed.
4. Press the right mouse button and select the **Change corner/curve** option from the menu.



5.2.1.4.5 Line editing - Dragging/Scaling/Rotating lines/Mirror

Full information on **Drag Constrain** is in the **Edit** chapter.

Click here for information on **Drag Constrain**.

1. Select **Object Selection** from the **Selection** options of the **Tools** Menu. The cursor will be displayed .
2. Select the line(s) to be edited.

3. With the pointed cursor displayed , click the left mouse button and hold it down to drag the lines.
4. Hold down the **Ctrl** button and click the right mouse button to select the rotation point.
5. Click the left mouse button to start rotation. Move the cursor to rotate the line(s)
6. Click the left mouse button to finish.

For further information, see Edit - Drag Constrain.

5.2.1.4.6 Line editing - Virtual Mirror

It is possible to do a mirror of selected geometry without having to select an axis. This is provided for a quicker interaction. To do this, the operator should:

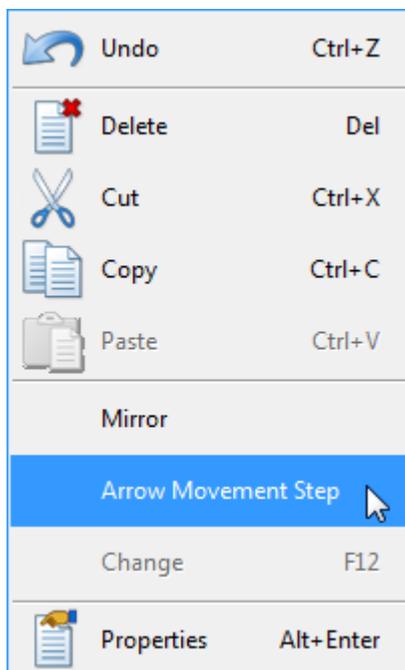
1. select line(s) to mirror.
2. press the right mouse button and select the **Mirror** option from the menu.

The lines are mirrored around a virtual axis, automatically defined, based on the selected geometry.

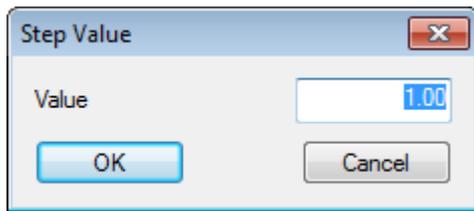
5.2.1.4.7 Line editing - Arrow Movement Step

This tool allows the user to configure the value in mm that the line will be moved, each time, when moving the line with the keyboard arrows.

1. Select a line.
2. Do a right click and select Arrow Movement step.



3. Insert the step value.



4. Now when the keyboard arrows are pressed the line will move 1 mm in the direction of the arrow pressed.

5.2.2 Tools - Drawing - Bezier

This is the same as clicking the **Bezier line**  button in the **Tools** toolbar.

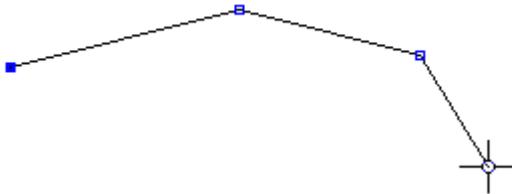


With this type of line it's possible to have better control the direction of tangents to each of the control points of the line.

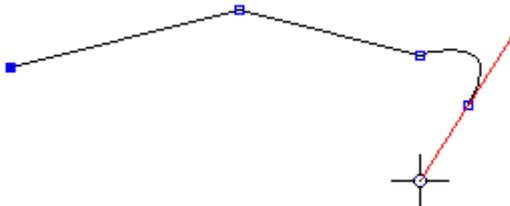
1. Select **Bezier Line** from the **Tools - Drawing** Menu. The cursor will be displayed as a cross.



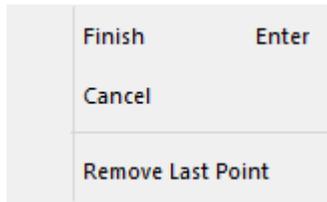
2. Insert points using the left mouse button, by default the simple point will be corner points.



3. To control the point tangent during the line creation, press down the left mouse button and move the mouse until you have the desired curvature.

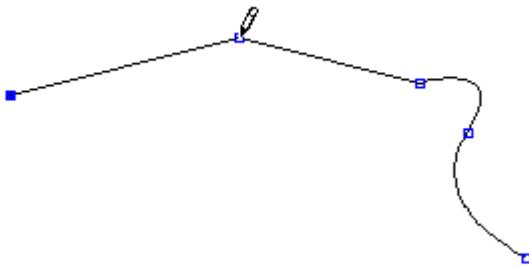


4. To finish the line either double click the left mouse button or press the right mouse button and select finish from the menu

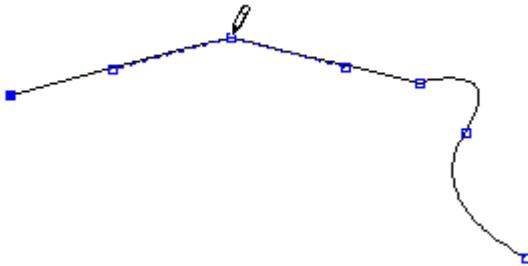


5.2.2.1 Bezier Line Editing

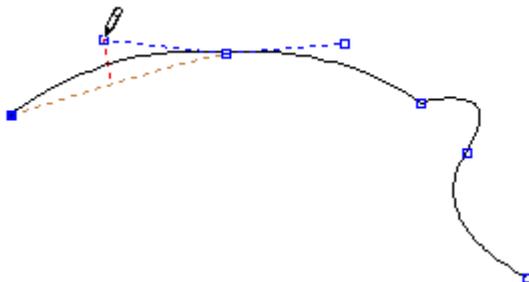
1. Select the button **Select** from the **Tools** toolbar. The cursor will be displayed .
2. Select the line to be edited. As you approach a point on the selected line the cursor will change to a pen.



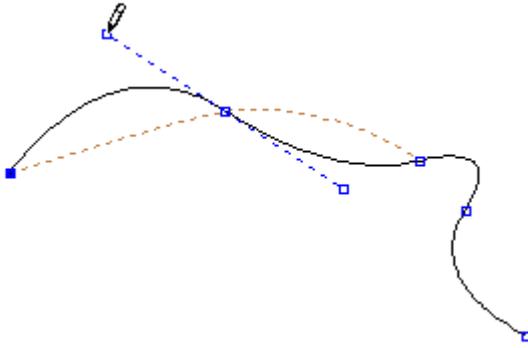
3. Select the point to edit. Doing a left click over it. Now the tangent is visible.



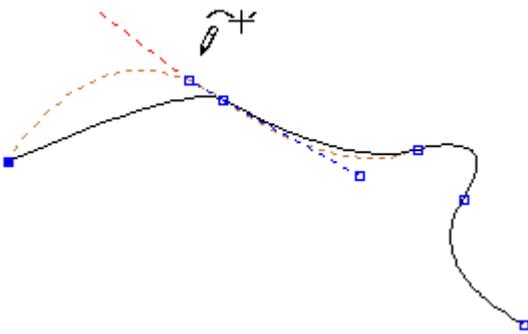
4. Press and hold down the left mouse button, as you move the mouse the point tangent will move.



5. Hold down the **Shift** key and hold down the left mouse button, as you move the mouse the direction of tangents will match.



6. Hold down the **Shift+Ctrl** key and hold down the left mouse button, as you move the mouse. You can see that now its possible to change one side length without interfering with the length of the other side.



7. Repeat on any point on the selected line.

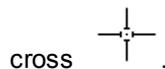
5.2.3 Tools - Drawing - Circle

Use this option to draw circles freehand or by a given radius

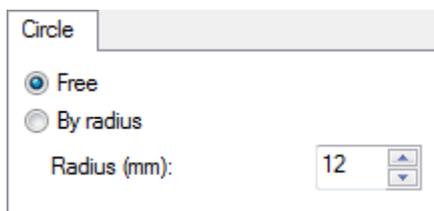


5.2.3.1 Drawing - Circle - Free

1. Select **Circle** from the **Drawing** options of the **Tools** menu. The cursor will be displayed as a

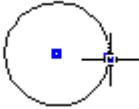


2. Select **Free** from the **Circle** options



3. Insert a point using the left mouse button. This point will be the centre of the circle. As you move

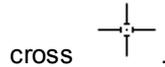
the mouse the size of the circle will change.



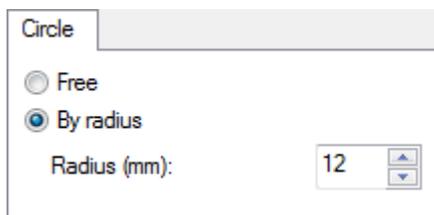
4. Press the left mouse button again to complete the operation.

5.2.3.2 Drawing - Circle - By radius

1. Select **Circle** from the **Drawing** options of the **Tools** menu. The cursor will be displayed as a



2. Select **By radius** from the **Circle** options

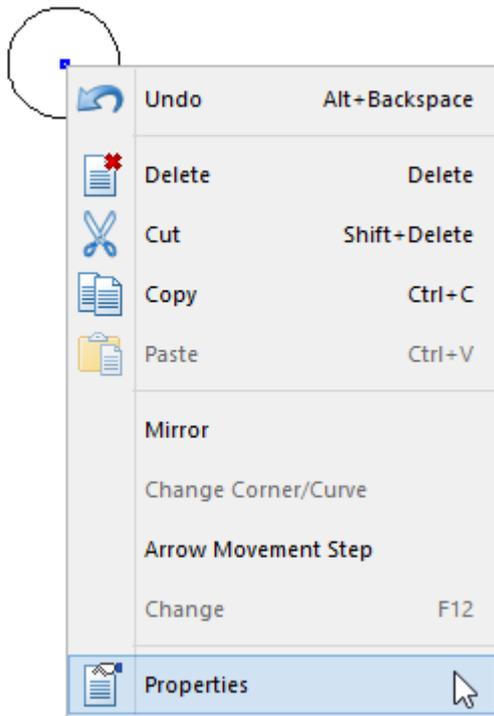


3. Select the radius required using the up/down arrows.
4. Insert a point(s) using the left mouse button. This point(s) will be the centre of the circle of your specified radius.

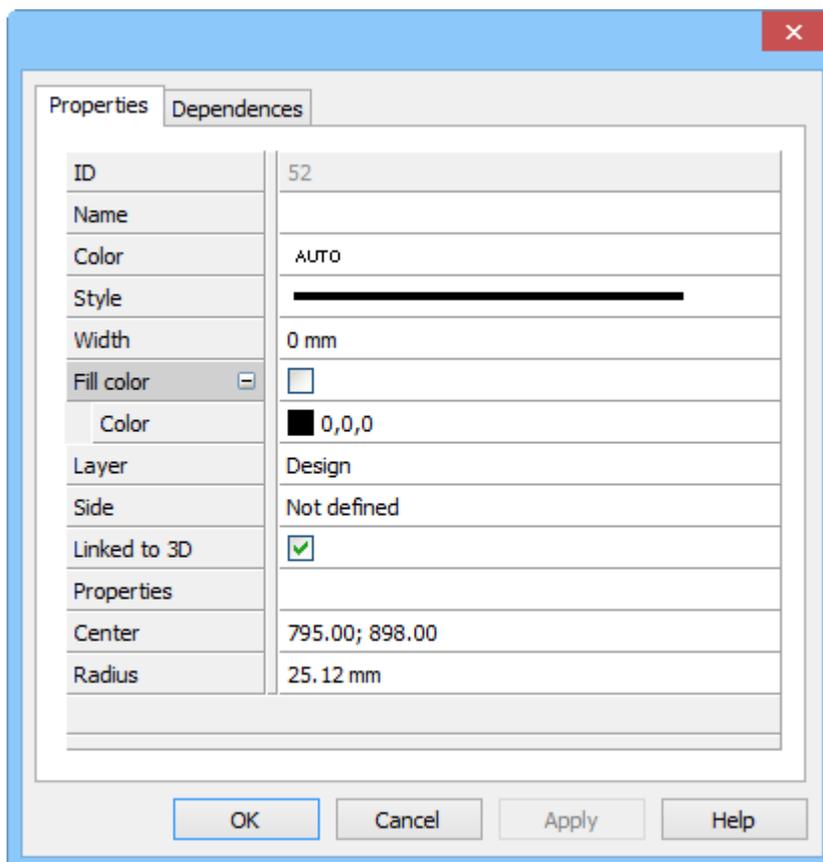
5.2.3.3 Circle Properties

To access the circle properties:

- Select the circle;
- Do a right click over it;
- And select Properties from the contextual menu.



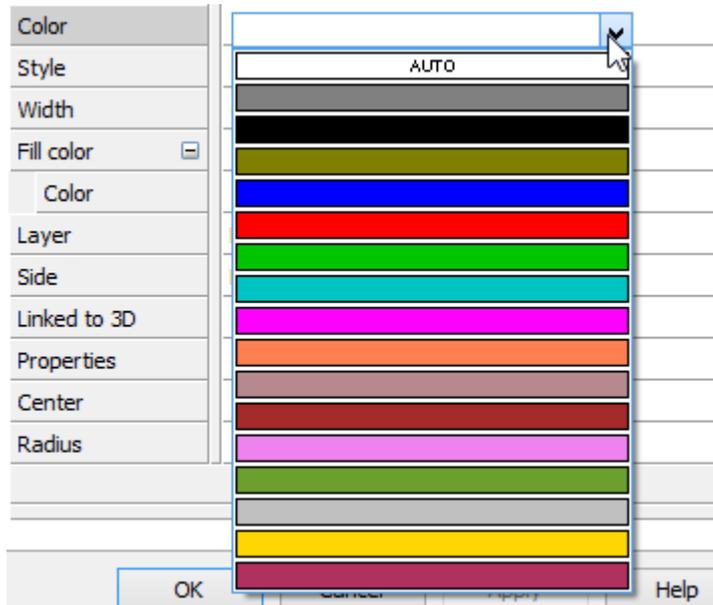
The **Properties** window will be displayed.



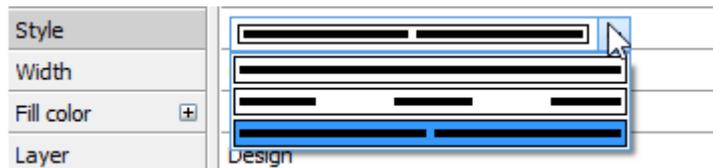
ID: Number representing the Circle identity.

Name: Is possible to assign a name to the circle.

Color: Select the circle line color, from the available options.



Style: Choose the style for the line.

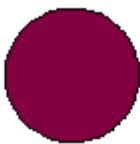


Width: Allows to change the line width in mm.

Fill Color: Check to fill in the closed shape.



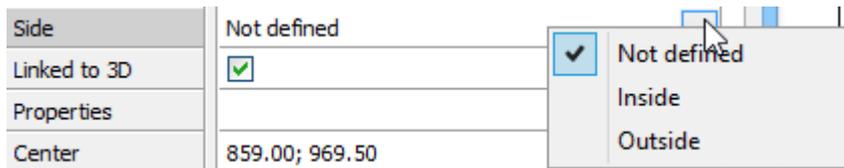
Color: Select the color to fill the shape.



Layer: Select the circle layer, press button [...] to see the available layers.



Side: Allows to define in what side the circle should be. Press button [...] to choose the side.



Linked to 3D: Check to link with 3D.

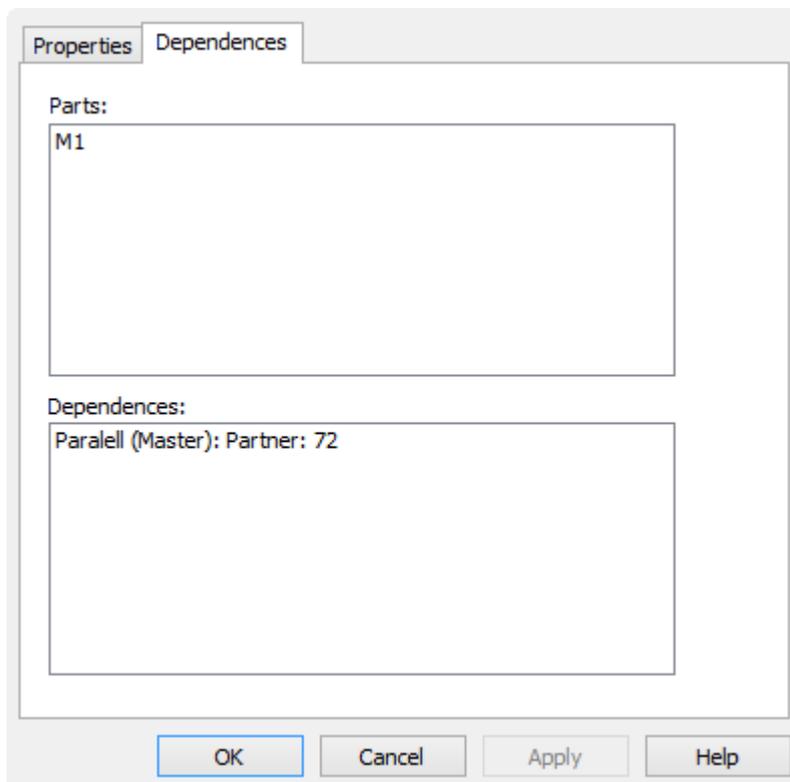
Properties: Allows to add properties to the circle.



Center: Allows to change the circle center to a different position.

Radius: Allows to change the circle radius.

Dependencies Tab:



In this tab is visible if the shape as dependencies, this is, if is used in parts, if as parallels associated, etc.

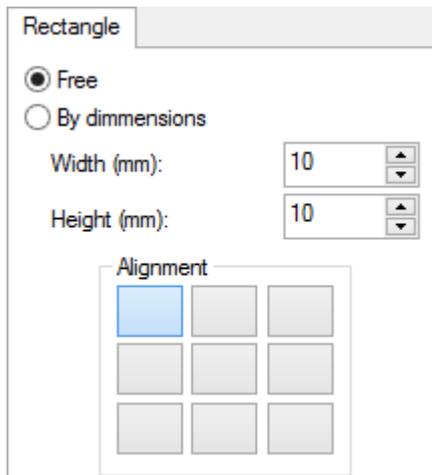
5.2.4 Tools - Drawing - Rectangle

Use this option to draw rectangles.

1. Select **Rectangle** from the **Drawing** options of the **Tools** menu . The cursor will be

displayed as a cross .

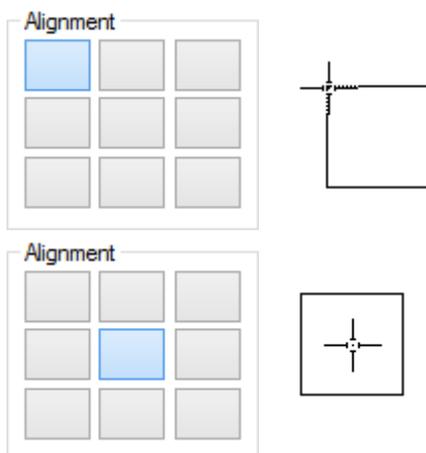
2. Insert a point using the left mouse button. Move the mouse to give the diagonally opposite corner of rectangle and press the left mouse button again to complete the operation.



3. If **By dimensions**, enter the Width and Height in mm.

And select the rectangle alignment.

The corner or edge of the rectangle specified by the alignment option is placed at the position selected by the left mouse button click.



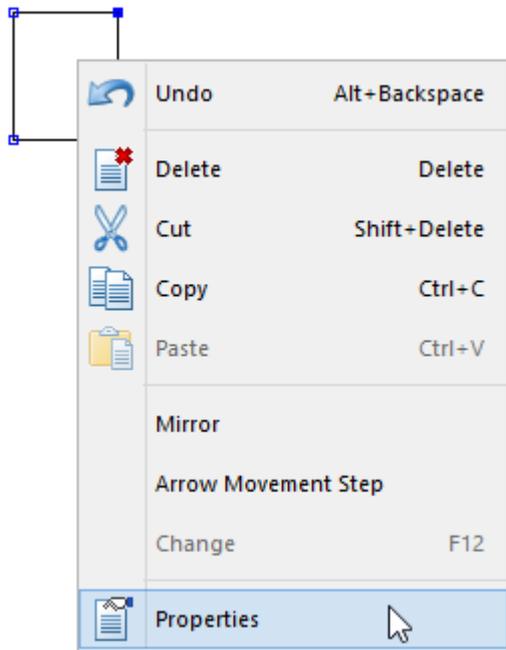


After its creation, the rectangle has 3 control points for enhanced shape control. The original corner control handle, given on creation, will control width and height of the rectangle, maintaining angle directions. The third control point will allow you to rotate and change the width and height, using the first given handle has the anchor handle.

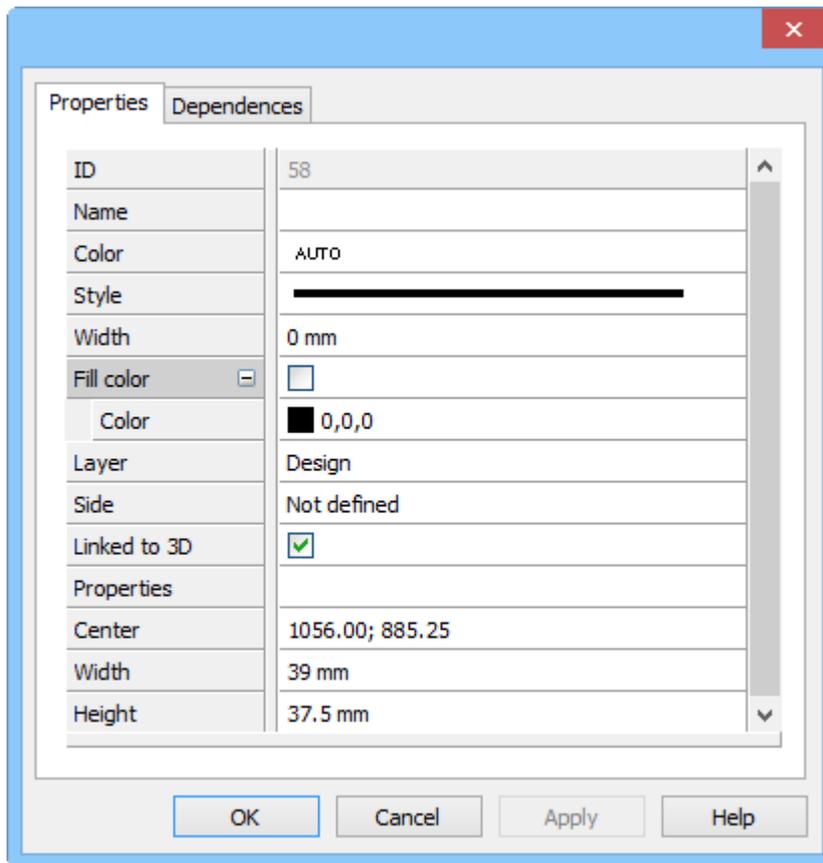
5.2.4.1 Rectangle Properties

To access the rectangle properties:

- Select the rectangle;
- Do a right click over it;
- And select Properties from the contextual menu.



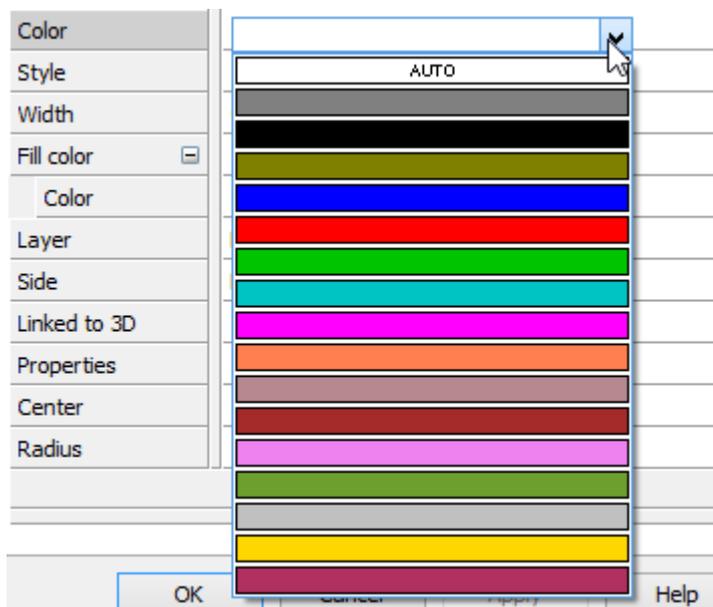
The **Properties** window will be displayed.



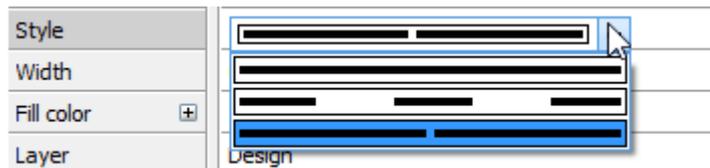
ID: Number representing the Rectangle identity.

Name: Is possible to assign a name to the rectangle.

Color: Select the rectangle line color, from the available options.



Style: Choose the style for the line.



Width: Allows to change the line width in mm.

Fill Color: Check to fill in the closed shape.



Color: Select the color to fill the shape.



Layer: Select the rectangle layer, press button [...] to see the available layers.

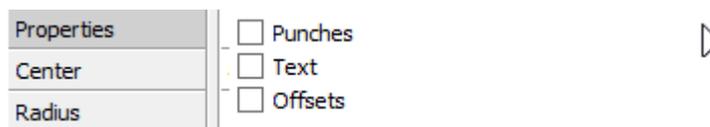


Side: Allows to define in what side the rectangle should be. Press button [...] to choose the side.



Linked to 3D: Check to link with 3D.

Properties: Allows to add properties to the rectangle.

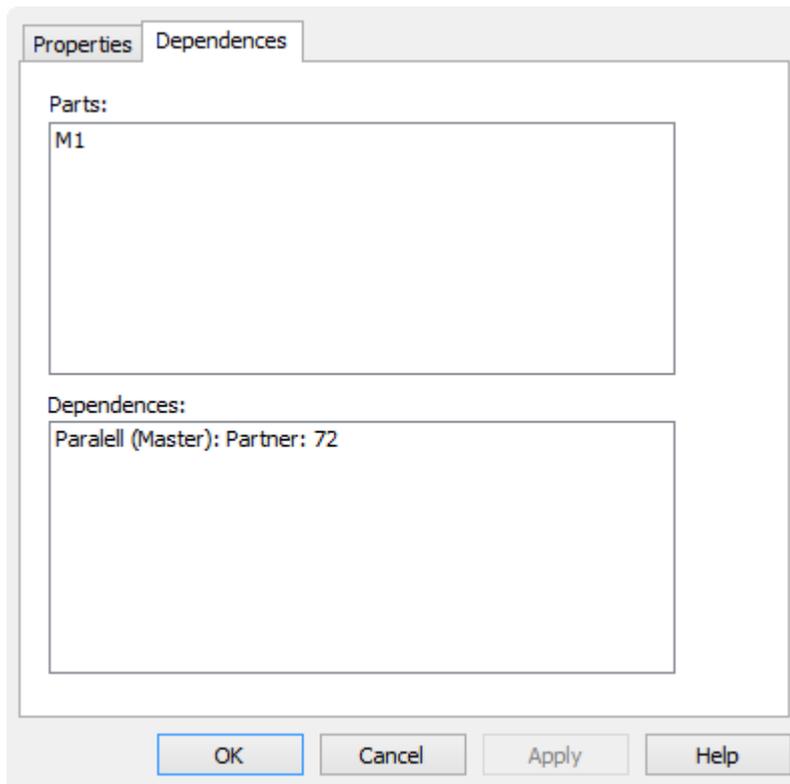


Center: Allows to change the rectangle center to a different position.

Width: Allows to change the rectangle width.

Height: Allows to change the rectangle height.

Dependencies Tab:



In this tab is visible if the shape as dependencies, this is, if is used in parts, if as parallels associated, etc.

5.2.5 Tools - Drawing - Arc

This option lets you arcs. An arc is the arc of a circle. If you draw three points using the normal line drawing it will not be an arc.

1. Select **Arc** from the **Drawing** options of the **Tools** menu . The cursor will be displayed as a

cross .

2. Insert three points to define the arc.
3. Repeat if required.

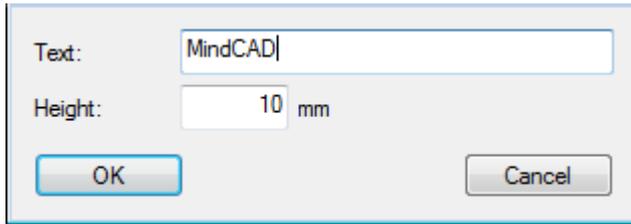
5.2.6 Tools - Drawing - Text

This option lets you add text to your shell (not parts).

1. Select **Text** from the **Drawing** options of the **Tools** menu . The cursor will be displayed as

a cross .

2. Insert the start point for your text with the left mouse button. A dialogue box is displayed



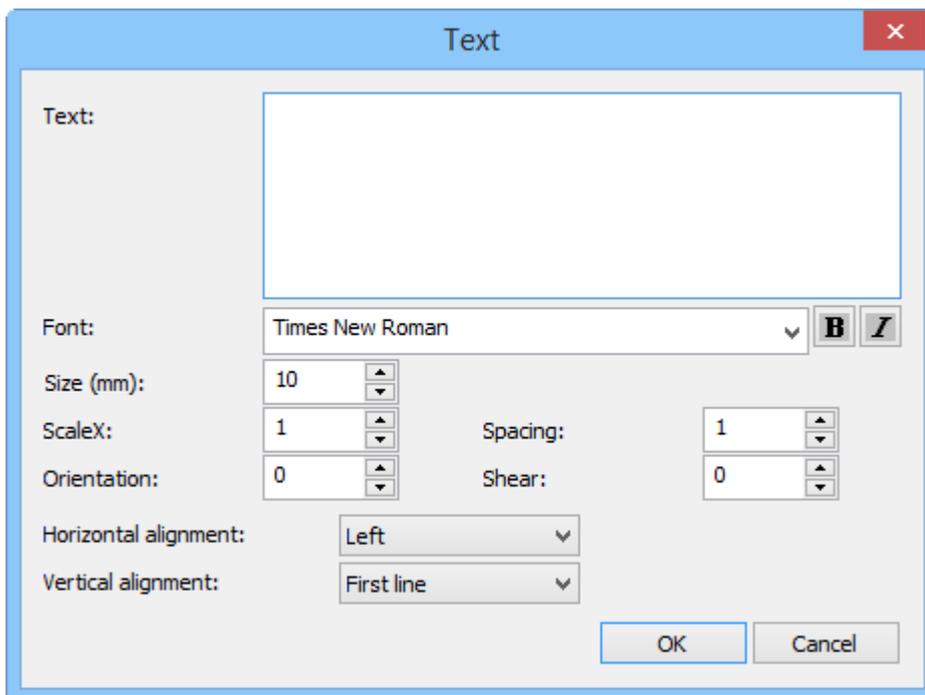
3. Insert **Text** and size of text (**Height**)
4. Select **OK**

5.2.7 Tools - Drawing - Text (True Type)

This option lets you add text to your shell (not parts).

1. Select Text (True type) from the **Drawing** options of the **Tools** menu . The cursor will be displayed as a cross .

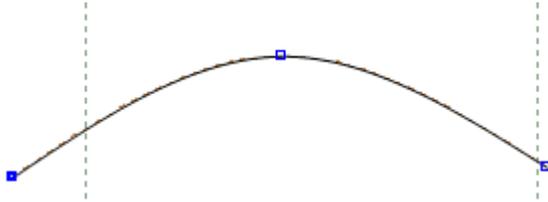
2. Insert the start point for your text with the left mouse button. A dialogue box is displayed



3. Insert **Text**, **Font** type, **Size** of text, **scaleX**, **spacing** between the letters, the **orientation**, the **horizontal** and **vertical** alignment, and the **shear** to be applied.
4. Select **OK**

In alternative it's possible to add text to a line.

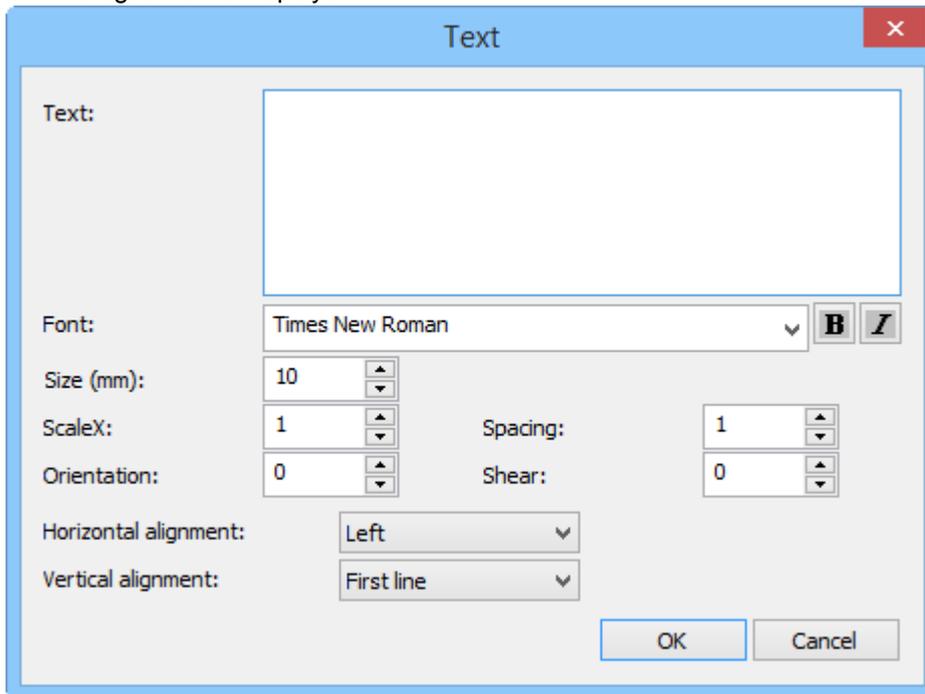
1. Select the line.



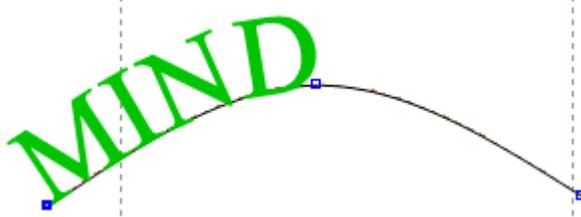
2. Select Text (True type) from the **Drawing** options of the **Tools** menu



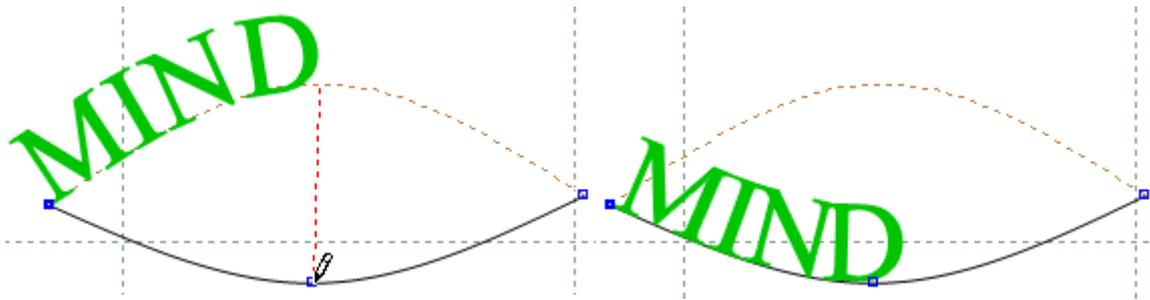
3. A dialogue box is displayed



5. Insert **Text**, **Font** type, **Size** of text and select **OK**.



6. Now the text will move when the line is moved.

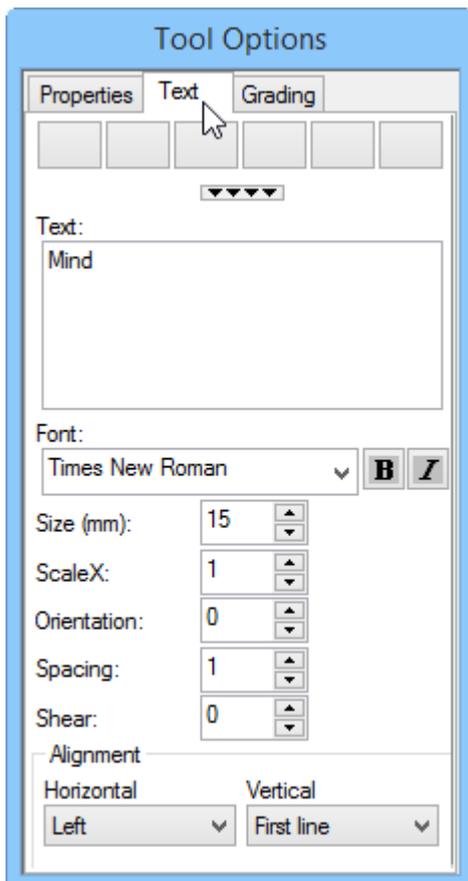


5.2.7.1 Text (True Type) Edition

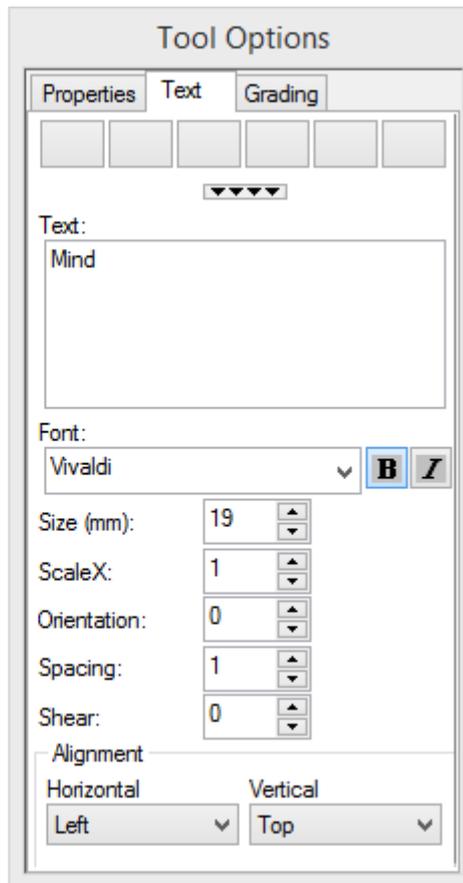
1. Select the text to edit.



2. In the Tool Options, select the **Text** tab.



3. Any option you change will be automatically applied to the selected text.

5.2.8 Tools - Drawing - Sawtooth

Use this option to draw sawtooth lines (zigzag lines).

1. Select **Sawtooth Line** from the **Drawing** options of the **Tools** menu . The cursor will be

displayed as a cross



2. Insert points using the left mouse button.



While drawing the line you can press the right mouse button and use the options to change the sawtooth line width and depth

Finish	Enter
Remove Last Pt	
Sawtooth line width	
Sawtooth line depth	

3. To finish the line either double click the left mouse button or press the right mouse button and select **Finish** from the menu

5.2.8.1 Tools - Drawing - Sawtooth - Edit

Use this option to edit sawtooth lines (zigzag lines).

Select **Sawtooth line**, using the right mouse button and select change or pressing **F12**.

Sawtooth

Type

Triangular
 Rectangular
 Ellipse
 Arc
 User defined

Balance:

Roundness:

By width
 Start width (mm): 10
 End width (mm): 10

By number
 Number: 10
 Start depth (mm): 10
 End depth (mm): 10

Centered
 Start distance (mm): 0
 End distance (mm): 0

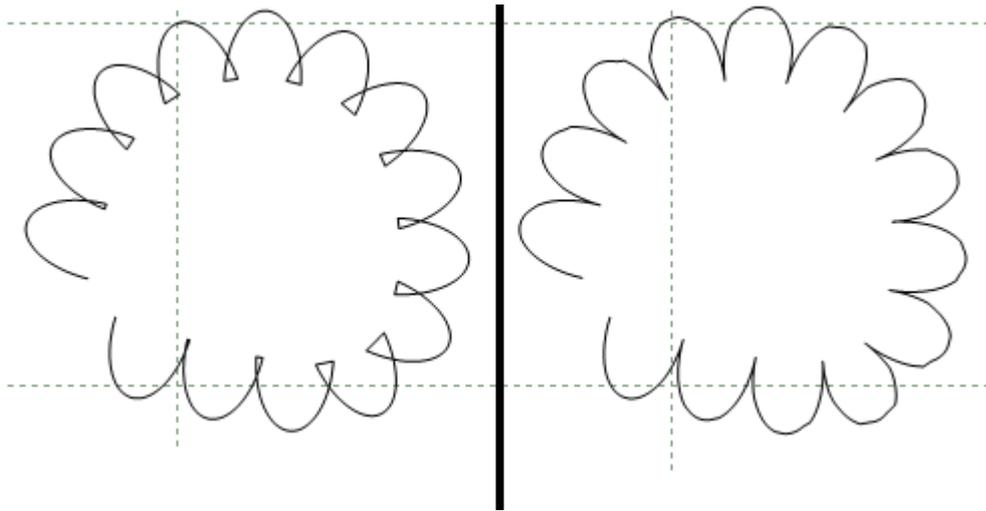
Reverse
 Rounded
 Morph geometry
 On Section

Initial margin (mm): 0
 Final margin (mm): 0

1. Select **Sawtooth Type** (*Triangular, Rectangular, Ellipse, Arc or User defined*).
2. Define the **Balance** and **Roundness** by moving the slide in the bar.
3. **By Width** (enter the start and end width), or **By Number** (enter the number).
4. Enter the **Start** and **End Depth**.
5. **Centered** - Enable or disable centered sawtooth.
6. **Start** and **End Distance** - Insert the original start and end line distance.
7. **Reverse** - Enable or disable reverse sawtooth.
8. **Rounded** - Enable or disable rounded sawtooth.
9. **Morph geometry** - Enable or disable the morph geometry.

Morph option Off:

Morph option On:

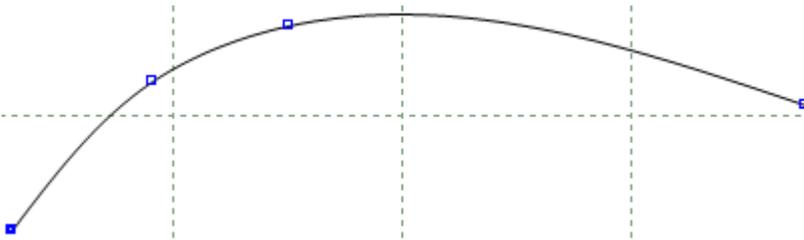


10. **On Section** - Enable or disable sawtooth on section.

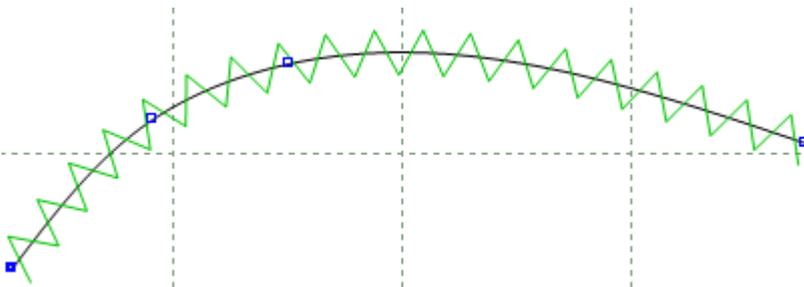
11. **Initial** and **Final Margin** - Insert the initial and final margin value for on section sawtooths.

5.2.8.2 Tools - Drawing - Sawtooth over Line

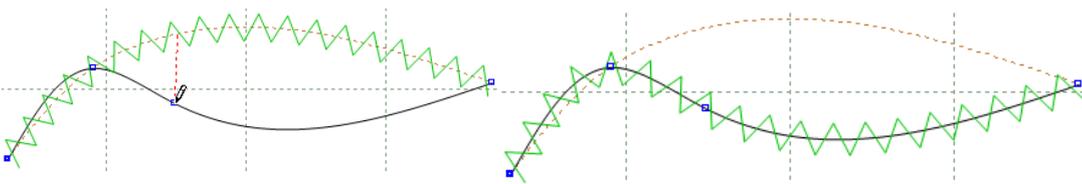
1. Select the line.



2. Select **Sawtooth Line** from the **Drawing** options of the **Tools** menu .

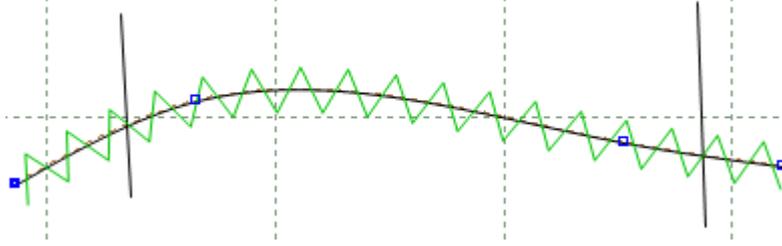


3. Now the sawtooth will move when the line is moved.

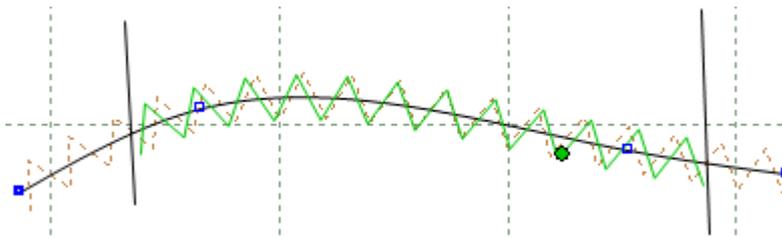
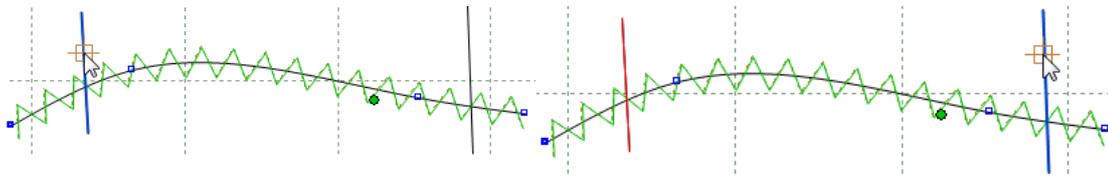


When a sawtooth is drawn over a line it's possible to set a section.

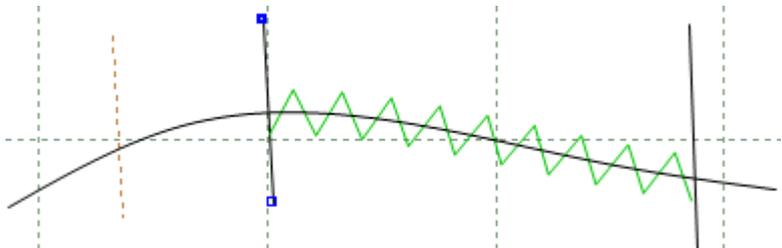
1. Draw 3 lines, one for apply the sawtooth and two to define the section.
2. Select the line to apply the sawtooth and apply it.



3. Go to the sawtooth tool options, select the option **On Section** and select the lines that will compose the section.



4. When one of the lines is moved the section is automatically updated.

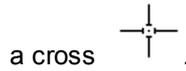


Note: Now that the sawtooth is created over a line, it's possible to add punches, those will be synchronized with the sawtooth. For further information go to [Punches over Sawtooth](#).

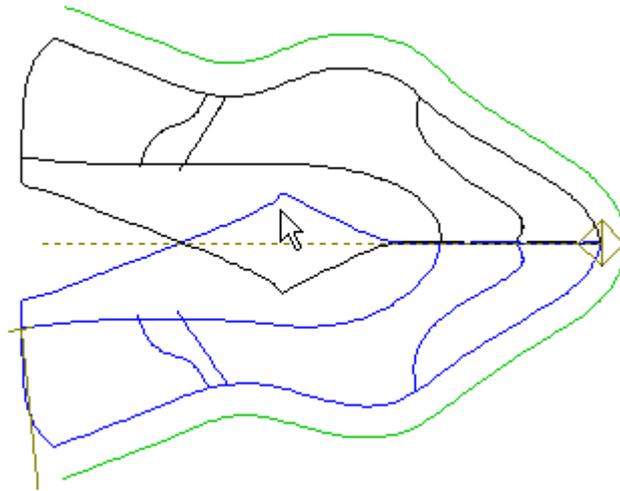
5.2.9 Tools - Drawing - Axis

This option lets you to draw axis lines. An axis is used to mirror lines across, or for grading. There is always an axis down the centre of the shoe. If you do not have at least one axis, you will not be able to grade your shell.

1. Select **Axis** from the **Drawing** options of the **Tools** menu . The cursor will be displayed as



2. Insert two points to define the axis.

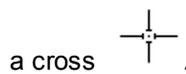


The main axis of a shell is displayed with a diamond shape at its start - see above.

5.2.10 Tools - Drawing - Marks

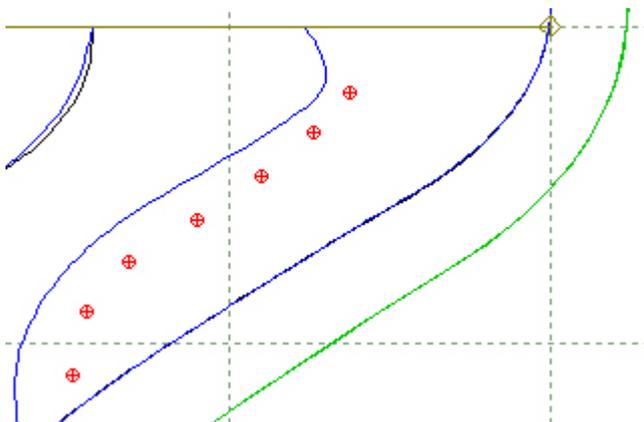
This option lets you to draw marks.

1. Select **Marks** from the **Drawing** options of the **Tools** menu . The cursor will be displayed as



2. Insert a points(s) using the left mouse button.

Marks (small crosses) are added to each point input. Marks can be used as reference points to either check or construct other lines.



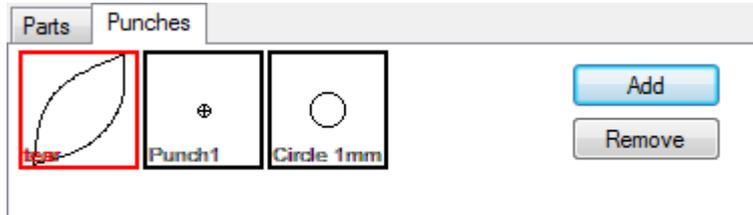
5.2.11 Tools - Drawing - Punches

This option lets you to draw punches.

1. Select **Punches** from the **Drawing** options of the **Tools** menu . The cursor will be displayed

as a cross .

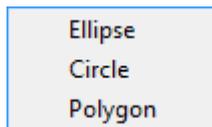
2. Select a punch shape in the punches tab of the **Parts/Library** bar using the left mouse button.



3. Insert one or more points using the left mouse button, a punch shape will be added for each point.

5.2.12 Tools - Drawing - Symmetric Shapes

This option enables the creation of symmetric shapes. Several base geometry types are available:

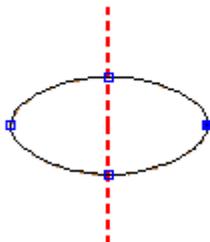


- Ellipse
- Circle
- Polygon

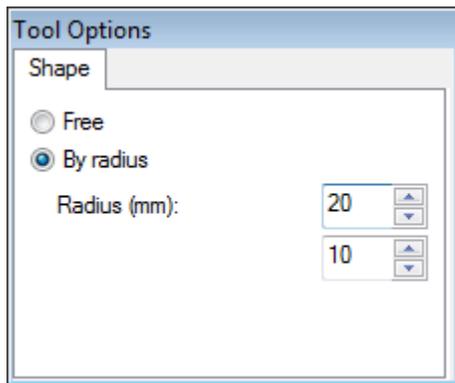
5.2.12.1 Tools - Drawing - Symmetric Shape - Ellipse

This option allows to draw punches with the help of a symmetry base.

1. Select symmetric shape Polygon.



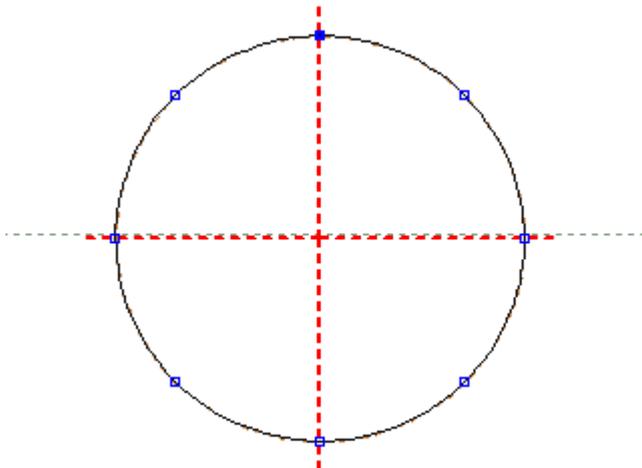
2. Select free or by radius.
3. If select By Radius, enter radius value.



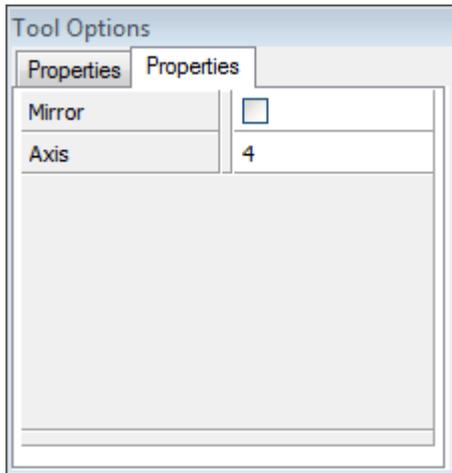
5.2.12.2 Tools - Drawing - Symmetric Shape - Circle

This option allows to draw punches with the help of a symmetry base.

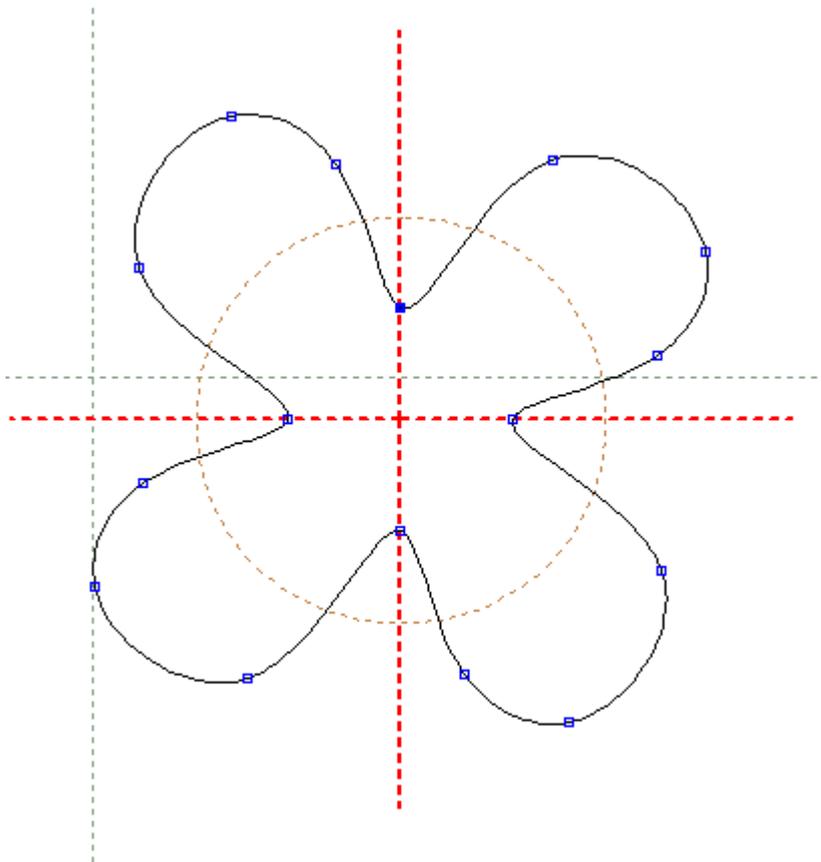
1. Select symmetric shape circle.



2. Enable or disable Mirror
3. Enter axis number.



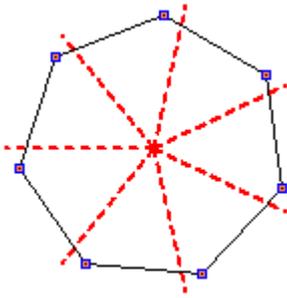
4. Draw the punch



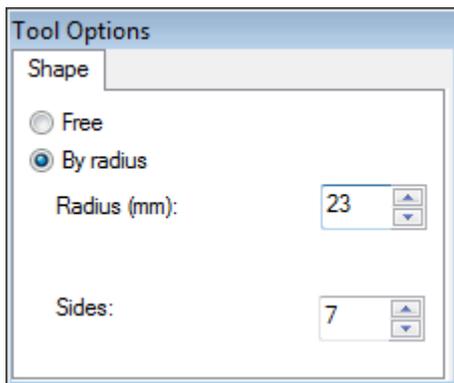
5.2.12.3 Tools - Drawing - Symmetric Shape - Polygon

This option allows to draw punches with the help of a symmetry base.

1. Select symmetric shape Polygon.



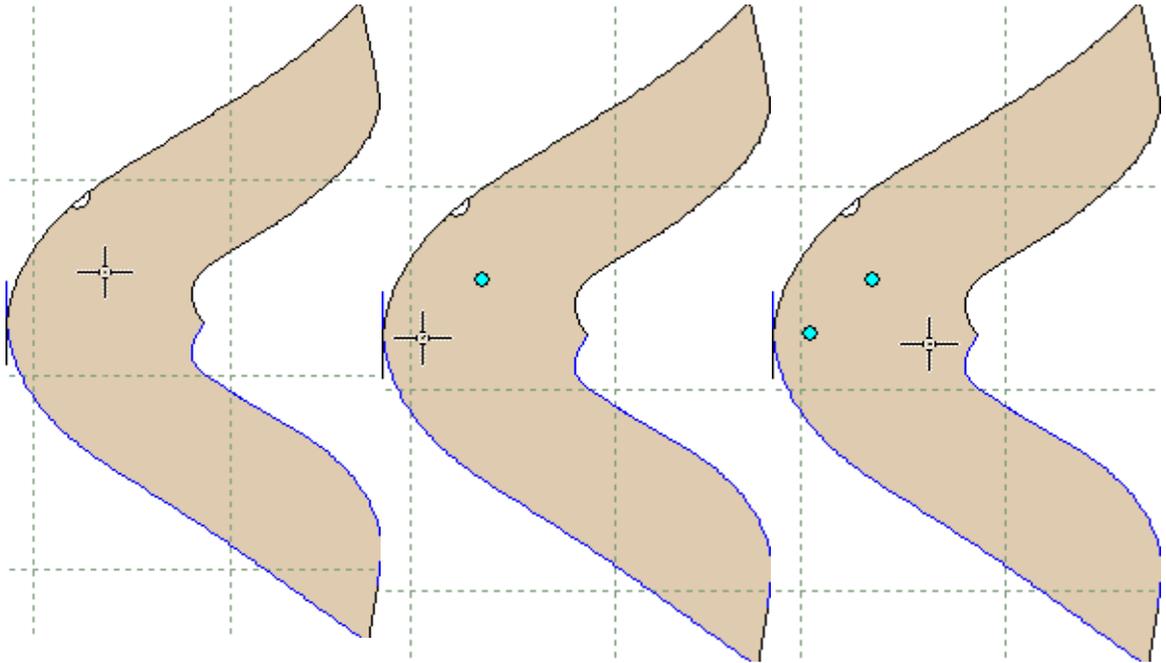
2. Select free or by radius.
3. If select By Radius, enter radius value and sides number.



5.2.13 Tools - Drawing - Grid

This option allow to create a grid and apply punches and markers to it, that can be subsequently added to a part. This function allows the user to quickly create patterns on parts.

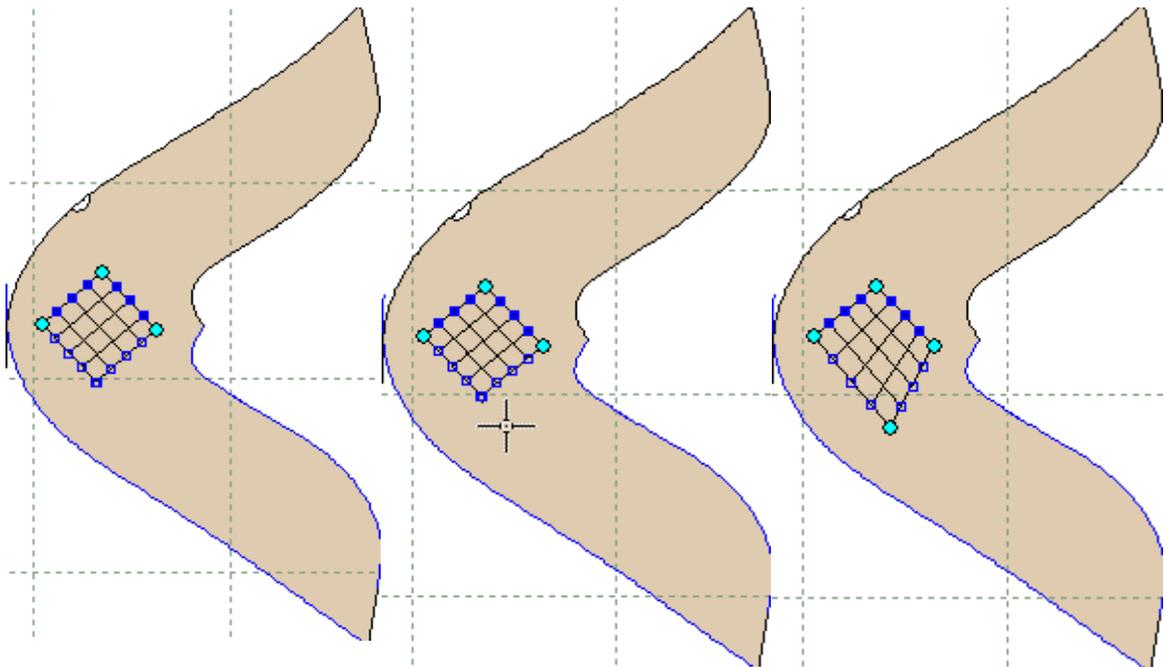
1. Select the Grid option from tools - drawing menu.
2. Select the points to create the grid. The grid can be created based in three or four point.
Draw the first point: Second point: And third point:



The grid will appear, the fourth point position is automatically calculated.

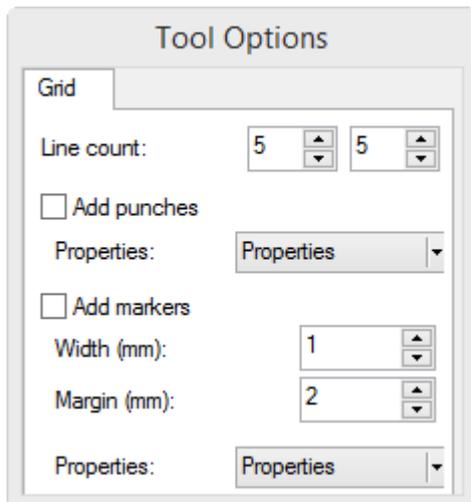
To add the fourth point in a different location, just click in the desired place.

When the fourth point is added the grid will adjust to it.



3. It's possible to click and drag any point to a different location.

4. In the **Tool Option** there are available several parameters:

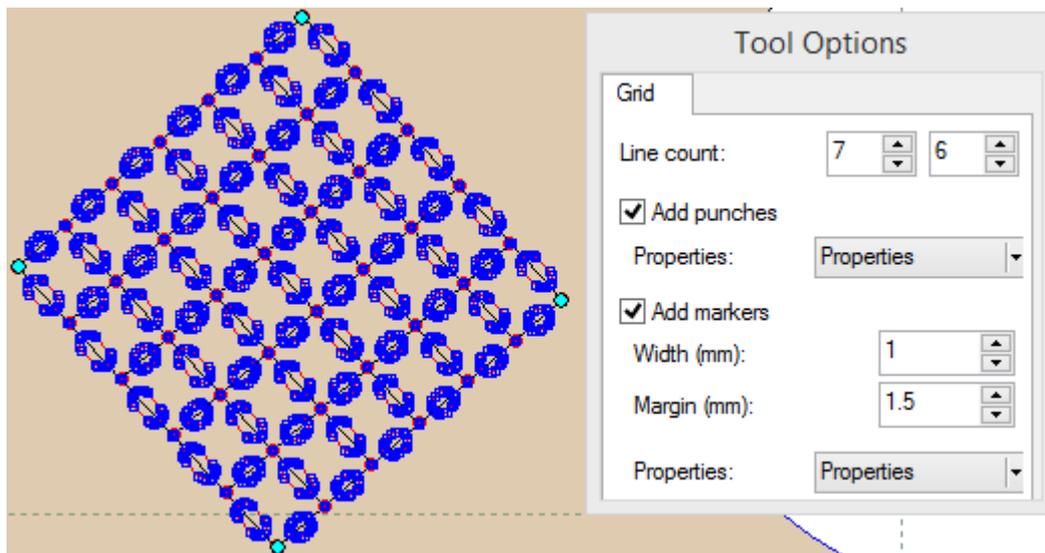


Line count - Insert the grid, number of rows and columns.

Add punches - Enable/disable to add punches automatically at the intersection of the grid.

Add markers - Enable/disable to add markers automatically at the intersection of the grid. It's possible to define the markers **Width (mm)** and **Margin (mm)**.

In the image below is an example:



5. Do a right click and the contextual menu will appear:

	Finish	Enter
	Cancel	Esc
	Reset	R
	Set count...	C
<input checked="" type="checkbox"/>	Create markers	S
	Markers width...	W
	Markers margin...	M
<input checked="" type="checkbox"/>	Create punches	P

Finish - Select to finish the grid edition.

Cancel - Select to delete the grind and leave the tool.

Reset - Select to delete the actual grid, and draw other.

Set count - Allow to define the grid number of rows and columns, also available in the tool option panel.

Create Markers - Enable/disable to add markers automatically at the intersection of the grid. Also available in the tool option panel.

Markers width - Allows to define the markers width, also available in the tool option panel.

Markers margin - Allows to define the markers margins, also available in the tool option panel.

Create punches - Enable/disable to add punches automatically at the intersection of the grid. Also available in the tool option panel.

5.2.14 Tools - Drawing - Continue line

This option lets you add points to the ends of lines.

1. Select the line to be continued.

2. Select **Continue Line** from the **Drawing** options of the **Tools** menu . The cursor will be

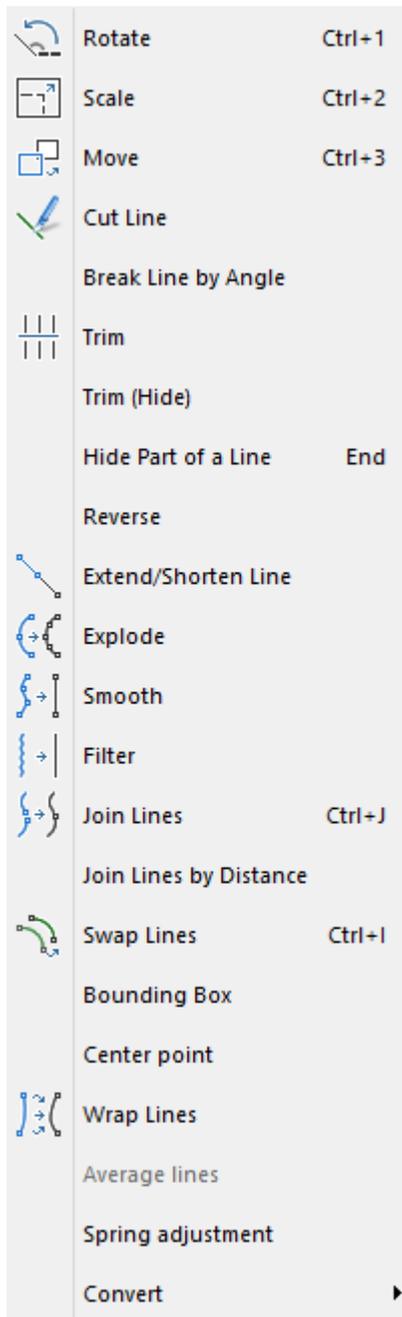
displayed as a cross 

3. Add points to the end of the line using the left mouse button.

4. If you want to add points to the other end of the line, use **Tools - Change - Reverse** to reverse the direction of the line.

5.3 Tools - Change

These options let you manipulate the lines that have been drawn.

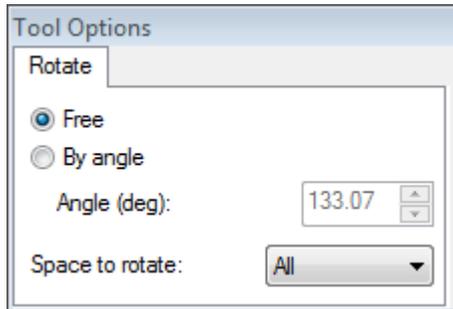


5.3.1 Tools - Change - Rotate

Use this option to rotate lines.

1. Select the line(s) to be rotated.

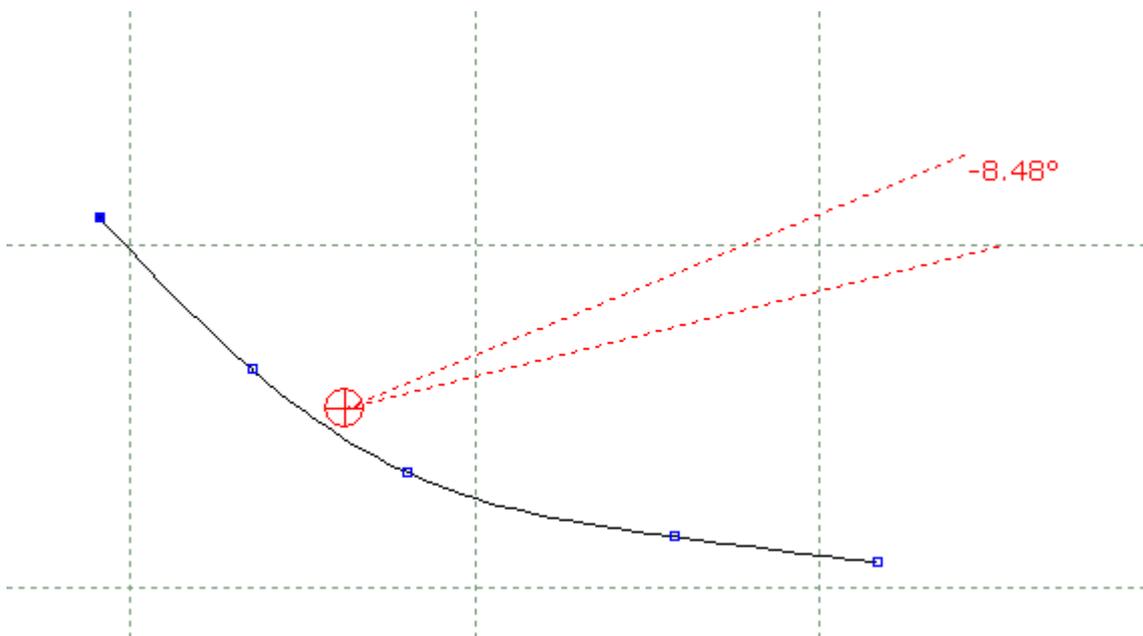
2. Select **Rotate** from the **Change** options of the **Tools** menu  or pressing **CTRL+1**.
3. Enter the rotation point using the left mouse button.



Use the **Space to rotate** option to determine which points of the selected lines will be affected

All space (right and left)	All the handles will be affected
Right space	Only handles to the right of the rotation point will be affected
Left space	Only handles to the left of the rotation point will be affected

4. Enter another point near the rotation point using the left mouse button, and then move the mouse.



As the mouse is moved, the lines are rotated and the angle of rotation is displayed.

5. Click the left mouse button to finish.

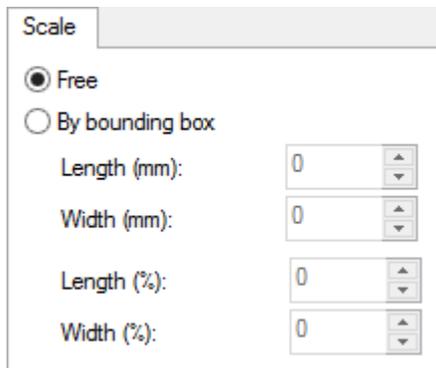
5.3.2 Tools - Change - Scale

Use this option to scale lines.

1. Select the line(s) to be scaled.

2. Select **Scale** from the **Change** options of the **Tools** menu  or pressing **CTRL+2**.

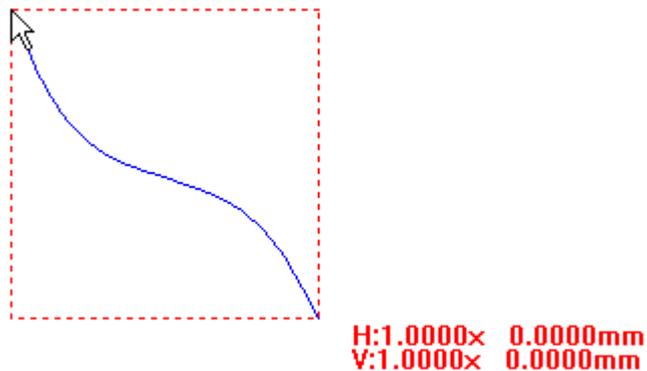
3. In the tool option it's possible to choose between **Scale Free** or **By bounding box**.



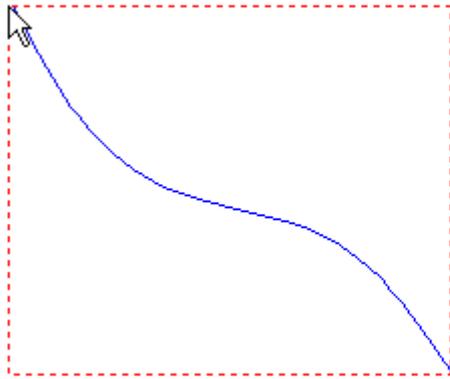
Scale Free

1. Using the left mouse button select a region to scale by clicking on two diagonally opposite corners.

When you select the second point a number of values will be displayed.



2. Move the mouse to change the scale;



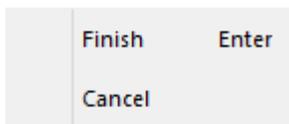
H:1.3313x 10.6329mm
V:1.1138x 3.7022mm

The values change as follows:

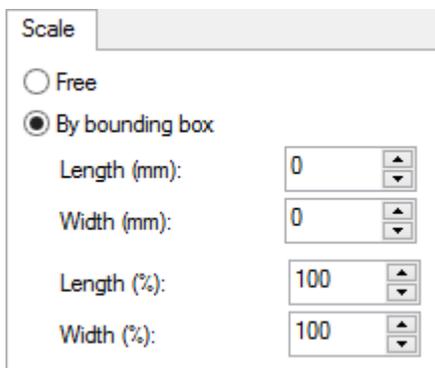
H:1.3313x 10.6329mm - This is the new scale horizontally in this case 33.13% bigger and 10.6329mm longer

V:1.1138x 3.7022mm - This is the new scale vertically in this case 11.38% bigger and 3.7022mm longer

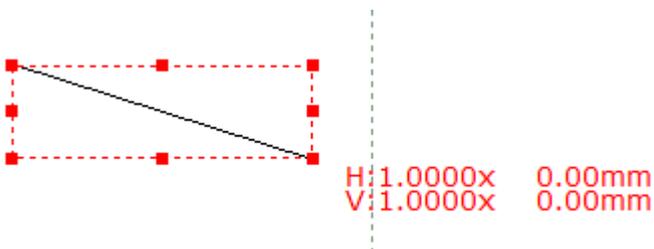
3. Click the left mouse button to finish.



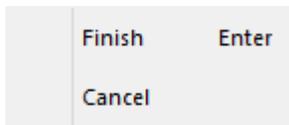
By bounding box



1. Selecting the option **By bounding box**, an bounding box is automatically created around the selected area.



- To edit the scale, you can either change the values displayed in the tool options, length and width in mm or in percentage Or use the mouse cursor to change the bounding box dimensions by click and drag in one of the points.
- Click the left mouse button to finish.

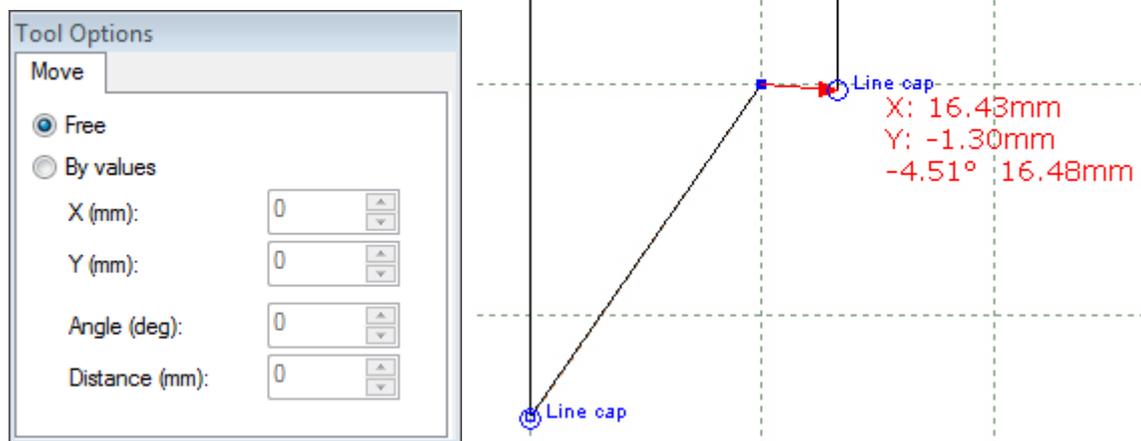


5.3.3 Tools - Change - Move

Use this option to move lines

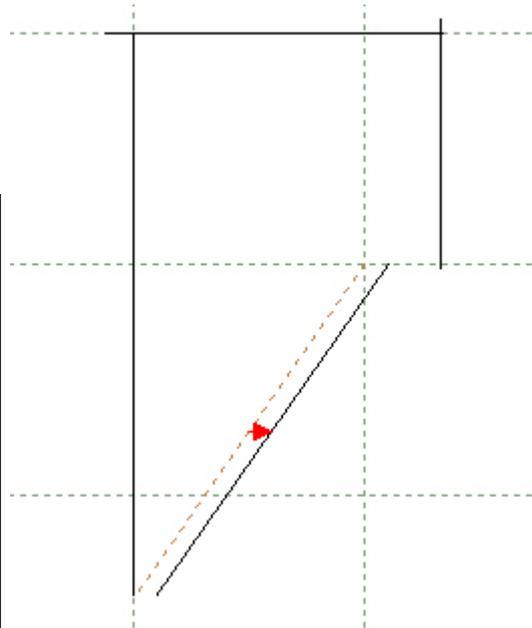
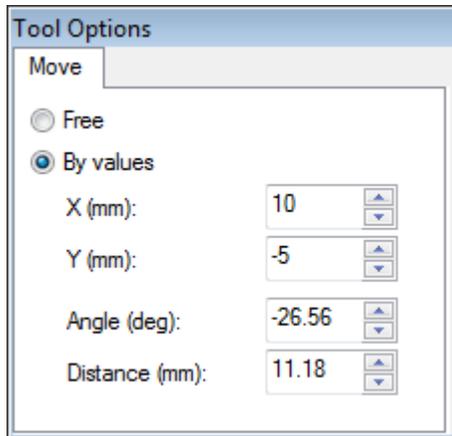
Free

- Select the line(s) to be moved.
- Select **Move** from the **Change** options of the **Tools** menu  or pressing **CTRL+3**.
- Using the left mouse button select the point from which the move operation starts.
- Move the mouse from the original position to new position.



By Values

- Select the line(s) to be moved.
- Select **Move** from the **Change** options of the **Tools** menu.
- Enter the values (**XY**, **angle** and **distance**).



5.3.4 Tools - Change - Cut Line

Use this option to cut lines.

This is the same as clicking the **Cut Line**  button in the **Tools** toolbar or pressing the **Home** key.



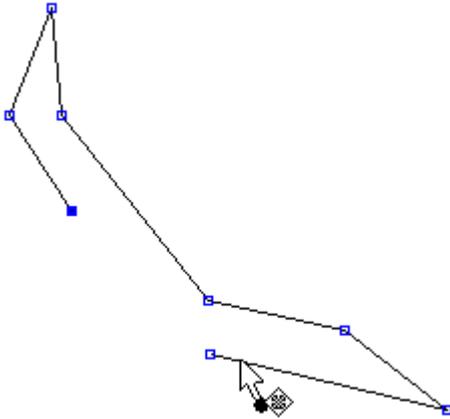
To cut a line,

1. Select the line to be cut.
2. Select **Cut Line** from the **Change** options of the **Tools** menu. The cursor is displayed on the line.
3. Move the cursor to the required position.
4. Click the left mouse button to cut the line.

5.3.5 Tools - Change - Break Line By Angle

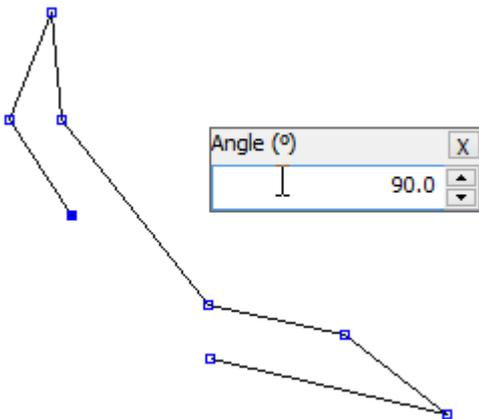
Use this tool to break the lines points that have an angle inferior to user-defined value.

1. Select the **line** to apply the break line by angle tool.

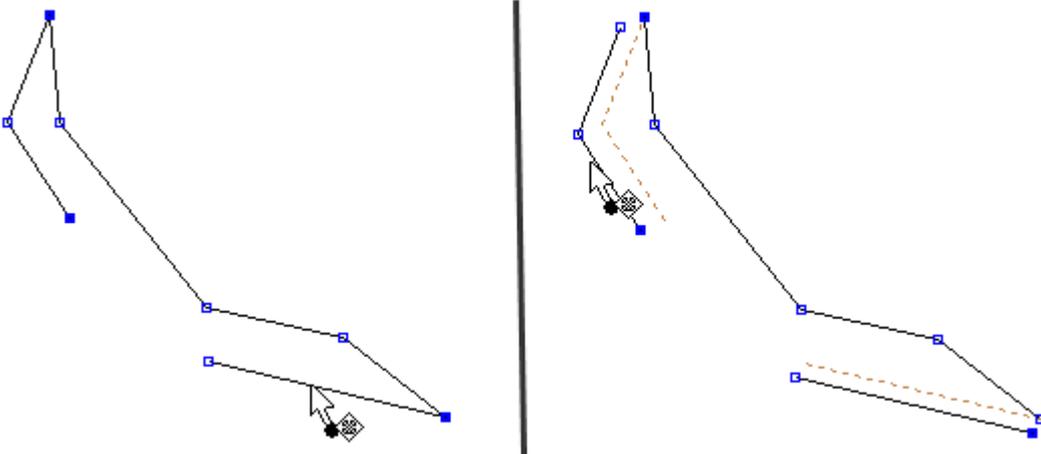


2. Select Break Line By Angle from the Change options of the Tools menu.

3. A text box will appear, insert the angle and press **ENTER** key to apply.



4. The line will break where the angle is equal or higher to the inserted one (in this examples 90°).

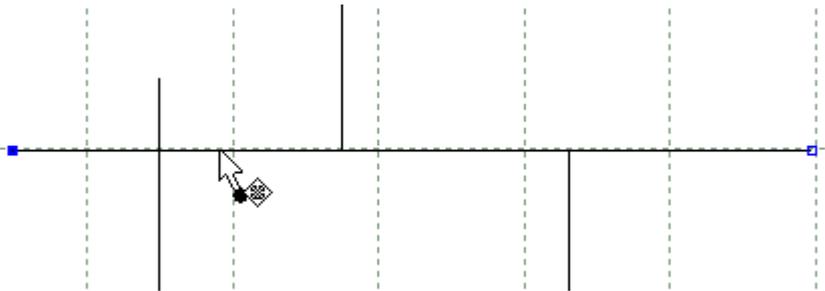


5.3.6 Tools - Change - Trim

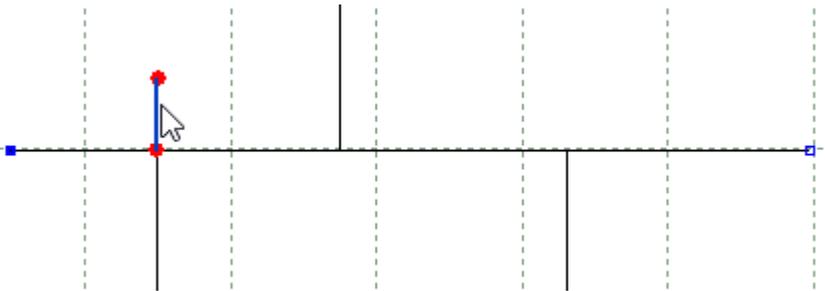
Use this option to **Trim** lines.

This is the same as clicking the **Trim**  button in the **Tools** toolbar.

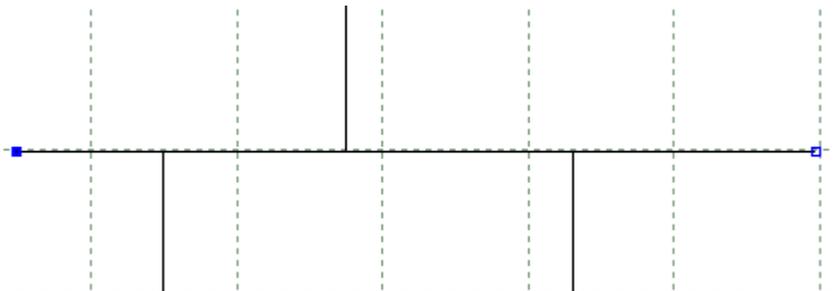
1. Select the main line.



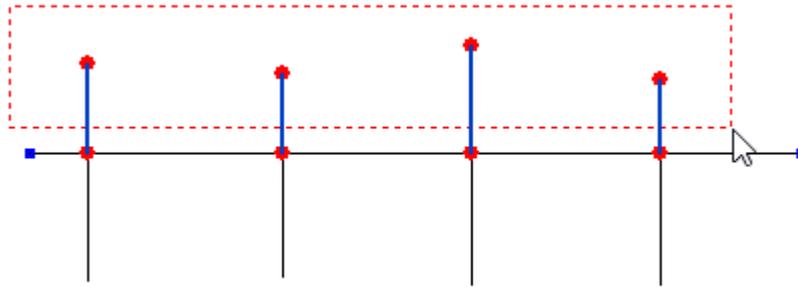
2. Select the **Trim** option (Tools - Change - Trim).
3. Select the side of a line where the trim will be applied.



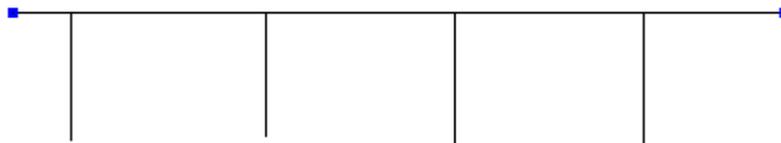
4. The selected side of the line, after the main line, will be erased.



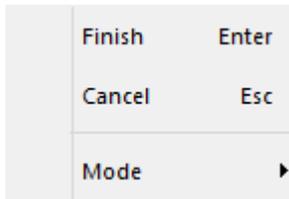
- a. To trim **several lines** at the same time, click and drag to define the trim area and select more than one line simultaneously.



b. Release the right mouse button and the trim will be applied.



5. To finish the trim press enter or do a right click and select finish from the contextual menu.



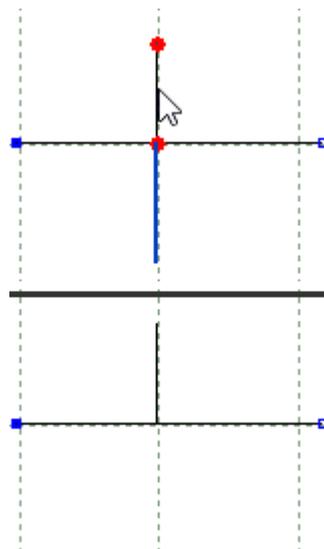
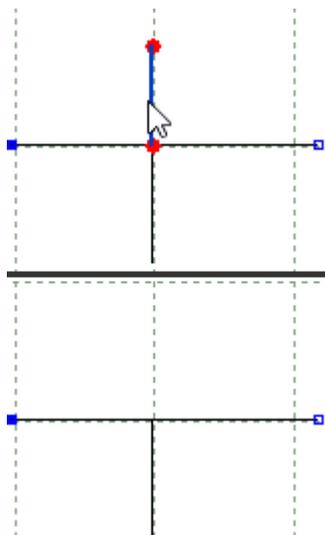
Finish - Allows to leave the tool and apply the changes.

Cancel - Allows to close the tool and cancel the changes.

Mode - Allows to select the trim tool mode, between the **normal** behavior and the **reversed**.

Trim Normal - The selected side of the line will be erased.

Trim Reversed - The selected side of the line will be the one to stay.

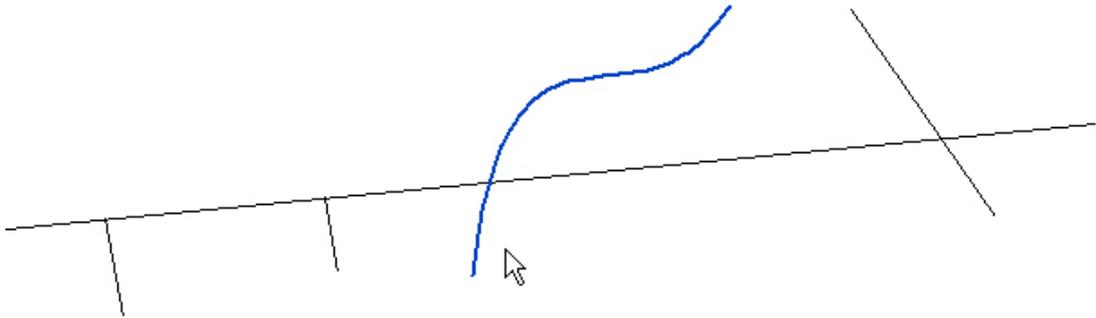


5.3.7 Tools - Change - Trim (Hide)

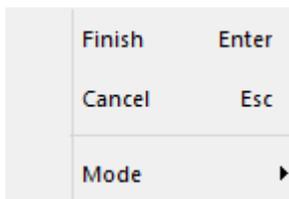
Use this option to **Trim (Hide)** lines.

This is the same as clicking the **Trim (Hide)** button in the **Tools** toolbar.

1. Select the main line.
2. Select the side of a line where the trim will be applied
3. The other side of the lines after the main line will be hidden.



4. To finish the trim press enter or do a right click and and select finish from the contextual menu.



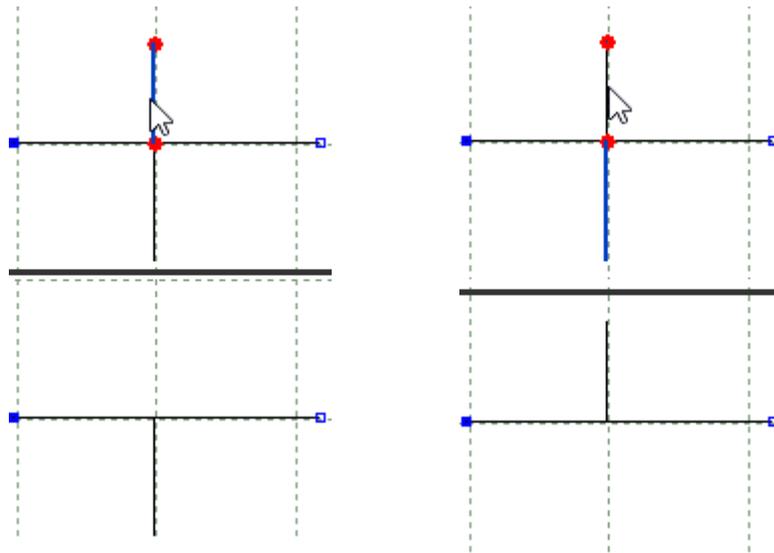
Finish - Allows to leave the tool and apply the changes.

Cancel - Allows to close the tool and cancel the changes.

Mode - Allows to select the trim tool mode, between the **normal** behavior and the **reversed**.

Trim Normal - The selected side of the line will be hidden.

Trim Reversed - The opposite side of the line will be the one to be hidden.



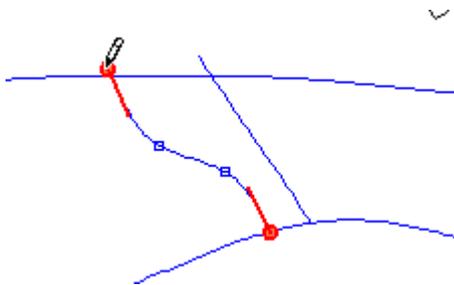
5.3.8 Tools - Change - Hide Part of a Line

Use this option to hide part of a line. The line will still be held in its original state, but parts of the line can be removed from display.

This is the same as pressing the **END** key.

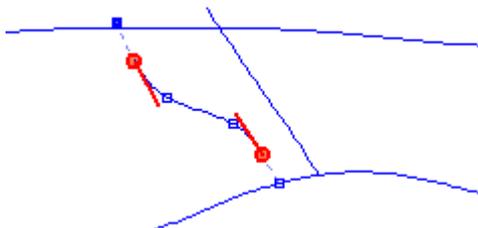
To hide part of a line,

1. Select the line to be partly hidden.
2. Select **Hide Part of a line** from the **Change** options of the **Tools** menu. The cursor is displayed on the line and both ends will be highlighted.

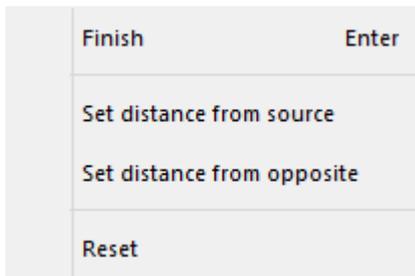


3. Move the cursor to either end and drag it along the line holding down the left mouse button.

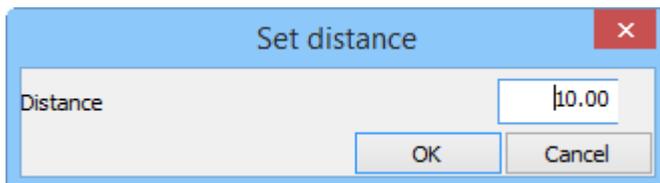
The ends of the line will be hidden



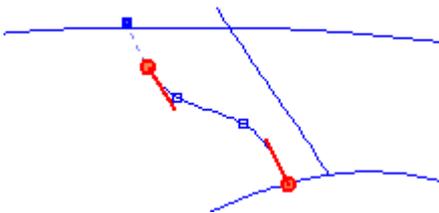
4. In alternative, do a right click over either line ends and select one of the options, Set distance from source or Set distance from opposite.



Set distance from source - Insert the distance from the original line point.

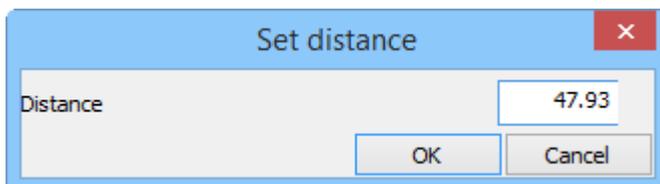


Press ok, and the change will be applied.



If the distance value is 0, the point will return to its original place.

Set distance from opposite - Insert the distance between the selected point and other line end.



This value is the distance between the two line ends. Change the distance and press **Ok** to apply the changes.

5. To **Finish** press the middle mouse button, **Esc** or do a right click and select finish from the contextual menu.

Finish	Enter
Set distance from source	
Set distance from opposite	
Reset	

When the line is selected, all the original line is highlighted. You can use the option again to restore hidden sections of lines.

5.3.9 Tools - Change - Reverse

Use this option to change the direction of a line.

1. Select the line to be reversed.
2. Select **Reverse** from the **Change** options of the **Tools** menu.

5.3.10 Tools - Change - Extend/Shorten Line

Use this option to extend or shorten a line.

There are two ways to use this tool:

a) By selecting the Line first:

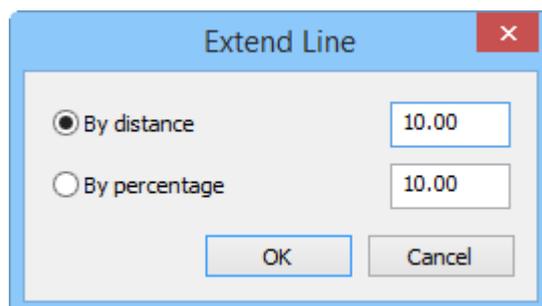
1. Select the line to be extended/shortened.



2. Select **Extend/shorten Line** from the **Change** options of the **Tools** menu



3. A dialogue box is displayed, it's possible to set the value **By size** in mm or **By percentage**.



To **extend** the line insert a **positive** value and click **OK**.

To **shorten** the line insert a **negative** value and click **OK**.

Both ends of the line will be extended/shortened by the given value.



b) Selecting the tool first:

1. Select **Extend/shorten Line** from the **Change** options of the **Tools** menu
2. Do a right click and the **contextual** menu will appear.



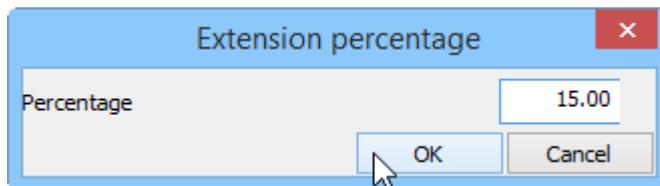
	Finish	Enter
	Set Value	V
•	By Value	Q
	By Percentage	W
	By Point	E
	Next point	Barra de espaços

3. Its possible to extend/shorten the line **By Value**, **By percentage** or **By point**.

a. **By Value** (shortcut key **Q**):

- Select the option **Set Value** from the contextual menu or press **V**, to define the value in mm.

A dialogue box is displayed. Insert the value in mm and press **Ok**.



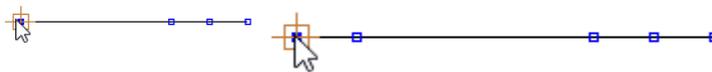
To **extend** the line insert a **positive** value and click **OK**.

To **shorten** the line insert a **negative** value and click **OK**.

- Place the mouse cursor over one of the line ends and do a left click over to apply the extension.



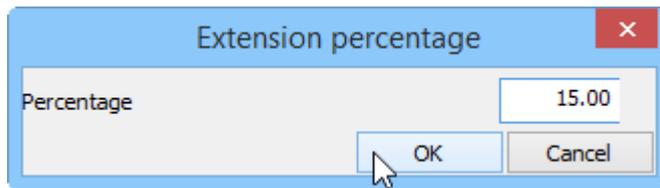
- The tool will remain active, doing more right clicks over the line ends the same change will be applied.



b. **By Percentage** (shortcut key **W**)

- Select the option **Set Value** from the contextual menu or press **V**, to define the percentage value.

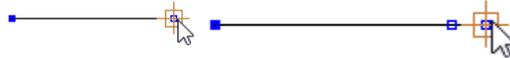
A dialogue box is displayed. Insert the percentage value and press **Ok**.



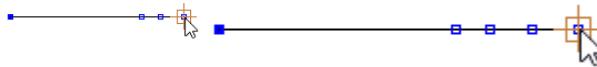
To **extend** the line insert a **positive** value and click **OK**.

To **shorten** the line insert a **negative** value and click **OK**.

- Place the mouse cursor over one of the line ends and do a left click over to apply the extension.

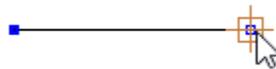


- This tool will increment $x\%$ based in the line length, this means that for every new click the length incremented will be higher than the previous.



c. **By Point** (shortcut key **E**):

- Place the mouse cursor over one of the line ends and do a left click over it to start.



- The distance is controlled by the mouse cursor. Do other right click to fix the fix extension position.



- The tool will remain active, its possible to repeat the process as many times as desired.



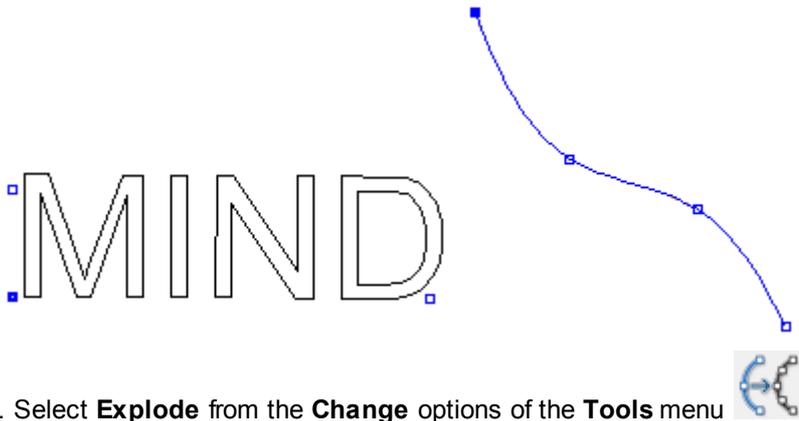
An example of using this option to short the line:



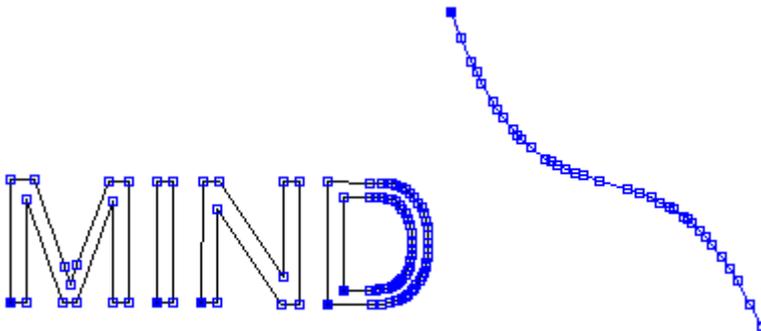
5.3.11 Tools - Change - Explode

Use this option to change a curved line into a polyline (several connected straight segments).

1. Select the line to be exploded.



2. Select **Explode** from the **Change** options of the **Tools** menu

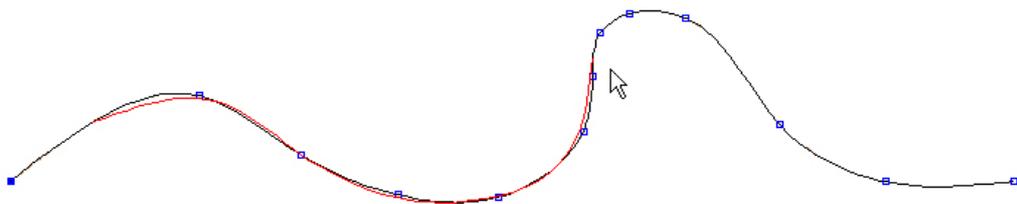


5.3.12 Tools - Change - Smooth

Use this option to smooth line.

1. select line.

2. select **Smooth** from the **Change** options of the **Tools** menu



3. starting over a point on the line, simply redraw the line to get the desired smooth aspect. This tool allow for line smoothing only on a specific section of the base line or at its full extent.

4. to finalize just press ENTER or right-click and choose the intended action.

Finish	ENTER
Cancel	Esc
Smooth complete line	S

5.3.13 Tools - Change - Filter

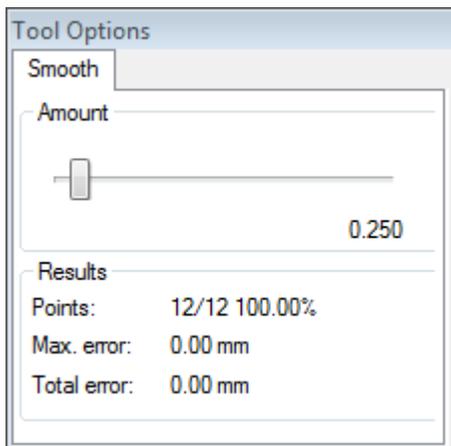
Use this option to filter points lines. The number of points in a line can be dramatically reduced with this command.

1. Select the line to be smoothed.

2. Select **Filter** from the **Change** options of the **Tools** menu



The line will be highlighted and the **Tool Options** toolbar will look as follows:



3. Move the slider with the left mouse button.

Clicking the left mouse button will update the menu and highlight the line in its current geometry.

As the slider is moved the number of points in the line, the **Max error** (maximum distance from the original line) and the **Total error** (total distance from the original line) are displayed.

4. Click the middle mouse button to complete the command.

5.3.14 Tools - Change - Join Lines

Use this option to join separate lines into one line.

1. Select **Join Lines** from the **Change** options of the **Tools** menu



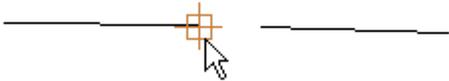
or pressing **CTRL+J**.

The menu will be displayed as a box on the lines

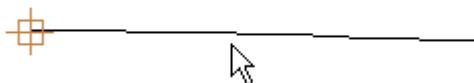


2. Select the end of the first line to be joined using the left mouse button

3. Select the start of the next line using the left mouse button



The lines will be joined

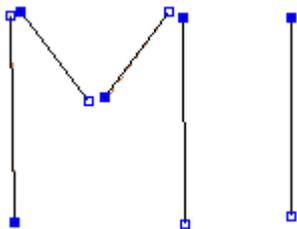


4. Continue to select other lines to be joined or press the **Esc** button to finish.

5.3.15 Tools - Change - Join Lines by Distance

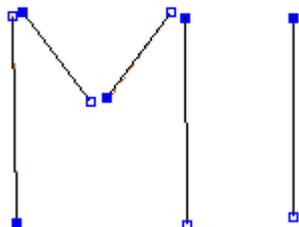
Use this tool to join all the lines that are an user-defined distance from each other.

1. Select the **lines** to apply the tool.

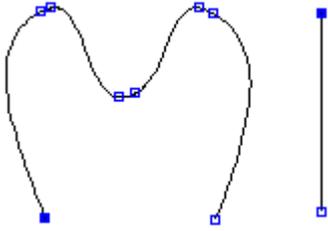


2. Select **Join Lines by Distance** tool from the **Change** options of the **Tools** menu.

3. A text box will appear, insert the distance and press **ENTER** key to apply.

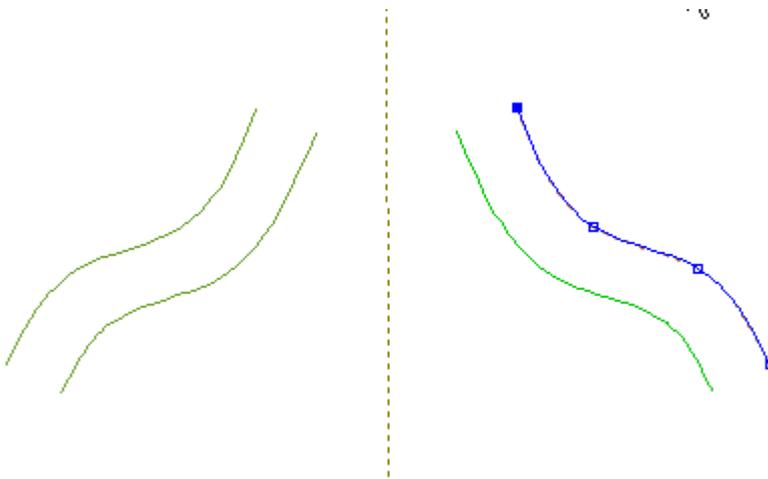


4. All the lines that are an user-defined distance or less, from each other are joined.

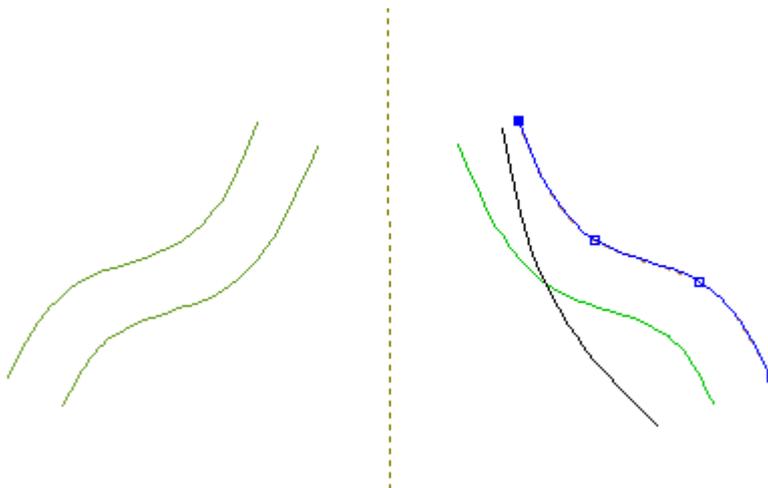


5.3.16 Tools - Change - Swap Lines

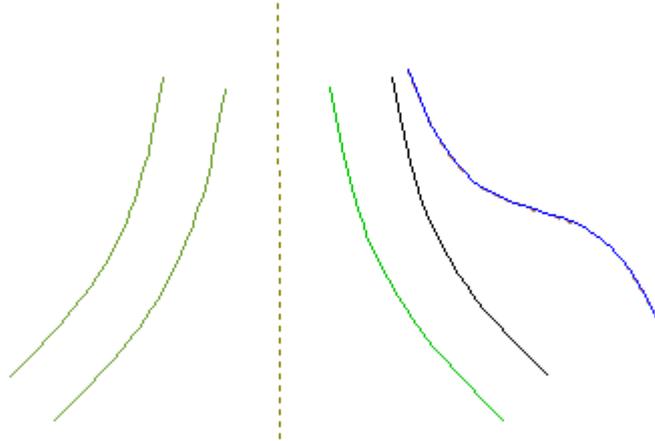
Use this option to swap lines. If a line has several dependant lines (for example, mirrors or offsets) swap line can be used to replace the original line and keep all the dependencies.



1. In the diagram above the selected line has been used to create the other lines (offsets and mirrors)
2. Draw a new line to carry the dependencies (in black) and select the original line.



3. Select **Swap Lines** from the **Change** options of the **Tools** menu.
4. Select the new line (in black)

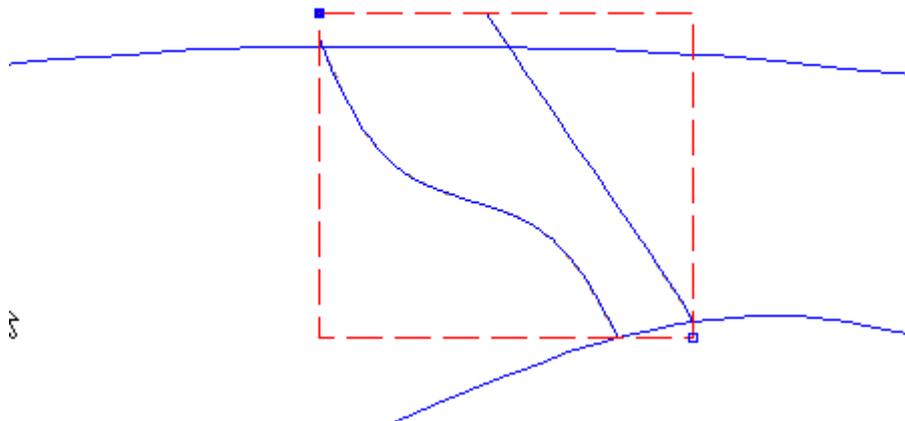


The dependencies are carried onto the new line.

5.3.17 Tools - Change - Bounding Box

Use this option to draw a bounding box around selected lines.

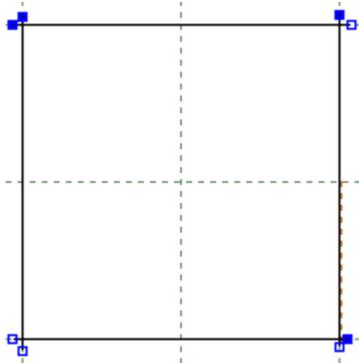
1. Select the line(s) to be used to define the bounding box.
 2. Select **Bounding Box** from the **Change** options of the **Tools** menu.
- A box will be drawn around the selected lines



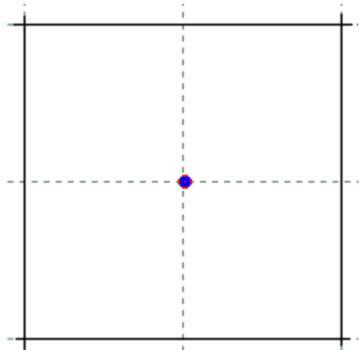
5.3.18 Tools - Change - Center point

This tool allow to create a punch in the center of the selected group of lines.

1. Select a group of lines.



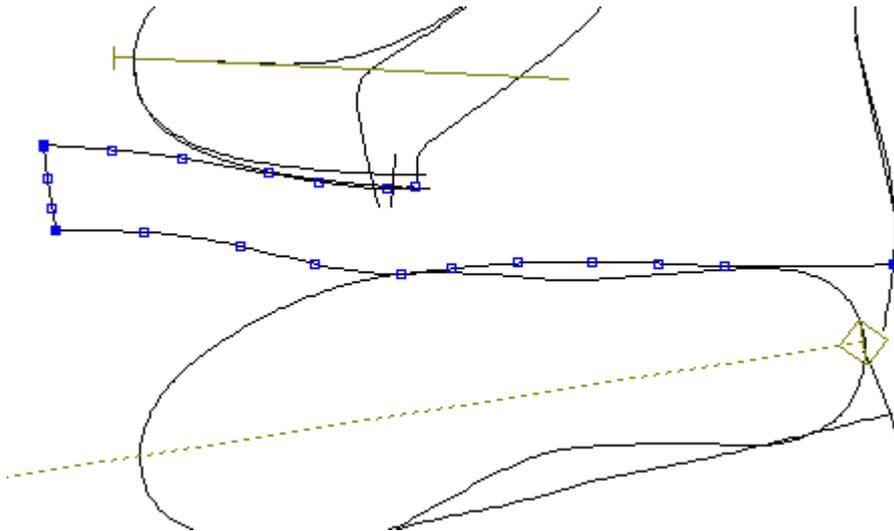
2. Select the Center point option (Tools - Change - Center point)
3. A punch will appear in the center of the selected lines.



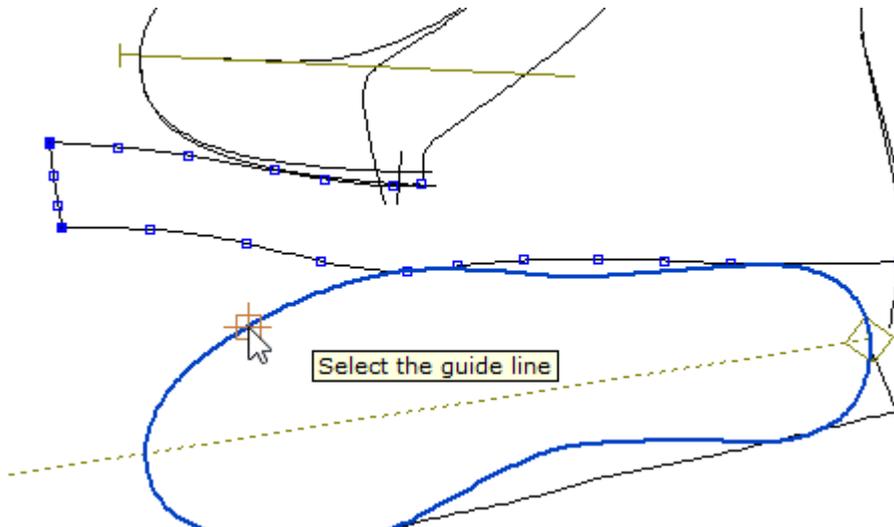
5.3.19 Tools - Change - Wrap Lines

Use this option to wrap lines around another line. This option is usually used when constructing moccasin patterns.

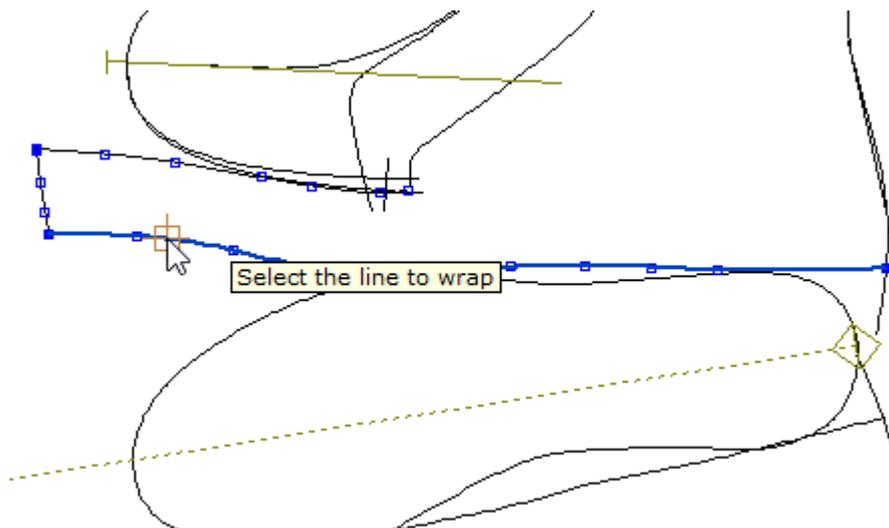
1. Select the line(s) to be wrapped. Do a Pre-Copy to keep the original lines position.



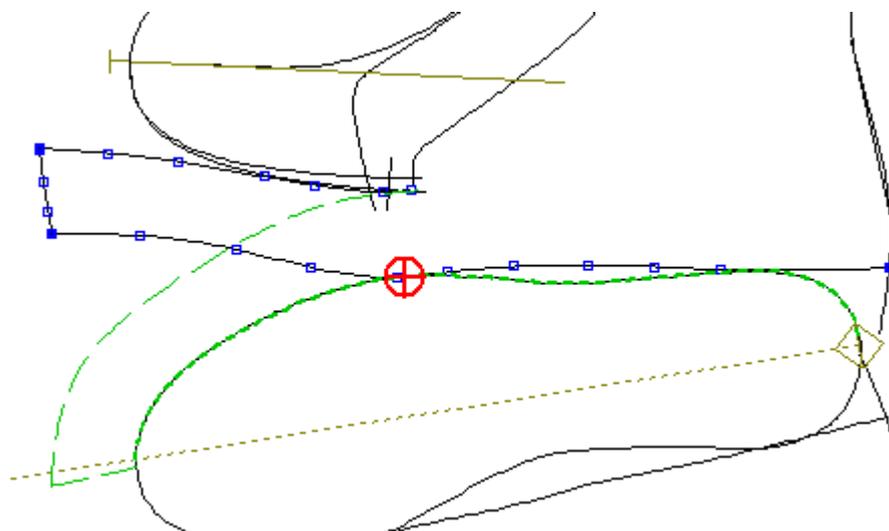
2. Select **Wrap Lines** from the **Change** options of the **Tools** menu .
3. Select the **guide line**, this line is used as the base line to wrap the other lines around



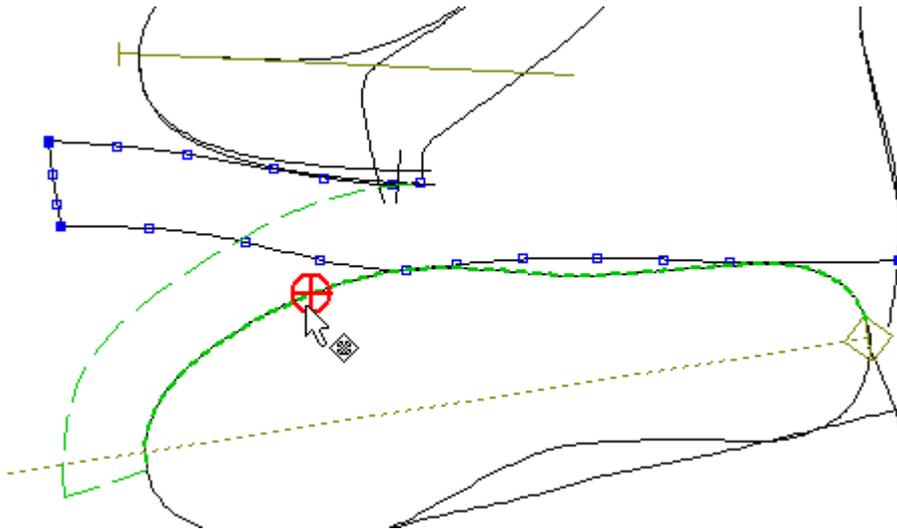
4. Select the **line to wrap** around the base line.



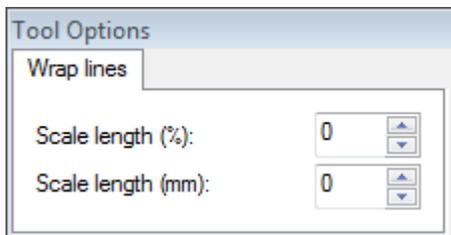
5. The lines will be wrapped.



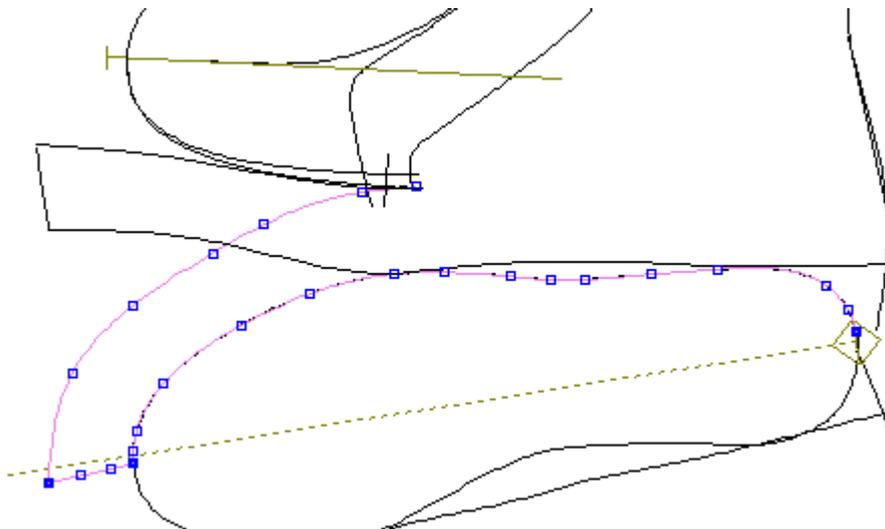
6. Use the Red pointer to scale the wrapped lines, just click and drag.



7. A scale length factor (% / mm) could be used to extend or decrease the wrapped lines lengths.

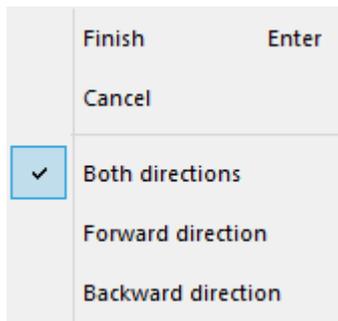


8. Do a right click and select Finish from the contextual menu to apply the changes.



Tip: Learn how to apply punches dependent on other punches.

Doing a right click several option are available in the contextual menu:



Finish - Select to apply the changes and close the tool.

Cancel - Select to cancel the changes e close the tool.

Both directions - The warp lines direction will be for both forward and backward.

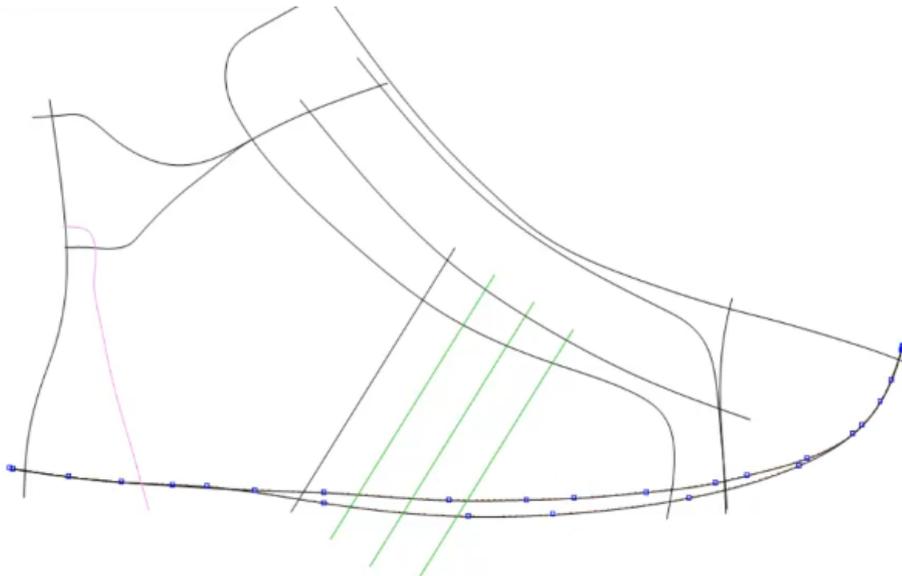
Forward direction - The warp lines direction will be forward.

Backward direction - The warp lines direction will be backward.

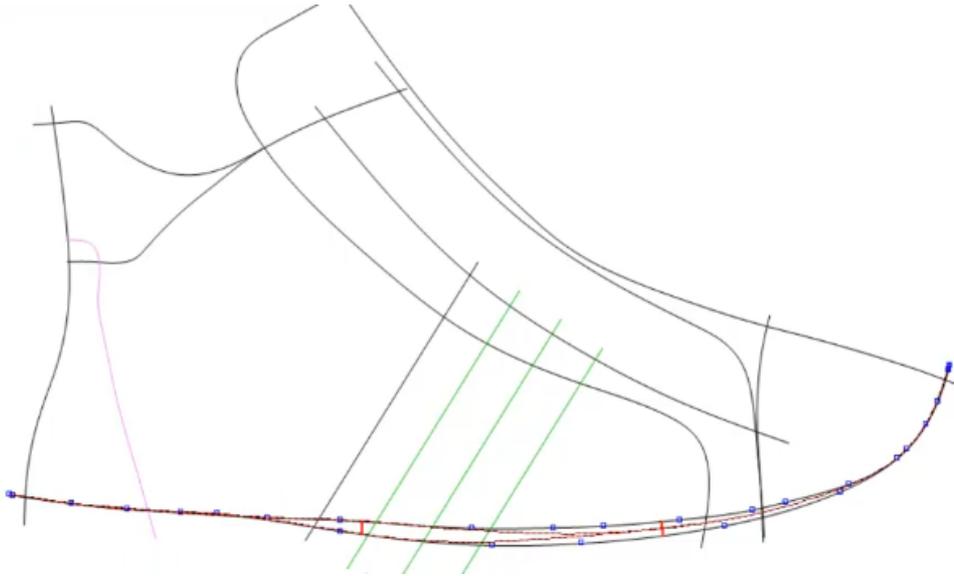
5.3.20 Tools - Change - Average lines

This tool allow to do a quick modification of two lines to establish a mean plus blend region effect.

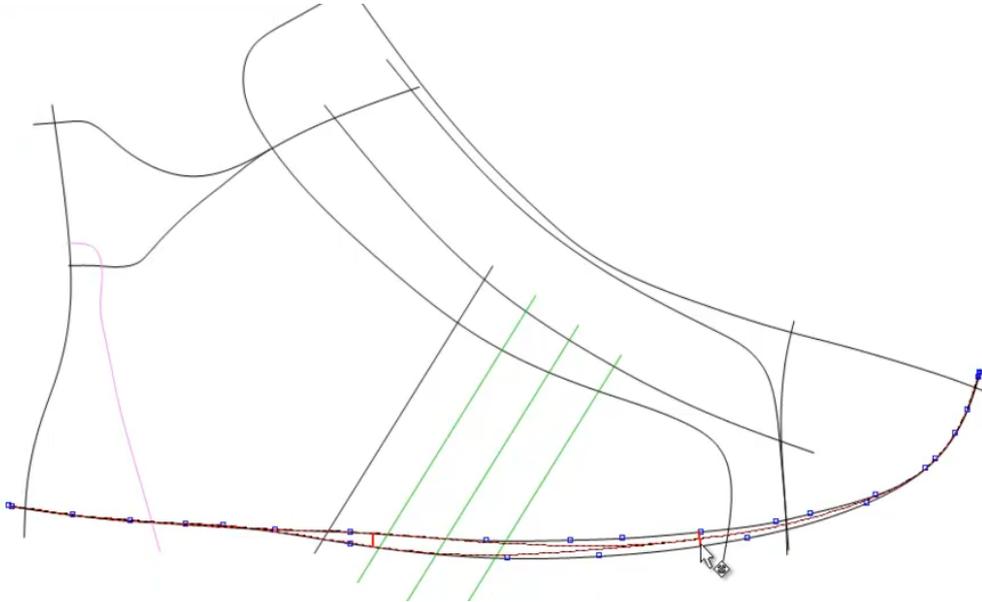
1. Select the two lines



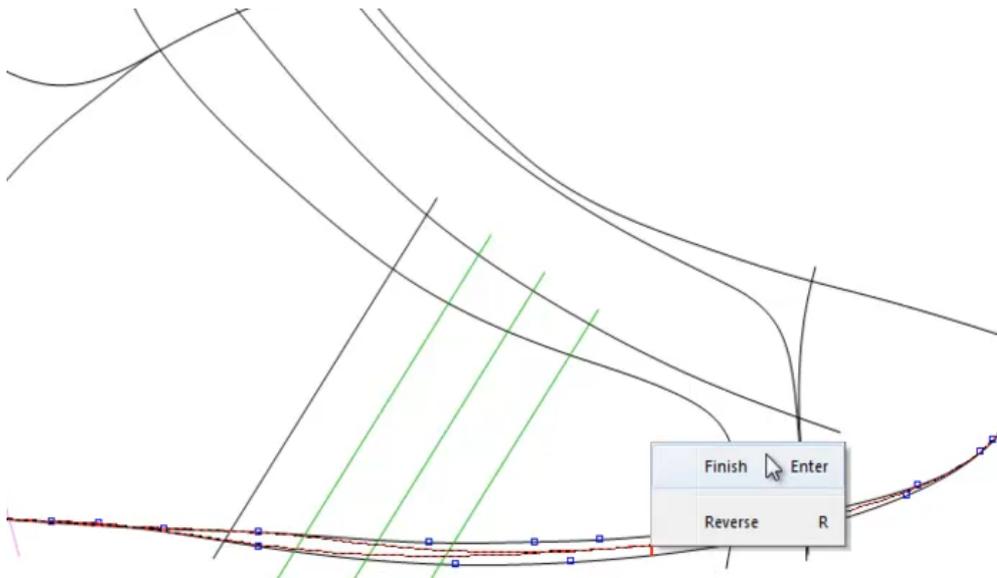
2. Go to **Tool - Change - Average lines**
3. It will appear two new lines between the two selected



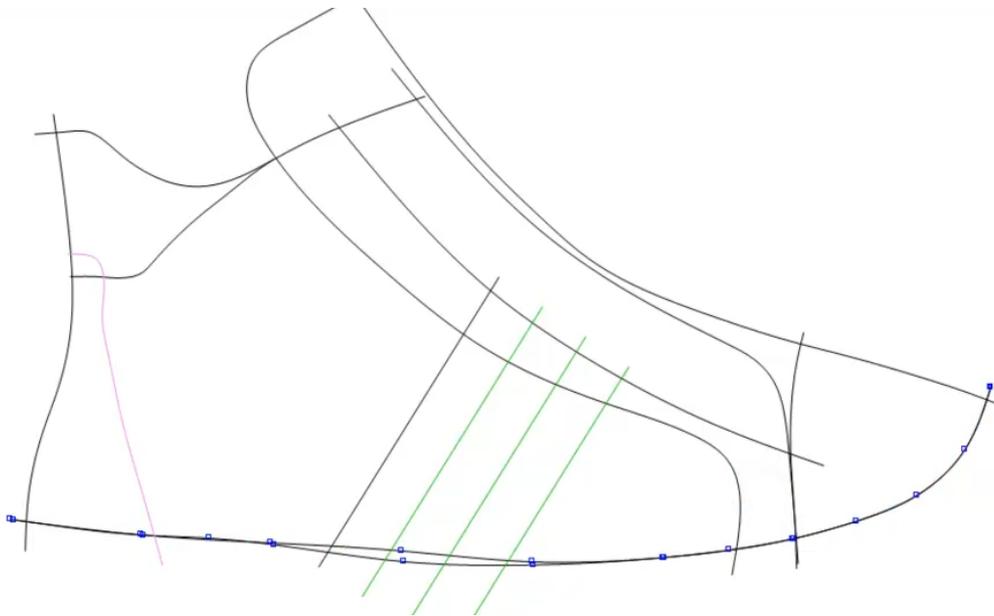
4. It's possible to control the new lines approximation using the handles in it. Just click over it and drag.



5. When the lines are in the correct position, do a righth click and select finish.



6. The new lines will replace the old ones

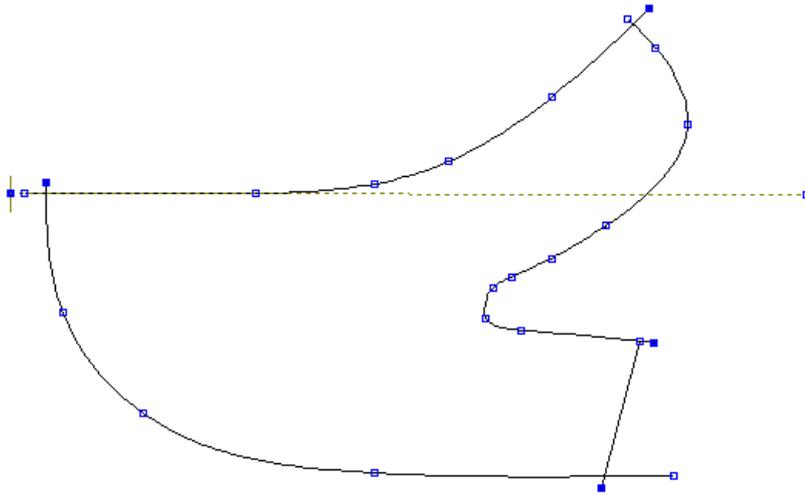


*Note: To keep the old lines to, you just need to do a **pre-copy** before start the Average lines process.*

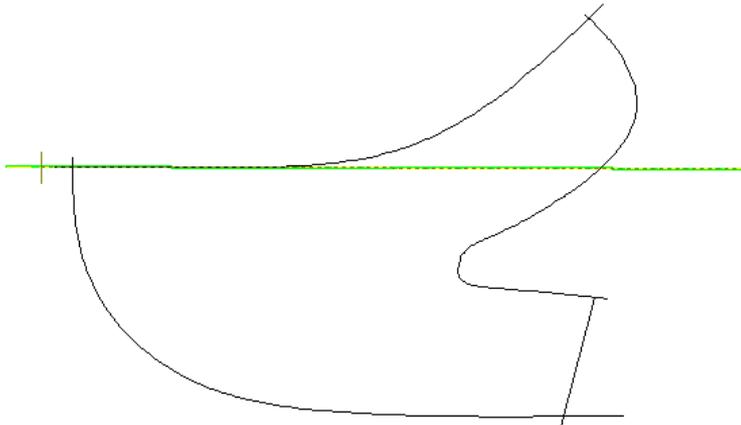
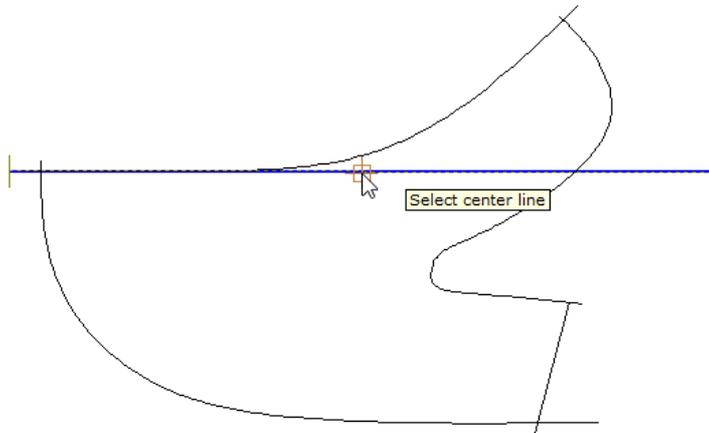
5.3.21 Tools - Change - Spring Adjustment

Semi-automatic springing process allowing for a coordinated rotation and offsetting of parts.

1. To start the springing process, select the part lines to apply the deformation.



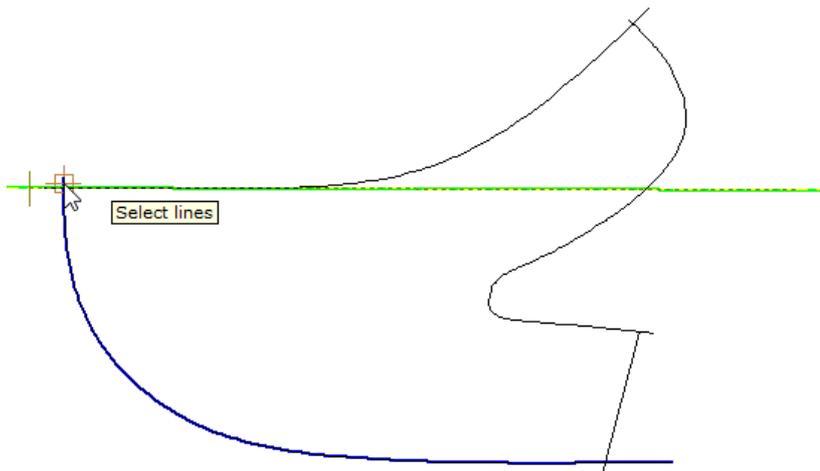
2. Then active the option **Spring Adjustment** from the **Tools - Change** menu.
3. Select the center line.



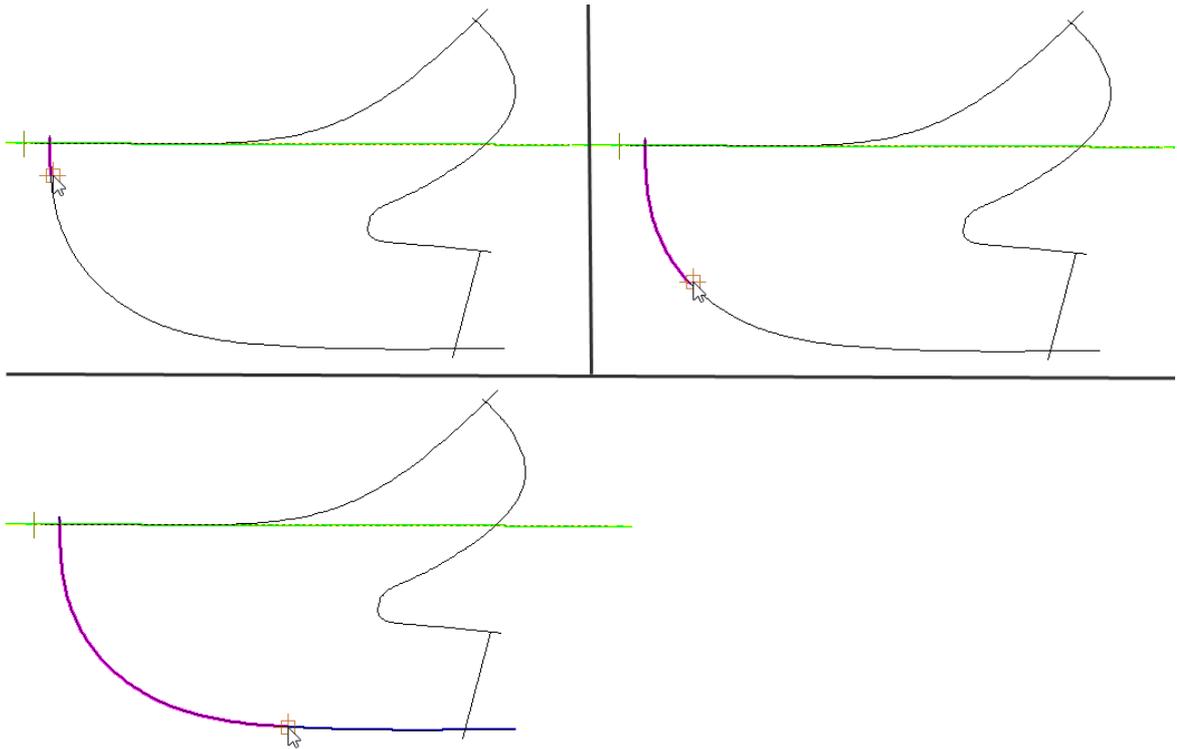
4. Do a right click to open the context menu.

	Finish	Enter
	Cancel	Esc
	Undo	Ctrl+Z
	Redo	Ctrl+Y
	Reset position	0
	Previous position	Backspace
	Rotate	R
	Move	T
	Add path	E
	Restart	

5. Select the **Add path** option.
6. Select the line or lines to apply the path.



7. It's possible to select just a part of the line, just keep the left mouse button pressed over the line and drag, from the start point until the last point you want to select.

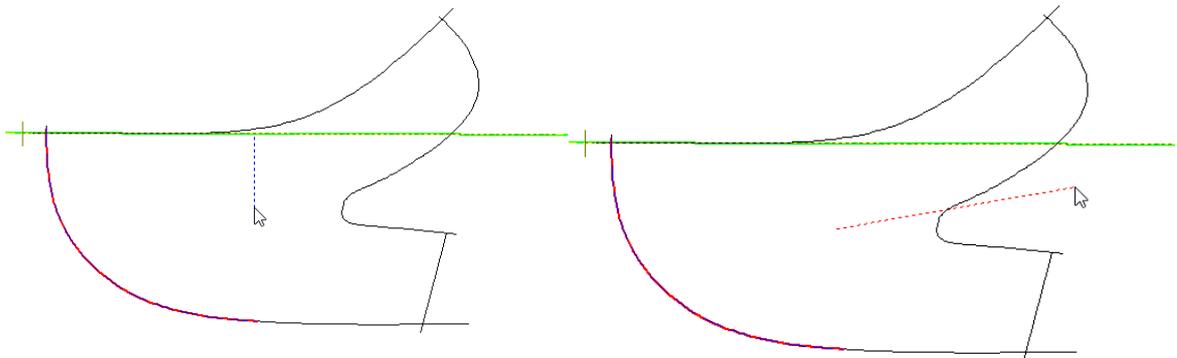


8. Now doing a right click, select the deformation to be applied, from the contextual menu.

Rotate:

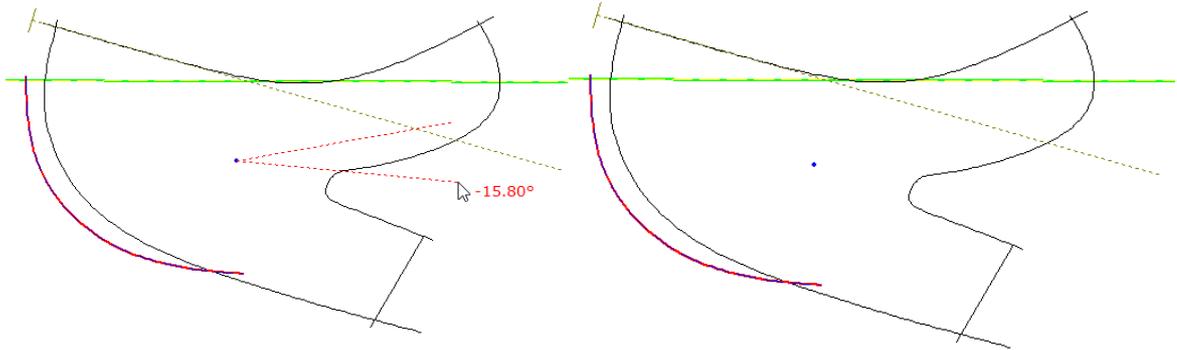
Using the left mouse button, click to select the rotation point.

Move the mouse, select the rotation axis, by doing a click with the left mouse button.



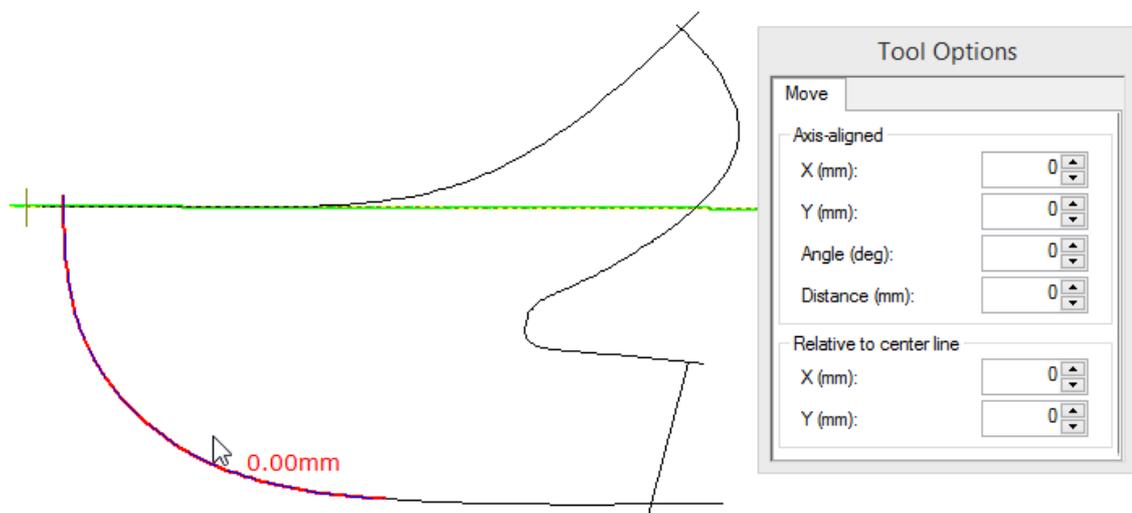
Then start moving the cursor and the lines will rotate, the angle of rotation is displayed.

Do left click with the mouse button to stop the rotation.

**Move:**

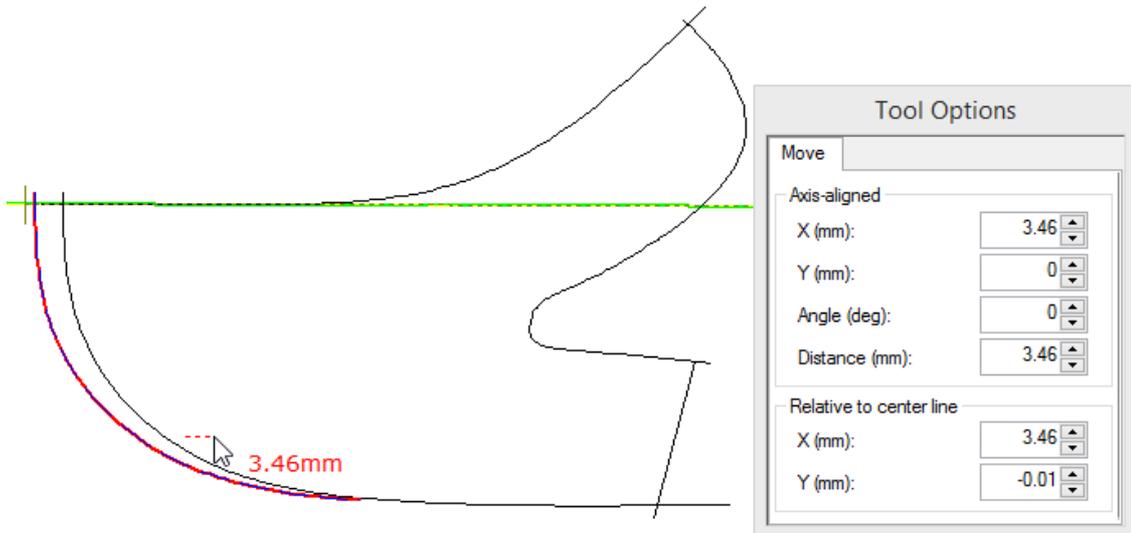
Using the left mouse button, click in the point from which the move operation starts.

In the Tool Options that point is shown as point 0,0.

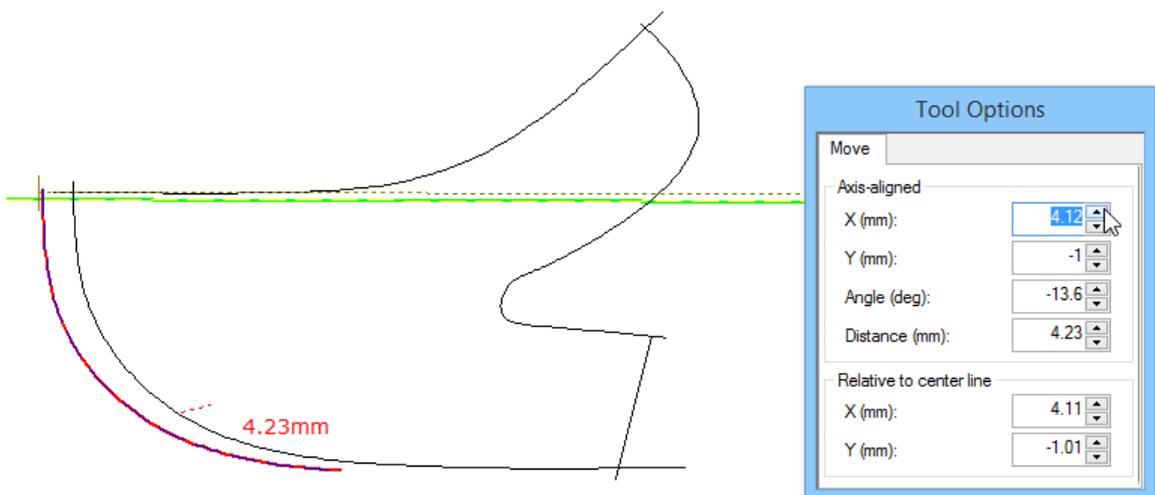


Move the mouse cursor and the lines will move.

In the Tool Options you can see the distances from Axis-aligned and Relative to center line.



In alternative it's possible to change the distance directly in the Tool Option.



9. Doing a right click and the contextual menu will open.

	Finish	Enter
	Cancel	Esc
	Undo	Ctrl+Z
	Redo	Ctrl+Y
	Reset position	0
	Previous position	Backspace
	Rotate	R
	Move	T
	Add path	E
	Restart	

Finish - Allows to accept the changes and close the tool.

Cancel - Allows to close the tool and cancel the changes.

Undo - Allows to undo the last change.

Redo - Allows to redo the last change.

Reset position - Allows to reset the lines position.

Previous position - Allows to move the lines to the previous position.

Rotate - Allows to rotate the lines.

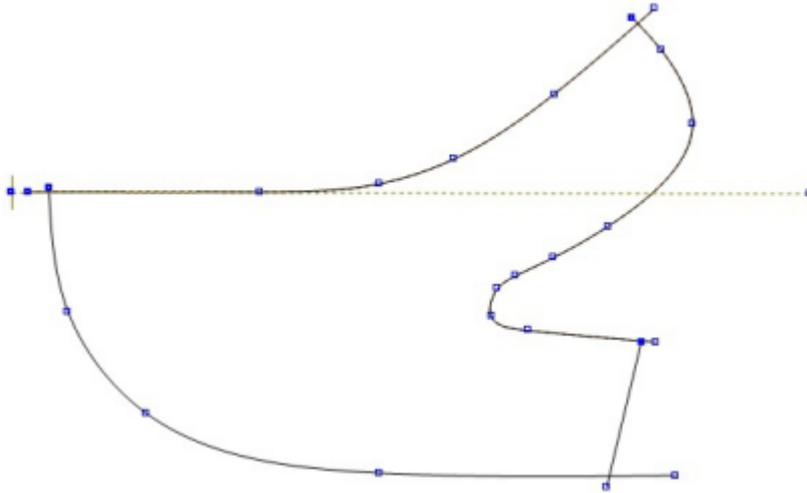
Move - Allows to move the lines.

Add path - Allows to add a path.

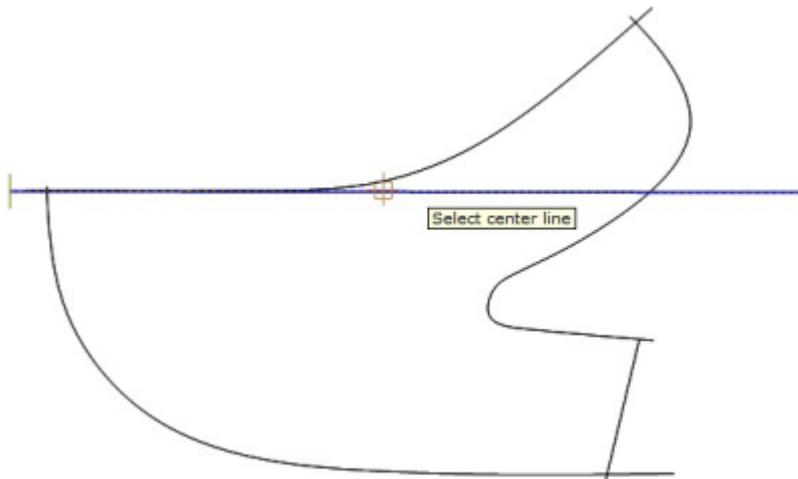
Restart - Allows to restart all the process. Will be asked to select central line.

5.3.21.1 Spring Adjustment - Complete process

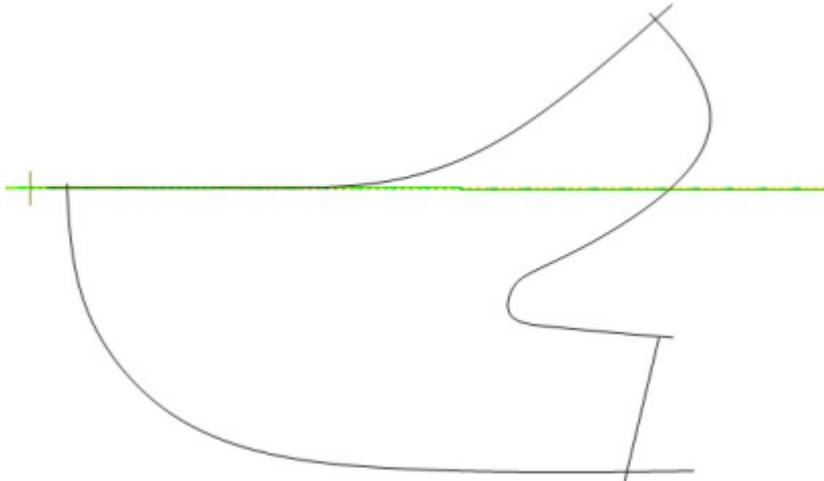
1. To start the springing process, select the part lines to apply the deformation.



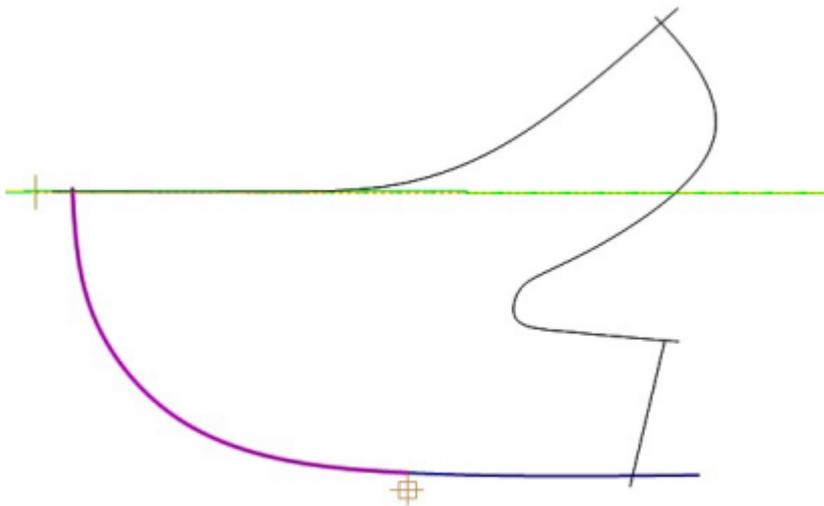
2. With the lines selected, go to **Tools - Change** and select the option **Spring Adjustment**.
3. Select the center line (axis).



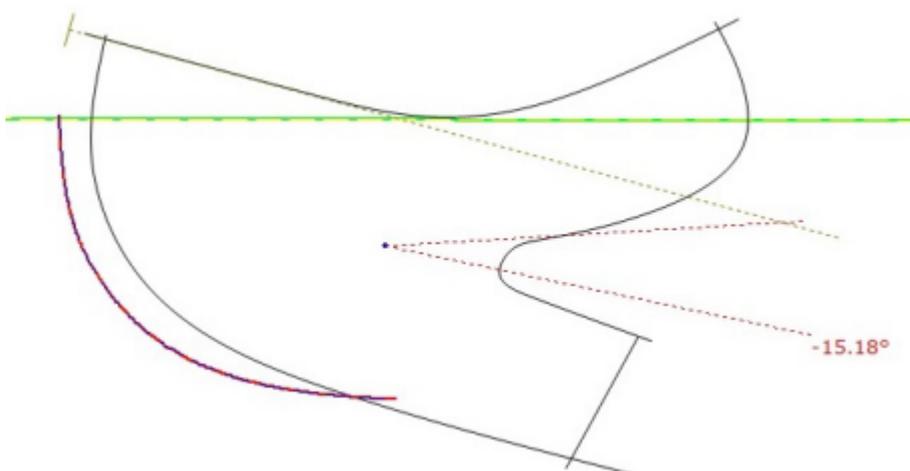
4. When selected will appear with a different color.



5. Do a right click and select the **Add path** from the context menu, or press **E** key. Now select the line(s) section to apply the path.

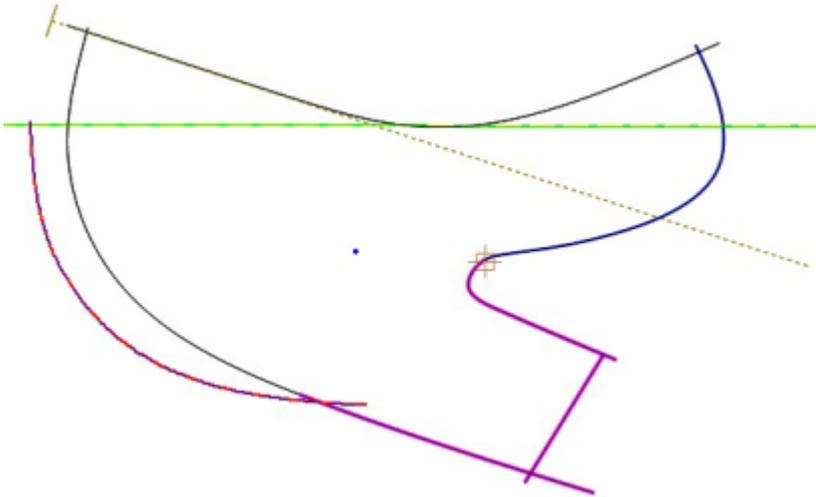


6. Do a right click and select the **Rotate** from the context menu or press **R** key. Apply the required rotation.

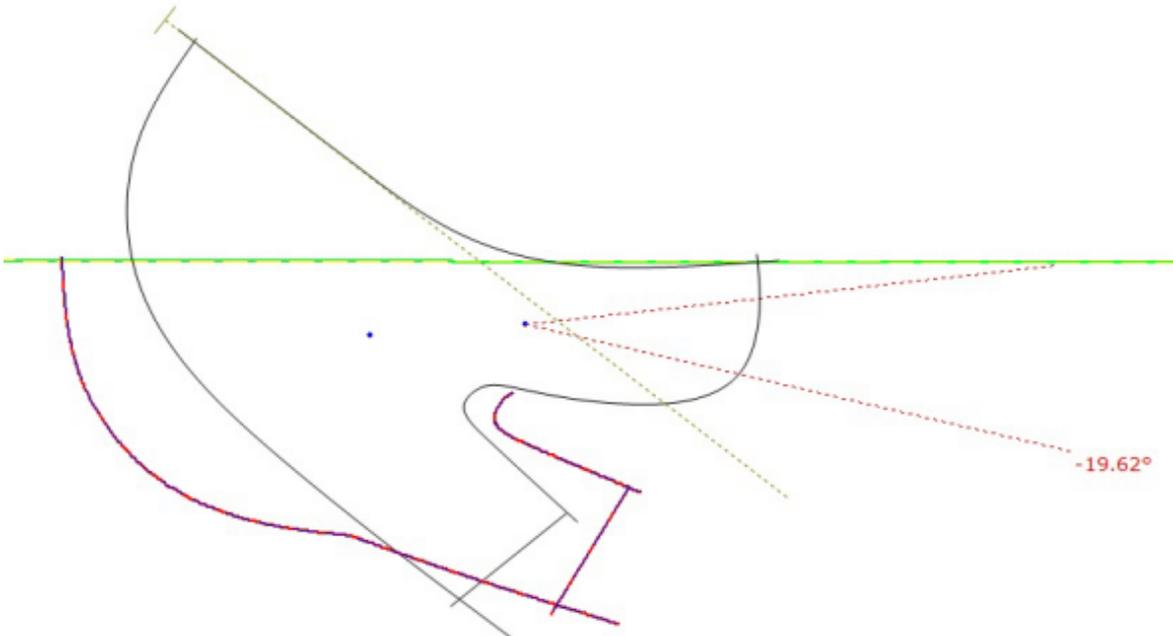


7. Do a right click and select the **Add path** from the context menu, or press **E** key. Now select the

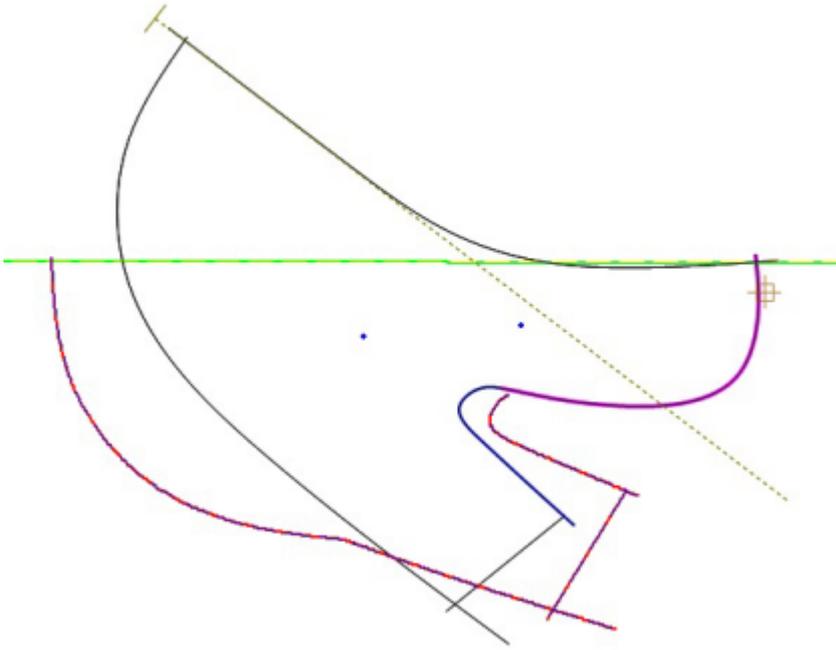
lines sections to apply the path.



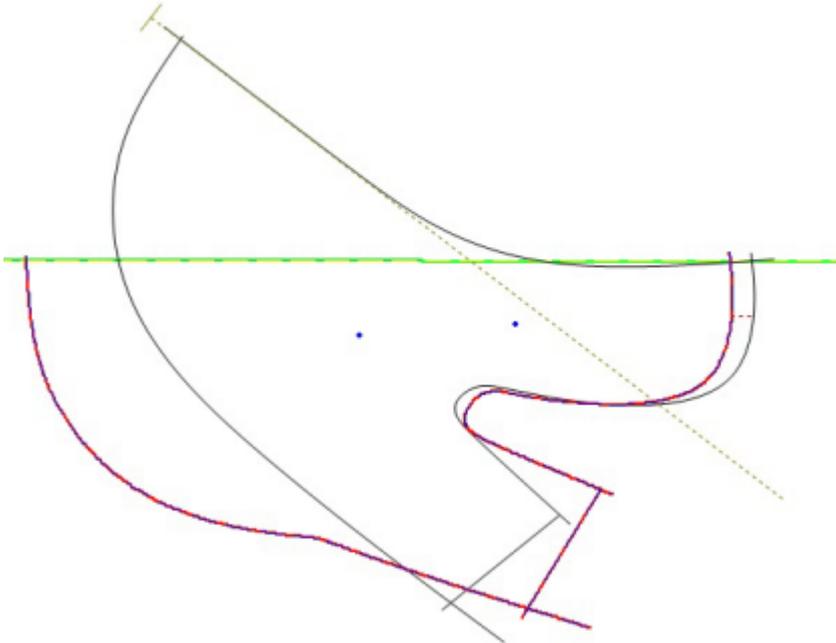
8. Do a right click and select the **Rotate** from the context menu or press **R** key. Apply the required rotation.



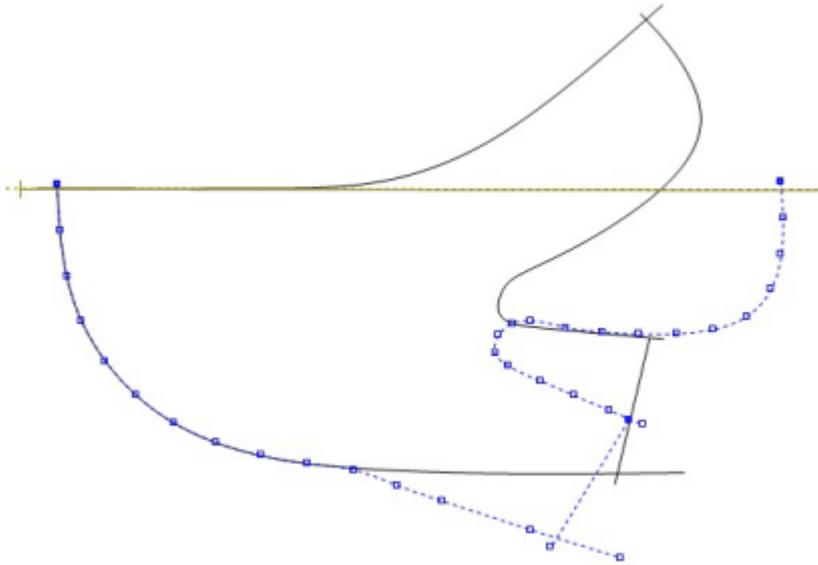
9. Do a right click and select the **Add path** from the context menu, or press **E** key. Now select the line section to apply the path.



10. Do a right click and select the **Move** from the context menu or press **T** key. Apply the required movement.

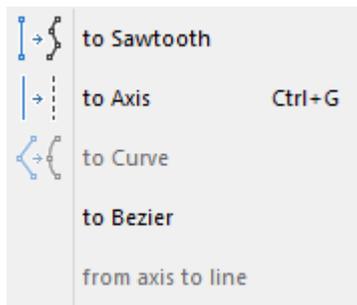


11. Do a right click and select the **Reset Position** from the context menu or press **0** key. The original lines will return to his original position. Do a right click and select the **Finish** from the context menu or press **ENTER** to exit the tool e apply the changes.



5.3.22 Tools - Change - Convert

These options allow you to convert lines to sawtooth lines, curves or to axis lines.



5.3.22.1 Tools - Change - Convert - to Sawtooth

Use this option to change the selected line to a sawtooth line .

5.3.22.2 Tools - Change - Convert - to Axis

Use this option to change the selected line to an axis  or pressing **CTRL+G**.

5.3.22.3 Tools - Change - Convert - to Curve

Use this option to change the selected line to a curved line



5.3.22.4 Tools - Change - Convert - to Bezier

Use this option to change the selected line to a **Bezier** line.

5.3.22.5 Tools - Change - Convert - From Axis to Line

Use this option to change the selected axis to a line or pressing **CTRL+G**.

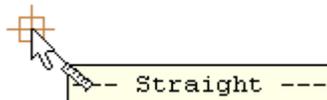
5.4 Tools - Measurements

This option let you take measurements on the screen, either in a straight line or along lines, select

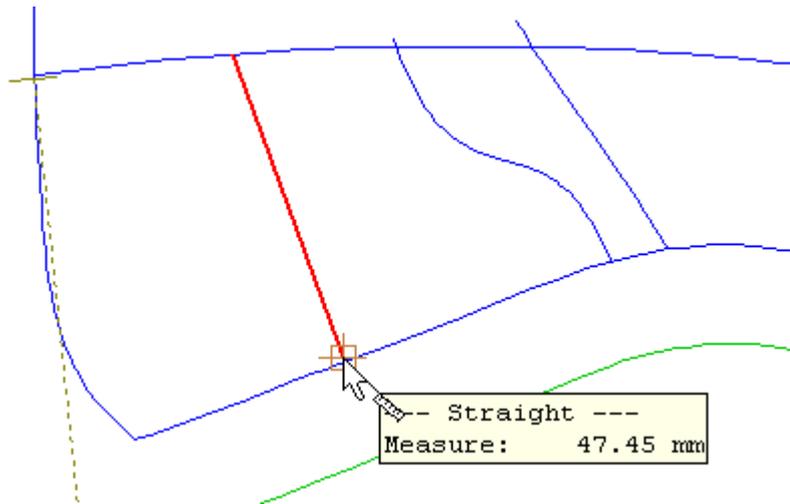
Measurements from the tools menu  or press **CTRL+K**.

5.4.1 Free measurements

1. Select **Measurements** from the **Tools** Menu  or pressing **CTRL+K**. The cursor will be displayed



2. Move the cursor to the position you want to measure from and press the left mouse button.
3. Move the cursor to the point you want to measure to.

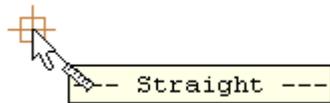


The measurement is displayed in the menu

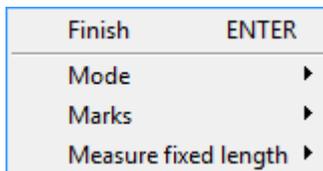
4. Click the left mouse button to take another measurement or the **Esc** button to finish the command.

5.4.2 Measurement along lines

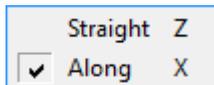
1. Select **Measurements** from the **Tools** Menu  or pressing **CTRL+K**. The cursor is displayed



2. Click the right mouse button to display the following menu



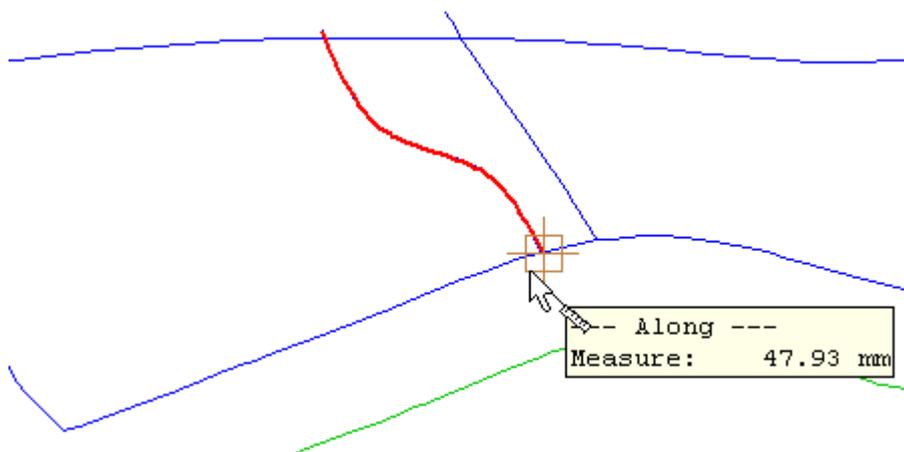
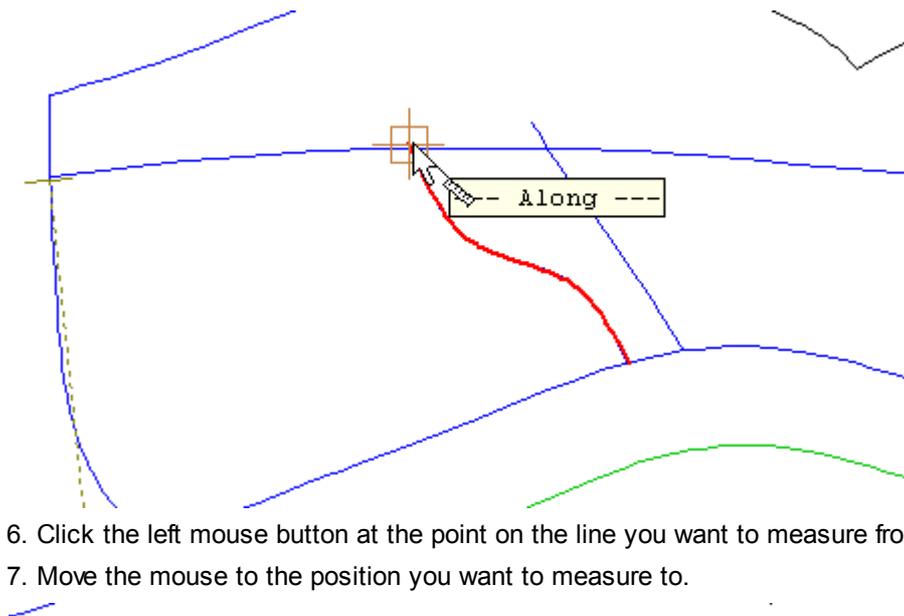
3. Select **Mode** and another menu is displayed



4. Select **Along** or press **X**. The cursor will be displayed



5. Move the cursor close to the line you want to measure. As you get close, the line will highlight.



8. Click the left mouse button to take another measurement or the **Esc** button to finish.

5.4.3 Using markers when measuring

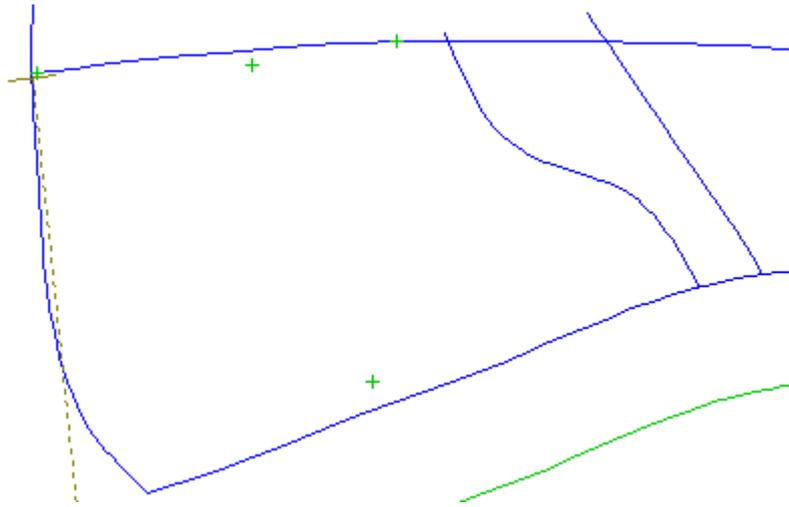
When measuring it is possible to leave markers on the points used for taking the measurements.

The following example was also used in the Free measurements section.

To add markers when measuring,

1. enter the first point using the left mouse button, but do not enter the second point using the left hand mouse button
2. when in the correct position to measure to, click the right mouse button and select **Place Markers**

The start, end and mark now points will be left as markers on the shell.



5.4.4 Measure fixed length

Measuring over a line from a point plus a distance value is possible using the fixed length option.

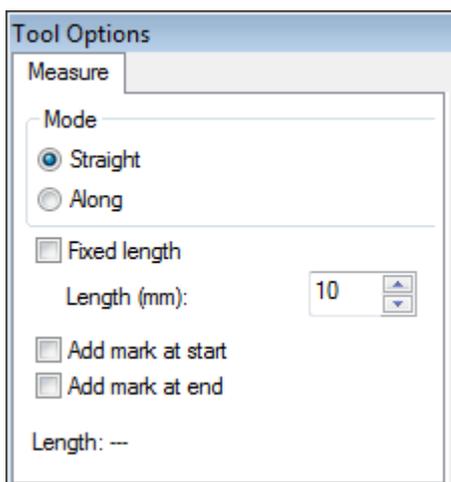
1. select line to measure.

Finish	ENTER
Mode	▶
Marks	▶
Measure fixed length	▶

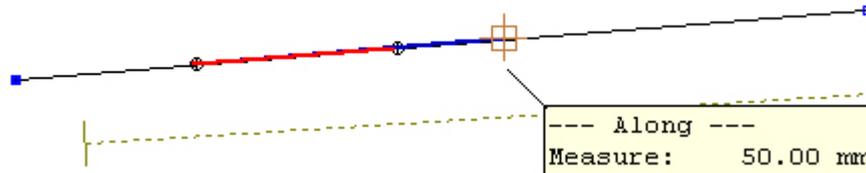
2. right click and under **Measure fixed length** select **Measure fixed length** option.

Measure fixed length	W
Increase fixed length	Q
Decrease fixed length	A

3. on the **Tool Options** toolbar, under **Mode** select **Along**.



4. **Fixed Length** - enable or disable fixed length measuring.
5. enter the **Length**.
6. **Add mark at start** - enable or disable the placement of a mark at start of the measured segment.
7. **Add mark at end** - enable or disable the placement of a mark at the end of the measured segment.



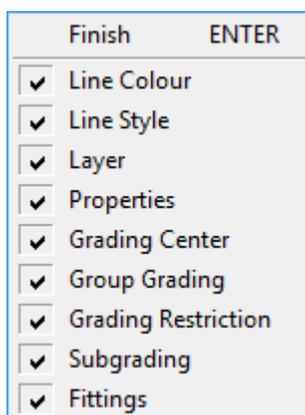
5.5 Tools - Copy Properties

Use this option to copy properties between objects.

1. select the object from which the properties are being copied.

2. Select **Copy Properties** from the **Tools**  toolbar.

3. Press **Ctrl** and left mouse button to copy all the properties of the object. To select individual properties press the right mouse button and select the required properties from the menu using the left mouse button.



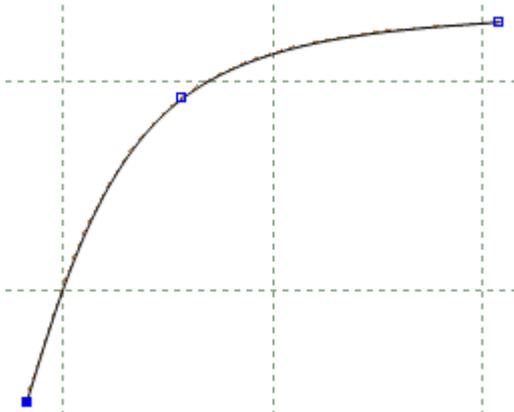
The cursor will be displayed  when the properties have been copied.

4. Move the cursor to the objects to have these properties applied to them and press the left mouse button.

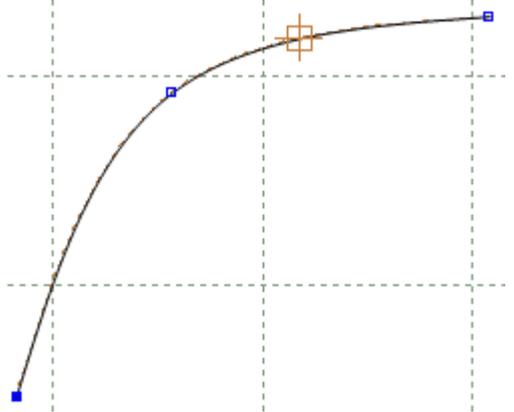
5.6 Repeat last operation

This tool allows you to retrieval the last used tool. Select **Repeat last operation** from the **Tools** menu or press **F2**.

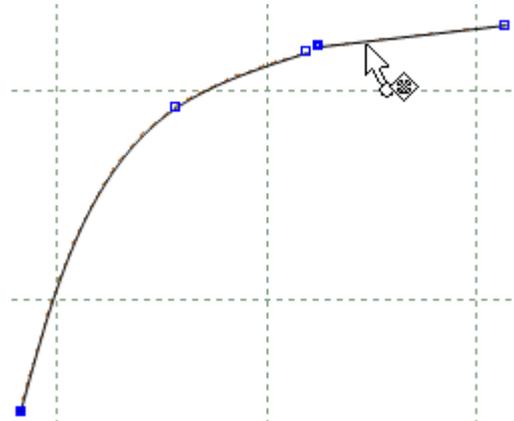
1. Draw a line and select it.



2. Go to **Tools - Change - Cut Line** and cut de line.



3. After that the cut tool is disable.



4. If you want to used the same tool again press **F2** and the tool is turn back on.

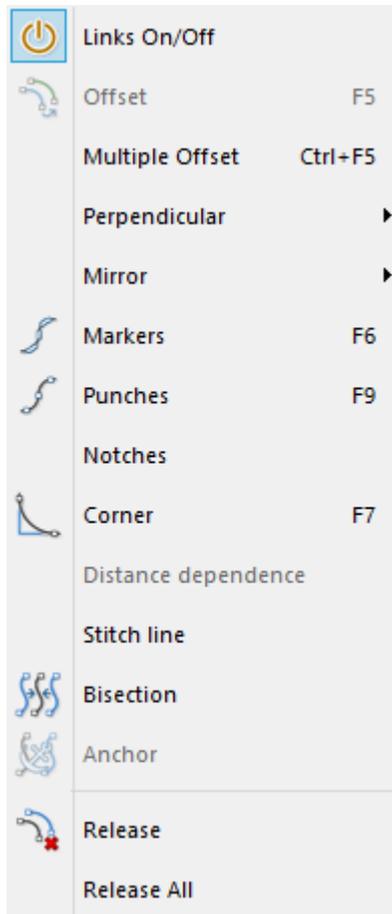
Part

VI

6 Operations Overview

This menu lets you

- Create new lines from existing geometry using, the offset, perpendicular and mirror options.
- Apply markers and punches to any line.



6.1 Operations - Links On/Off

This option lets you keep a reference to the original line if required.

This is the same as clicking the **Links**  button in the **Tools** toolbar



If **Links** is **ON** when a line is created by mirroring or offsetting, any future edits of the original line will also be reflected in the linked lines.

If **Links** is **OFF** when an operation is carried out, the newly created line is independent.

6.2 Operations - Offset

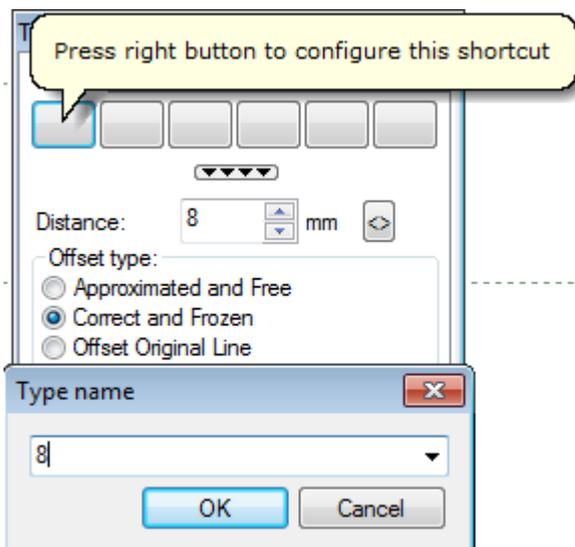
This option allows you to offset lines.

This is the same as clicking the **Offset**  button in the **Tools** toolbar or pressing **F5**.

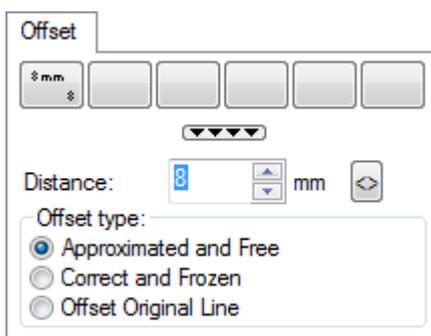


To set a shortcut for commonly used offsets, including distance and offset type,

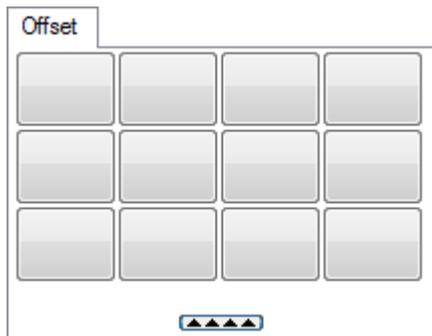
1. Set the **Distance**, right click on a blank shortcut box at the top of the menu, enter the name for this kind of offset and select **OK**



2. This shortcut is now available for future use.

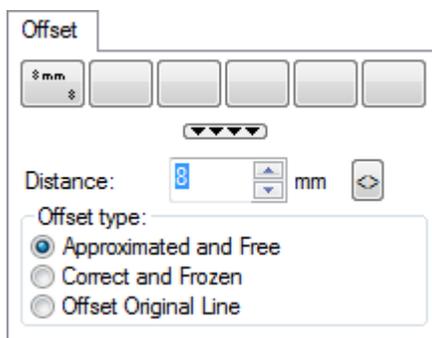


3. More space is available for more quick access buttons by pressing the 4 triangle button.



6.2.1 Creating an offset to a line

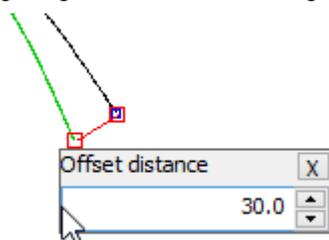
1. Select the line to be offset.
2. Select **Offset** from the **Operations** menu. The **Tool Options** toolbar displays appropriate options.



3. Select the **Distance** for the offset using one of the following methods:
 - § by clicking in the up/down arrows;
 - § by typing in a value;
 - § dragging the point with the cursor using the left mouse button.

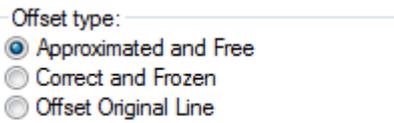


- It's also set the distance point by point, by selecting the point with the left mouse button, then doing a right click and selecting **Distance** from the contextual menu or press key **D**.



Press **Enter** and the distance will be applied to the selected point.

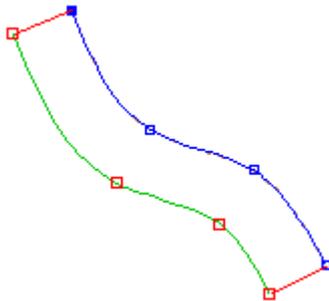
4. Select the direction of the offset by using the **change side** button , or pressing **S** or doing a right click and select **Swap side** from the contextual menu.
5. Select the type of offset by selecting an **Offset type**.



Approximate and Free - The original points are offset

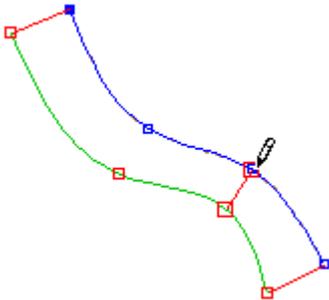
Correct and Frozen - Extra points are added to the offset to keep the line parallel to the original.

Offset Original Line - Make change to original line instead of creating a new one.



6. If you want a constant offset click the middle mouse button to finish.

7. If you want to add different values at different points, select the points using the left mouse button



Enter a new value or position with the cursor.

8. Repeat for as many points as required

9. To finish click in the middle button or do a right click and select **Finish** from the context menu.

Finish	Enter
Distance...	D
Swap side	S
Clear distance	C
Select next point	X
Select previous point	Z
Configuration	▶

Finish - Apply the changes and close the tool.

Distance - Set a specific distance to the selected line points.

Swap side - Change the side of the offset

Clear distance - If the point as applied a manual distance, it release the point and the automatic distance will be applied.

If a point has applied a manual distance, it will be connected by a line to the main point:



To release this constrain, you can either do a right click and select Clear distance from the contextual menu, or approach the line with the mouse cursor and "Cut the line". When the mouse cursor is placed over the connector line, will change and appear like a scissors, just do a right click to release the point.



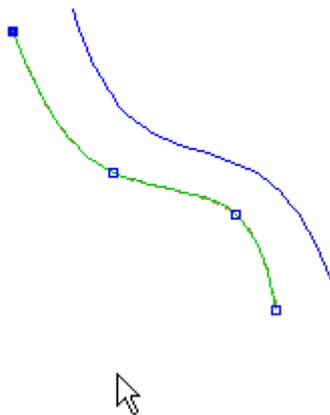
Select next point - Change the selection to the next line point.

Select previous point - Change the selection to the previous line point.

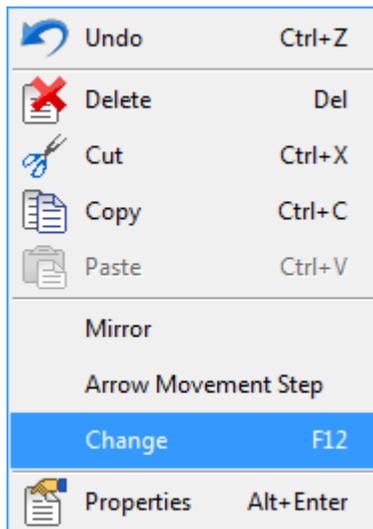
Configuration - Select one of the configurations for commonly used offsets.

6.2.2 Changing the values of the offset

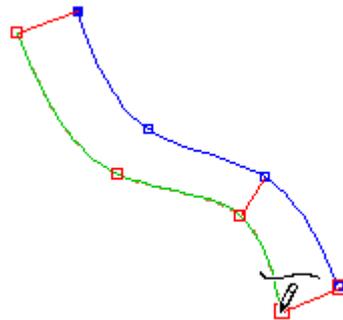
1. Select the offset line



2. Click the right mouse button and select **Change** or press **F12**



3. Select the point to edit



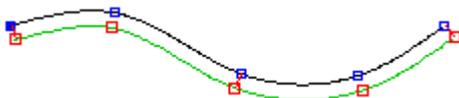
4. Change values, using one of the methods described in Creating an offset to a line

5. Click the middle mouse button to finish.

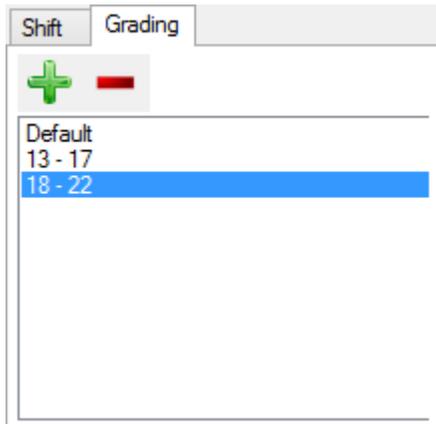
6.2.3 Offset - Grading

This option allows control offsets behavior while grading.

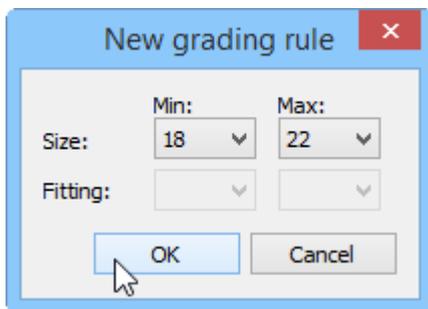
1. Select the offset and edit it, by doing a right click and select **Change** from the contextual menu or pressing **F12** key.



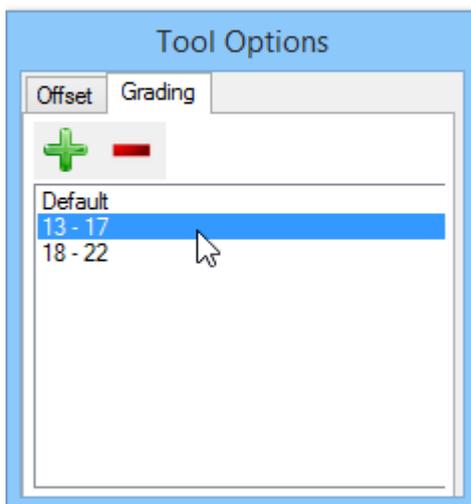
2. Select **Grading** tab from the tool option.

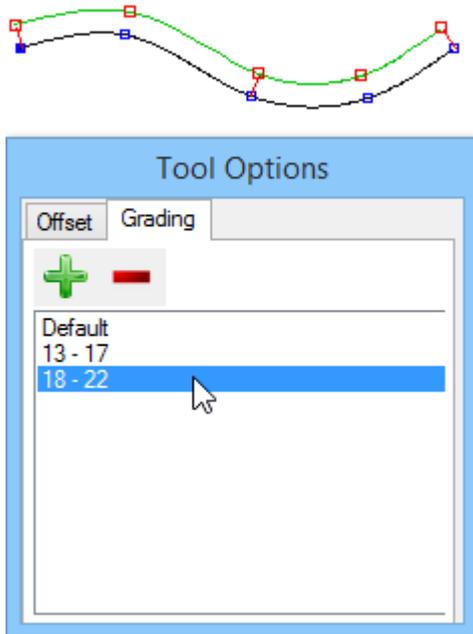


3. To **Add** new grading groups press the button .
4. Insert the minimum and the maximum size, and press **Ok**.



5. The new grading will be added to the list.
6. Now configure a new value for the offset, and it will be applied to the grading rule.

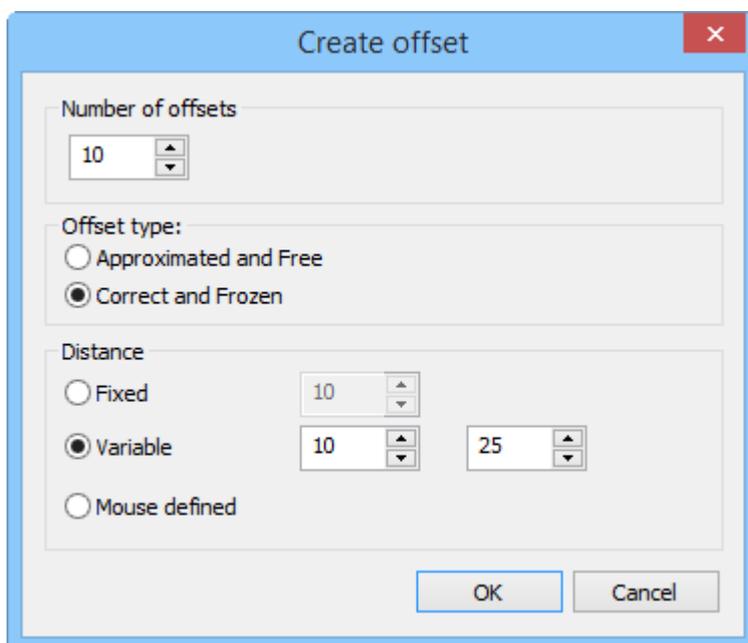




7. To remove a grading rule, select it and press the button .

6.3 Multiple Offset

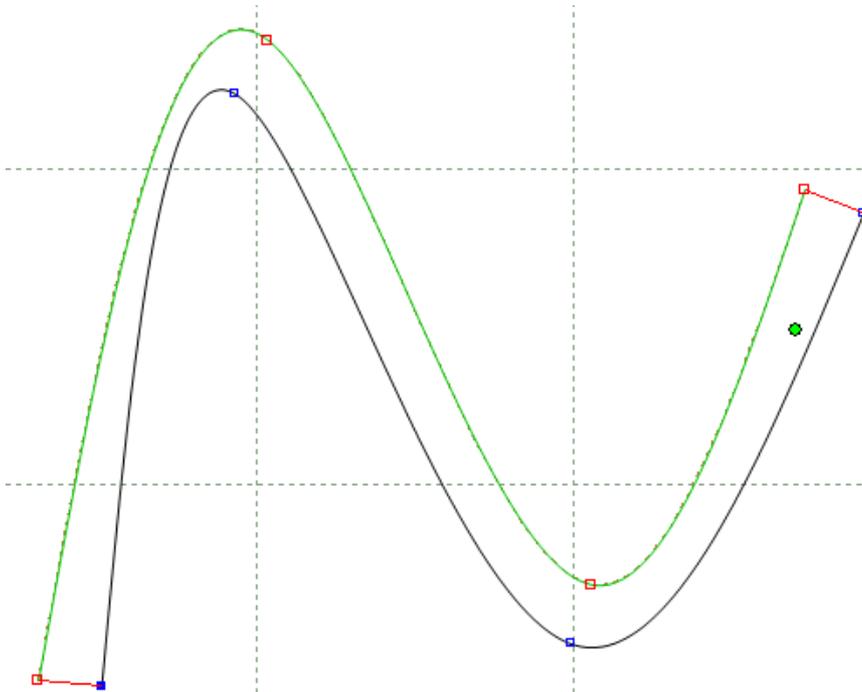
This option allows you to multiple offset lines in a single operation.



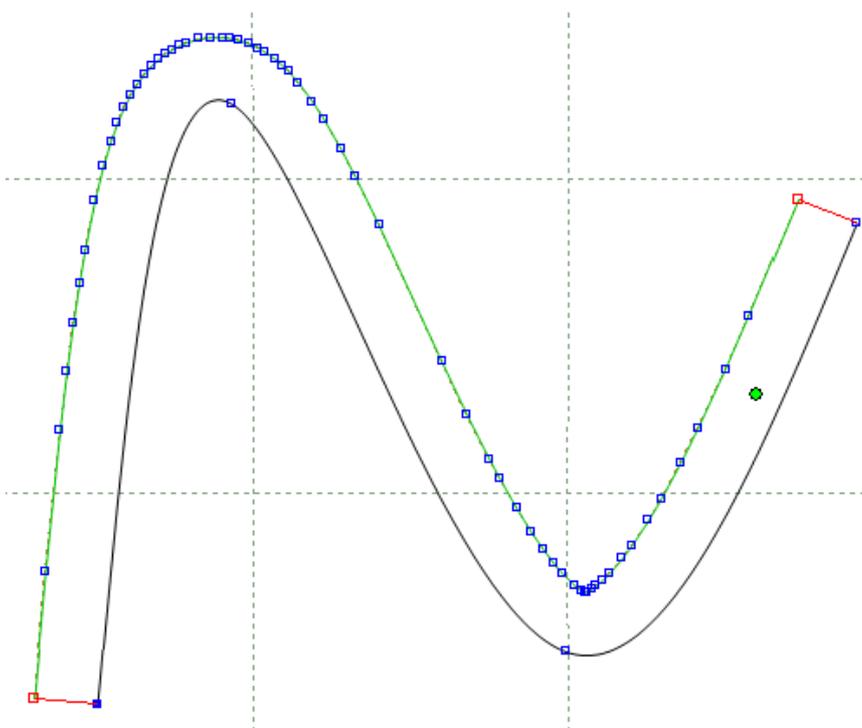
Number of offsets - Enter the number of offsets.

Offset type:

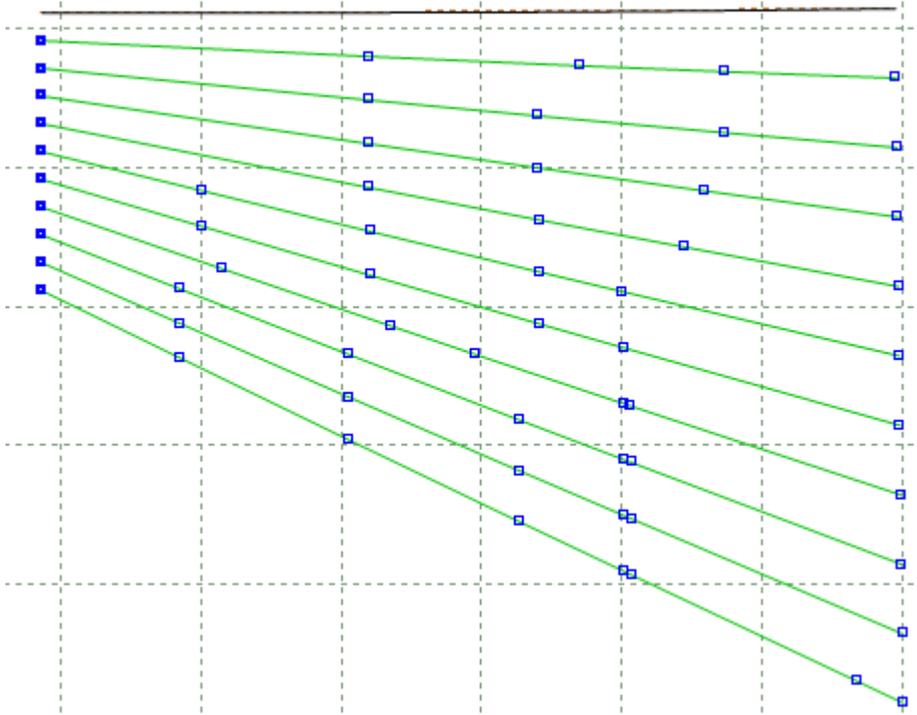
- **Approximate and Free** - The original points are offset.



- **Correct and Frozen** - Extra points are added to the offset to keep the line parallel to the original.

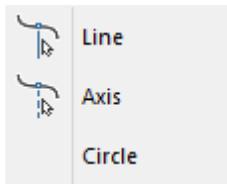


Distance - Chose between Fixed, Variable or Mouse Defined.



6.4 Operations - Perpendicular

This lets you draw a line or axis perpendicular (at 90 degrees) to another line or axis.



6.4.1 Operations - Perpendicular - Line

This lets you construct a line perpendicular to another line.

1. Select the line from which you want to construct the perpendicular line.

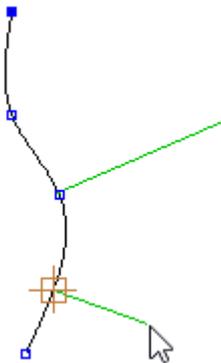
2. Select **Line** from the **Perpendicular** options of the **Operations** menu . The cursor will be displayed on the line



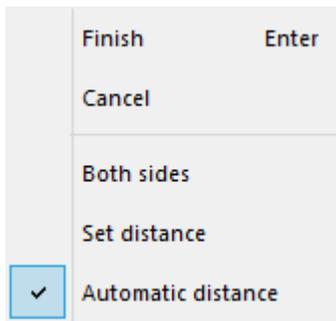
3. Move the cursor to a position which gives the correct start point for the line and the correct distance from the line.



4. Press the left mouse button to create the line. Its possible to create several lines.



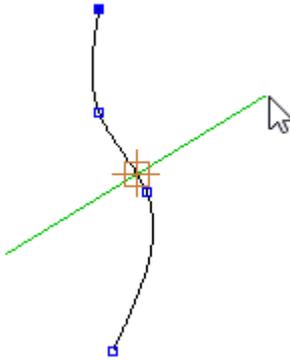
5. Do a right click and several options are available in the contextual menu.



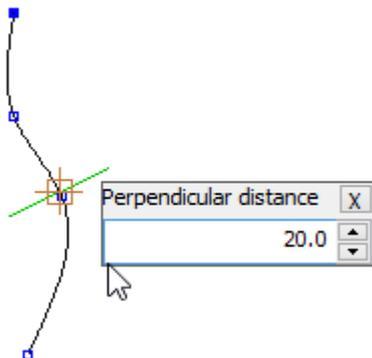
Finish - This option applies the changes and close the tool.

Cancel - This option cancel the changes and close the tool.

Both sides - If this option is active, the perpendicular will be applied in both sides of the line.



Set Distance - Insert the perpendicular line length.



Automatic distance - The distance is controlled by the mouse position.

Note: The perpendicular will be dependent from the master line. To break the dependency to the master line go to Operations - Release.

6.4.2 Operations - Perpendicular - Axis

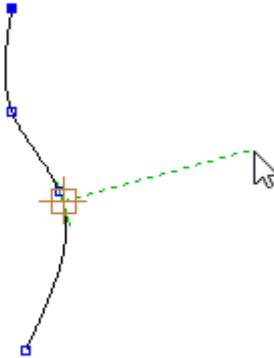
This lets you construct perpendicular to another line.

1. Select the line from which you want to construct the perpendicular axis.

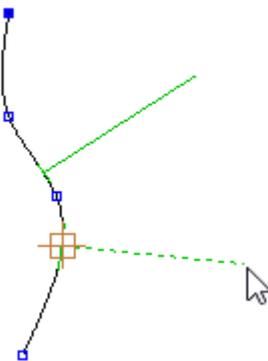
2. Select **Axis** from the **Perpendicular** options of the **Operations** Menu . The cursor will be displayed on the line



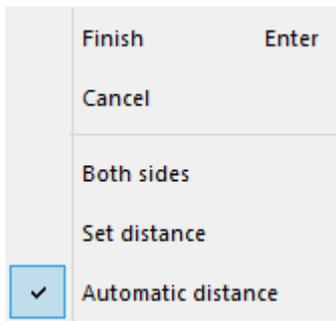
3. Move the cursor to a position which gives the correct start point for the axis and the correct distance from the line.



4. Press the left mouse button to create the axis. Its possible to create several axis.



5. Do a right click and several options are available in the contextual menu.



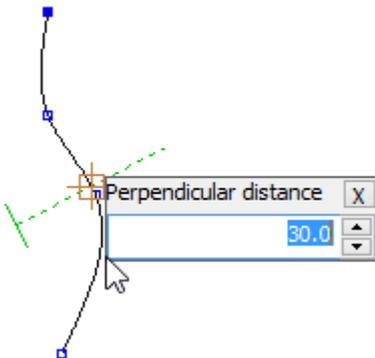
Finish - This option applies the changes and close the tool.

Cancel - This option cancel the changes and close the tool.

Both sides - If this option is active, the perpendicular will be applied in both sides of the line.



Set Distance - Insert the perpendicular axis length.



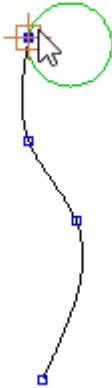
Automatic distance - The distance is controlled by the mouse position.

Note: The perpendicular will be dependent from the master line. To break the dependency to the master line go to Operations - Release.

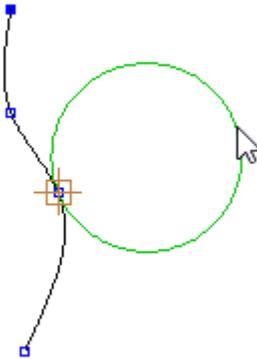
6.4.3 Operations - Perpendicular - Circle

This lets you construct perpendicular to another line.

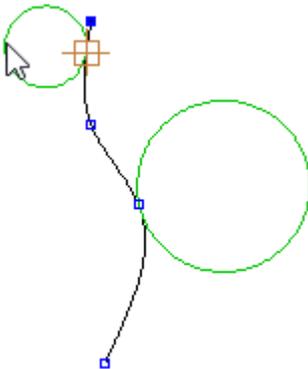
1. Select the line from which you want to construct the perpendicular circle.
2. Select **Circle** from the **Perpendicular** options of the **Operations** Menu. The cursor will be displayed on the line



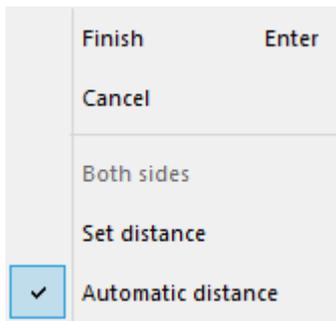
1. Move the cursor to a position which gives the correct start point for the circle and the correct distance from the line.



2. Press the left mouse button to create the circle. Its possible to create several circles.



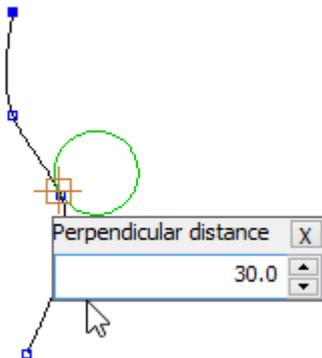
5. Do a right click and several options are available in the contextual menu.



Finish - This option applies the changes and close the tool.

Cancel - This option cancel the changes and close the tool.

Set Distance - Insert the circle diameter.

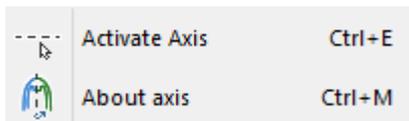


Automatic distance - The diameter is controlled by the mouse position.

Note: The perpendicular will be dependent from the master line. To break the dependency to the master line go to Operations - Release.

6.5 Operations - Mirror

This lets you mirror or reflect lines about an axis.



6.5.1 Operations - Mirror - Activate Axis

To mirror any lines you must have an active axis. This option activates an axis, making it the current axis.

1. Select an axis.

2. Select **Activate Axis** from the **Mirror** options of the **Operations** menu . The axis will be highlighted and displayed as a dotted line.

This is the same as pressing **Ctrl+E**

6.5.2 Operations - Mirror - About axis

This mirrors any selected lines about the activated axis.

1. Select line(s) to be mirrored.
2. Select **Mirror** - To the other side from the Operations menu.

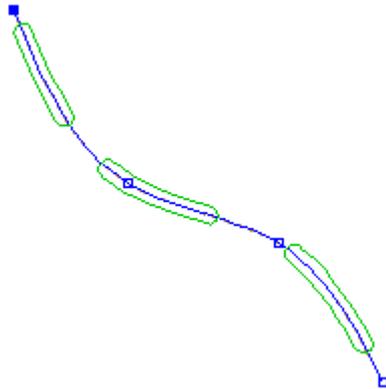
This is the same as clicking the **Mirror** button  in the **Tools** toolbar or pressing **CTRL+M**.



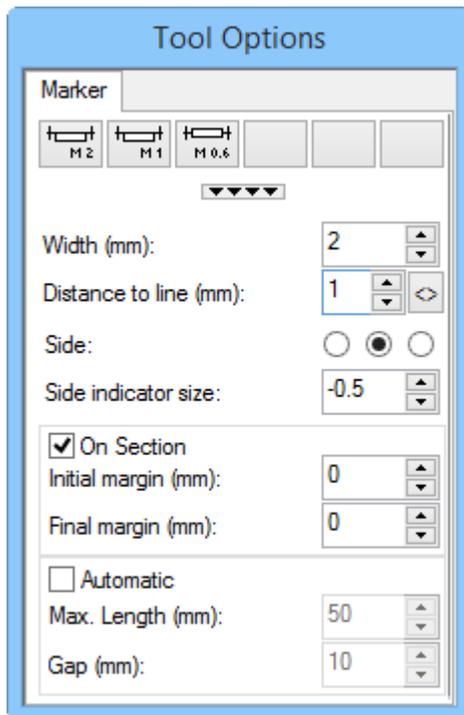
6.6 Operations - Markers

This lets you draw markers over existing lines. Markers are small closed lines or bubbles that can be added to parts later. Selecting this option  is the same as pressing **F6**.

1. Select the line to have markers applied.
2. Select **Markers** from the **Operations** menu.
3. Define the markers with pairs of clicks using the left mouse button.



The **Tool Options** toolbar displays appropriate options.



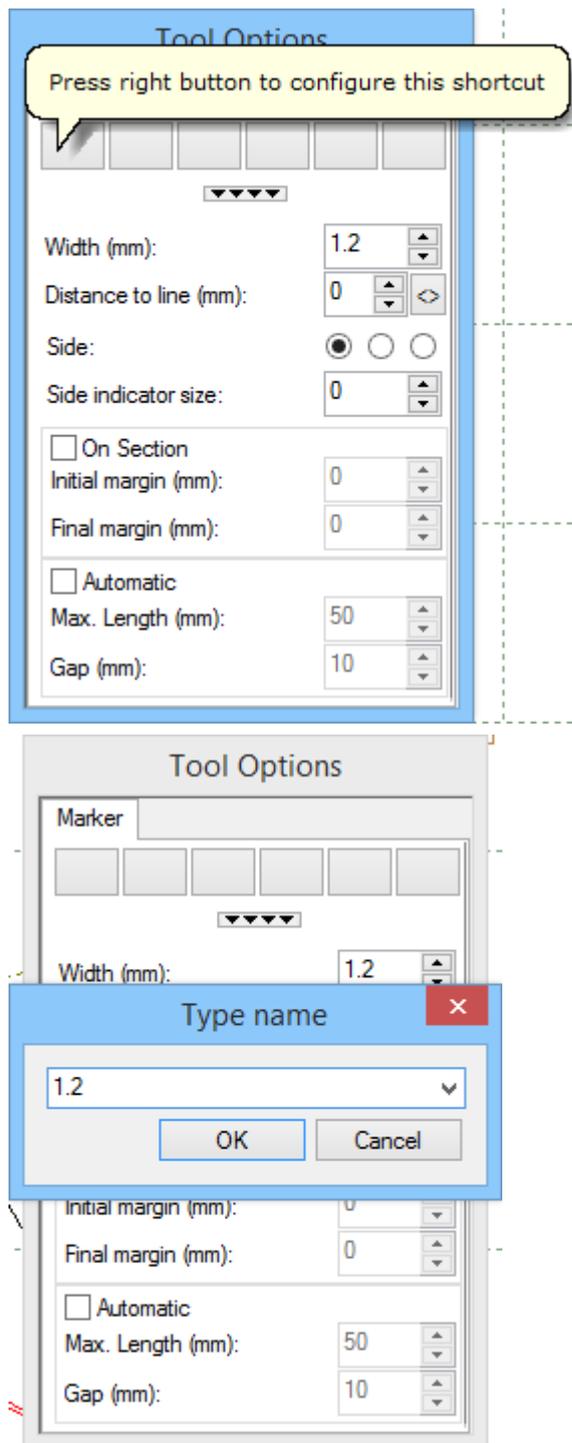
4. Use the options in the upper portion of the toolbar to adjust the size and position of your markers.

- **Width**
- **Distance to line**
- **Side** (or pressing **S**)
- **Side indicator size**
- **On Section** (initial margin and final margin)
- **Automatic** (max. length and gap)

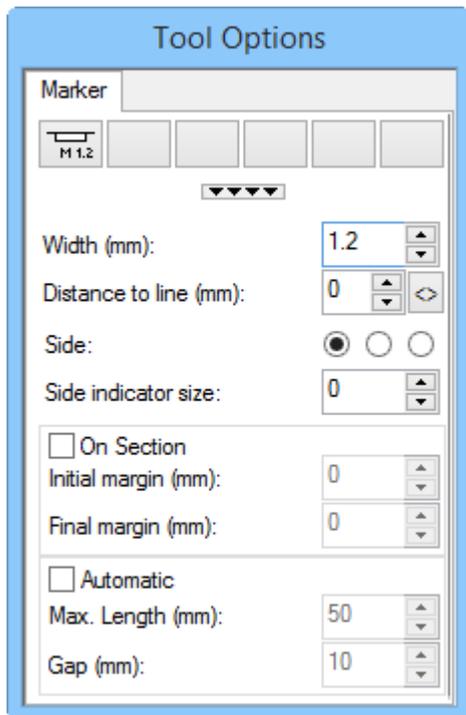
5. Press the middle mouse button to complete the command.

- *To set a shortcut for commonly used Markers, including width, distance to line, side and others values,*

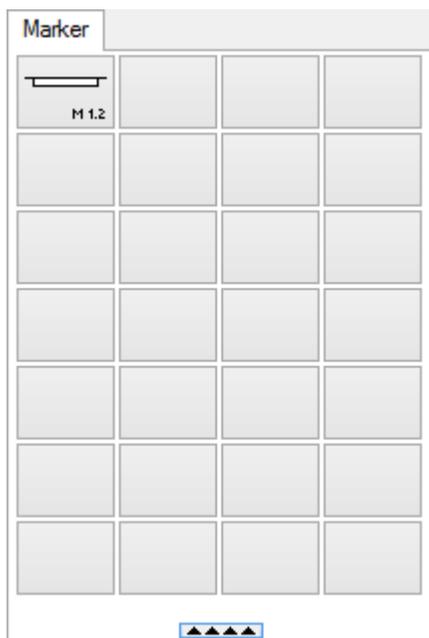
1. Click on a blank shortcut box at the top of the menu



2. Type in a name and select OK. This shortcut is now available for future use.



3. more space is available for more quick access buttons by pressing the 4 triangles button.



6.7 Operations - Punches

This lets you space punches on lines and offset from them. Selecting this option is the same as pressing F9.

1. Select the line to apply the punches.

2. Select **Punches** from the **Operations** menu . The **Tool Options** toolbar displays appropriate options.

Using the options on the toolbar, select the way the punches should be applied:

By number - Equally space the input number of punches along the line

By distance - Space punches at the specified distance along the line.

Start and End distance - Place a punch at an input distance from the start and end of the line. This options are available when the **By distance** option is used.

Dependent on other punches - Copy the number of punches from another punch line; The number of punches will always be the same even when graded.

Distance to master line - Offsets the punches parallel to the line (use the arrows to swap the offset to the other side or press **S**)

Start Margin - Distance from the start of the line to place the first punch.

End Margin - Distance from the end of the line to place the last punch.

Manual - If *ON*, the punches can be edited manually after they have been applied to the line

Automatic - If *ON*, the values defined in other options are used to space the punches

Align directions / Rotation - If *ON*, align the punches to the geometry of the line. If *OFF*, apply the punches in their original XY positions. Or enter rotation value.

On section - If *ON*, the punches are placed on a section of a line. The section is defined by selecting two lines that intersect the line.

On intersection - If *ON*, one punch is placed on an intersection. Use the cursor to select the intersecting line.

Oblique on intersection - If *ON*, one punch is placed oblique to an intersection. Use the cursor to select the intersecting line.

Number of lines - Enter the number of punch lines.

Line Separation - Distance between lines.

Final Line Separation - Distance between final lines.

Start Scale - Insert the first punch size. The punches in between will scale based in the start and end scale size.

End Scale - Insert the last punch size. The punches in between will scale based in the start and end scale size.

Mirror distribution -This option is available when the **Distance to master line** is being used. If this option is active the punches will be mirrored to the other side of the line.

Shape - The software is supplied with two standard punch shapes, a cross and a circle. By default the punched are drawn as crosses.



 - Select to transform the punch shape into a cross.

 - Select to transform the punch form into a circle, as you select this option, a text box will appear to insert the Circle Radius;



apply. - Insert the Circle Radius and press Enter to

 - Select to access the **Punch Generator Window**.

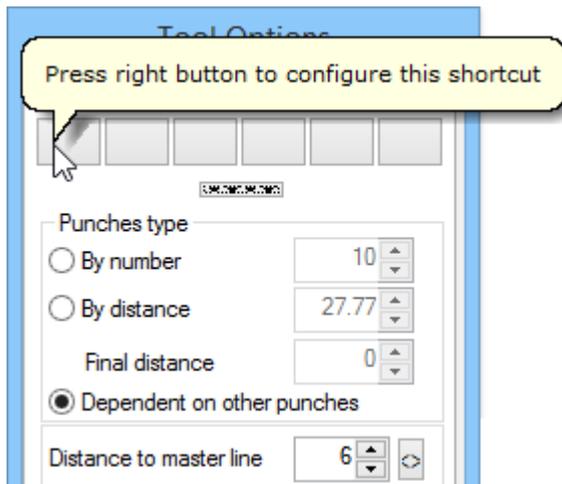
3. Click the middle mouse button to finish

To **edit** the spacing of the punches,

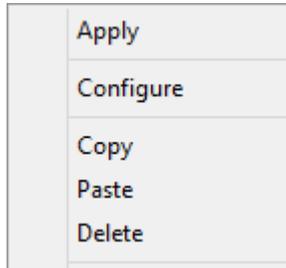
1. Select the punches
2. Click the right mouse button
3. Select **Change** or press **F12**

- To set a shortcut for commonly used Punches, including punches type (by number, by distance or dependent on other punches), distance to master line, start margin, end margin, on section, on intersection or oblique on intersection.

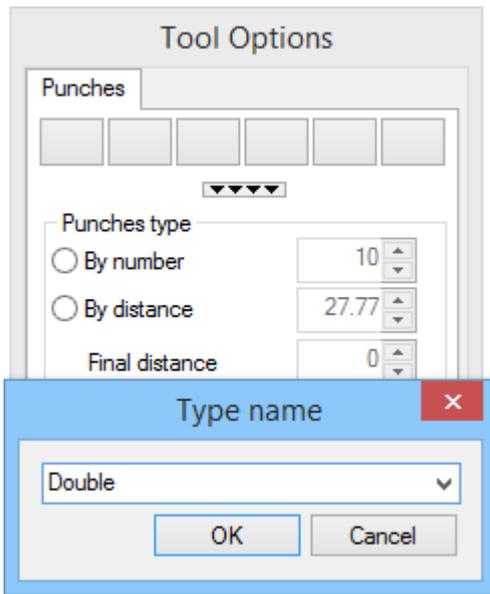
1. Right click on a blank shortcut box at the top of the toolbar.



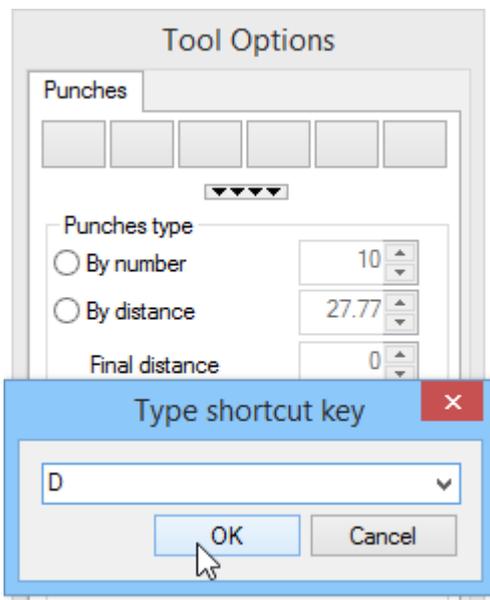
2. The contextual menu will appear, select configure.



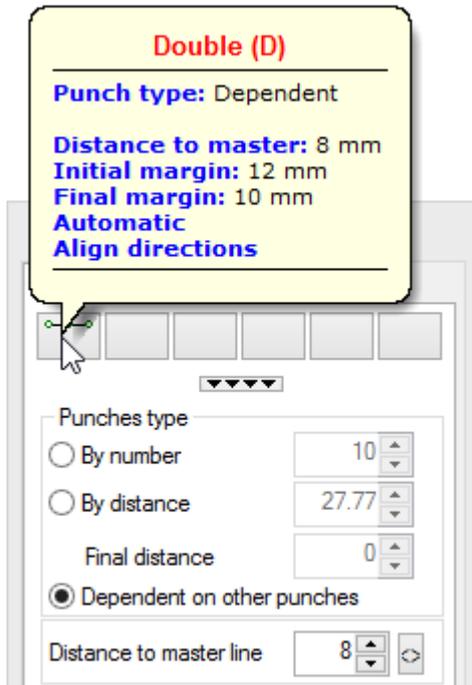
3. Type in a name and select OK.



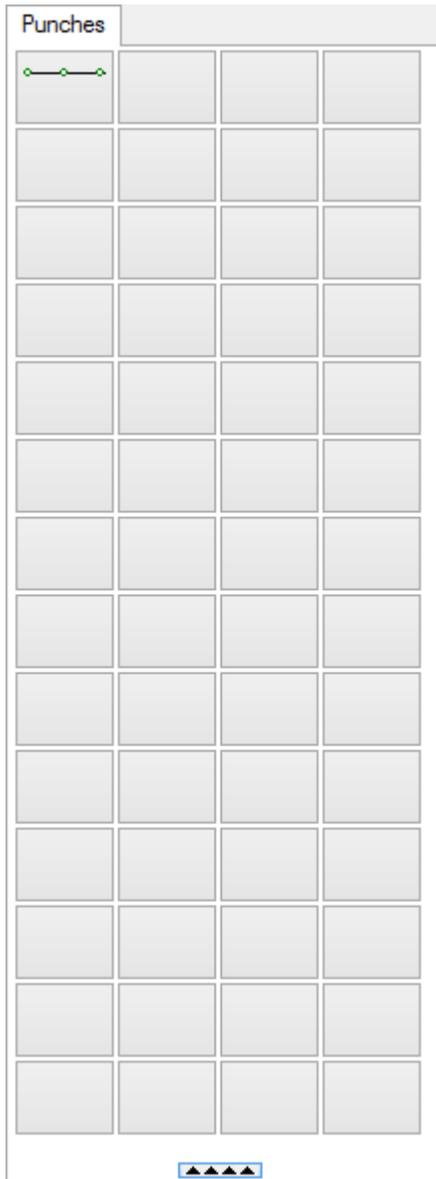
4. Type shortcut key and select OK.



5. This shortcut is now available for future use.



6. More space is available for more quick access buttons by pressing the 4 triangles button.

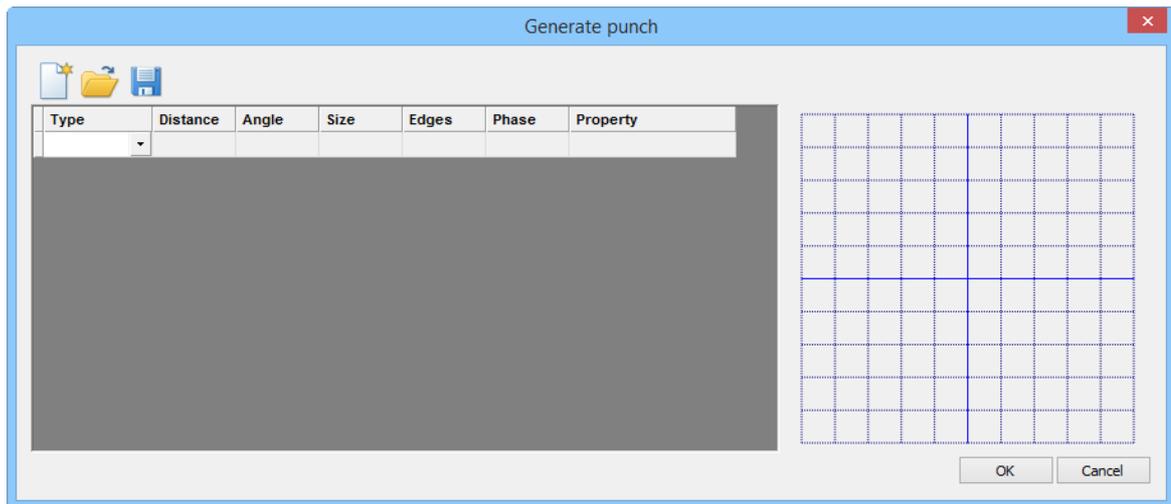


6.7.1 Punch Generator

The punch generator is available in the Punches distribution Tool Options.

The screenshot shows the 'Punches' dialog box with the 'Grading' tab active. The 'Punches type' section has 'By number' selected with a value of 10. 'By distance' is also visible with 'Start distance (mm)' and 'End distance (mm)' both set to 20.3. 'Distance to master line' is set to 0. 'Start margin' and 'End margin' are also set to 0. The 'Automatic' mode is selected. 'Align directions' is checked with a value of 0. There are checkboxes for 'On section', 'On intersection', and 'Oblique'. 'Number of lines' is set to 1, 'Line separation' to 5, and 'Final line separation' to 5. 'Start scale' and 'End scale' are both set to 1. 'Mirror distribution' is unchecked. The 'Shape' section shows three options: a solid circle, an open circle, and a triangle.

Select the Punch Generator  button and the **Generate punch** window will appear.



- Press to start creating a new punch.

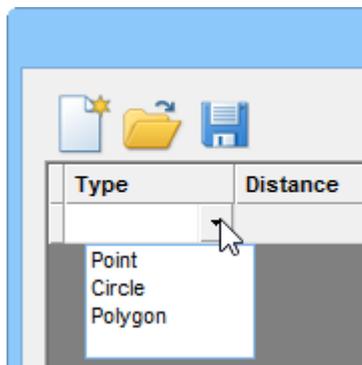


- Press to open a punch file.

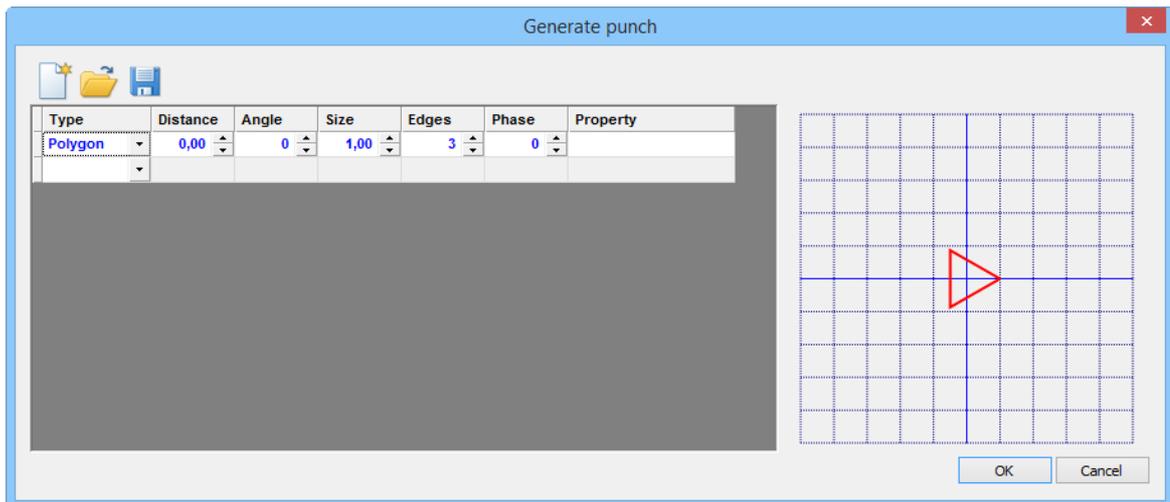


- Press to save the punch to file.

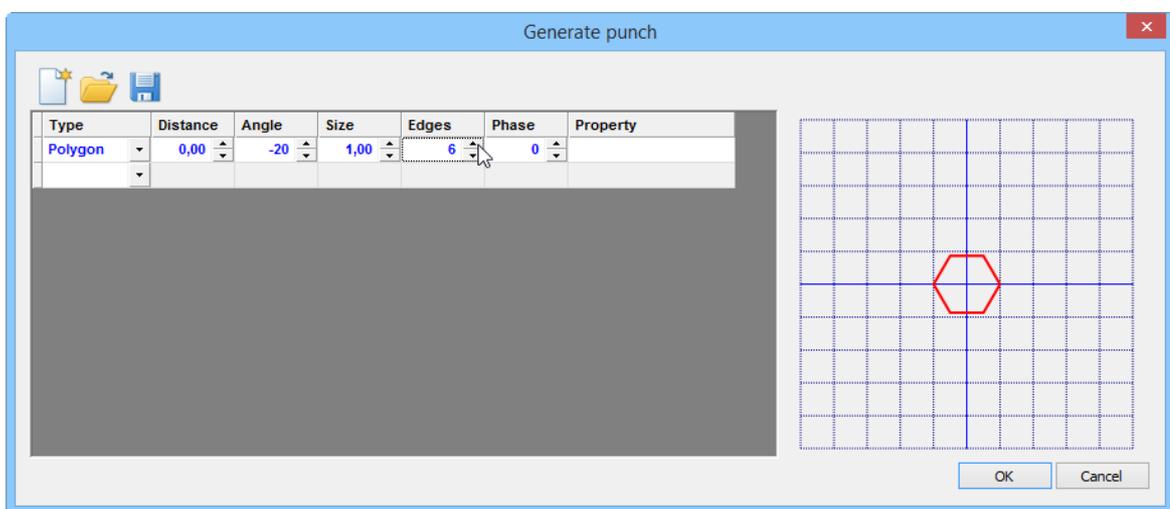
1. To start a new punch creation, select the punch Type:



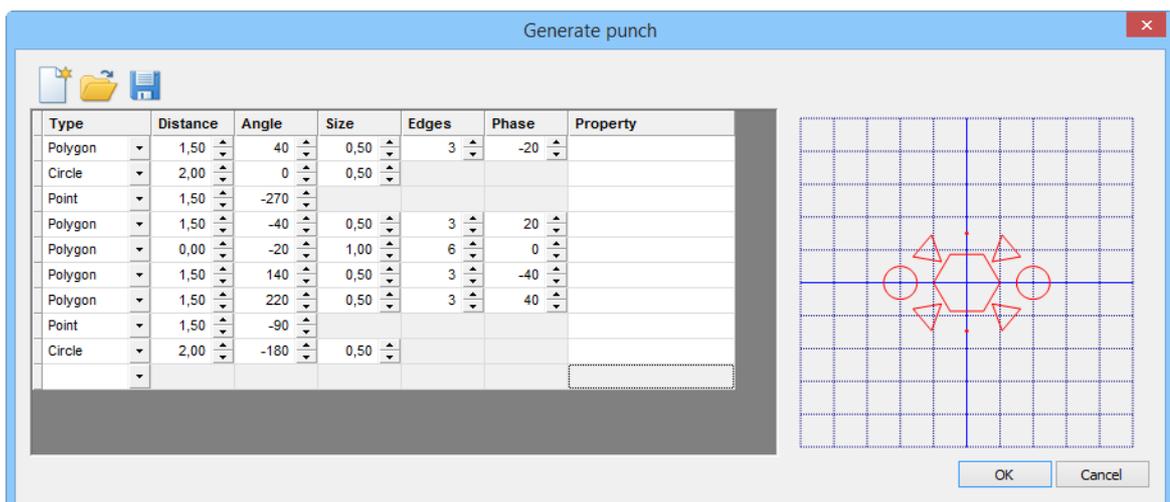
2. As you select the Type, a preview will be visible



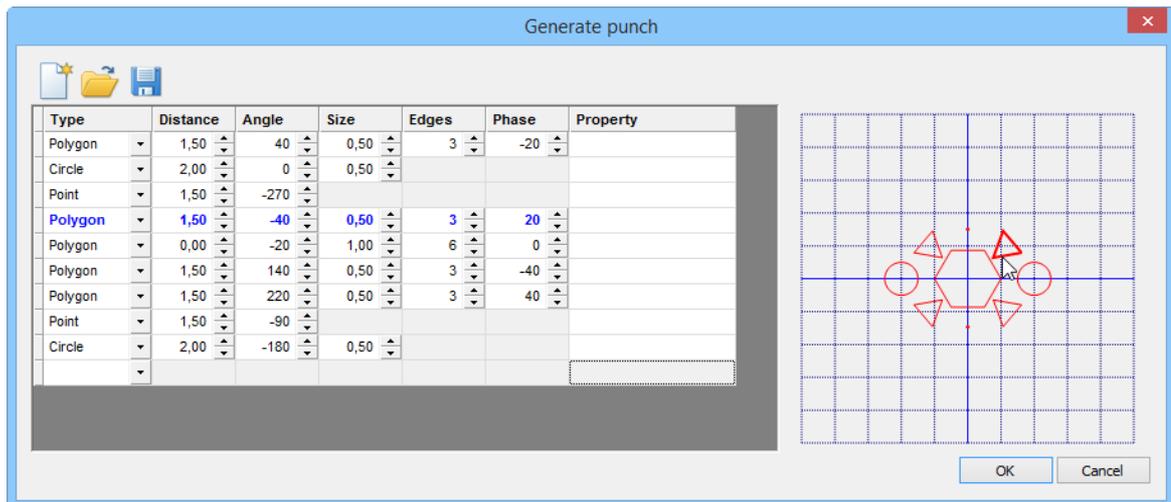
3. Set the available parameters for the selected punch type.



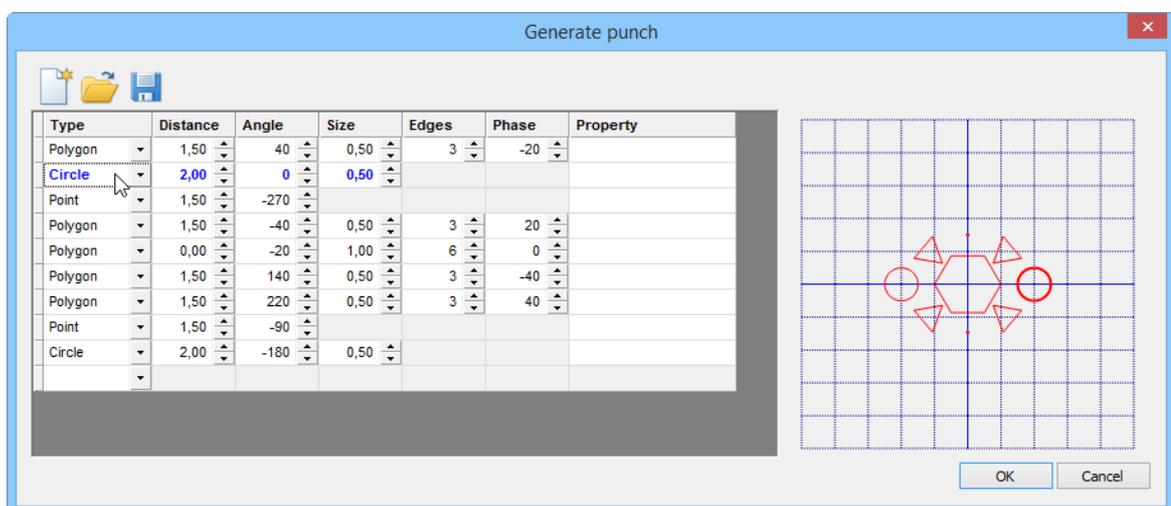
4. Insert as many Types as required.



5. To easily identify which type is shown in the preview, just move the mouse cursor over the preview and the Type and parameters will be highlighted.



6. The opposite is also applied, clique over the Type and the preview will be highlighted.



7. When finished, press Ok and the punch will be applied.

6.7.2 Add/Delete Punch Shapes from the library

The software is supplied with two standard punch shapes:

- a cross
- a circle.

You can add any new shape of punch to the library.

1. Draw a new punch shape



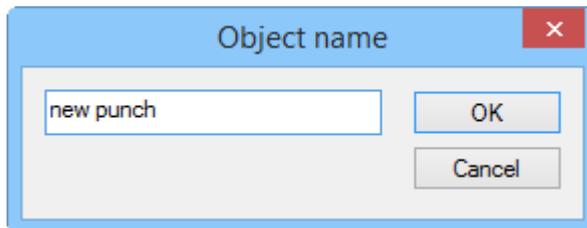
2. Select the lines



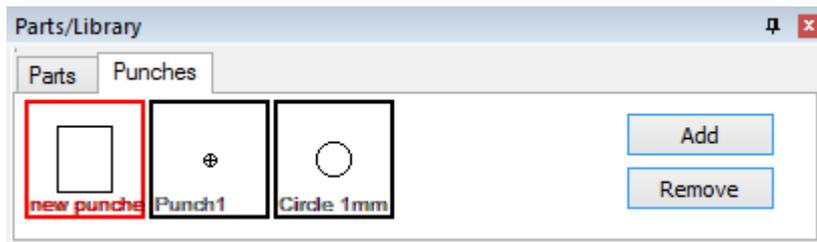
3. Select the **Punches** tab of the **Parts/Library** toolbar.
4. Click **Add**.



A dialogue box is displayed



5. Type in the name for the new punch shape and click **OK**. The new punch will be displayed ready for selection



To **delete** a punch shape from the library:

1. Select the punch shape from the **Punches** tab of the **Parts/Library** toolbar.
2. Click in the **Remove** button.
3. A confirmation message appear, select **Yes** to delete the punch or **No** to cancel.

6.7.3 Punches Grading Behaviour

This option allows control punch behavior while grading.

1. Select the punches. And edit them, by doing a right click and select **Change** from the contextual menu or pressing **F12** key.



2. Select **Grading** tab.

The screenshot shows a software interface with two tabs: "Punches" and "Grading". The "Grading" tab is active. It contains a table with the following data:

	From	To	Number
1	35	38	3
2	39	42	4

Below the table, there are three input fields: "From" (containing 39), "To" (containing 42), and "Number" (containing 4). Below these fields are two buttons: "Add" and "Remove".

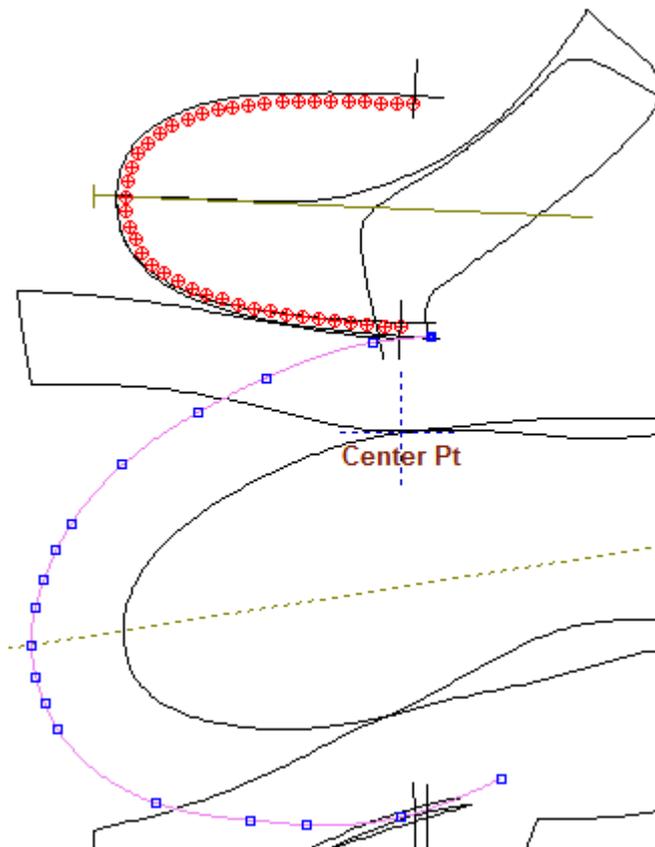
3. Press **Add** button to add the necessary grading groups, in this case, the one from 35 to 38 has 3 punches and the one from 39 to 42 has 4 punches. Finalize pressing the **Enter** key.

4. Press **Remove** button to delete grading groups.

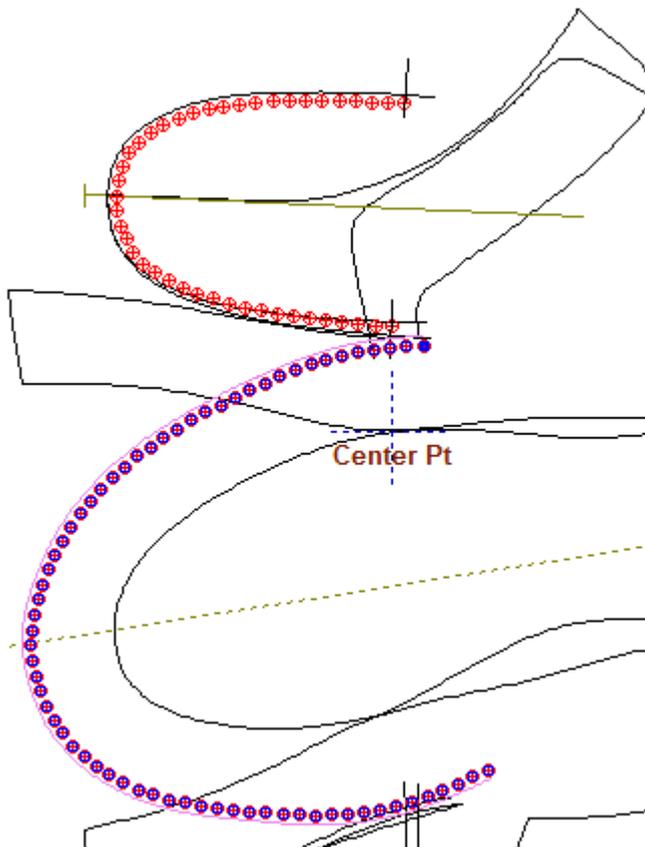
6.7.4 Punches dependent on other punches

This allows to copy the number of punches from another punch line; use the cursor to select the line.

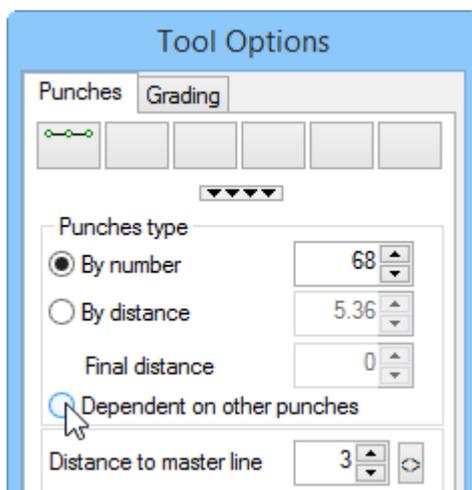
1. Select the **line** to apply the punches.



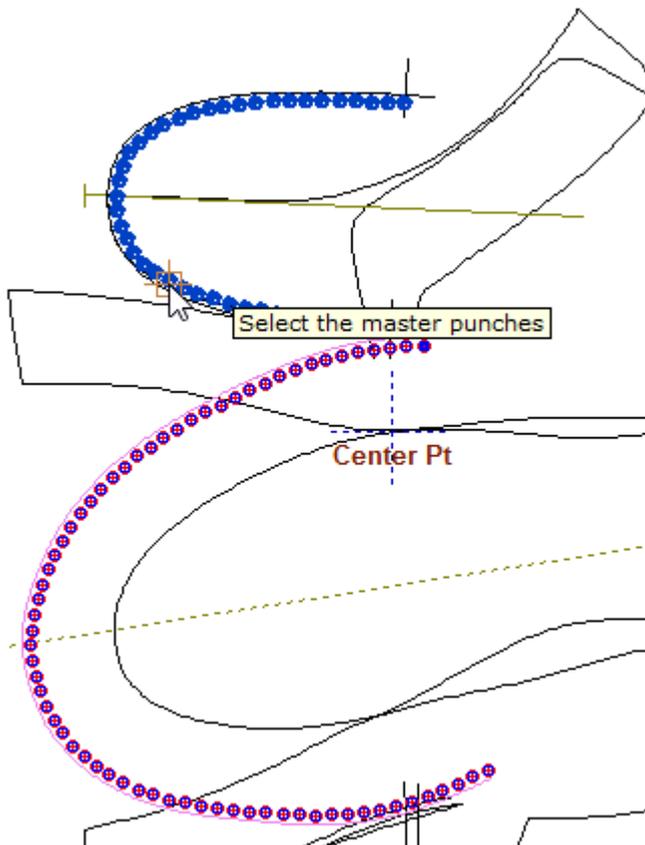
2. Select **Punches** from the Operation menu or press **F9**. The last punch configuration used will be automatically applied to the line.



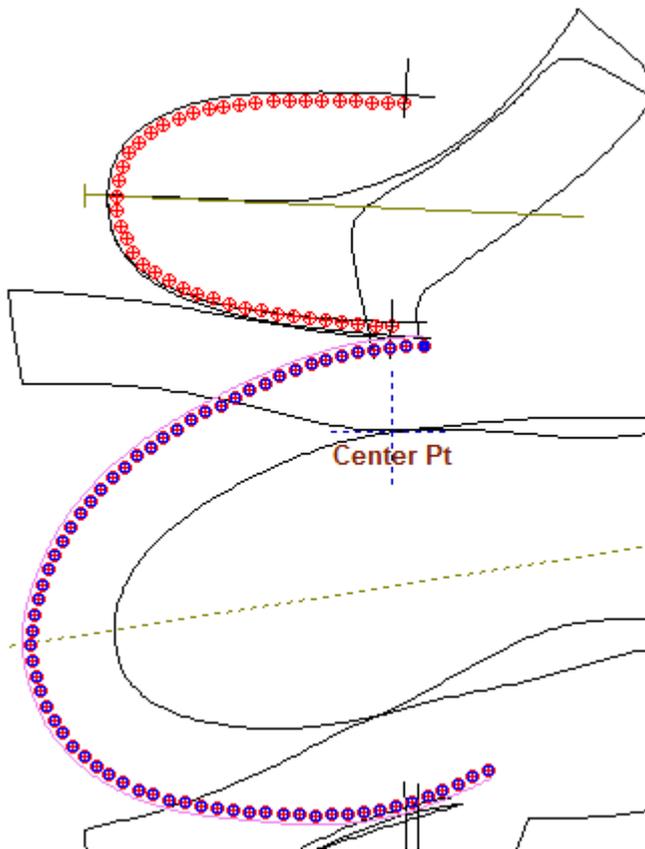
3. From the option **Dependent on other punches** from the Tool Option.



4. Select the **master punches**.



5. The new punches will be automatically rearranged based on the masters.



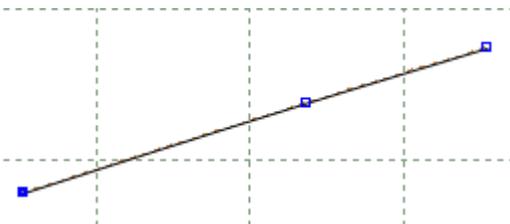
If the masters change, the dependent will follow.

Note: Usually the punches applied to the tongue are set **by distance**, then the punches applied to the vamp are dependent to the tongue punches.

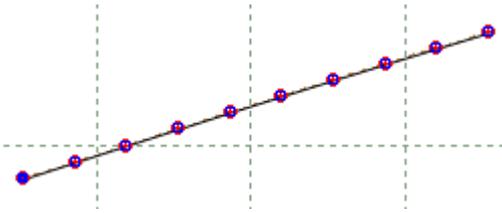
6.7.5 Multiple Punch Lines

This option allows creating many punch lines.

1. Draw the line, select the line and the desired type of punches.



2. Go to **operation** menu and select **punches**.



3. The next tool box will be displayed.

Punches
Grading

▼▼▼▼

Punches type

By number 10

By distance 7.91

Final distance 0

Dependent on other punches

Distance to master line 0

Start margin 0

End margin 0

Manual Automatic

Align directions 0

On section

On intersection

Oblique

Number of lines: 1

Line separation: 5

Final line separation: 5

Mirror distribution

Start scale 1

End scale 1

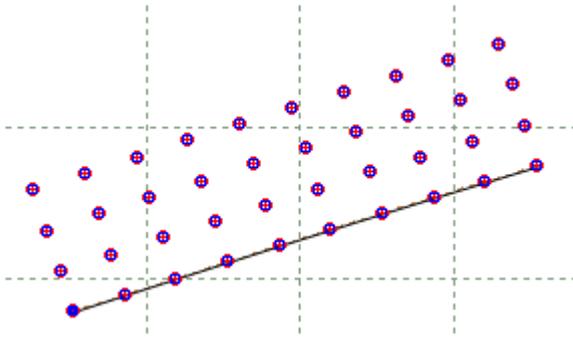
4. Change the option **Number of lines** and use the option **Line separation** to adjust the lines distance.

Number of lines: 4

Line separation: 14

Final line separation: 14

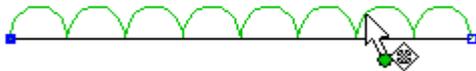
5. The result will be:



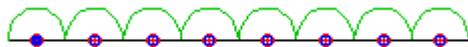
6.7.6 Punches over sawtooth

When a sawtooth is created over a line, its possible to add punches, those will be synchronized with the sawtooth.

1. Create a sawtooth over line.



2. With the sawtooth selected, go to **Punches** from the **Operations** menu  or press **F9**.



3. It's possible to rearrange the Punches distribution, on the tool options.

Punches Grading

▼▼▼▼

Punches type

By number

By distance

Start distance (mm)

End distance (mm)

Dependent on other punches

Distance to master line

Start margin

End margin

Manual Automatic

Align directions

On section

On intersection

Oblique

Number of lines:

Line separation:

Final line separation:

Start scale

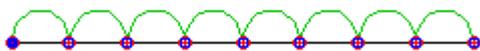
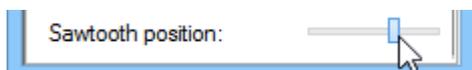
End scale

Mirror distribution

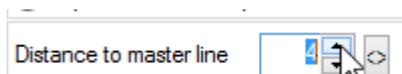
Shape

Sawtooth position:

4. Use the Sawtooth position slide bar to change the punches position, based on the sawtooth.



5. Its also possible to center the punches, increasing the distance from master line.





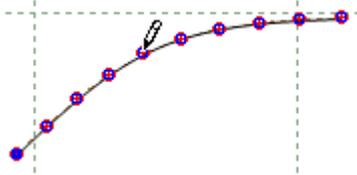
6. Now if you change the sawtooth properties, the punches will follow.



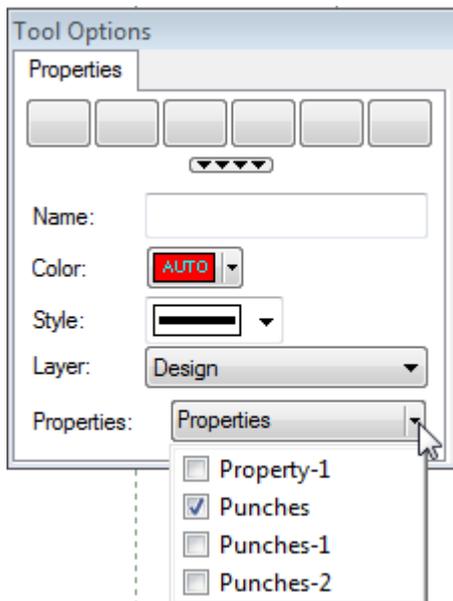
In the example was changes the option sawtooth by number property, from 8 to 3.

6.7.7 Editing Punches Distribution

1. Select the punch distribution



2. In the tool option is now visible the punches Properties.



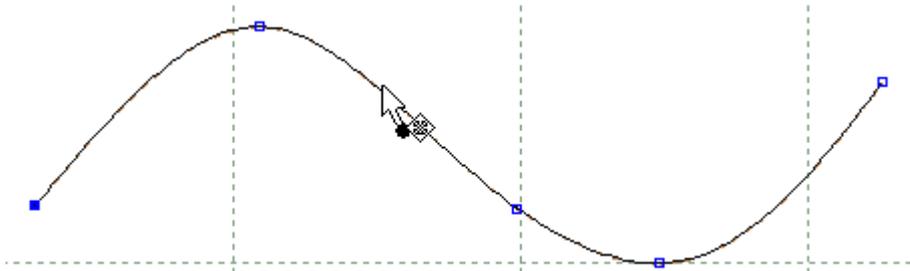
3. It's possible to insert a name, change the colour, the style, the layer and assign one or more properties, to add new property go to **Preferences, Default Properties** tab.

6.8 Operations - Notches

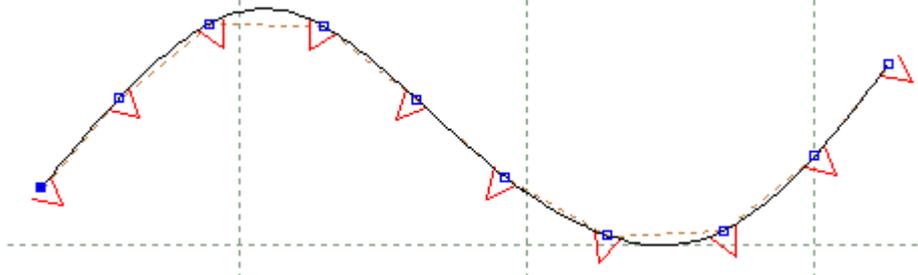
This toll is used to create or change a notches line.

To create a new notches line:

1. Select the **line** that will be the master of the notches.



2. Select **Notches** from the **Operations** menu. The notches will be applied.



3. In the tool option are several options available.

Notches

Width: 5

Height: 5

Curvature: 0

Margins: 0

Shape: ^ U C |

Oblique

Distribution: By number (10) By distance (10)

Final distance: 10

Delimiters: None On intersection On section

Dependencies: Width Height Curvature Margins Shape Distribution Count Spacing Positioning

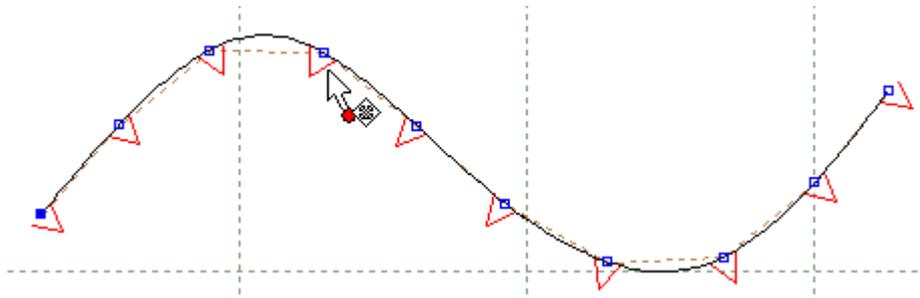
<> R

4. To finish, press **Enter** or do a right click and select Finish from the contextual menu.

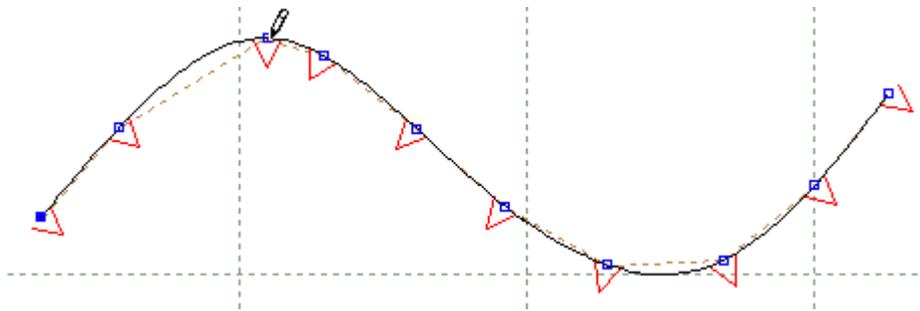
Finish	Enter
Controlling Notches	▶
Swap side	S
Reset	R
Configuration	▶

To change notches position (one by one):

1. Select the notches.



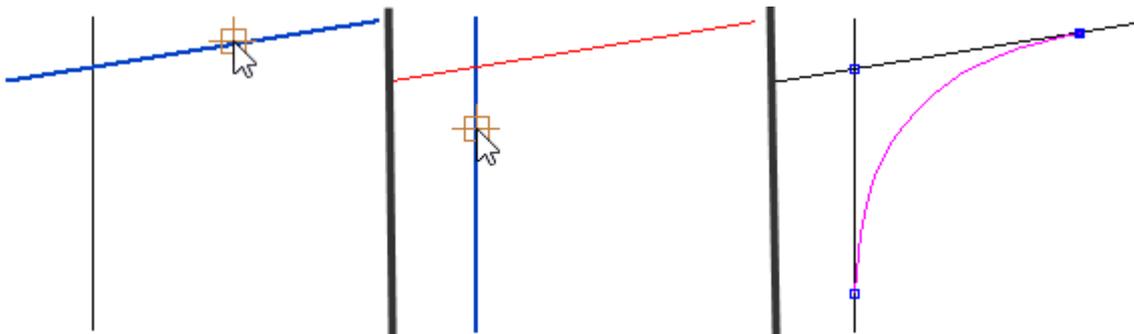
2. Click over the notch and drag him.



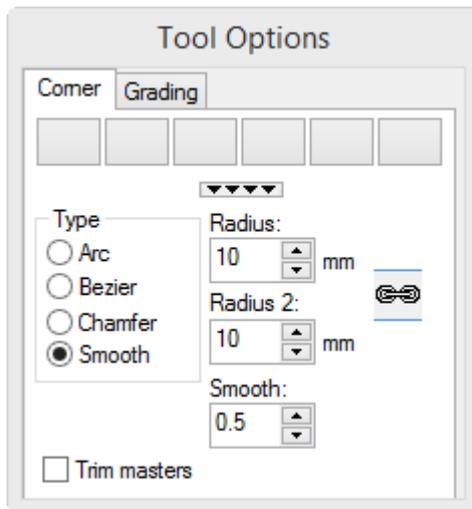
6.9 Operations - Corner

Use this option to create a corner. This is mainly to control the corners shape of parts.

1. Select the lines, when you select the last line, the corner will be created.



2. In the Tool Options there are available several parameters:



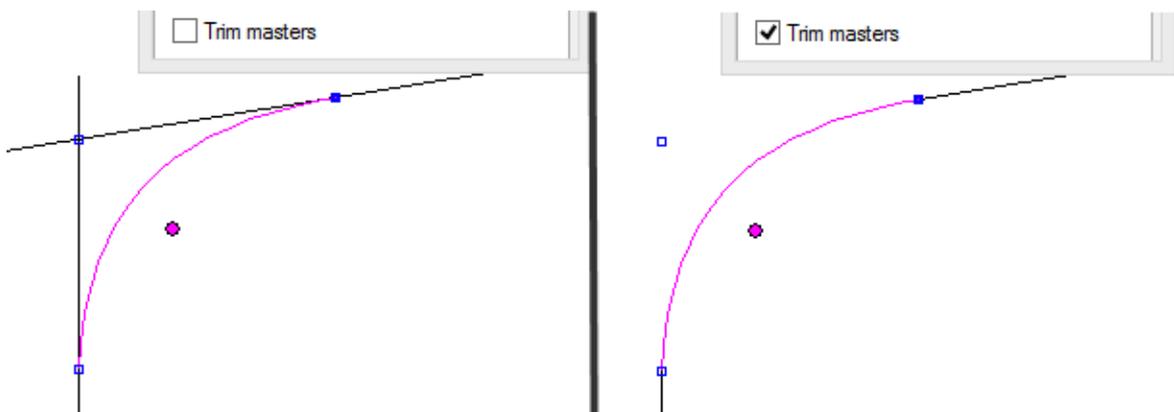
Type - Select the corner type between **Arc**, **Bezier**, **Chamfer** or **Smooth**

Radius - Input radius for the first line in mm.

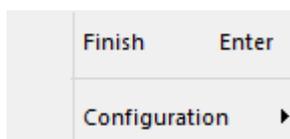
Radius 2 - Input radius for the second line in mm.

Smooth - If the selected type of corner is **Smooth**, select the smooth factor.

Trim masters - Enable/Disable the trim masters option.



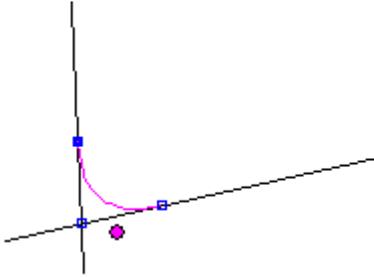
3. To finish press Enter or right click and select finish from the contextual menu.



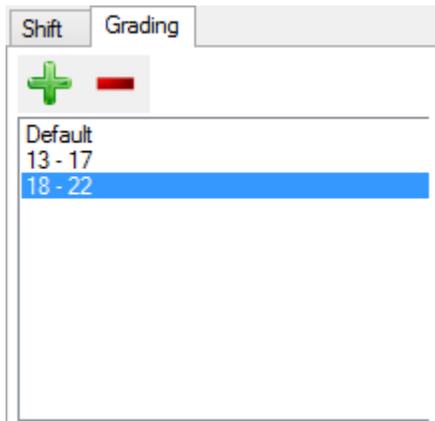
6.9.1 Corner - Grading

This option allows control corners behavior while grading.

1. Select the corner and edit it, by doing a right click and select **Change** from the contextual menu or pressing **F12** key.

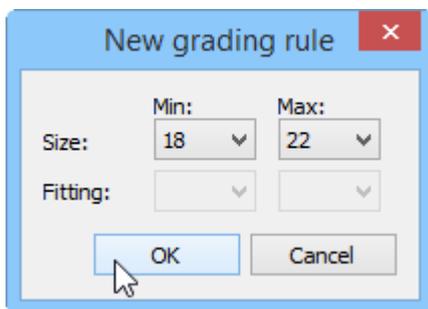


2. Select **Grading** tab from the tool option.



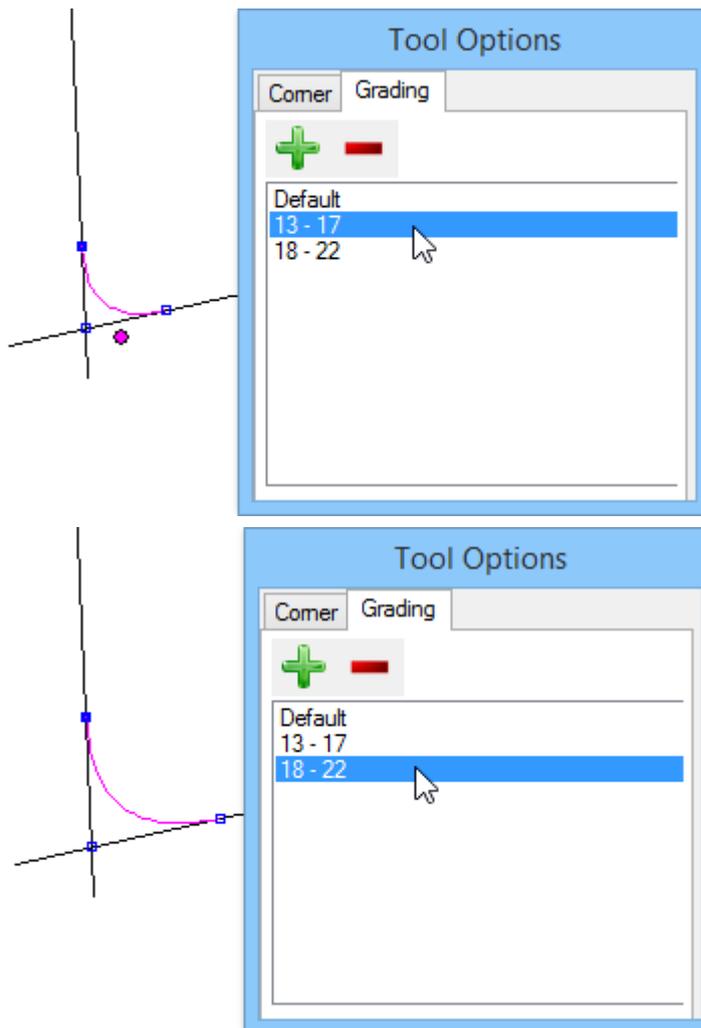
3. To **Add** new grading groups press the button .

4. Insert the minim and the maxim size, and press **Ok**.



5. The new grading will be added to the list.

6. Now configure a new value for the corner, and it will be applied to the grading rule.

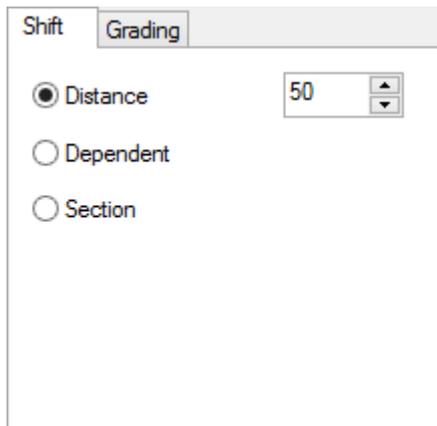


7. To remove a grading rule, select it and press the button .

6.10 Operations - Distance Dependence

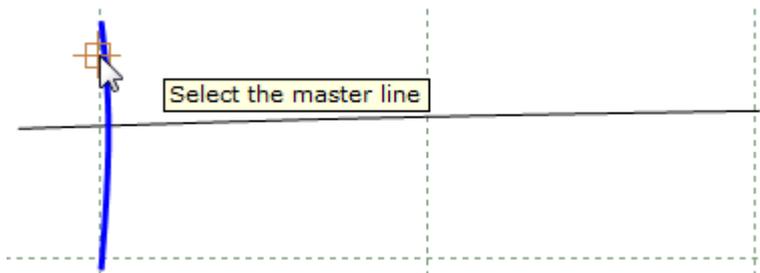
This tool control line position based on extracted length property from other elements.

1. Select **Distance Dependence** tool from the **Operations** menu.

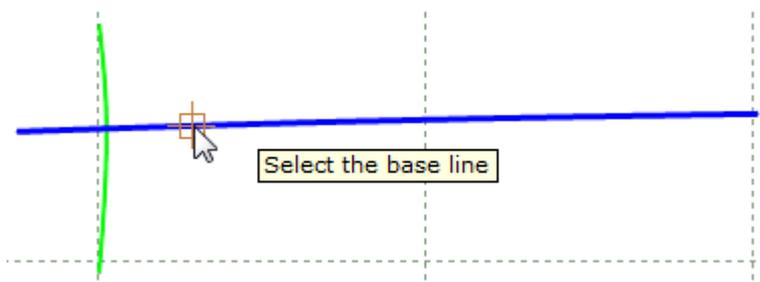


Note: If the tool is not available please deselect the lines.

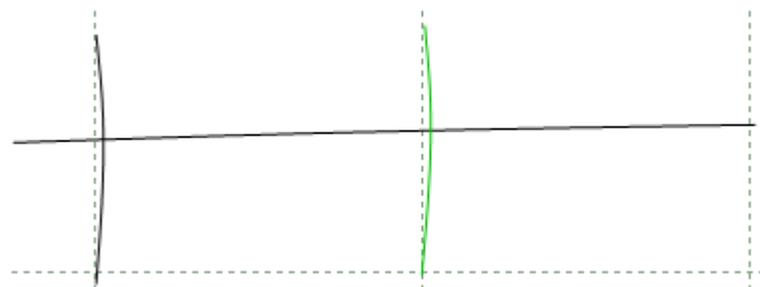
- To create a distance line dependence based on a value inserted manually, select the first option (**Distance**) on the **Tool options** introduce the distance (mm) in the text box.
- Select the master line (the created line will be equal to this one).



- Select the base line. (the new line will appear X mm away from the master line, following the base line)



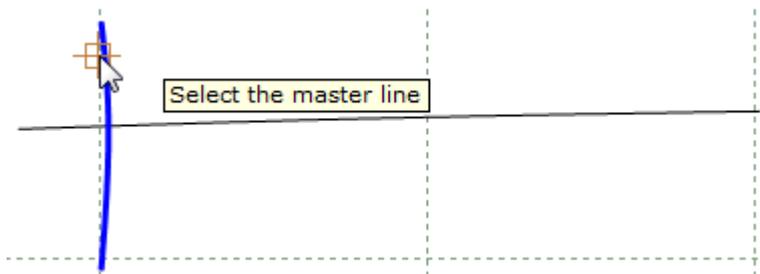
- The new line (green line) it was created 50mm from the master line.



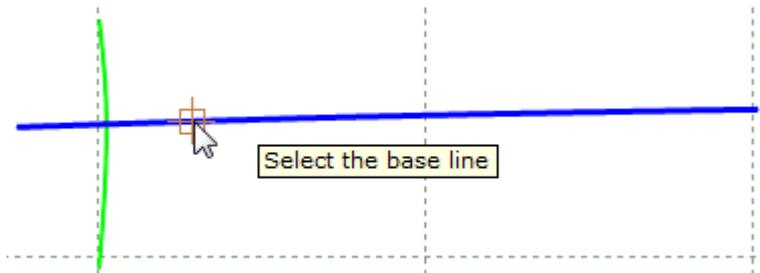
- To create a distance line dependence based on the length of other line, select the option

Dependent from the Tool options.

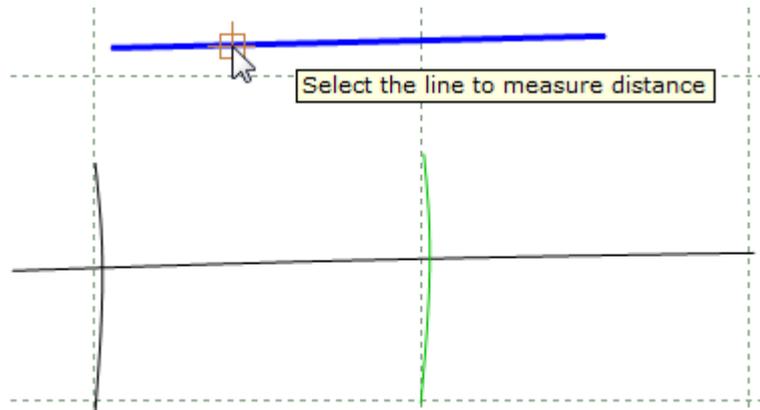
7. Select the master line.



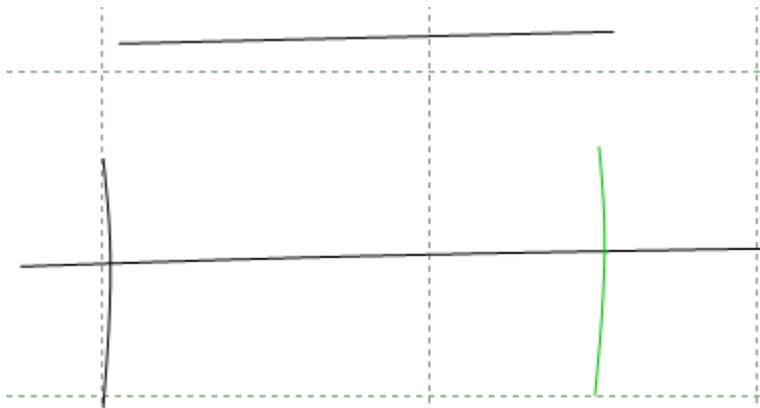
8. Select the base line.



9. Select the line to measure distance.



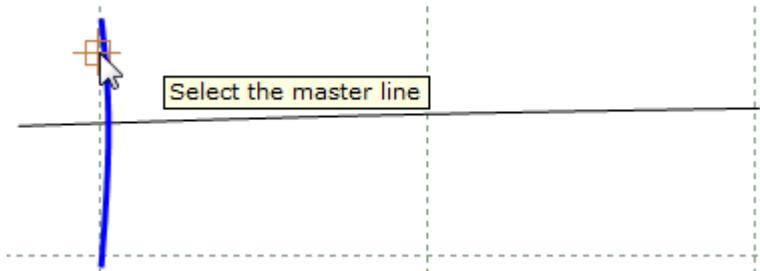
10. If we increment the "line to measure distance", the distance between the green line and the master line will be automatically readjusted.



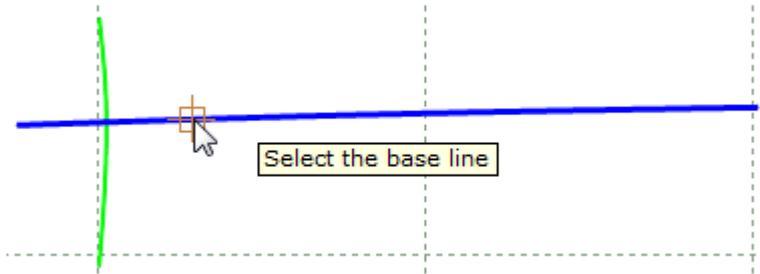
11. To create a distance line dependence based on a section, select the option **Dependent** from the

Section.

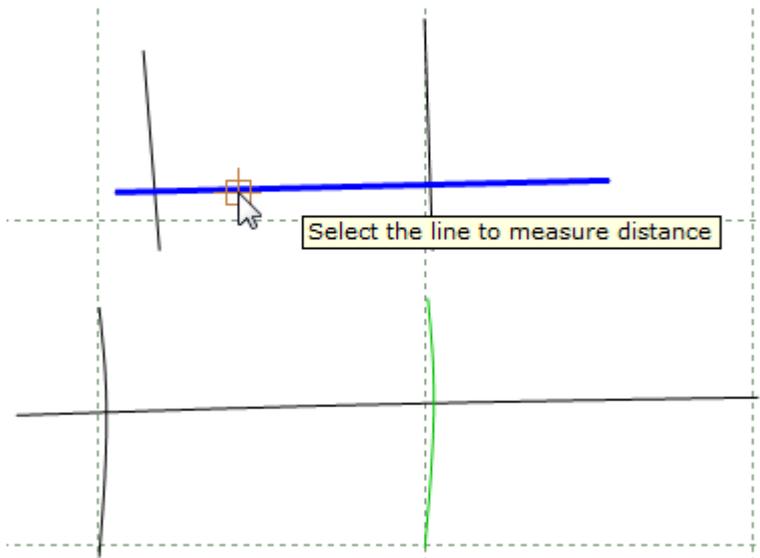
12. Select the master line.



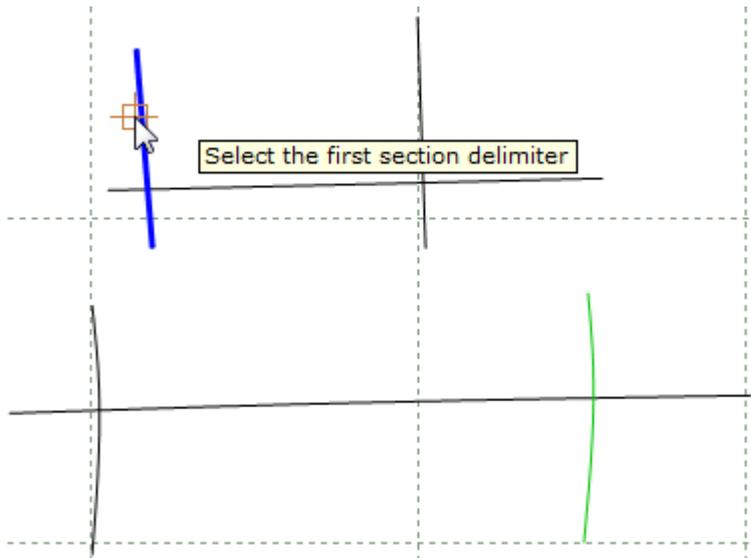
13. Select the base line.



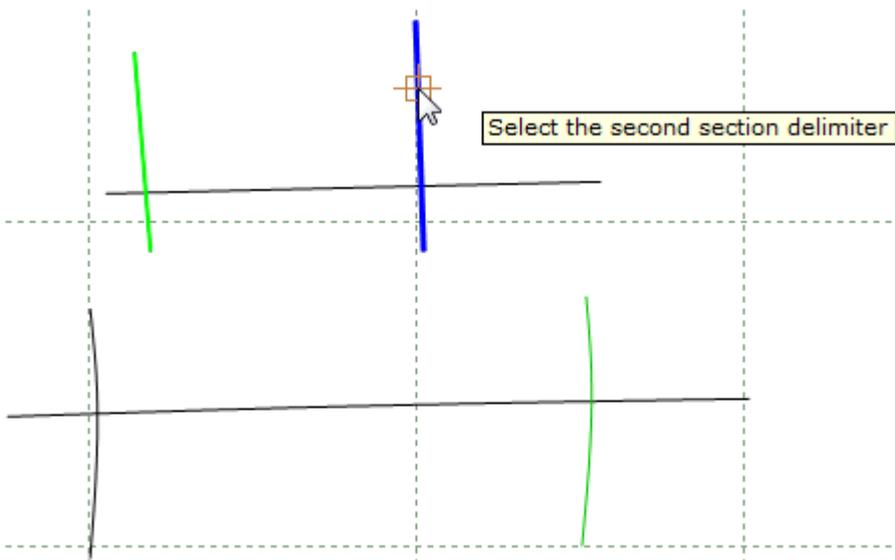
14. Select the line to measure distance.



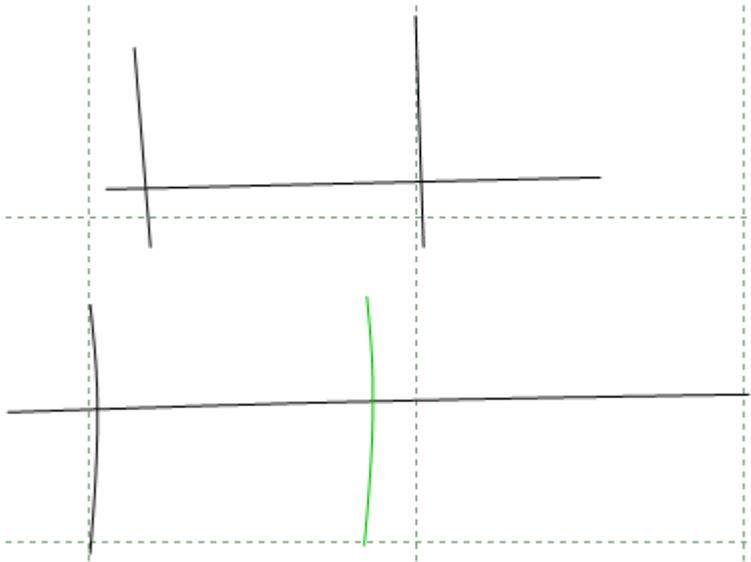
15. Select the first section delimiter.



16. Select the second section delimiter.



17. The new section is created equal to the main section, if the main section is changed, the new section will be readjusted, to ensure that the both sections have exactly the same length.



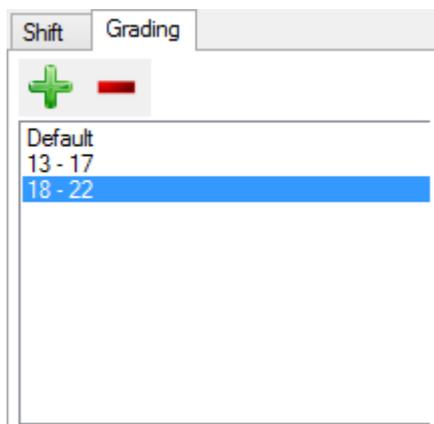
6.10.1 Distance Dependence - Grading

This option allows control distance dependence lines behavior while grading.

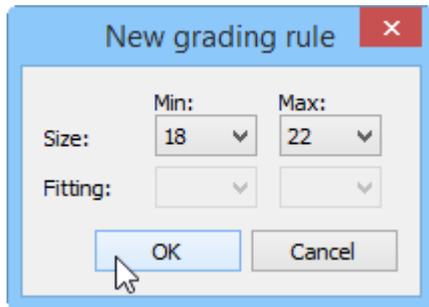
1. Select the distance dependence line. And edit them, by doing a right click and select **Change** from the contextual menu or pressing **F12** key.



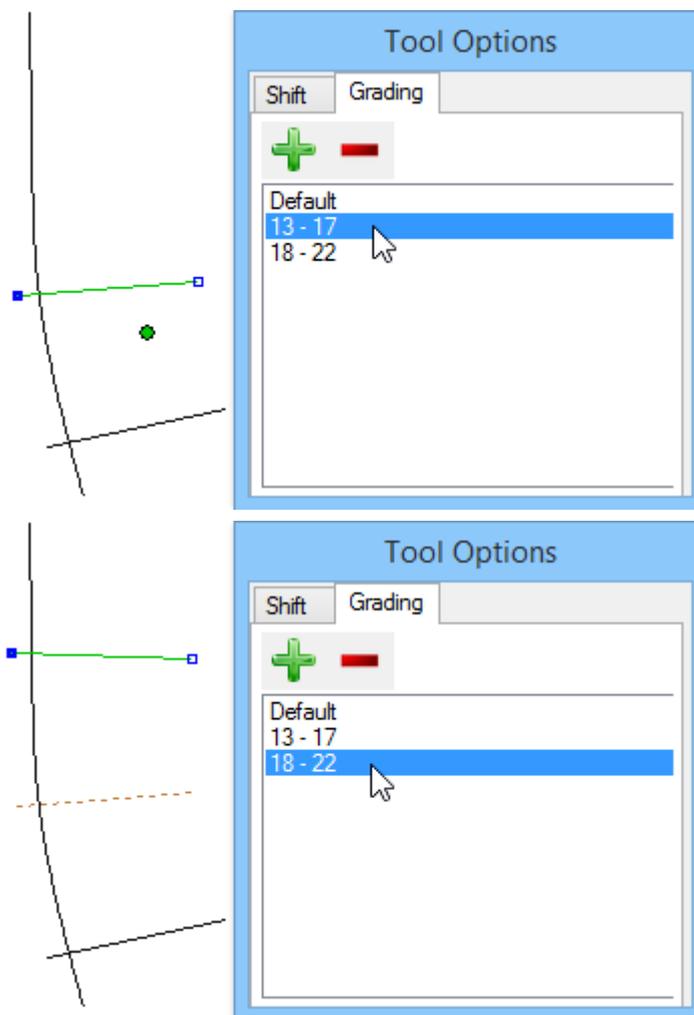
2. Select **Grading** tab from the tool option.



- To **Add** new grading groups press the button .
- Insert the minim and the maxim size, and press **Ok**.



- The new grading will be added to the list.
- Now configure a new value for the dependence line, and it will be applied to the grading rule.



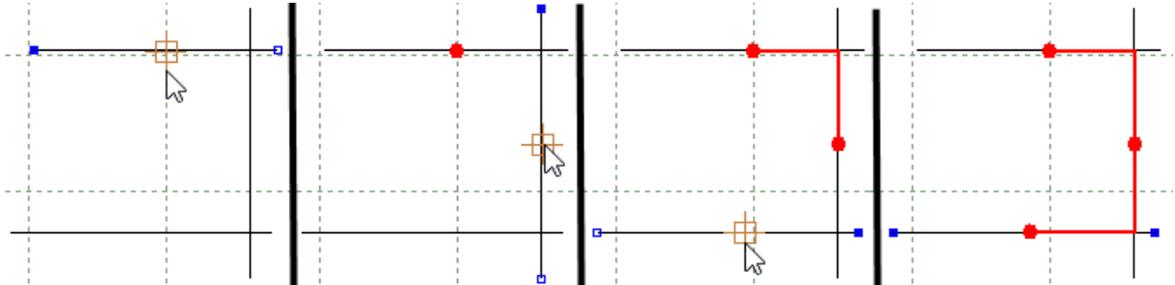
- To remove a grading rule, select it and press the button .

6.11 Operations - Stitch line

This tool allows automatic insertion of corners while stitching multiple lines to ensure smooth transitions.

1. To create a Stitch line, active the **Stitch line** option from the menu **Operations**.

2. Select the lines to stitch together. One click over each line successively.



3. Select **finish** from the contextual menu.

Finish	Enter
Cancel	Esc
Remove Last Pt	Backspace
Chamfer on next	C
Bezier on next	B
Arc on next	A

Finish - Allows to finish the stitch line.

Cancel - Allows to cancel the stitch line.

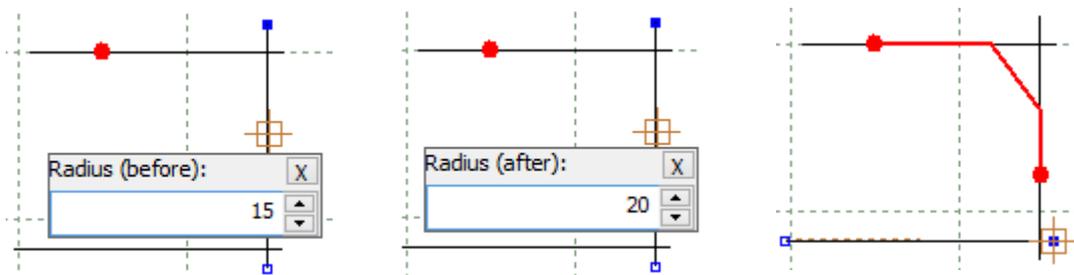
Remove Last Pt - Allows to remove the added last point.

Chamfer on next - Select this option to apply the type of corner **Chamfer** in the intersection between the selected line and the next selected line.

Select the first line and active the **Chamfer on next** option, from the contextual menu or pressing letter C in the keyboard. again.

Insert the **Radius(before)**, press Enter, then insert the **Radius (after)** and press Enter

Select the other line and the corner will be created with the selected radius.

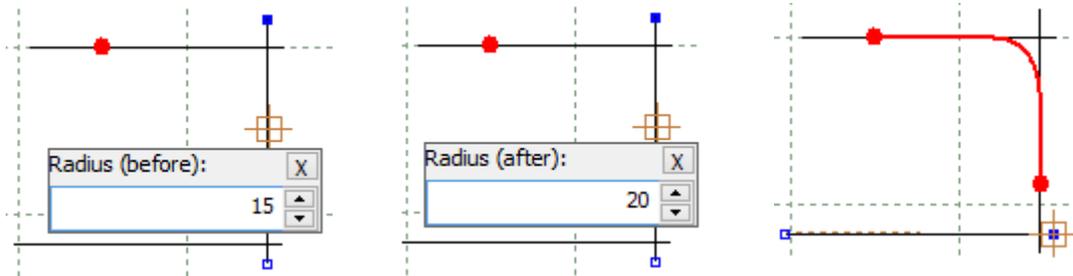


Bezier on next - Select this option to apply the type of corner **Bezier** in the intersection between the selected line and the next selected line.

Select the first line and active the **Bezier on next** option, from the contextual menu or pressing letter B in the keyboard.

Insert the **Radius(before)**, press Enter, then insert the **Radius (after)** and press Enter again.

Select the other line and the corner will be created with the selected radius.

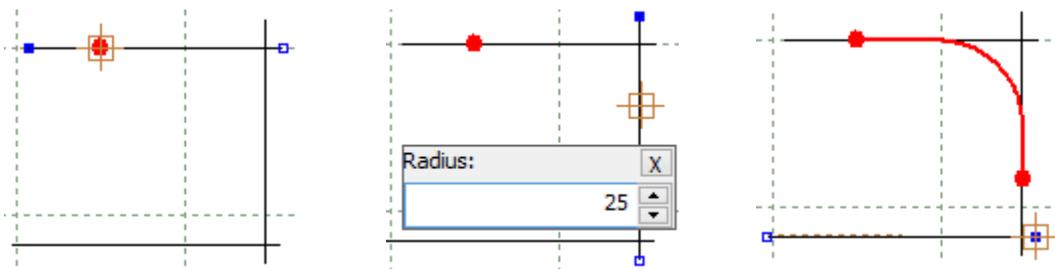


Arc on next - Select this option to apply the type of corner **Arc** in the intersection between the selected line and the next selected line.

Select the first line and active the **Arc on next** option, from the contextual menu or pressing letter A in the keyboard.

Insert the **Radius** and press Enter.

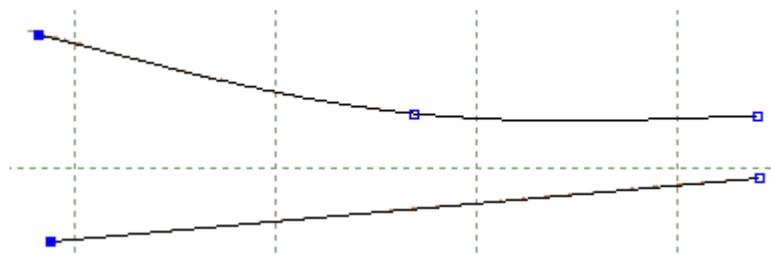
Select the other line and the corner will be created with the selected radius.



6.12 Operations - Bisection

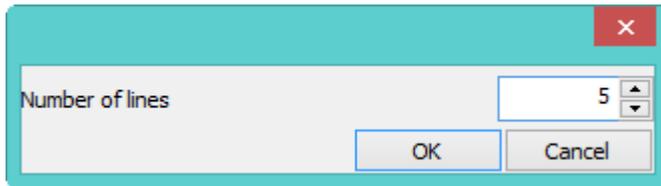
This option allows you to construct a lines that bisects two other lines.

1. Select the lines.

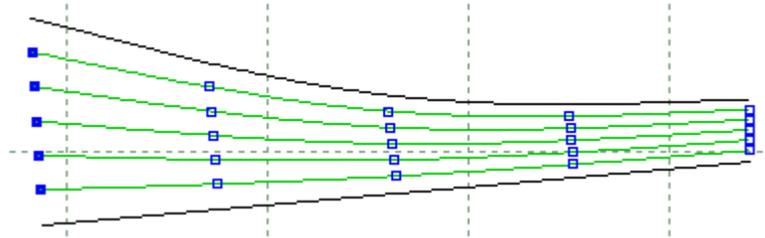


2. Select **Bisection** from the **Operations** menu.

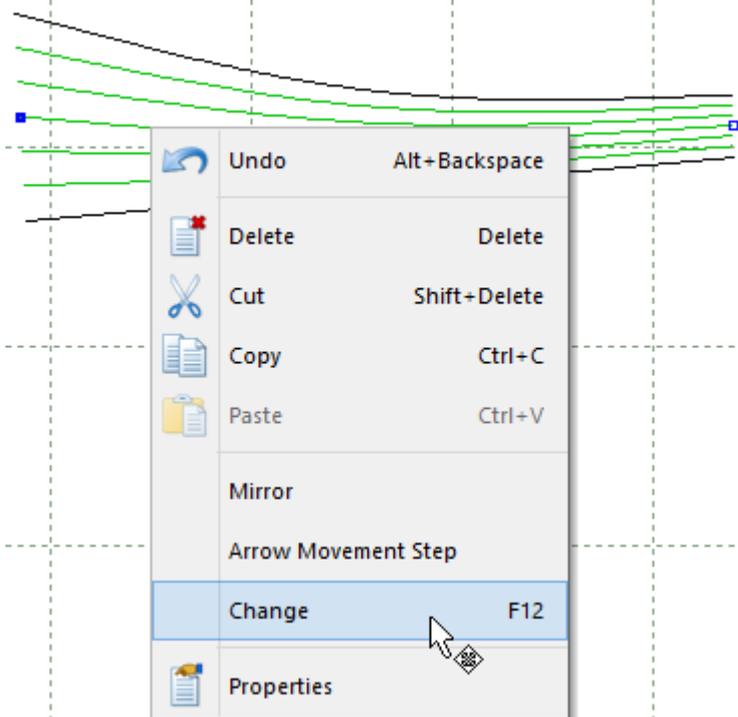
3. Insert the number of lines and click **OK**.



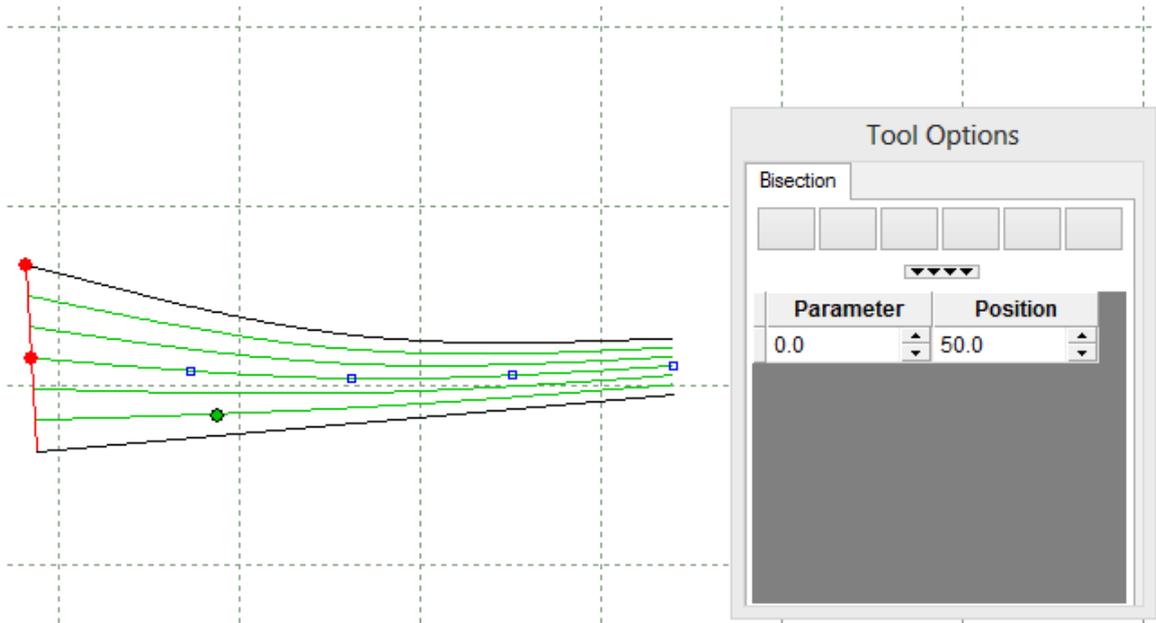
4. The lines will be created



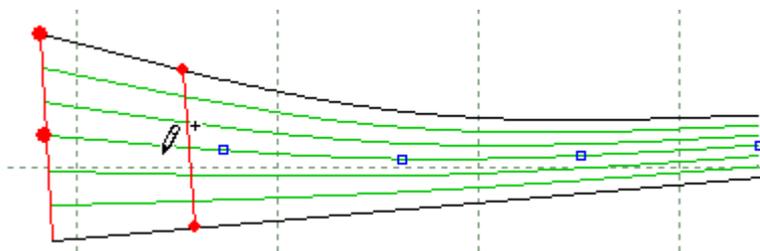
5. Select one line, do a right click and select **Change**



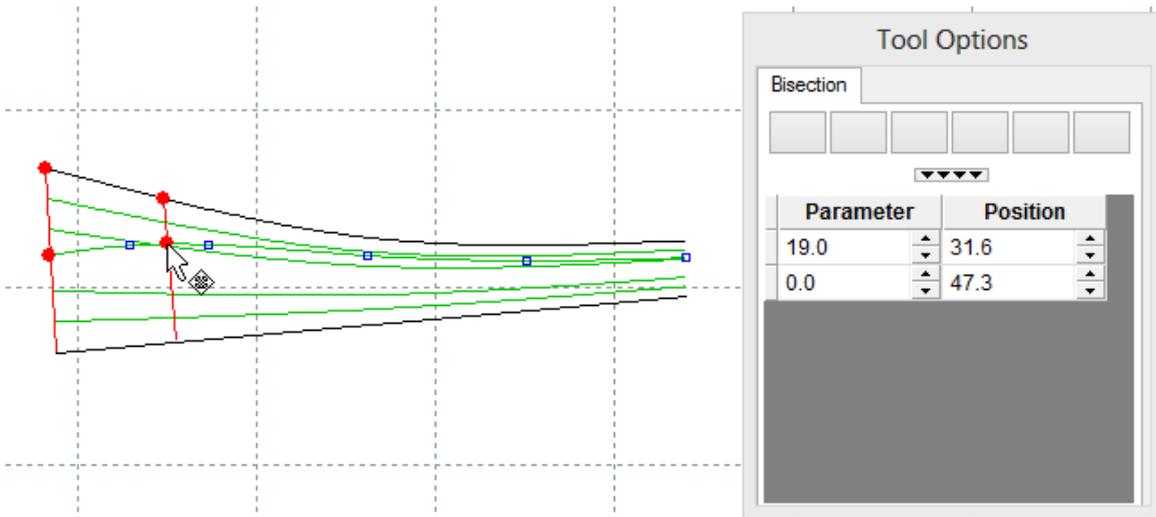
6. Now its possible to add new parameters to the line and change its position.



7. To add a new parameter press Shift, and do a left click over the desired place.



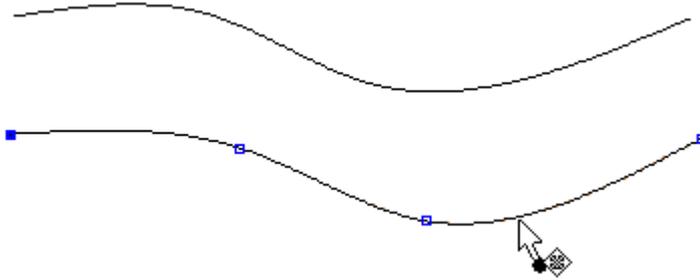
8. It's possible to change the parameter and its position by dragging the red points over the lines (middle red point to change position, top red point to change parameter), or by change the values in the **Tool Options**.



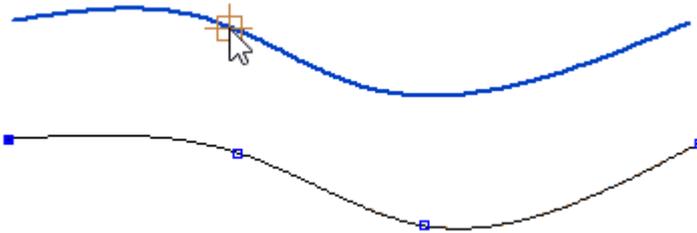
6.13 Operations - Anchor

This option creates a link between lines of different geometry; it also holds them constant relative to each other when graded.

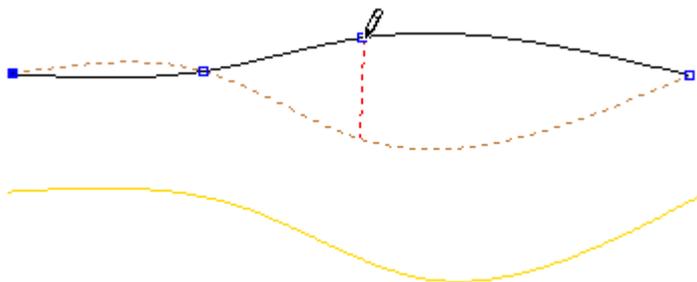
1. Select the anchor line.



2. Select **Anchor** from the **Operations** menu.
3. Select the master line



The anchor line turns yellow. Any edits done to the master line are reflected in the anchor line



4. The lines will remain a constant distance apart when graded (the length will grade).

6.14 Operations - Release

This option breaks the dependency to a master line.

1. Select dependent line(s).

2. Select **Release** from the **Operations** menu . Any dependency to a master line is broken.

6.15 Operations - Release All

This option breaks the dependency to a master line and lines dependent from the current line.

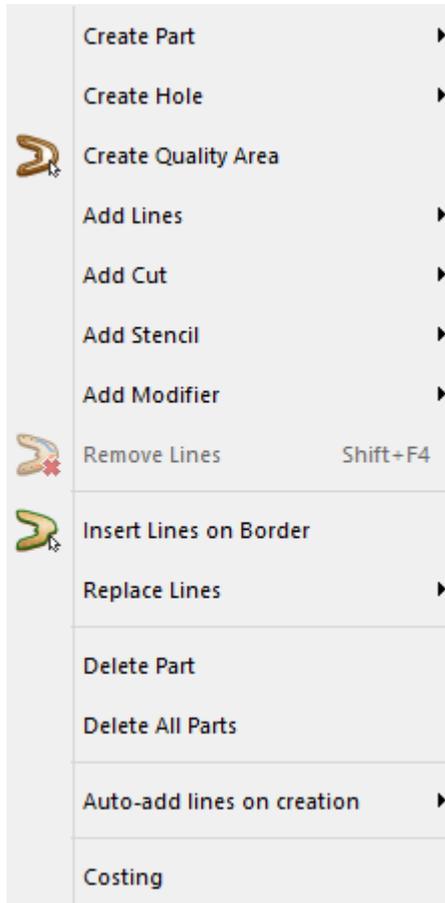
1. Select dependent line(s).
2. Select **Release All** from the **Operations** menu. Any dependency to a master line or slave lines are broken.

Part



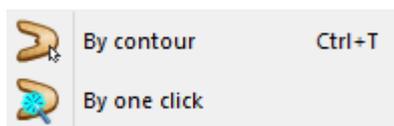
7 Parts Overview

This menu lets you create parts and add holes, punches and generally edit parts.

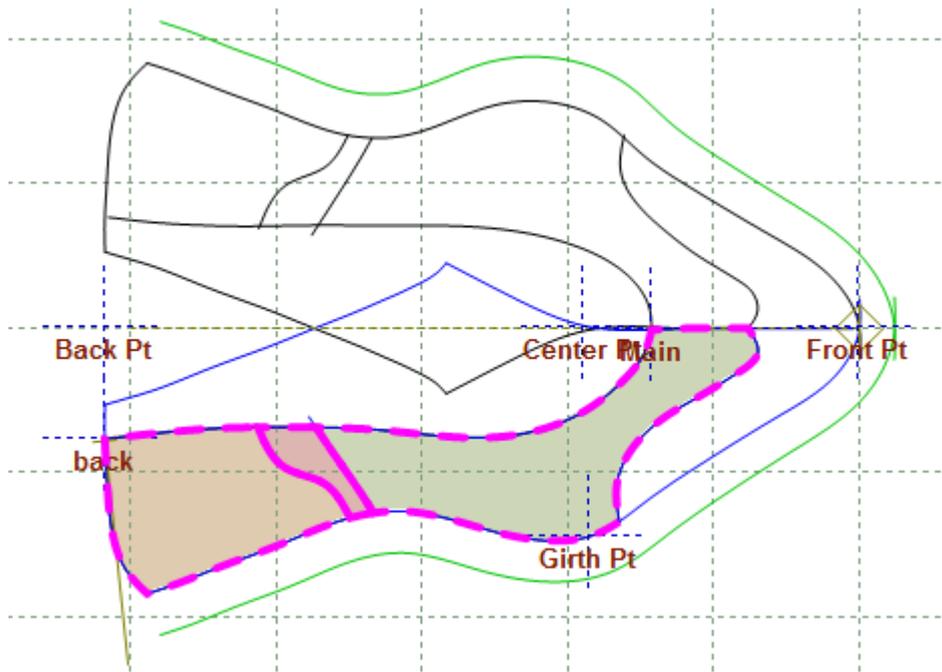


7.1 Parts - Create Part

This menu lets you to choose between create a part **by contour** or **by on click**.



Note: Enhanced part collection tool with information about last collected parts.



7.1.1 Parts - Create Part - By Contour

This is the same as clicking the **Create Part**  button on the **Parts** toolbar or pressing **Ctrl+T**



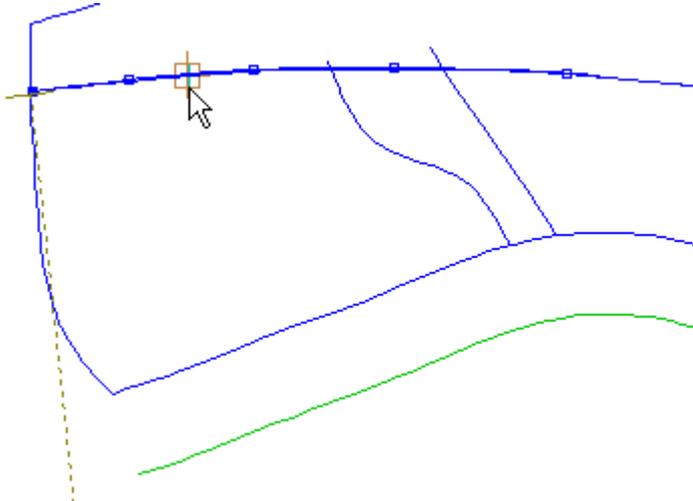
- Parts can be created very quickly using hot keys and menu options.
- Treatments (for example, overlaps, folds and seams) can be added during part creation.
- If you work on a folded shell, centre notches can be added automatically.
- Inside indicators can be applied automatically.
- The software is designed to have some built in intelligence. So, if a treatment is applied to one side of a folded part that joins the other side of the part, the other side will have the same treatment applied to it.

The following examples show you how to create some of the common types of parts.

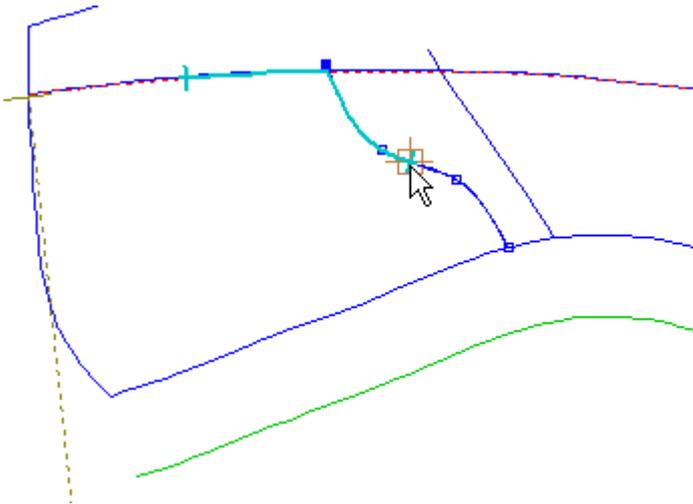
- Creating a part with no treatments or folds
- Creating an unfolded mirrored part
- Creating an unfolded non-mirrored part
- Creating parts with treatments
- Tips and Tricks

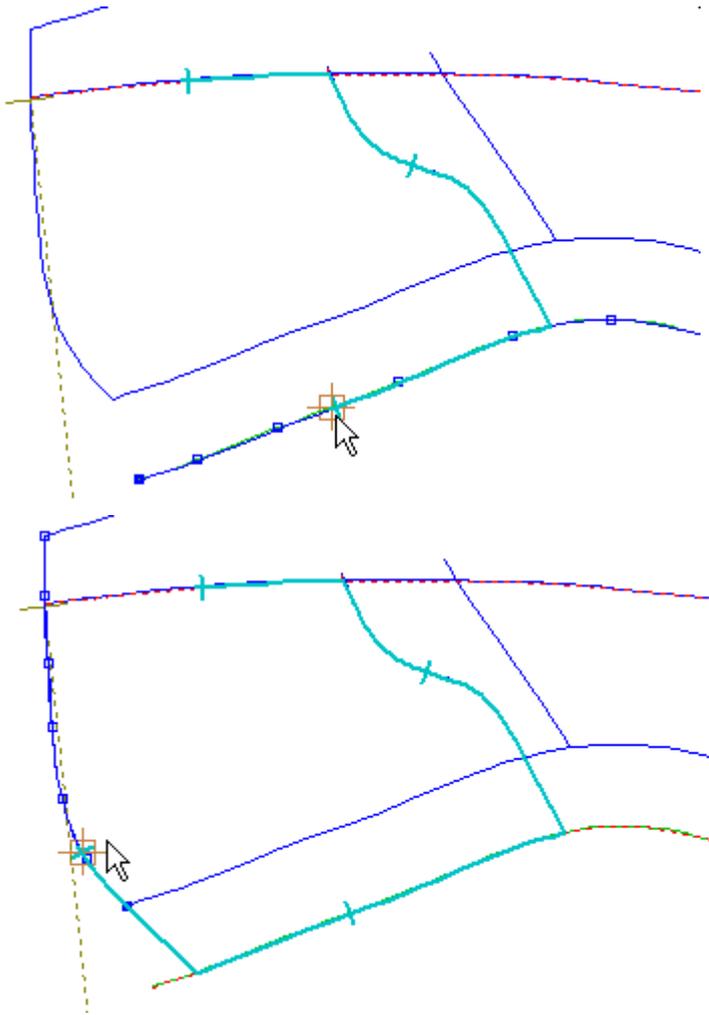
7.1.1.1 Creating a part with no treatments or folds

1. Select **By contour** from **Create Part** in the **Parts** menu.
2. Start to define the boundary of the part using the left mouse button.



3. Continue to select lines going in the same direction. The direction is not important as long as within each part you move in the same direction.



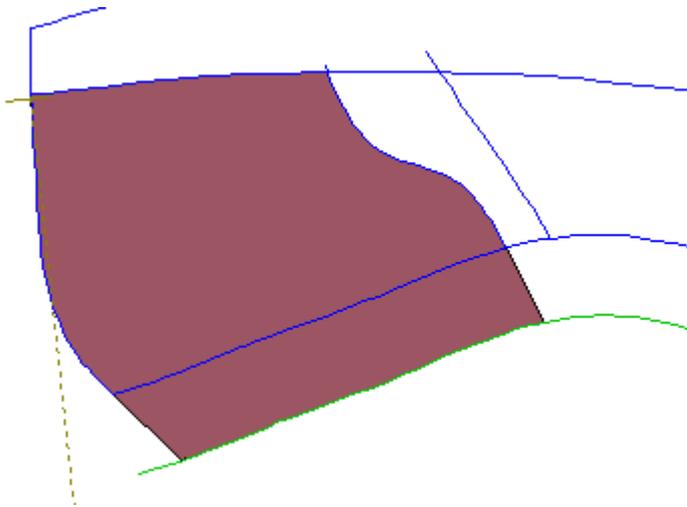


4. Click the right mouse button to display the following menu.

Finish	Enter
Finish (close with reflection)	
Remove Last	
Switch Side	
Auto insert corner on next line	
Side Indicator on Next	
None on next	
Overlap on next	
Fold on next	
Trim on next	
Seam on next	

5. Select **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

The part will be highlighted.



- **Remove Last** - If you make a mistake when selecting a line, use this option to undo the last selection. You can then pick another line.

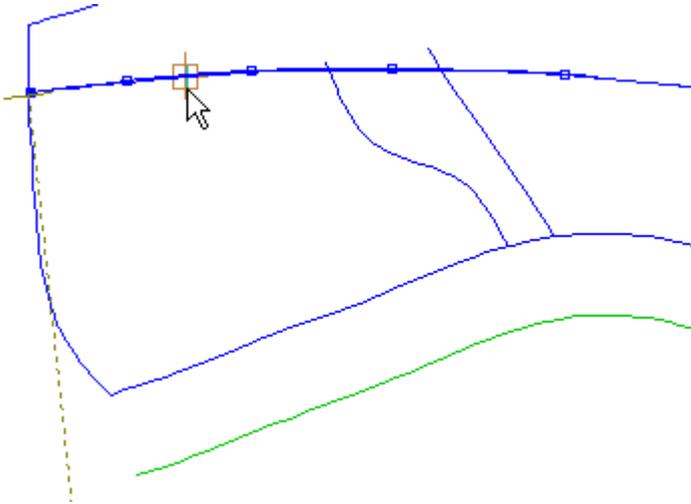
6. The part will be added to the Parts/Library Bar.



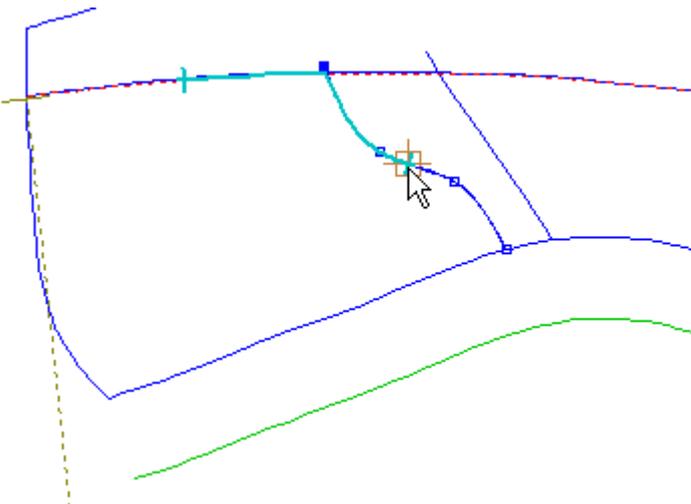
Note: The part will always go to the first empty space in the parts toolbar.

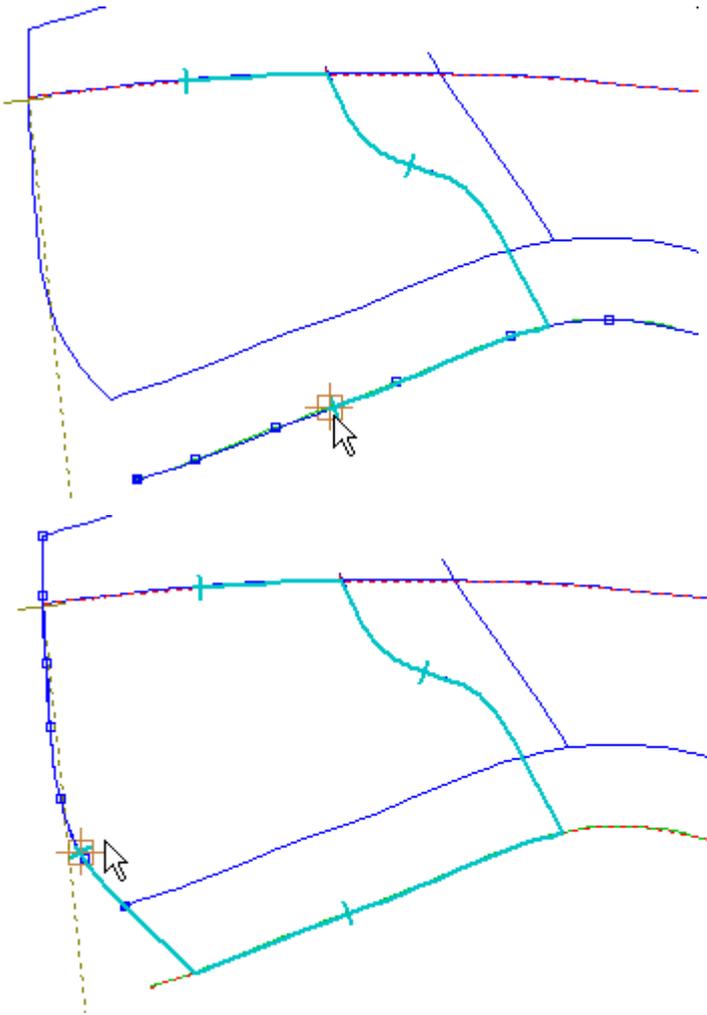
7.1.1.2 Creating an unfolded mirrored part (1 axis)

1. Select **By contour** from **Create Part** in the **Parts** menu.
2. start to define the boundary of the part using the left mouse button. Select the first line next to the current axis that will be used to unfold the part.



3. continue to select lines going in the same direction.

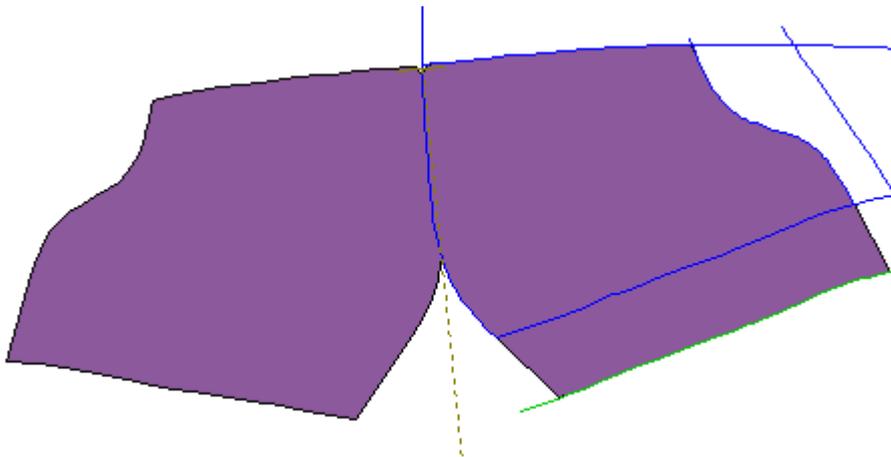




4. click the right mouse button to display the following menu.

Finish	Enter
Finish (close with reflection)	
Remove Last	
Switch Side	
Auto insert corner on next line	
Side Indicator on Next	
None on next	
Overlap on next	
Fold on next	
Trim on next	
Seam on next	

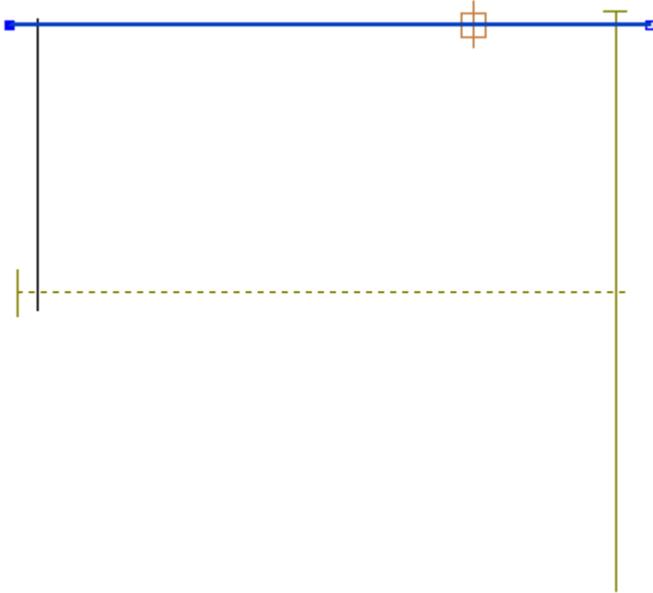
5. select **Finish (close part with reflection)** to complete the part. The part will be highlighted.



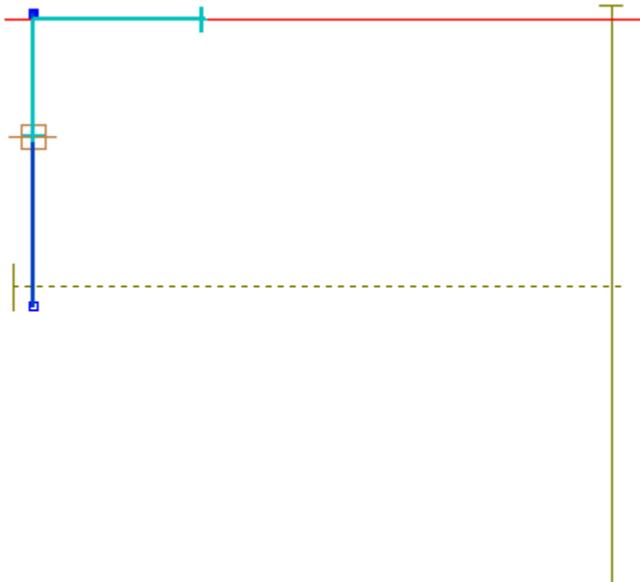
7.1.1.3 Creating an unfolded mirrored part (2 axis)

Example in how to create an unfolded mirrored part with two axis.

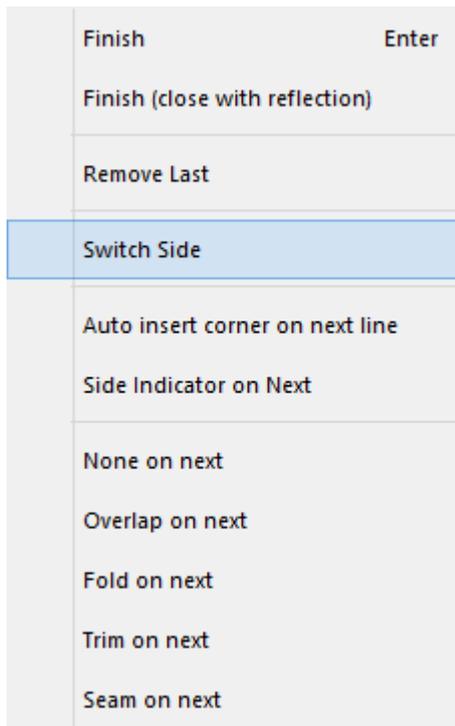
1. Select **By contour** from **Create Part** in the **Parts** menu.
2. Start to define the boundary of the part using the left mouse button. Select the first line next to the current axis that will be used to unfold the part.



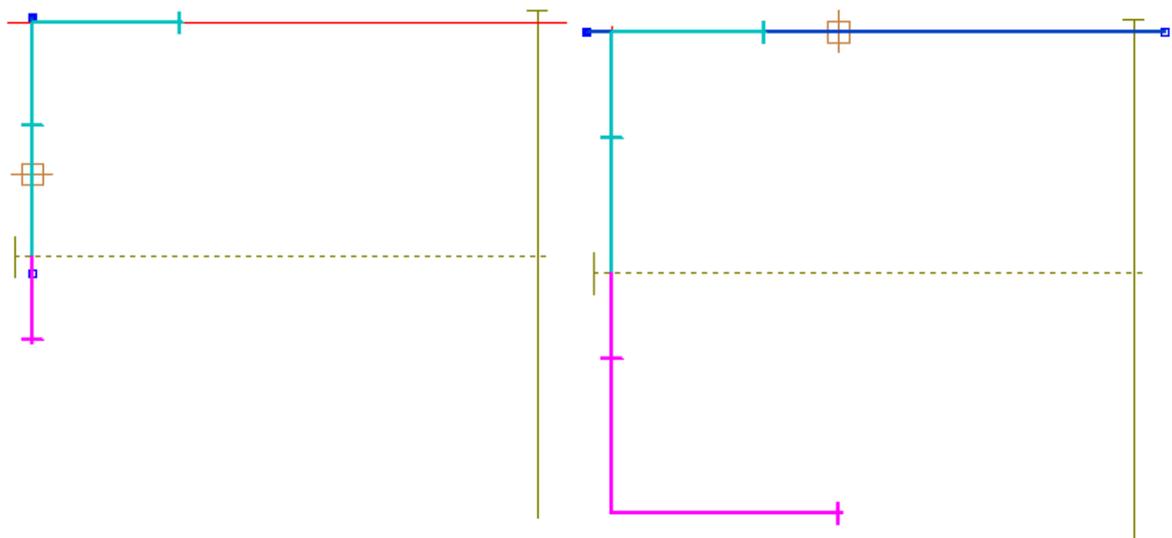
3. Continue to select lines going in the same direction.



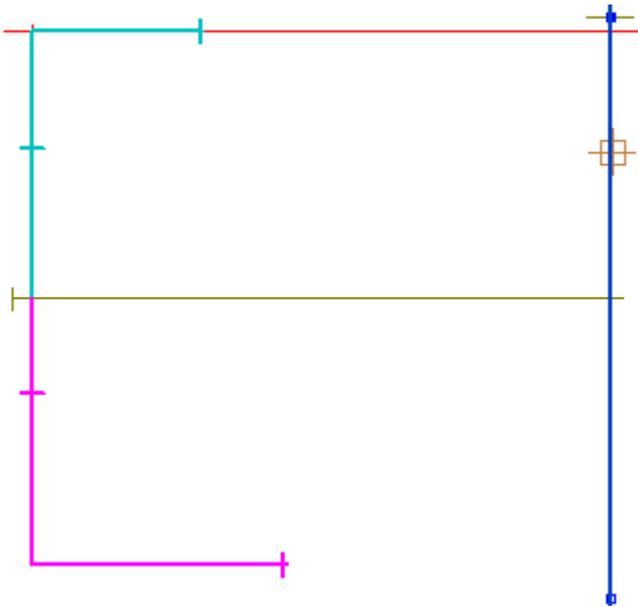
4. Click in the right mouse button to display the contextual menu. And select the option **Switch Side**.



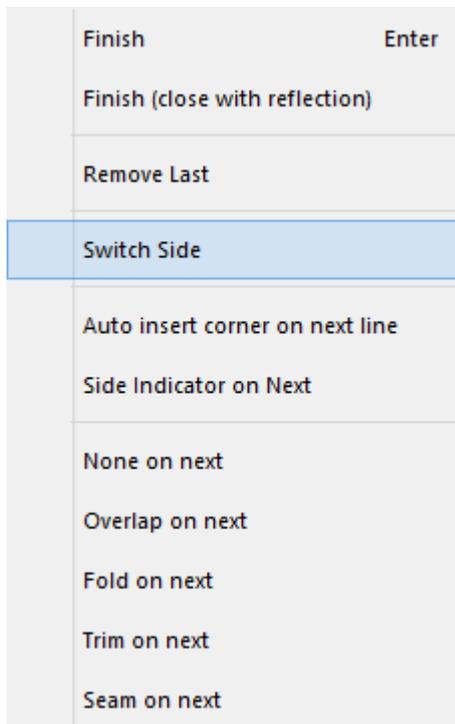
5. Continue to select lines going for the other side.



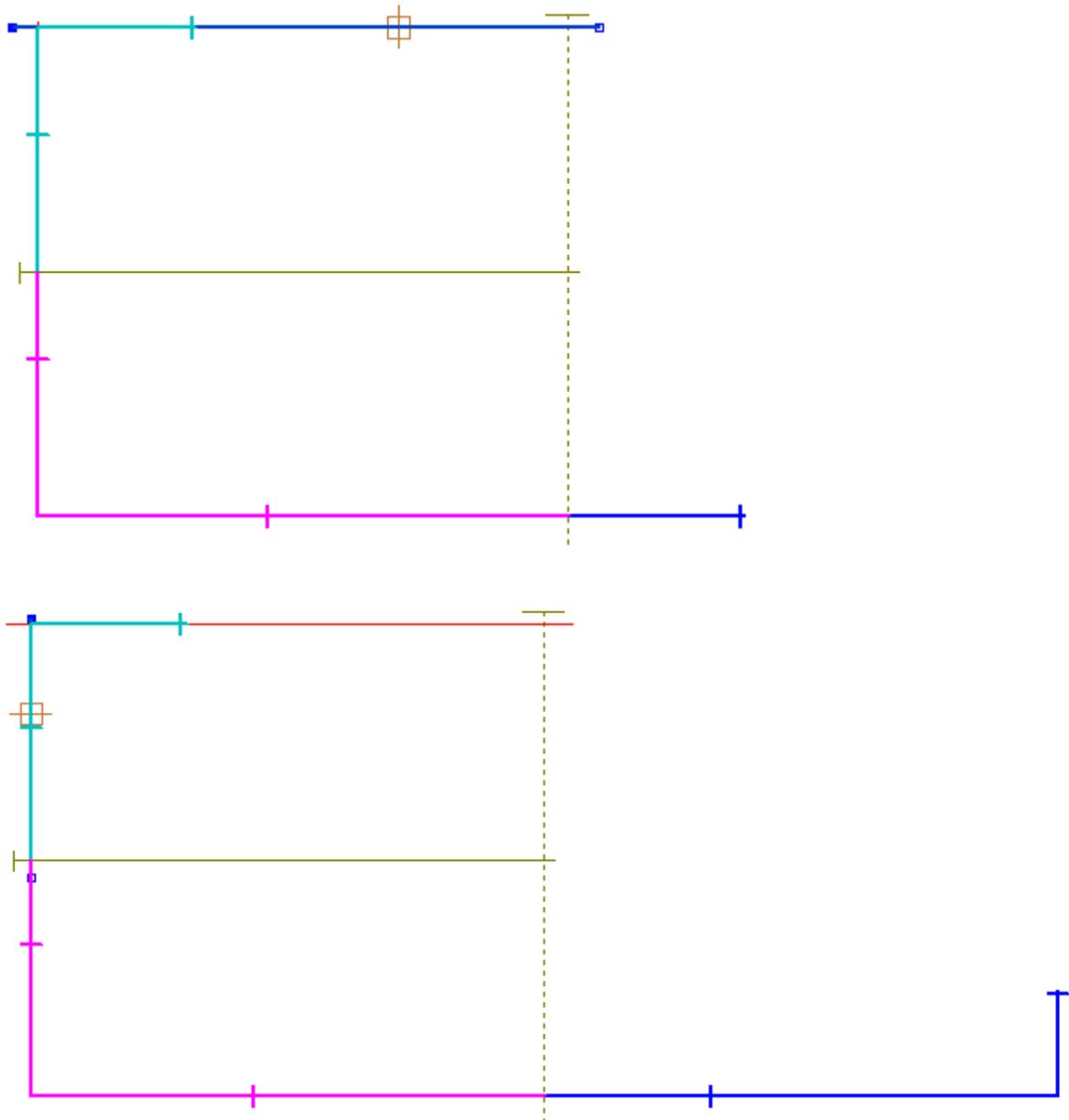
6. Place the cursor over second axis and press **CTRL+E** to active it.



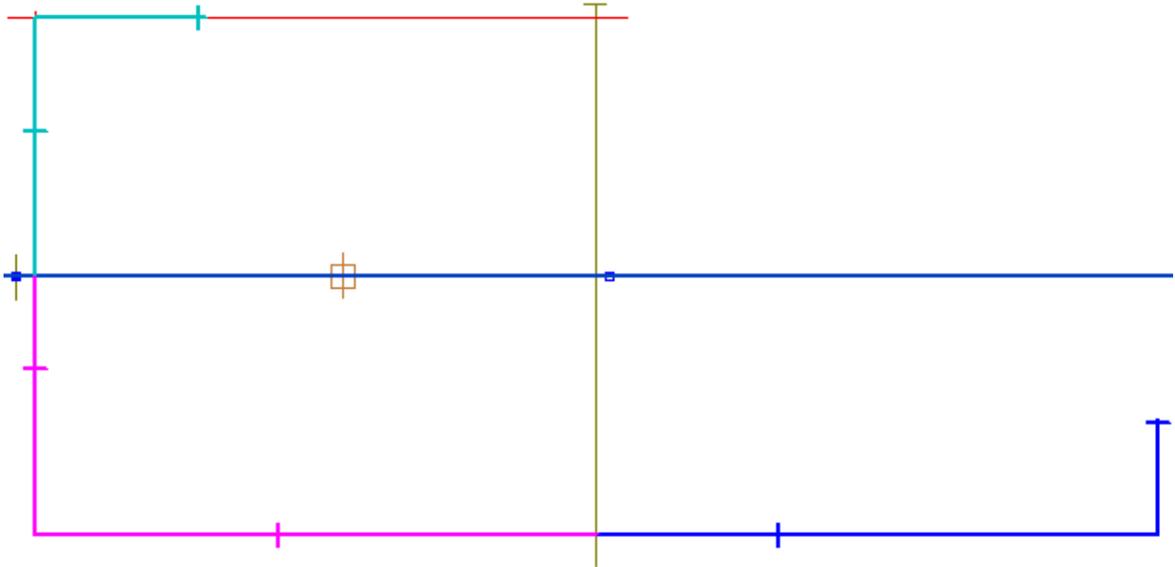
7. Click the right mouse button to display the following menu.



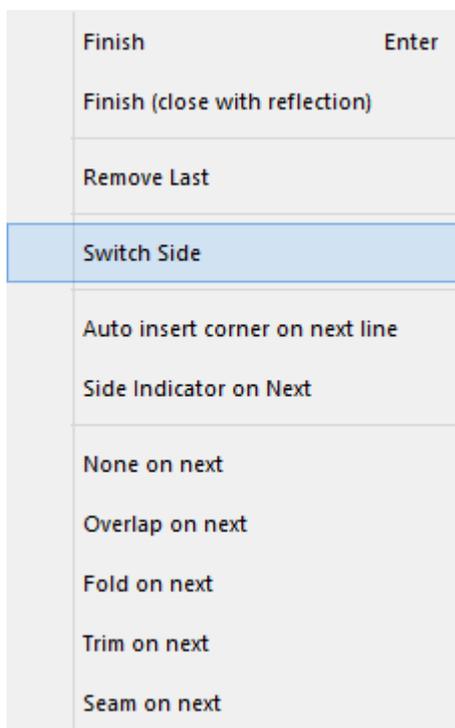
8. Continue to select lines going for the other side.



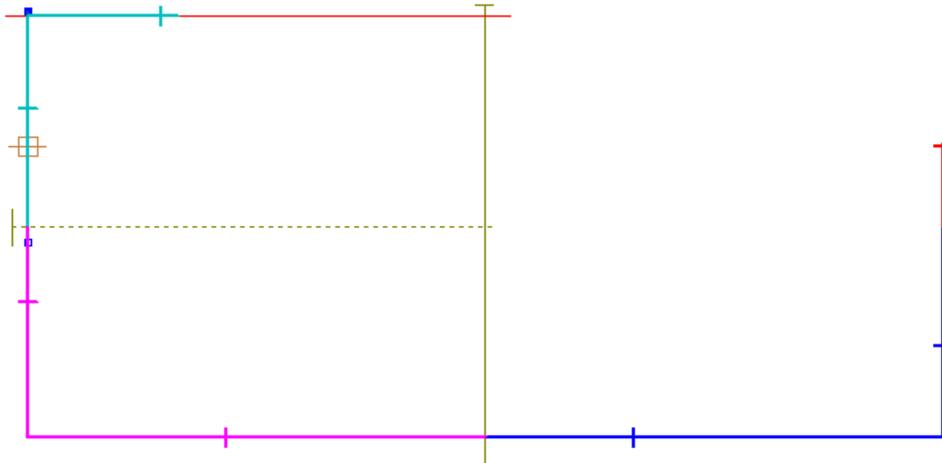
9. Place the cursor over the other axis and press **CTRL+E** to active it.



10. Click the right mouse button to display the following menu.



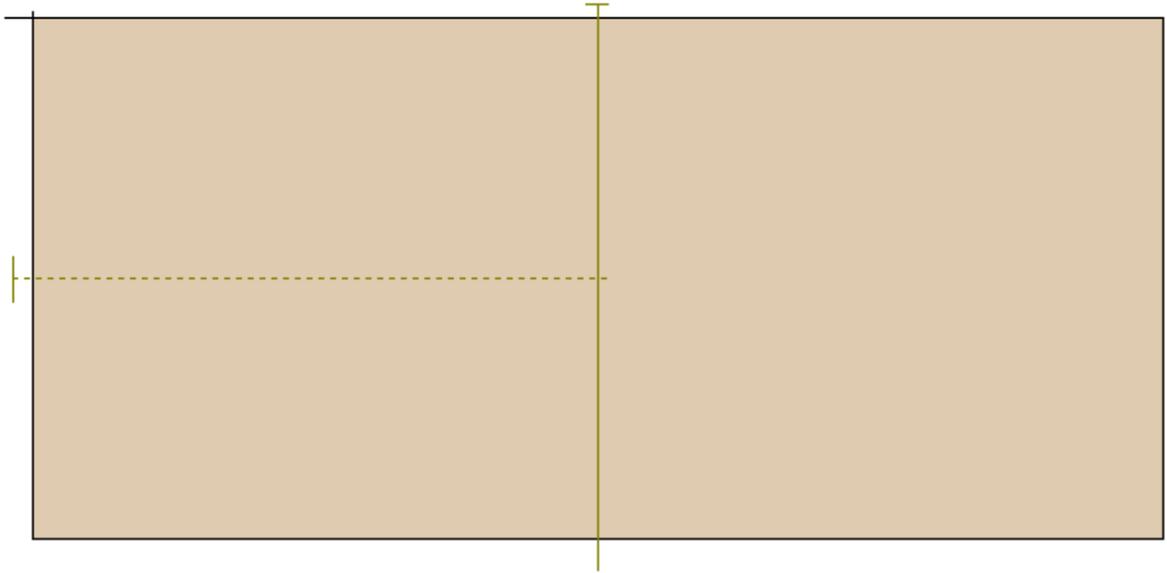
11. Continue to select lines going for the other side.



12. Click the right mouse button to display the contextual menu.

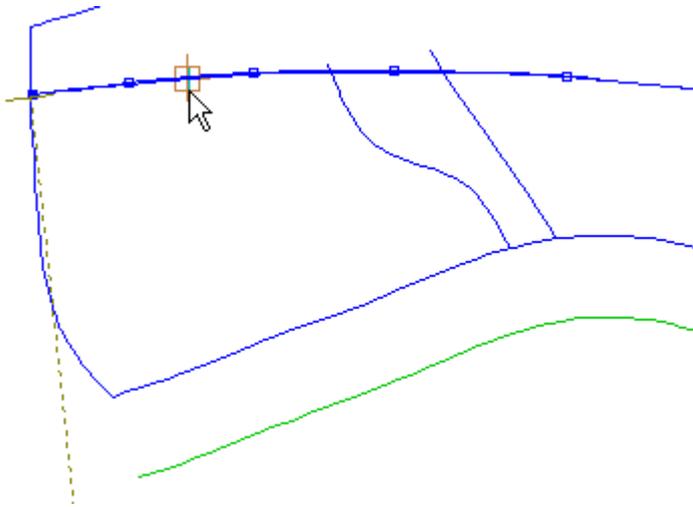
Finish	Enter
Finish (close with reflection)	
Remove Last	
Switch Side	
Auto insert corner on next line	
Side Indicator on Next	
None on next	
Overlap on next	
Fold on next	
Trim on next	
Seam on next	

13. Select **Finish** to complete the part. The part will be highlighted.

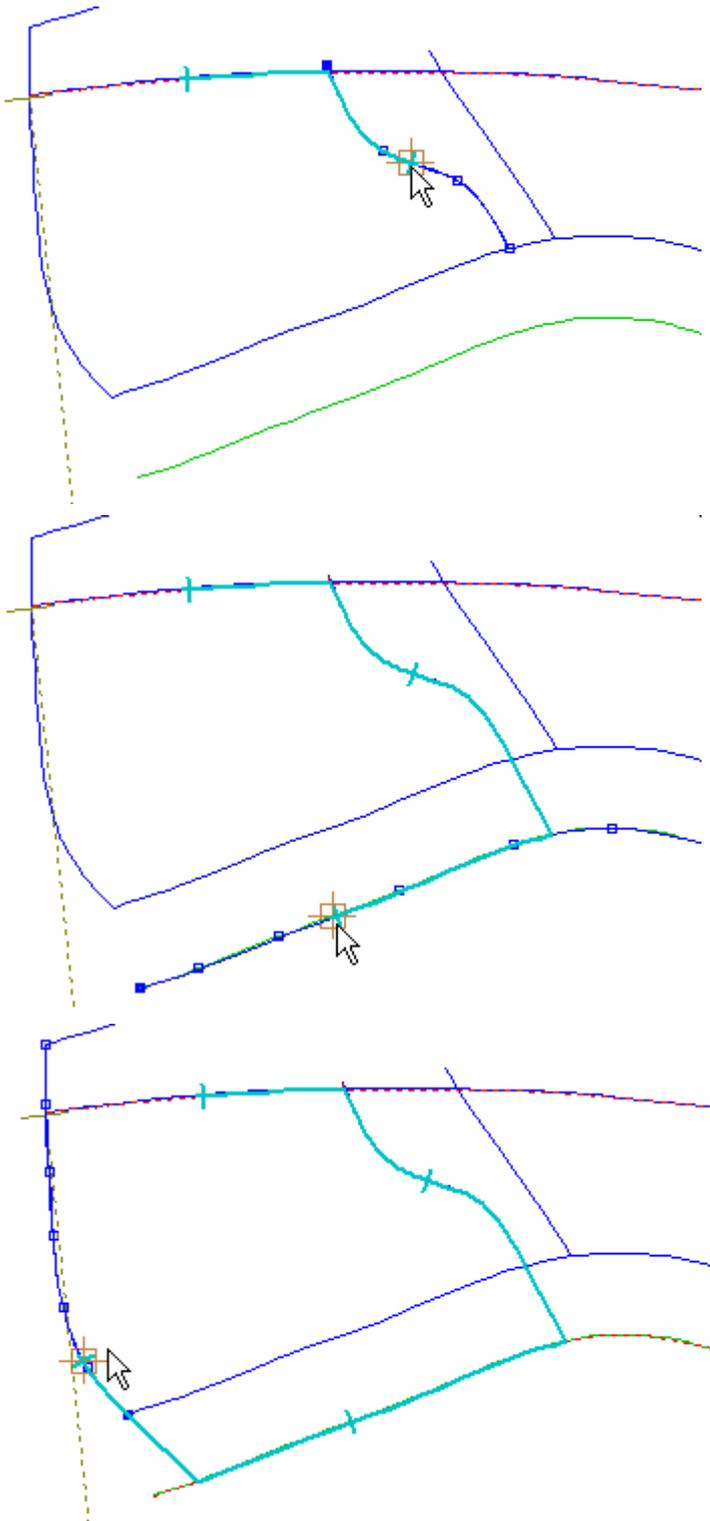


7.1.1.4 Creating an unfolded non-mirrored part

1. Select **By contour** from **Create Part** in the **Parts** menu.
2. Start to define the boundary of the part using the left mouse button. Select the first line next to the current axis which will be used to unfold the part.



3. Continue to select lines going in the same direction.



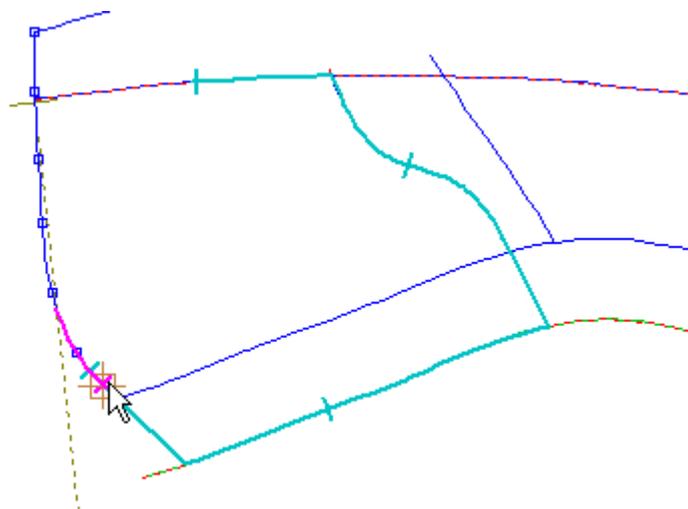
4. Use the right mouse button to display this context menu and select **Switch Side**

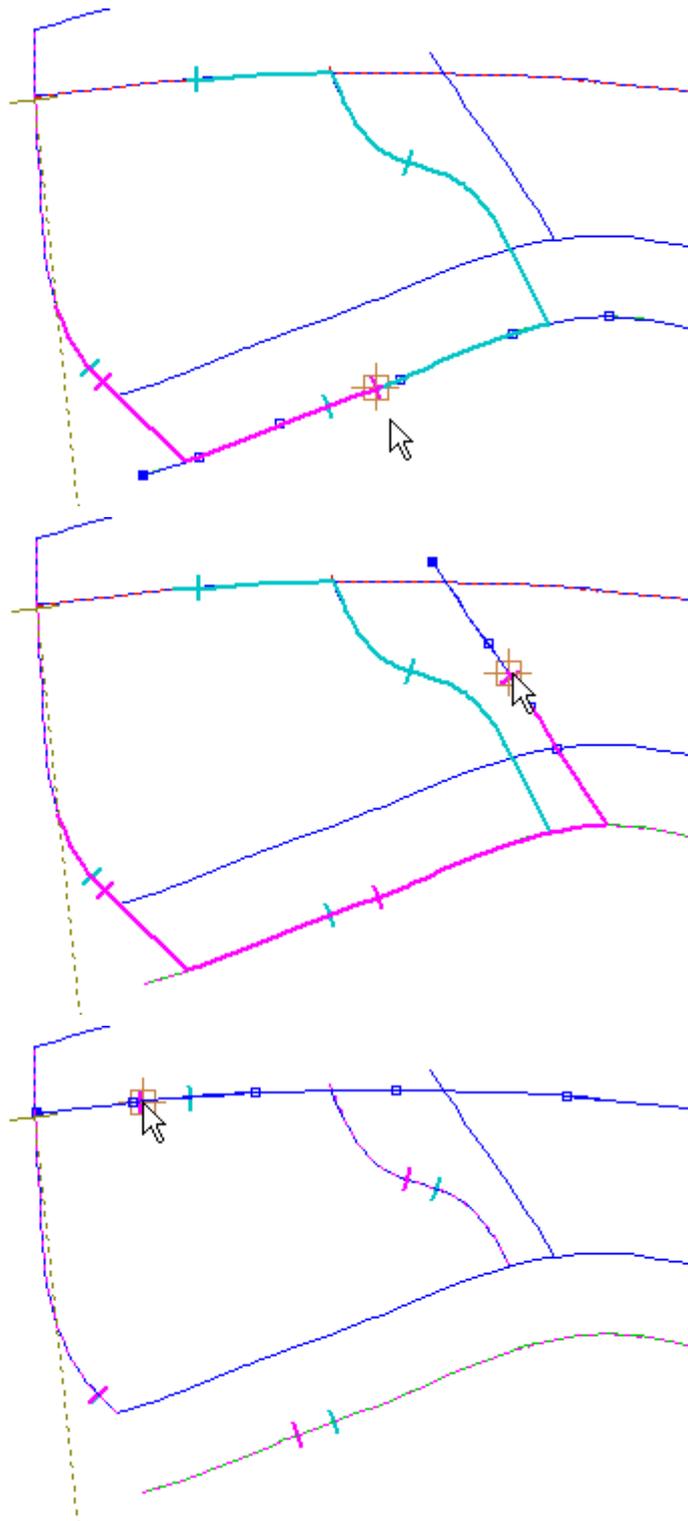
Finish	Enter
Finish (close with reflection)	
Remove Last	
Switch Side	
Auto insert corner on next line	
Side Indicator on Next	
None on next	
Overlap on next	
Fold on next	
Trim on next	
Seam on next	

(Tip: If you press the **Ctrl** key when selecting the next point you do not need to select **Switch Side** from the menu.)

Now you can pick the other side of the part (in reverse order).

5. Continue picking the boundary



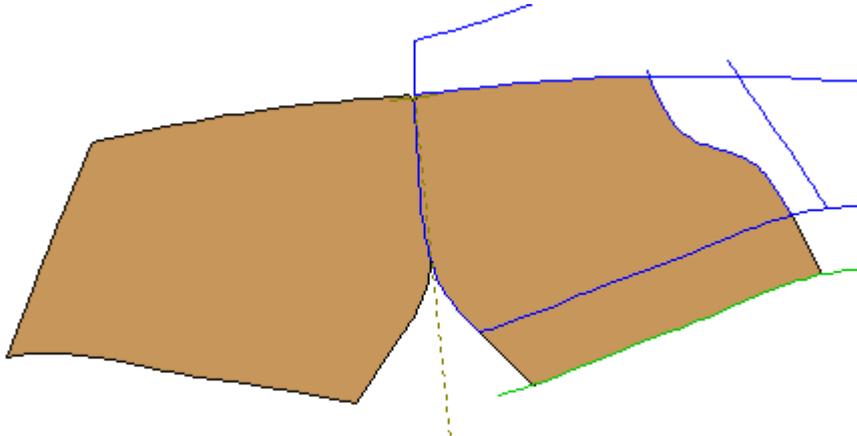


6. Click the right mouse button to display the following context menu.

Finish	Enter
Finish (close with reflection)	
Remove Last	
Switch Side	
Auto insert corner on next line	
Side Indicator on Next	
None on next	
Overlap on next	
Fold on next	
Trim on next	
Seam on next	

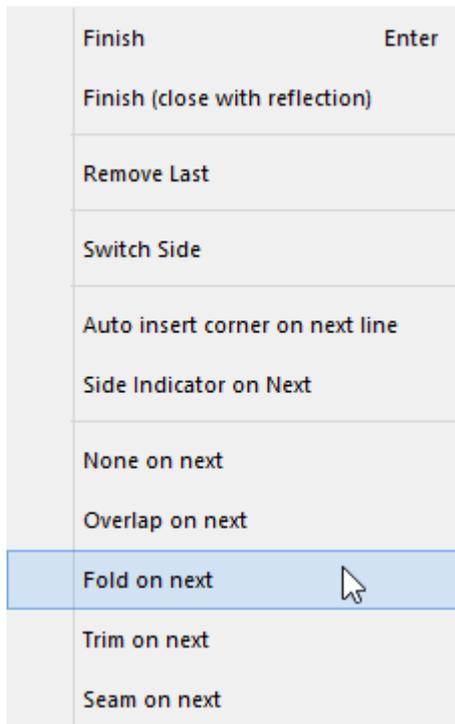
7. Click **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

The part will be highlighted.



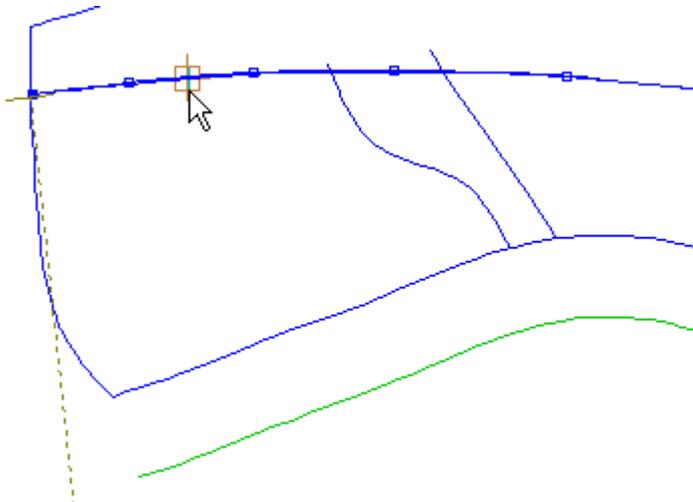
7.1.1.5 Creating parts with treatments

1. Select **By contour** from **Create Part** in the **Parts** menu.
2. click the right mouse button when in the graphics window and select **Fold on next**

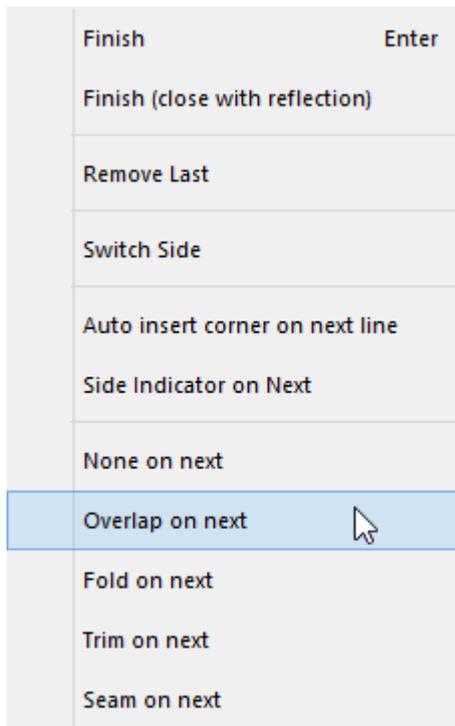


This is the same as pressing the hot key **F**

3. start to define the boundary of the part using the left mouse button.

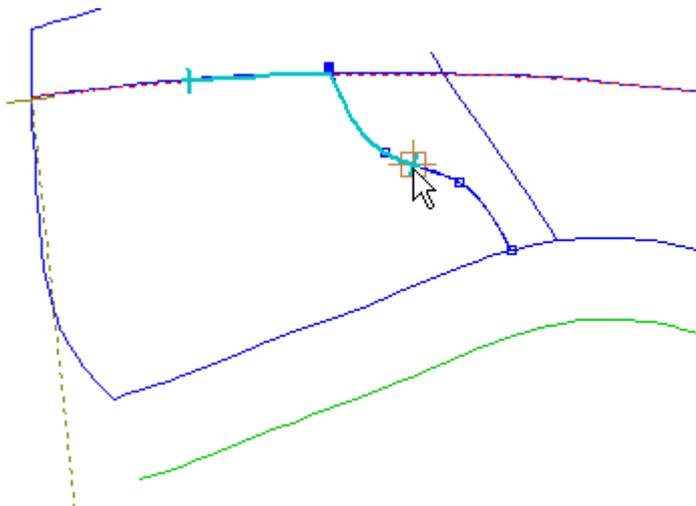


4. before selecting the next line, click the right mouse button and select **Overlap on next**

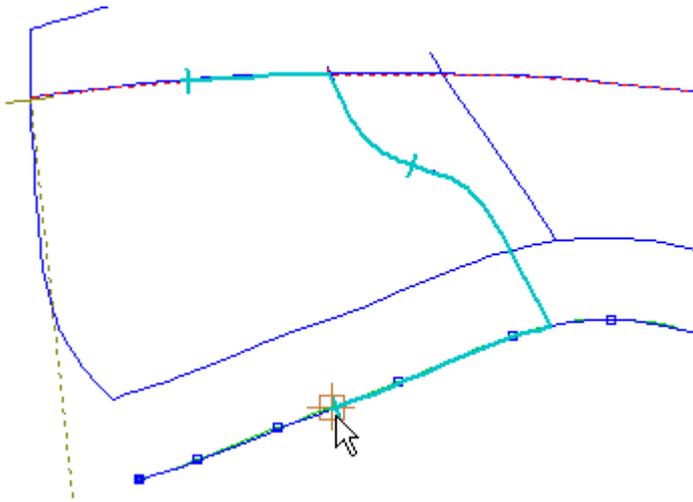


This is the same as pressing the hot key **O**

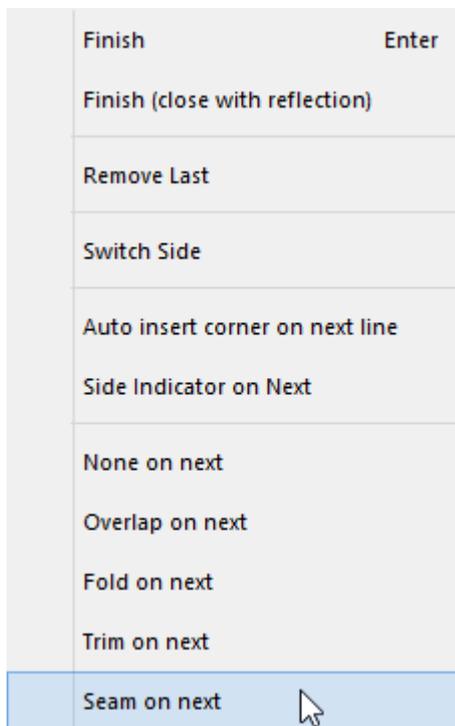
5. select the next line.



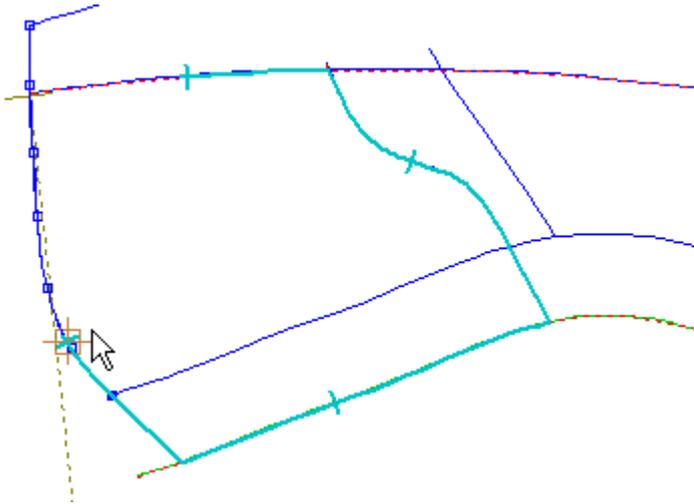
6. select the gross feather edge. If you don't select a treatment, no offset or corner will be applied (The default is zero offset and an ordinary corner).



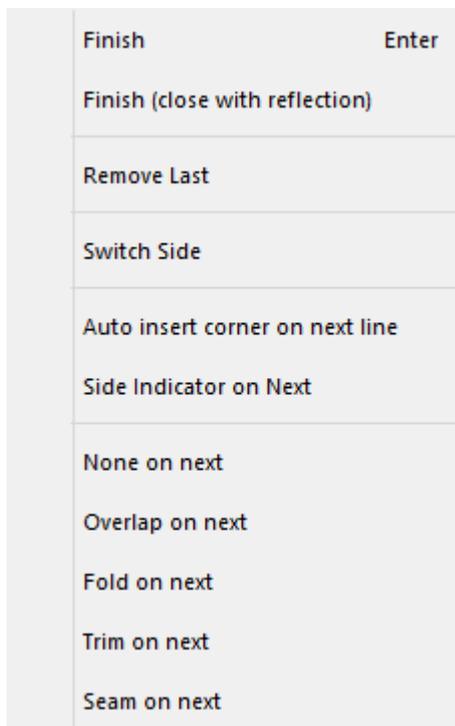
7. before selecting the heel curve click the right mouse button and select **Seam on next**



This is the same as pressing hot key **S**

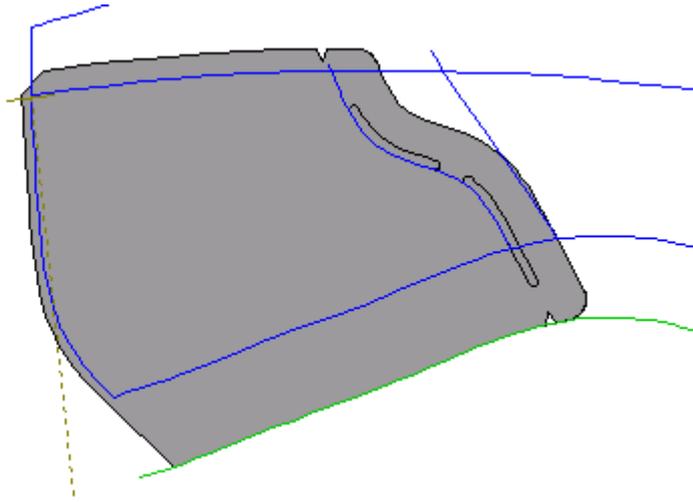


8. click the right mouse button to display the following menu.



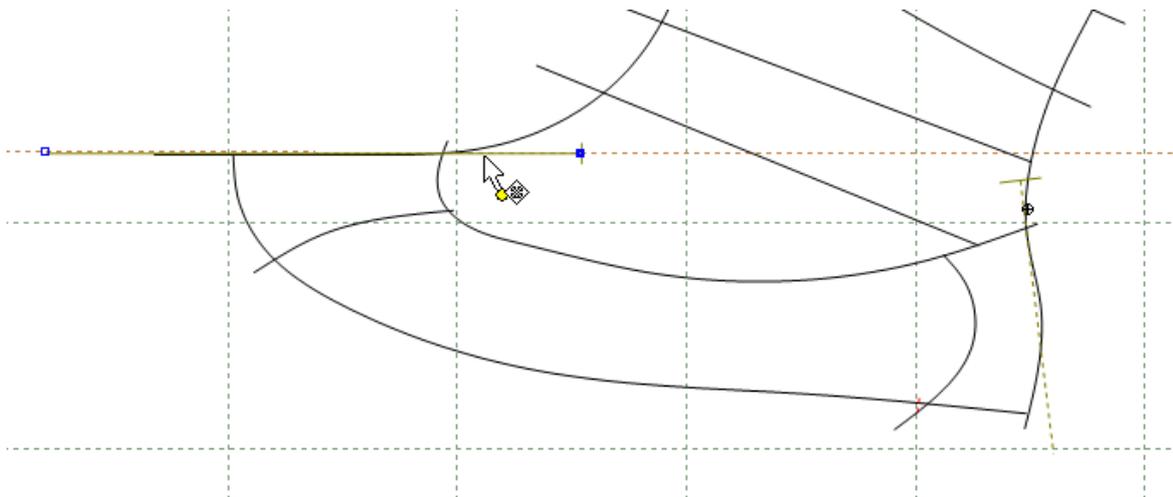
9. click **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

The part will be highlighted.



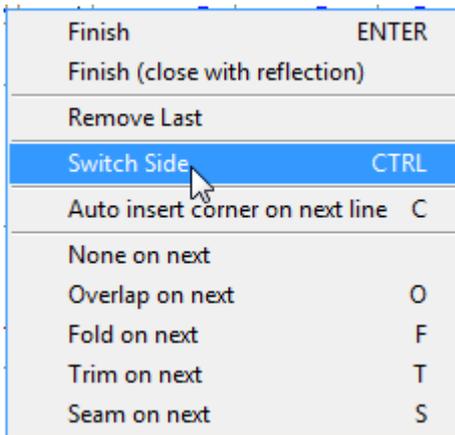
7.1.1.6 Creating parts with two axes (enabling one at a time)

1. Select and activate the first axis. To do that you can go to **Operations - Mirror - Active Axis** or press **CTRL+E**, after Axis selection.

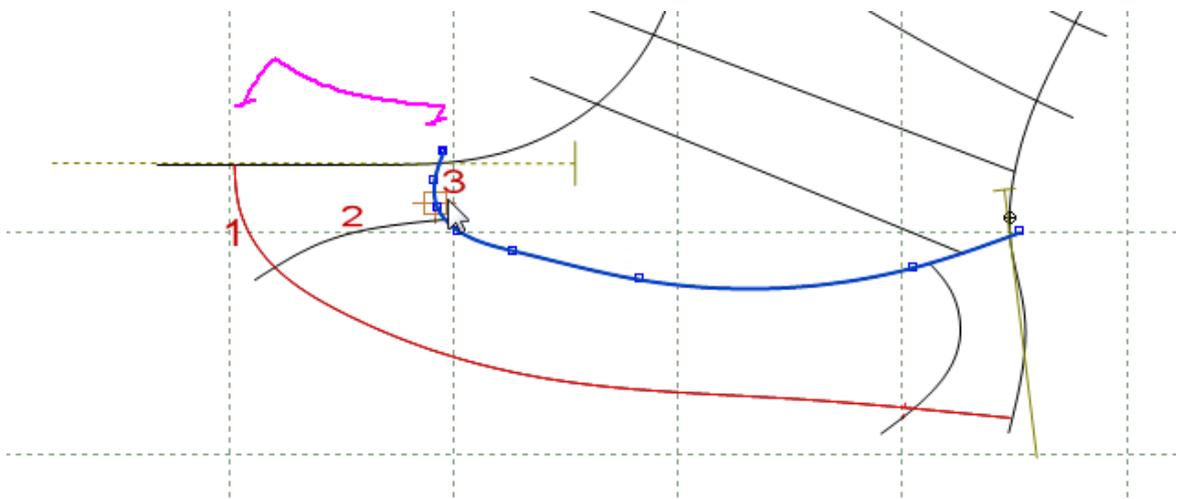


Select **By contour** from **Create Part** in the **Parts** menu. 

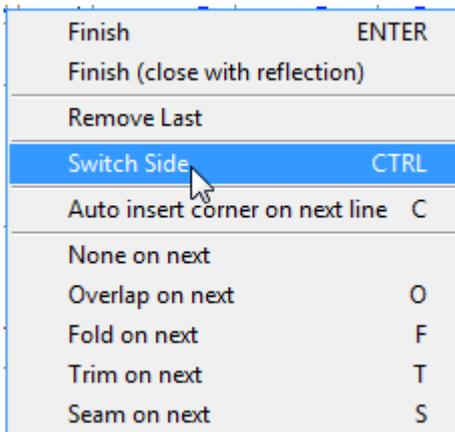
2. Press the right mouse button and select the option **Switch Side**.



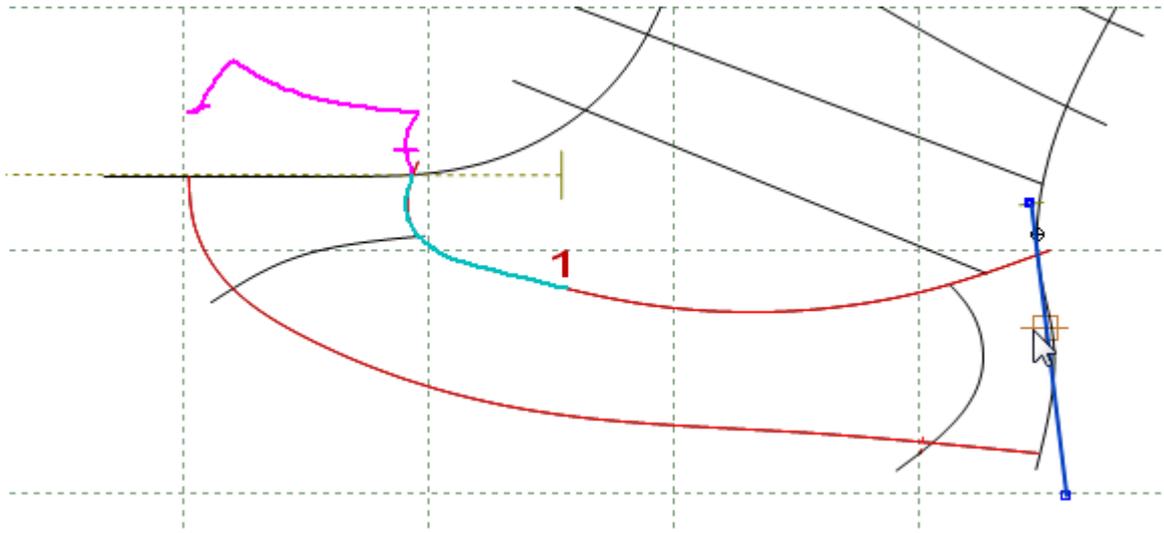
3. Start to define the boundary of the part using the left mouse button. Select the lines based on the numbers order shown in the image below (1,2 and 3).



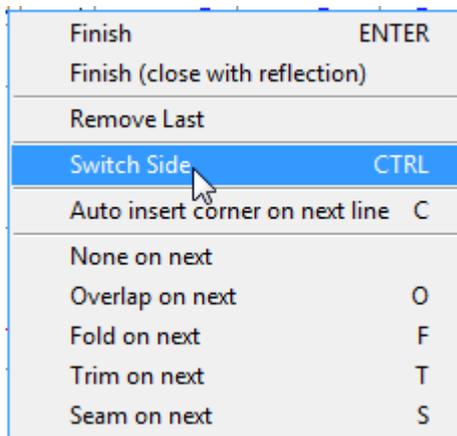
Press the right mouse button and select again the option **Switch Side**.



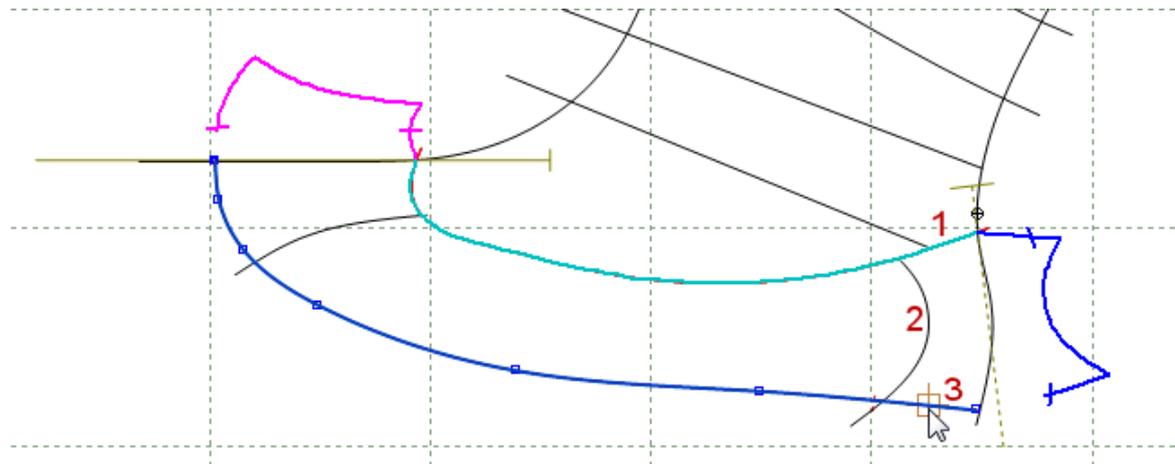
4. Select the top line (marked on the below image with the number 1); next, select and active the seconde axis. To do so, you can select **Operations - Mirror - Active Axis** or press **CTRL+E**, after Axis selection.



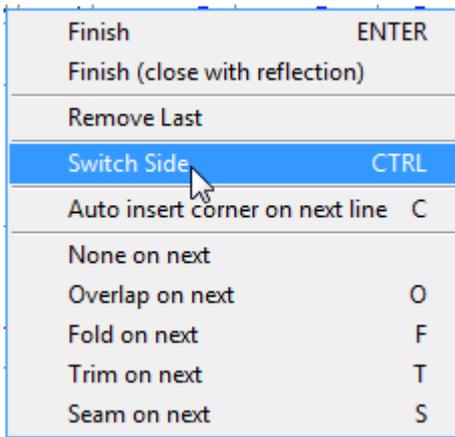
Press the right mouse button and select the option **Switch Side**.



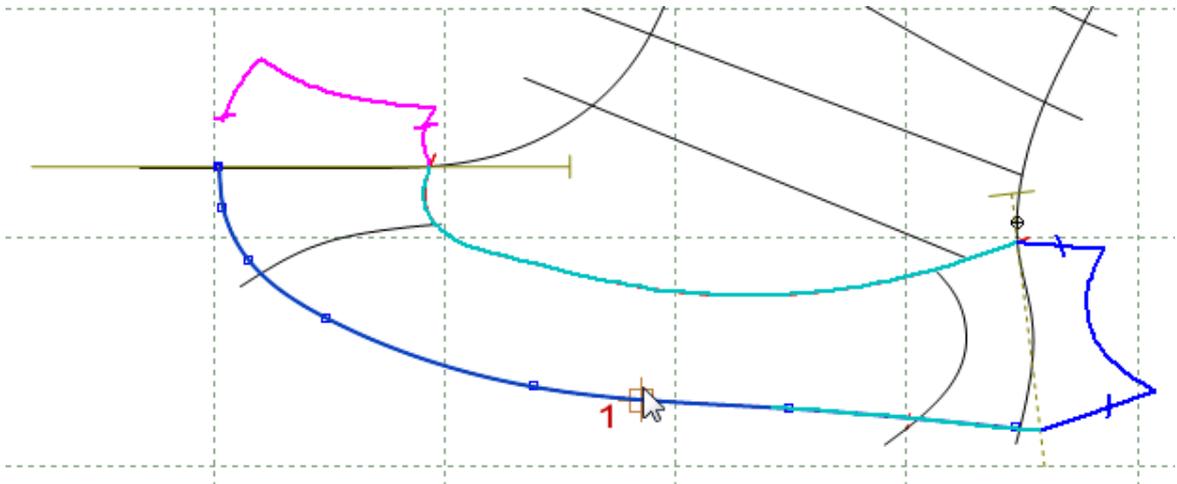
5. Continue to select lines, based on the numbers order, as shown in the image below (1,2 and 3).



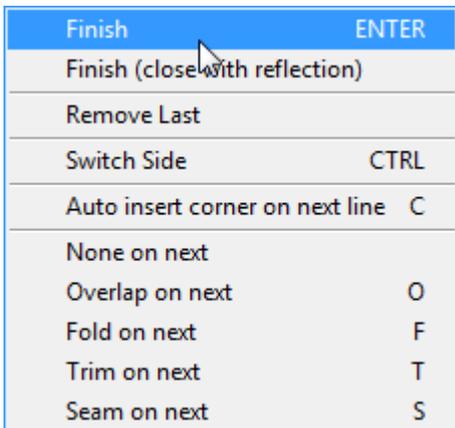
Press the right mouse button and select the option **Switch Side**.



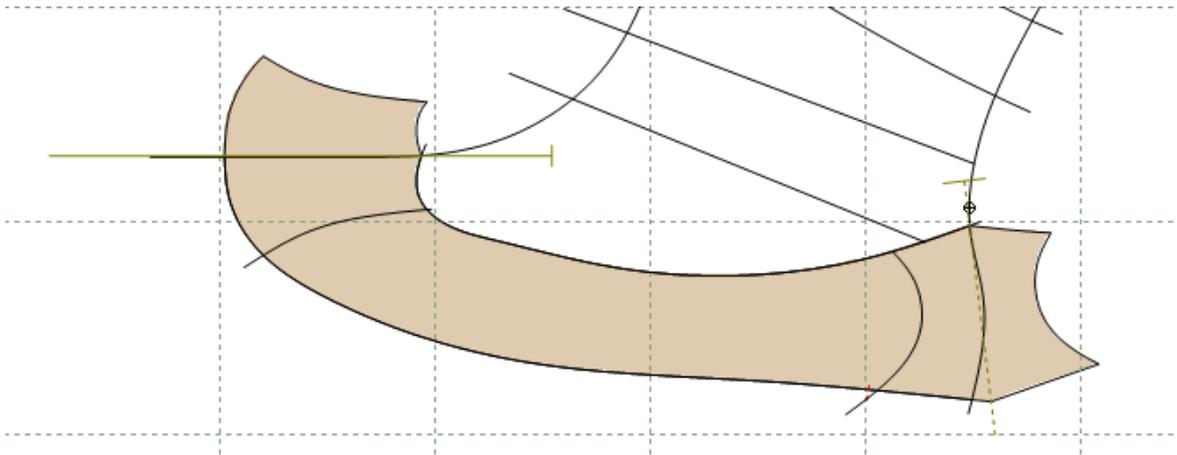
6. Continue to select lines this time the bottom line (marked on the below image with the number 1).



Click the right mouse button to display the following menu.

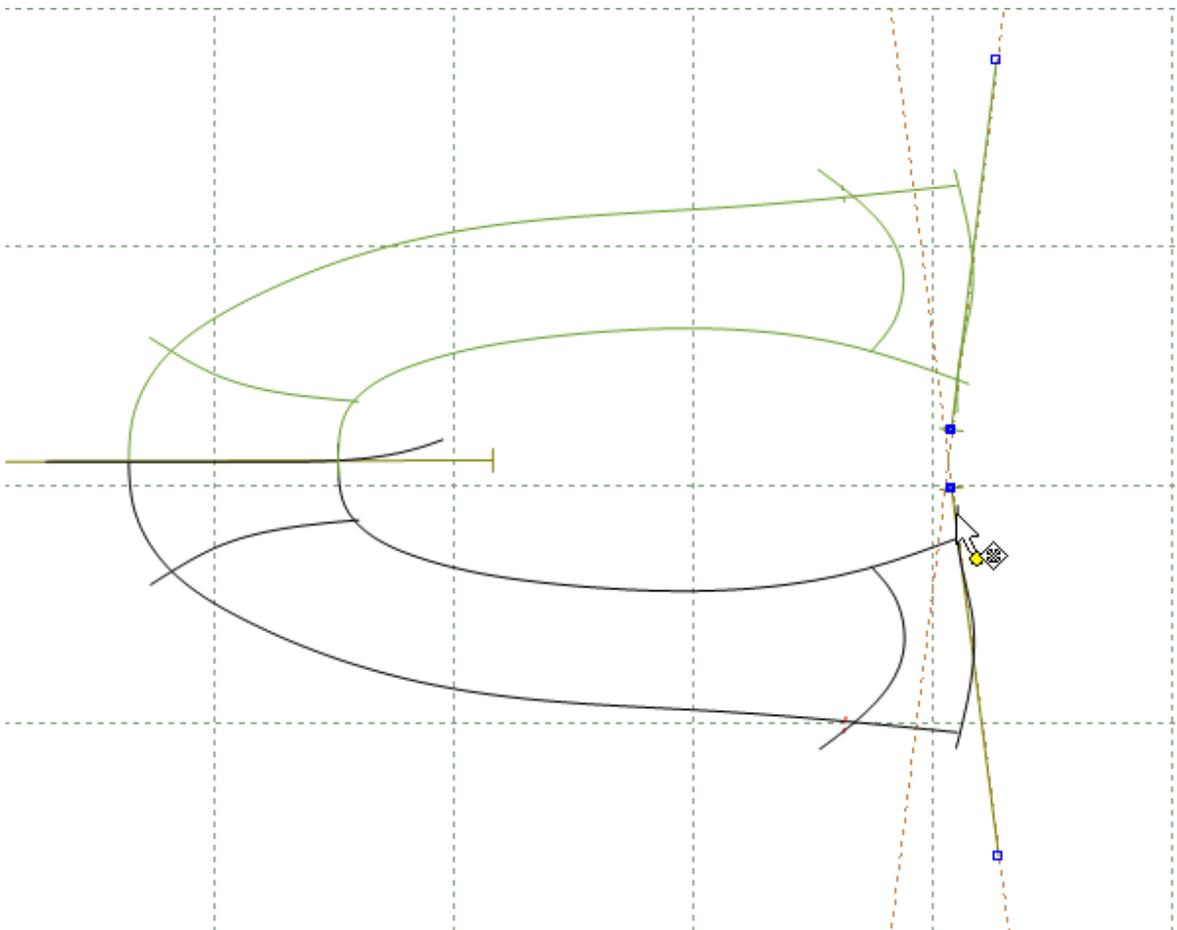


7. Select **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

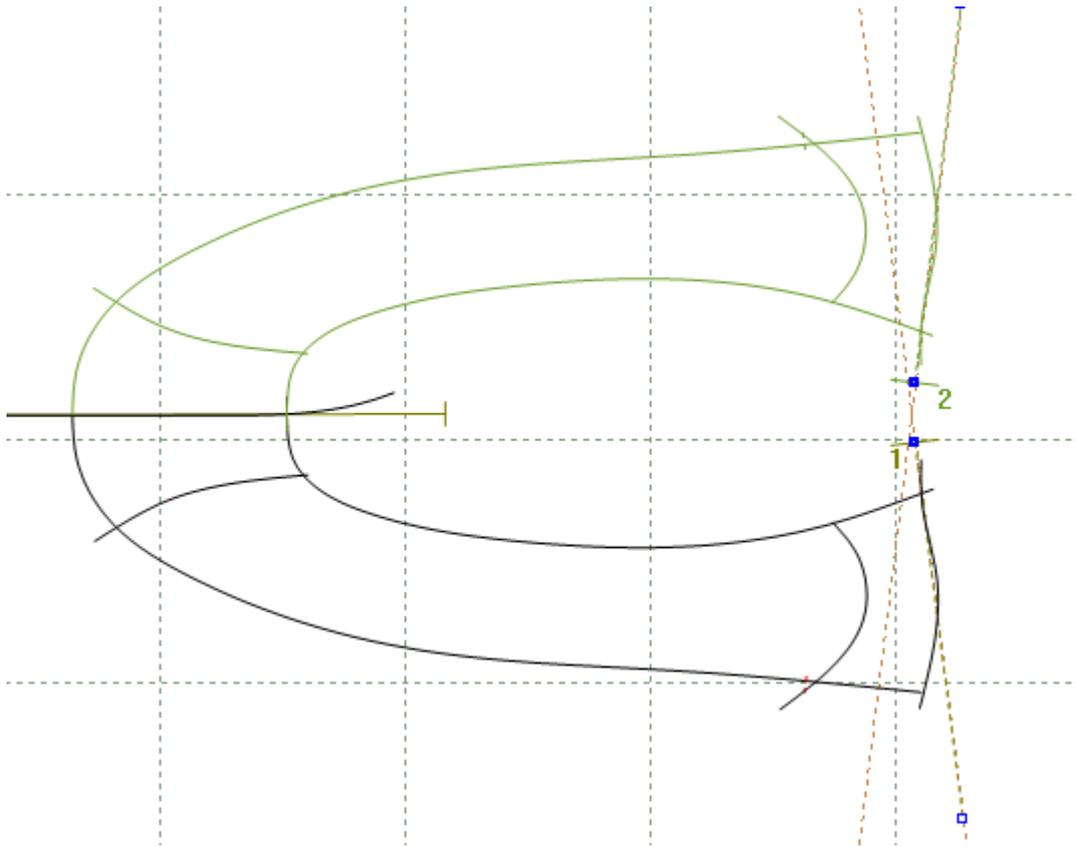


7.1.1.7 Creating parts with two axes (enabling the two axes at once)

1. Select the two axes. To select the both axes simultaneously select the first one and keep the **CTRL** press until select the second one.

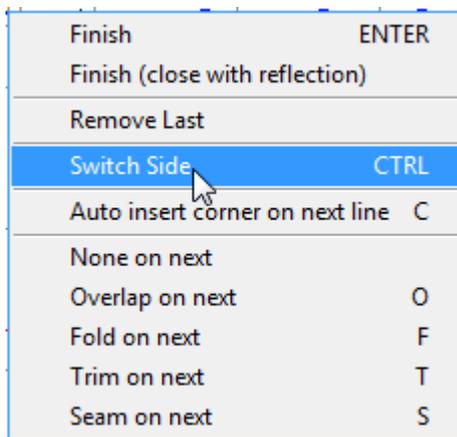


Activate the axes. To activate the axes you can go to **Operations - Mirror - Active Axis** or press **CTRL+E**, after Axes selection.

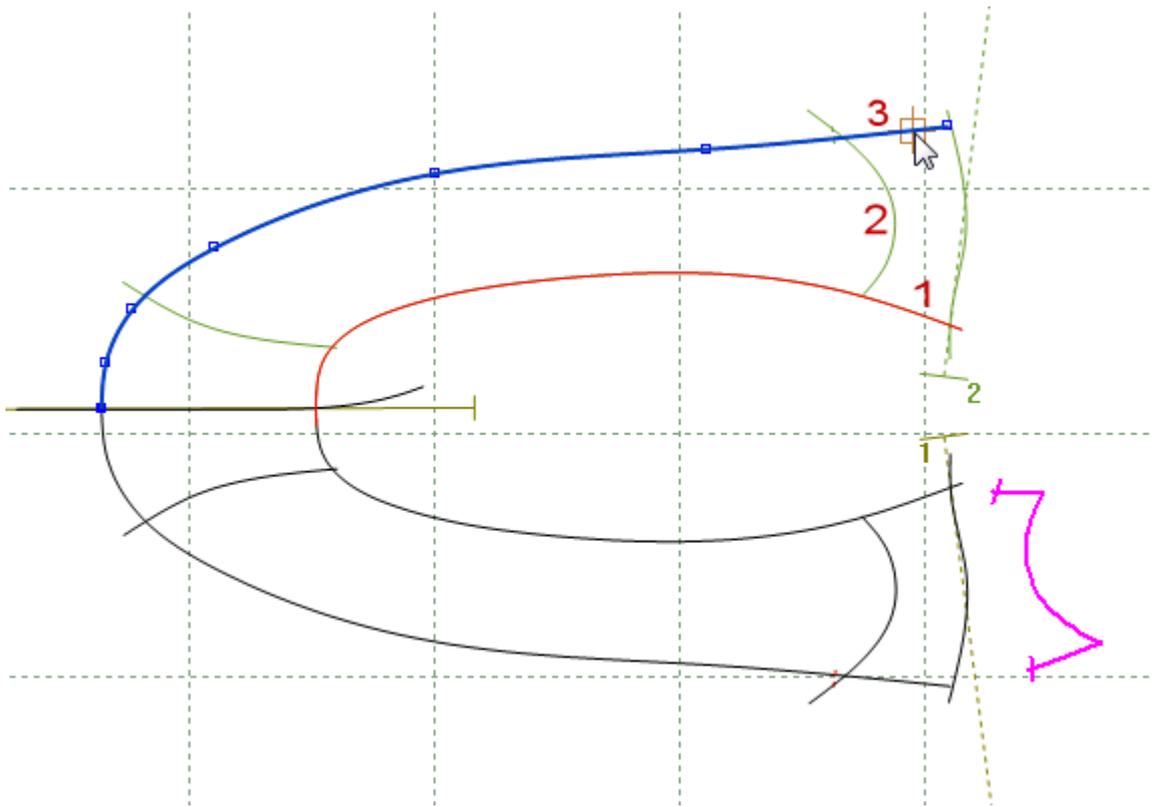


Select **By contour** from **Create Part** in the **Parts** menu. 

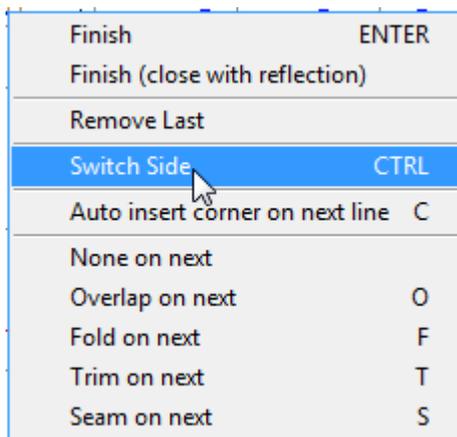
2. Press the right mouse button and select the option **Switch Side**.



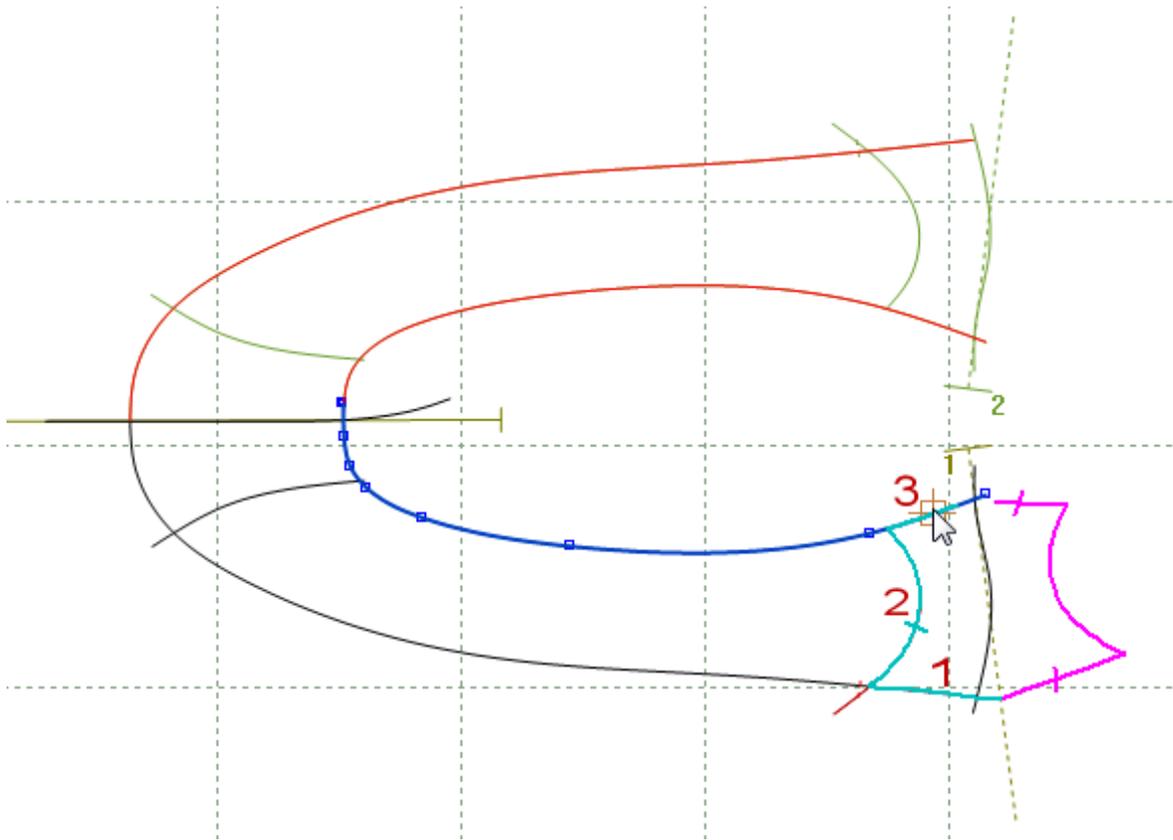
3. Start to define the boundary of the part using the left mouse button. Select the lines based on the red numbers order shown in the image below (1,2 and 3).



Press the right mouse button and select again the option **Switch Side**.



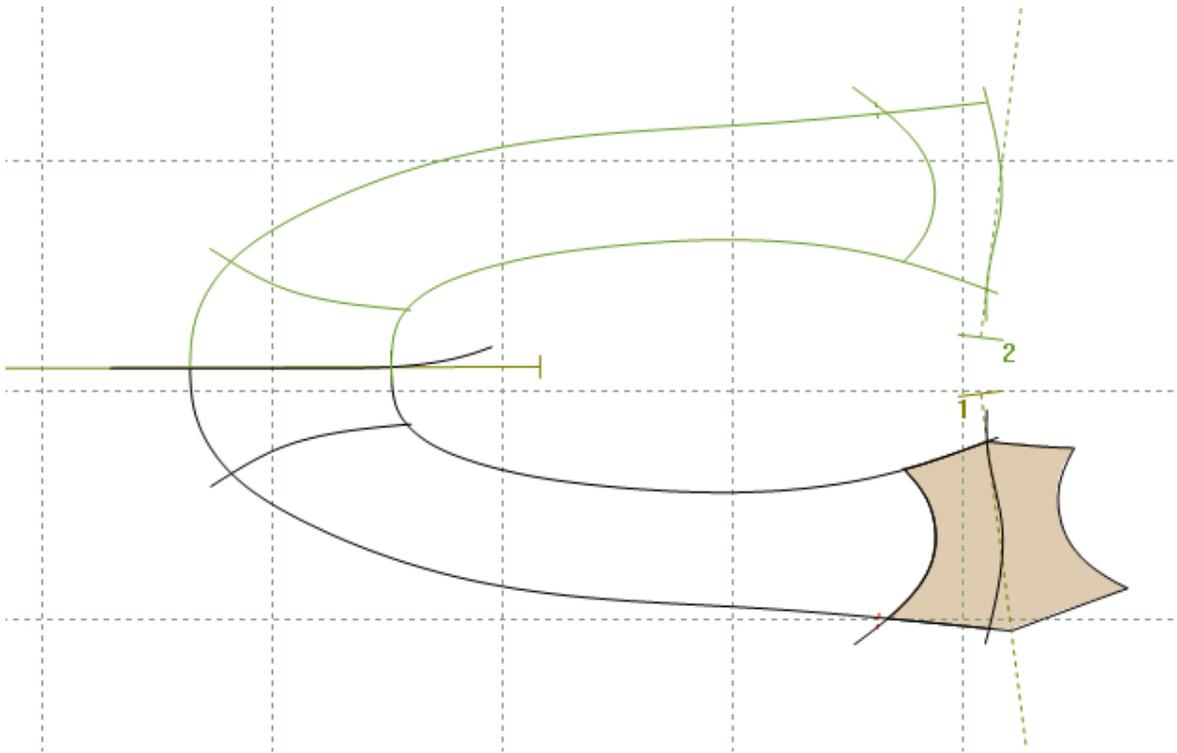
4. Continue to select lines based on the red numbers order shown in the image below (1,2 and 3).



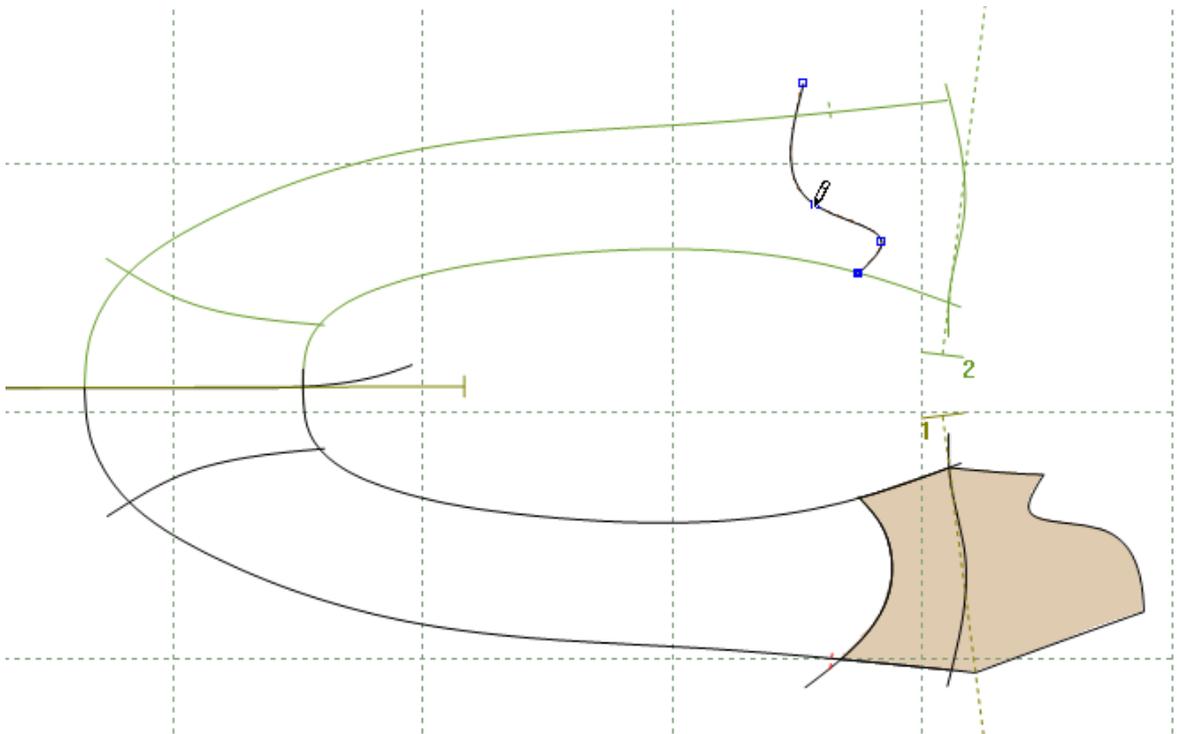
Click the right mouse button to display the following menu.

Finish	ENTER
Finish (close with reflection)	
Remove Last	
Switch Side	CTRL
Auto insert corner on next line	C
None on next	
Overlap on next	O
Fold on next	F
Trim on next	T
Seam on next	S

5. Select **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.



Note: The difference between this method and create a mirrored part is the fact that the lines can be different on each side. Take the below image for example.

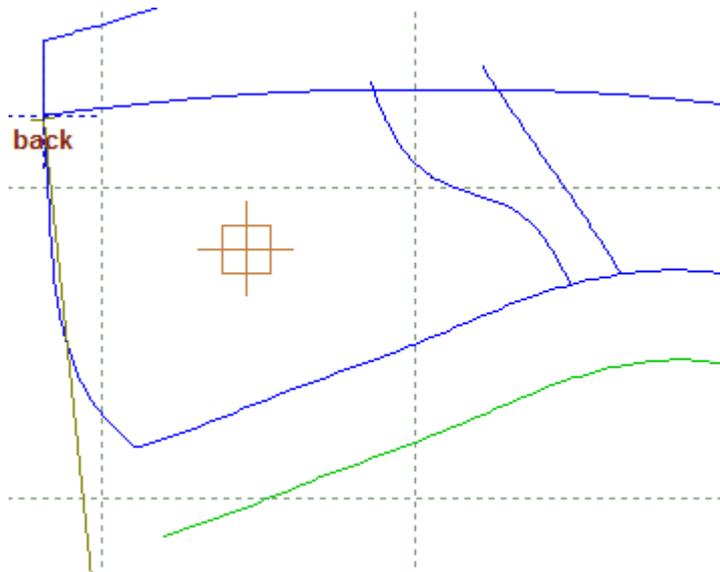


7.1.1.8 Tips and tricks

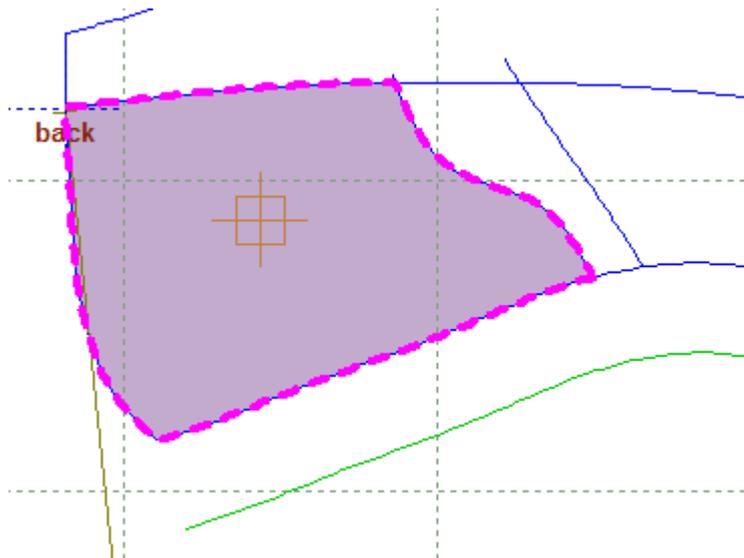
- Inside indicators
 - Shells that have been exported from **3D Design & Engineering** - each time you select the inside feather line (net or gross), an inside indicator will be applied at the point you select the line.
 - Digitised shell - For an inside indicator, use the Inside indicator on next option or press **M**.
- If you are trying to create unfolded or mirrored parts and the parts are not being displayed, always check that the correct axis is selected.
- Mirrored or unfolded parts will automatically update if you move the axis.
- Lines don't need to intersect a part to be created. The gap between the lines can be up to 25 mm.
- Avoid split lines after parts creation.

7.1.2 Parts - Create Part - By One Click

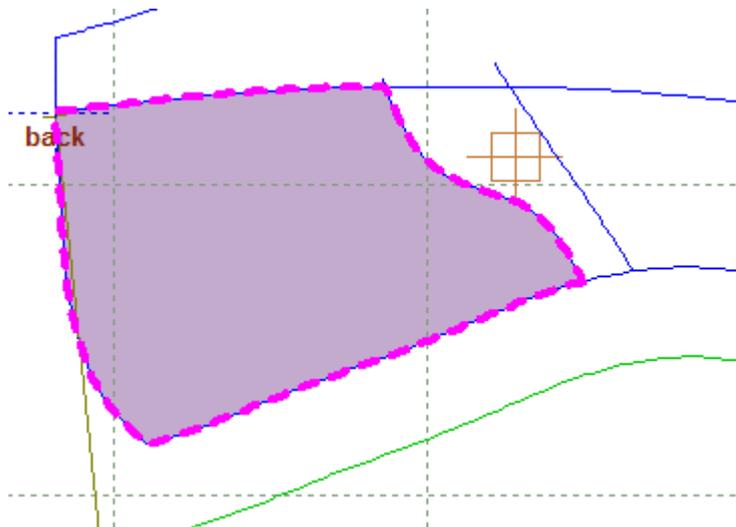
1. Select **By One Click** from **Create Part** in the **Parts** menu.
2. Position the mouse cursor in the middle of the lines that will compose the part.



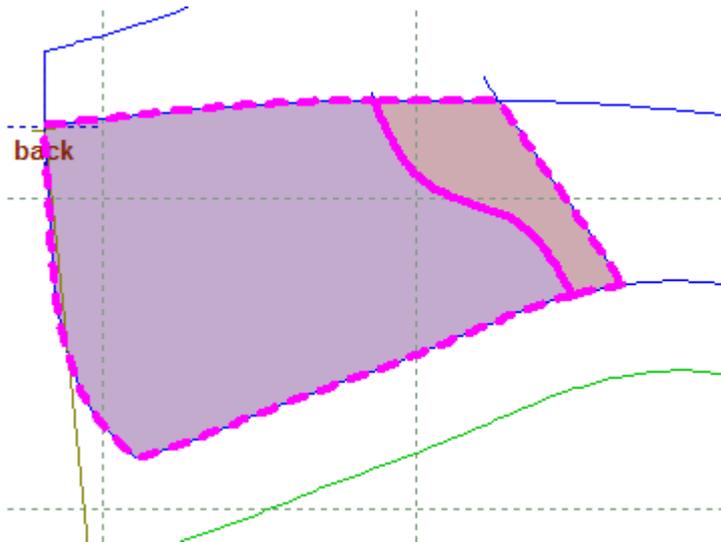
3. When the cursor is in the right position, do a click with the left button, the parts contour will be selected.



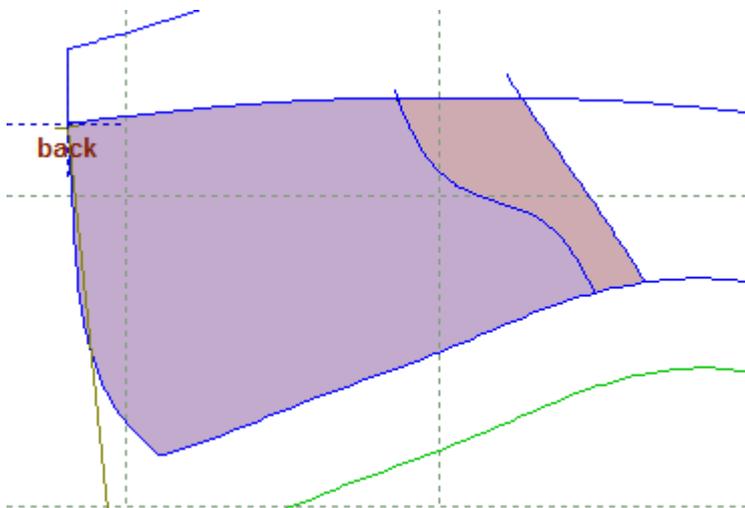
4. Before ending the process you can select more parts; just position the cursor again in the middle of the desired lines.



When the cursor is in position, do a click with the left button; the parts contour will be selected.



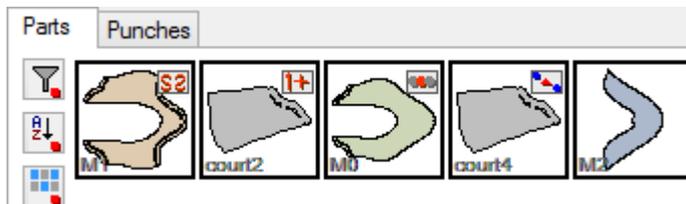
To end the process, do a right click and select finish or press ENTER. The part will be created.



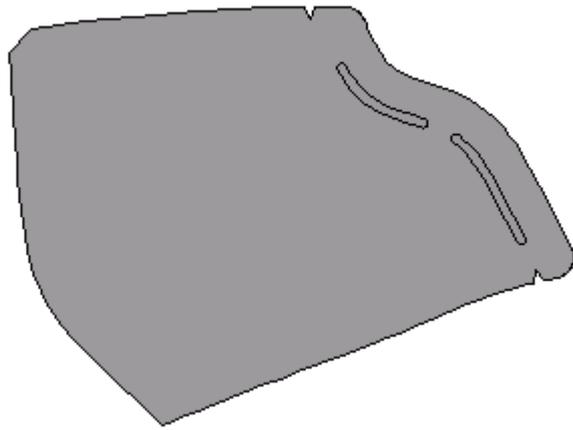
7.1.3 Editing Parts

7.1.3.1 Editing Parts - Corners

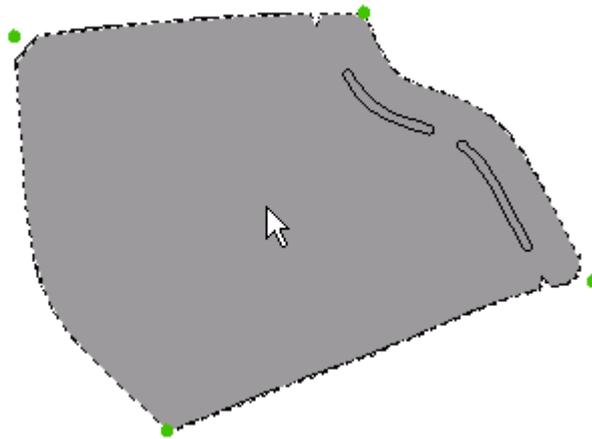
1. Select one or more parts from the **Parts/Library** toolbar using the left mouse button.



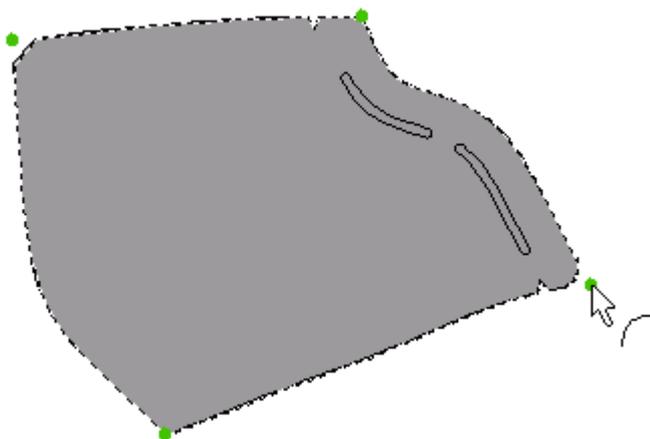
The part will be displayed.



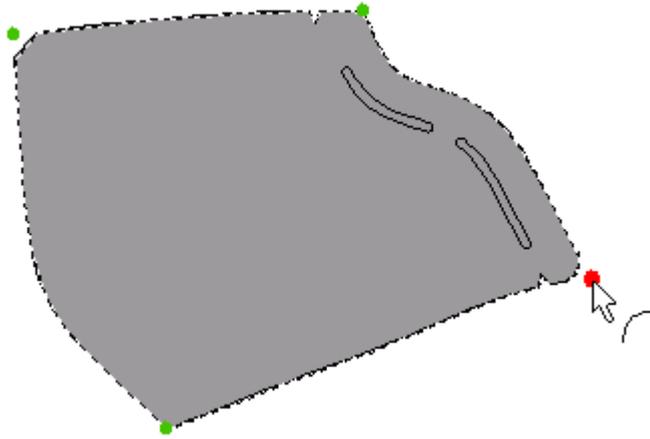
Using the left mouse button click inside the part, which will be highlighted.



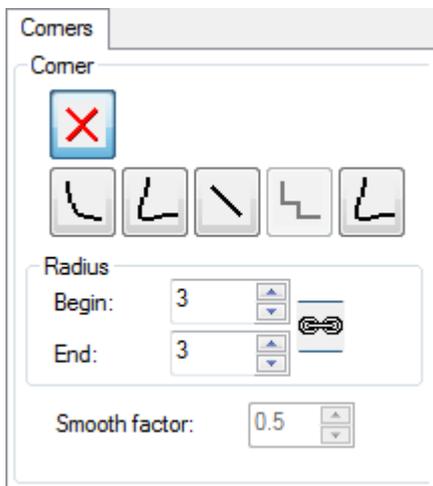
As you move the cursor close to the corner positions (shown by green dots), the cursor will change to the corner cursor.



Using the left mouse button select the corner, which will be highlighted.



Select the type of corner from the **Tool Options** toolbar.



 **No corner** - Intersect the lines only

 **Arc** - Insert an arc of given radius

 **Bezier** - Similar to an arc, but with better results on sharp intersections.

 **Chamfer** - Cut the corner off with a straight line. If Link button is OFF, you can enter a Begin and End radius.

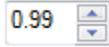
 becomes active  when there are treatments on both sides of the corner. If applied, the net intersection of the two original lines is used to generate an internal cut out. This command is usually used when one of the treatments is a fold. Control of the radius value is also possible.



Smooth - It's possible to adjust the smooth factor, when this corner type is selected the text box is enable

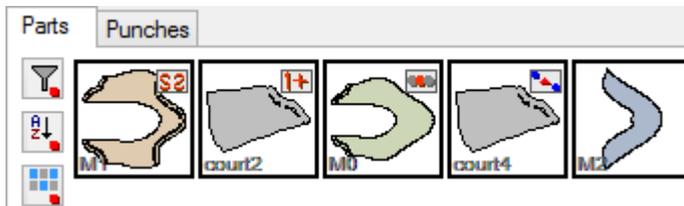
Smooth factor:

0.99

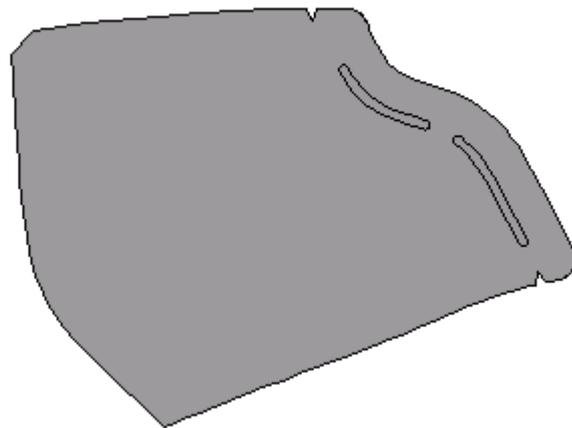


7.1.3.1.1 Editing Parts - Treatments

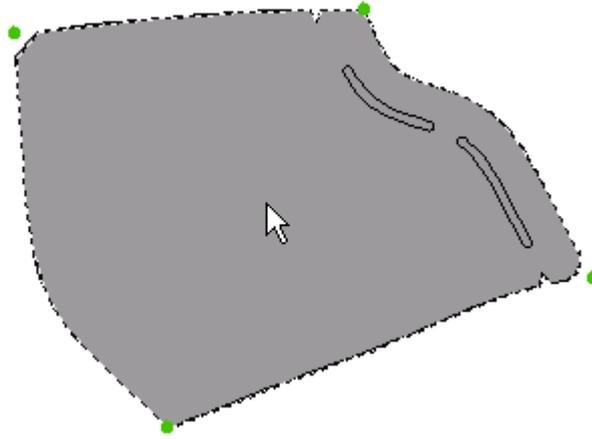
1. select one or more parts from the **Parts/Library** toolbar using the left mouse button.



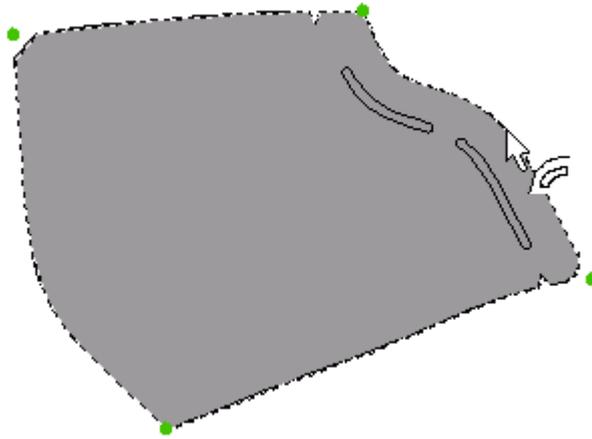
The part will be displayed.



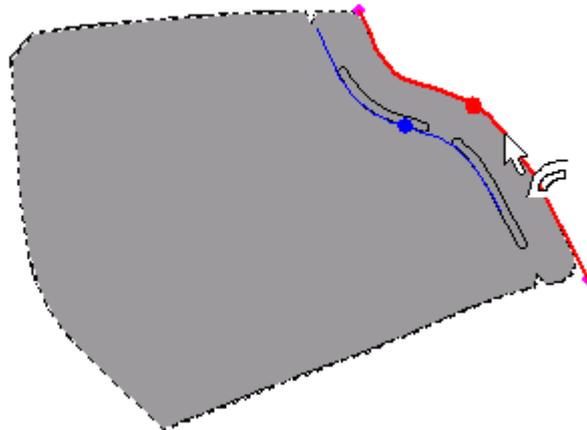
using the left mouse button click inside the part. It will highlight. Corners are represented by green dots.



As you move the cursor close to the edge the cursor will change to the treatments cursor.



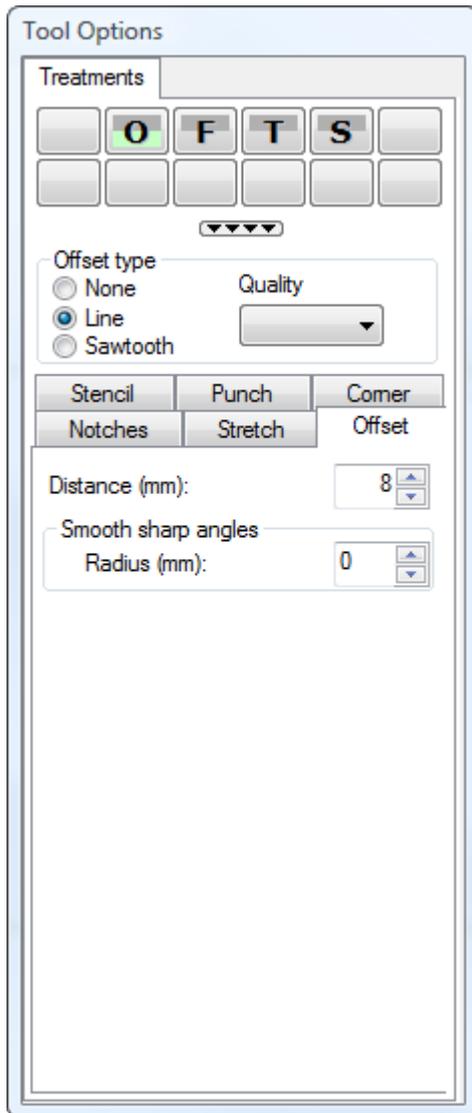
click the left mouse button to select the outline of the part between the corners.



The section of the outline will highlight

2. select the required treatment from the **Tool Options** toolbar or press the appropriate hot key to

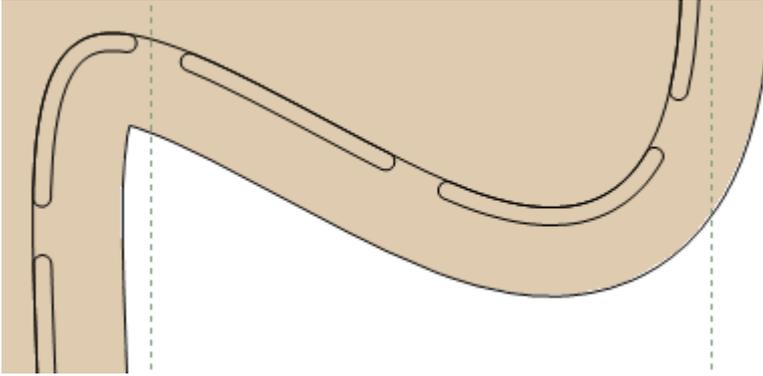
change the treatment.



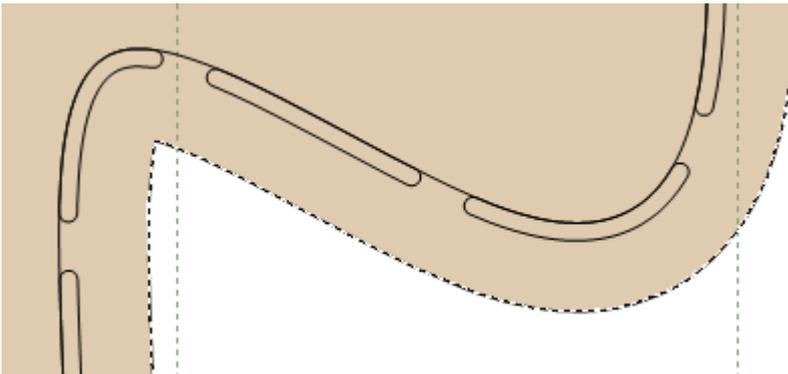
7.1.3.1.2 Editing Parts - Radius

This option allows to force smooth corners on treatments.

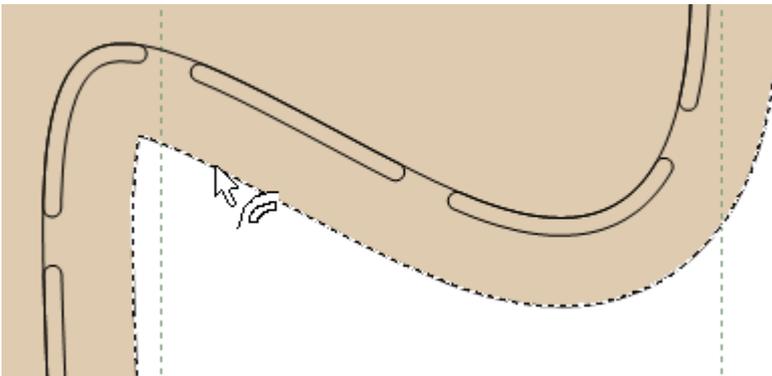
To force the smooth sharp angle shown in the image below:



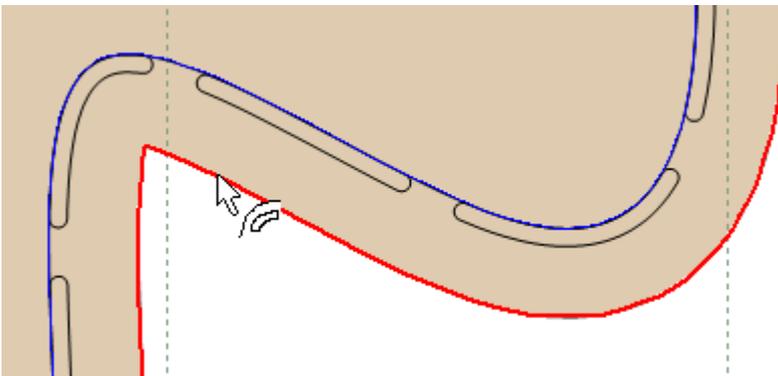
1. Using the left mouse button click inside the part. It will highlight.



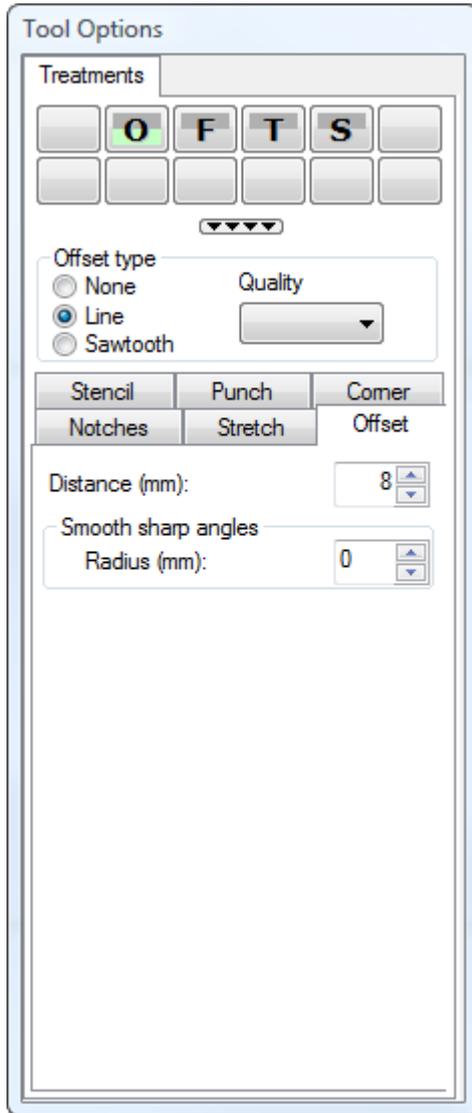
2. As you move the cursor close to the edge the cursor will change to the treatments cursor.



3. Click the left mouse button to select the outline of the part. The section of the outline will highlight

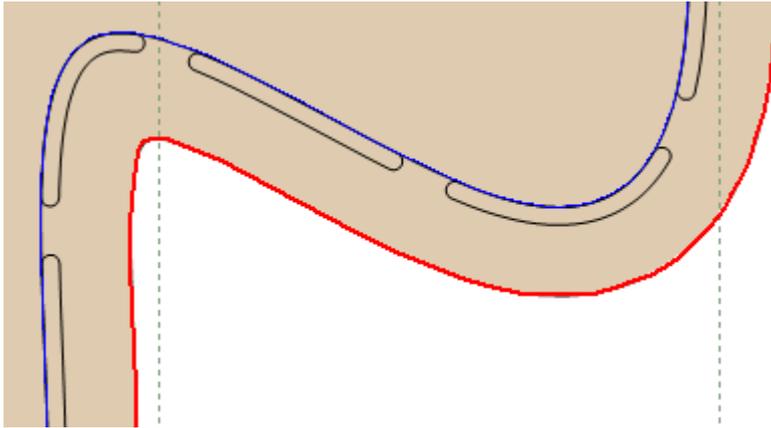


4. In the **Tool Options** toolbar change the value of the **Radius(mm)**.



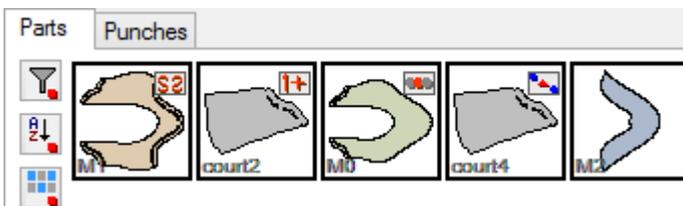
5. As you increase the value the sharp angle is smoothed.



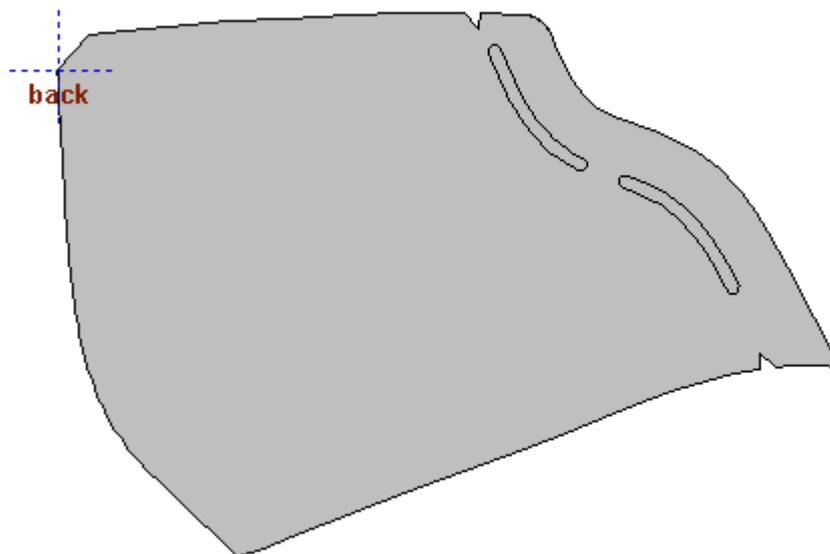


7.1.3.2 Editing Parts - Notches

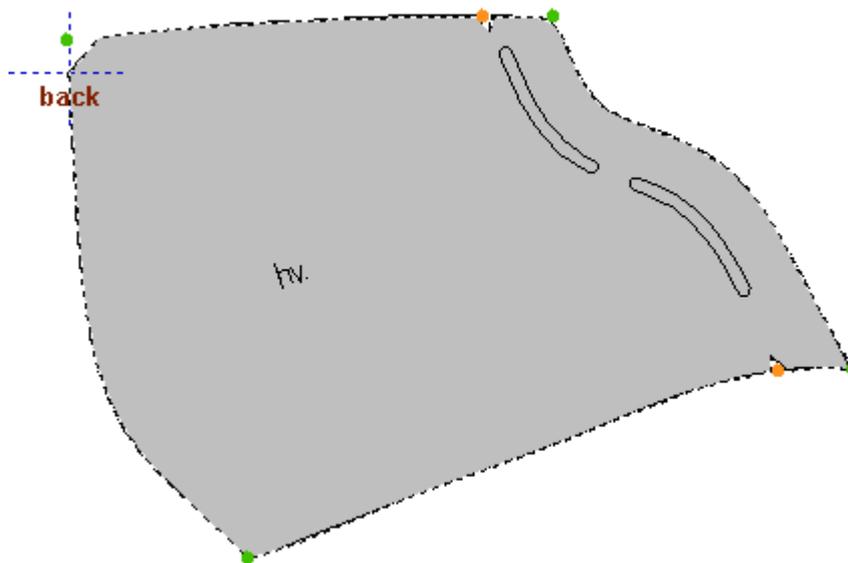
- select one or more parts from the **Parts/Library** toolbar using the left mouse button.



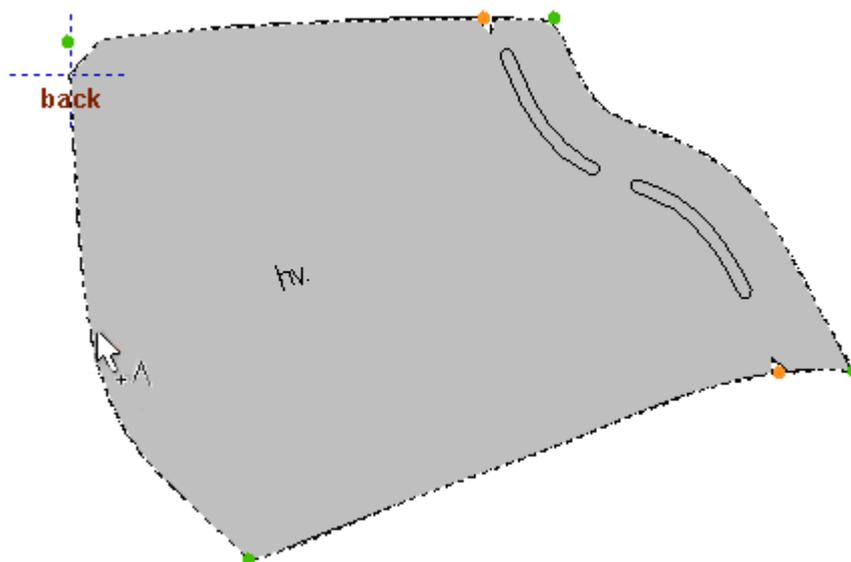
The part will be displayed.



- using the left mouse button click inside the part. It will highlight.

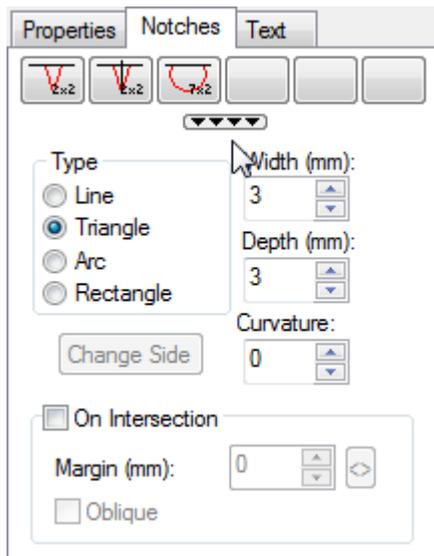


- with the **Shift** key pressed place the notch on the desired location clicking the left mouse button.

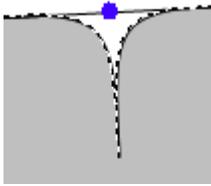


The section of the outline will highlight

- select the **Notches** tab of the **Tool** options toolbar



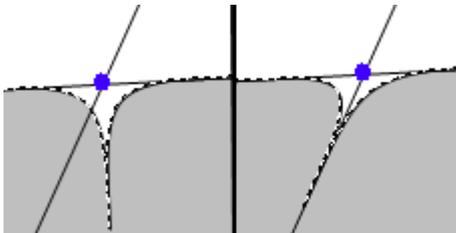
- Use the **Notches** options to set the notch type, size and side.
- Line** - A line placed at the cursor position. You can also enter a **Depth** and **Curvature** value.
 - The notches placement can be on mouse selection.



- Or **On Intersection** than can be **Oblique** or not.

Oblique *OFF*

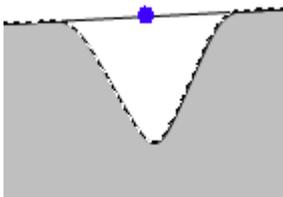
Oblique *ON*



Oblique - A notch with the base of the triangle placed on the line it is created from. Oblique notches can only be applied using the intersection option.

- Triangle** - A triangular notch, placed with its centre at the position or intersection selected.

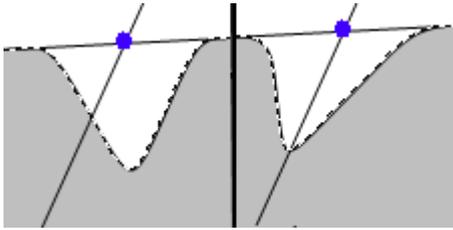
- The notches placement can be done on mouse selection.



- Or **On Intersection** than can be **Oblique** or not.

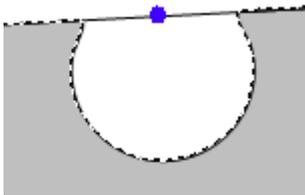
Oblique *OFF*

Oblique *ON*

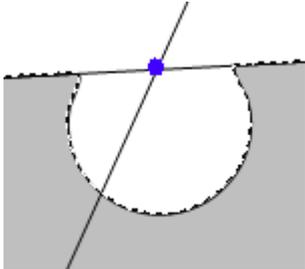


3. **Arc** - An arc shape - normally used as an inside indicator

- The notches placement can be done on mouse selection.

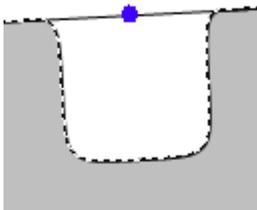


- Or **On Intersection**.

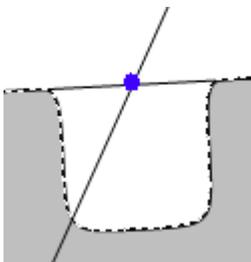


4. **Rectangle** - A rectangle of given size.

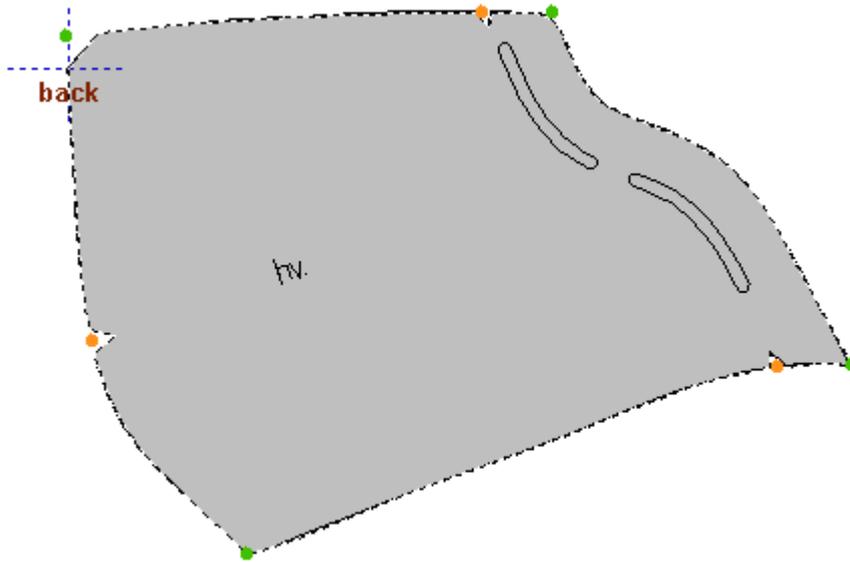
- The notches placement can be done on mouse selection.



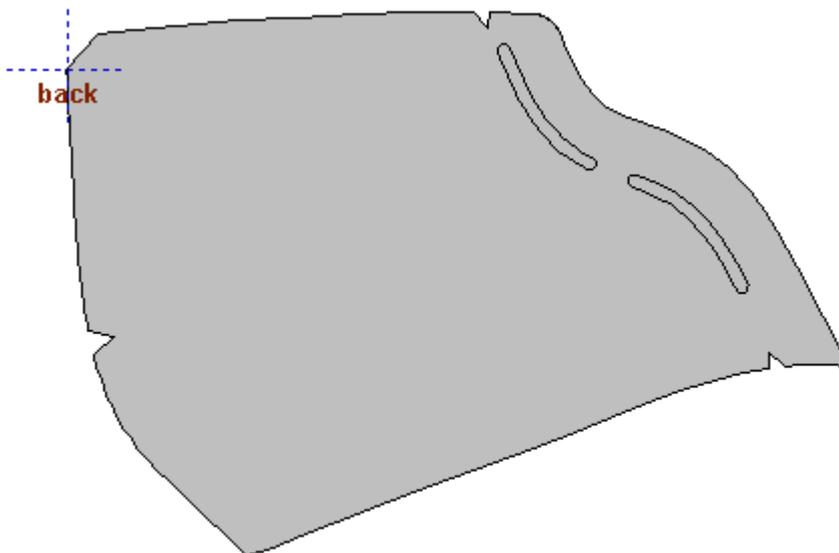
- Or **On Intersection**.



- move the cursor towards the selected part of the outline. As you get close, the cursor will change to the notch cursor



position the notch and click the left mouse button.

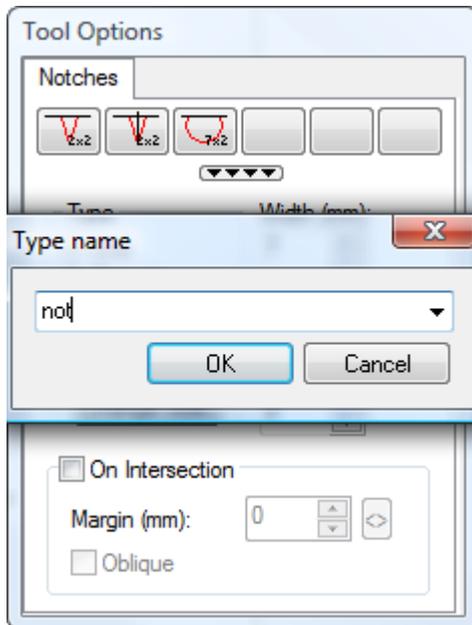


The notch will be added.

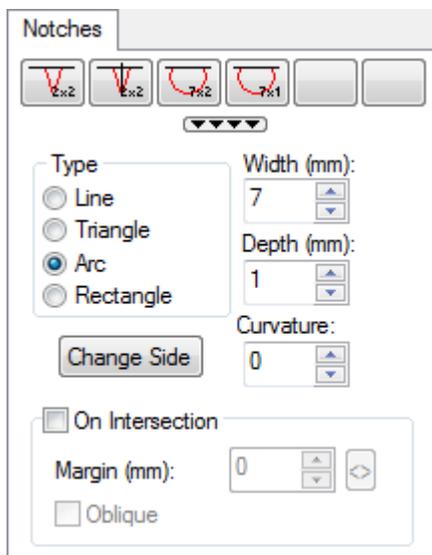
- If the cursor is positioned inside the part, the notch will go inwards,
- If positioned outside the part, the notch will go outwards.
- If the intersection option is used when positioning a notch, the notch cursor will only be displayed at positions where lines intersect.

To edit notches,

1. Select them with the left mouse button
2. Use the **Tool** Options to make the required changes. You can use the **Delete** key to remove the notch
 - To set a shortcut for commonly used notches, including type and value,
 1. Click on a blank shortcut box at the top of the menu

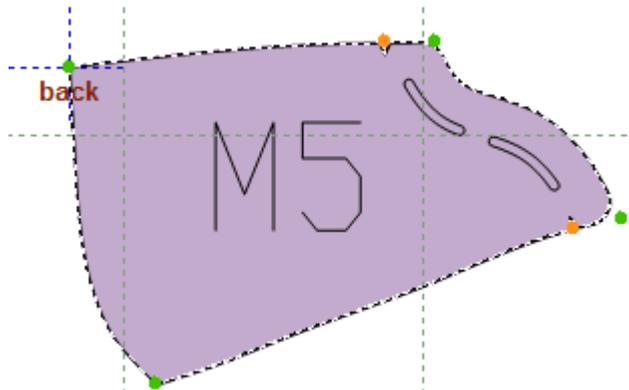


2. Type in a name and select **OK**. This shortcut is now available for future use.

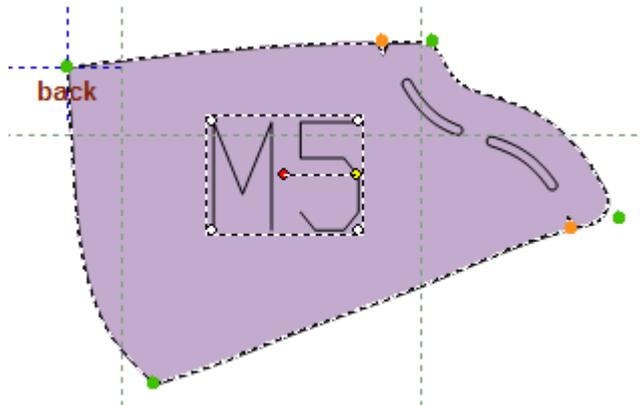


7.1.3.3 Editing Parts - Text

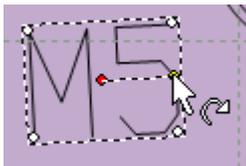
1. Select the part(s) from the **Parts/Library** toolbar using the left mouse button. The part will be displayed with its default text



2. Select the text using the left mouse button.

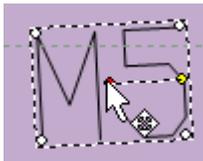


3. Change the text using one of the following methods
- To **rotate** the text,



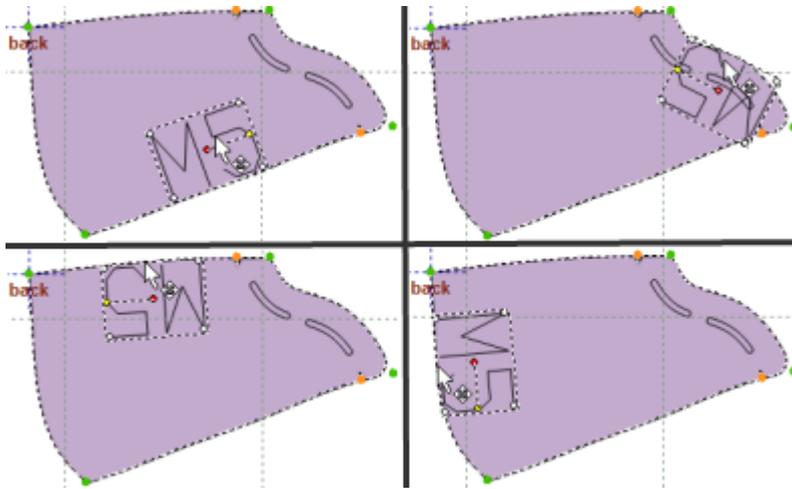
- (a) Move the cursor to the yellow dot;
- (b) Click the left mouse button and drag the cursor to the required position;
- (c) Release the left mouse button.

To **drag** the text,

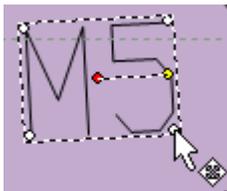


- (a) Move the cursor over the text;
- (b) Click the left mouse button and drag the cursor to the required position;
- (c) Release the left mouse button.

Note: If the text is dragged to one of the part edges, its orientation will adjust automatically.



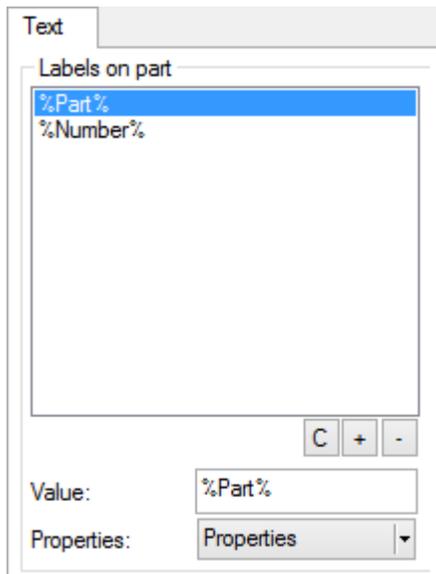
To **scale** the text,



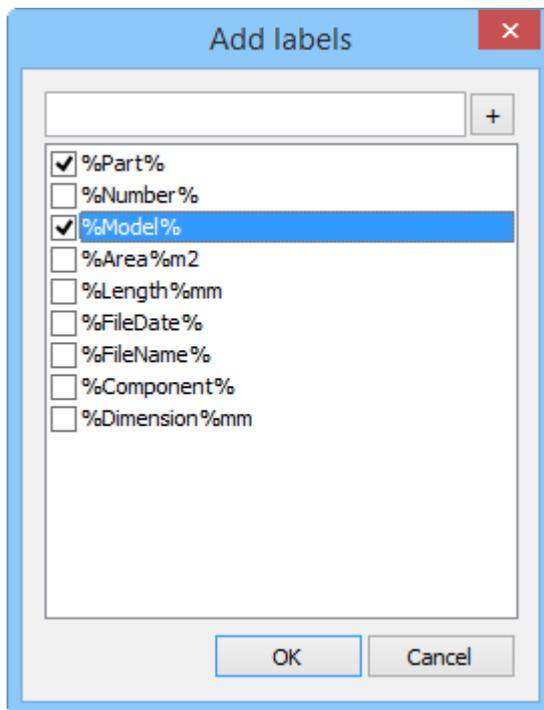
- (a) Move the cursor over one of the white dots displayed;
- (b) Click the left mouse button and drag the cursor to the required position;
- (c) Release the left mouse button.

To **add new** text to parts,

- (a) With the part is selected select the **Text** tab of the **Tool Options** toolbar



(b) Press the button "+". Now select the required text from the list. Press **Ok** to apply it to the current part.



7.1.3.4 Editing Parts - Configuring Treatments

Treatments are a quick way of applying offsets, corners and notches in one operation.

There are many options that can be set. You can also add a shortcut that allows them all to be applied in one operation.

1. Select a part

2. Select a part of the outline and go to the **Treatments** tab of the **Tool Options** toolbar.
3. Set the **Offset type** and use the **Treatment** options to set the treatments.

None - No offset;

Line - A normal offset line;

Sawtooth - An offset with a sawtooth edge.

To set a shortcut for commonly used treatments. Define treatments properties, including offset type, offset distance, stencil, punch, corner and notches,

1. Set the values on the **Offset** tabulator

The screenshot shows the 'Treatments' dialog box with the 'Offset' tab selected. The 'Offset type' section has three radio buttons: 'None', 'Line' (which is selected), and 'Sawtooth'. To the right of these is a 'Quality' dropdown menu set to '4'. Below this is a grid of buttons: 'Stencil', 'Punch', 'Corner', 'Notches', 'Stretch', and 'Offset'. At the bottom, there are two input fields: 'Distance (mm):' with a value of '8' and 'Smooth sharp angles Radius (mm):' with a value of '5'.

2. Set the values on the **Stencil** tabulator

Treatments

O **F** **T** **S**

Offset type

None Line Sawtooth

Quality: 4

Notches | Stretch | Offset

Stencil | Punch | Comer

Type

None Net Offset

Inside Outside

Width (mm): 1.6

Margin (mm): 8 8

Max. Length (mm): 25

Gap (mm): 6

Distance (mm): 0

Inside Outside

Side indicator (mm): 0

Properties: Properties

3. Set the values on the **Punch** tabulator

Treatments

O **F** **T** **S**

Offset type

None Quality

Line 4

Sawtooth

Notches Stretch Offset

Stencil Punch Comer

Enable

Punches type

By number 10

By distance 10

Margin (mm):

8 8  

Distance (mm): 0

Properties: Properties

4. Set the values on the **Corner** tabulator

Treatments

O F T S

Offset type
 None
 Line
 Sawtooth

Quality
 4

Notches Stretch Offset
 Stencil Punch Comer

Type
 None
 Bezier
 Arc
 Chamfer
 Smooth

Radius (mm): 4

Smooth factor: 0.8

5. Set the values on the **Notches** tabulator

Treatments

O F T S

Offset type
 None
 Line
 Sawtooth

Quality
 4

Stencil Punch Comer
 Notches Stretch Offset

Type
 None
 Oblique
 Triangular

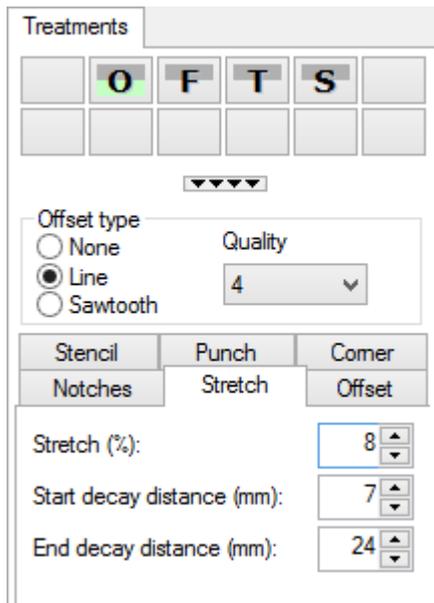
Depth (mm): 2

Width (mm): 2

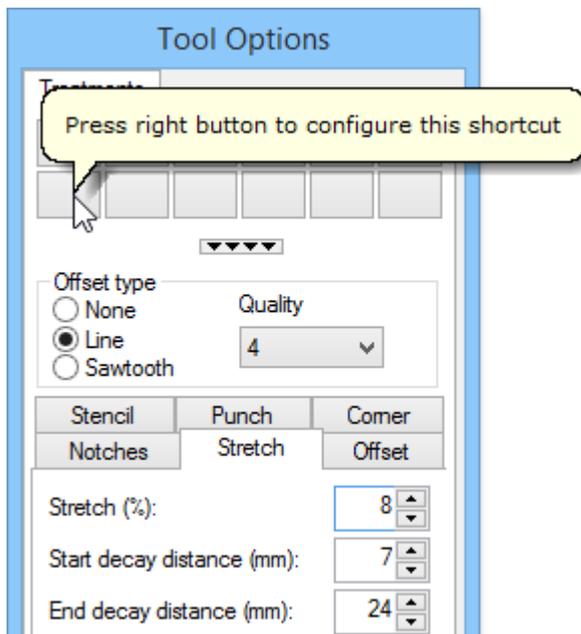
Curvature: 0

Offset (mm): 2

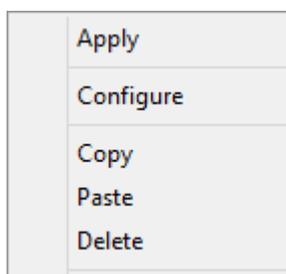
6. Set the values on the **Stretch** tabulator



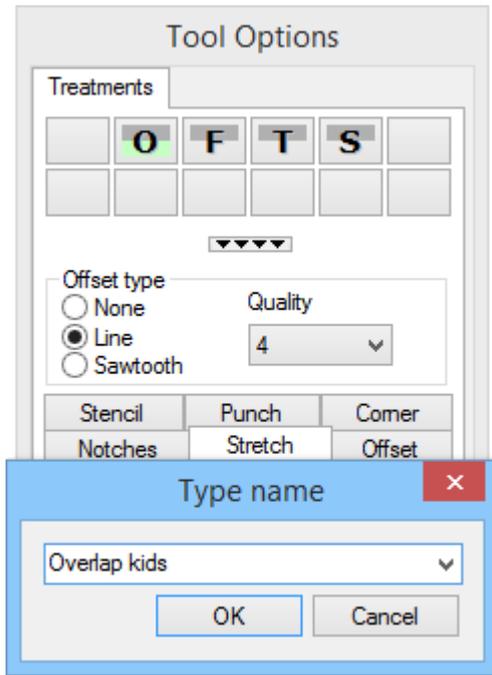
7. Right click on a blank shortcut box at the top of the toolbar.



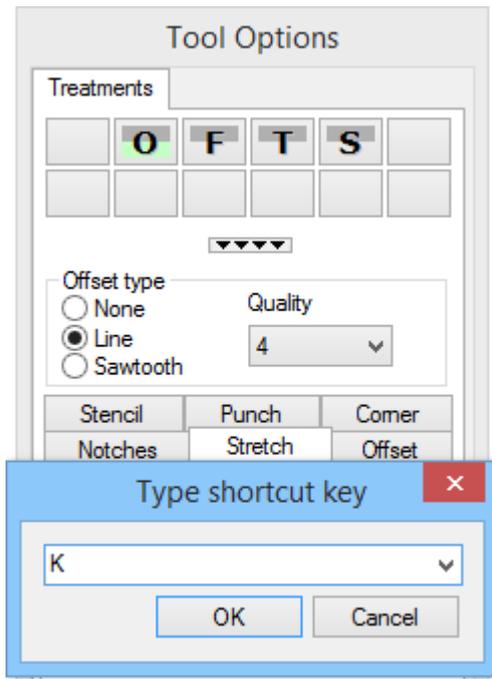
8. The contextual menu will appear, select configure.



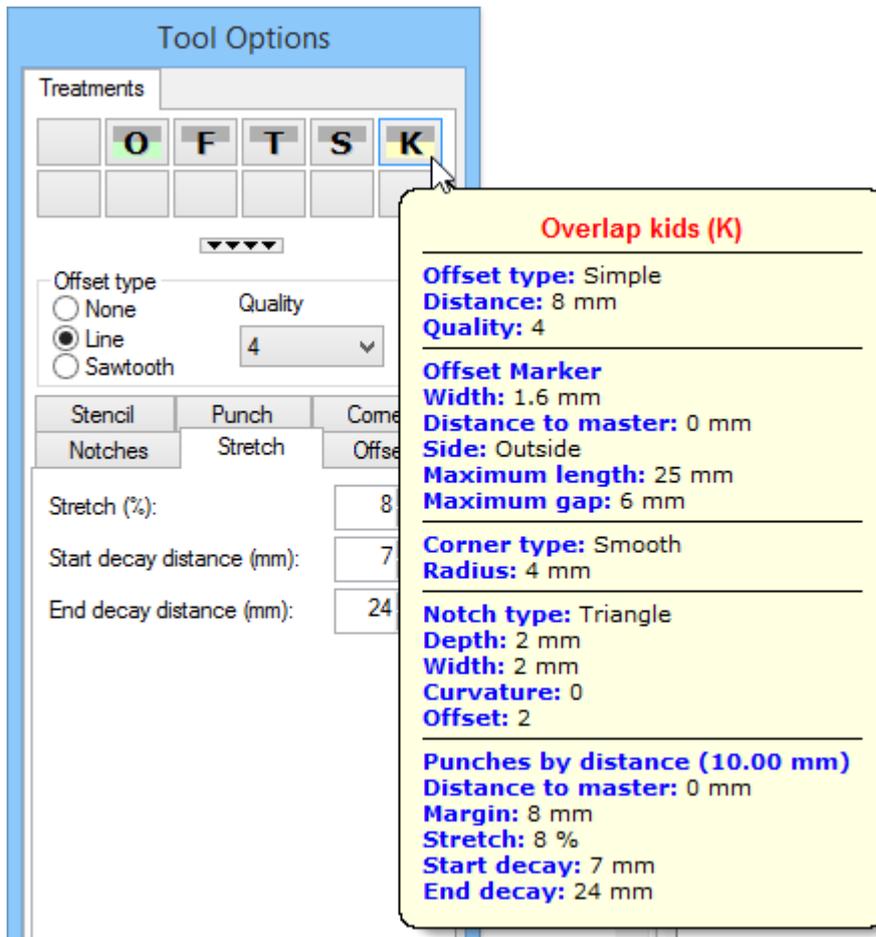
9. Type in a name and select **OK**.



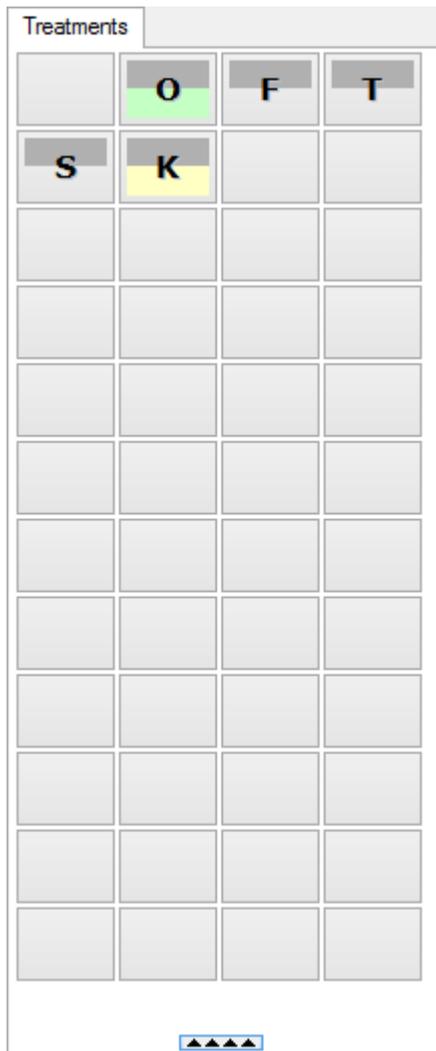
9. Type shortcut key and select **OK**.



10. This shortcut is now available for future use.



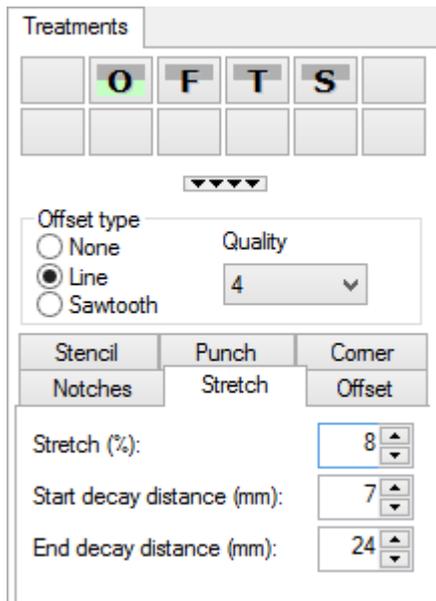
11. More space is available for more quick access buttons by pressing the 4 triangles button.



7.1.3.5 Editing Parts - Stretch

Stretch compensation emulates part controlled deformation that is intended to be off the last. This includes extreme wrinkle effects.

1. select a part
2. select an edge the part and go to the **Treatments** tab of the **Tool Options** toolbar.
3. set the values on the **Stretch** tabulator

**Stretch (%)**

Stretch percentage. This value controls the amount of added material along the selected edge that should exist to compensate the wrinkle effect

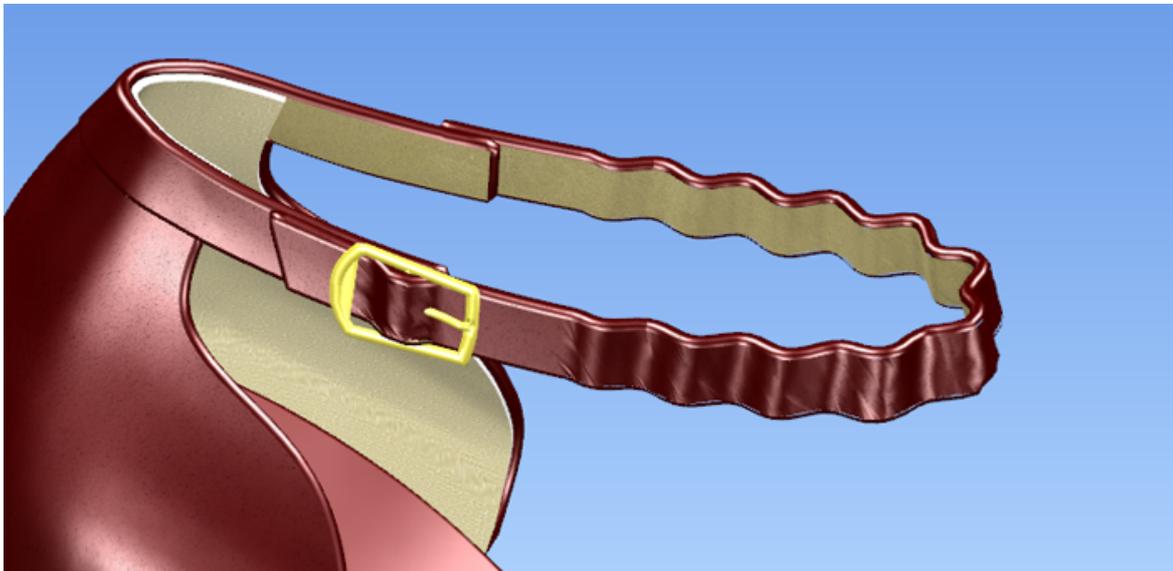
Start decay distance (mm)

Start value distance. This value controls the beginning of the blending region.

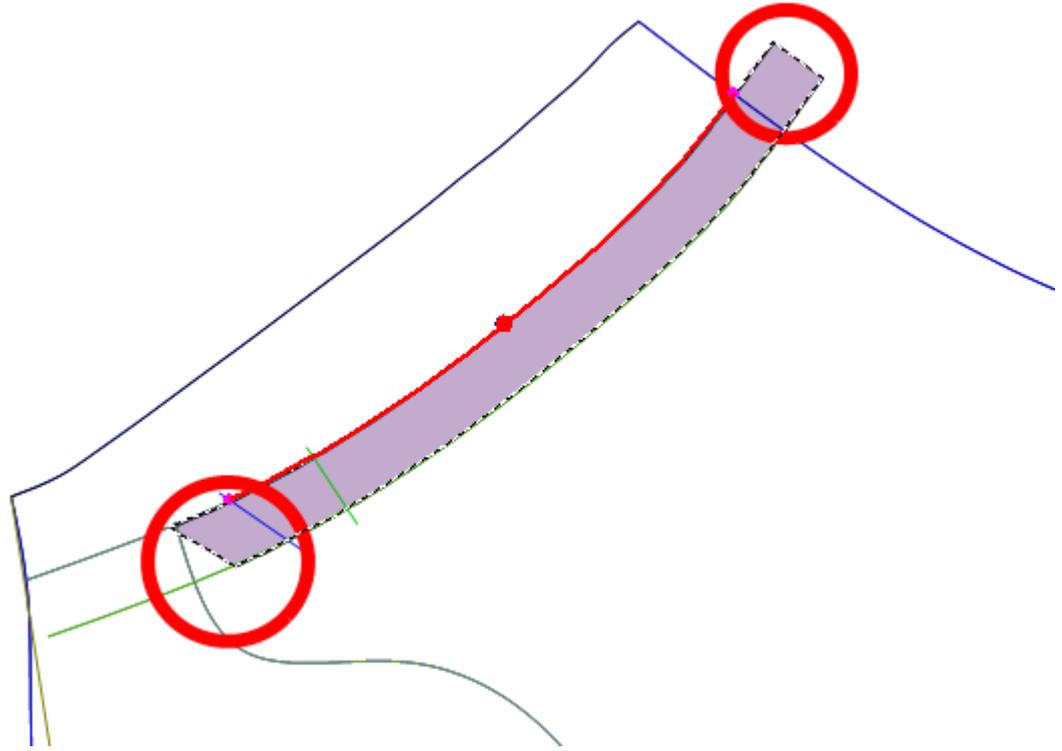
End decay distance (mm)

End value distance. This value controls the end of the blending region.

Taking the following example, where a strap is to appear with a wave effect, emulating for example, an elastic material



with the given parameters on the depicted **Stretch** tabulator, the part will be compensated like this



7.1.3.6 Treatments - Line Offset

These are the options for the most typical treatment, which is the **Line** type

The screenshot shows the 'Treatments' dialog box with the following settings:

- Offset type:** Line (selected), None, Sawtooth. Quality: 4.
- Stencil:** Notches, Stretch, Offset, Punch, Corner. Type: Offset (selected), None, Net, Inside, Outside.
- Width (mm):** 1.6
- Margin (mm):** 8, 8. Includes a link icon and a right-pointing arrow.
- Max. Length (mm):** 25
- Gap (mm):** 6
- Distance (mm):** 0. Orientation: Outside (selected), Inside.
- Side indicator (mm):** 0
- Properties:** Properties (dropdown)

Stencil

Stencils are the same as markers; the stencil menu can be scrolled by holding down the left mouse button.

None - no markers;

Net - Markers that are drawn over the original line;

If **Net** stencils are used, more information is required;

Width (mm) - the width of the stencil in millimeters;

Margin (mm) - the distance from the next portion of the part outline. This is used to undercut the markers so they do not break the edge of the part;

Max length (mm) - the maximum length of the marker in millimeters;

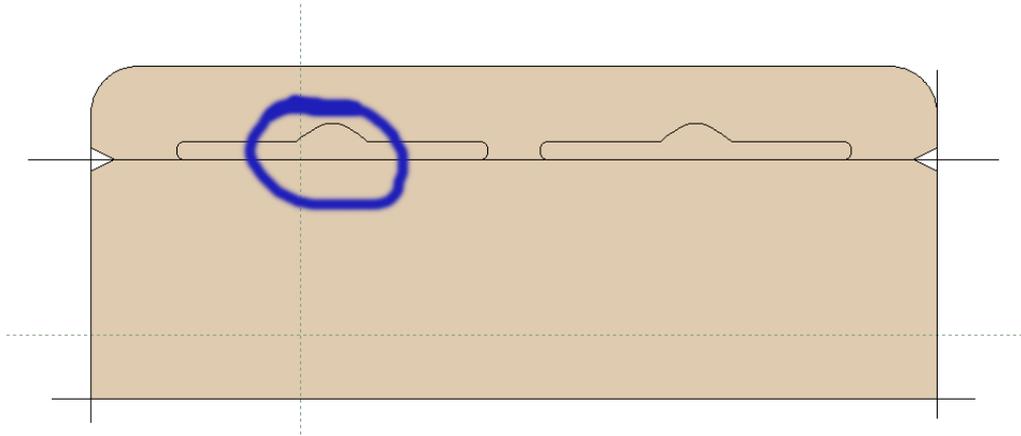
Gap (mm) - the gap between markers in millimeters;

Offset - markers which are offset from the original line. If **Offset** is used, the following values must be specified;

Inside - Offset is towards the inside of the part (away from the edge);

Outside - Offset is towards the outside of the part (towards the edge);

Distance (mm) - Distance of the offset in millimeters;



Side indicator - Enter value of the side indicator.

Corner

Corners will be applied at both ends of the treatment.

Notches

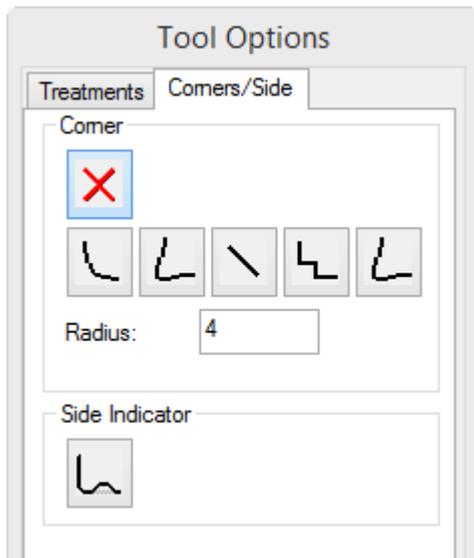
Notches will be applied at both ends of the treatment if selected

Offset

The offset from the original line in mm.

7.1.3.7 Treatments - Corners-Side

It is possible to control the corners of a treatment

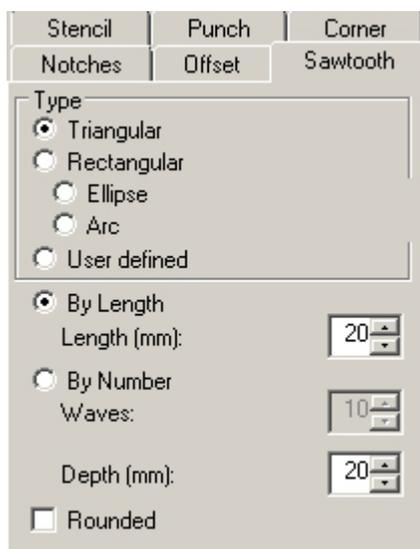


Corners - please refer to Editing Parts - Corners for details.

Side Indicator - Enables the side indicator. This option is only available in part creation.

7.1.3.8 Treatments - Sawtooth offset

These are the options for the **Sawtooth** type treatment



Triangular - Triangular shape

Rectangular - Rectangular shape

Elipse - Elipse shape

Arc - Arc shape

User defined - User defined shape. This must be selected from the **Punches** tab of the **Parts/Library** menu

The number of shapes on the part can be defined by

By Length - Length of each shape

By Number Waves - Number of shapes required

Depth (mm) - Depth of the shape in mm

Rounded - Corners of the shapes can be rounded

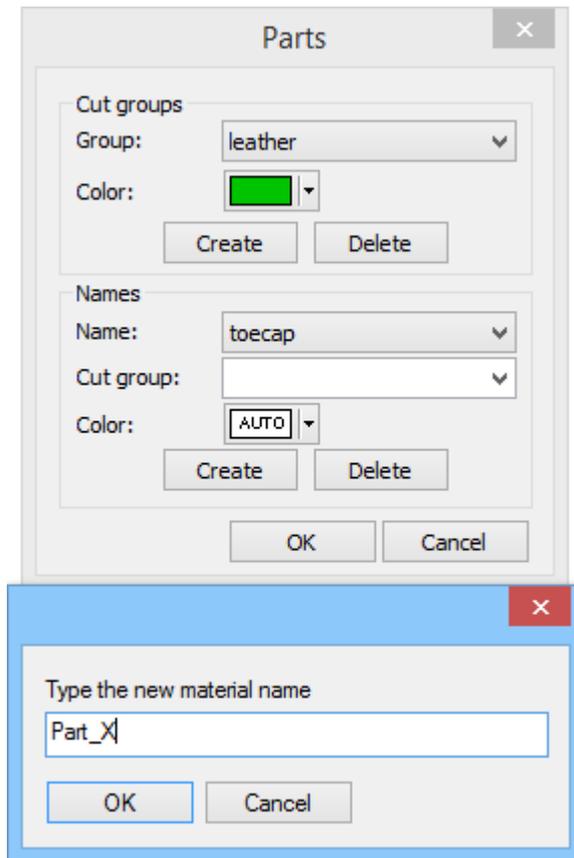
7.1.3.9 Editing Parts - Names, Cut Groups, Cost Groups and Colours

1. with a part selected, select to the **Properties** tab of the **Tool Options** toolbar

2. Change or add the properties.

- **Name** - Select the part name from the drop down list

- **Group** - Select the part group from the drop down list. Using the **+** button will allow you to add names and groups using the properties options.



- **Color** - Define the part color;
- **Quality** - Part quality used to calculate its cost;
- **Properties** - It is recommended that this option is unchanged;
- **Symmetric** - If ON, the part needs to be cut twice (once mirrored);
- **Quantity** - Number of parts in the project
- **Quantity (symmetric)** - Number of parts symmetric in the project.
- **Side** - Left or right.

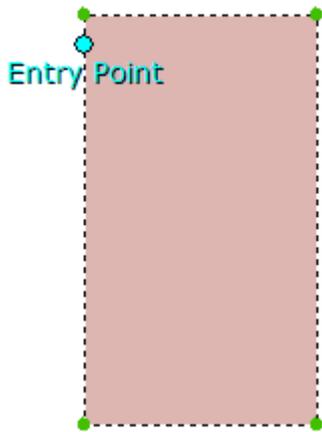
7.1.3.10 Editing Parts - Points

Entry Point - To define the cutting start position.

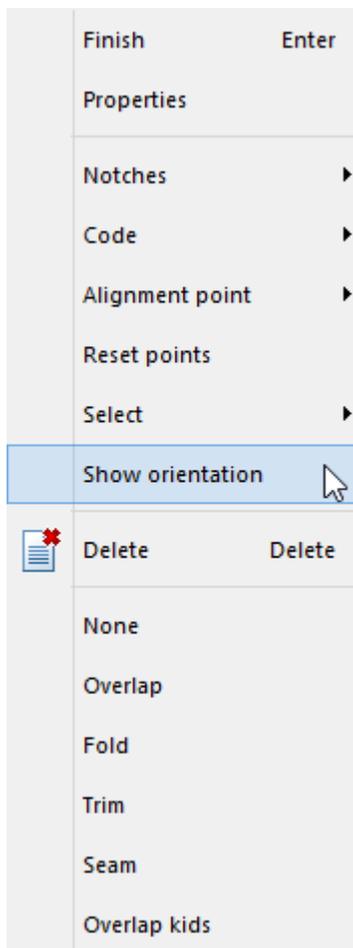
Orientation - To define the orientation of the part when cutting. This orientation is used by the automatic or interactive nesting algorithms.

Code Point - To define the code position which has the option of being inverted (outside or inside).

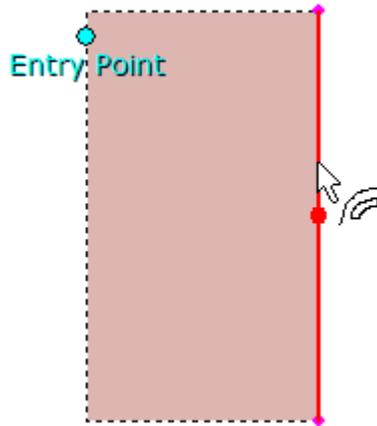
1. When you select the part the entry point it's already placed. To move the point just click over it and drag.



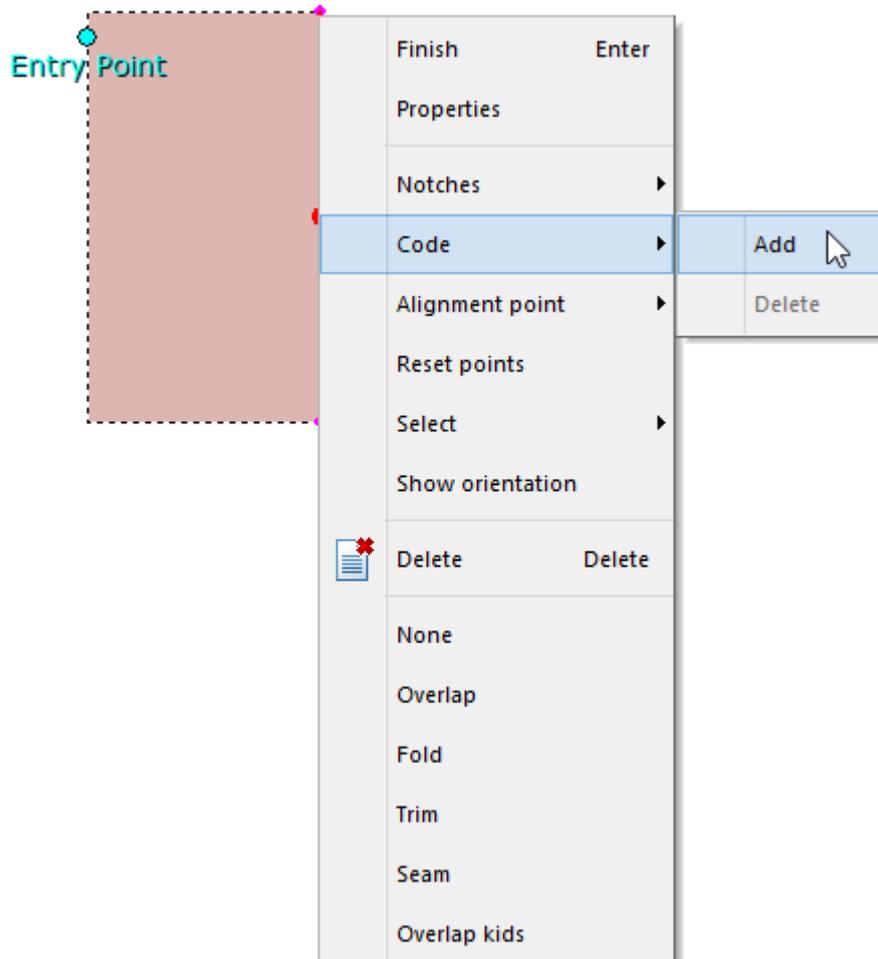
2. To set the orientation point do right click and select the option **Show orientation**. The orientation will also be visible in the parts bar.



3. To add code points, select the part and the line desired.

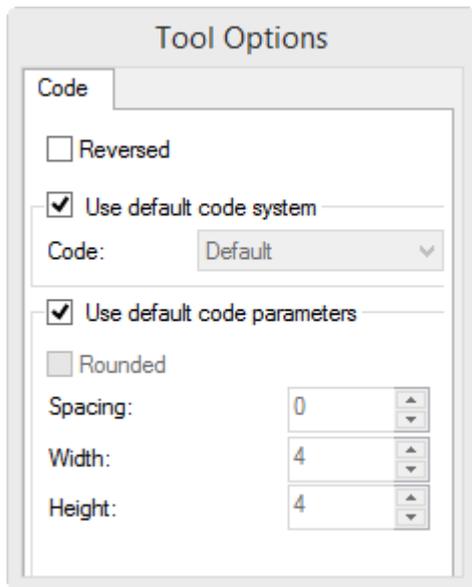


a. Do a right click over the place you want to add the point, and select the options **Code - Add**

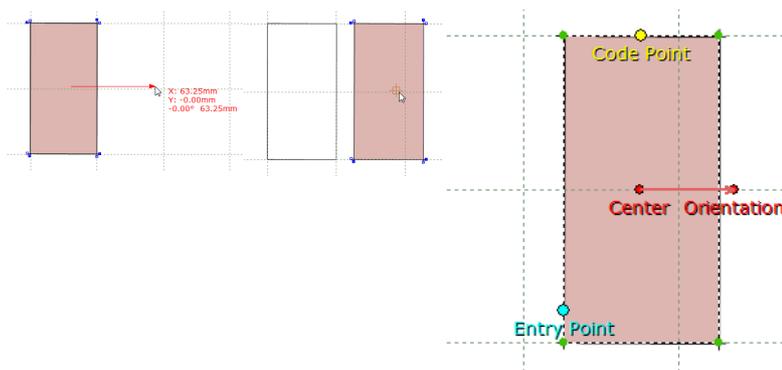


b. To delete a code point, select the point, do a right click and select the options **Code - Delete**

1. With the code point selected, the Code tab will appear in the **Tool Options** toolbar.



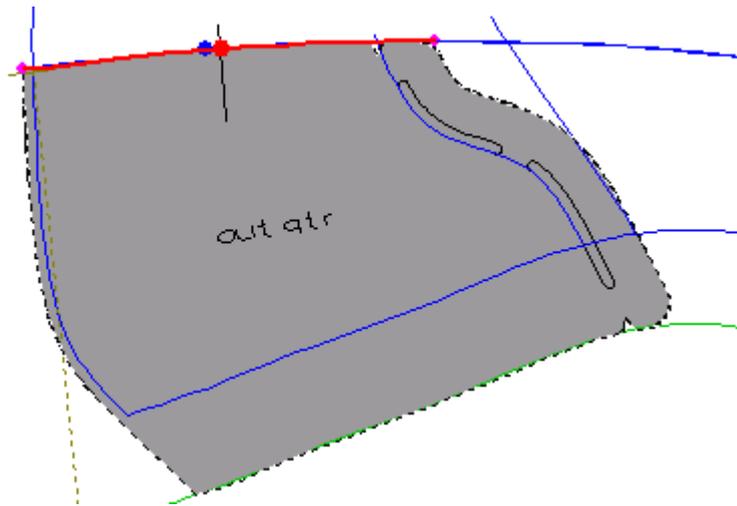
Note: If you move the part the points will be dragged with it.



7.1.3.11 Editing Parts - Breaking the part boundary.

The boundary of a part can be broken or cut where a line intersects it.

1. select the section of the part boundary you wish to break. This may be for a change in offset within that section.

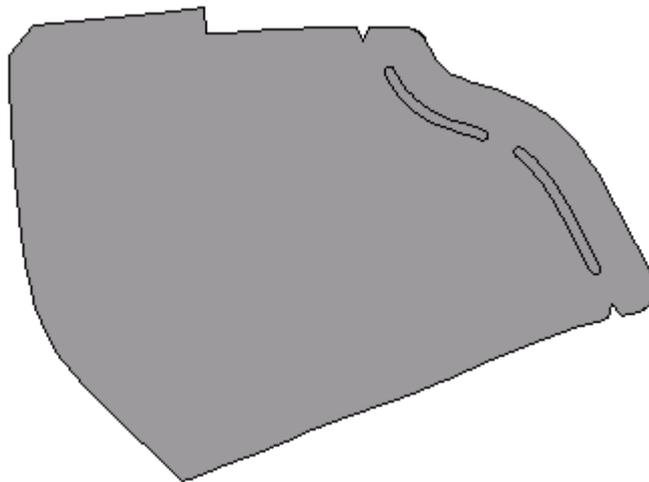


2. Press **Shift** and move the cursor towards the line that defines the cut position. The cut cursor will

be displayed 

3. click the left mouse button to cut the boundary.

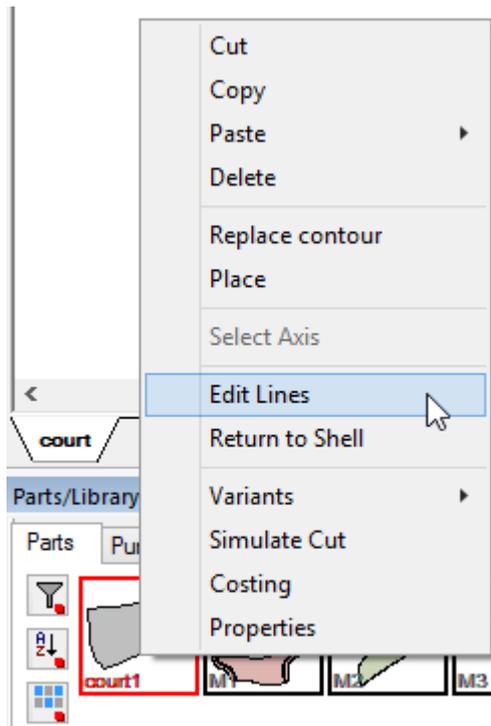
4. apply different treatment to one section.



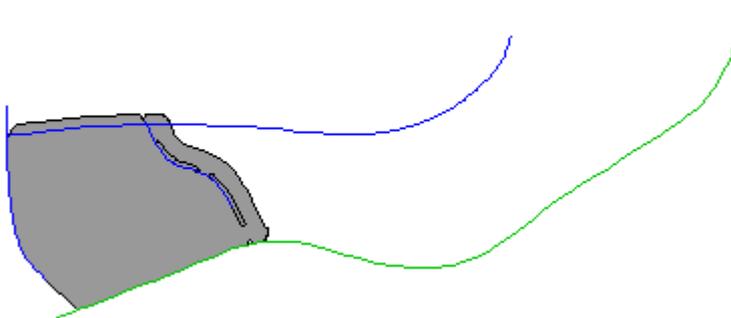
7.1.3.12 Editing Parts - Edit lines

Sometimes it is useful to be able to display only the lines that are used in the current part. This is particularly useful when a shell has many lines.

1. Select the part(s) in the parts library.
2. Right mouse click over the part in the **Parts** toolbar.
3. Select **Edit Lines** option, from the contextual menu.



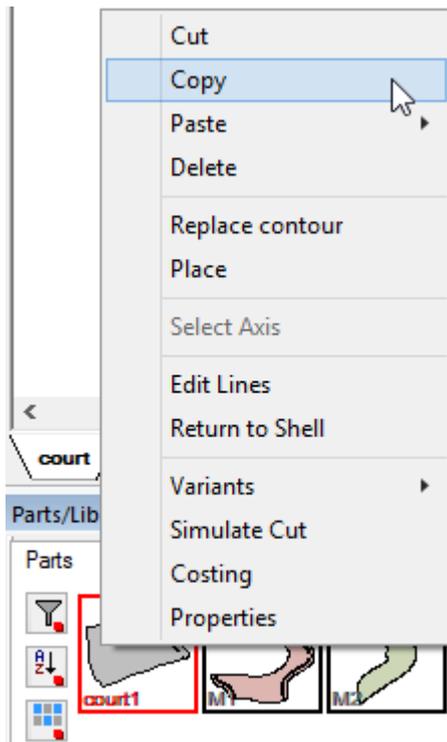
The part and its lines will be displayed for editing



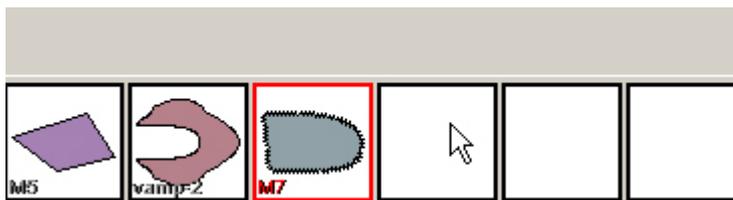
7.1.3.13 Editing Parts - Copy and paste

To make a copy of a part,

1. Select the part.
2. Right mouse click over the part in the **Parts** toolbar.
3. Select **Copy** from the contextual menu.

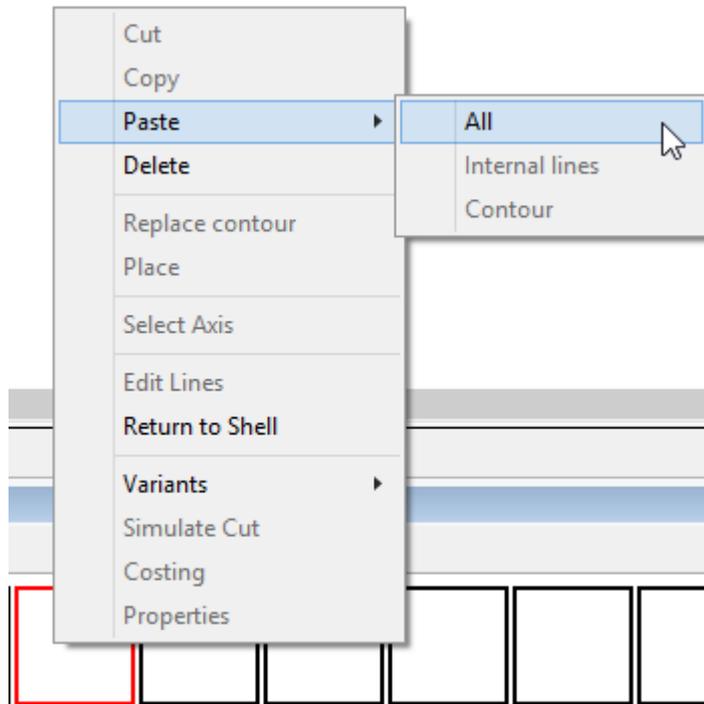


4. Select a blank space in the **Parts** toolbar



Click the right mouse button while the cursor is over the blank space.

5. Select **Paste All** from the contextual menu.

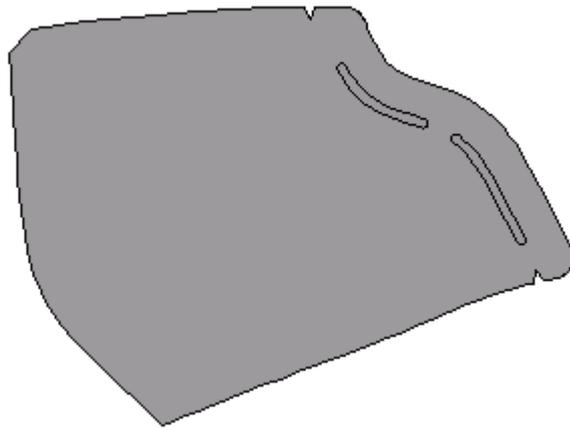


The copy of the part will be displayed in the parts toolbar.

7.1.3.14 Editing Parts - Return to Shell

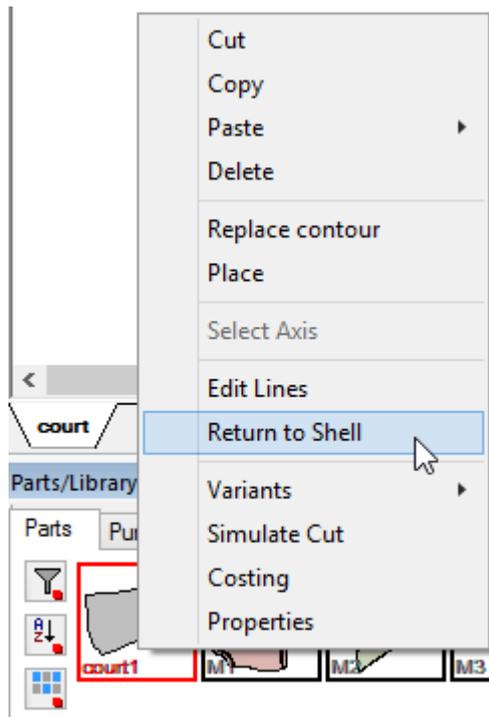
Use this option to show all the lines on a part. The display is scaled so that the whole part is shown on the screen.

With the part selected,

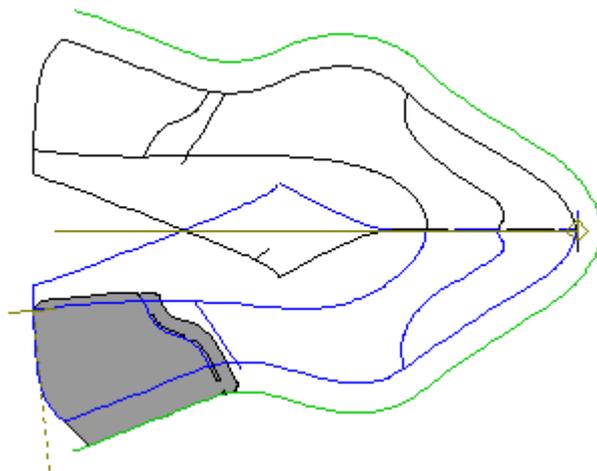


Right mouse click over the part in the **Parts** toolbar.

1. Select **Return to Shell** option.

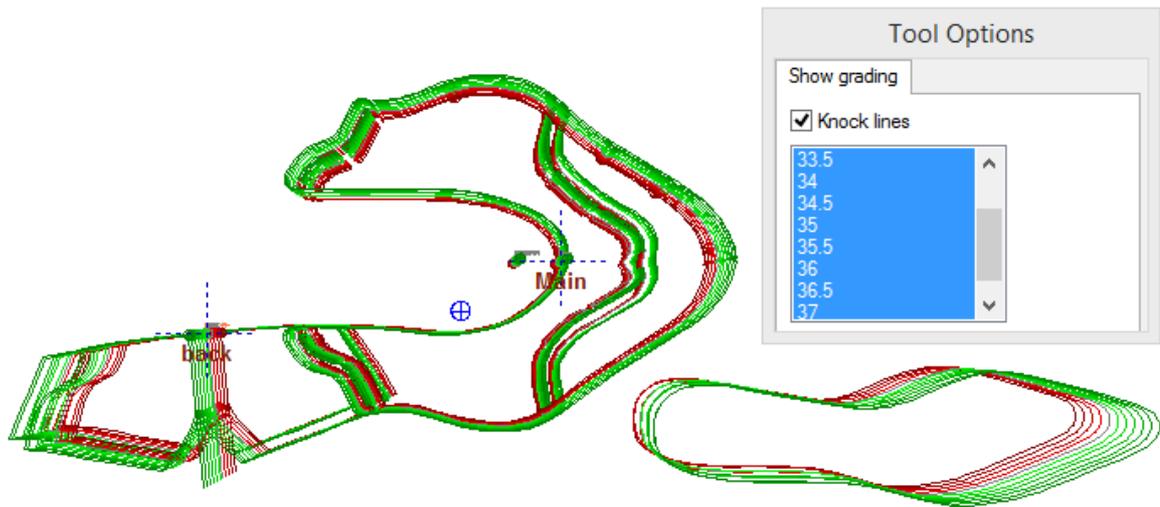


The part and all lines will be scaled to fit the screen and displayed

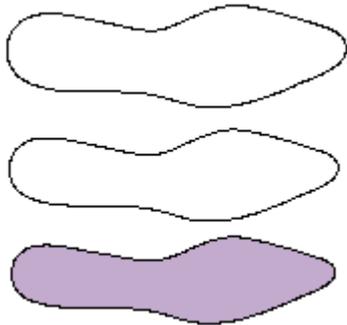


7.1.3.15 Editing Parts - Variants

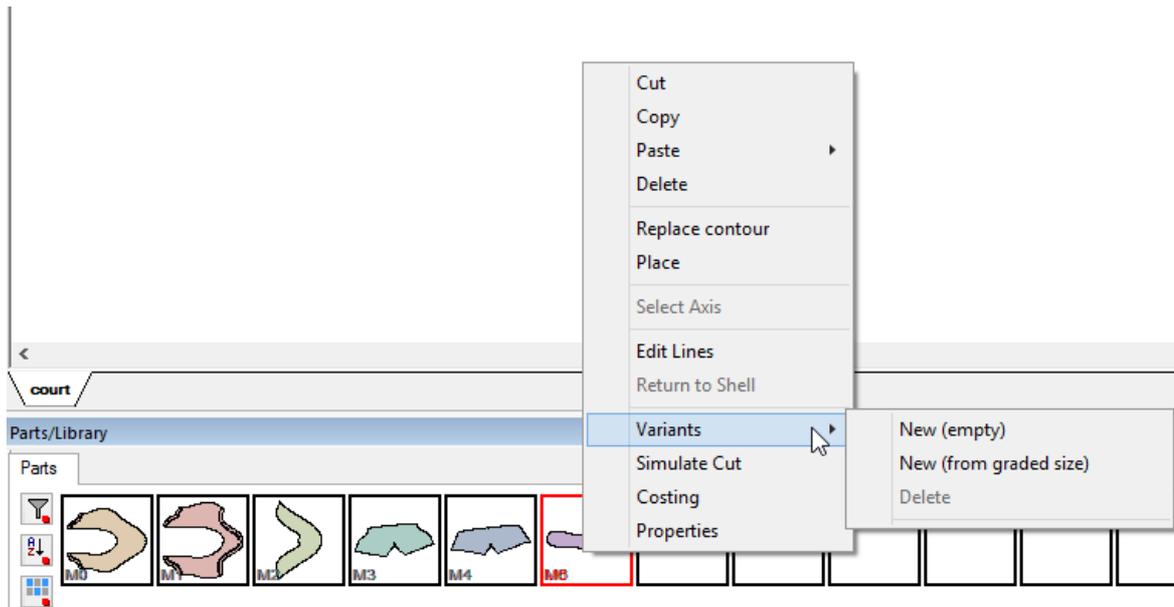
By default, all the parts included in a model, will scale base in the same grading.



If the grading isn't equal to all the parts, then its possible to define a different grading.

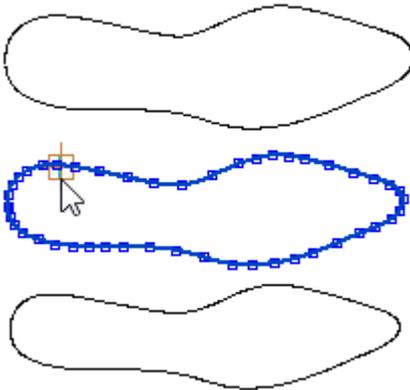


1. In the **Parts** toolbar, do a right mouse click over the part to add the different grading.
2. Select **Variants** option, there are two types of variants, empty or from graded size.

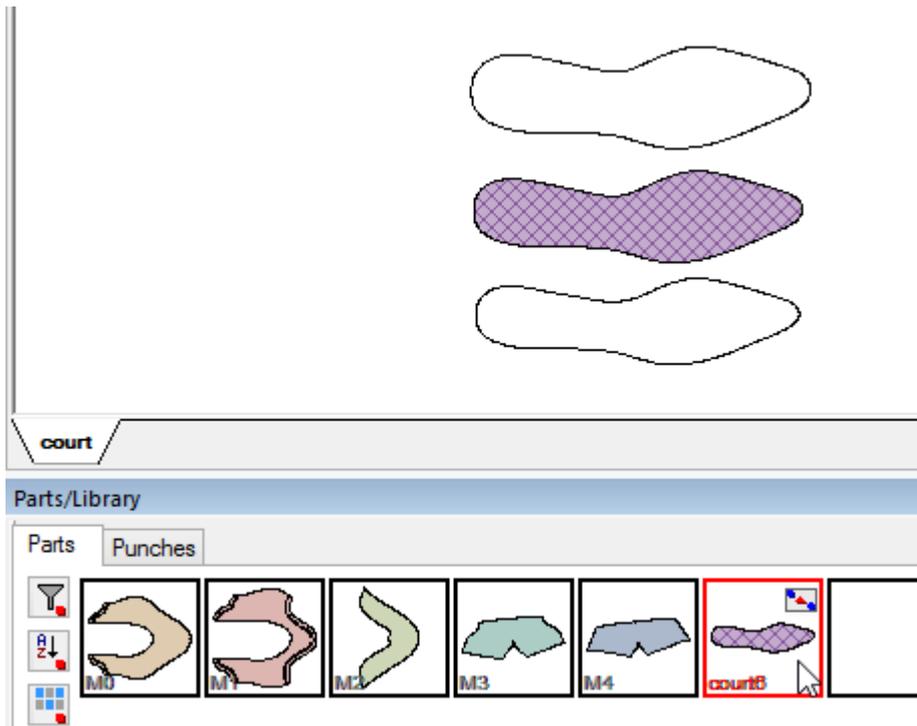


7.1.3.15.1 Editing Parts - Variants - New (empty)

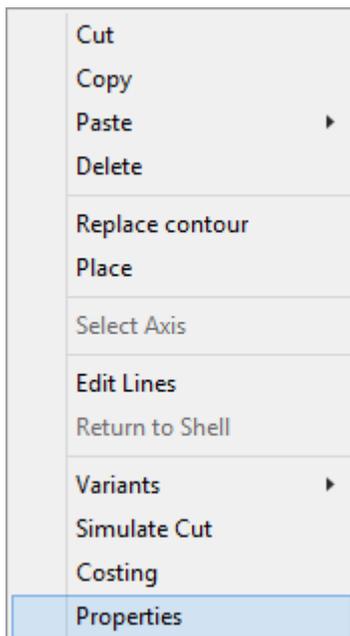
1. In the **Parts** toolbar, do a right mouse click over the part to add the different grading.
2. Select **New (empty)**, under the **Variants** option.
3. Now, create the new part to grade.



4. The new part will be added to the same place in the parts tool bar.



5. To define the grading for each part size, in the **Parts** toolbar, do a right mouse click over the part and select Properties.



6. Open the second Properties tab, to configure the variants, by size range.

Properties Properties Assessment

Variant: All sizes

Size rule:

- Exclude
- All sizes
- Size range
- Not graded size

Post processing:

- Filter outside border
- Filter holes
- Filter internal lines

Part contents:

- Remove lines outside border
- Remove lines inside holes
- Trim line groups
- Remove holes outside border

Group grading: [None]

Full part scaling (%): 0.00

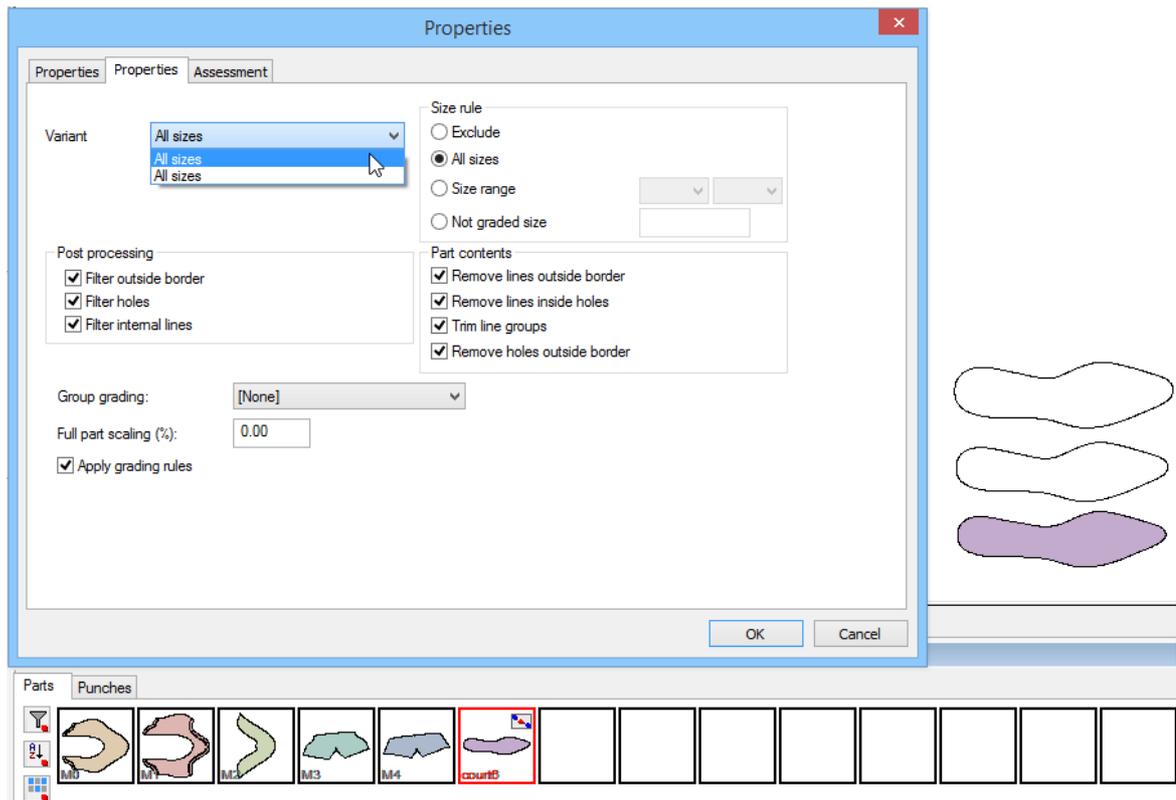
Apply grading rules

Stencils margin: 0

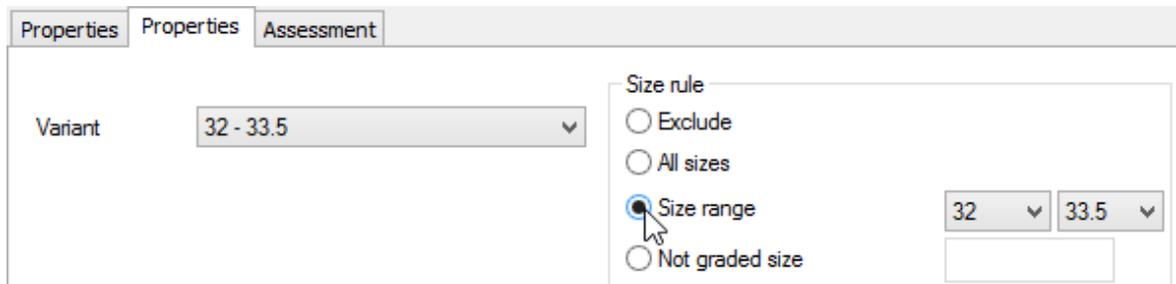
7. Select the Variant, by default they will be attributed to all sizes.

Variant: All sizes

8. But as you selected the variant, the correspondent will be active.

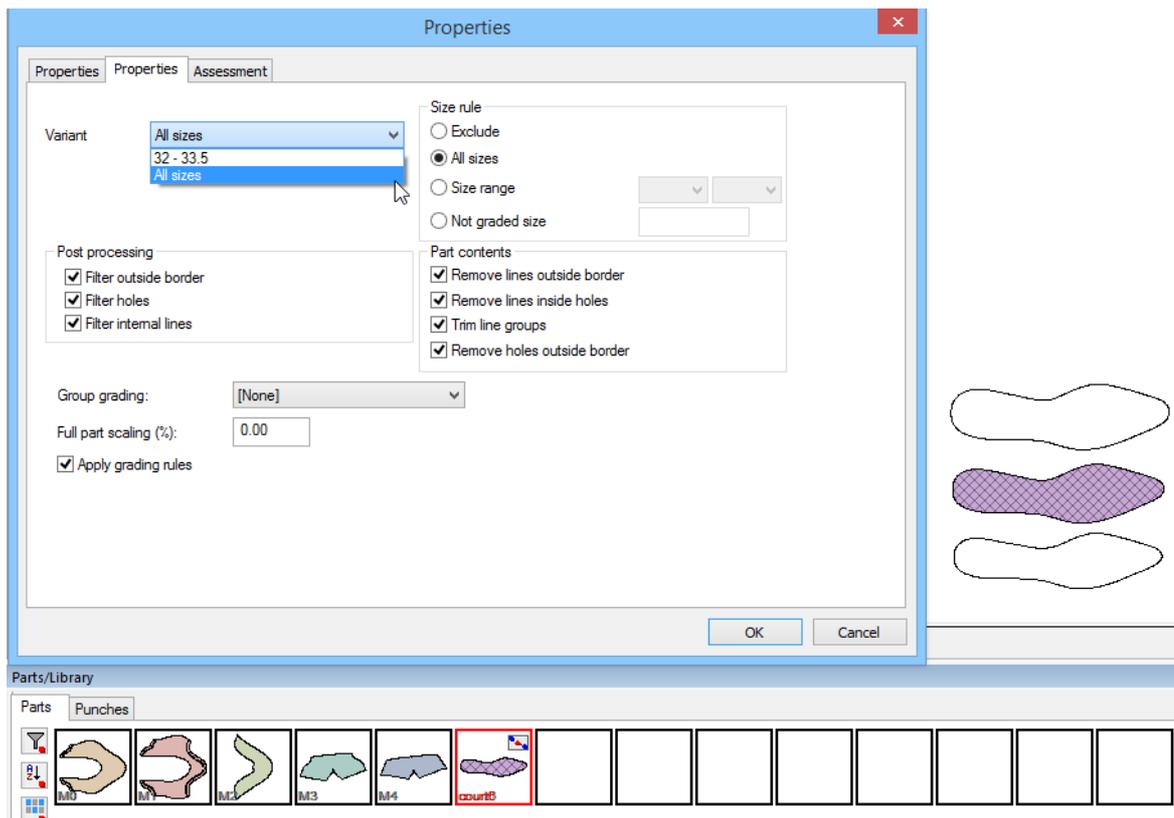


9. With the required variant selected, select the **Size Rule**.

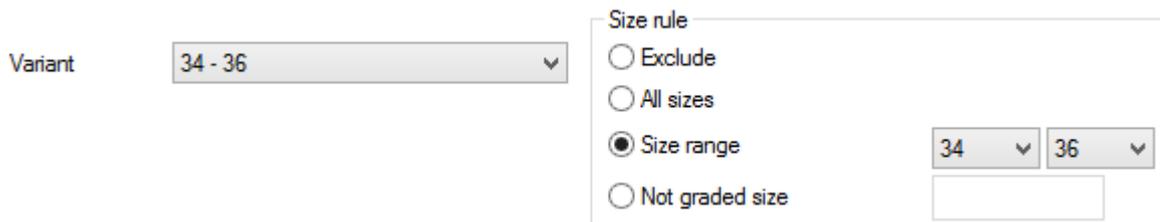


Note: The **Variant Name** will assume the **Size Range**.

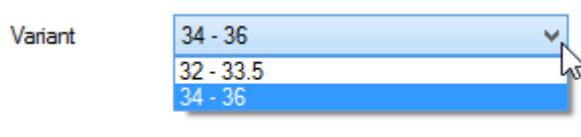
10. Select the other **Variant**.



11. Select the **Size Rule**.



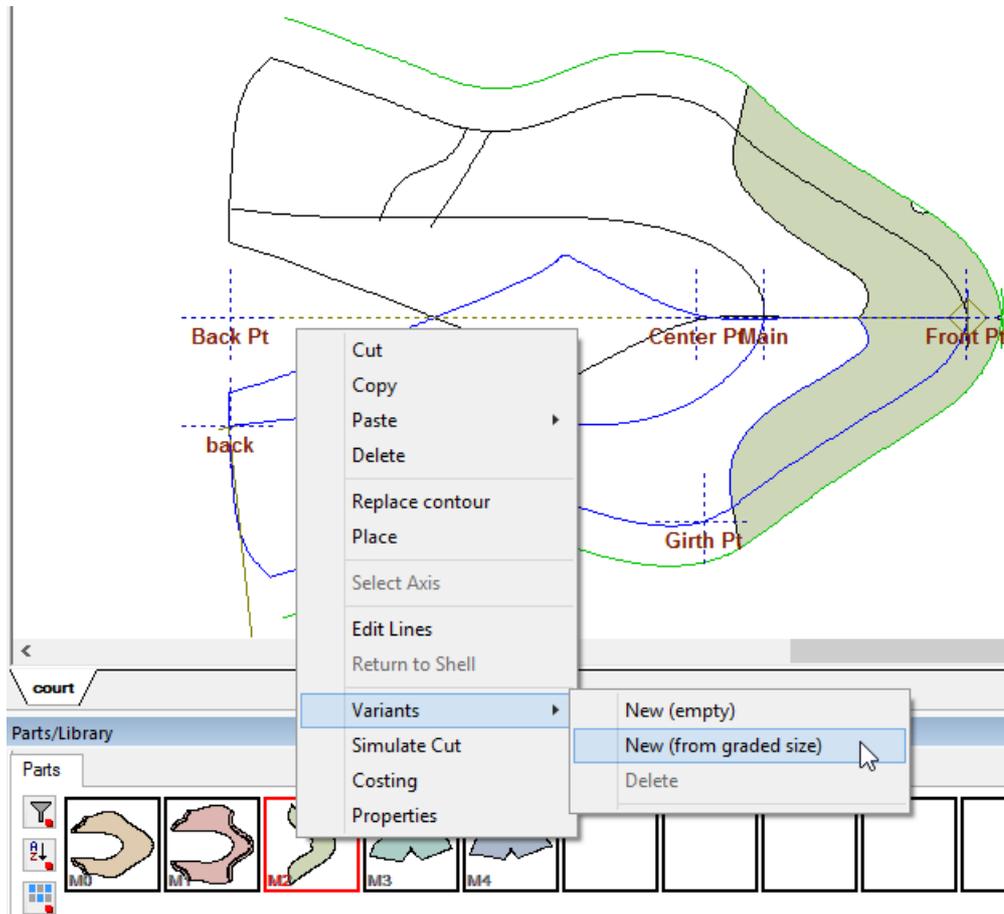
12. Now there are two different variants, the first part will be used in gradings for size 32 to 33,35, and the other for size 34 to 36.



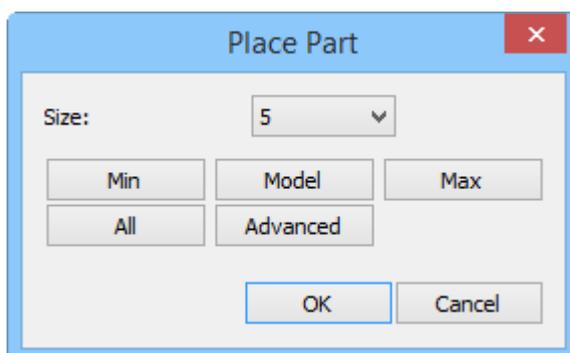
It's possible to add as many variants are desired. For further information go to Parts Properties - Properties

7.1.3.15.2 Editing Parts - Variants - New (from graded size)

1. In the **Parts** toolbar, do a right mouse click over the part to add the different grading.
2. Select **New (from graded size)**, under the **Variants** option.



3. The **Place Part** window will appear.



Size - Choose the desired graded size, from the drop down list.

Min - The smaller graded size will be selected

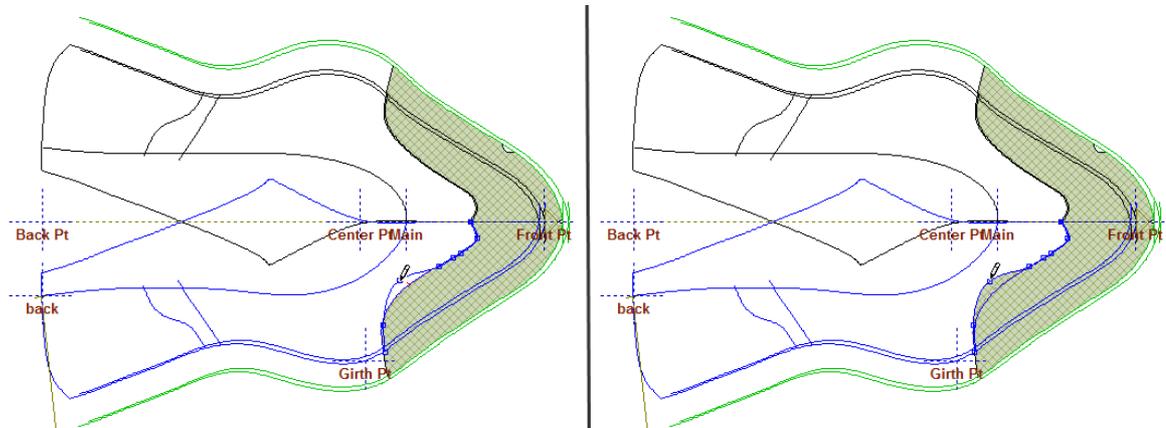
Model - The model graded size will be selected

Max - The bigger graded size will be selected

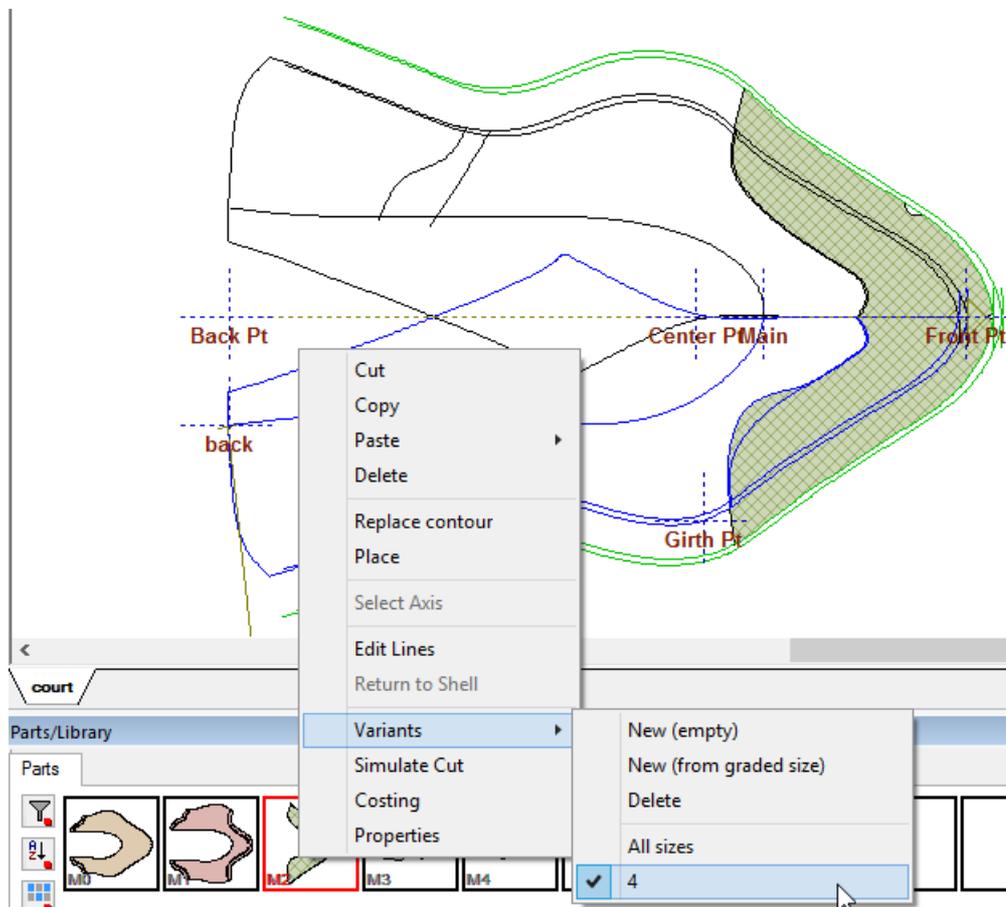
All - All sizes will be selected

Advanced - Opens the part selection window, and allows to select, one, several or all graded sizes.

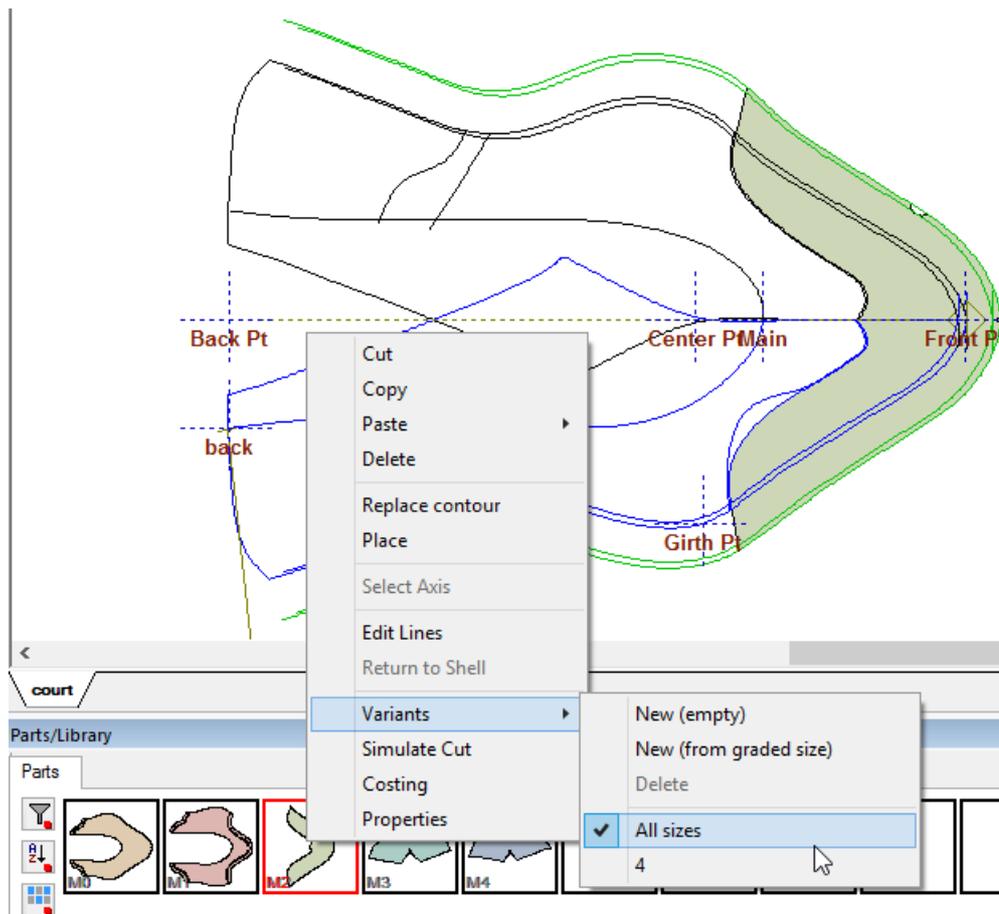
4. Select the desired graded size(s) and press **Ok**, now its possible to change the part geometry only for the selected graded size(s).



5. The change is only applied for the selected graded size.



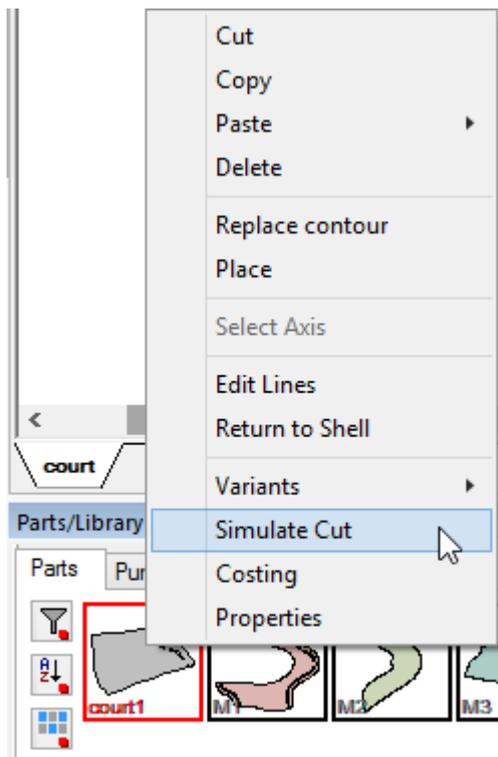
6. The other sizes remain as they were.



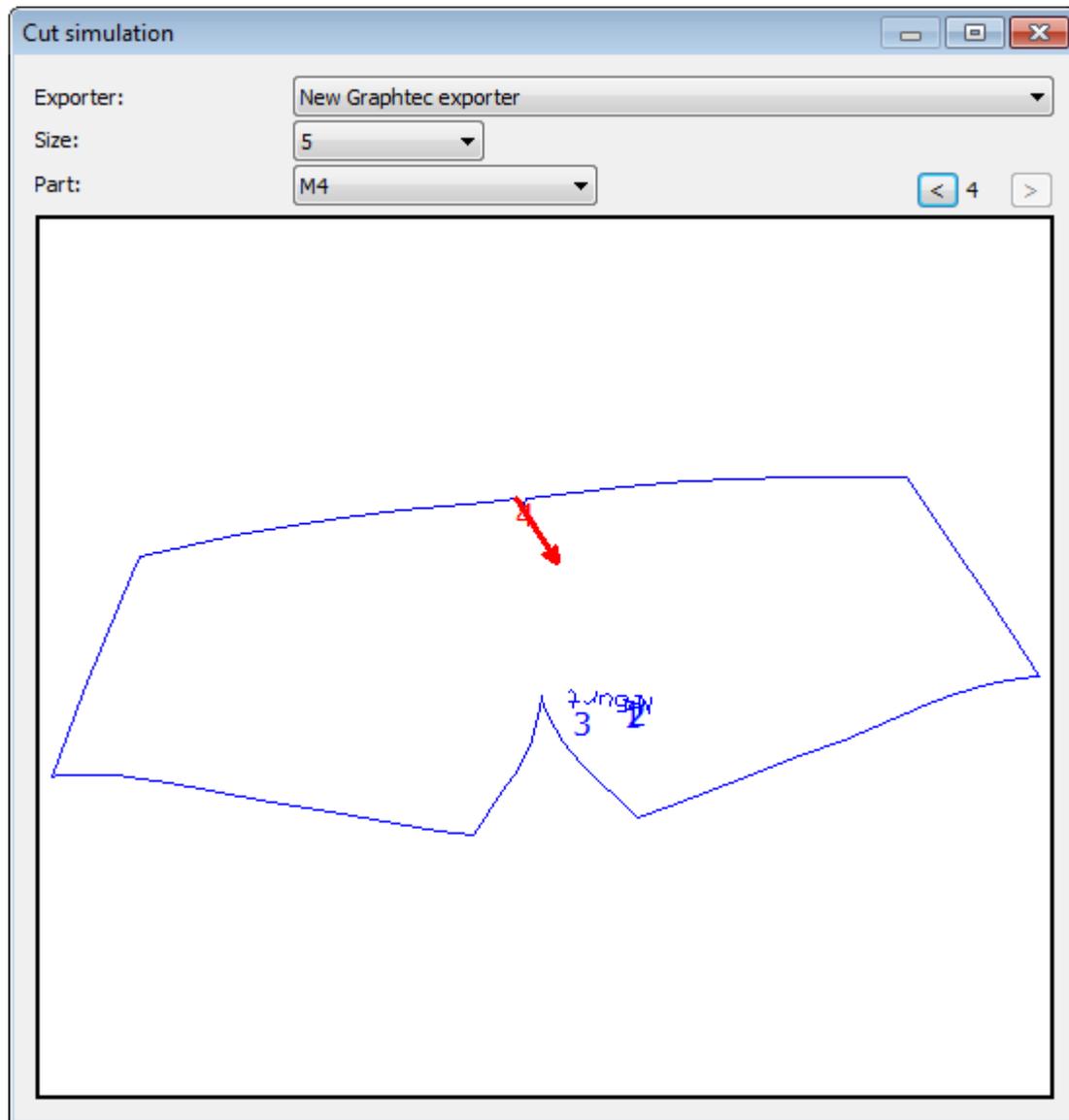
7.1.3.16 Editing Parts - Simulate Cut

This option simulate cut the parts.

1. Select the part(s).
2. Right mouse click over the part in the **Parts** toolbar.
3. Select **Simulate Cut** from the contextual menu.



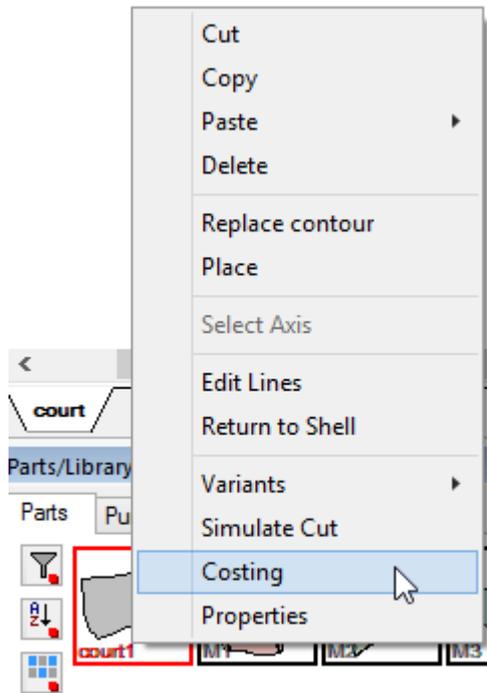
4. Select exporter machine and size to simulate.
5. The Cut simulation window will appear.



7.1.3.17 Editing Parts - Costing

This option does the costing evaluation of the target parts.

1. Select the part(s).
2. Right mouse click over the part in the **Parts** toolbar.
3. Select **Costing** from the context menu.



4. The dialog part assessment will appear. More information on the options available could be found on the Parts - Costing section.

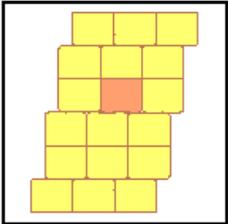
Part assessment

Material: <All> Technique: Inverse parallelogram

Size: <All> Group common sizes

Part: <All>

Group by: None Options Report PDF CSV

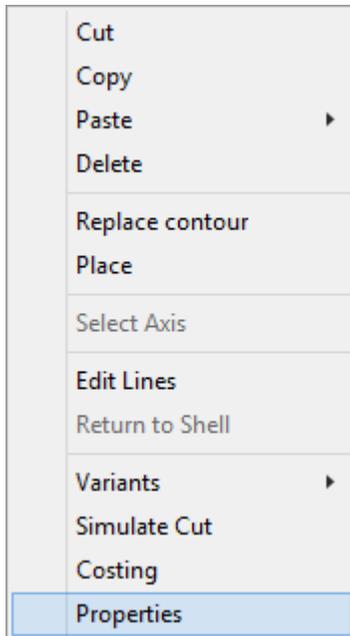


Component	Part	Size	Area	Perimeter	Efficiency	Total/Part	Total/Pair	Punches	Markers	Lines
1260D	meP_sita - 0	Inv.	0.080 m ²	1117.5 mm	99.4 %	0.080 m ²	0.161 m ²	0	0.0 mm	0.0 mm
Average:			0.080 m²	1117.5 mm	99.4 %	0.080 m²	0.161 m²			
Total:			0.080 m²	1117.5 mm	99.4 %	0.080 m²	0.161 m²	0	0.0 mm	0.0 mm

7.1.3.18 Editing Parts - Properties

How to access **parts properties**.

1. Select the part(s). Several parts could be selected by using the **CTRL** button while clicking. This enables to set common properties to the selection.
2. Press the right mouse button while the cursor is over the part(s) in the **Parts** library.
3. Select **Properties** option.



4. Change or add new properties.

Properties

Properties Assessment

Name: M%S

Group:

Quantity: 1 / 1

Quantity (symmetric): 0 / 1

Symmetric

Color: AUTO

Side: Left

Synchronize with 3D system

Angle: 0.0

Rotation angles for auto nesting

Angle: 0

Range: 0

OK Cancel

7.1.3.18.1 Parts Properties - Properties

Use this option to edit the part properties.

Name - Select the part name from the drop down list.

Group - Select group from the drop down list.

Quantity - Number of parts in the project.

Quantity (symmetric) - Number of parts symmetric in the project.

Symmetric - If *ON*, the part needs to be cut twice (once mirrored)

Color - Select the part color.

Angle - Insert the start position angle of a part.

Rotation angles for auto nesting - After inserting the Angle and Range, click "+" button, to add the new angle range.

To delete an angle range, select it and press "-" button.

Side - Select the side, between Left or right.

Synchronize with 3D system - If *ON*, the part will be synchronized with 3D system.

The screenshot shows the 'Assessment' tab of a software interface. It contains several configuration sections:

- Variant:** A dropdown menu set to 'All sizes'.
- Size rule:** Radio buttons for 'Exclude', 'All sizes' (selected), 'Size range' (with two empty dropdowns), and 'Not graded size' (with an empty text box).
- Post processing:** Three checked checkboxes: 'Filter outside border', 'Filter holes', and 'Filter internal lines'.
- Part contents:** Four checked checkboxes: 'Remove lines outside border', 'Remove lines inside holes', 'Trim line groups', and 'Remove holes outside border'.
- Group grading:** A dropdown menu set to '[None]'.
- Full part scaling (%):** A text input field containing '0.00'.
- Apply grading rules:** A checked checkbox.
- Stencils margin:** A spinner control set to '0'.

Variant - Select the part variant

Size rule - Sets how is the scaling of the selected variant.

Exclude - The variant is excluded, i.e, will not be exported.

All sizes - Normal scaling made to all sizes.

Size range - Define the size range where the normal scaling made. Outside this range the variant is excluded.

Not graded size - The normal scaling will not be applied to this variant. The geometry will be exported without any changes and with the size defined in the edit box.

Post processing - Allow to filter (remove excessive points) from the **outside border**, **holes** or **internal lines**.

Part Contents - Select or deselect the content parts options.

Remove lines outside border - When the part is generated (to send for cut or PDM) all the lines outside the border will be excluded.

Remove lines inside holes - When the part is generated (to send for cut or PDM) all the lines inside the holes will be excluded.

Trim line groups - For line groups (ex. markers), this option controls if the markers is cut or deleted when is intersecting the border.

Remove holes outside border - The holes contained outside the part border will not be exported.

Group Grading - apply a specific group grading to part. In this case, for the sizes between 32 and 34 use the 34 grade and for sizes between 35 and 37 use the 37 grade. When cutting this part only sizes 34 and 37 will be sent to the cutter/plotter.

Group grading: 34 (32 - 34); 37 (34.5 - 37) ▼

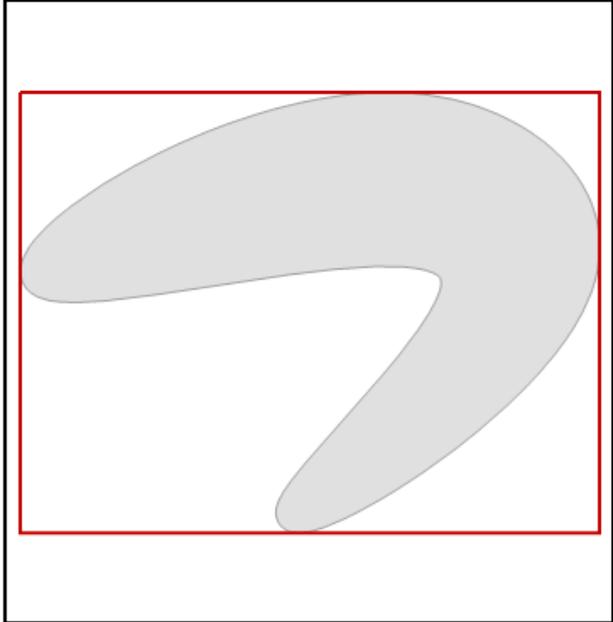
Full part scaling - Used when a global scale factor is applied to the part, after being scaled by all the other grading rules.

Apply grading rules - Check/Uncheck to apply grading rules.

Stencils margin - Allows to control the stencils margins (mm), when cutting the part.

7.1.3.18.2 Parts Properties - Assessment

The parts assessment allows to have real time consumptions.

Properties	Properties	Assessment
Method	Bounding box	
Parts margin	0 mm	
Parts area	0.032 m ²	
Parts	1	
Result	0.070 m ²	
Efficiency	46.19 %	

- **Method:** Several interlock costing techniques can be used;

There are several methods:

<input checked="" type="checkbox"/>	Convex Hull
<input type="checkbox"/>	Parallelogram
<input type="checkbox"/>	Inverse parallelogram
<input type="checkbox"/>	Bounding box
<input type="checkbox"/>	Linear
<input type="checkbox"/>	Circle
<input type="checkbox"/>	Grid
<input type="checkbox"/>	Synthetic

- **Parts Margin:** Adds a margin in mm between parts;
- **Parts Area:** The parts area;

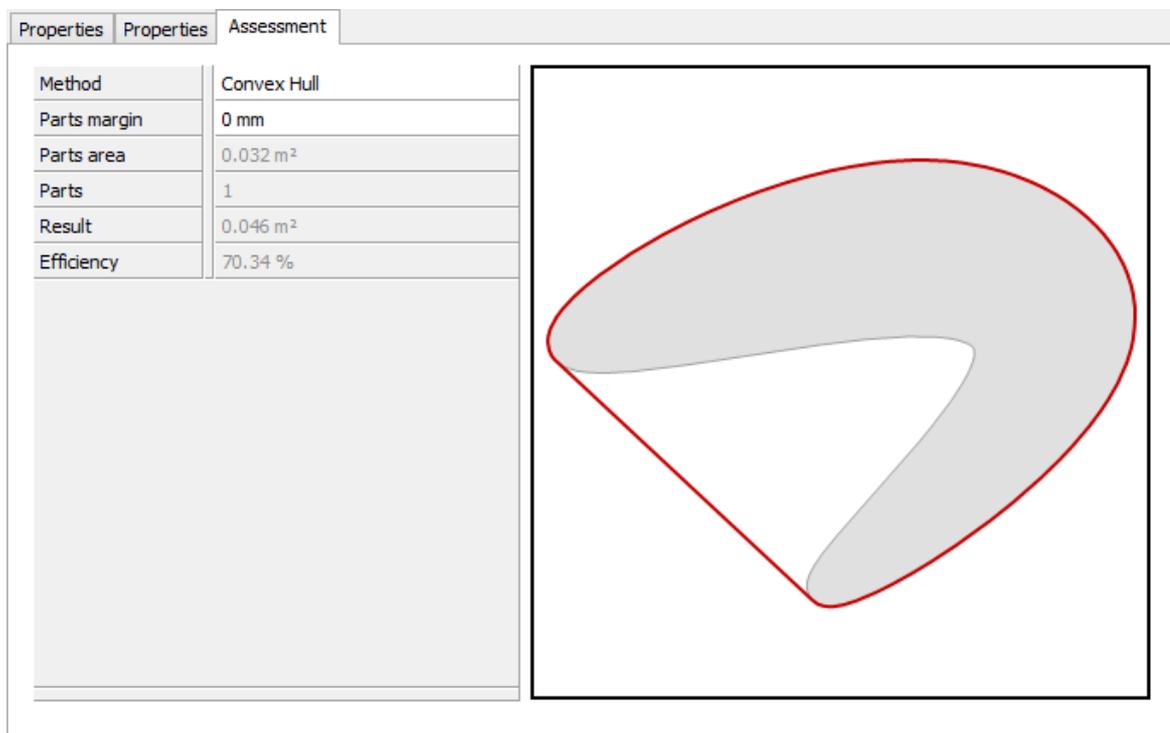
- **Parts:** The number of parts;
- **Result:** Consumption area for the specified pattern.
- **Parts Margin:** Adds a margin in mm between parts;
- **Result:** Consumption area for the specified pattern.
- **Efficiency:** Measure of efficiency, defined as material area being cut versus raw material area;

7.1.3.18.2.1 Method - Convex Hull

This is a nesting interlock technique called Convex Hull.

It uses the tightest bounding convex polygon (Convex Hull) of the part or part group and evaluates the resulting area.

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

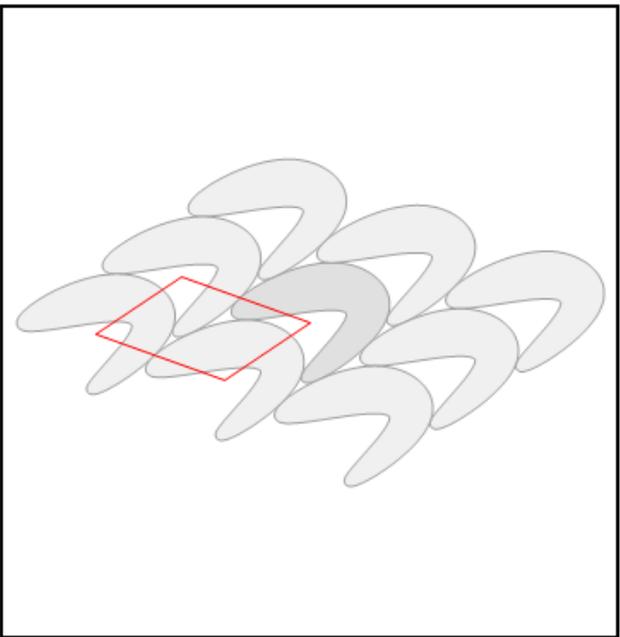


7.1.3.18.2.2 Method - Parallelogram

This is a nesting interlock technique called Parallelogram.

It uses the central point of the part group and packs, without any rotation, the group based on a parallelogram that is the minimum parallelogram with the shortest height (distance in Y).

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

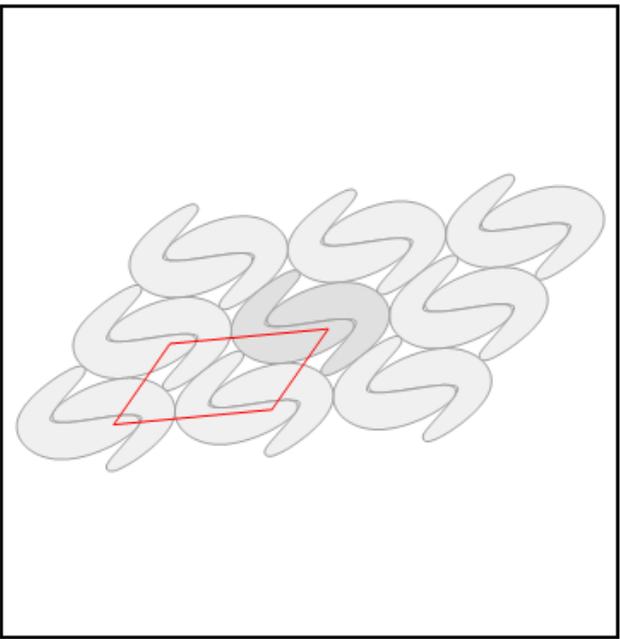
Properties	Properties	Assessment
Method	Parallelogram	
Parts margin	0 mm	
Parts area	0.032 m ²	
Parts	1	
Result	0.041 m ²	
Efficiency	77.71 %	

7.1.3.18.2.3 Method - Inverse Parallelogram

This is a nesting interlock technique called Inverse Parallelogram.

It uses the central point of the part group and packs, without any rotation, the group based on a parallelogram that is the minimum parallelogram with the shortest height (distance in Y).

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

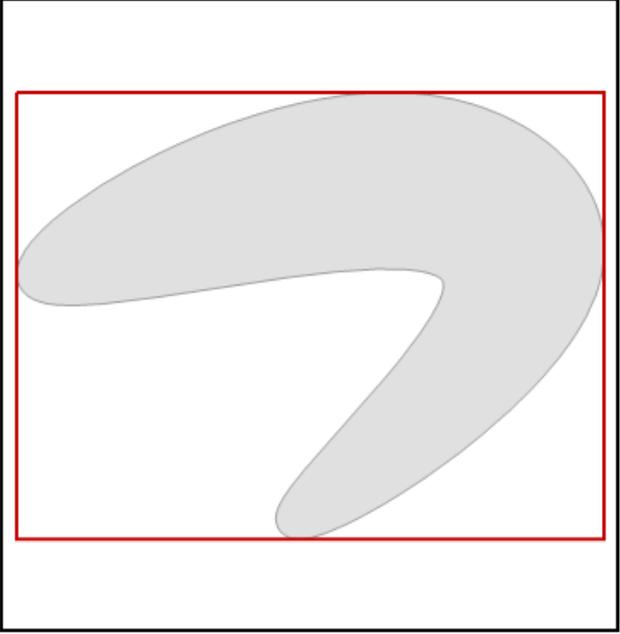
Properties	Properties	Assessment
Method	Inverse parallelogram	
Parts margin	0 mm	
Parts area	0.032 m ²	
Parts	1	
Result	0.036 m ²	
Efficiency	88.52 %	

7.1.3.18.2.4 Method - Bounding box

This is a nesting interlock technique called Bounding Box.

It uses the tightest bounding box of the part group and evaluates the resulting area.

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

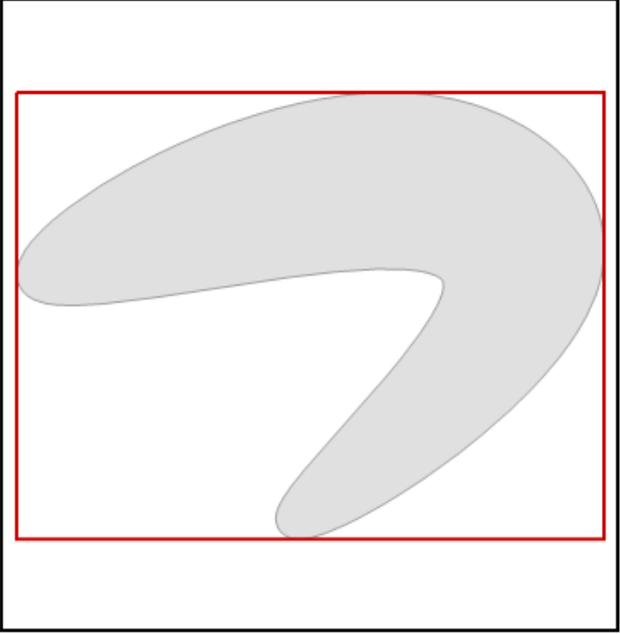
Properties	Properties	Assessment
Method	Bounding box	
Parts margin	0 mm	
Parts area	0.032 m ²	
Parts	1	
Result	0.070 m ²	
Efficiency	46.19 %	

7.1.3.18.2.5 Method - Linear

This is a nesting interlock technique called Linear. This is used for linear raw materials automatically fed from a roll.

It uses the minimum vertical linear strip that fully contains part group and evaluates the resulting area.

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

Properties	Properties	Assessment
Method	Linear	
Parts margin	0 mm	
Parts area	0.032 m ²	
Parts	1	
Efficiency	46.19 %	
Width	0.301 m	
Height	0.231 m	

7.1.3.18.2.6 Method - Circle

This is a nesting interlock technique called Circle.

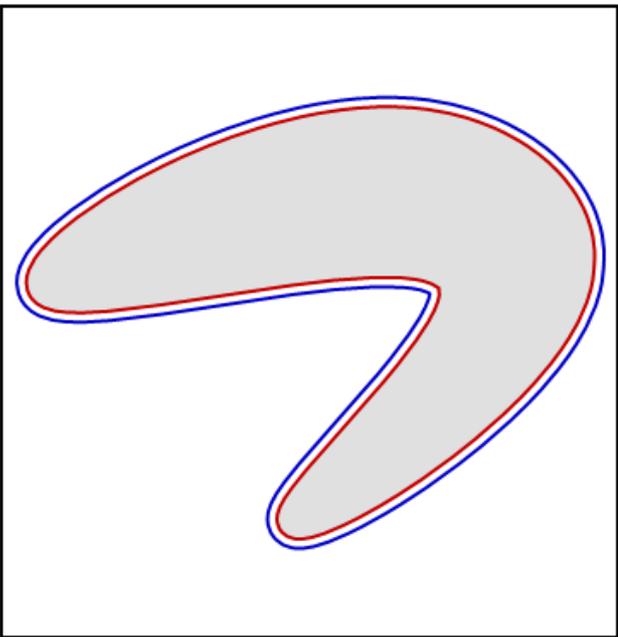
It uses a calculated edge of the part group and evaluates, using a circle with a specific radius traveling over that edge, the boolean union of all those circles.

After choosing the this technique enter the radius

Circle radius | 5

The result will be as displayed in the Part assessment panel tab, with the following result metrics:

Properties	Properties	Assessment
Method	Circle	
Parts margin	0 mm	
Circle radius	5	
Parts area	0.032 m ²	
Parts	1	
Result	0.032 m ²	
Efficiency	100.01 %	



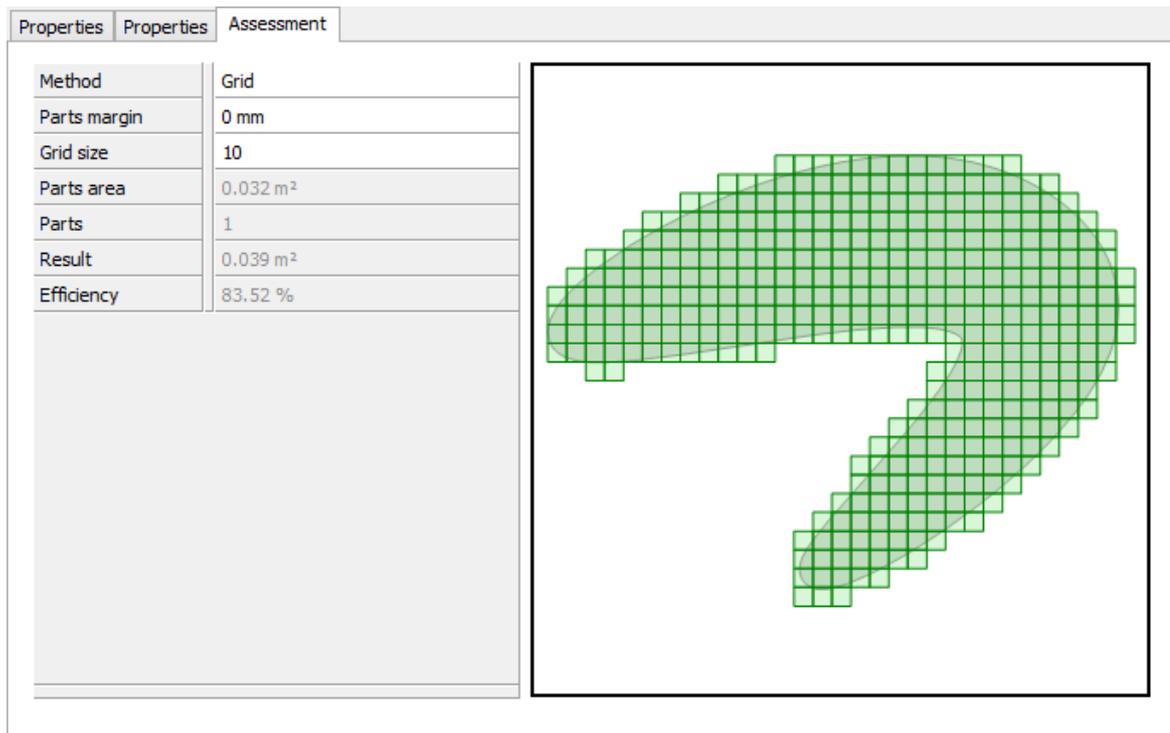
7.1.3.18.2.7 Method - Grid

This is a nesting interlock technique called Grid. The system activate the grid over parts.

The operator add the grid value.

Grid size	10
-----------	----

The result will be as displayed in the Part assessment panel tab, with the following result metrics:



7.1.3.18.2.8 Method - Synthetic

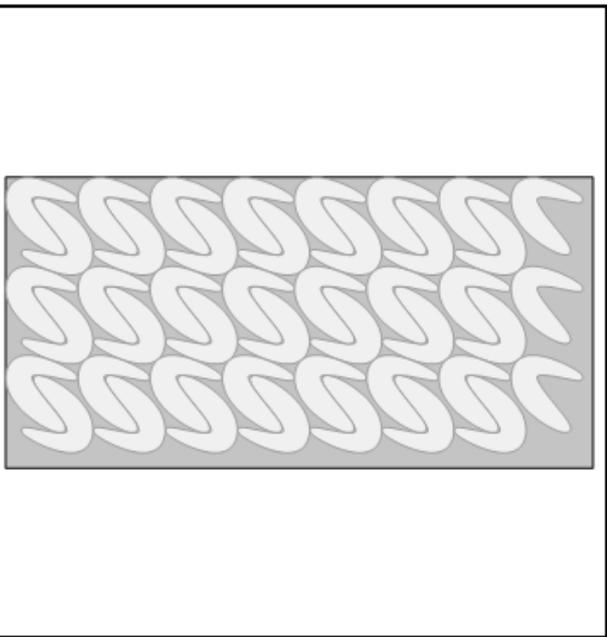
This is a nesting interlock technique called Synthetic. This is used for synthetic materials available in rectangular formats.

First the measures of the material should be defined.

Material width	2000
Material height	1000

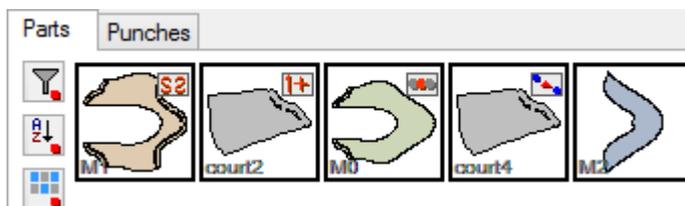
The result will be as displayed in the Part assessment panel tab, with the following result metrics:

Properties	Properties	Assessment
Method	Synthetic	
Parts margin	0 mm	
Material width	2000	
Material height	1000	
Parts area	0.032 m ²	
Parts	45	
Result	0.044 m ²	
Efficiency	72.35 %	



7.1.3.19 Editing Parts - Parts Bar

For a better user experience, a parts bar is available on the lower end of MindCAD 2D Design & Engineering interface layout. This bar has thumbnails of the parts.



Besides the graphical representation of the part, containing outer boundary and all the elements that could be included on a part (markers, notches to name a few), there are auxiliary symbols appearing on the top right corner of the thumbnail.

This symbol means this part is not symmetrical (could be defined in properties).



This symbol means this part has more than one part per foot (could be defined in properties).



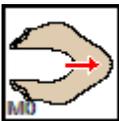
This symbol means this part has an associated group grading (could be defined in properties).



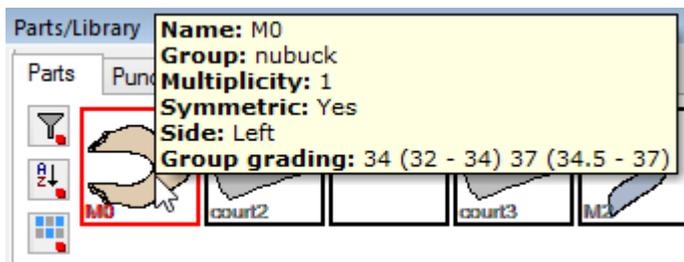
This symbol means this part has variants (could be defined in properties)



This symbol shows the part orientation.



When we hover the cursor on the part, a quick properties window appears.



This button allows filtering parts by material.



This button allows sorting part by alphabetic order.

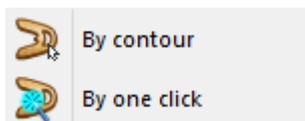


This button allows hiding empty part thumbnails.



7.2 Parts - Create Hole

This menu lets you to choose between create a hole **by contour** or **by on click**.



7.2.1 Parts - Create Hole - By Contour

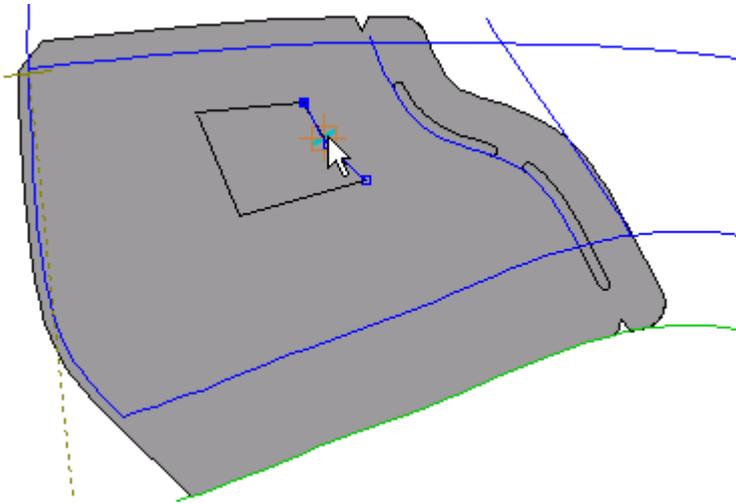
This option lets you apply holes to parts. This is the same as clicking the **Create Hole**  button in the **Parts** toolbar.



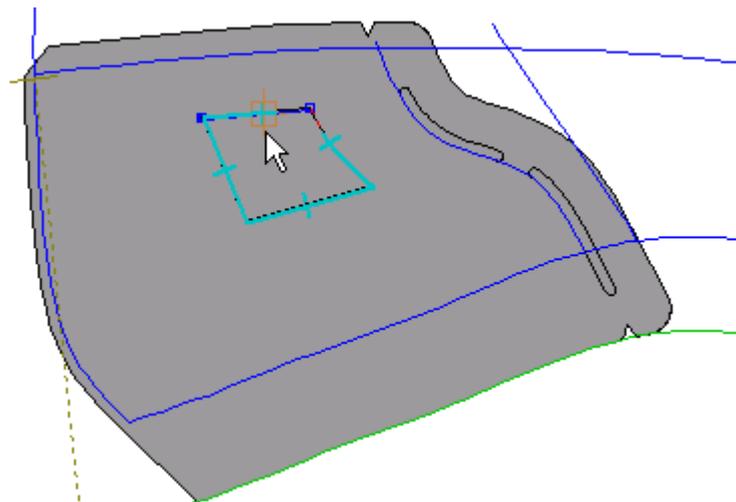
Treatments can be applied to holes.

To create a hole,

1. Select the part.
2. Select **Create Hole** from the **Parts** toolbar
3. Start defining the boundary of the hole.



4. Define the rest of the boundary of the hole going in one direction.

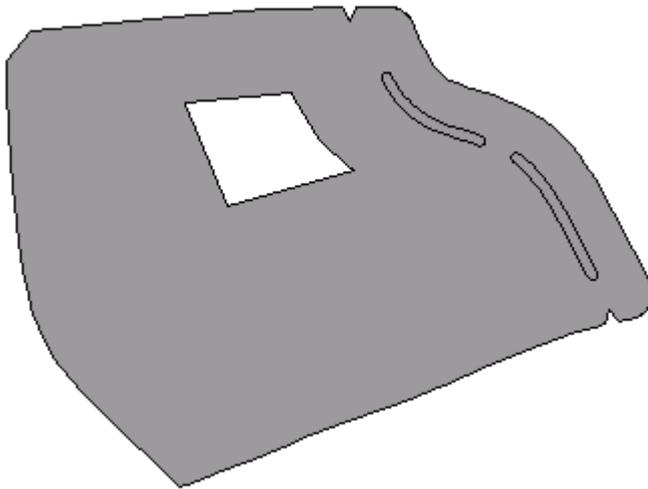


5. Click the right mouse button to display the following menu.

Finish	ENTER
Finish (close with reflection)	
Finish (add on reflection)	
Finish (add on both sides)	
Remove Last	
Switch Side	CTRL
Auto insert corner on next line	C
Side Indicator on Next	M
None on next	
Overlap on next	O
Fold on next	F
Trim on next	T
Seam on next	S
overlap Kids on next	K

6. Select **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

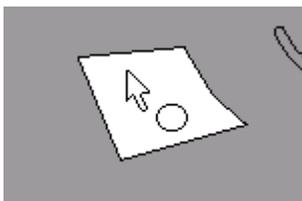
The part will be drawn with the hole.



- Use the **Finish (and insert reflection)** option to put the hole in the reflected part of a folded part.

To delete a hole,

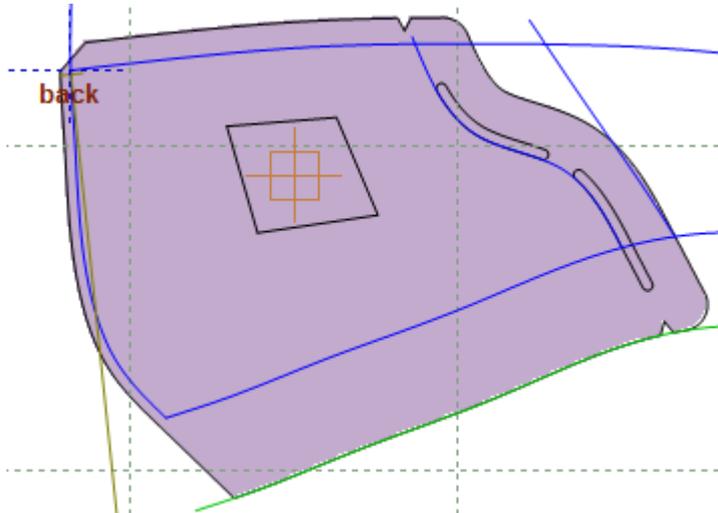
1. Move the cursor over the hole to be deleted. A circular cursor will be displayed



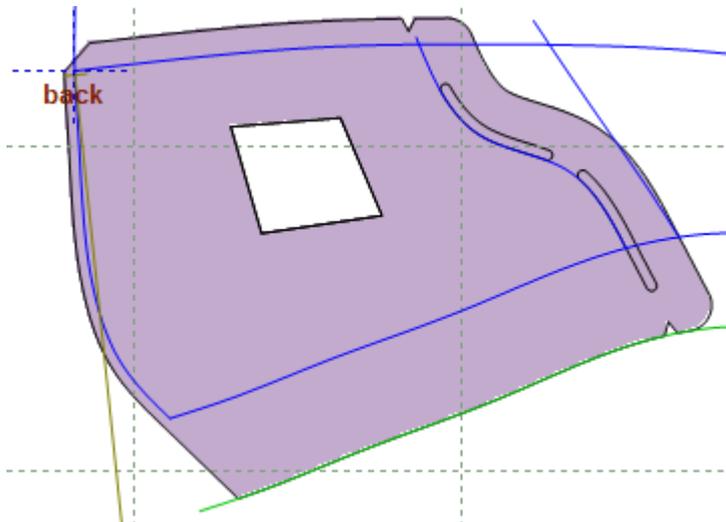
2. Press the left mouse button to select the hole.
3. Press the **Delete** key to delete the hole.

7.2.2 Parts - Create Hole - By One Click

1. Select **By One Click** from **Create Hole** in the **Parts** menu.
2. Position the mouse cursor in the **middle of the lines** that will compose the hole.



3. When the cursor is the right position do a click with the **left button**, the hole will be created.



7.3 Parts - Create Quality Area

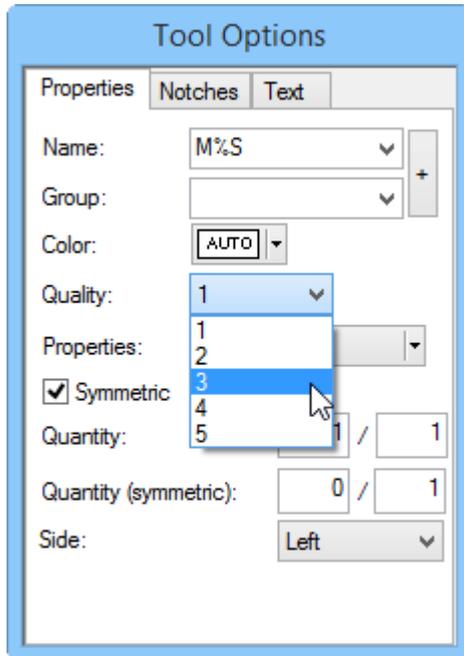
This option lets you create quality areas within parts to aid in the costing process.

1. Select the part to have a quality area applied

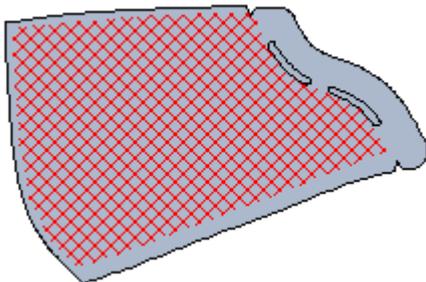
2. Select **Create Quality Area** from the **Parts** menu



3. Create an area, using the method used to create a hole.
4. When the circular cursor is displayed, select the quality area.
5. Use the **Tool Options** toolbar to set the quality value.

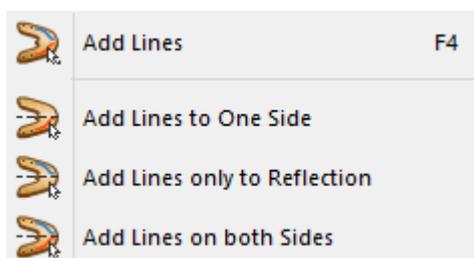


The quality areas color depends in the quality value.



7.4 Parts - Add Lines

This option lets you add lines to completed parts.



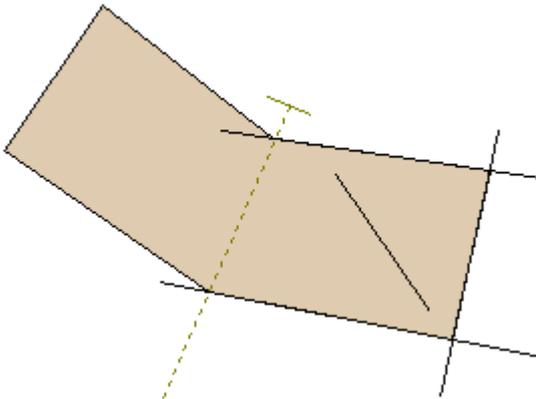
7.4.1 Parts - Add Lines - Add Lines

This is the option to add lines to completed parts, if you use this option on unfolded parts, lines will be added to both sides of the part. Lines added to parts will be drawn on the finished (cut) part.

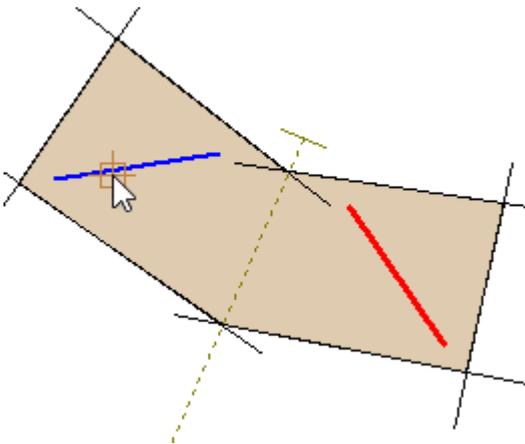
This is the same as clicking the **Add Lines**  button in the **Parts** toolbar



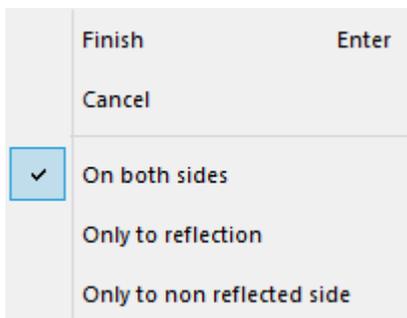
1. Select the **Part** to have lines added.



2. Select **Add Lines** from the **Add Lines** options of the **Parts** menu, select **Add Lines** from the parts tool bar or press **F4**.



3. After selecting the required lines, do a right click and select **finish** from the contextual menu or press **Enter**.

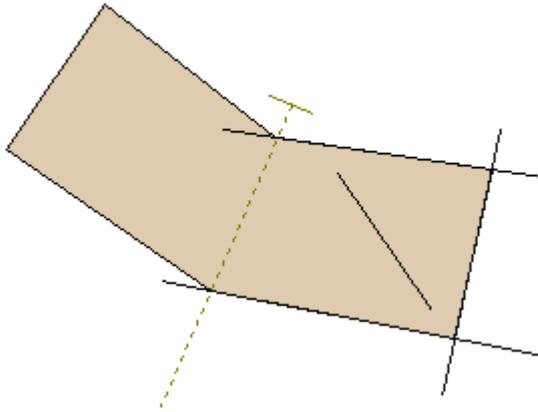


7.4.2 Parts - Add Lines - Add Lines to One Side

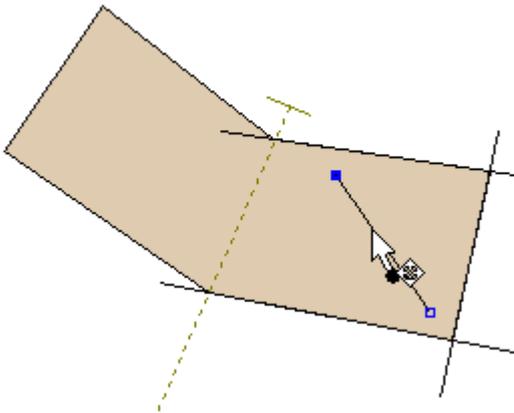
This option adds lines, in their original position, to completed mirrored parts.

To add lines to one side of the part,

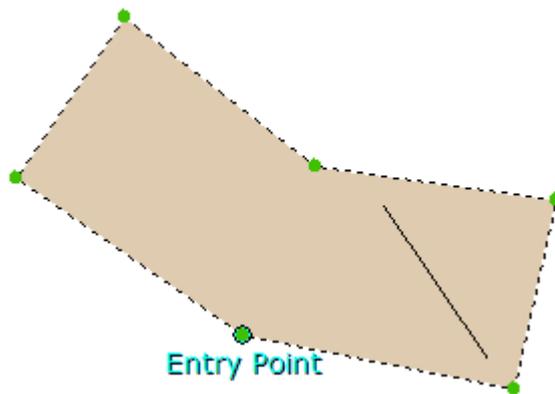
1. Select the **Part** to add the Line.



2. Select the **Line** to be added.



3. Select **Add Line to one side** from the **Add Lines** options of the **Parts** menu.
4. The line will be added to the part.

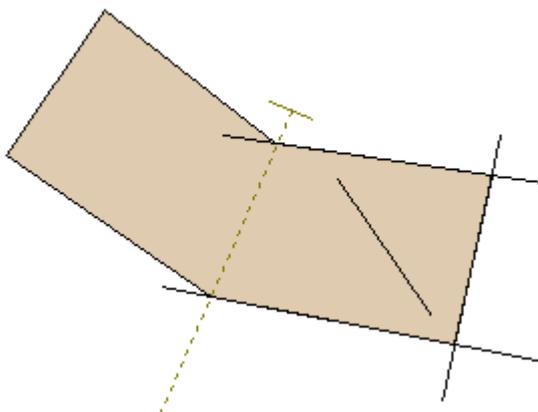


7.4.3 Parts - Add Lines - Add Lines only to Reflection

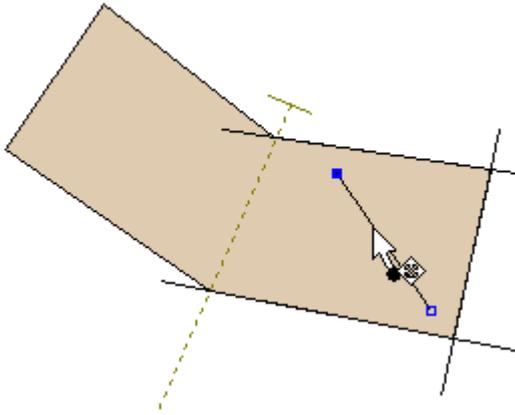
This option adds lines in their mirrored position, to completed mirrored parts.

To add lines only to the reflection,

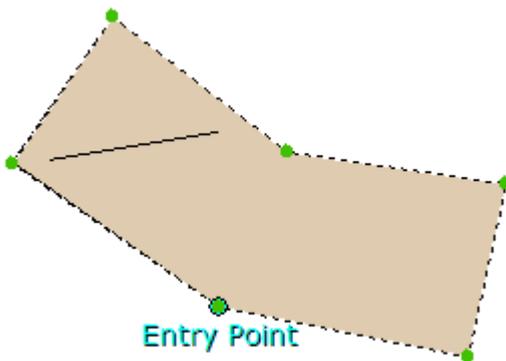
1. Select the **Part** to add the Line.



2. Select the **Line/Stencil** to be added.



3. Select **Add Lines only to reflection** from the **Add Lines** options of the **Parts** menu.
4. The line will be added to the part.

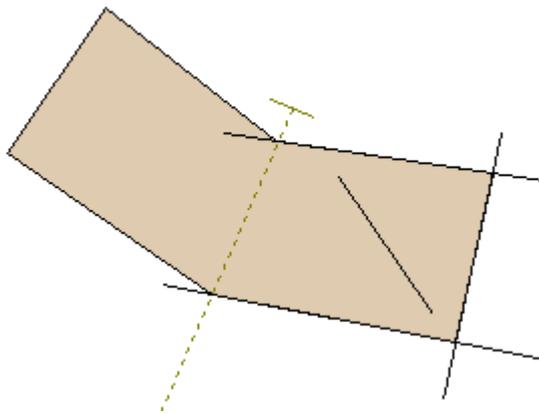


7.4.4 Parts - Add Lines - Add Lines on both Sides

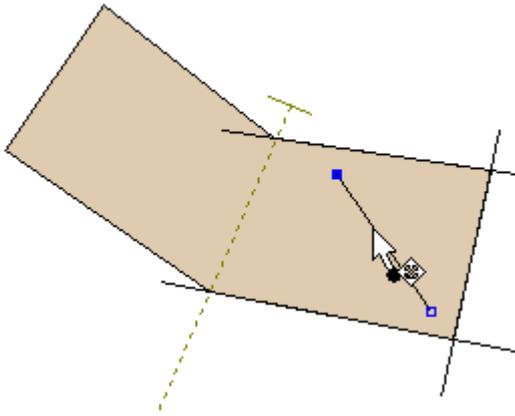
This option adds lines to both sides of completed mirrored parts.

To add lines to both sides,

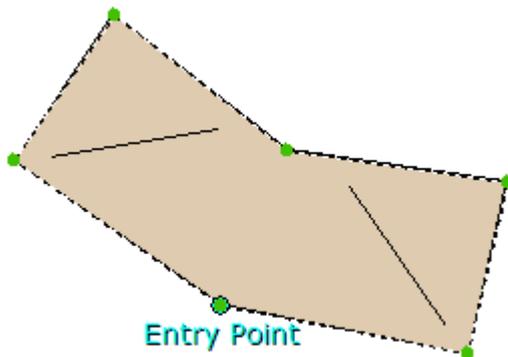
1. Select the **Part** to add the Line.



2. Select the **Line** to be added.

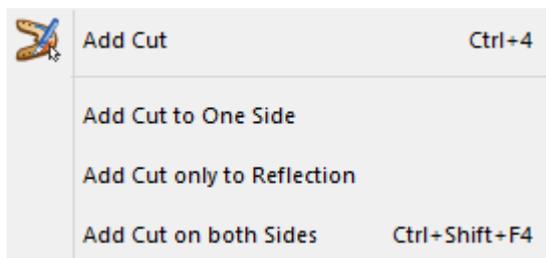


3. Select **Add Lines on both sides** from the **Add Lines** options of the **Parts** menu.
4. The lines will be added to the part.



7.5 Parts - Add Cut

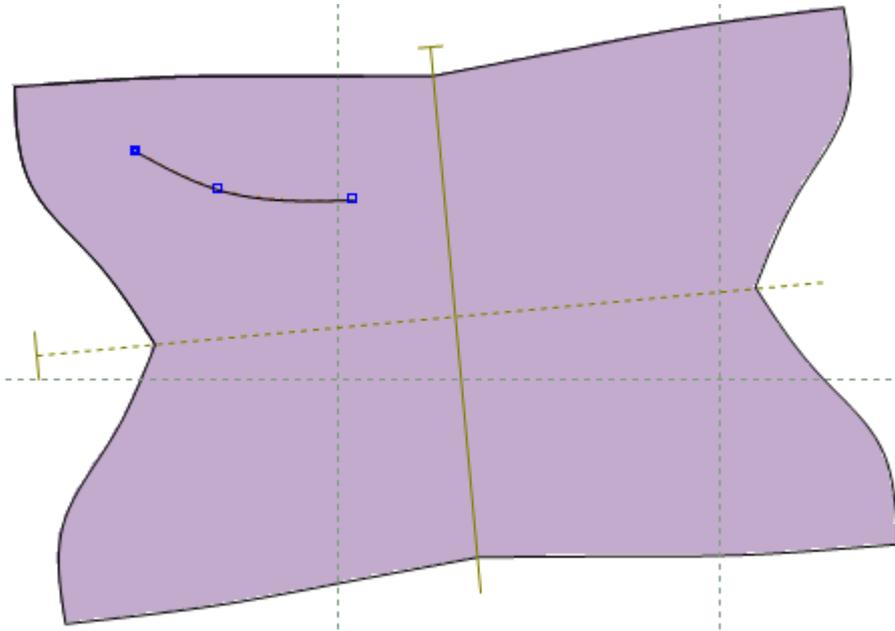
This option lets you add lines to completed parts. The lines that are added will be cut when sent to the cutting table.



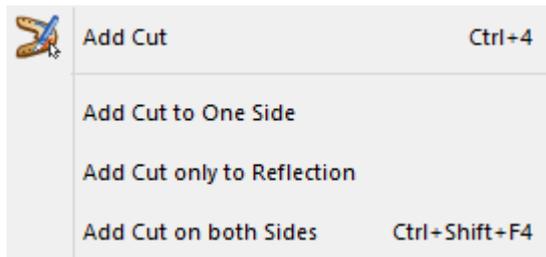
7.5.1 Parts - Add Cut - Add Cut

This option allows choosing where to add the cut.

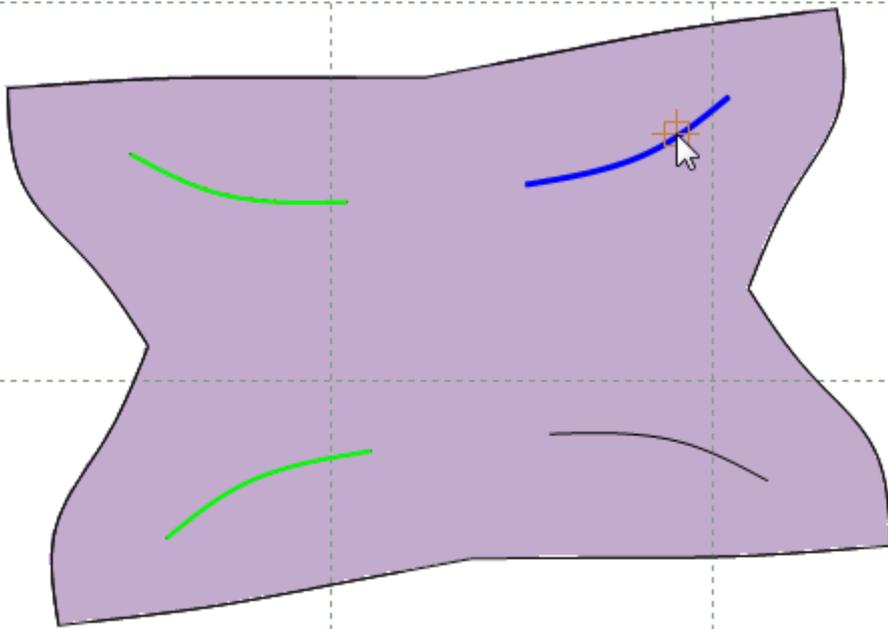
1. Select the line to be added to the part.



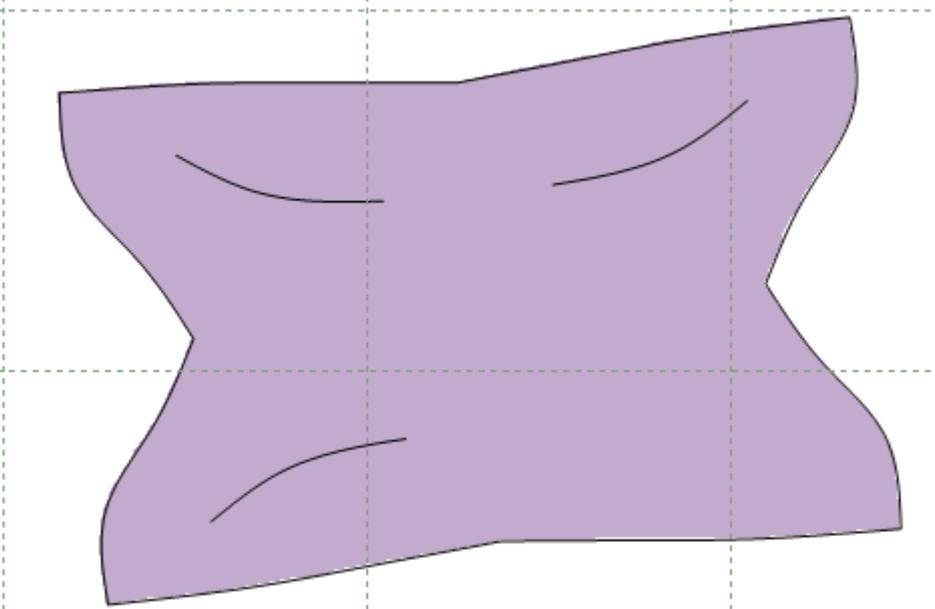
2. Select **Add Cut** from the **Add Cut** options of the **Parts** menu.



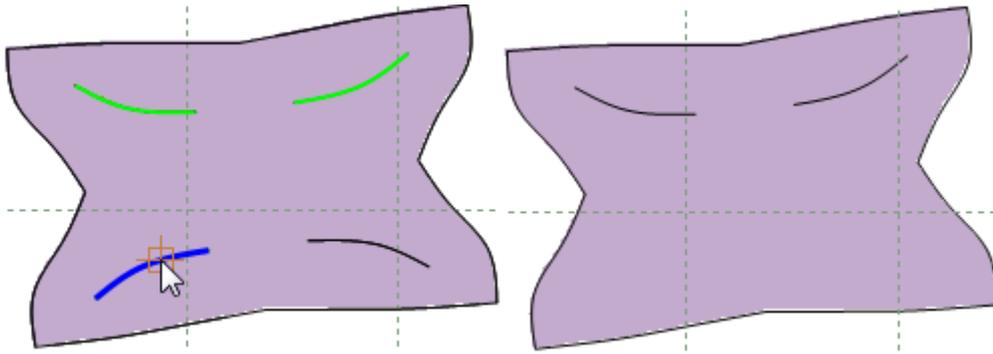
3. Select the lines to add the cuts by doing a left mouse click over the shown lines.



4. To finish the process press the middle mouse button or CTRL key.



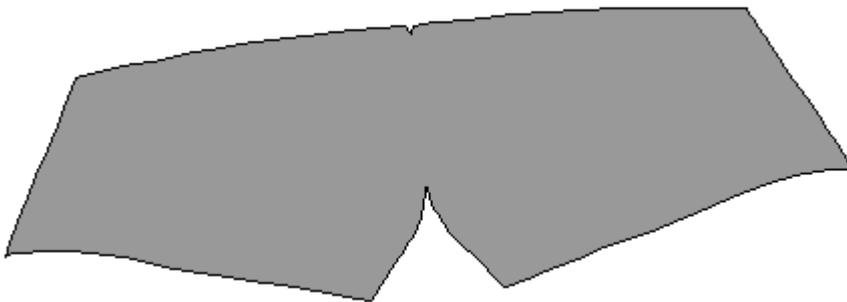
5. To edit the selected cut, do the same process and deselect the lines.



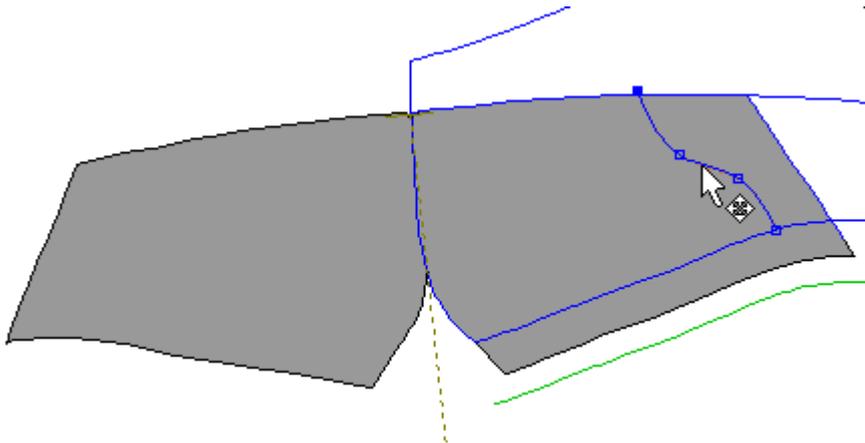
7.5.2 Parts - Add Cut - Add Cut to One Side

This option adds cuts in their original position, to completed mirrored parts.

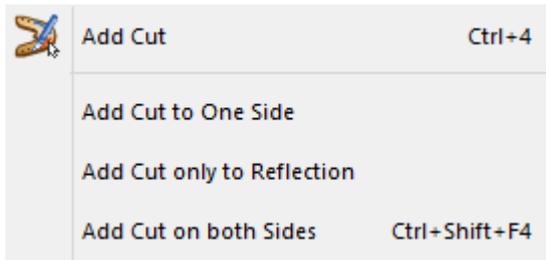
1. Select one or more parts to have cuts added.



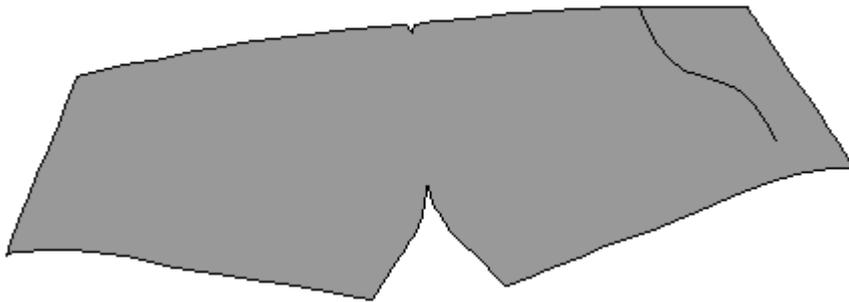
2. Select one or more lines to be added



3. Select **Add Cut to One Side** from the **Add Cut** options of the **Parts** menu.



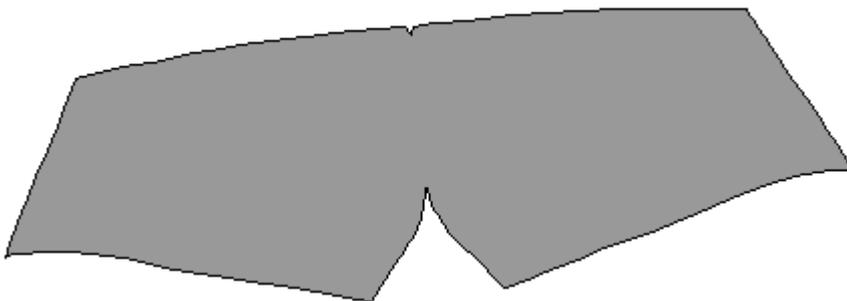
The part will have the cut added



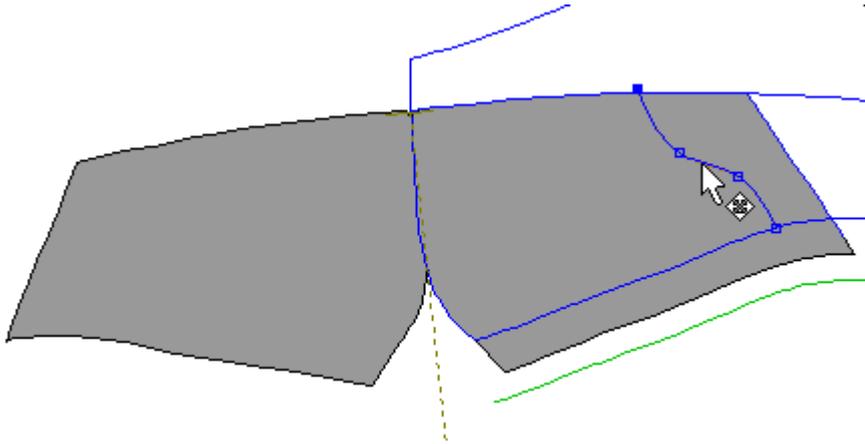
7.5.3 Parts - Add Cut - Add Cut only to Reflection

This option adds cuts in their mirrored position, to completed mirrored parts.

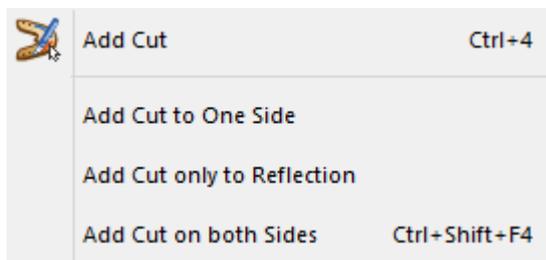
1. Select one or more parts to have cuts added.



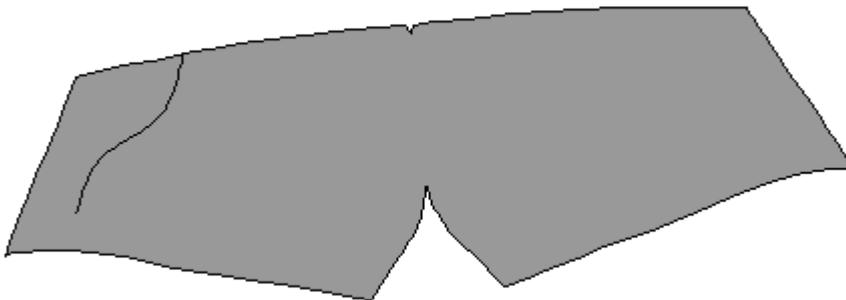
2. Select one or more lines to be added



3. Select **Add Cut only to Reflection** from the **Add Cut** options of the **Parts** menu.



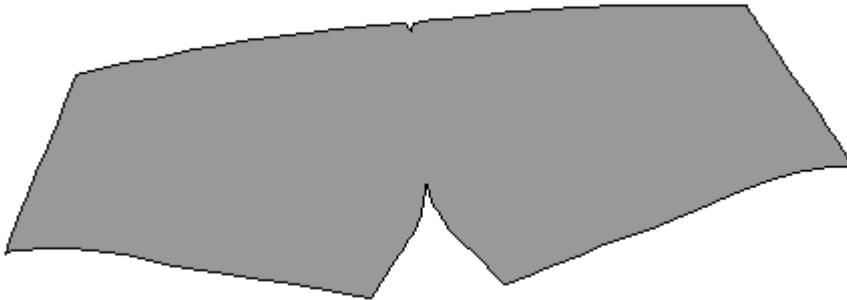
The part will have the cuts added



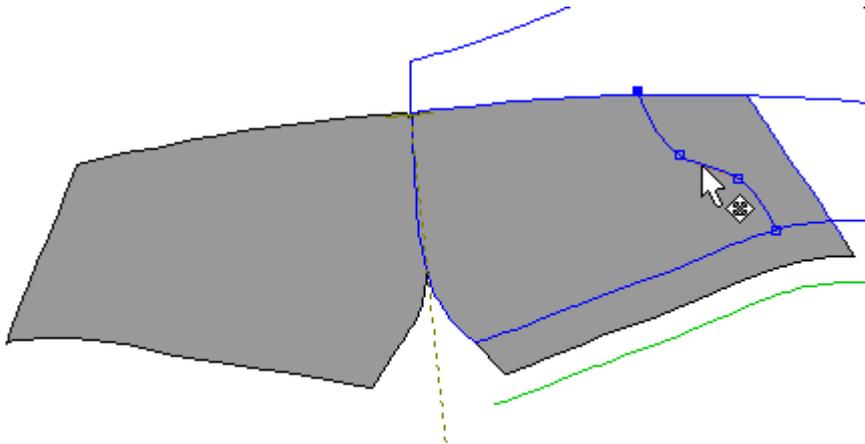
7.5.4 Parts - Add Cut - Add Cut on both Sides

This option adds cuts to both sides of completed mirrored parts.

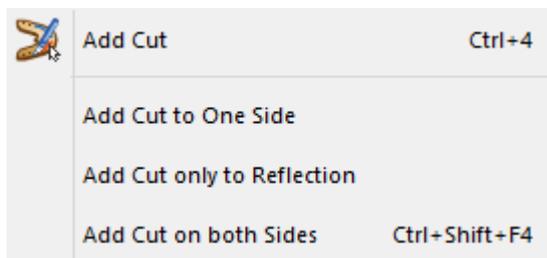
1. Select one or more parts to have cuts added.



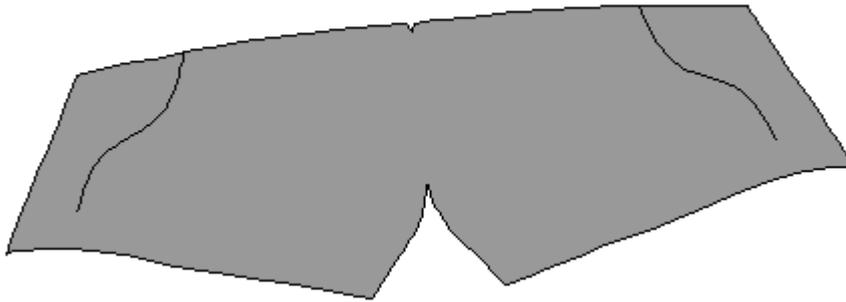
2. Select one or more lines to be added



3. Select **Add Cut on both Sides** from the **Add Cut** options of the **Parts** menu.



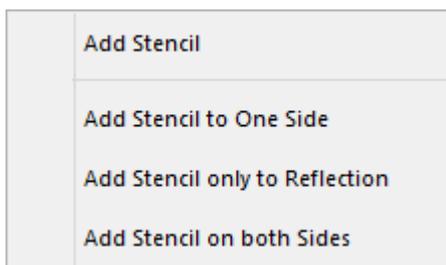
The part will have the cuts added



7.6 Parts - Add Stencil

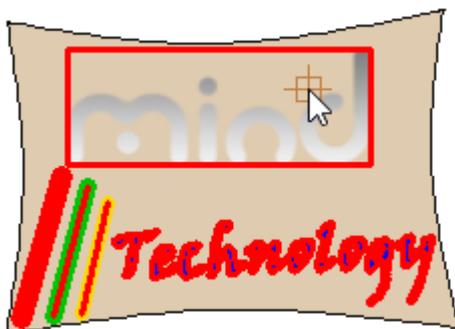
This option allows to add lines, text and images to parts. The added elements keep its characteristics (color, thickness, style, etc) when exported to Cut, using the Printer exporter.

Allowing these elements to be sent directly to the laser machine and designed within the part to cut.



This tool was made for Laser engraving, allowing to print images, text and lines with different color intensity.

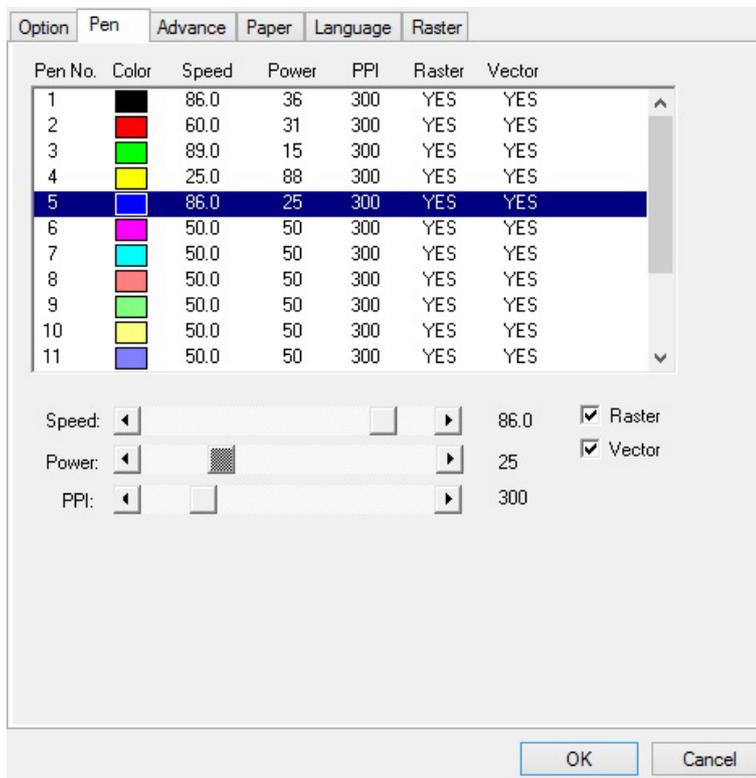
1. Select the **Part** to add the Stencils.
2. Select **Add Stencil** from the **Add Stencil** options of the **Parts** menu, or press **F4**.
3. With the left mouse button click over the lines, images or text to add.



4. When items will be highlighted when selected.
5. To finish do a right click and select **Finish** from the contextual menu, or press **Enter**.

For images, the machine driver will automatically apply color intensity, lighter colors will be applied less intensity, darker colors will be applied more intensity.

For Lines and Text, it's possible to configure the intensity and machine velocity for each color. The intensity can also be configured by material type.



Simulating the Cut in MindCAD2D it's possible to check the elements properties that are kept for each exporter.

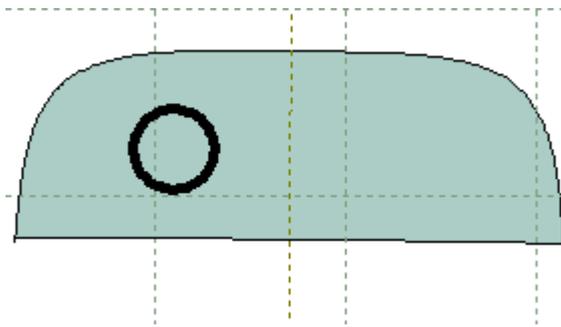
Using the printer exporter:



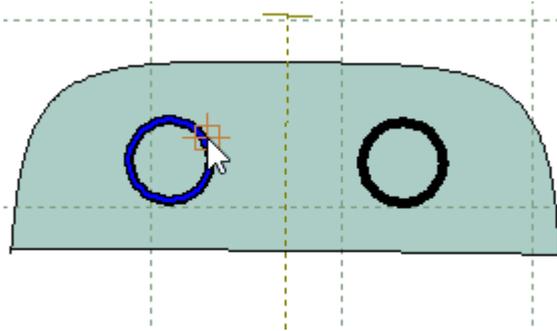
7.6.1 Parts - Add Stencil - Add Stencil

This option allows to add or remove lines/stencils through an interactive tool.

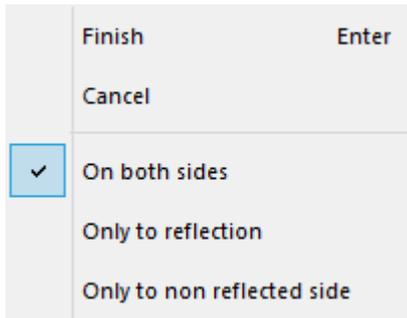
1. Select the **Part** to add the Stencil/Line.



2. Select **Add Stencil** from the **Add Stencil** options of the **Parts** menu.



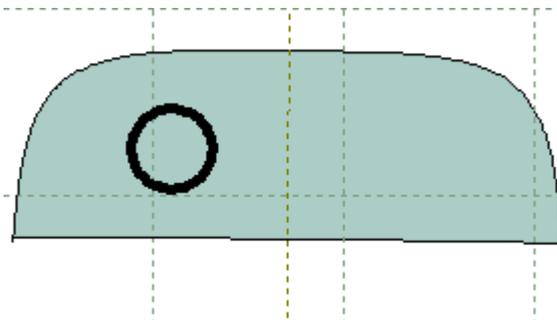
3. After selecting the required lines/stencils, do a right click and select finish from the contextual menu.



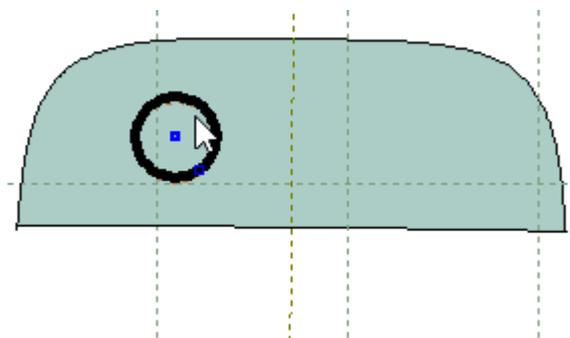
7.6.2 Parts - Add Stencil - To One Side

This option allows to add lines/stencils to one side.

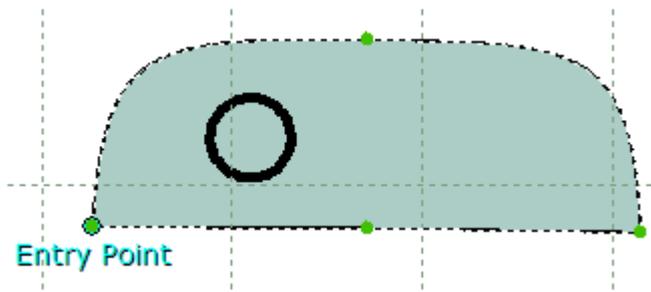
1. Select the **Part** to add the Stencil/Line.



2. Select the **Line/Stencil** to be added.



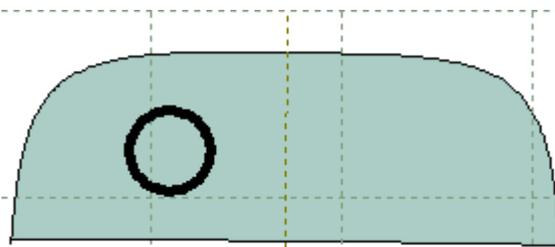
3. Select **Add Stencil to one side** from the **Add Stencil** options of the **Parts** menu.
4. The stencil/line will be added to the part.



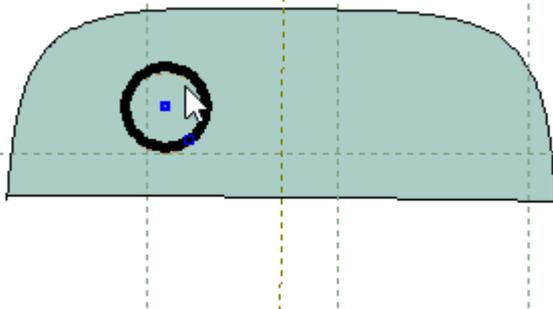
7.6.3 Parts - Add Stencil - Only to Reflection

This option allows to add lines/stencils only on reflection.

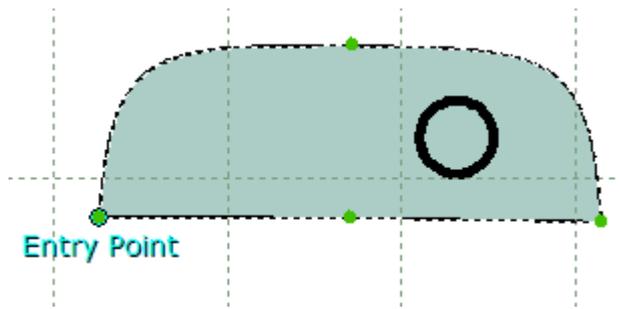
1. Select the **Part** to add the Stencil/Line.



2. Select the **Line/Stencil** to be added.



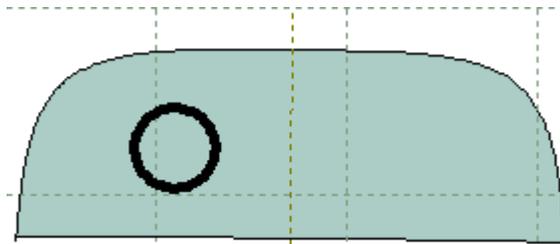
3. Select **Add Stencil only to reflection** from the **Add Stencil** options of the **Parts** menu.
4. The stencil/line will be added to the part.



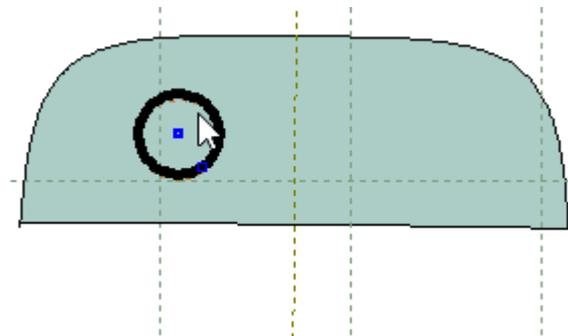
7.6.4 Parts - Add Stencil - On both Sides

This option allows to add lines/stencils on both sides.

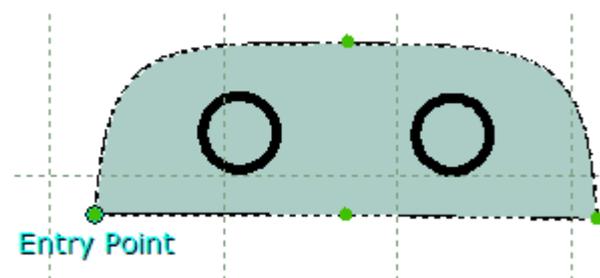
1. Select the **Part** to add the Stencil/Line.



2. Select the **Line/Stencil** to be added.



3. Select **Add Stencil on both sides** from the **Add Stencil** options of the **Parts** menu.
4. The stencil/line will be added to the part.



7.7 Parts - Add Modifier

This option lets you add modifier to completed parts.

This tool covers the guided deformation of a part through a master line and parameters. On a real modelling scenario, this will avoid the need to make manual cutting of the original part, to emulate the stretching imposed by the wrinkling effect. This provided an integrated solution where this kind of deformation is modelled before the piece being cut, not after.

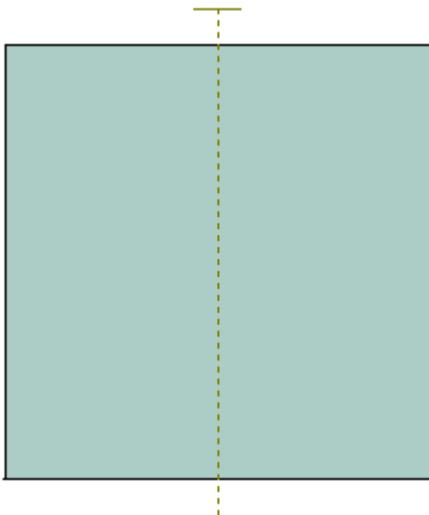
Several options are available to add this kind of effect (**One side**, **Reflection** and **Both sides**). Please refer to the following sections.

- Add modifier to one side
- Add modifier only reflection
- Add modifier on both sides

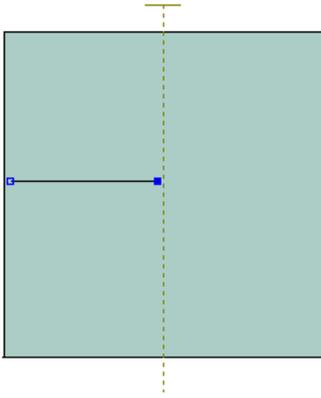
7.7.1 Parts - Add Modifier - To one side

This option add modifiers to one side.

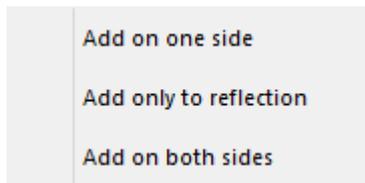
1. Select one part to add the modifier.



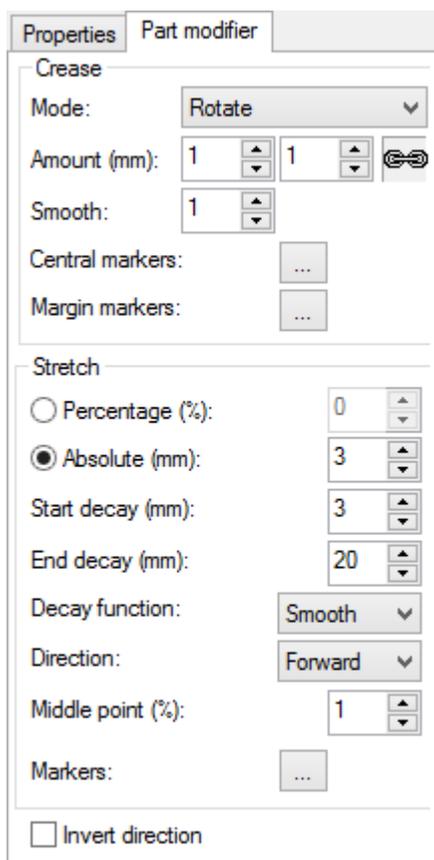
2. Select one or more lines to be added



3. Select **Add on one Side** from the **Add Modifier** options of the **Parts** menu.



4. Set the modifier values.



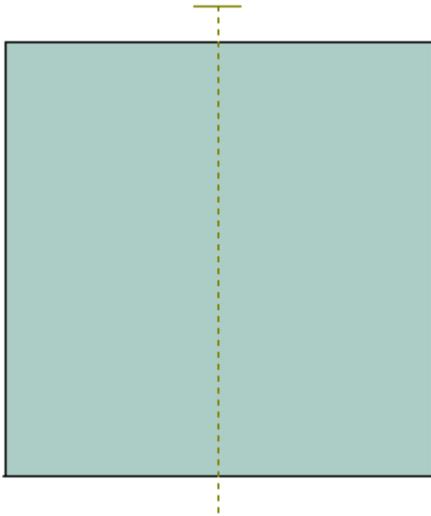
Crease

- **Mode** Select the mode between **Rotate** or **Offset**.
- **Amount (mm):** This value controls the amount of added material for the crease mode.
- **Smooth** This value controls the smoothness of the change.
- **Central markers** Add central markers automatically using the modifier line.
- **Margin markers** Add margin markers automatically using the modifier line.
- **Stretch**
 - **Percentage (%)** Select how to input the values between **Percentage** or **Absolute**. This values control the amount of added material along the selected edge, that should exist to compensate the wrinkle effect.
 - **Absolute (mm)**
 - **Start decay (mm)** This value controls the beginning of the blending region.
 - **End decay (mm)** This value controls the end of the blending region.
 - **Decay function** Select the decay function between Linear, Sharp or Smooth.
 - **Direction** Select the stretch direction between Forward, Back or Both.
 - **Middle point (%)** Define in which point of the line the modifier should be applied. Ex: applied from the line beginning (middle point = 0%), from the line middle (middle point = 50%) or the line ending (middle point = 100%).
 - **Markers** Add markers automatically using the modifier line.
 - **Invert direction** Enable/disable the invert direction option. If active inverts the line direction, so the modifier is applied backwards.

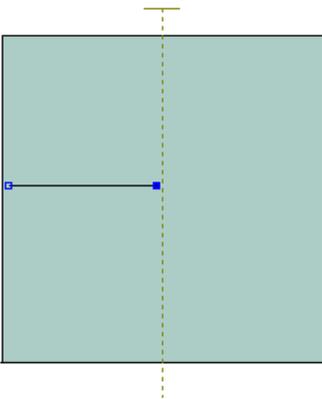
7.7.2 Parts - Add Modifier - Only to reflection

This option add modifiers only to reflection.

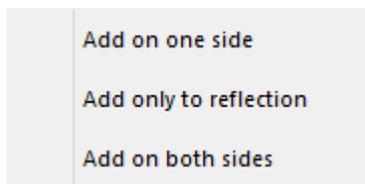
1. Select one part to add the modifier.



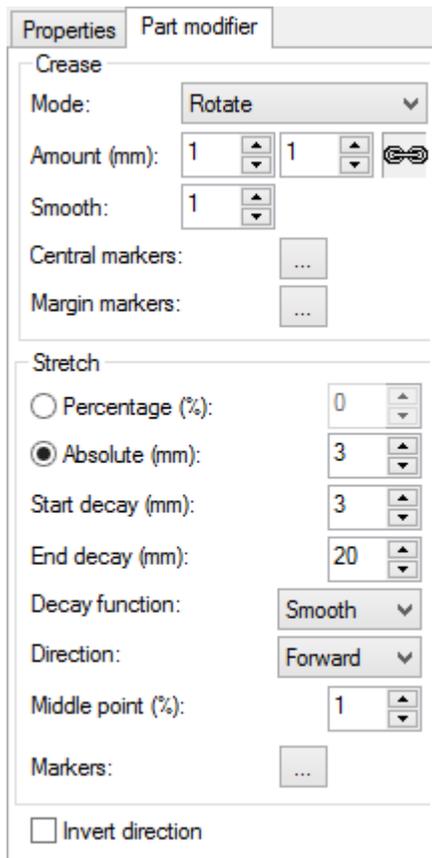
2. Select one or more lines to be added.



3. Select **Add only to reflection** from the **Add Stretch** options of the **Parts** menu.



4. Set the modifier values.



Crease

- **Mode** Select the mode between **Rotate** or **Offset**.
- **Amount (mm):** This value controls the amount of added material for the crease mode.
- **Smooth** This value controls the smoothness of the change.
- **Central markers** Add central markers automatically using the modifier line.
- **Margin markers** Add margin markers automatically using the modifier line.

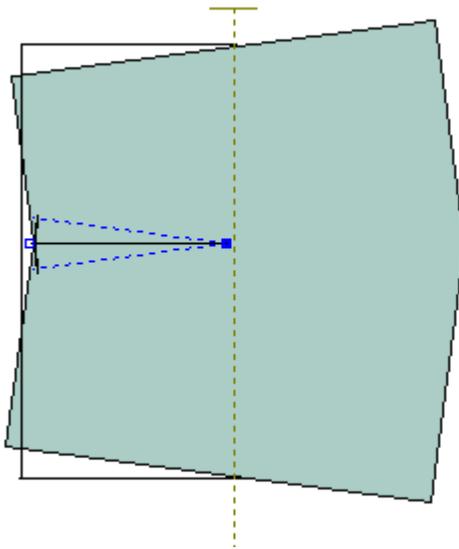
Stretch

- **Percentage (%)** Select how to input the values between **Percentage** or **Absolute**.
This values control the amount of added material along the selected edge, that should exist to compensate the wrinkle effect.
- **Absolute (mm)**
- **Start decay (mm)** This value controls the beginning of the blending region.
- **End decay (mm)** This value controls the end of the blending region.
- **Decay function** Select the decay function between Linear, Sharp or Smooth.
- **Direction** Select the stretch direction between Forward, Back or Both.
- **Middle point** Define in which point of the line the modifier should be applied. Ex: applied from the

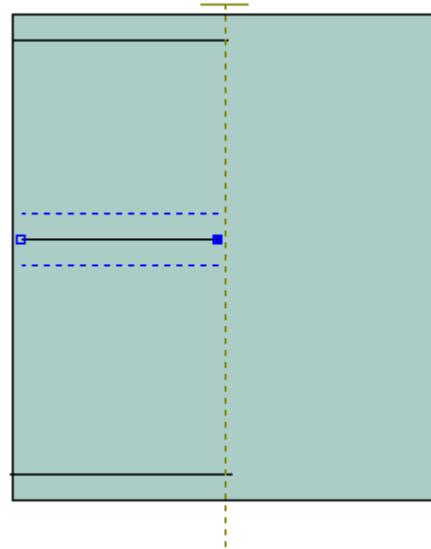
- (%) line beginning (middle point = 0%), from the line middle (middle point = 50%) or the line ending (middle point = 100%).
- **Markers** Add markers automatically using the modifier line.
- Invert direction** Enable/disable the invert direction option.

Applying a **Crease** modifier:

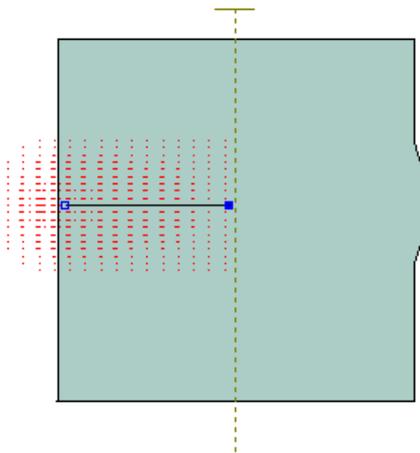
Mode: Rotation



Mode: Offset



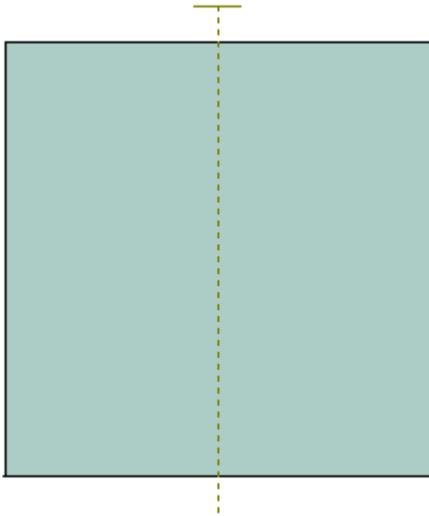
Applying a **Stretch** modifier:



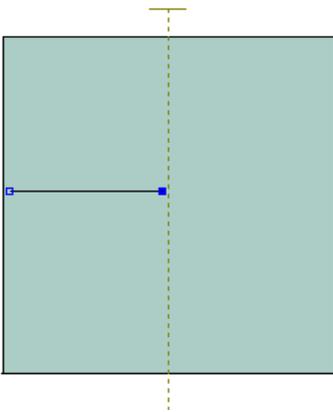
7.7.3 Parts - Add Modifier - On both Sides

This option add modifiers to both sides.

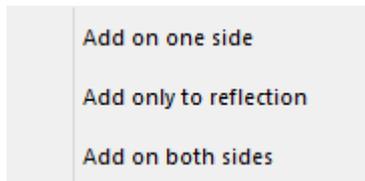
1. Select one part to add the modifier.



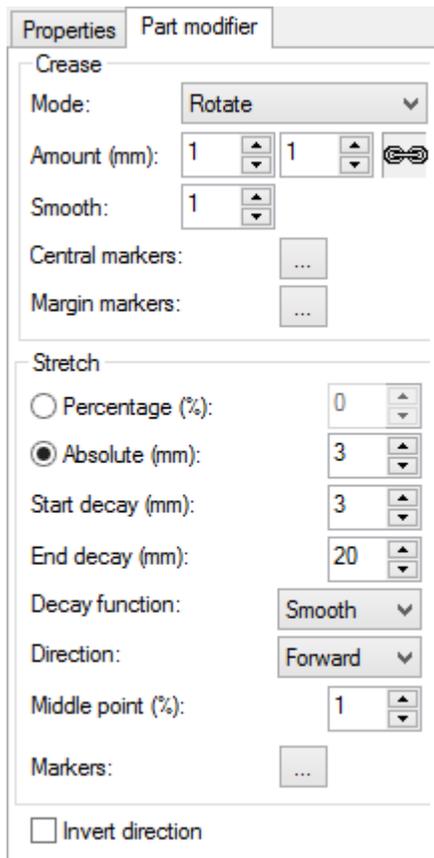
2. Select one or more lines to be added.



3. Select **Add on both Sides** from the **Add Stretch** options of the **Parts** menu.



4. Set the modifier values.



Crease

- **Mode** Select the mode between **Rotate** or **Offset**.
- **Amount (mm):** This value controls the amount of added material for the crease mode.
- **Smooth** This value controls the smoothness of the change.
- **Central markers** Add central markers automatically using the modifier line.
- **Margin markers** Add margin markers automatically using the modifier line.

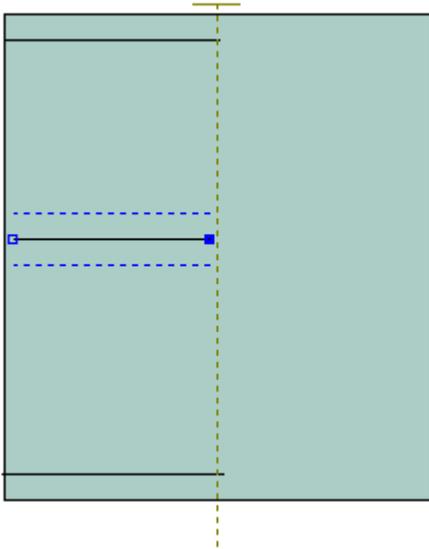
Stretch

- **Percentage (%)** Select how to input the values between **Percentage** or **Absolute**. This values control the amount of added material along the selected edge, that should exist to compensate the wrinkle effect.
- **Absolute (mm)**
- **Start decay (mm)** This value controls the beginning of the blending region.
- **End decay (mm)** This value controls the end of the blending region.
- **Decay function** Select the decay function between Linear, Sharp or Smooth.

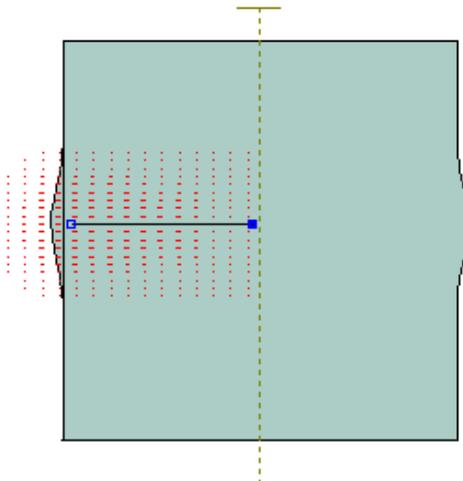
- **Direction** Select the stretch direction between Forward, Back or Both.
- **Middle point (%)** Define in which point of the line the modifier should be applied. Ex: applied from the line beginning (middle point = 0%), from the line middle (middle point = 50%) or the line ending (middle point = 100%).
- **Markers** Add markers automatically using the modifier line.
 - Invert direction** Enable/disable the invert direction option.

Applying a **Crease** modifier:

Mode: Offset



Applying a **Stretch** modifier:



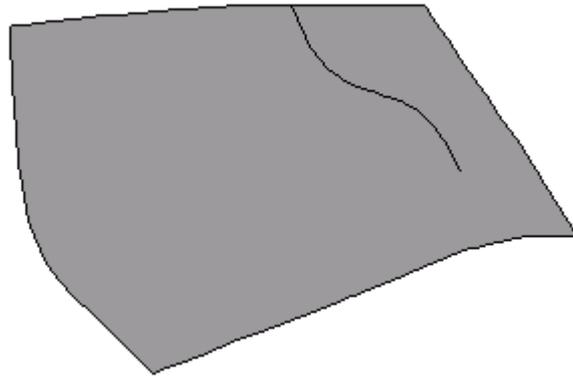
7.8 Parts - Remove - Lines

This option removes lines that have been added to parts. This is the same as clicking the **Remove**

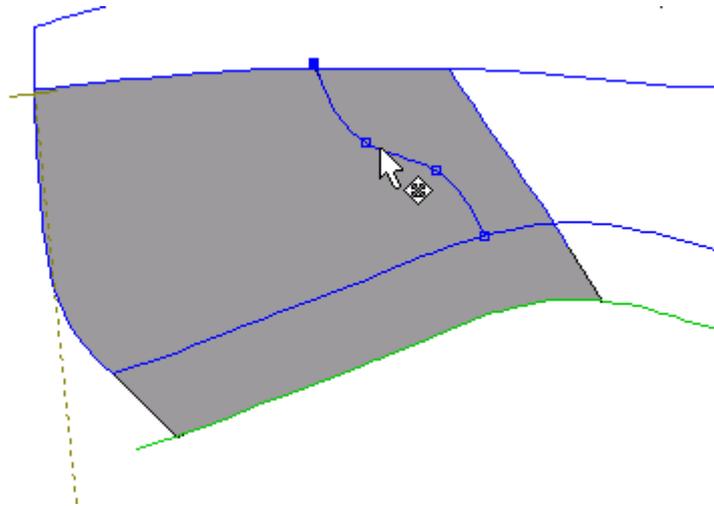
lines  button in the **Parts** toolbar



1. Select the one or more parts to have the line removed from



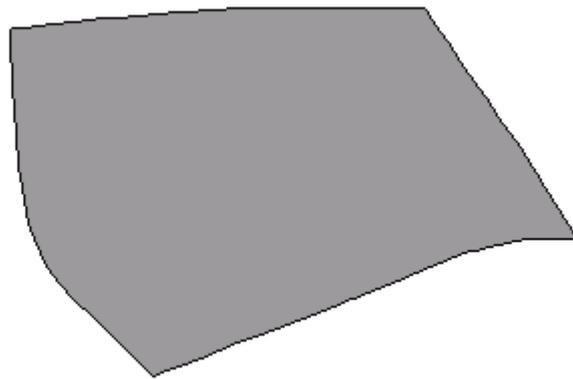
2. Select one or more lines to be removed



3. Select **Lines** from the **Remove** options of the **Parts** menu.



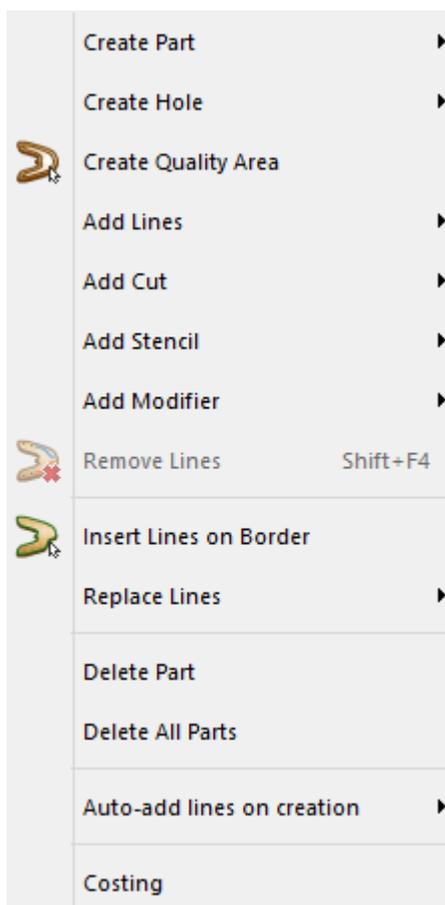
The lines will be removed from the part



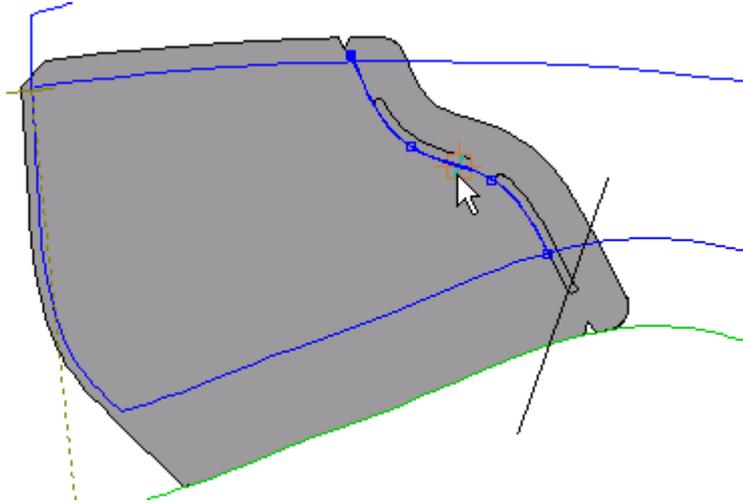
7.9 Parts - Insert Lines on Border

This option lets you insert lines into an already finished part.

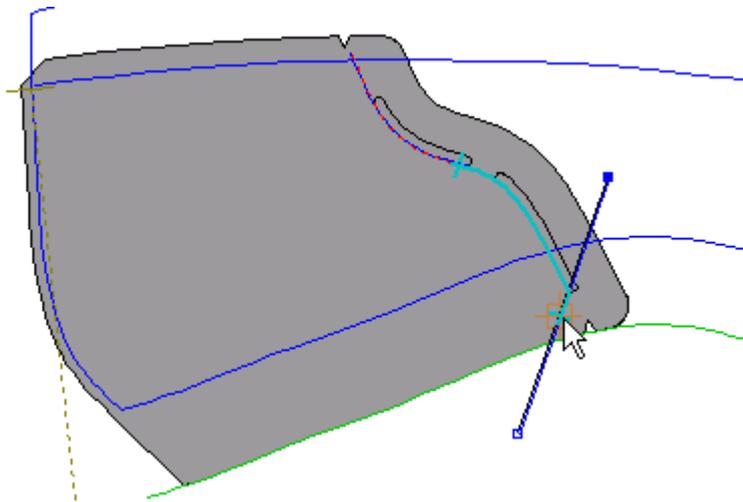
1. Select the part to be edited.
2. Select **Insert Lines on Border** from the **Parts** menu.



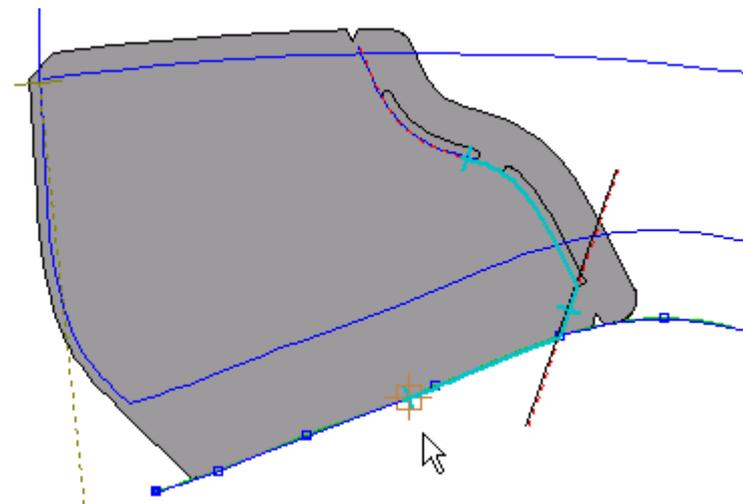
3. Select the line that comes before the line(s) to be inserted



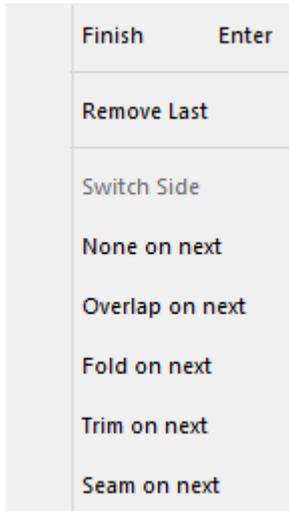
4. Select one or more lines to be inserted



5. Select the line that comes after the line(s) to be inserted

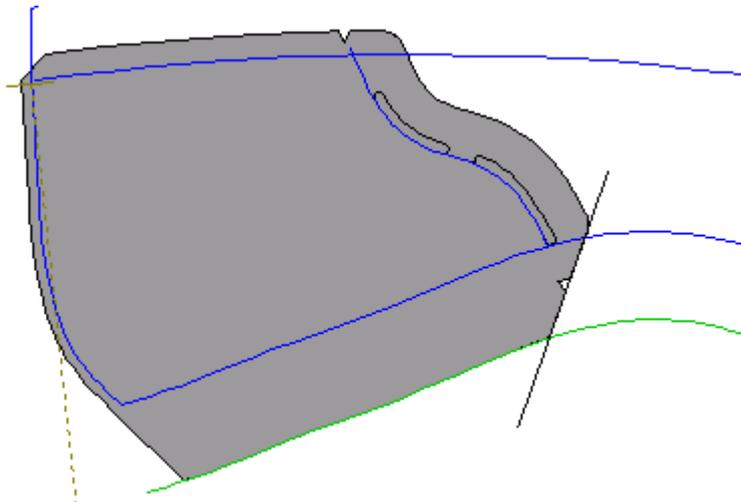


6. Click the right mouse button to display the popup menu.



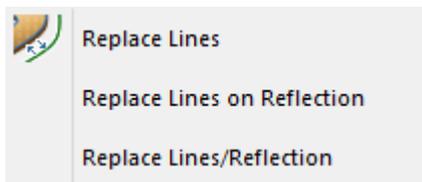
7. Select **Finish** to complete the part. The part can also be finished by pressing the **Enter** key or clicking the middle mouse button.

The part will be highlighted.



7.10 Parts - Replace Lines

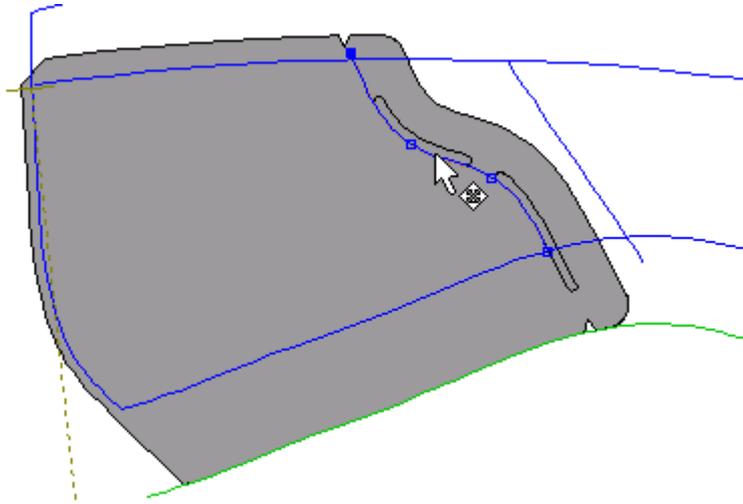
Use this to replace lines in your parts. It allows you to change one line for another on all selected parts.



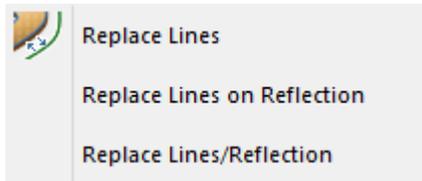
7.10.1 Parts - Replace Lines - Replace Lines

This option lets you replace one line with another on completed parts.

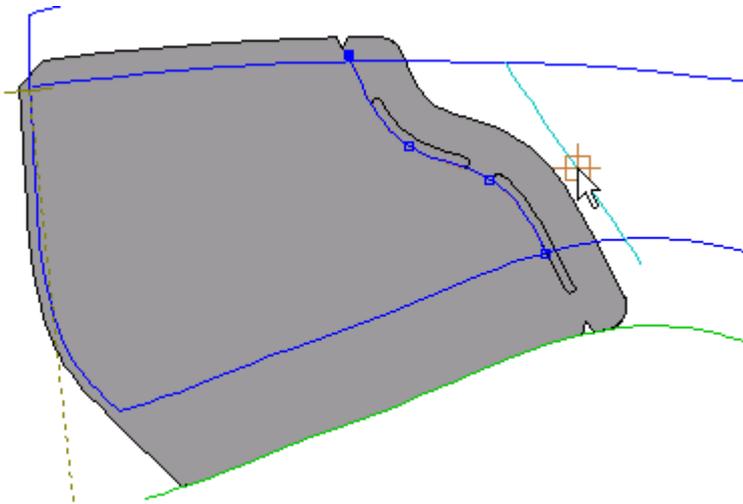
1. Select the line to be replaced (the original line).



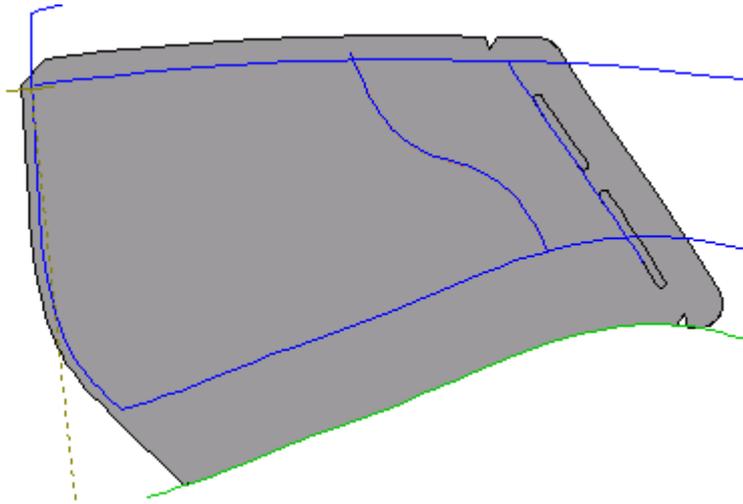
2. Select **Replace Lines** from the **Replace Lines** options of the **Parts** menu.



3. Select the replacement line (the new line).



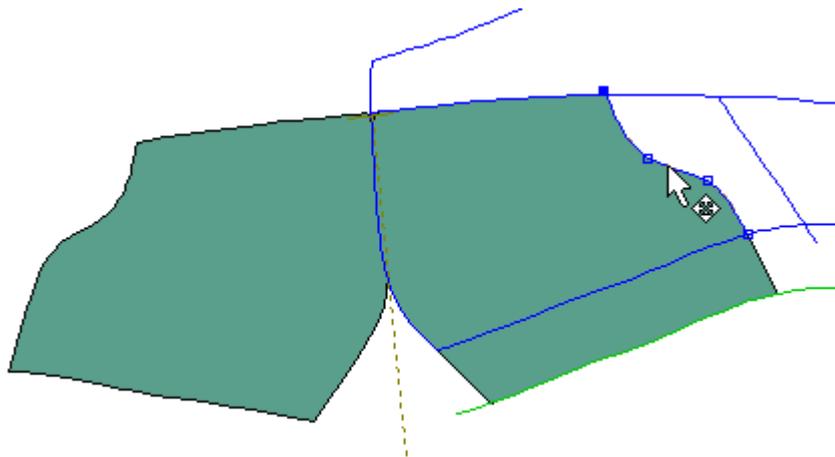
The part will be drawn with the new line as part of the boundary.



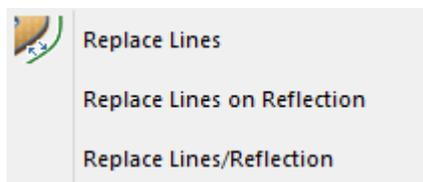
7.10.2 Parts - Replace Lines - Replace Lines on Reflection

This option lets you replace one line with another, on the reflected side of parts that have been mirrored/reflected.

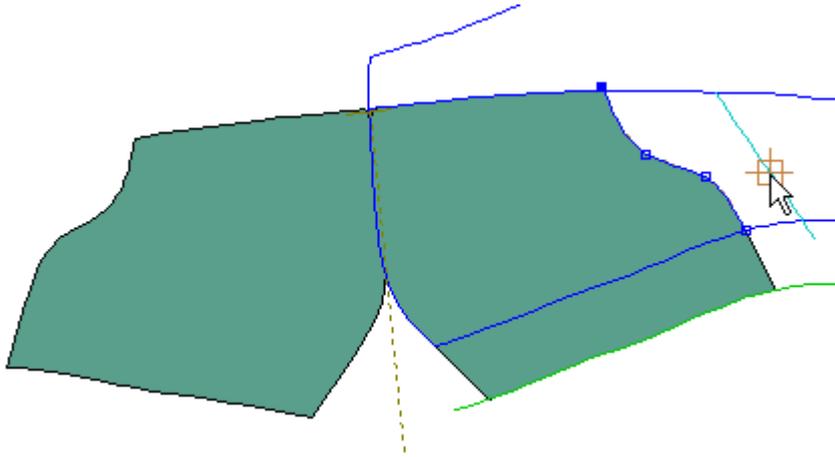
1. Select the line to be replaced (the original line).



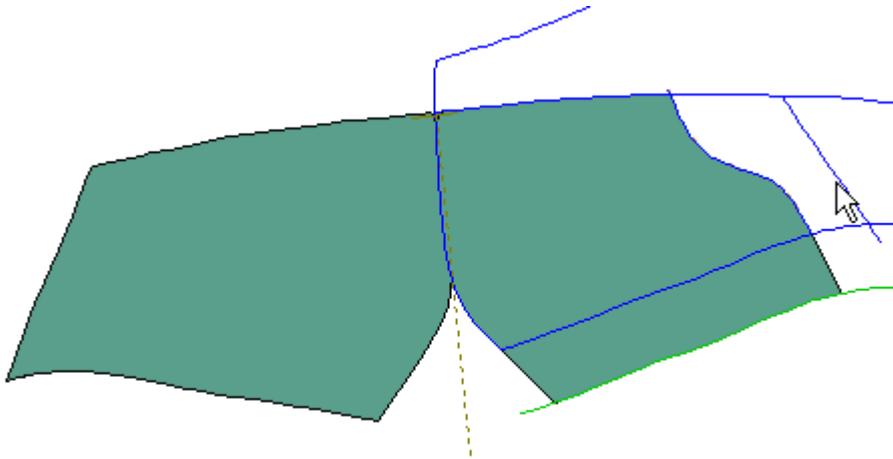
2. Select **Replace Lines on Reflection** from the **Replace Lines** options of the **Parts** menu.



3. Select the replacement line (the new line).



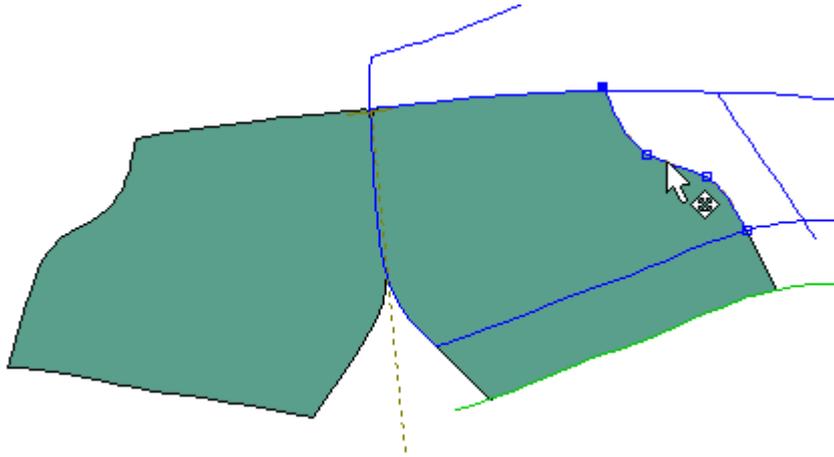
The part will be drawn with the new line as part of the boundary.



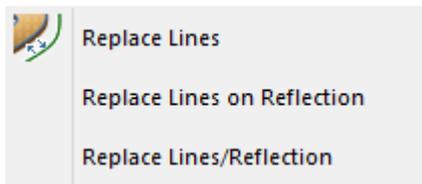
7.10.3 Parts - Replace Lines - Replace Lines/Reflection

This option lets you replace one line with another, on both sides of the parts that have been mirrored/reflected

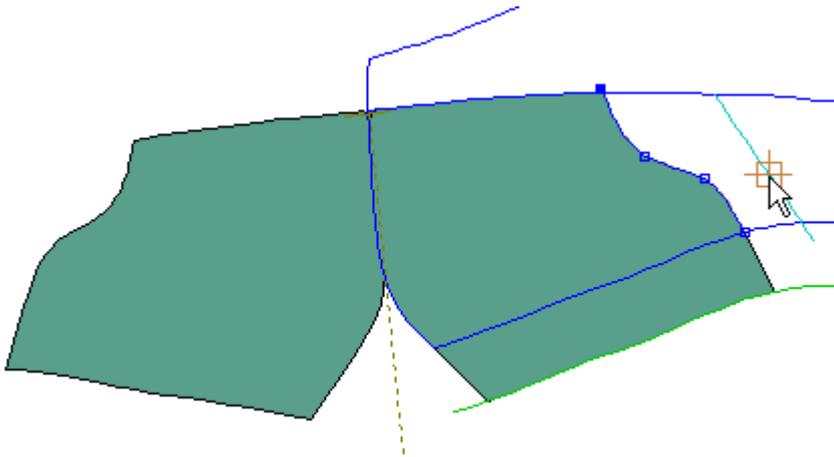
1. Select the line to be replaced (the original line).



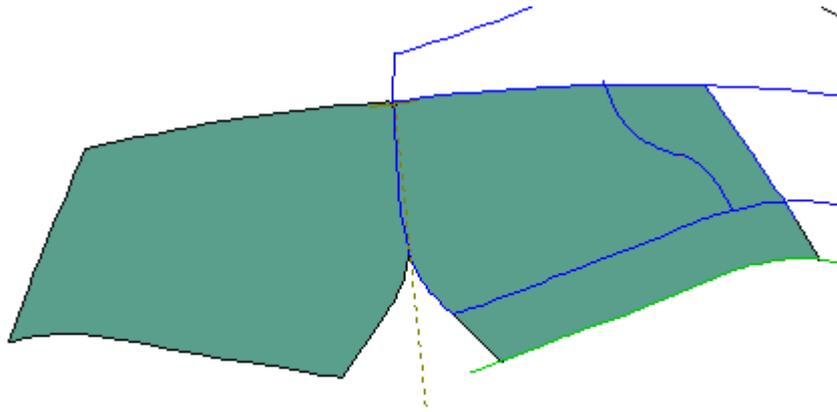
2. Select **Replace Lines/Reflection** from the **Replace Lines** options of the **Parts** menu.



3. Select the replacement line (the new line).

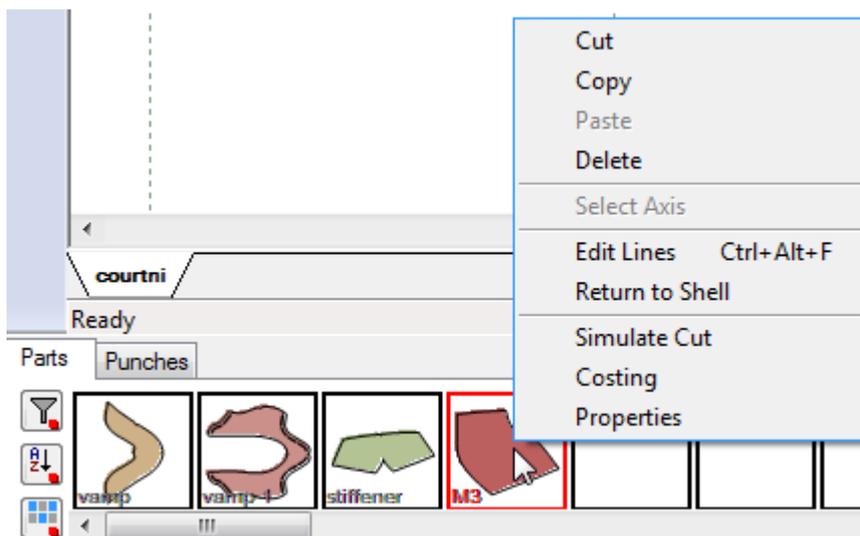


The part will be drawn with the new line as part of the boundary.



7.11 Parts - Delete Part

This option deletes the current part(s). This is the same as selecting the part from the Parts/Library Bar, do a right click over it and select **Delete**.

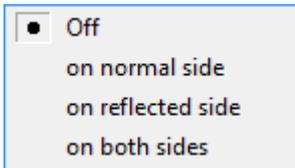


7.12 Parts - Delete All Parts

This option deletes all parts.

7.13 Parts - Auto Add Lines on Creation

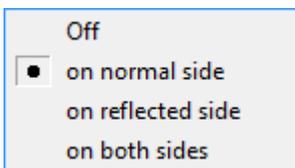
This option adds lines on creation of the parts.



Off
 on normal side
 on reflected side
 on both sides

Off	Will disable auto insertion of lines
On normal side	Add in normal side
On reflected side	Add in reflected side
On both sides	Add on both sides

1. Active the option **on normal side**;

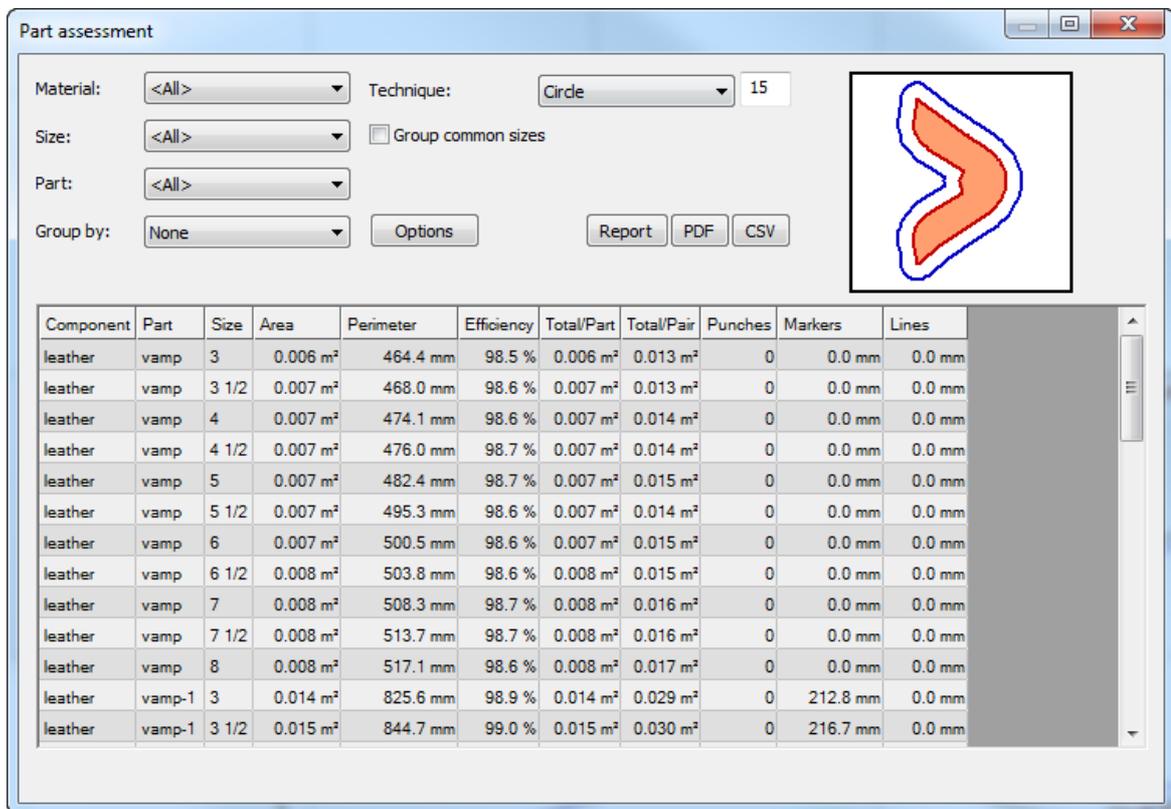


Off
 on normal side
 on reflected side
 on both sides

2. Now if you create punches, notches, markers or corners they will be added to the select part automatically (if they are located in the area of the part)

7.14 Parts - Costing

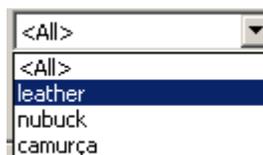
This option makes shape consumption assessment part by part.



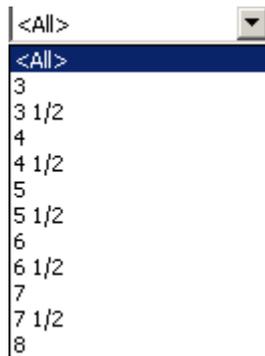
Component	Part	Size	Area	Perimeter	Efficiency	Total/Part	Total/Pair	Punches	Markers	Lines
leather	vamp	3	0.006 m ²	464.4 mm	98.5 %	0.006 m ²	0.013 m ²	0	0.0 mm	0.0 mm
leather	vamp	3 1/2	0.007 m ²	468.0 mm	98.6 %	0.007 m ²	0.013 m ²	0	0.0 mm	0.0 mm
leather	vamp	4	0.007 m ²	474.1 mm	98.6 %	0.007 m ²	0.014 m ²	0	0.0 mm	0.0 mm
leather	vamp	4 1/2	0.007 m ²	476.0 mm	98.7 %	0.007 m ²	0.014 m ²	0	0.0 mm	0.0 mm
leather	vamp	5	0.007 m ²	482.4 mm	98.7 %	0.007 m ²	0.015 m ²	0	0.0 mm	0.0 mm
leather	vamp	5 1/2	0.007 m ²	495.3 mm	98.6 %	0.007 m ²	0.014 m ²	0	0.0 mm	0.0 mm
leather	vamp	6	0.007 m ²	500.5 mm	98.6 %	0.007 m ²	0.015 m ²	0	0.0 mm	0.0 mm
leather	vamp	6 1/2	0.008 m ²	503.8 mm	98.6 %	0.008 m ²	0.015 m ²	0	0.0 mm	0.0 mm
leather	vamp	7	0.008 m ²	508.3 mm	98.7 %	0.008 m ²	0.016 m ²	0	0.0 mm	0.0 mm
leather	vamp	7 1/2	0.008 m ²	513.7 mm	98.7 %	0.008 m ²	0.016 m ²	0	0.0 mm	0.0 mm
leather	vamp	8	0.008 m ²	517.1 mm	98.6 %	0.008 m ²	0.017 m ²	0	0.0 mm	0.0 mm
leather	vamp-1	3	0.014 m ²	825.6 mm	98.9 %	0.014 m ²	0.029 m ²	0	212.8 mm	0.0 mm
leather	vamp-1	3 1/2	0.015 m ²	844.7 mm	99.0 %	0.015 m ²	0.030 m ²	0	216.7 mm	0.0 mm

Several display options could be configured to better evaluate the consumption like material, part, size, grouping and other like technique will control the evaluation costing algorithms.

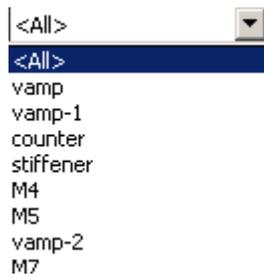
Material - select which material already assigned to parts will be displayed.



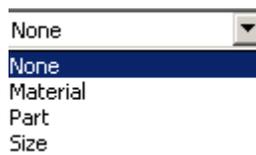
Size - select which sizes of parts will be displayed.



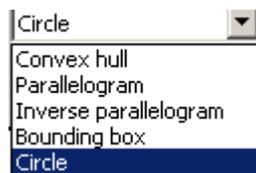
Part - select the part that will be displayed.



Group by - select how to group the results



Technique - select the costing technique.



Group Common Sizes - Select this option to group common sizes.

Options - Select this option to configure the costing options.

Report - print a report

Model: court Base size: 5
Costing technique: Circle (4.0 mm)

M4

Component	Part	Size	Area	Perimeter	Efficiency	Total/Part	Total/Pair
camurça	M4	6	0.005 m ²	283.7 mm	99.1 %	0.005 m ²	0.010 m ²
			0.005 m²	283.7 mm	99.1 %	0.005 m²	0.010 m²

M5

Component	Part	Size	Area	Perimeter	Efficiency	Total/Part	Total/Pair
	M5	6	0.001 m ²	106.4 mm	99.0 %	0.001 m ²	0.001 m ²
			0.001 m²	106.4 mm	99.0 %	0.001 m²	0.001 m²

PDF - Save a report in PDF format.

CVS - Save a report in CVS format.

7.14.1 Parts - Costing - Options

This option allows to adding costing options.

1. Create new Pricing settings

Costing options

Pricing settings

Name:

Currency: Margin (%):

Area cost: Length cost:

Punches cost:

Lines cost: Markers cost:

Area unit

Name: Conversion:

Length unit

Name: Conversion:

Punches

#1 property:

#2 property:

Report template

OK Cancel

2. Insert the name and the other costing properties.

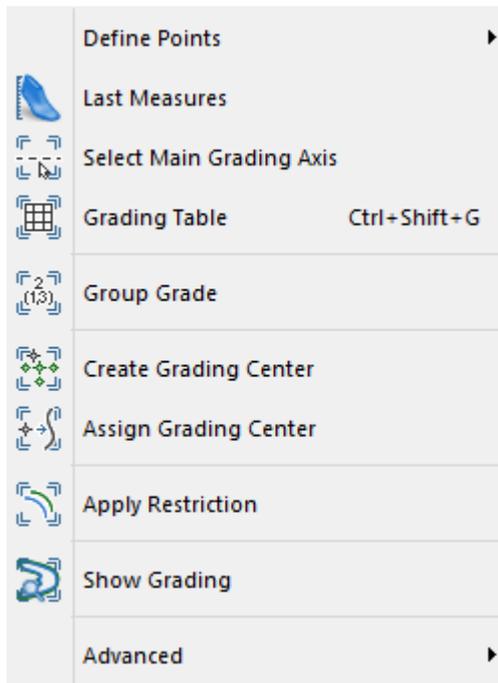
3. In the **Punches Cost** it's possible to assign them to specific properties.
4. To create a new property go to **Preferences, Default Properties** tab.
5. To assign the punch to the property, select the punches distribution and go to the preferences in the tool options box.
6. In the costing option, the name that is inserted in the **Punches #1 property** must match with the name given to the property assigned to the punches distribution.
The punch cost **1#** represents the cost of the punches that have that property assigned.
7. Press **Ok** to finish the Costing Option.

Part



8 Grading Overview

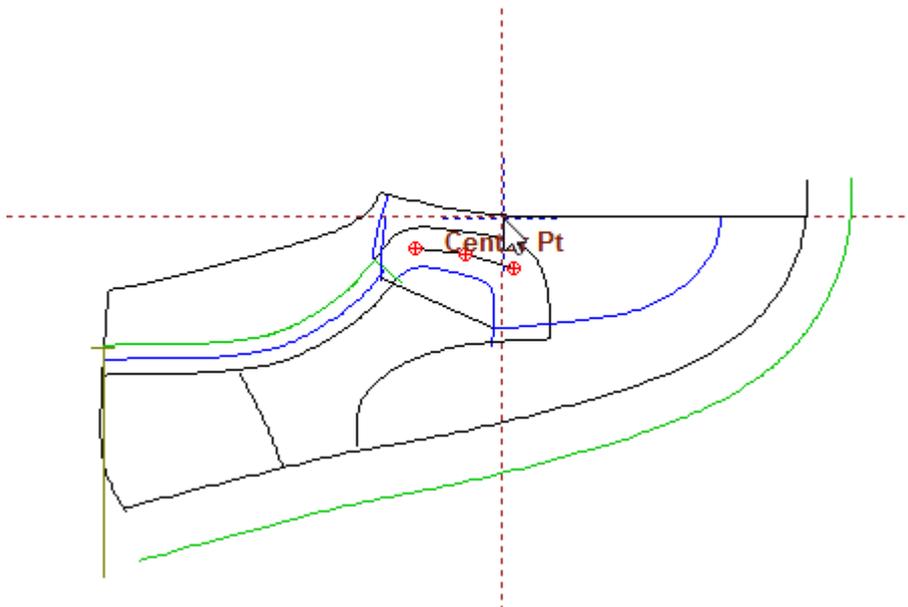
This menu lets you carry out all operations to grade and group grade a shell.



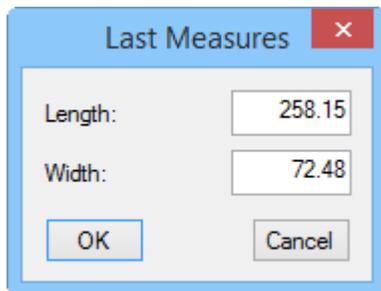
8.1 Grading - Basics Steps for Grading

To quickly start grading for your shell some basic steps are necessary:

1. Insert the Center Point .



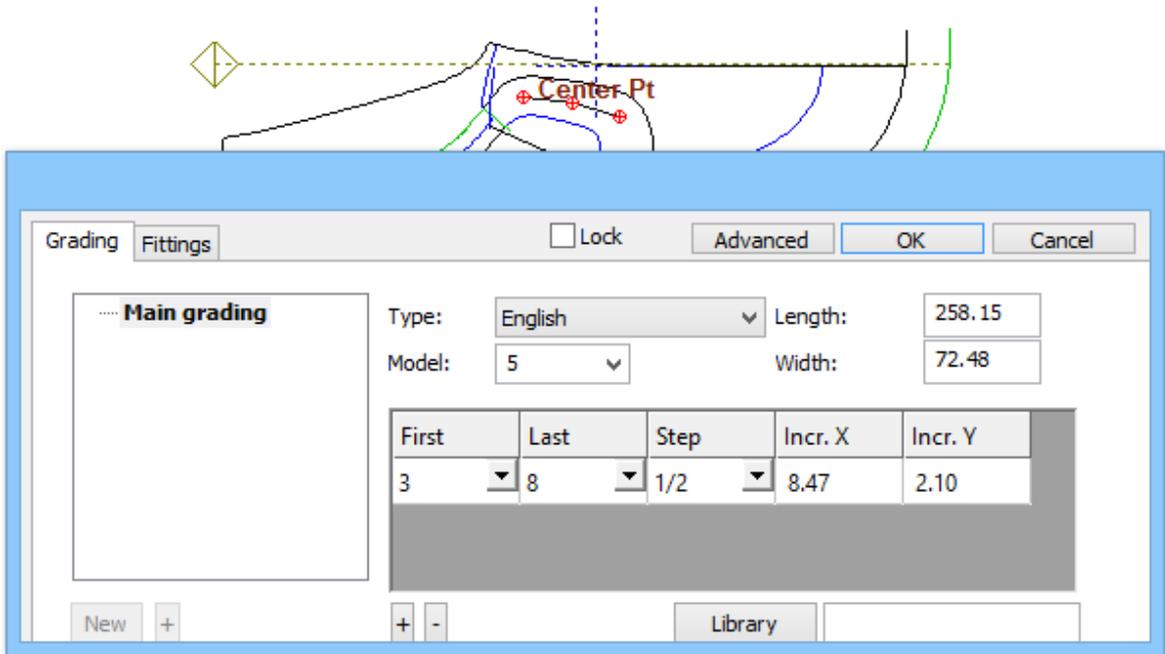
2. Input the measures of the last 



Measure	Value
Length	258.15
Width	72.48

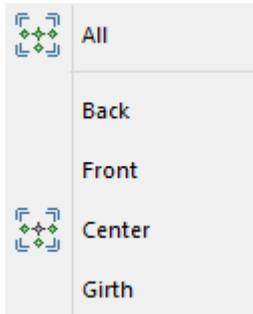
3. Select **Grading Table** 

4. A grading axis is created automatically (by default is horizontal) and a dialog to establish the grading table rules is opened. When finished configuring the rules, press **OK**.



8.2 Grading - Define Points

Use these options to define the points used to measure the length and width of the shell. The values calculated from these points are used as the length and width in the grading table.



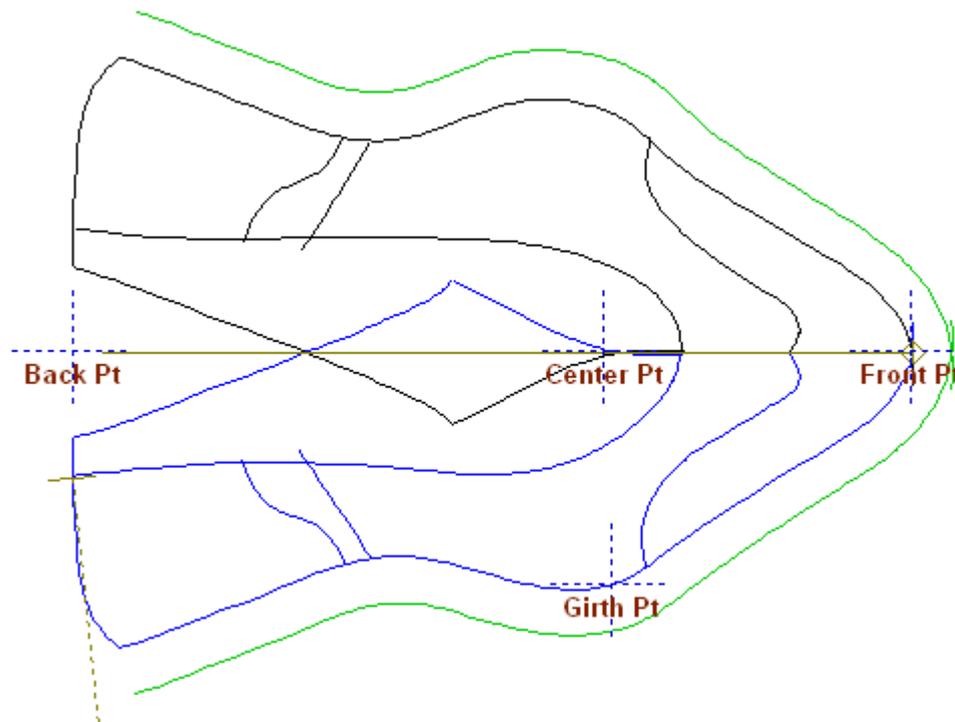
8.2.1 Grading - Define Points - All

Use this option to define the four points used to measure the length and width of the shell.

This is the same as clicking the **Define Points**  button in the **Grading** toolbar.



After selecting this option the cursor is displayed as a large dotted cross hair. The point to be placed is positioned on the cross hair and is placed by clicking the left mouse button. As each point is placed the next point to be placed is displayed at the cross hair.



8.2.2 Grading - Define Points - Back

Use this option to place or move only the back point.

8.2.3 Grading - Define Points - Front

Use this option to place or move only the front point.

8.2.4 Grading - Define Points - Centre

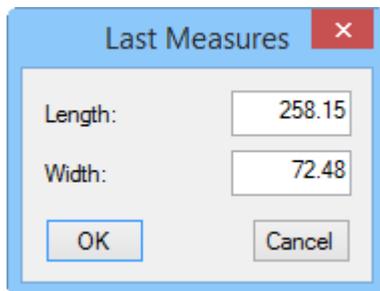
Use this option to place or move only the centre point. 

8.2.5 Grading - Define Points - Girth

Use this option to place or move only the girth point.

8.3 Grading - Last Measures

Use this option to display the **Length** and **Width** measurements used for grading. 



It is possible to type in values if required.

8.4 Grading - Select Main Grading Axis

Use this option to set a main grading axis.

§ If the shell has been drawn, digitised or imported from non **MindCAD** software, one axis must be set as the main grading axis.

.1. Select the axis required and then use this option.

.2. Select **Select Main Grading Axis** from the **Grading** menu. 

§ If the shell has been exported from **3D Design & Engineering**, the axis is already set, and this option does not need to be used.

8.5 Grading - Grading Table

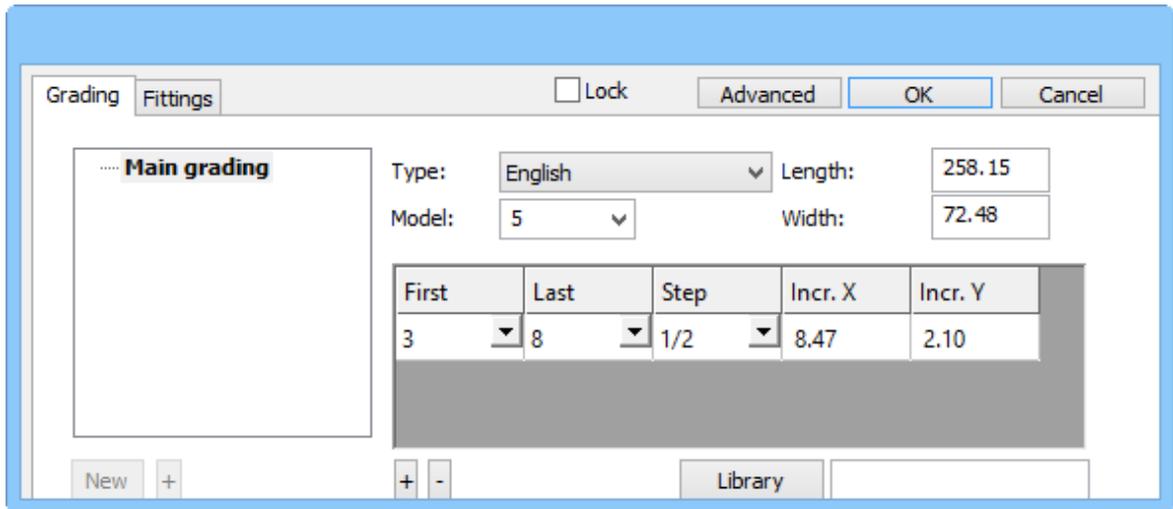
Use this option to set up the size ranges to be graded and increments between sizes.

This is the same as clicking the **Grading Table**  button in the **Grading** toolbar or pressing **Ctrl +Shift+G**.

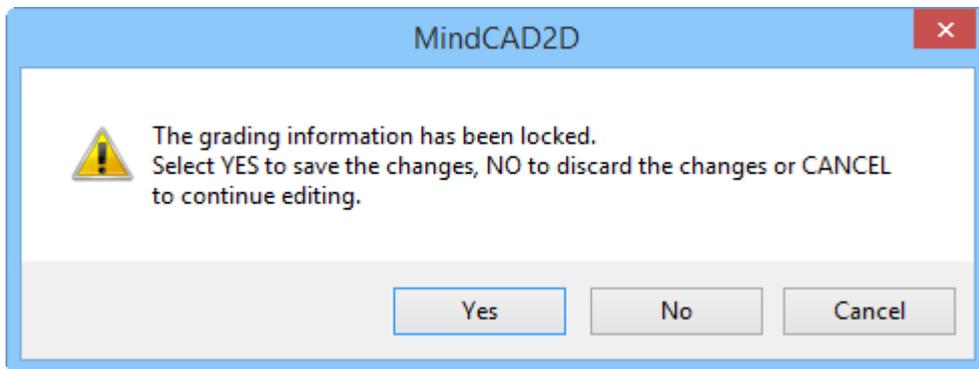


To create a grading table,

1. select **Grading Table** from **Grading** menu. The **Grading Table** dialogue box is displayed.
2. use the dialogue box to set up the size ranges and increments between the sizes (**Main grading**).



Lock - When this option is active, it's possible to change the values but when the **OK** button is pressed the below message will appear.



Type - Select the type of grading, (*English* or *Continental*) from the drop down list.

Model - Set the model size.

First - Set the first (smallest) size you want to grade. You can select this from the drop down list or enter a value.

Last - Set the last (largest) size you want to grade. You can select this from the drop down list or enter a value.

Step - Set the step between sizes using the drop down list. Available options are 1, 1/2, 1/3, 1/4

Increments - When you select a **Type** (*English* or *Continental*) the standard grading increments are applied for that grade type. If required, these can be edited in the increment boxes.

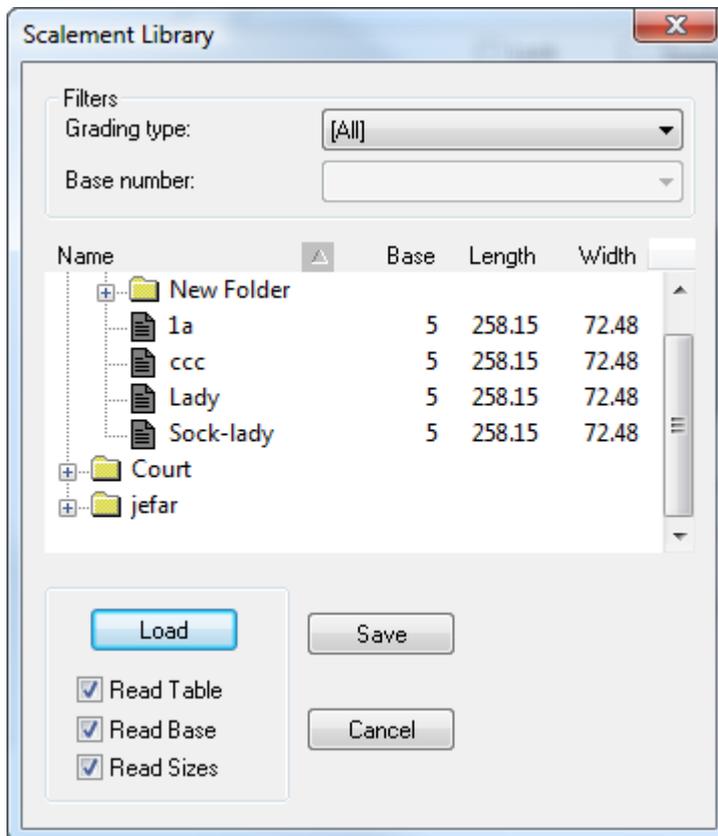
+/- - Add/remove grading sections (these sections are created when there are sizes ranges with different increments)

First	Last	Step	Incr. X	Incr. Y
3	8	1/2	8.47	2.10
6	8	1/2	7.00	2.10

Advanced - switch to expert view of the grading table specification.

Library - allows to save/load grading specifications on a library. While browsing for a specific grading specification, there is the possibility to filter by grading type and base number:

- **Filters** - filters the tree list using **Grading type** or **Base number**
- **Load** - loads the grading specification. Extra control is possible by checking the following fields: **Read Table**, **Read Base**, **Read Sizes**)
- **Save** - Saves a grading specification



While in the expert view additional fields are available:

Cascade update - If *ON*, table values are updated automatically after operator input.

For each size, the operator can make individual changes of the following parameters:

Length Dif. - length increment between sizes

Lengths - last length for each size

Width Dif. - width increment between sizes

Widths - last width for each size

Alias - use another size grading specification (ie. size 4 will have the same measures of the 4 1/2)

Reset - reset of increment values to the default increment grading value.

Simple - switch to simplified view of the grading table specification

The screenshot shows the 'Grading Fittings' dialog box. The 'Main grading' section is highlighted in yellow. It includes fields for Type (English), Length (258.15), Model (5), and Width (72.48). Below these are fields for First (3), Last (8), Step (1/2), Incr. X (8.47), and Incr. Y (2.10). A 'Reset' button is present. The 'Detailed grading table' is also visible, showing various parameters for different grades.

	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8
Length Dif.	4.24	4.24	4.24	4.24	0.00	4.24	4.24	4.24	4.24	4.24	4.24
Lengths	241.21	245.44	249.68	253.91	258.15	262.38	266.62	270.86	275.09	279.33	283.56
Width Dif.	1.05	1.05	1.05	1.05	0.00	1.05	1.05	1.05	1.05	1.05	1.05
Widths	68.28	69.33	70.38	71.43	72.48	73.53	74.58	75.63	76.68	77.73	78.78
Alias	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8

3. Click **OK** to confirm or **Cancel** to discard changes.
4. If the values of the advanced table are change
5. When the values from the **Detailed grading table** are changed by the user, the **Main grading table** will change to yellow, as a warning.

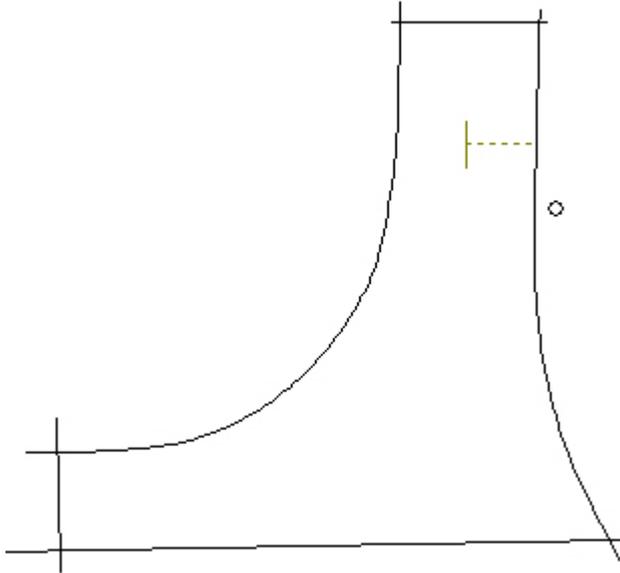
The screenshot shows the 'Grading Fittings' dialog box. The 'Main grading' section is highlighted in yellow, indicating a warning. The 'Detailed grading table' is also visible, showing various parameters for different grades.

	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8
Length Dif.	-4.77	4.24	4.24	4.24	0.00	4.24	4.24	4.24	4.24	4.24	4.24
Lengths	250.21	245.44	249.68	253.91	258.15	262.38	266.62	270.86	275.09	279.33	283.56
Width Dif.	1.05	1.05	1.05	1.05	0.00	1.05	1.05	1.05	1.05	1.05	1.05
Widths	68.28	69.33	70.38	71.43	72.48	73.53	74.58	75.63	76.68	77.73	78.78
Alias	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8

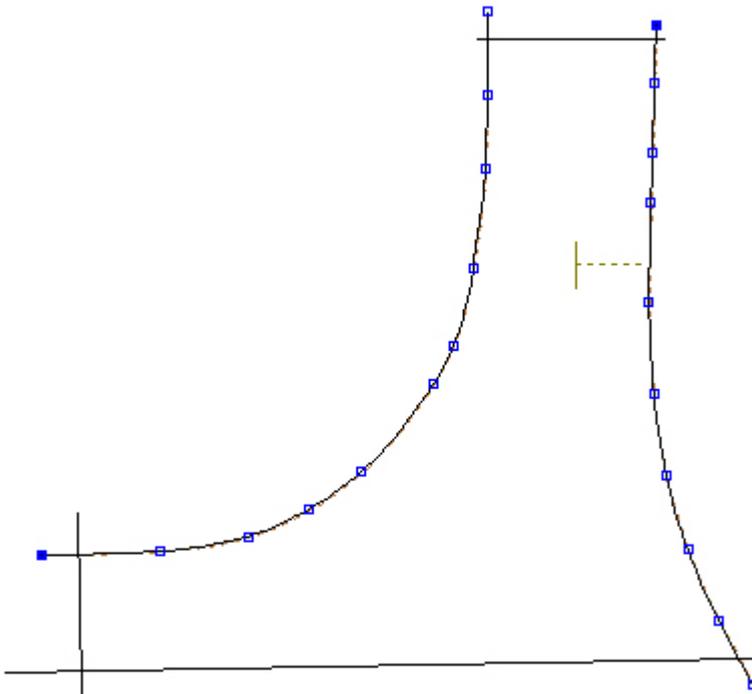
8.5.1 Grading - Grading Table - Sub-Grading

Use this option to restrict the amount of grade on a line(s) .

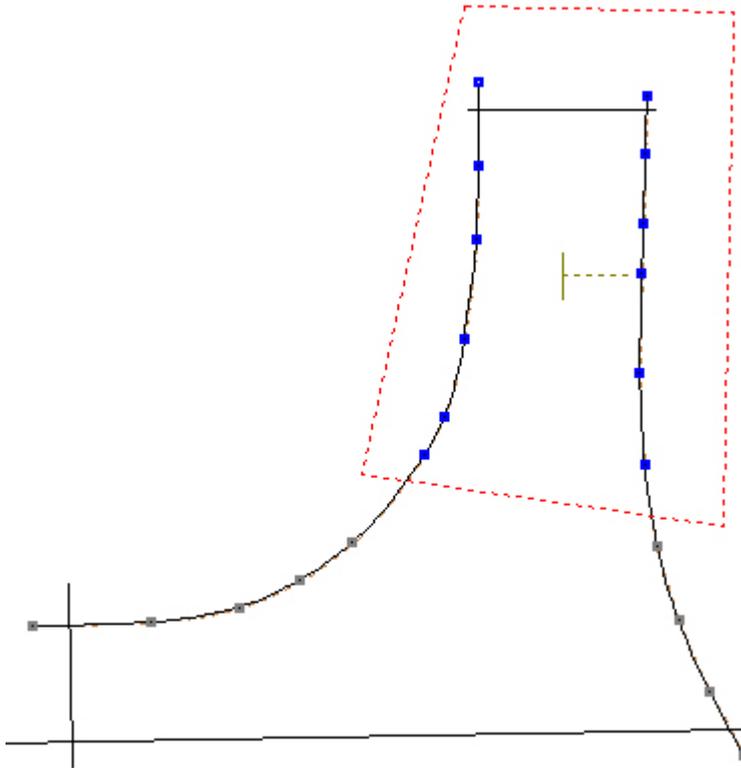
1. create the axis for the sub-grading.



2. select the lines to be sub-graded.



3. if the sub-grading is to be applied only to a section of the lines then select the affected area by doing a net selection while pressing **Shift**.



4. open the grading table specification and press **Advanced** for the expert view.

5. create the sub-grading pressing **New**  button. Rename the sub-grading to a meaningful name. Under the created node, information about the lines to be affected (ie. Line 371, Line 373 and Axis). The **plus** button allows to add lines to the selected sub-grading.

Grading | Fittings | Simple | OK | Cancel

Type: English Length: 211.03
Model: 5 Width: 200.91

First: 3 Last: 8 Step: 1/2 Incr. X: 6.92 Incr. Y: 5.92

Reset

+ - Library Cascade Update

	3	3 1/2	4	4 1/2	5	5 1/2	6	6
Length Dif.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lengths	258.27	258.27	258.27	258.27	258.27	258.27	258.27	258.27
Width Dif.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Widths	71.23	71.23	71.23	71.23	71.23	71.23	71.23	71.23
Alias	3	3 1/2	4	4 1/2	5	5 1/2	6	6

New +

6. control sub-grading increments on X and Y. If there is the need not to scale on the direction of the sub-grading axis, the zero value should be used for the X increment. Likewise for a direction perpendicular to the sub-grading axis, the zero value should be used for the Y increment. Control of increments size by size is possible using the **Length Dif.** and **Width Dif.** rows on the grading table. To finalize, press **OK**.

Grading | Fittings | Simple | OK | Cancel

Type: English Length: 211.03
Model: 5 Width: 200.91

First: 3 Last: 8 Step: 1/2 Incr. X: 0.00 Incr. Y: 5.92

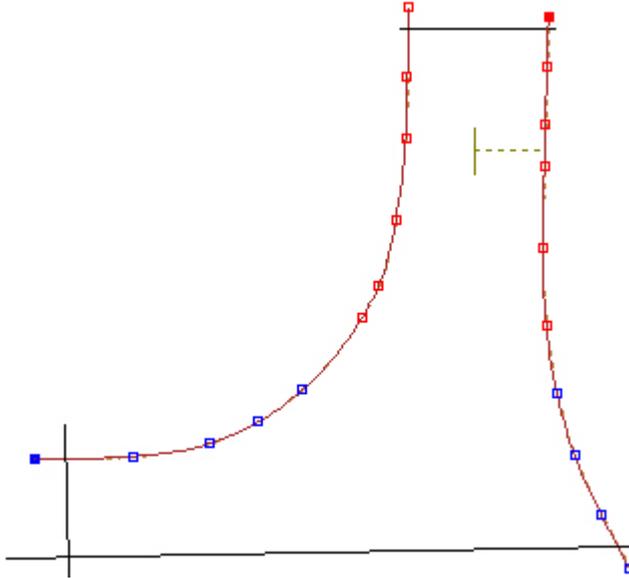
Reset

+ - Library Cascade Update

	3	3 1/2	4	4 1/2	5	5 1/2	6	6
Length Dif.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lengths	211.03	211.03	211.03	211.03	211.03	211.03	211.03	211.03
Width Dif.	2.96	2.96	2.96	2.96	0.00	2.96	2.96	2.96
Widths	189.06	192.03	194.99	197.95	200.91	203.87	206.83	206.83
Alias	3	3 1/2	4	4 1/2	5	5 1/2	6	6

New +

7. lines being affected by a sub-grading will turn into a ruby colour, the constrained control points turn into red and the unrestricted control points into blue.



8. use **Show Grading** button to visualize the sub-grading affecting the lines and its related parts.

Grading | Fittings | Simple | OK | Cancel

--- **Main grading**

Type: English Length: 258.27
 Model: 5 Width: 71.23

First	Last	Step	Incr. X	Incr. Y
3	5	1/2	8.47	2.10
6	8	1/2	7.00	2.10

Reset

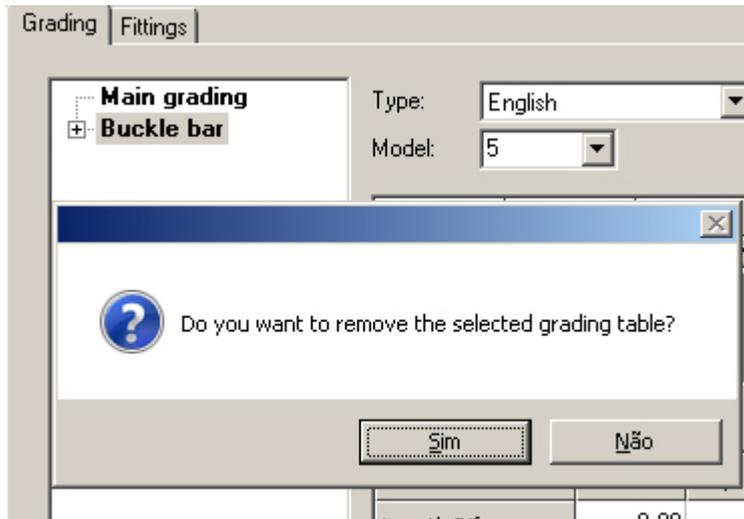
+ - Library Cascade Update

	3 1/2	4	4 1/2	5	6	6 1/2	7	7
Length Dif.	4.24	4.24	4.24	0.00	3.50	3.50	3.50	
Lengths	245.56	249.80	254.03	258.27	261.77	265.27	268.77	
Width Dif.	1.05	1.05	1.05	0.00	1.05	1.05	1.05	
Widths	68.08	69.13	70.18	71.23	72.28	73.33	74.38	
Alias	3 1/2	4	4 1/2	5	6	6 1/2	7	

New +

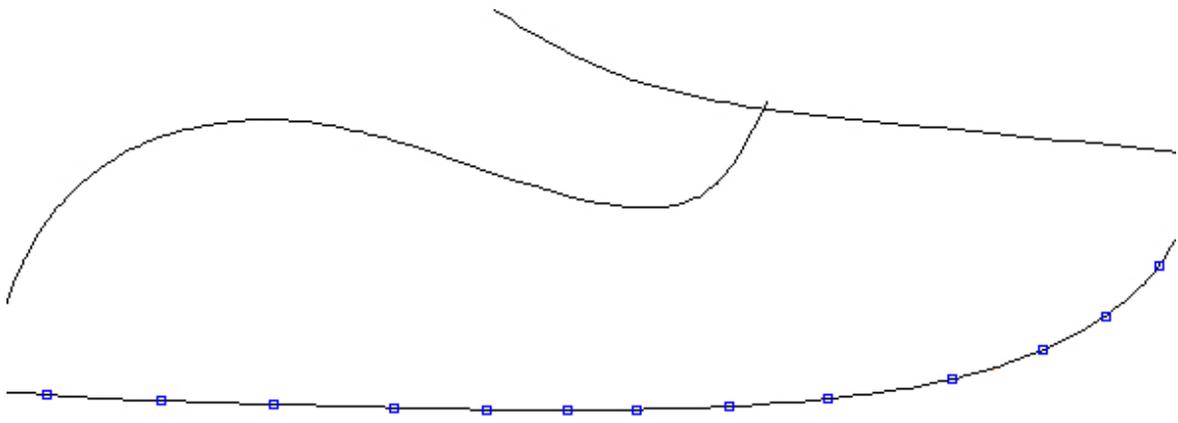
9. if there is the need to smooth the end result, please refer to Grading Connection

10. to remove a sub-grading or an associated line, select it and then press the **Delete** key. On confirmation dialog answer **Yes**.

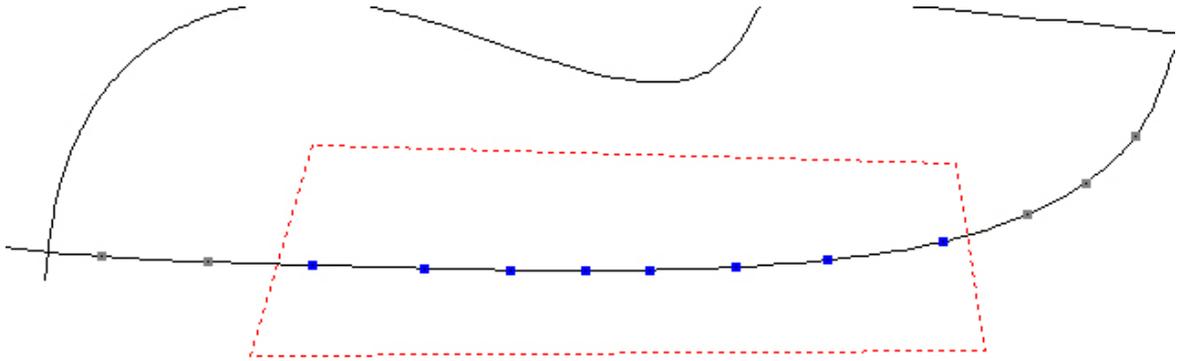


8.5.2 Grading - Grading Table - Fittings

Use this option to restrict the amount of grade on a line. This is typically used on child footwear.



1. select the lines to be affected by the fitting.



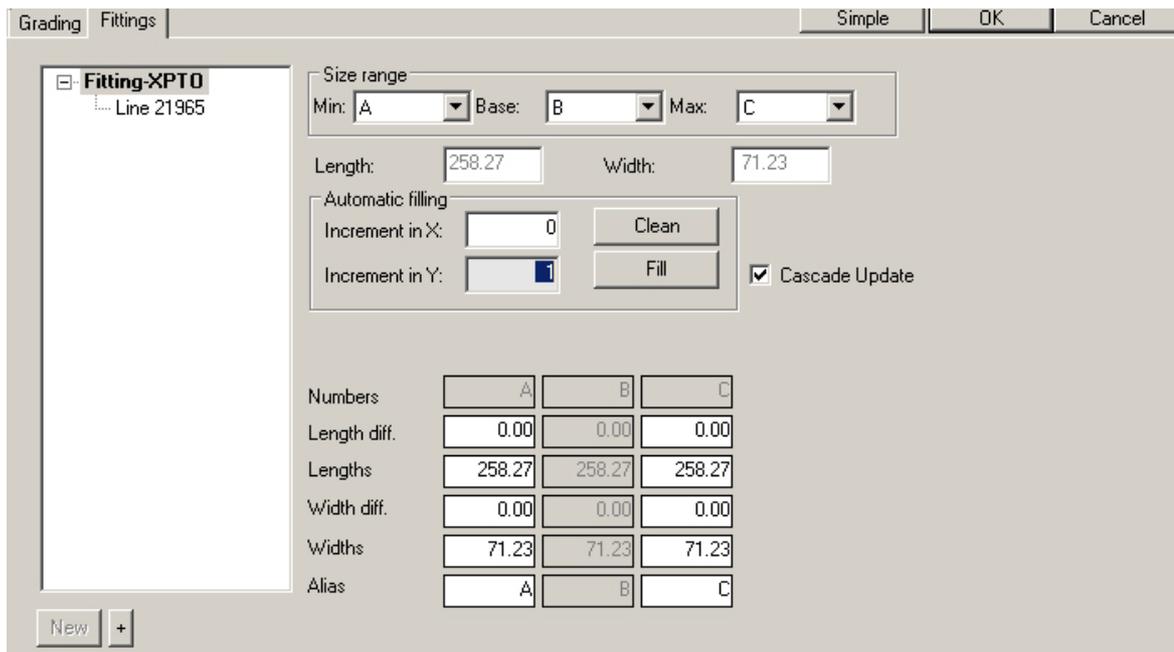
2. if the fitting is to be applied only to a section of the lines then select the affected area by doing a net selection while pressing **Shift**.

3. open the grading table specification, press **Advanced** for the expert view and select **Fittings** tab.

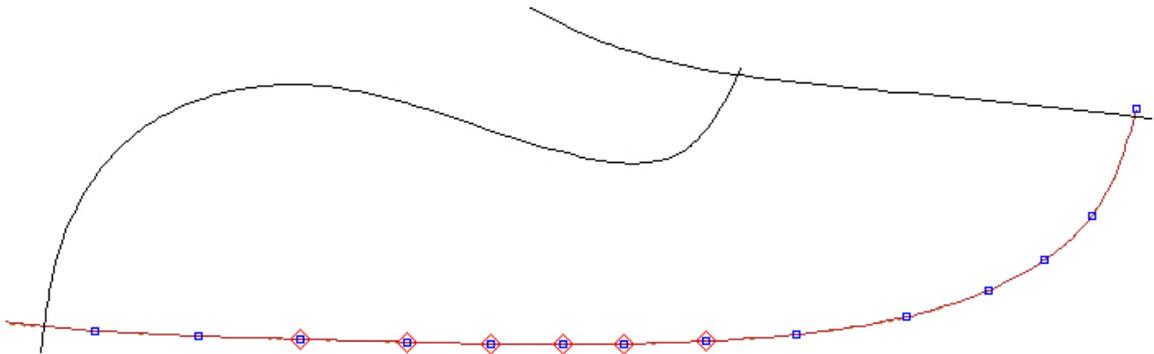
4. create the fitting pressing **New**  button. Rename the fitting to a meaningful name. Under the created node, information about the lines to be affected (ie. Line 371, Line 373 and Axis). The **plus** button allows to add lines to the selected fitting. Select a **Size Range** (ie. **Min.:** A, **Base:** B and **Max.:** C)

Numbers	A	B	C
Length dif.	0.00	0.00	0.00
Lengths	258.27	258.27	258.27
Width dif.	0.00	0.00	0.00
Widths	71.23	71.23	71.23
Alias	A	B	C

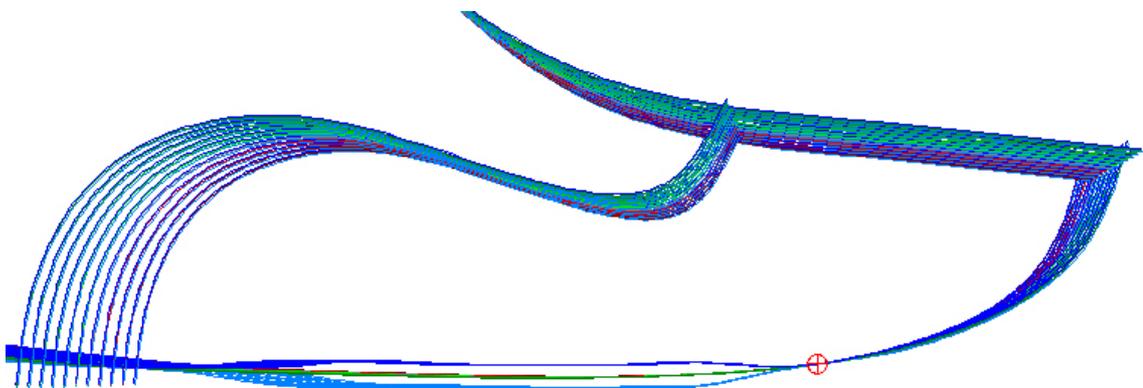
5. control fitting increments on X and Y. If there is the need not to scale on the direction of the grading axis, the zero value should be used for the X increment. Likewise for a direction perpendicular to the grading axis, the zero value should be used for the Y increment. Control of increments size by size is possible using the **Length Dif.** and **Width Dif.** fields. To finalize, press **OK**.



6. lines being affected by the fitting will turn into a ruby colour, the constrained control points will be displayed inside red diamond shapes and the unrestricted control points into blue.



8. use **Show Grading** button to visualize the fitting affecting the lines and its related parts.



9. if there is the need to smooth the end result, please refer to Fittings Grading Connection

10. to remove a fitting or an associated line, select it and then press the **Delete** key. On confirmation dialog answer **Yes**.



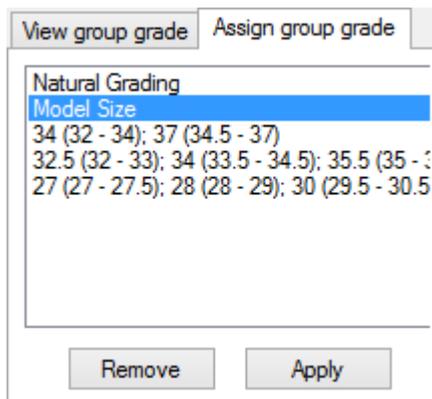
8.6 Grading - Group Grade

Use this option to apply group grading to lines or points within lines.

This is the same as clicking the **Group Grading**  button in the **Grading** toolbar.



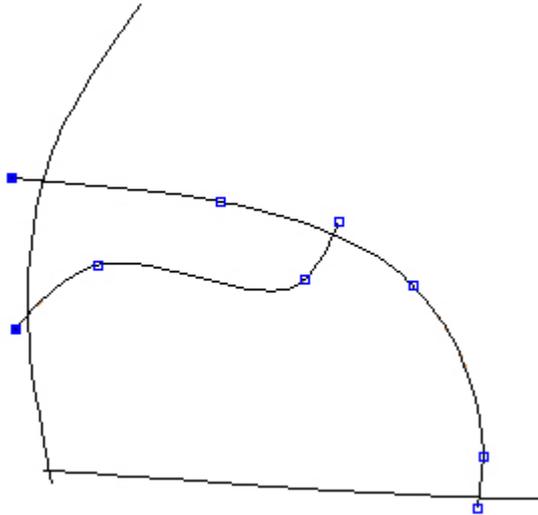
1. Select line(s) for group grading
2. Select **Group Grade** from the **Grading** menu. A dialogue box is displayed



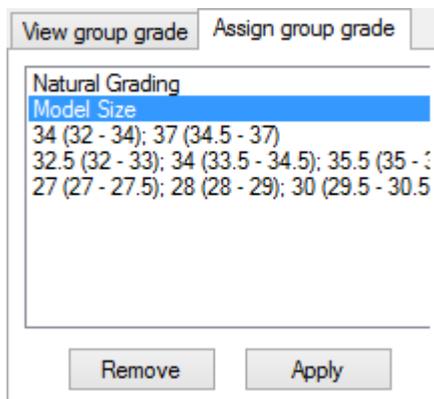
3. Select group required.
4. Select **Apply**. The lines will be highlighted to confirm selection
5. Press the middle button to finish.

8.6.1 Applying options to points within lines (blended grading)._2

1. select line(s) for group grading

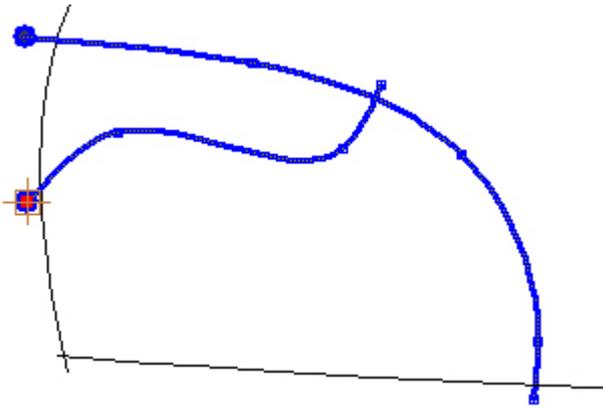


2. select **Group Grade** from the **Grading** menu. A dialogue box is displayed



3. select group required.
4. select points on the lines.
5. select **Apply**

If only one group is applied to a point on a line, the whole line will be graded to that rule, so a further grade must be applied to the same line

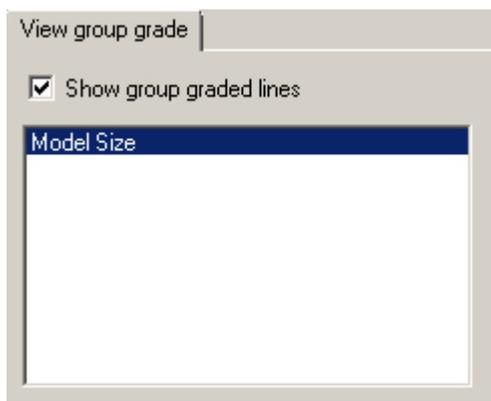


6. select another point(s) on the line and apply another grade.
7. press the middle button to finish.

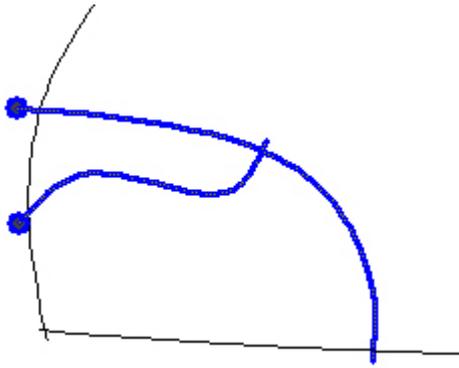
8.6.2 View Group Grade

Use this option to visualize the group grades applied to the model

1. select **Group Grade** from the **Grading** menu. A dialogue box is displayed



2. visualization of the existing group grades and corresponding associated lines.



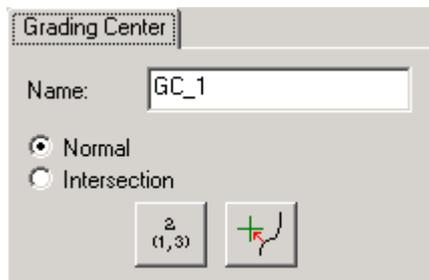
8.7 Grading - Create Grading Centre

Use this option to create grading centres, on selecting this option a menu is displayed.

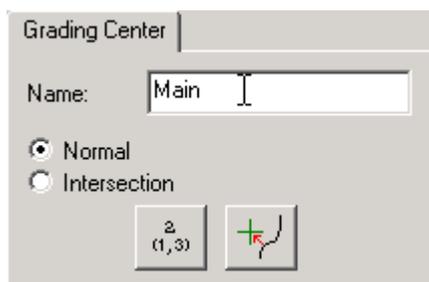
This is the same as clicking the **Create Grading Centre**  button in the **Grading** toolbar.



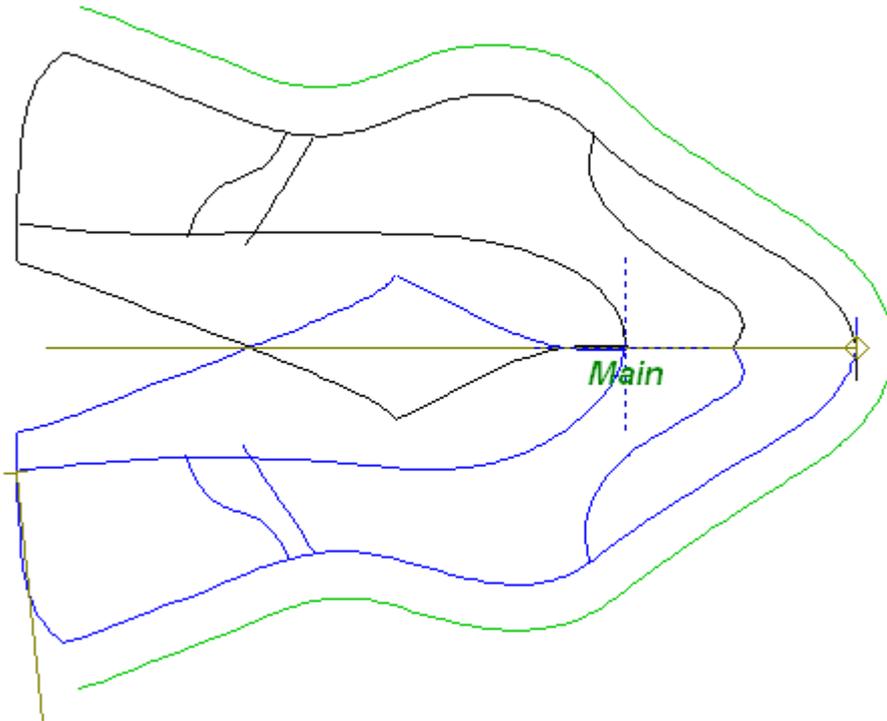
1. select **Create Grading Centre** from the **Grading** menu. The **Tool Options** toolbar displays appropriate options.



2. type in a **Name** for the grading centre.



3. Move the cross hairs to the position required for the grading centre and press the left mouse button.



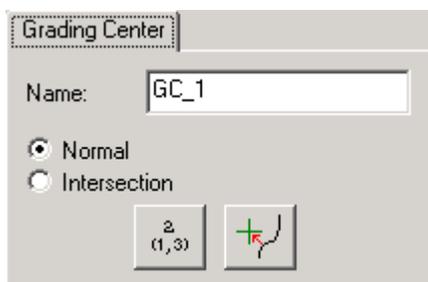
4. Click the middle mouse button to finish.

Tips:

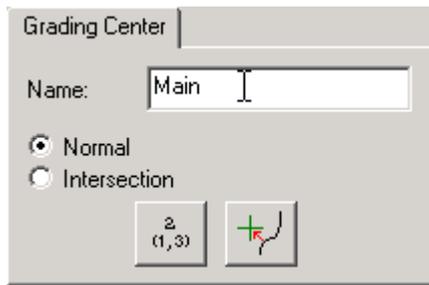
1. Grading Centres can be group graded from other grading centres using the two buttons in the group creation menu.
2. If Grading Centres are selected, the tool options menu will be displayed for editing and the Grading Centre can be moved.
- 3 Intersecting Grading Centres will always be placed at the intersections of the lines even if the lines have different grade rules.

8.7.1 Creating a grading centre on the intersection of two lines.

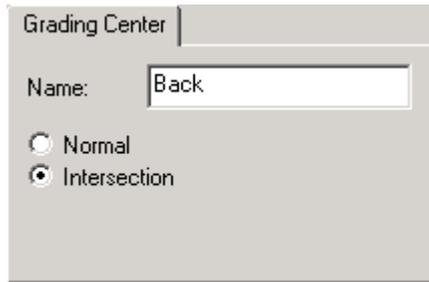
1. select **Create Grading Centre** from the **Grading** menu. The **Tool Options** toolbar displays appropriate options.



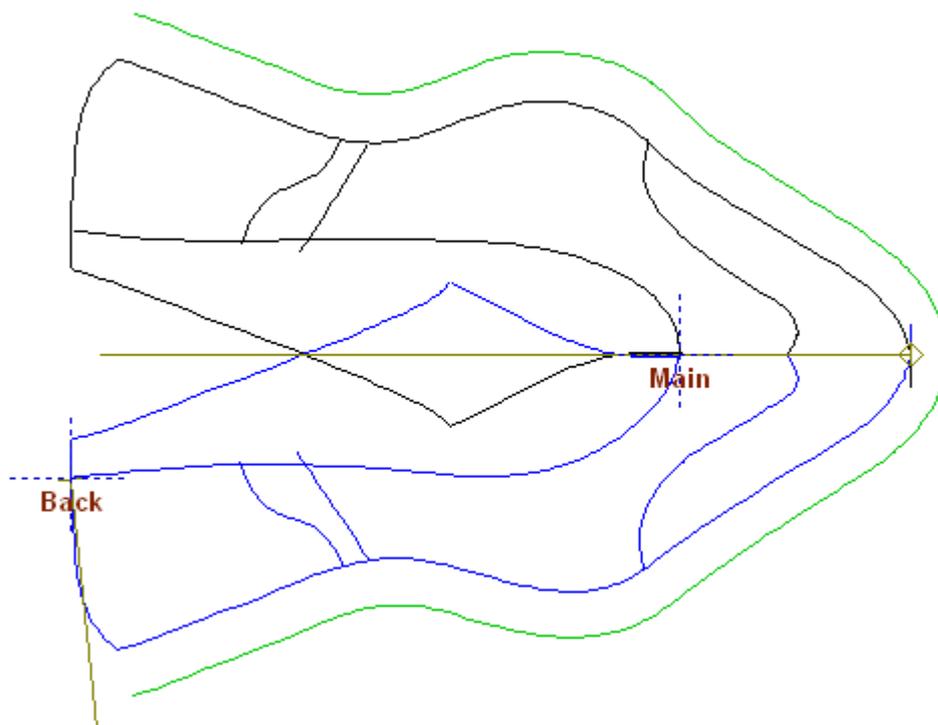
2. type in a **Name** for the grading centre.



3. select **Intersection**



4. the cursor will be displayed  select the two lines that define the intersection.



5. press the middle mouse button to complete the command.

8.8 Grading - Assign Grading Centre

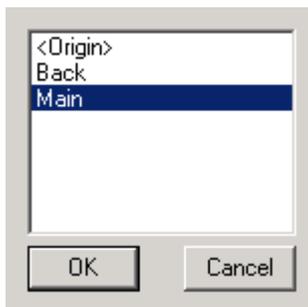
Use this option to assign a grading centre to a line.

This is the same as clicking the **Assign Grading Centre**  button in the **Grading** toolbar.



To assign a grading centre,

1. select the lines you want to assign to a grading centre.
2. select **Assign Grading Centre** from the **Grading** menu. A dialogue box will be displayed with the grading centres available



3. select the required grading centre and click **OK**

8.9 Grading - Apply Restriction

Use this option to restrict the amount of grade on a line .

If lines are 'linked' the amount of grade between the lines will always be constant. If lines are not 'linked' and parallel, when the lines are graded the distance between the lines will grade. This applies to parallel lines or any other implicit distance relation the operator wants to enforce .

To avoid this general grading behaviour, use this option. Detailed explanation of available options is done just ahead.

8.9.1 Grading - Apply Parallel Restriction

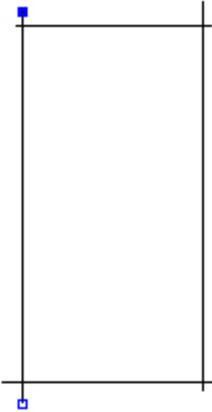
Use this option to restrict the amount of grade on a line.

This is the same as clicking the **Restriction**  button in the **Grading** toolbar.

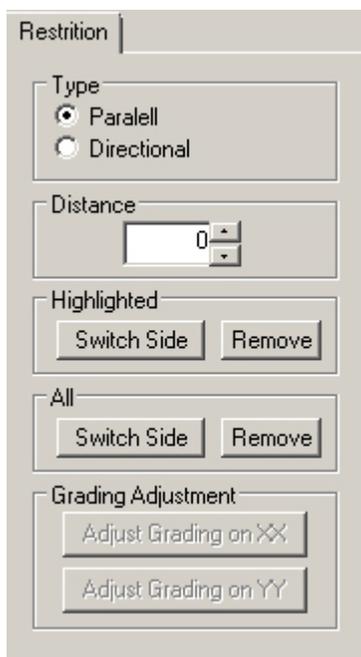


To apply parallel restriction,

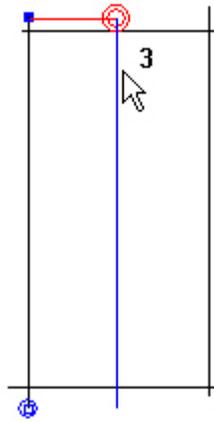
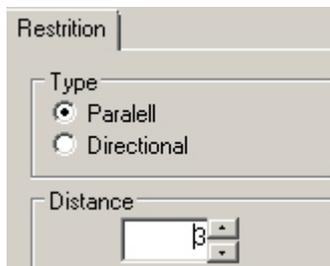
1. select the line to have the restriction applied.



2. select **Apply Restriction** from the **Grading** menu. On the **Tool Options** select **Parallel** option.

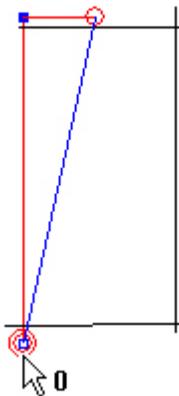


3. type in the value or using the double circle red handle just simply drag to the desired position. A measure helper will be displayed while dragging.



4. if the restriction is constant do not add any further values.

If the restriction is different at a different point, select another double circle red handle and apply or drag to a new value.



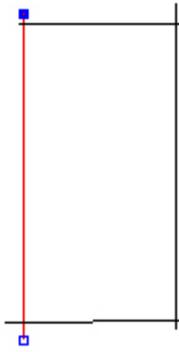
5. to change side or to remove restrictions the following buttons are available

Highlighted - Switch side / Remove for the selected handle

All - Switch side / Remove for all the handles



6. click the middle mouse button to finish. The line being constrained turn into red.



8.9.2 Grading - Apply Directional Restriction

Use this option to restrict the grade between lines of different geometry.

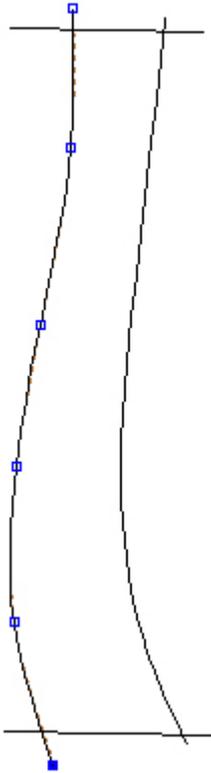
This is the same as clicking the **Restriction**  button in the **Grading** toolbar.



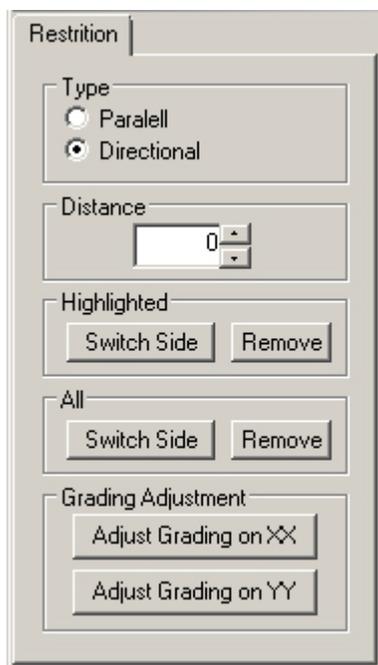
When graded, the distance between the lines will remain constant at the points where the restriction is applied even though the length of the line changes.

To apply directional restriction,

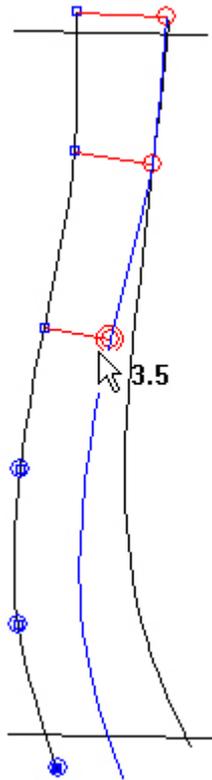
1. select the line to have the restriction applied.



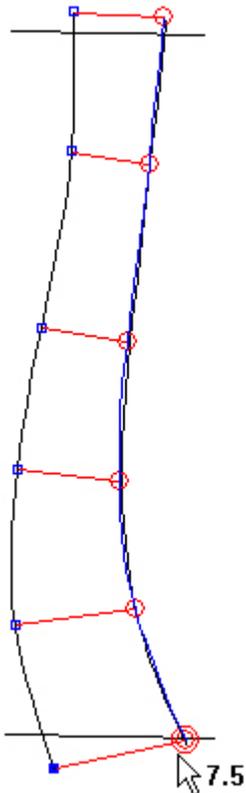
2. select **Apply Restriction** from the **Grading** menu. On the **Tool Options** select **Directional** option



3. using the left mouse button drag the restriction handle to the required point or set the **Distance** value.



4. drag the other shown restrictions to their required points. Please note, the operator could only set **Distance** values handle by handle and let the system decide the best direction for a smooth result.



5. to change side or to remove restrictions the following buttons are available

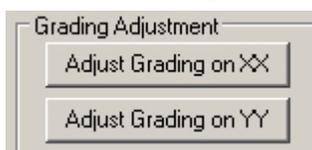
Highlighted - Switch side / Remove for the selected handle

All - Switch side / Remove for all the handles

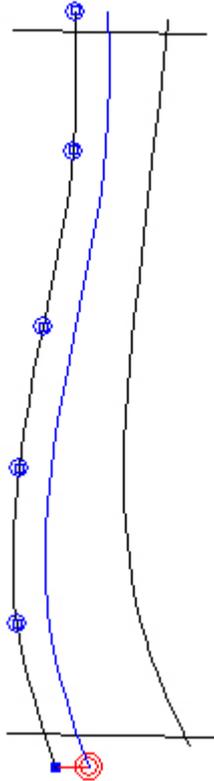


6. press the middle mouse button to complete the command.

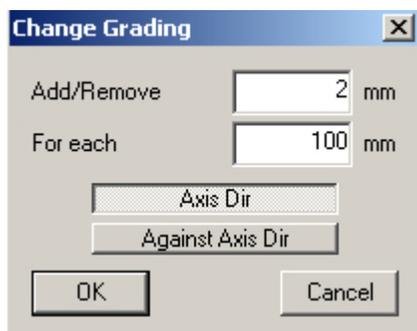
Only when in directional restriction, the distance values could be configured based on grading adjustment on XX and YY. The following options are only available when **Directional** is selected and if an already configured main grading with at least two sizes exists.



Additional to the previous steps, for each handle selected



7. Select **Adjust grading on XX**. Input the value in mm to add or remove for each measure unit and axis direction.



8. Finalize pressing **OK**.

8.10 Grading - Show Grading

Use this option to 'knock' your graded sizes for checking.

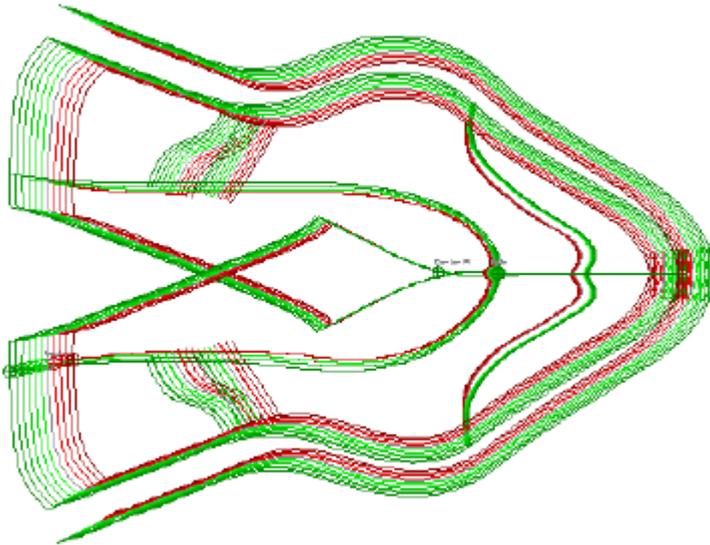
This is the same as clicking the **Show Grading**  button in the **Grading** toolbar.



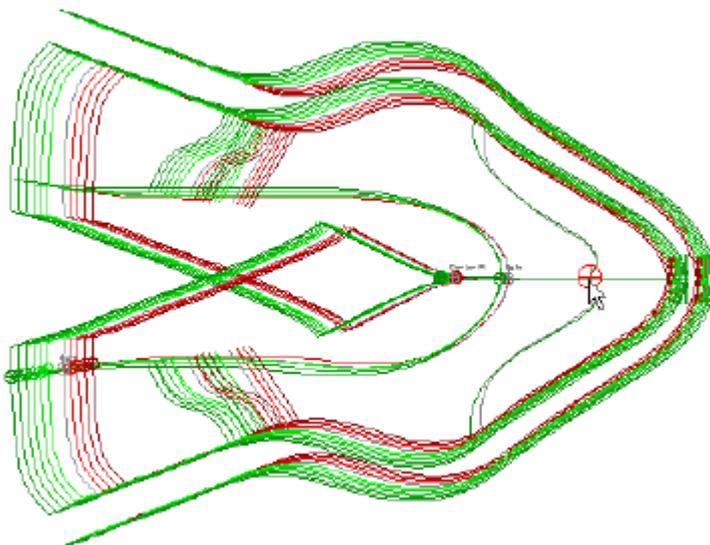
1. select the lines to be knocked. If none are selected all lines will be knocked. Alternatively, select

one or more parts.

2. select **Show Grading** from the **Grading** Menu. Your graded sizes will be displayed



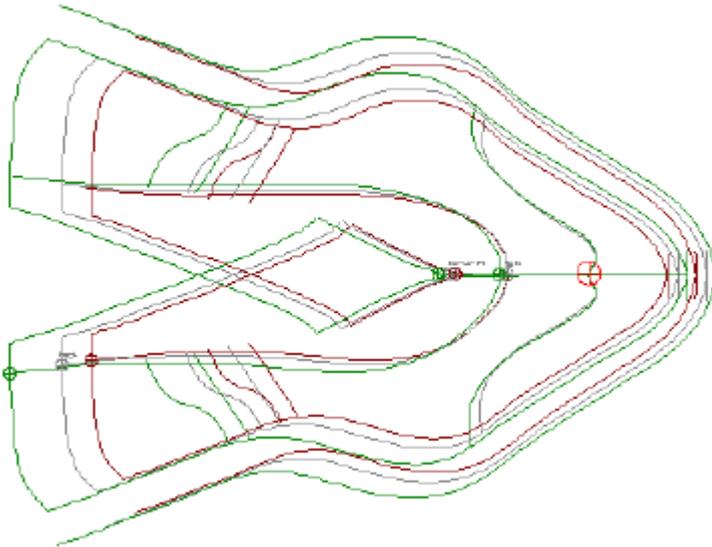
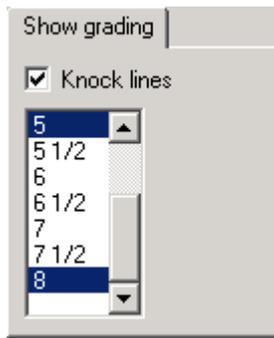
3. click the left mouse button to knock to any position



4. hold the left mouse down and drag the mouse with the left mouse button held down to see the knocking done in real time.

To select specific sizes within the graded range,

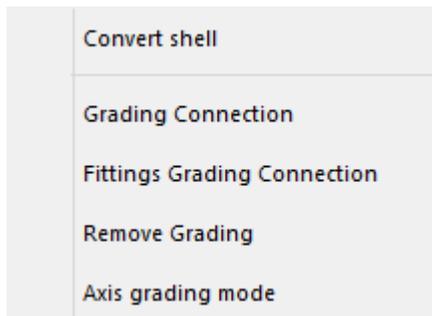
1. use the **Tool Options** toolbar to select specific sizes within the graded range. Use the **Ctrl** key to add sizes.



2. click the middle mouse button to finish.

8.11 Grading - Advanced

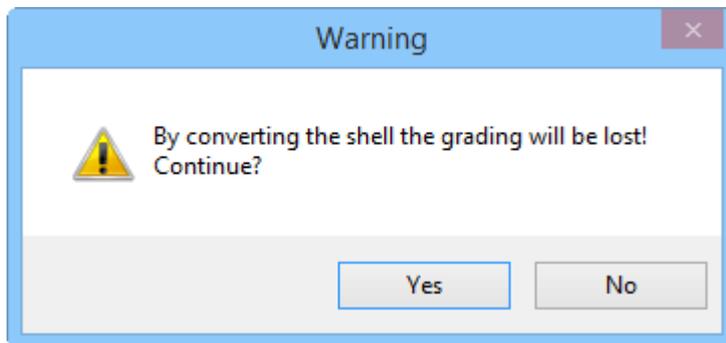
Use this menu to access the following options:



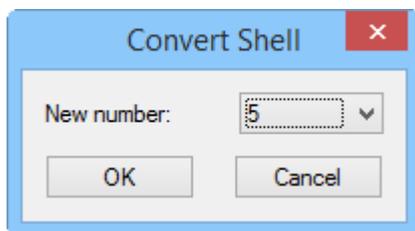
8.11.1 Grading - Advanced - Grading Shell

Use this option to create a new model size shell.

1. When the option has been selected a warning message is displayed



2. Select **Yes** to continue. A second message is displayed



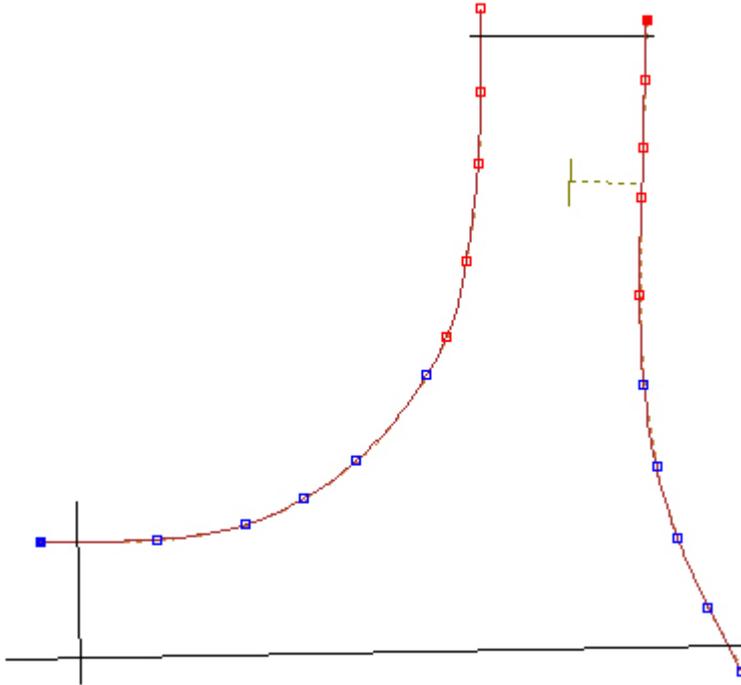
3. Use the drop down list to select the size of the new model and **OK**

- *As this is a new model size, all grading options have to be used again.*

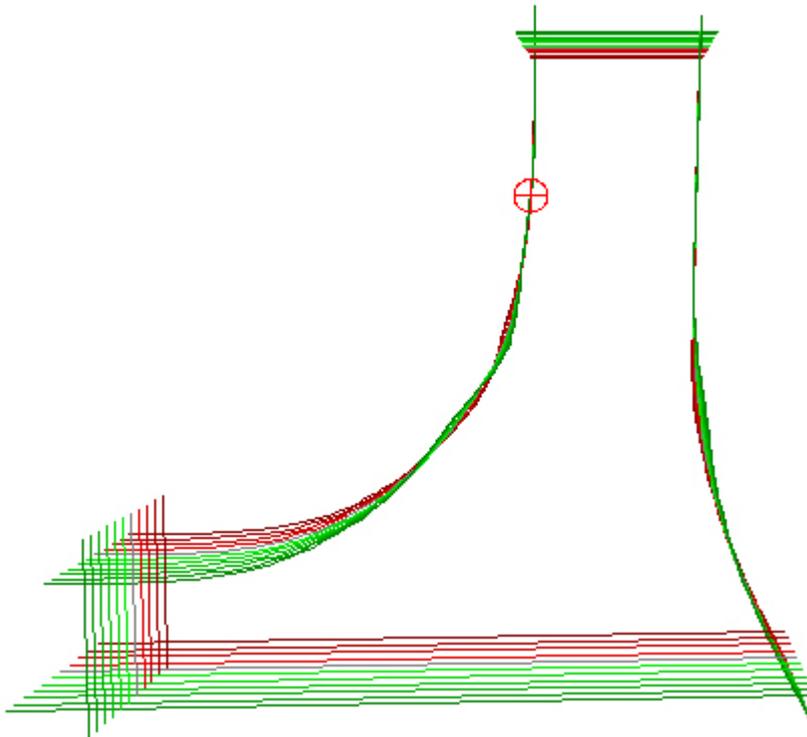
8.11.2 Grading - Advanced - Grading Connection

The purpose of this tool is to provide smooth line connection on sub-gradings.

When a sub-grading restriction is applied to a certain area (the red handles) the other have the normal grading rules (the blue handles).

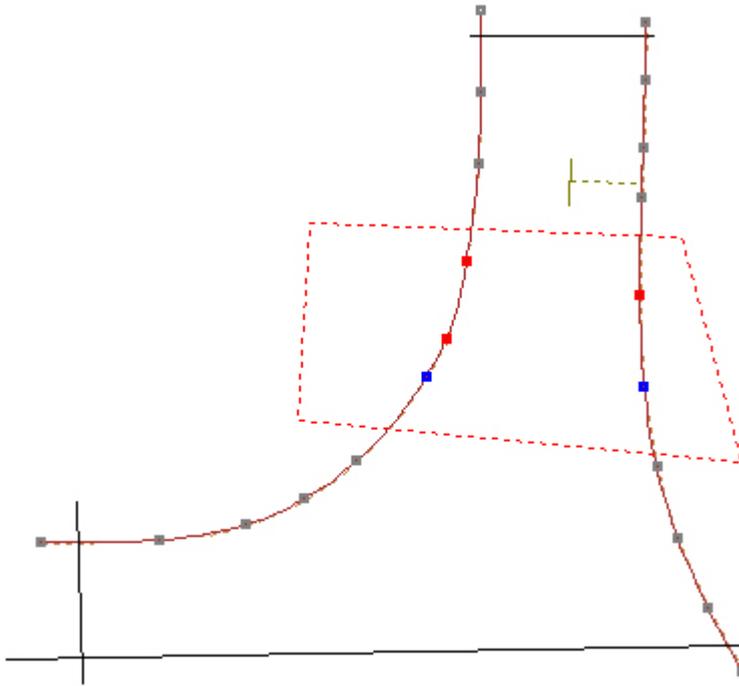


Generally, this leads to some imperfections on the transition area. This is showed when knocking the parts as depicted below.

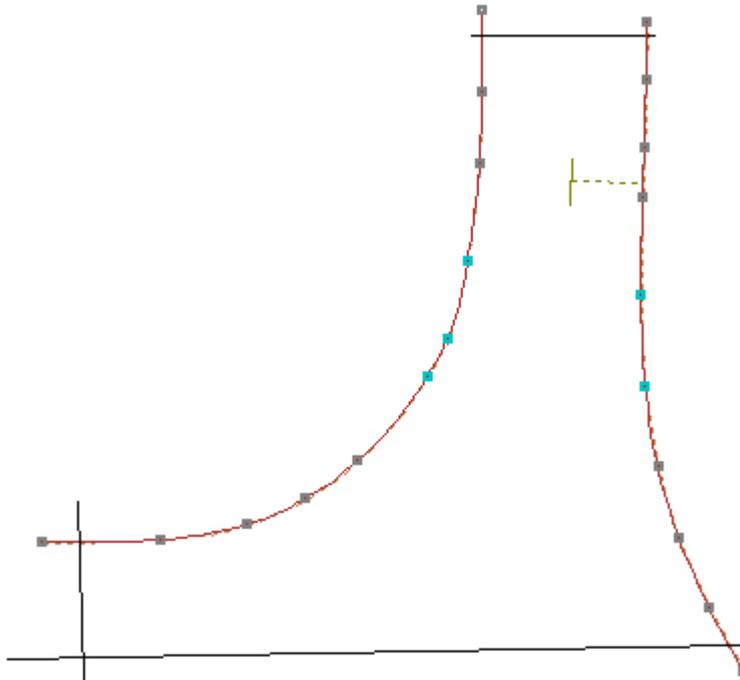


To avoid this undesirable effect do the following:

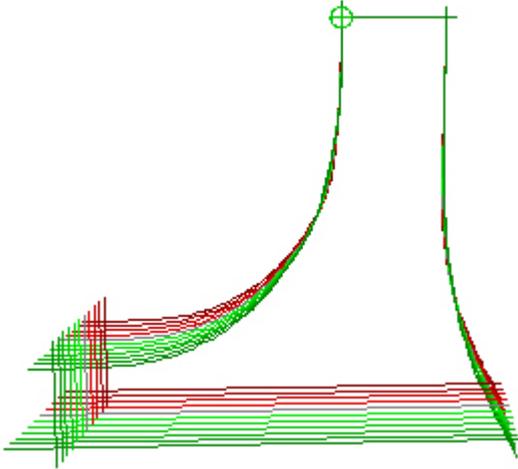
1. select lines with the sub-grading; select the handles of the transition area (include red and blue handles) by doing a net selection while pressing **Shift**



2. select **Grading Connection** from the **Advanced** options on the **Grading** menu. The smoothing connection handles will turn into a light blue.



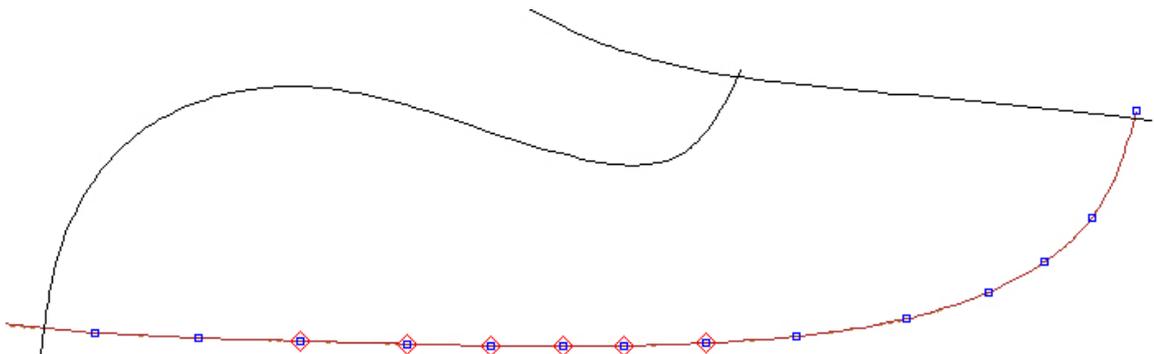
Now, when doing the knocking of the parts the imperfections disappear.



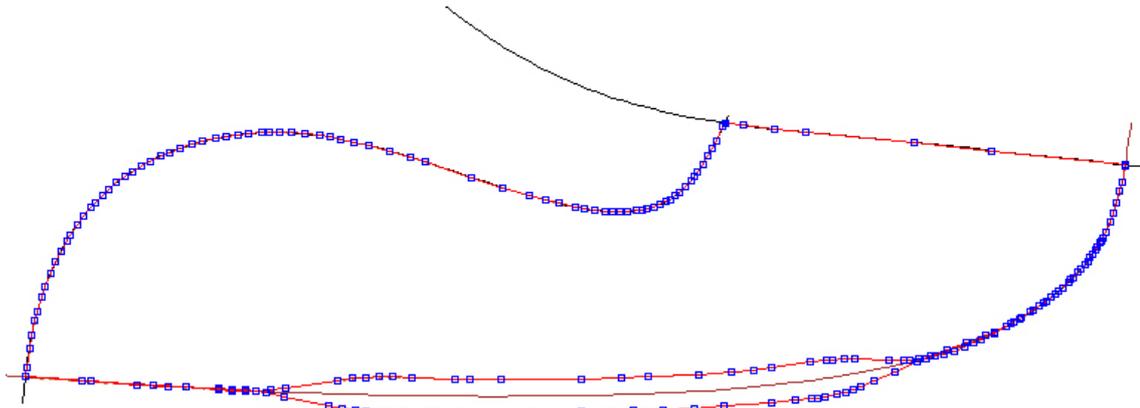
8.11.3 Grading - Advanced - Fittings Grading Connection

The purpose of this tool is to provide smooth line connection on fittings.

When a fitting restriction is applied to a certain area (the blue handles inside red diamond shapes) the other have the normal grading rules (the blue handles).

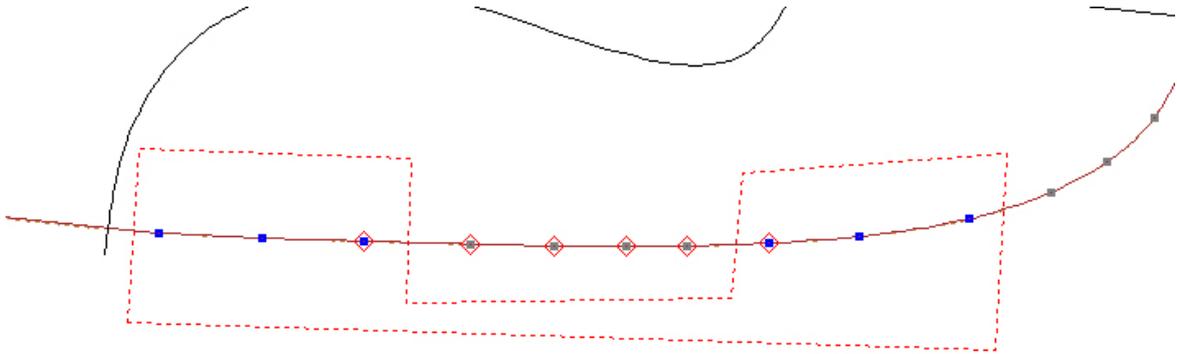


Generally, this leads to some imperfections on the transition area. This is showed when knocking the parts as depicted below.

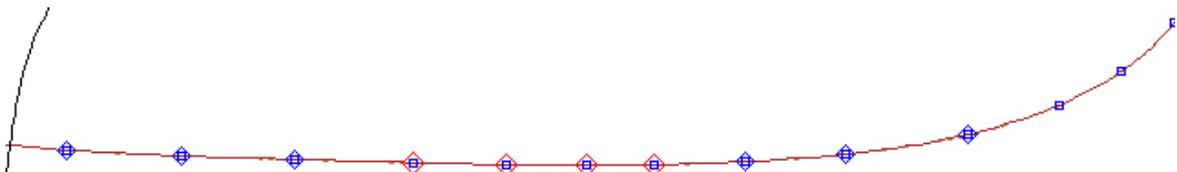


To avoid this undesirable effect do the following:

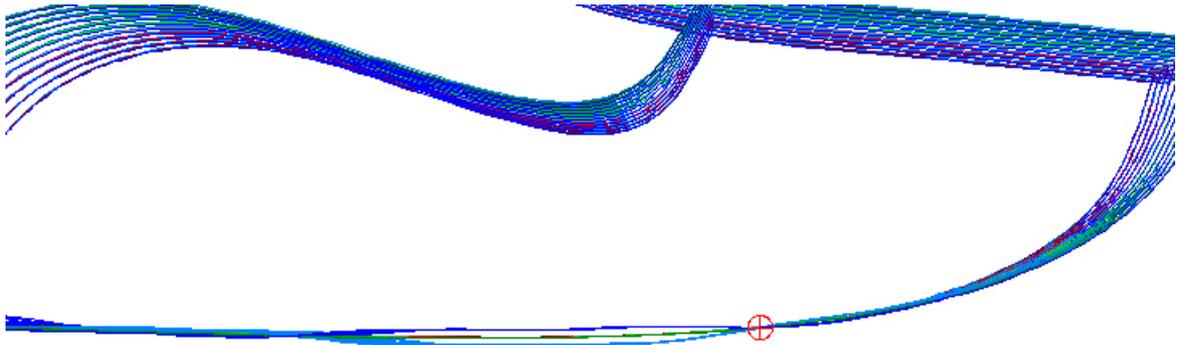
1. select lines with the fitting applied. Select the handles of the transition area (include diamond shaped handles and blue handles) by doing a net selection while pressing **Shift**



2. select **Fittings Grading Connection** from the **Advanced** options on the **Grading** menu. The smoothing connection handles will appear inside blue diamond shapes.



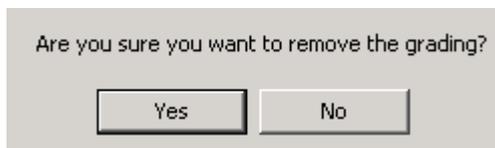
Now, when doing the knocking of the parts the imperfections disappear.



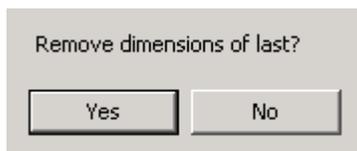
8.11.4 Grading - Advanced - Remove Grading

Use this option to remove grading from a shell.

1. when the option has been selected a warning message is displayed



2. select **Yes**. A further menu is displayed

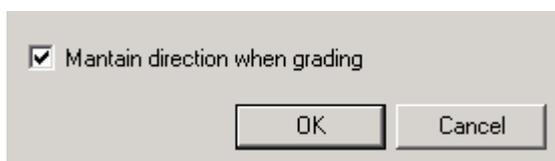


3. if you want to grade the shell again and are happy with the last measures click **No**. If you want to measure the last again click **Yes**

8.11.5 Grading - Advanced - Axis Grading Mode

Use this option to maintain the angle of a grading axis.

1. select the axis
 2. select **Axis Grading Mode** from the **Advanced** options on the **Grading** menu
- A dialogue box is displayed



3. click **OK**

The angle of the axis will be maintained, the first point of the axis will grade normally and the angle will be held constant from that graded position.

Part



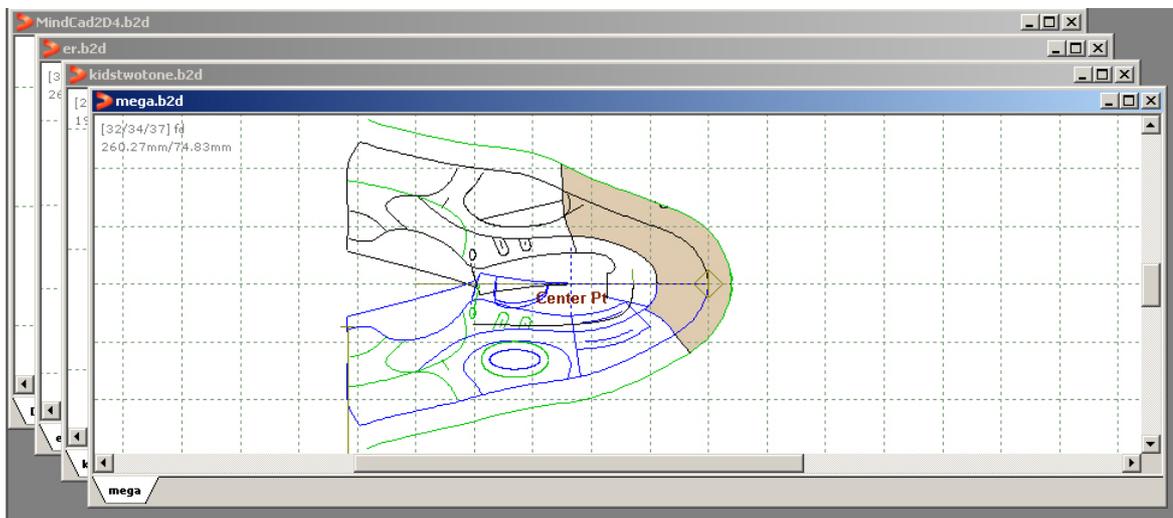
9 Window Overview

This lets you control the position and the way your windows are arranged on the screen.



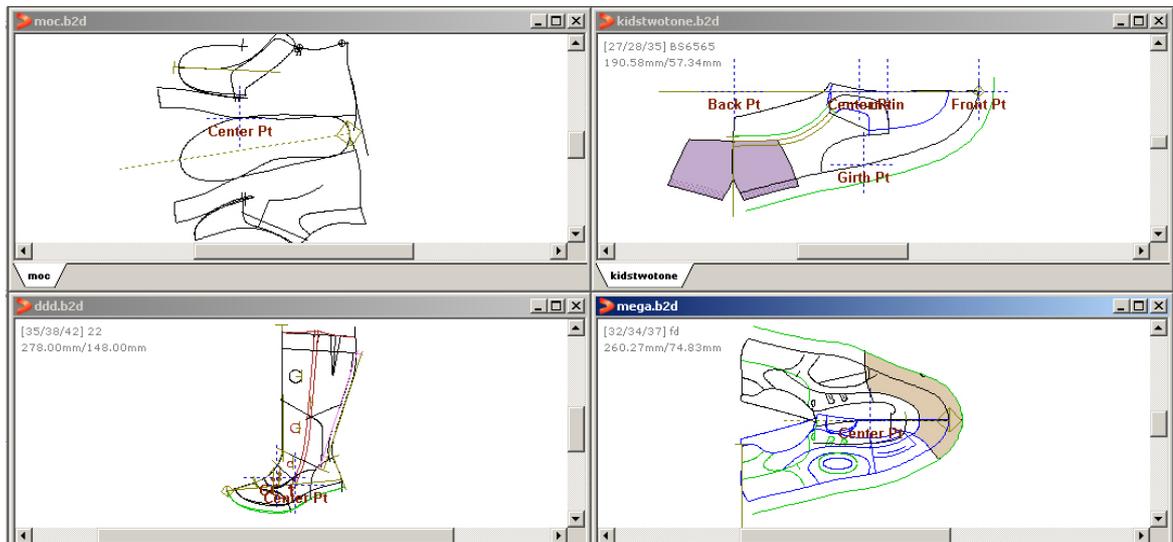
9.1 Window - Cascade

This option lets you display your windows in a cascade.



9.2 Window - Side by Side

This option lets you display your windows side by side.



9.3 Window - List

Select the name of a current window to make it active.

Part



10 Applications Overview

This lets you switch to other MindCAD applications.



10.1 Applications - 3D Design & Engineering

This option lets you switch to the **3D Design & Engineering** package.

3D Design & Engineering lets you

- create your 3D designs
- create 3D parts
- create and import soles
- visualize your finished shoe.

10.2 Applications - Last Design & Engineering

This option lets you switch to the **Last Design & Engineering** package.

Last Design & Engineering lets you create or import lasts

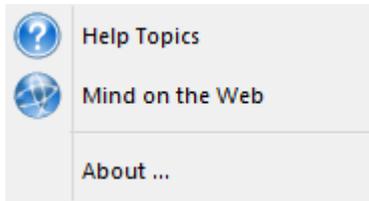
The lasts can then be edited and the surfaces flattened for use in **3D Design & Engineering**.

Part



11 Help Overview

This lets you launch the help system, open the Mind web site and display the version number of the current software.



11.1 Help - Help Topics

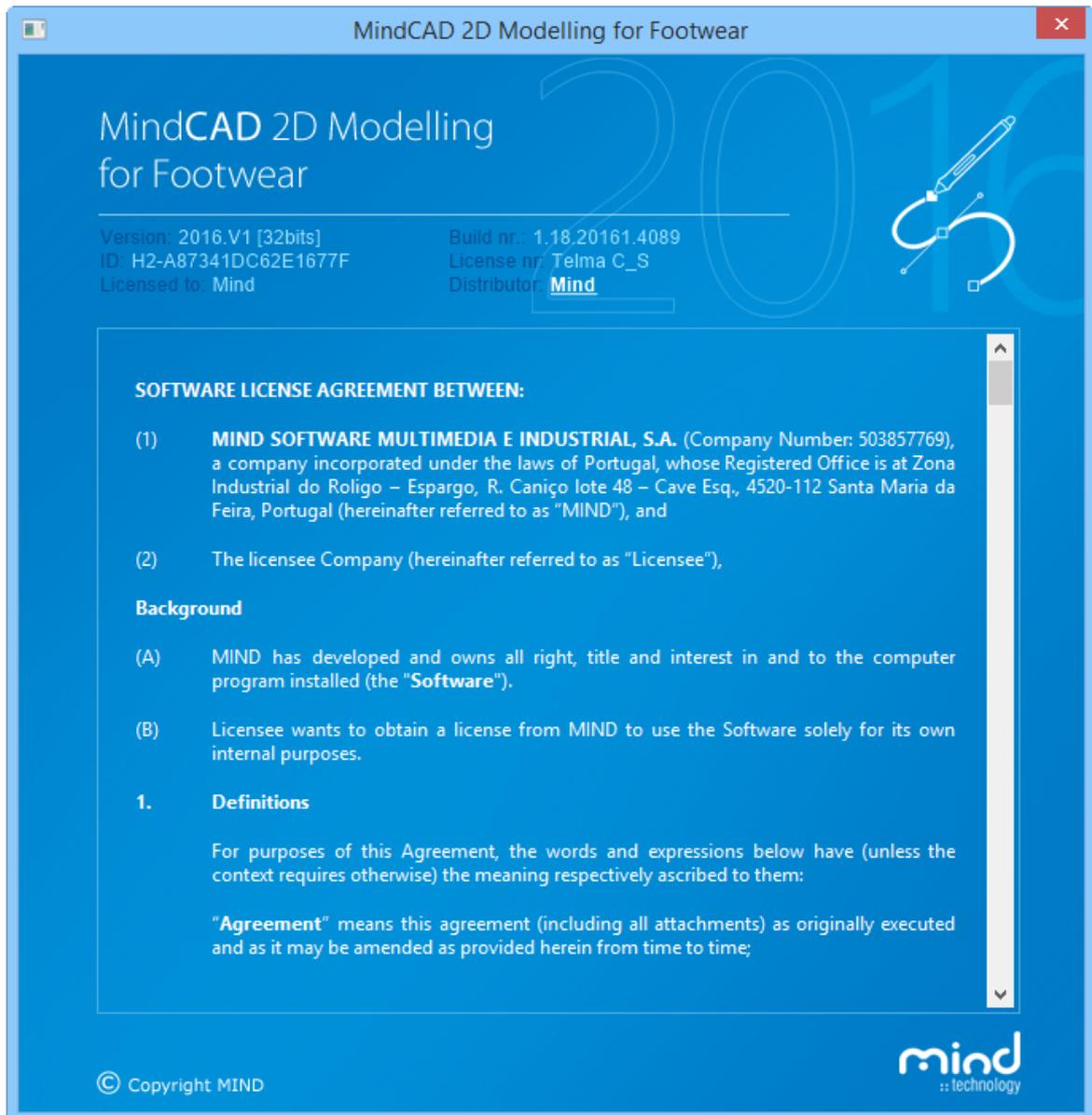
This option lets you launch the help system.

11.2 Help - Mind on the Web

This option lets you open the Mind website.

11.3 Help - About MindCAD 2D Design & Engineering

This option displays a dialogue box containing the version number.



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