



Seamly^{2D}

*Reference
Manual*

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Formulas

Formula Wizard

You may use formulas to set segment's lengths and angles in **Seamly2D**. A formula may contain the following:

- constants (integers or decimal numbers)
 - o + for addition
 - o - for subtraction
 - o * for multiplication
 - o / for division
 - o ^ for raising a number to an integer power (e.g. $3^2 = 9$)
 - o < Less than
 - o > Larger than
- algebraic or trigonometric functions
 - o sin
 - o cos
 - o min
 - o max
 - o avg
 - o fmod
 - o pi

How or why one would use these is way beyond this tutorial, however, they are available for those who wish to use them. For most, the simple operators should be sufficient.

Another example of using them would be to find the diameter of the waist girth measurement:

waist_circ / _pi

If the **waist_circ = 31.5"**, this formula will return **10.0268"** which co-relates to **31.5" * 7 / 22**.

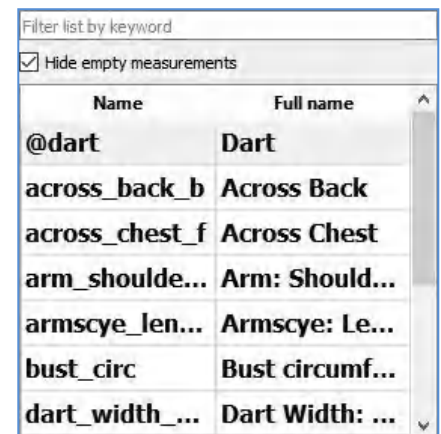
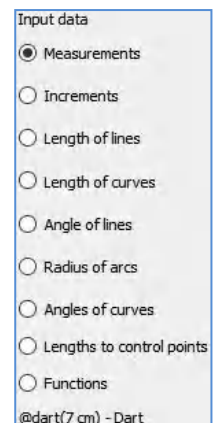
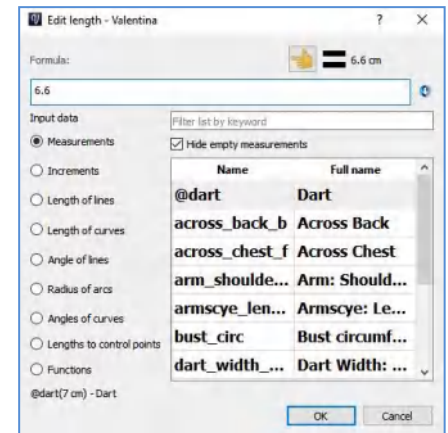
To enter the actual measurement value, just type the value into the box provided.

Many of the tools in **Seamly2D** accept formulas as input. To simplify the creation of formulas, these tools use a special dialogue (**The Formula Wizard**) that lists all the variables you can use.

Select the desired variable type (e.g. measurements) and double-click on the variable name to include it in a formula field.

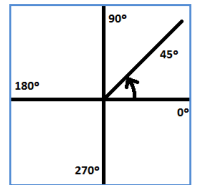
Dialogue that has more than one formula field doesn't allow the use of double-click on the variable name. You should select the variable name and click on button  near the right formula field. You may also type the variable name in the formula, but selecting variables from the list provided is recommended for speed and accuracy.

The formula dialogue validates the formula and displays the result shortly after the formula is modified. The dialogue considers the formula valid if the field is not empty and the value can be calculated. If the field represents a length, not an angle, then the value cannot be zero. If the formula is invalid, the dialogue displays an error message. You can find more detailed error message by hovering the cursor over the word **"Error"**.



Specifying Angles

You may specify an angle as a constant number or as a formula. Angles are specified in degrees, where 0 degrees points East and angle values increase in a counter-clockwise direction.



(Taken from help offered by Bamba in the forum)

Let say you are closing a dart...

Try creating a line from the PIVOT point to where you are closing Dart to.

Line_P_D1 - a line from the PIVOT point to the nearest point you are moving - Line_P_D2

When you come to rotate the points edit the angle formula to (AngleLine_P_D1 - AngleLine_P_D2) – you may have to fiddle with an extra +/- 180 if line is going wrong way.

Conditional Statements

Seamly2D's muparser math processing library will allow you enter if then else statements, in the form of:

((a operation b) ? c : d)

Read this as:

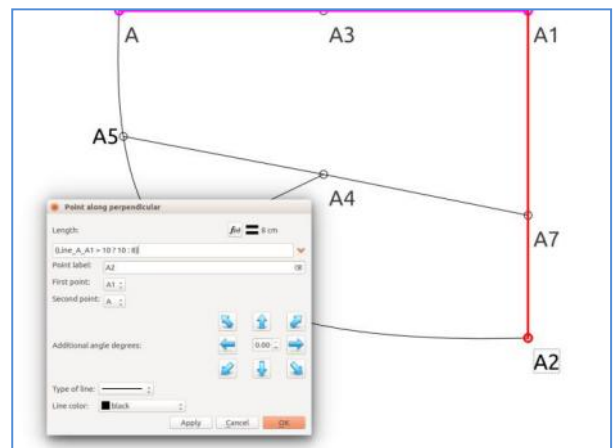
If (a operation b) is true THEN c ELSE d

This example works:

(Line_A_A1 > 10 ? 10 : 8)

Read this formula as:

IF (length of Line_A_A1 > 10) THEN 10 ELSE 8



The Process

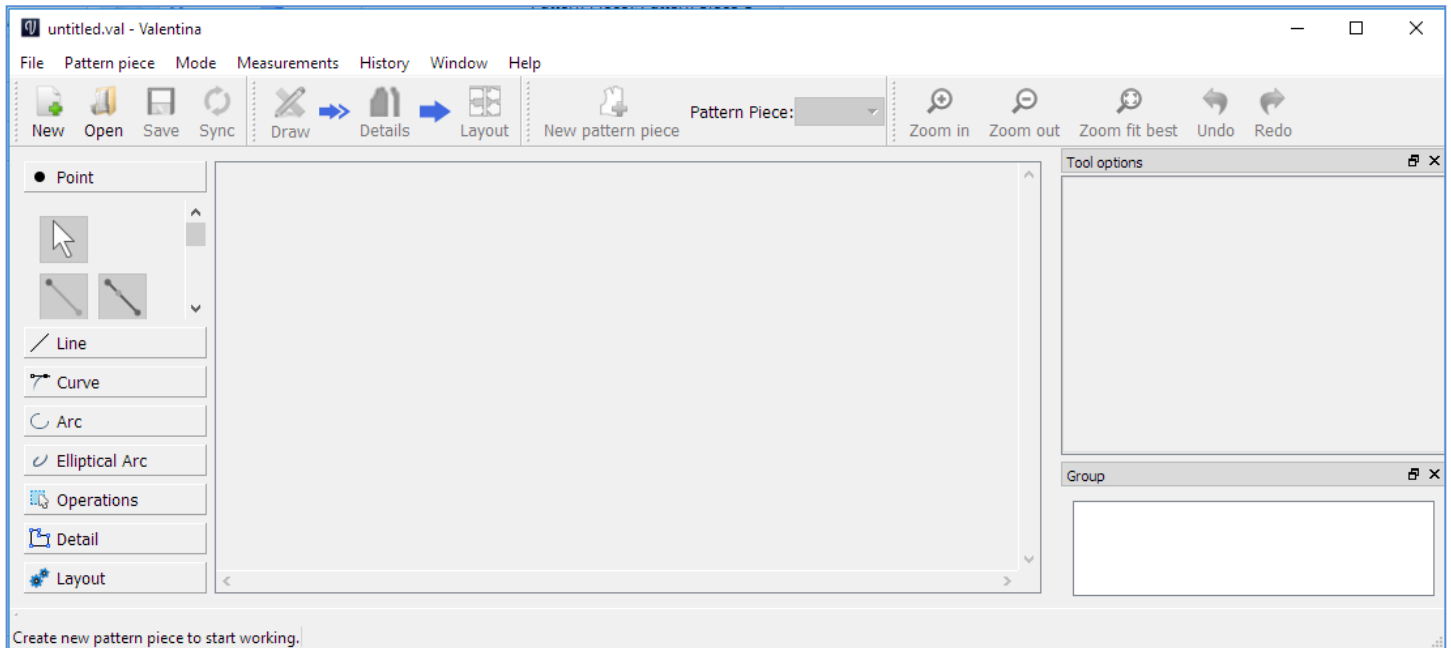
There is a process to producing a pattern:

- Choose a person to create the pattern for (or group of people).
- Draft your design.
- Measure the person (or use preset multisizes of your choice for the range of sizes).
- Create a measurement file in **SeamlyME** (refer to the **SeamlyME** Manual).
- Create the pattern pieces.
- Create the detail for each pattern piece.
- Create the layout of the pattern to be printed or exported.
- Print the pattern.
- Make the garment.

Seamly2D, along with the subsidiary program - **SeamlyME**, have been created to assist you with steps 4 to 8. And as such, it will not teach you how to create patterns; it will be your duty to learn how to do that elsewhere. To facilitate you in this, please refer to [Annexure B](#) which gives a list of books and websites which will aid you.

In the following pages, you will find all the help you will need to learn how to use **Seamly2D** quickly and easily.

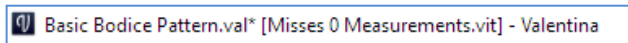
User Interface



When you open **Seamly2D** for the first time, you are presented with the screen above. Everything has been laid out very neatly and, in the following pages, you will find explanations of all the different sections.

Title Bar

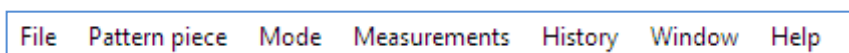
At the very top, is the Title Bar which is divided into two sections - on the left is the file name that you are working on, followed by the Measurements file that you have attached to the pattern and the program that you are using (**Seamly2D**).



On the right are the normal Minimize, Maximize and Exit icons.



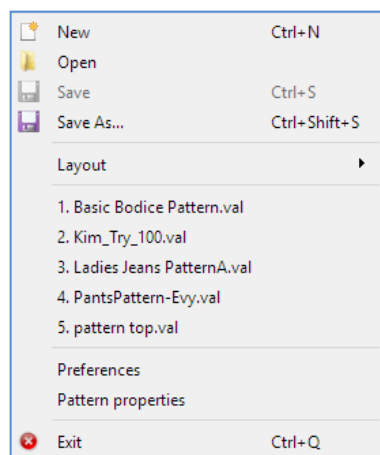
Menu



Some of these have keyboard shortcuts displayed to the right and some are repeated in the quick icons.

File

Most of the options in the file menu are self-explanatory. They are:



New

To create a new pattern file;

Open

To open an existing pattern file;

Save

To save changes that have been made;

Save As

To save the file under a different name or in a different folder;

List of most recent files accessed

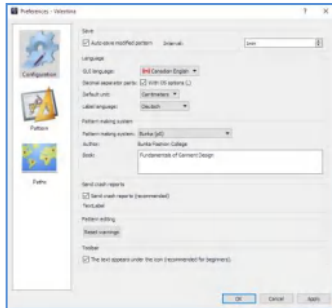
Here is a list of the 5 most recent files accessed – you may click on any one of them to

open it.

Preferences

This is where you change the defaults that **Seamly2D** uses if you wish. These related to the program and are your personal defaults:

Once you click on File, Preferences, the following screen pops up:



Configuration (the basics)

Self-save and Interval

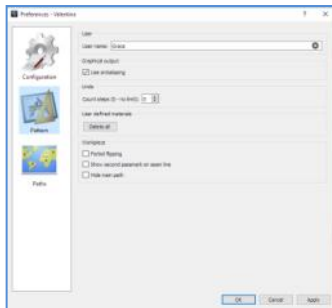
Language preference

Units

System used to create patterns (a block of possibilities)

Send Crash Reports

Tool Bar



Pattern

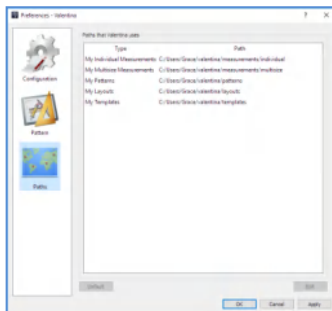
User Name

Graphical Output

Undo

User Defined Materials

Workspace



Paths

Here you may set your default paths for the following:

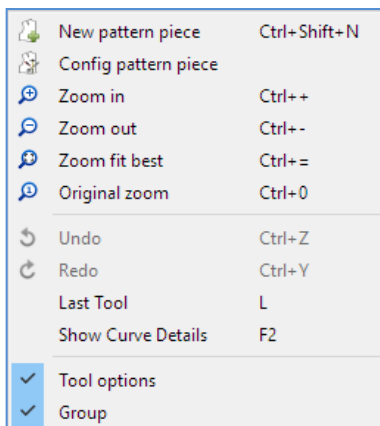
Individual Measurements

Multisize Measurements

Patterns

Layouts

Templates



Pattern Piece

New Pattern Piece

Click to create a new pattern piece.

Config Pattern Piece

Click to rename the pattern piece.

Zoom Options

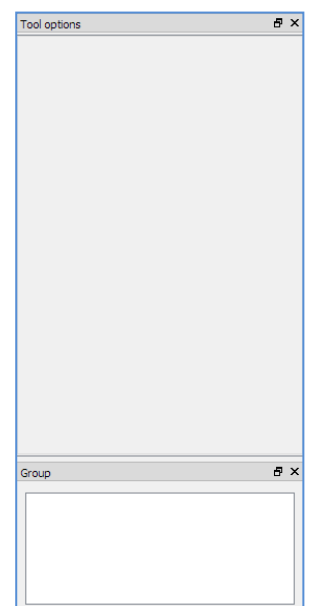
Used to zoom in, out, best-fit and original zoom.

Undo and Redo

Used to take steps backwards and forwards.

Last Tool

To pick up the last tool used.



Show Curve Details

This will toggle the curve details (handles, direction, etc.) on and off.

Tool Options

This will toggle the Tool Options box on the right on and off.

Group

This will toggle the Group box on the right on and off.

Note: By placing the cursor on the line between the two boxes, you can resize the boxes.

Mode

These options are to move around the three major areas of creating a pattern.

Draw

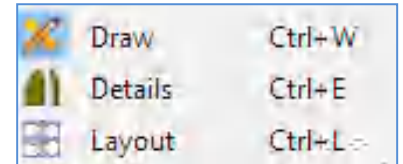
To go to the drawing area.

Details

To go to the details area once you have created some details.

Layout

To go to the layout area before exporting or printing your pattern.



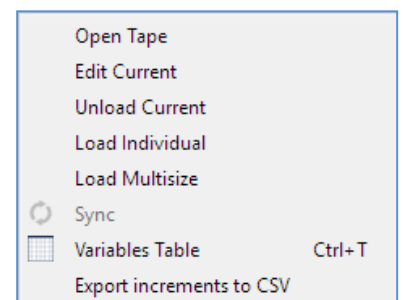
Measurements

Open SeamlyME

This will open **SeamlyME** so that you may create a new set of measurements to attach to your pattern.

Edit Current

This will open the current set of measurements that you are using, in **SeamlyME** so that you may make changes (either edit values or add measurement areas). Once you save the changes in **SeamlyME** and return to **Seamly2D**, you will be given the option to synchronize the changes into **Seamly2D** for immediate use.



Unload Current

Use this option to detach a set of measurements from this pattern.

Load Individual

Used to load an individual set of measurements previously created in **SeamlyME**.

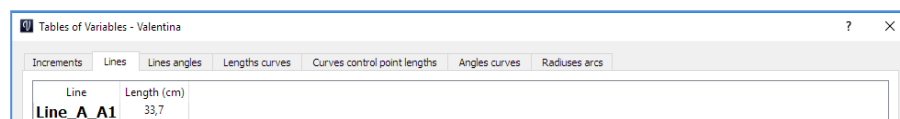
Load Multisize

Used to load set of multisize measurements previously created in **SeamlyME**.

Sync

If you chose not to synchronize the measurements, as described above in the paragraph [Edit Current](#), you may use this option to synchronize them later.

Variables Table

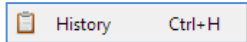


Here, you will find a record of all lines, curves, etc. That you have created while drawing your pattern. These are all options that you may choose to use when using the tools. The first tab – called **Increments** – is a very special feature where you may add values and formulas that are not in the measurement table created in **SeamlyME** but are necessary to create your pattern. A more detailed description of this will be included later in this document.

Export Increments to CSV

A **CSV** file is a comma delimited file which can be read across databases or by a spreadsheet or word processing program. You may use this option to save your increments as a .csv file to use or edit in another program. Hopefully, one day, an **Import** option will be added to the menu.

History

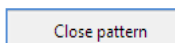


Clicking on this option will bring up a box with a list of the previous edits made:

Building a pattern piece is a sequential process that can contain many steps. Select **Pattern piece -> History** or click on button **History** to show the history record for the current active pattern piece.

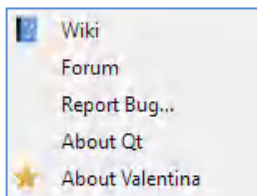
After creating a new object, it will be appended to the end of the current pattern piece history. In most cases, there is no need change this behaviour, but in some cases there is a need to add an object higher up the list of a pattern so that you may use the reference to it later in the pattern piece development. For this dialogue, **History** use **special pointer**. By default the pointer marks the last object in the pattern piece. To change this, click on the first column near the record after which you need to insert the new object and then do not close the dialogue while you create the new object.

Window



This option will close the pattern that you have been working on so that you may work on another pattern or create a new one.

Help



Wiki

This will take you directly to the Main Page of the Wiki on the internet.

Forum

Clicking this will take you directly to the friendly Forum where you may browse for information or ask questions that are unclear to you.

Report Bug

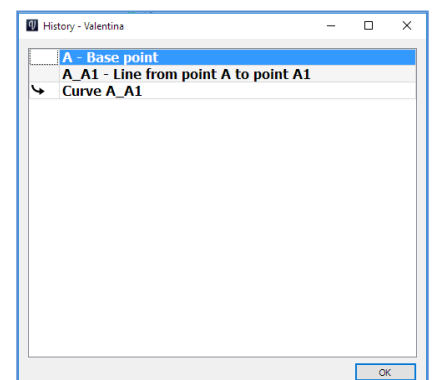
Should you encounter something that doesn't work or is not behaving correctly; this option will take you directly to the **Issues** section where you may report it. While every effort is made to deliver a fully functional program, gremlins do seem to creep in and we really need to know about them so that we can fix them.

About Qt

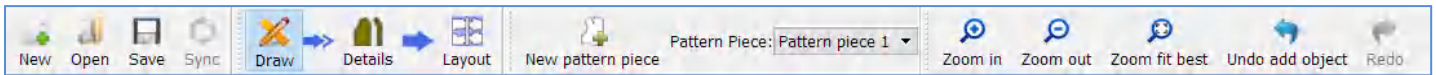
Qt is an across-program database that we use in our software. Here, you may read about it and check the version you are using.

About Seamly2D

Here you may check which version of **Seamly2D** you are working on and also check for updates. As we fix bugs and issues, improve on the software, etc. We upload new versions, every Monday (if needed), for you to download.



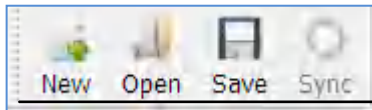
Easy Access Tools



Below the menu at the top, are the Easy Access Tools:

As in most programs, in addition to the drop-down menu, we have another menu, usually consisting of icons, which are more accessible. The tools in this menu can also be found in the drop-down menus. They are blocks of tools that can be moved by clicking and dragging on the dotted dash to the left of the block.

First Section



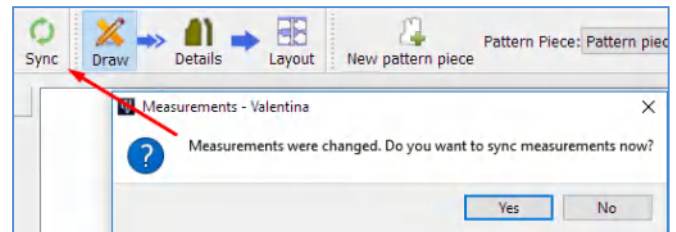
→ The dotted line to move block.

New is to create a new pattern

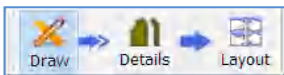
Open is to open an existing pattern.

It is always recommended to **Save** frequently.

Sync is to synchronize **Seamly2D** with **SeamlyME** if changed have been made in **SeamlyME**. If changes were made while **Seamly2D** is open, and the option under the **Measurements** menu was used to open the file in **SeamlyME** to make the changes, once you have saved the changes and you switch screens back to **Seamly2D**, you will be prompted to sync automatically. You may choose to sync now or later use this icon which will no longer be greyed out, but will remain green until the files are synced.



Second Section



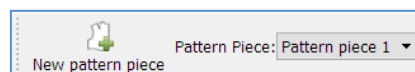
In this group are the three steps needed to create a pattern:

Draw: where the pattern is drawn;

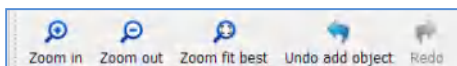
Details: where you choose the boundaries of the pattern pieces - neither the hem nor seam are chosen here, you go in later to define the details, titles, etc.;

Layout: the composition of the pieces in the marked fabric. One can save the layout as an .svg file and open it in **Inkscape** vector program (also free software) or another vector program or you may save the layout as a tiled .pdf in pieces of A4 and then print it.

Third Section



In the drawing area, we can have the pieces that we are creating or editing. Each time we create a new pattern piece, a new starting point will appear. You cannot work on several pieces at the same time, just one at a time and you may select the piece in the pattern piece drop-down.



Forth Section

Zoom in and **Zoom out** will do exactly that. However, I prefer to hold the Ctrl key and to zoom using the mouse's **centre wheel**.

Zoom fit best will fit the whole design into the design area.

Undo will undo previous steps and give a hint as to what was previously done – in this case, I added an object. You may also use the **Ctrl/Z** shortcut.

Redo will redo the steps cancelled by using Undo, or you may use the **Ctrl/Shift/Z** shortcut.

Using Your Mouse

While some things listed below are the norm, there are some that are very specific to **Seamly2D** and are also mentioned in the [Annexure: Shortcuts](#).

Moving Mouse Left, Right, Up or Down will move the cursor left, right, up or down.

Left Click will select.

Right Click will bring up additional options.

Centre Wheel will pan up and down.

Press Centre Wheel will bring up a hand to drag the drawing screen around (panning – in some programs the space bar is used).

Ctrl Centre Wheel – Holding the Ctrl key while turning the wheel will zoom in and out from the point where the cursor is.

Centre Section

This is the biggest section and takes up most of the screen occupied by **Seamly2D** and is divided up as follows:

Tools

The section on the left is where all the tools are located. These are explained in detail later.

Drawing Board

The big white square in the centre is where you will do all the drawing and viewing of your pattern and is also explained in detail later.

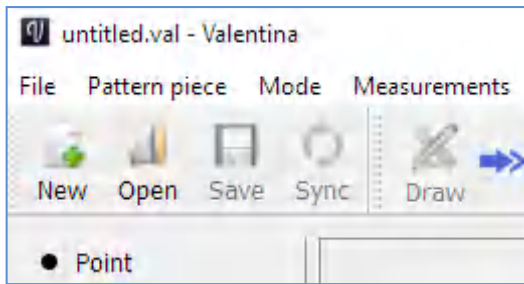
Tool Options and Group

These are located to the right of the drawing board and are also explained in detail later.

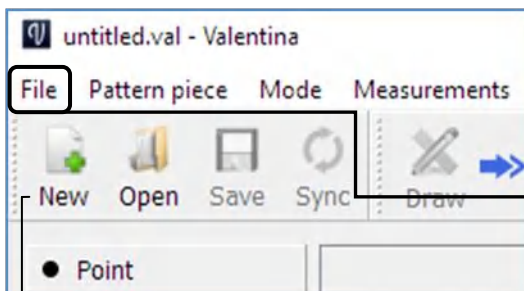
Bottom Bar

This is the bar at the bottom where you will be able to change the size of the pattern when creating multisize patterns and see any help messages. These are also covered later in the detailed sections.

Create a New Pattern File



When you start a new pattern file, a new pattern piece is created defaulted to '**Pattern Piece 1**', which you may rename (for example 'Bodice Back'). You may create a new piece for each part of the pattern or you may create all the pattern pieces in one pattern piece.



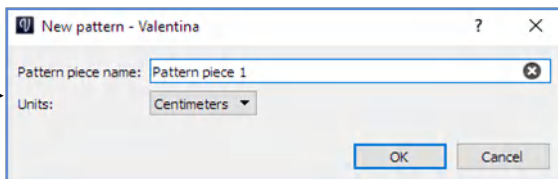
File: New document, to open a new document.

Seamly2D Window: The file will be formatted with the extension VAL.

For example: Base pattern body.val.

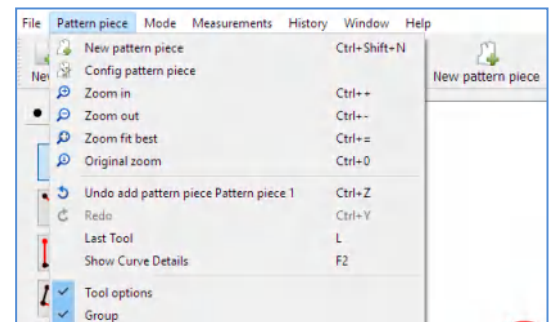
We can also use the icon to open a new document.

It will be saved by default in the Folder you specified in Preferences unless you direct it elsewhere. It is advisable to save frequently.

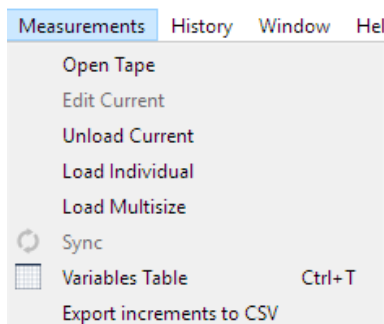


In this window you give a name to the piece and specify the units you wish to use, although the default will be those you have chosen in **Preferences**.

We can add additional pattern pieces using the icon, the menu option or Ctrl+Shift+N:



Measurements Database



When you create a new file in the drawing layout, the first thing you have to do is go to the Measurements menu and select **SeamlyME** to create a database of measurements to use in this pattern.

If you have already created your measurements database, you may select either Load Individual or Load Multisize depending on the type of measurement file you have created.

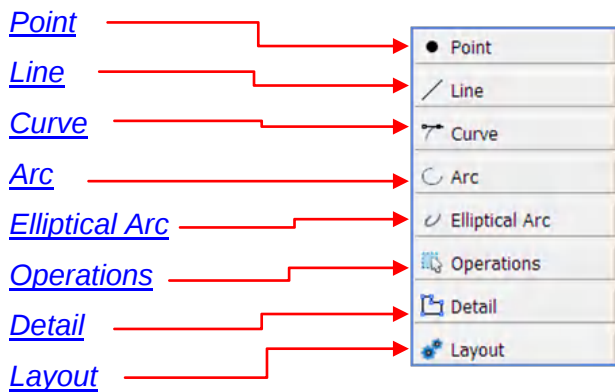
In this way you will attach a premade database with the measures and formulas which you will use to draw the pattern.

When we open a document that we have already started measurements will still be available and attached to the file.

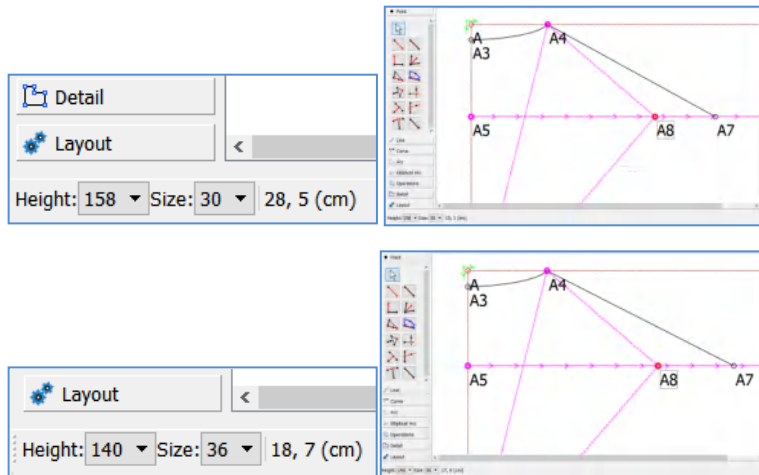
Please refer to the SeamlyME Manual for instructions on how to create measurement files!!!

To start drawing with the measurements, we have to load them into the file and then we are ready to start drawing the pattern.

Tools



These tools have been especially created so that, when you use them along with the measurements that you enter in **SeamlyME**, they will automatically resize the design when you change the measurements in **SeamlyME**. If you have created a **Multisize** measurement file in **SeamlyME**, then you may select a different size at the bottom left of your screen and the pattern will automatically resize the pattern. **Height** is the actual height of the person and **Size** is the actual bust measurement of the person divided by two.



Hint:

When using a tool and are in doubt as to what to do next, look at the information bar (bottom left) which will tell you what you need to do next.

As you can see from the images above, I have changed the size and A7 has moved slightly to the right (A4 to A7 is the only line in this example where I am actually using a formula from the measurements) and you can see the move on the axis line notches.

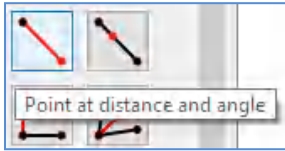
Drawing Tools

Here we can find all the drawing tools:

[Point](#), [Line](#), [Curve](#), [Arc](#), [Elliptical Arc](#), [Operations](#), [Detail](#) and [Layout](#).

We will cover each tool over the next few pages.

If you hover over the icons, a short description of the tool appears.



Depending on whether we are looking at the icon of the drawing tool or the actual drawing area, the black dots are the points that we leave or are going to use to create a new point and the red dot is the one we currently have selected, created or about to create, with the exception of the original base point of that pattern piece which will always be red and is the only one that we can drag around our drawing area.

Point

[Tool Pointer](#)

[Point at Distance and Angle](#)

[Point at Distance Along Line](#)

[Point Along Perpendicular](#)

[Point Along Bisector](#)

[Special Point on Shoulder](#)

[Point at Intersection of Arc and Line](#)

[Triangle Tool](#)

[Point from X and Y of 2 Other Points](#)

[Perpendicular Point Along a Line](#)

[Point Intersect Line and Axis](#)

[Mid Point Between 2 Points](#)



Tool Pointer

Tool Pointer selects points or tools. Unlike what we are accustomed to in other vector imaging software, in **Seamly2D**, the points have a fixed position derived from the way in which we have made the point and the value or measurement that we have used. Should the value or measurement change, the points will automatically update themselves to the new position.

The only point you can manually move, is the first one on each pattern piece, from which all other points radiate out to form the pattern.

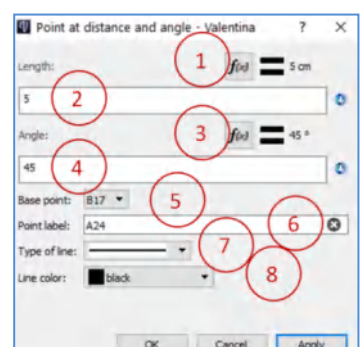
By clicking on this icon, we are able to drop whichever tool we were intending to use and to select another or to select a point which we would like to edit or to start the creation of a new point.

This tool is repeated in each section for easy access to it.



Point at Distance and Angle

This creates a straight line. Click on the point that you'd like to start from and drag out a bit.



Once you release, a box pops up where you can enter the dimensions you require:

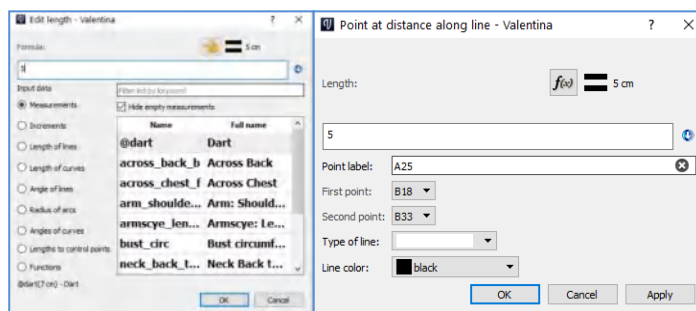
- Click to add a formula = The length of the line;
- Enter the length of the line manually;
- Click to add a formula = The degrees of the angle of the line;
- Enter the degrees of the angle manually;
- The point that you originally clicked on;
- You may change the point label here or it will give you the next generated point label;
- Automatically set to solid line, you may choose what type of line you require;
- You may change the line color if you wish;
- Click Apply to see if your settings are correct and if so, click Ok to save and exit the box.

All of the other boxes work in a similar manner - they only have more or less settings to work with.



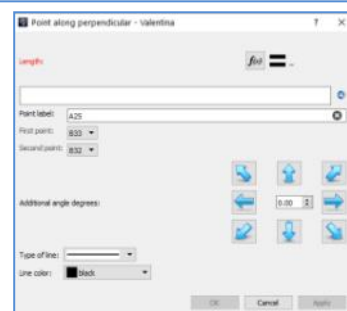
Point at Distance Along Line

The easiest way is to click the label of the 1st point and then the label of the 2nd point in the direction in which you want the distance to be measured from the 1st point. A box will pop up and you may enter the distance or enter a formula. This will only place a point of reference since the line type is automatically selected as 'no color' - you may choose a different line type and color. You may change the label name.



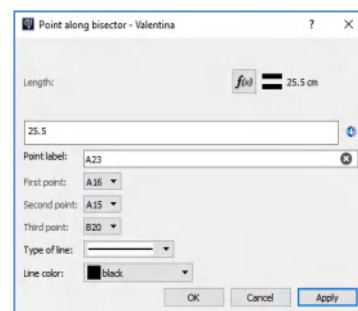
Point Along Perpendicular

This is very handy when you wish to 'square off' from a particular point. In other words, create a line at a 90° angle (or other angle) from a point. Click on the point where you need to square off and click on another point. A box will pop up where you may enter a formula or length of the line, change the label, use the arrows or enter the degrees for the 'square off', change the line type and color of the line. Once again, you can click apply to check that it is doing what you want it to before clicking 'Ok' to accept the instruction and close the box.



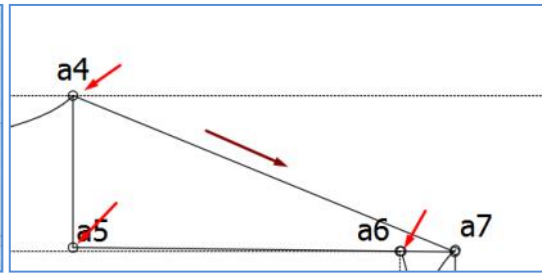
Point Along Bisector

Click on the 1st label, the 2nd label (where you would like the new line to intersect) and then on the 3rd label. A line will be drawn from the 2nd label outward between the 1st and 3rd labels. A box will pop up where you can enter either a formula or length of the new line and you may edit the other details if you wish.



Special Point on Shoulder

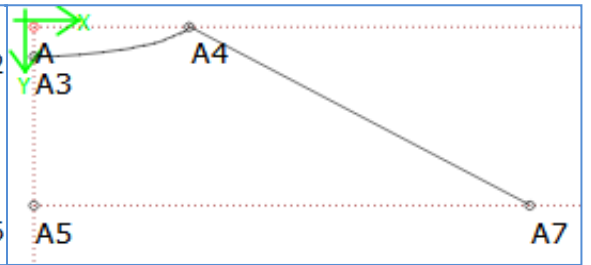
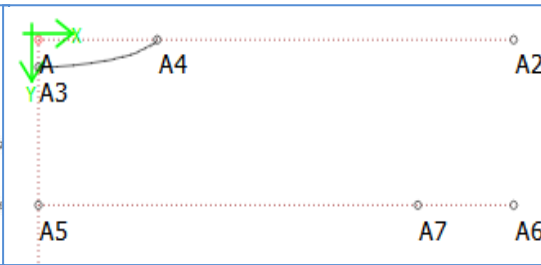
This one may be a little difficult to explain but I'll use my marks to help. You have a label at the shoulder point against the neck (A4) with a line from this point at 90° below it to indicate the height of the shoulder tip (A5) and another line, 90° from this line (A6) to indicate where the chest joins the arm is situated. Now you'd like to draw a line from A4 to the shoulder tip plus you'd like to include the width of the dart. You then click on A4, A5 and A6. The box will pop up and you may enter the formula for the shoulder width + the dart width. This will place a label point (A7) beyond A6 (in line with A5 to A6) where the line A1 to A7 will be the same length of the sum of the shoulder width + the dart width (in this case 1cm). You can now draw the line from A1 to A7 if you wish.



This is the tool I'd use as, whether the point is before or after the point at a6, it will always work.

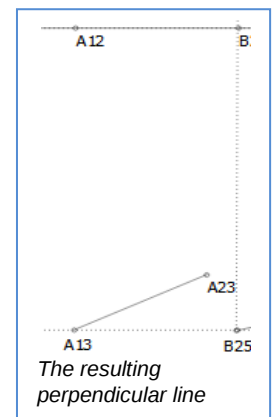
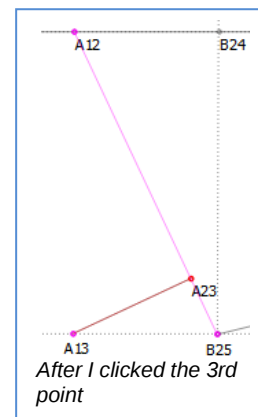


If the distance between a4 and a7 is less than the pointer a6, it will revert to point a6 and the ***Point at Intersection of Arc and Line*** will be the tool to use.



Perpendicular Point Along a Line

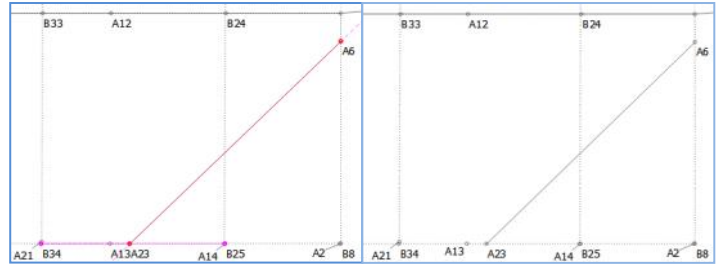
Before I clicked the 3rd point





Point Intersect Line and Axis

First, you need to select 2 points along a line (that you'd like a line to end in line with) and then the point that you'd like to draw the line from. You will need to set the angle. I set the base line in the image below, to be from B34 to B25, the end line to be A6 and the angle at 265°. This placed a point (A23) between B34 and B25 and drew a line between A23 and A6. The degree of the angle extends from A6.



Mid Point Between 2 Points

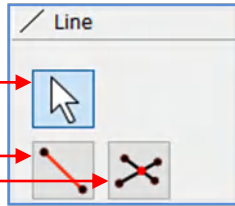
This one works exactly like the [Point at Distance and Angle](#) tool except that it will automatically insert the formula to take the current line length and divide it by 2 and place a point at that place. You can change the formula if you wish.

Line

[Tool Pointer](#)

[Line Between Two Points](#)

[Point at Line Intersection](#)



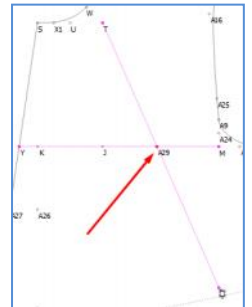
Line Between Two Points

This will draw a straight line between 2 points. Click on the 1st point and then on the 2nd point. You may then choose the type of line and the line colour. This is very handy in getting the length between points as a variable that may be used while drawing your pattern or to outline the whole shape as a visual confirmation.



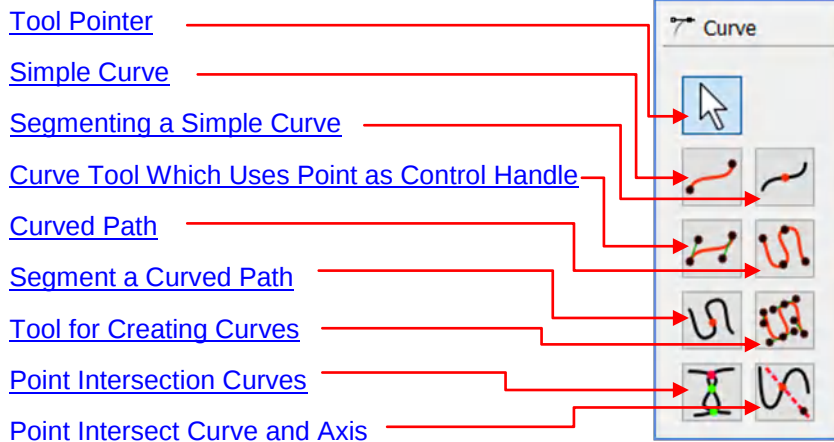
Point at Line Intersection

Click on the 1st line's 1st point and then the 2nd point, then click on the 2nd line's 1st point and then the 2nd point. A point will be placed where the 2 lines intersect – as shown by the red arrow in the image on the side.



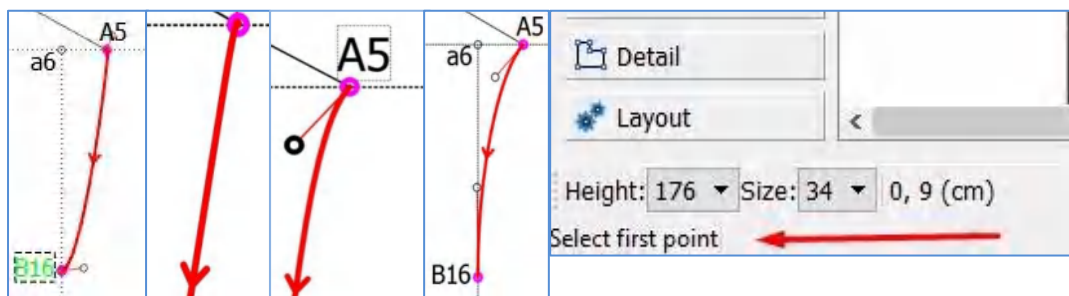
Curve

Some lines need to curve, and in this section, we deal only with curves of various types.

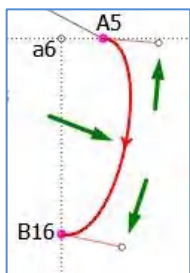


Simple Curve

This is a curve between 2 points. Place your cursor over the label of the point where you'd like your curve to start, click, place your cursor over the label of the end point and click. The label will turn green while your cursor is over it.

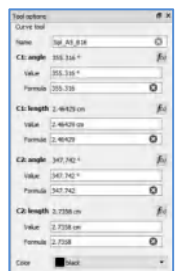


Once again, there are tips at the bottom left.



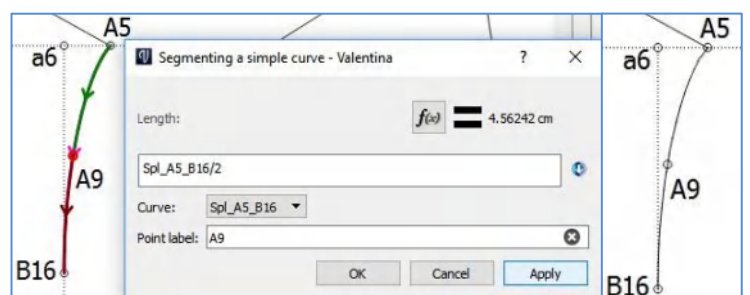
When the cursor is over the line, it gets a very fine black edge. When the cursor is over the handle point, the circle is 'fat' and you can drag the handle around until you have your desired position. To get your curve right, you can click on the line and drag it around to get close to what you require and there are 'handles' that you can click and drag around until you get the precise shape that you're looking for, or you can use exact degrees.

Once you have the curve in place, on the right side of the drawing board, you can change the properties of the line, among other things.



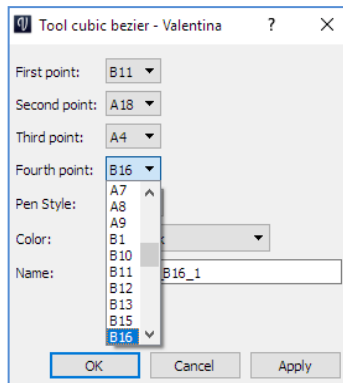
Segmenting a Simple Curve

This tool will place a point at the position that you require. Click on the curve, enter your formula and click on 'Apply' to view or 'Ok' to accept. No matter how you move the handles, the curve will always intersect with this point and the point will move as you move the handles.





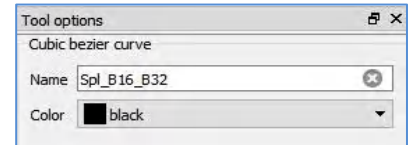
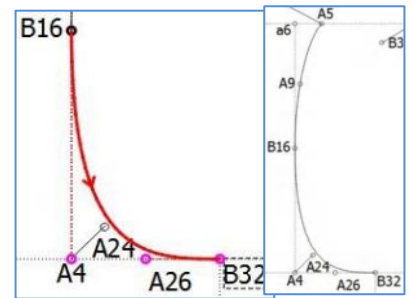
Curve Tool Which Uses Point as Control Handle



This tool uses 4 points to create a curve. The 1st and last points are the anchor points and the 2nd and 3rd points are handle points. Click on the 4 points in order of the direction you wish to go and a perfectly even curve will be created for you.

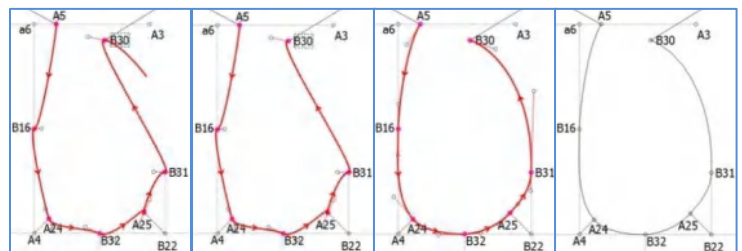
You may edit the point labels used by right clicking on the curve, select Options and the following box appears where you may choose the points you wish to use.

As with all lines and curves, it will reshape itself if the measurements change.



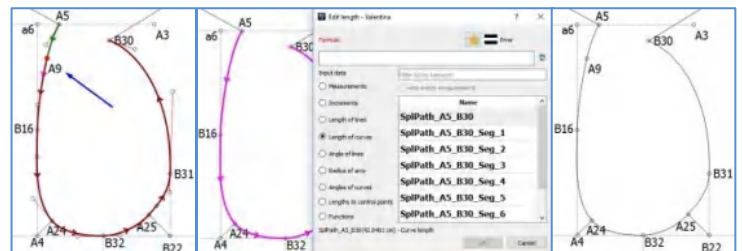
Curved Path

Select all the points along the curve that you wish to create, press 'Enter' to end selection and use the handles to tweak the curve to suit you. You need to select 3 or more points.



Segment a Curved Path

Select the curve that you wish to segment, a formula box will pop up and you can select the exact segment you wish to place a point in and complete the formula.

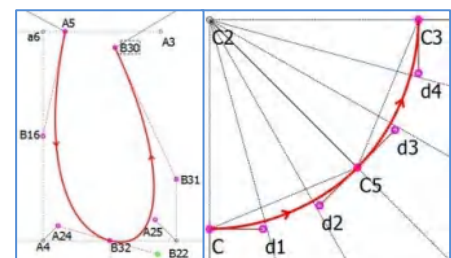


Tool for Creating Curves

This tool uses points as handles. The 1st point will be the starting anchor point of the curve, the 2nd point will be the handle point of the 1st point, the 3rd point will be the first handle of the 2nd anchor point and the 4th point will be the 2nd handle of the 2nd anchor point, etc..

This is a great tool for creating full circle skirts but it has many other uses. You will need to click on 7 or more points that you wish to use to create your curve and press 'Enter' when done.

In the 1st image, I have used this tool in the armhole (one needs to create the anchor handles before creating the curve). And in the 2nd image, I have used it to create the waist of a full circle skirt where you can see that the anchor points are C, C5 and C3, while the handle points are d1, d2, d3 and d4.



Point Intersection Curves

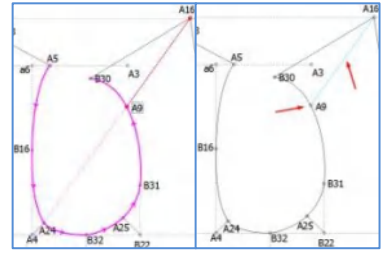
Select the 1st curve and then the 2nd curve. A point will be placed at the place where the 2 curves intersect.





Point Intersect Curve and Axis

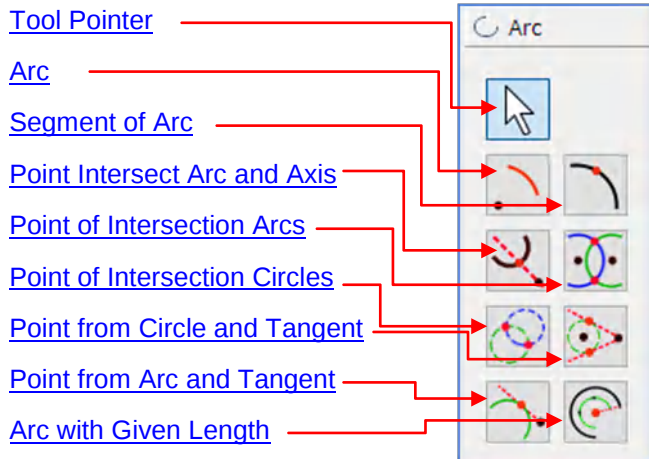
Select the curve. Click 1st axis point and then the next. A point will be placed where the curve and axis line intersect, with a line from the 1st axis point to the new point.



Arc

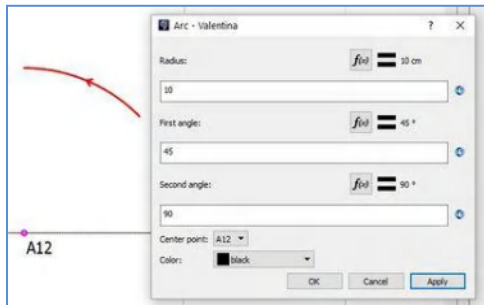
The tools described in this section have been designed to create the arcs required in some conditions. Such conditions would be to establish the intersection of 2 arcs where you would like to place point at the intersection.

While I am giving a brief explanation of how to use the tools, I am by no means expert in their use and you will have to explore them for a deeper understanding of the intricate power of these tools, whose basis lays in geometry, trigonometry and algebra, that will unleash a new world of opportunities in your creativity.



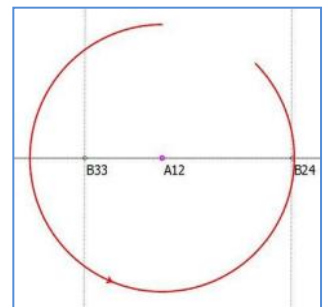
Arc

Click on the point that you'd like to have at the centre of your arc and the following pops up where you can enter the dimensions you require:



I have used direct values to illustrate this tool, however, you may use presets created while creating your pattern piece.

Radius is the distance from your centre point (A12), where I have used 10cm. The first angle is the start position where you'd like your curve to start. I have used 45 degrees but one can use the other angles like the angle between two lines. The second angle is the end position where you'd like your curve to end. I have used 90 degrees.



The image on the right is an example where the 1st angle is 90° and the 2nd is 45°.



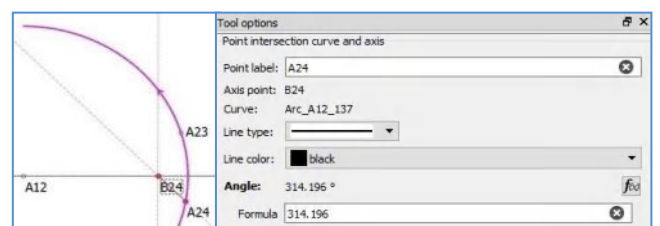
Segment of Arc

This tool will place a point at any point along an arc. Select the arc and specify where you'd like the point. In this case, I selected the arc created above and chose to place a point at $\frac{1}{3}$ of the length of the arc.



Point Intersect Arc and Axis

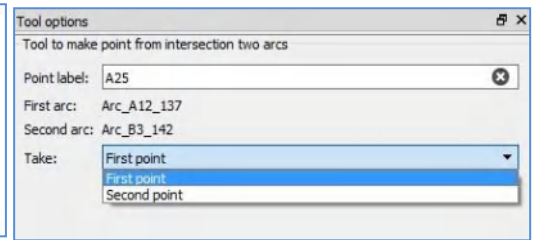
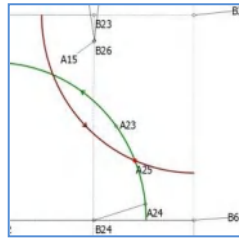
This tool will place a point where an arc intersects with an axis. Select the arc and then the axis point or formula.





Point of Intersection Arcs

Click on the 1st arc and then on the 2nd arc which you would like a point at the intersection). You will then be able to choose whether you'd like the 1st intersection or the 2nd intersection.

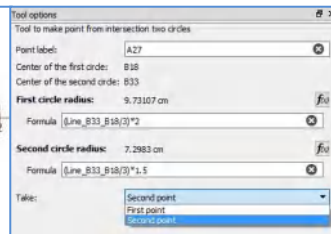
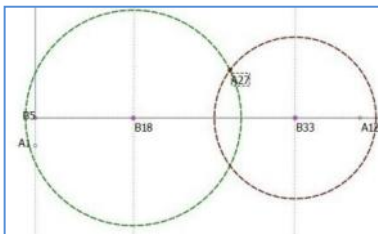


Point of Intersection Circles

This tool will create 2 circles that will remain invisible in your actual pattern piece and are used to create a point where the 2 circles intersect. Again, one can choose the 1st or 2nd intersection.

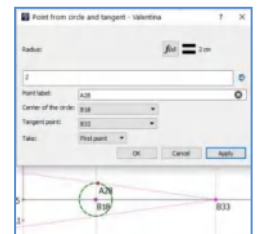
Select the 1st point that will form the centre of the 1st circle, and then the point that will form the centre of the 2nd circle. In the Tool Options on the right side, you may enter the length of the radius of the circles as in the 2nd image.

As you can see in the 3rd image, in the pattern piece, the point (A27) appears to be disconnected to any lines until you join lines to it.



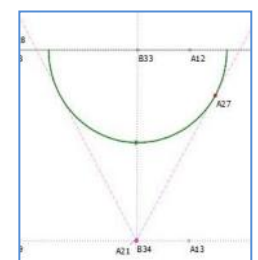
Point from Circle and Tangent

First select the point where your tangent will start and then the point of the centre of your circle. Enter the radius size, either by numbers or formula, and click on ok. Once again, you will be able to choose between the 2 points on the right in the Tool Options.



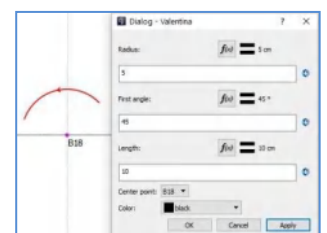
Point from Arc and Tangent

Choose the point at the start of the tangent and then the arc. Invisible lines will be made to meet the curve and a point will be placed there. Once again, you may choose the 1st or 2nd point in the Tool Options.



Arc with Given Length

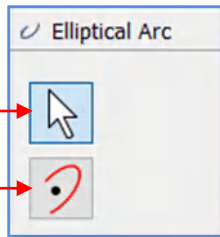
Select the point that will be the centre of your radius. In the box that pops up, enter the length of radius (either in values or formulas) – half the diameter, and then enter the angle there the arc must start in degrees and the length (of the line) of the curve. Click on 'Ok'.



Elliptical Arc

[Tool Pointer](#)

[Elliptical Arc](#)



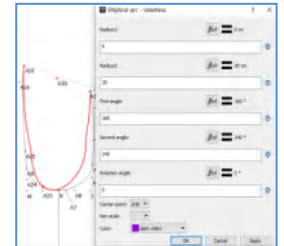
Elliptical Arc

Select the centre point of your elliptical arc, the following box comes up:

Enter the 1st radius, the 2nd radius, the 1st angle and the 2nd angle. You can select the pen style and color.

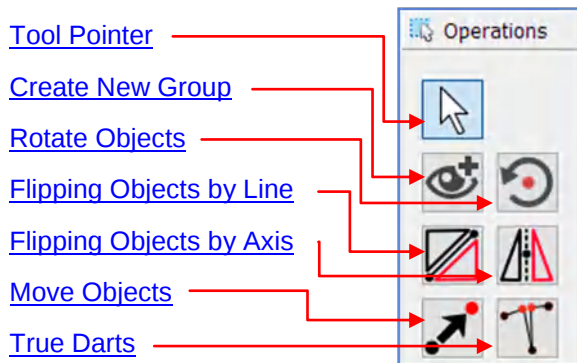
Once again, you may enter formulas drawn from variables created while making the pattern.

Here you can see my pitiful effort in trying to copy the curves of the armhole – the lazy way.



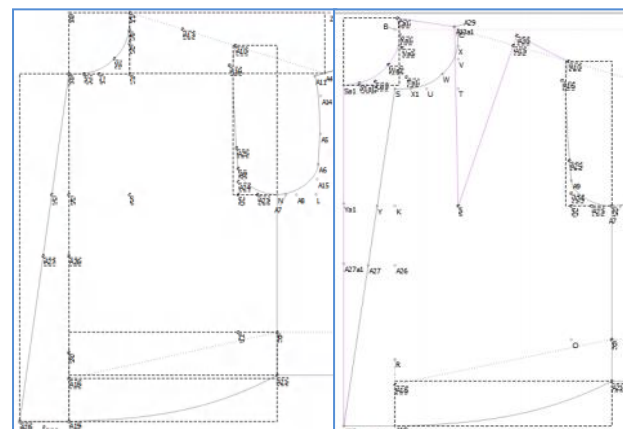
Operations

These tools are for complex operations on points or groups of points and while they are very easy to use, one will only become really proficient at using them with constant practise. Keep an eye on the instructions in the bottom left corner which are meant to help you.



Create New Group

Select all the points and lines that you'd like to group while holding down the Ctrl key. Always double check that all the points and lines are selected. And then press Enter. You will be able to name the group in the box that pops up:



This helps if that portion of the pattern is distracting you while you work on another portion and, although the points are no longer visible, you will still be able to use them in formulas, etc.

To delete a group, simply click on it and press the Del key.



Rotate Objects

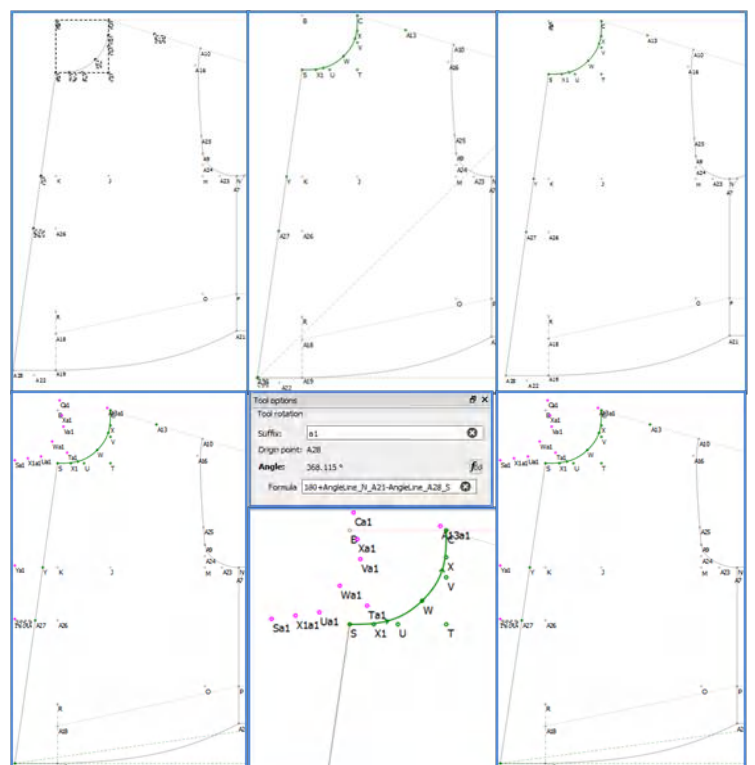
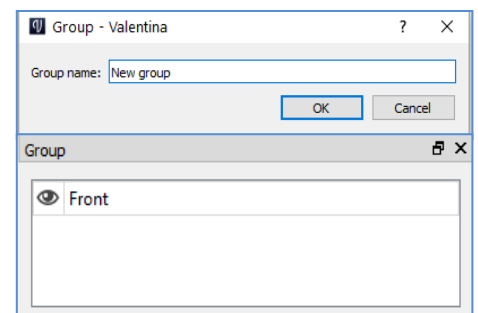
Using the same pattern piece that I used above, I have decided to place a dart in the middle of the shoulder seam. To do this, I need to rotate the centre-front line, the neck and half of the shoulder line to make space for the dart.

After clicking on the icon, and holding the Ctrl key, I select all the points and arcs that I would like to rotate. You will notice that all the objects selected have a dotted box around them. Once I have selected all the objects, I check, double check and then press Enter to confirm the

Once you have named your group, click on **OK**.

Your new group will now be listed in the area for groups at the bottom right side:

By clicking the eye in the list, you can toggle the group on and off – in other words make the pattern piece visible or invisible.



selection. The selected points and arcs are now green which indicates that they have been selected for rotation.

The next step is to select the point of rotation – In this case, point A28, and then I dragged the line around until it 'looks good' to me and press enter. The chances that the rotation did what I wanted are pretty slim, so I set up a formula in the side bar that gives me exactly what I want.

You will notice that the new, rotated points that have been created have the same base numbers with 'a1' added to them. This tells me that this is the first time I have used the rotation or the move tool in this part of the pattern.

All that is left for me to do is to redraw the lines and insert the dart which I have done in violet.

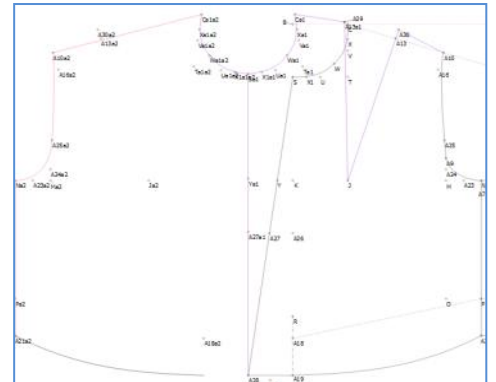


Flipping Objects by Line

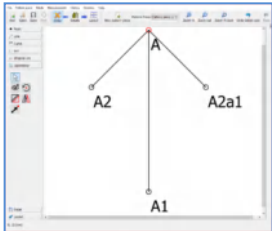
Once again, we select the points and curves that we would like to flip while holding the Ctrl key and press enter when done. In this instance, the centre front is the line that we will use as the flipping line, so we exclude these points from our selection – our first selection will be the neck curve, working clockwise around the piece, our last point will be A19.

Next, we click the 1st point of the line (Sa1) and then the 2nd point of the line (A28). A box pops up that confirms our selection and we may choose a suffix for our points – it is defaulted to 'a2', which follows on the 'a1' of the rotation earlier.

We may now click 'OK' and the flip is complete. We may now draw in the lines and curves which I have done in bright pink.



Flipping Objects by Axis



As above, select the points and objects that you wish to move, holding the Ctrl key and press enter when done.

Select a point on the vertical or horizontal axis. The new points will be "mirrored" to the opposite side of this axis.

A dialog box will appear, prompting for Axis point, type of axis (Vertical or Horizontal), and the suffix to add to the point's name. Click 'OK'.

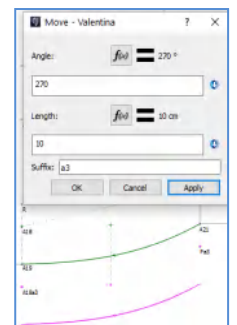
Click to [view video tutorial](#).



Move Objects

As above, select the points and objects that you wish to move, holding the Ctrl key and press enter when done.

A box pops up where you can enter the angle and distance you would like to move the object. Click on 'OK' and it's done.

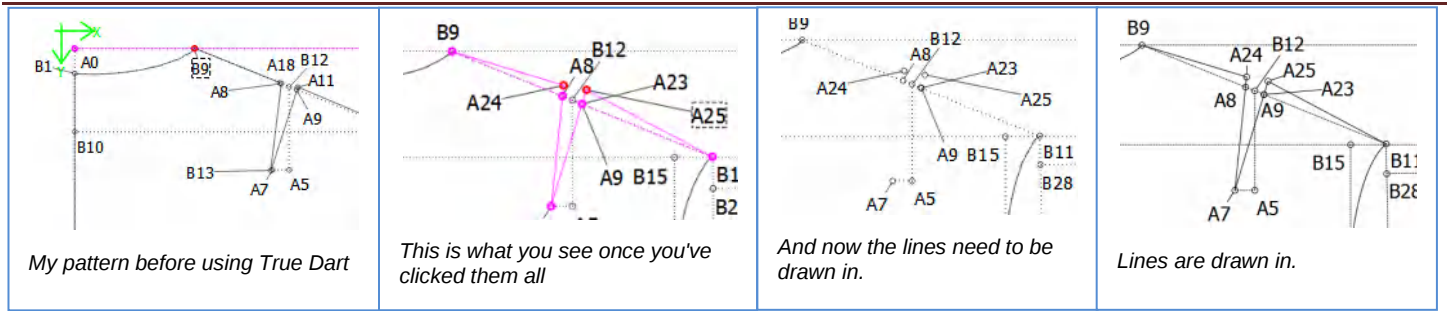


True Darts

When you have cut out your pattern and begin to sew, the edges of the darts are out of line if you only use the base line to create the dart. Allowances need to be made for the shift of the seam before cutting the fabric. This tool is meant to help you with that.

My shoulder line is B9 to B11, so we first select these 2 points. My dart is from A8 to A7 to A9 so we select these next. Now we need to draw the lines from B9 to A24, A24 to A7, A7 to A25, A25 to B11.

Seamly2D



As you can see, the dart points have been raised. Once the dart has been sewn, the shoulder seam should be straight.

Detail

This is where the actual pattern is created. We use these tools to create the outlines of each pattern piece, add labels, pins, etc.

[Tool Pointer](#)

[Seam Allowance Tool](#)

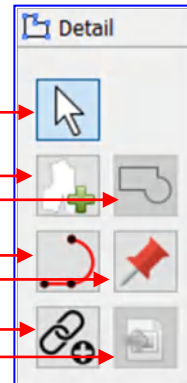
[Union Tool](#)

[Piece Path Tool](#)

[Pin Tool](#)

[Insert Node Tool](#)

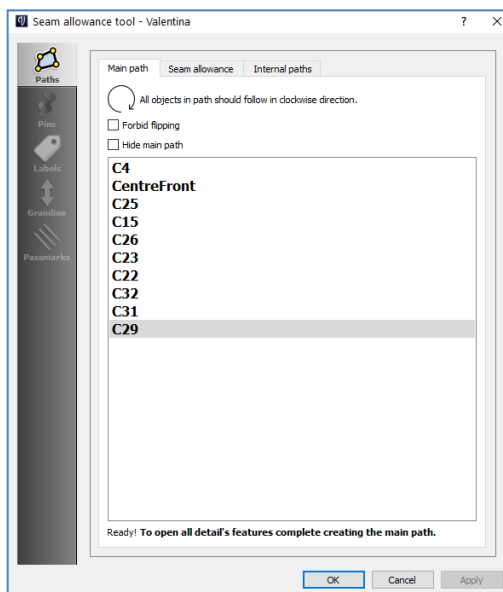
[Tool for Creating Details](#)



Seam Allowance Tool

This tool will create the basic outline of the pattern piece. To use it, click the icon and then on each point or curve of the pattern piece in a clockwise direction.

Once you have the whole pattern piece outlined in red, and all the points selected, press enter to accept the selection.



A dialogue box comes up where you may check that you have everything. If you have missed something, don't worry about it at this point, as we will cover adding points and items when we cover the 'Insert Node Tool'. At this point, all other options are grayed out so you cannot do anything other than to click on 'OK' to accept the selection or 'Cancel' to delete the selection and to start.

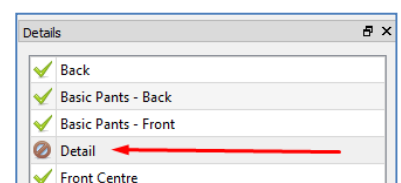
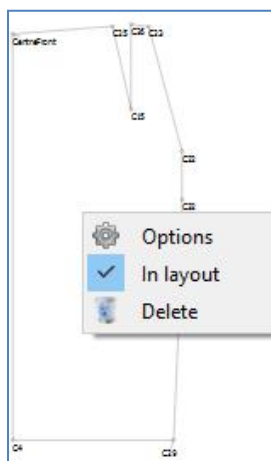
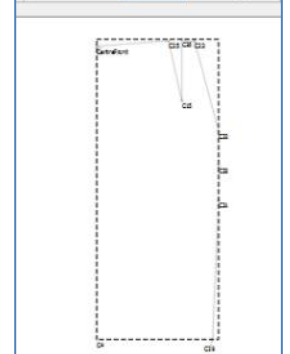
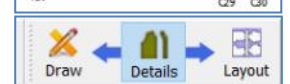
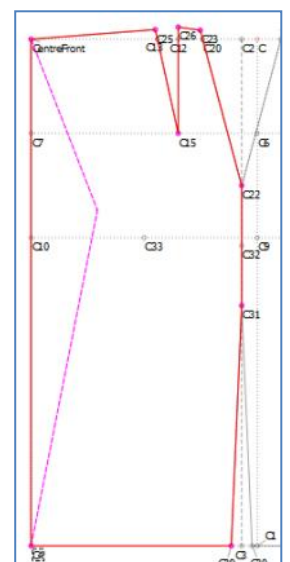
Once you have accepted the selection by clicking on 'OK', you may click on the Details tab above the drawing screen to view the newly created pattern piece. In the image to the right, I have clicked on the pattern piece which has selected it.

To the left of the drawing area near the bottom, you will find a list of all pattern pieces created for this pattern. The ones with the green check mark have been selected to be included in the overall

[Layout](#) of the pattern, while the ones with the circle with the line through it in black have been selected to be excluded from the overall [Layout](#) of the pattern.

Whether you have selected your pattern piece or not, you may now 'Right Click' on it to bring up the alternative menu.

The alternative menu has **Options**, which we will cover a bit later, In [Layout](#) – which you can click to toggle the check mark off and on (it is defaulted to on) to include or exclude the piece from the overall [Layout](#), and **Delete** – which you can click to delete the pattern piece.

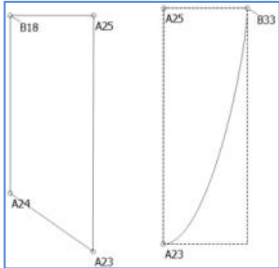




Union Tool

The Union Tool is used to take 2 pattern pieces and join them into 1 piece so you need to have 2 details created using the tool above.

Select the Union Tool and then select the 1st piece. Select the 1st point on the pattern piece where you would like the 2 pieces to be joined and then the 2nd point.

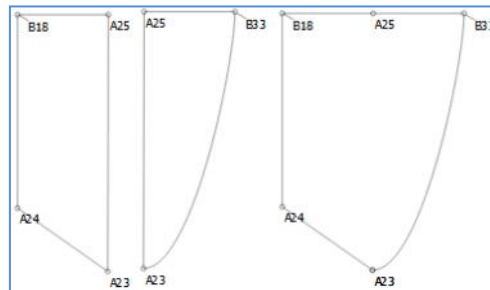
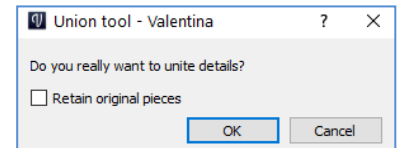
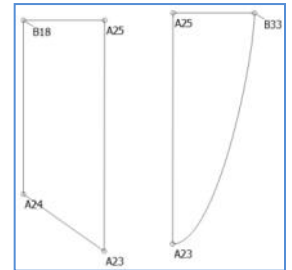


Repeat this on the 2nd piece by first selecting the piece and then the 1st and 2nd points.

Once you have done this, a box will pop up which will ask you if you really want to unite the 2 pieces and you may check the box if you wish to retain the original pieces.

Click on OK to complete the process.

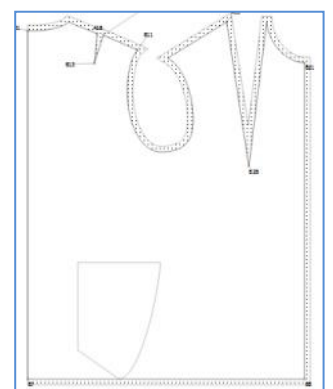
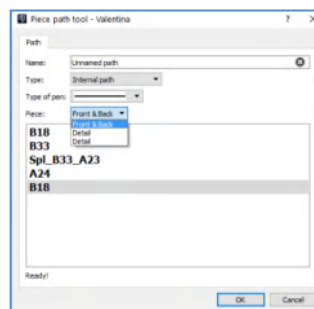
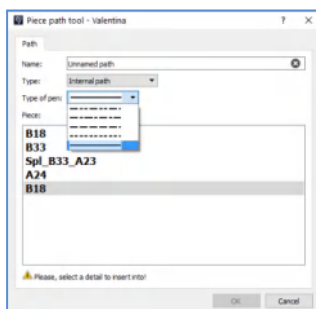
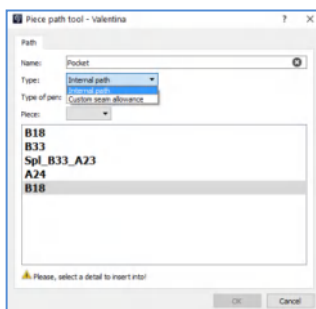
I have selected to keep the original pieces and you can see all 3 pieces below.



Piece Path Tool

This tool is used to select other detail like Internal Paths or Custom Seam Allowances to your pattern piece.

Click on the tool and select the points and curves that you wish to add to your pattern piece. Once you have done this, press Enter and a dialogue box appears where you may give this selection a name, specify whether it will be used for an Internal Path or Custom Seam Allowance, the type of pen you would like on the pattern piece, which piece you would like to add this detail to and the points will be listed in the box below.



Once you have selected the pattern piece, the OK becomes available to accept the selection.

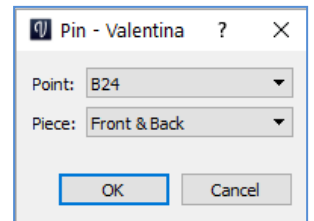
You will now be able to use this detail as described in the [Detail Options](#) section.



Pin Tool

This tool will place a pin in your pattern piece that may be used to pin the label to as described in the [Detail Options](#) section.

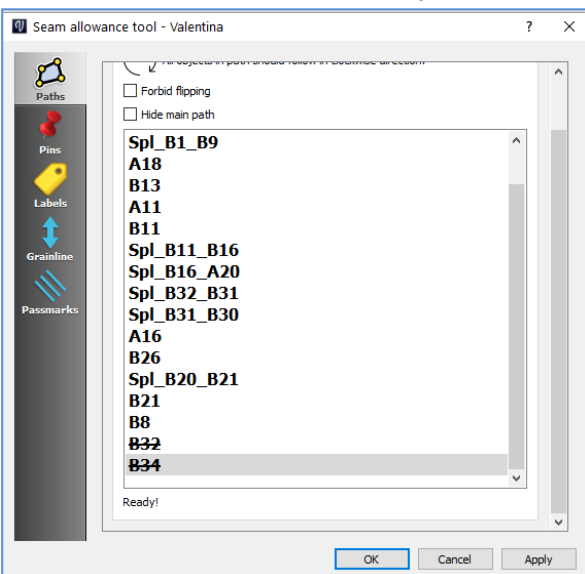
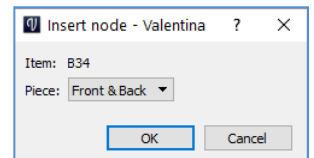
Click the tool, click on the point that you would like to use as a pin and select the pattern piece in the box that pops up. Click on OK.



Insert Node Tool

Once you have created your pattern detail, it happens that 1 or 2 nodes have escaped the selection. This tool allows you to add those nodes later, however, each node will need to be added individually.

Click the tool, select the node that you wish to add, select the pattern piece and click on OK to complete the selection.



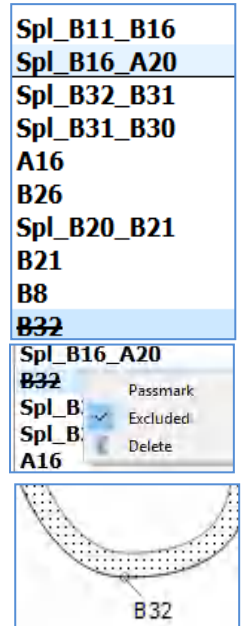
Next, click on the Details tab, right-click on the pattern piece and select Options.

The new nodes will be at the bottom of the list, so you may need to scroll down. They will also be crossed out showing that they have been excluded from the pattern.

Click and drag them to where you would like them to be in the list order.

Right-click on the item to bring up the alternative menu and click Excluded to toggle the option to Included.

On the pattern piece, that node will now be showing.

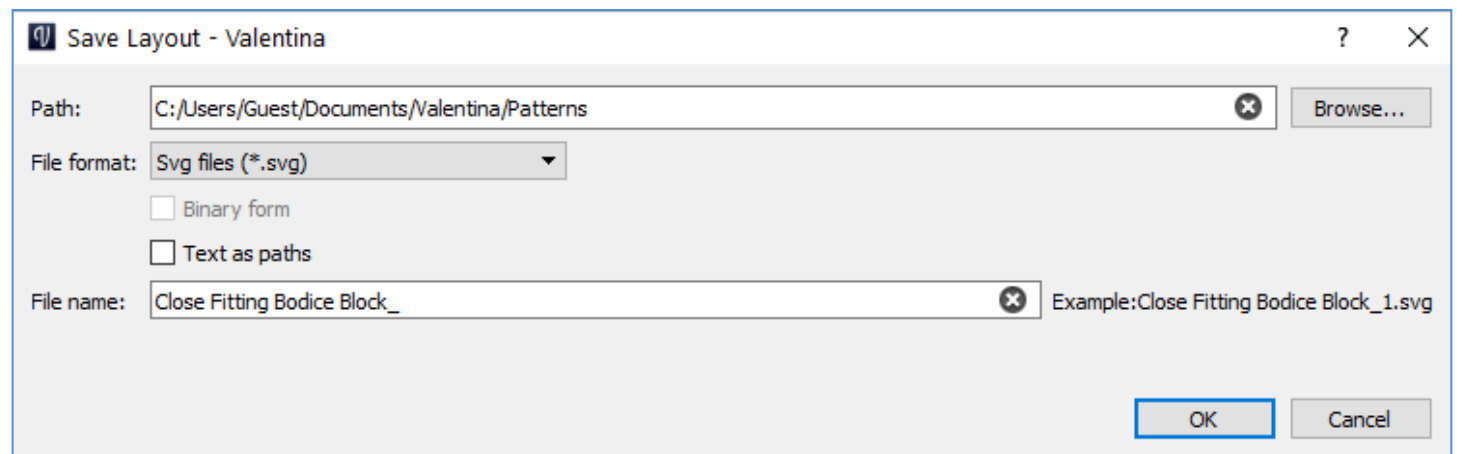


Note: Nodes that are crossed out are excluded from the pattern piece and will not show on the final pattern until they have been included, thereby removing the crossing out and making them active.



Tool for Creating Details

This tool is to set the preferences for this pattern piece that will be used later as the default when you create the layout.



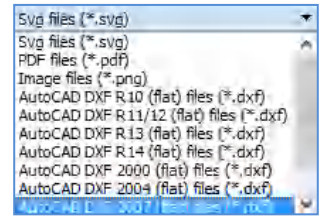
Path: You may browse to a different path where you wish to save this layout.

File Format: You may select the format in which you'd like to save this file – depending on what you intend to use the layout for, e.g. You may want to import it into another program or you may wish to print it or you may wish to send it to a cutting table. Various formats are included in the dropdown list. Dxf format range from R10 to 2013 versions.

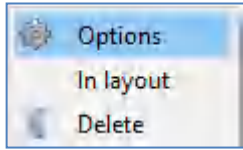
If you choose .dxf format, you will have the option to check the Binary Form box.

You may choose to check the Text as Paths Box and you may give the layout file a unique name.

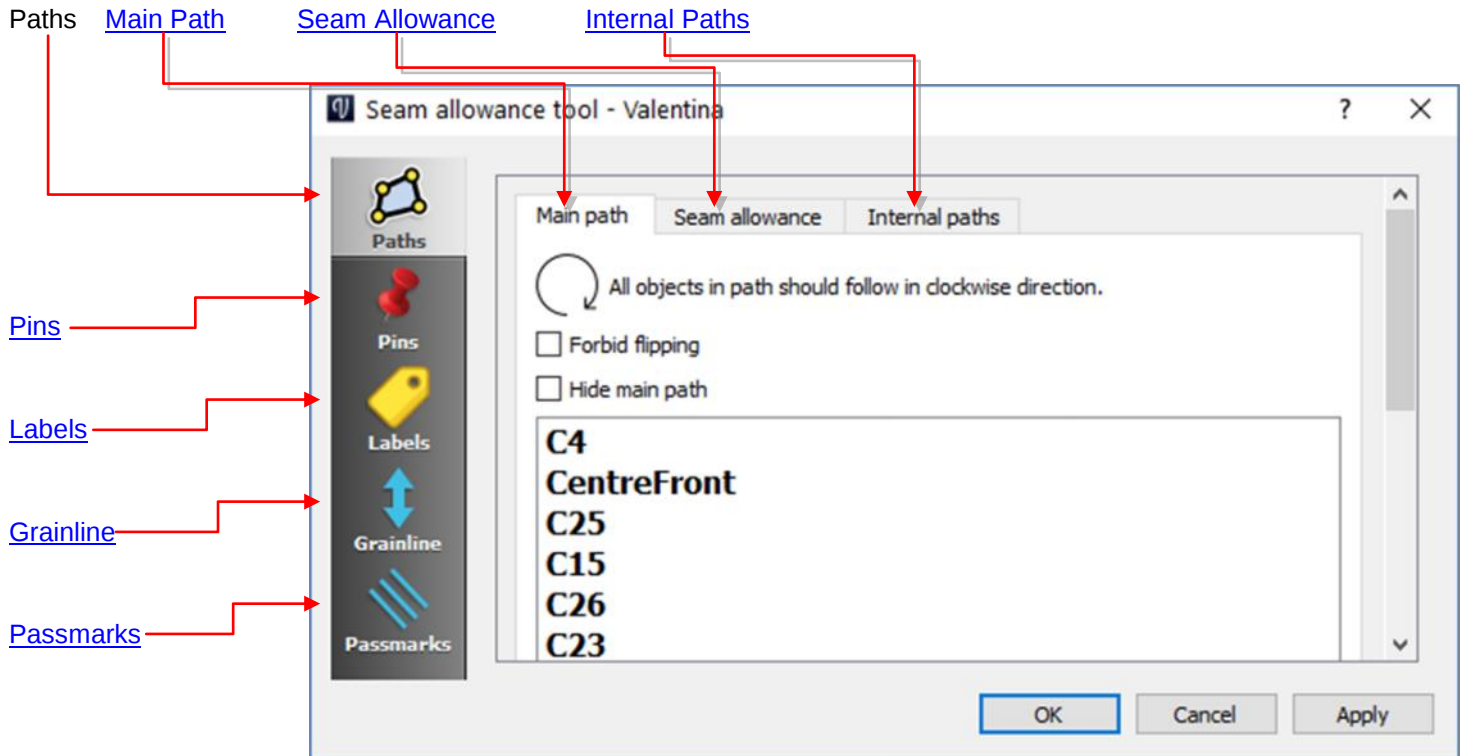
Click on OK and your choices will be saved into the pattern file.



Detail Options



By clicking on Options, we bring up the dialogue box that we closed previously but now all the options that were grayed out are now available to us.

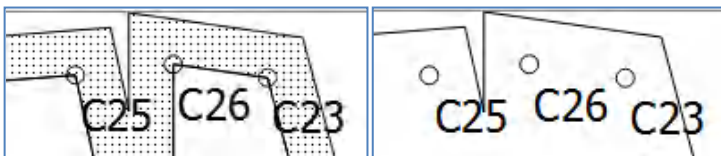


Paths

Main Path

In the Main Path, you have the option to forbid the flipping of the pattern piece during the creation and printing or cutting out of the Layout by clicking in the box to place a check mark there. ☒ Forbid flipping

By placing a check mark in the box next to Hide Main Path will remove the main path from the pattern and the seam allowance will be presented as the main path as you can see below:



Below these 2 options is the list of points and curves selected while creating the detail which we will cover in more detail later.

Seam Allowance

To add Seam Allowance, you need to select the Seam Allowance tab and place a check mark in the check box.

Next is the check box to check if you have built the Seam Allowance into the pattern piece – if this is the case, you will still need to add the seam allowance to place the Passmarks (and later, other pattern markings), so **SeamlyME** needs to know that the Seam Allowance is built in.

Below the Built In option, is the Automatic section where you can automatically add Seam Allowance to the whole pattern piece of a specified width. You may either type in the value of your favorite allowance or use the $f(x)$ option to use a variable or other item. The value in this box becomes the Default value.

Next is the **Node** section.

I have used the example of the front of a skirt for this exercise because it is cut on a fold and as such, doesn't need a seam allowance down the center front of the pattern piece. As you can see indicated by the red arrows in the image, the waist line has the 1cm seam allowance, while the center front line has none.

To achieve this, I selected the 'CentreFront' node in the drop down list in the box next to 'Node' and in the box below (Before), I entered '0'. This means that before the node, I'd like the seam allowance to be 0.

I then selected C4 in the Node box and in the 'After' box; I entered the value of 0. (C4 is the bottom left node that I selected when creating the detail.) So what this did is that anything after the node C4 will have a seam allowance of 0 while everything before this node will have the default seam allowance of 1cm.

Next is an Angle option where you may select various options from the dropdown list in the box.

In the same manner, you may select nodes and change the values between points in the **Custom** section. I haven't had any call for this so I haven't explored it enough to explain fully.

Once you have created the basic draft of your pattern piece, I suggest that you first create the Internal Paths and Pins needed for the complete piece. You may also wish to add things missed by using the Insert Node Tool.

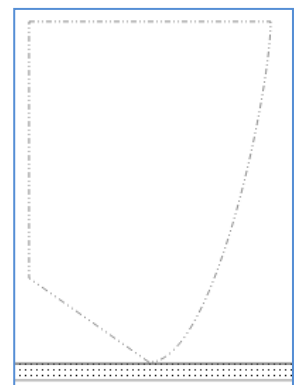
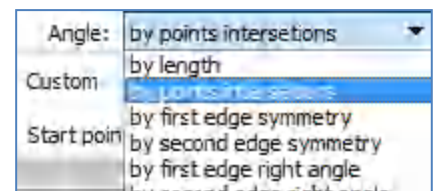
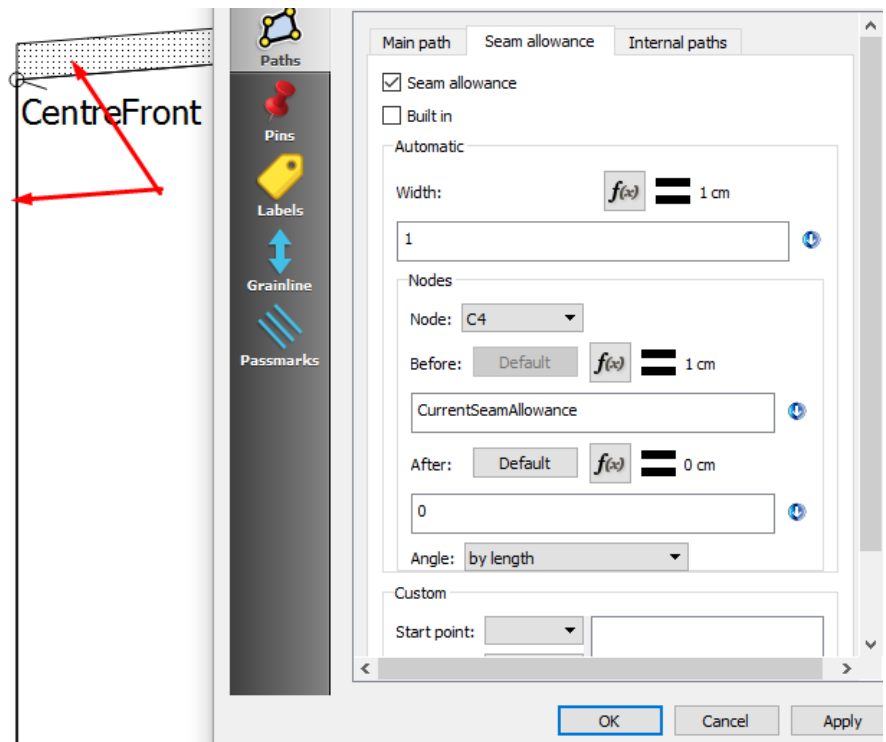
Internal Paths

Internal Paths are detail that you require inside your pattern piece and are created using the [Piece Path Tool](#).

Once you have an internal path created, it will be listed on this page with all the others that you have created. By right-clicking the item, you may edit it using the Options which will take you to the Options box where you may edit the details originally entered, or you may Delete it.

Pins

As with the Internal Paths, Pins need to be created first using the [Pin Tool](#) before one can work with them in the pattern piece. All pins created are listed here. By right-clicking on a pin, you will be given the option to delete it.



Labels

Piece Label Data

After clicking on the Labels side-tab, the first tab is open where you can give your pattern piece a Letter and a Name of the Detail – in this case the Letter is 'A1'; and the Name is 'Skirt Front'.

Next you may choose the material type from the dropdown menu.

Cut number may be chosen using the up and down arrows in the box.

Placement has option of 'None' or 'Place on Fold'. For this skirt I have chosen 'Place on Fold'.

Once you have added the label details, you may click on 'Add'. You will notice that 'Cut 1 on Fabric on Fold' has now been added to the box on the right.

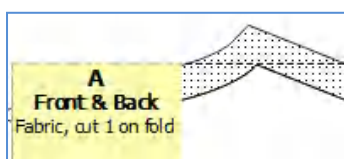
If you have added something in error, or need to edit something, you may click on the item on the right which will give you the options to Update, Cancel or Remove the item.

Labels - Left

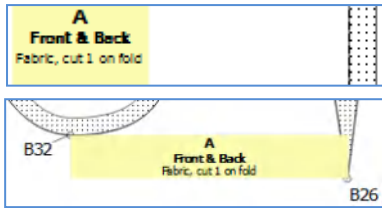
By clicking on the Labels tab, you are presented with the screen where you actually create and place the label on the pattern piece.

On the left side, you need to place a checkmark in the top box to include the label on the pattern piece,

Then you may select the width and the height of the label. You may do this by using the formula option or by entering direct values.



If you have added pins, you may use them to place the label on your pattern piece. If not, the label will be placed in the top left corner of the pattern and you may drag it to where you want it to be placed.



The next option is to place the label over a centre pin – click the down arrow to the right of the box to select the pin.

(I have included a portion of the seam allowance to show the positioning.)

If you have selected 'No Pin' in the Centre Pin box, you will be able to specify a top left and bottom right pin to have your label resize itself between 2 pins.

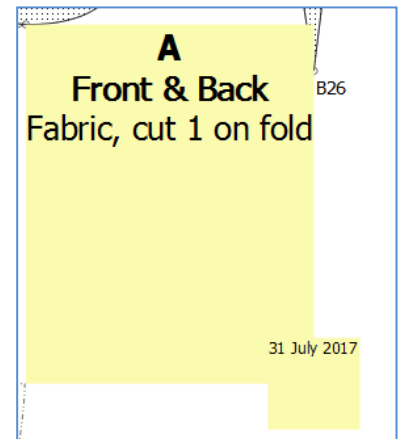
If you want the label to be placed at an angle, you may specify the angle in the box either by a formula or value in the last section.

Note: The font will resize automatically depending on the size of the label. The yellow background of the label will not be printed on the final pattern – it is only yellow so that you can see where the label will be.

Labels – Right

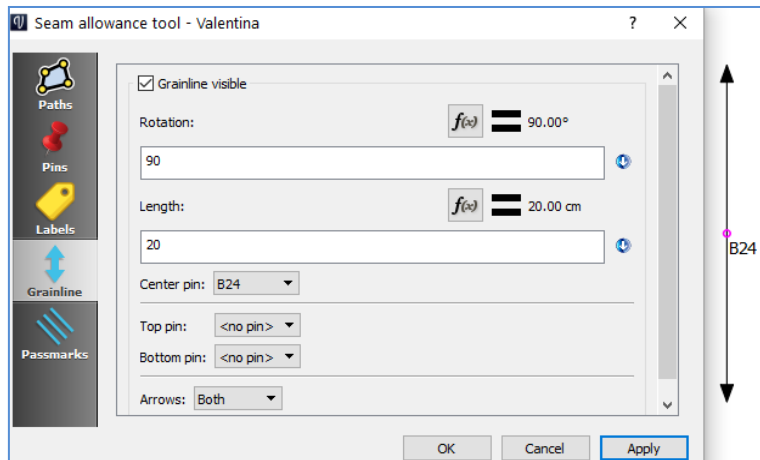
By placing a check mark in the box next to Pattern Label Visible, a label with additional information (like the date that the pattern is created) will be placed on the pattern piece separate from the 1st label.

Note: I have created these labels especially for this manual as a visual explanation. You may place your pins where you would prefer and include or exclude as you see fit.



Grainline

The draping of a garment on a body is largely affected by the grain of the fabric, so **Seamly2D** has included the option of have the grainline printed on the pattern piece.



You may choose to use this option by placing a check mark in the box provided.

Next, you may choose the angel of the line and the length of the line– either by value or formula.

As with the labels, you may use the pins – if not, it will be placed in the top left corner of the pattern and you will need to drag it to where you would like it to be on the pattern piece.

You may either select a centre pin (as I did in the image) or select a top (start) pin and bottom (end) pin for the line.

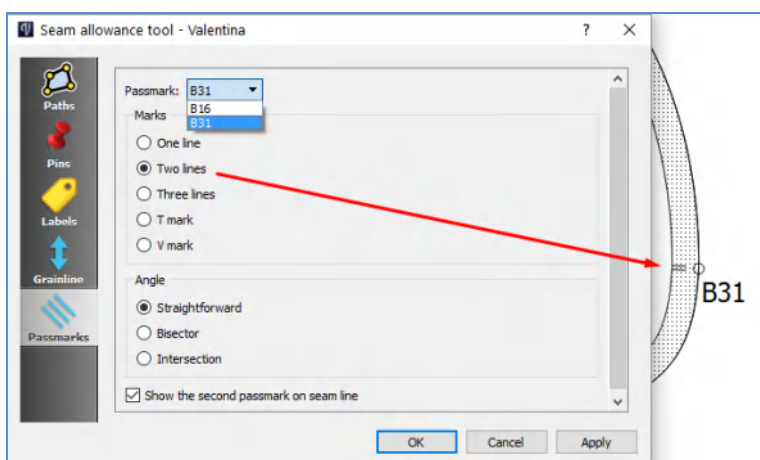
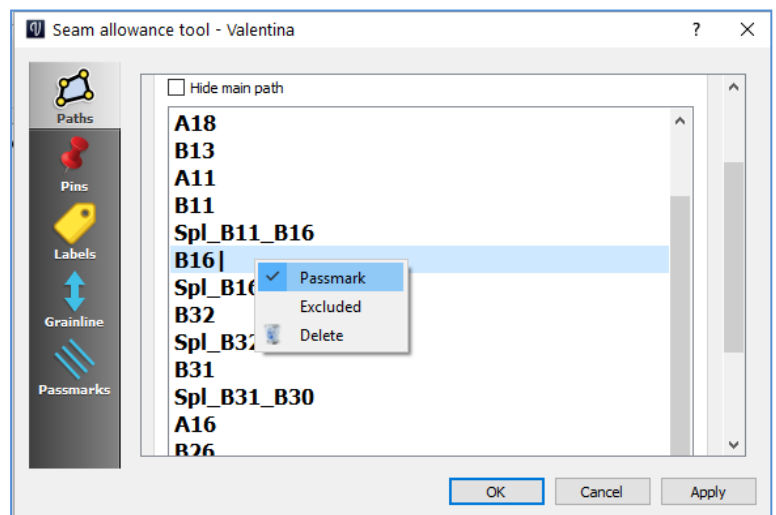
You may also select the arrow to be at both ends of the line or only at the top or bottom of the line.

Passmarks

These are normally used to match up pattern pieces while sewing the garment and are inserted on the nodes selected when creating the detail. If they haven't been included, please use the [Insert Node Tool](#) to add them.

To create a Passmark, you need to find the point on the Paths screen and set the node as Passmark by right-clicking the node and selecting Passmark. (You may do this for all the passmarks required and then go on to click the Passmark tab to edit them all at the same time, or you may do 1 at a time.) At this point, all passmarks will have a single line next to the node and on the pattern piece seamline as this is the default.

After creating the passmark nodes, you may click the Passmark tab and individualize each passmark.



By clicking the down arrow in the box, you will get a list of all the passmarks you have created and may choose the one you wish to change from the default.

Mark options are 1, 2 or 3 lines, T or V mark and may be chosen by clicking the radio circle next to it.

Angle options are Straightforward, Bisector or Intersection. I always use Straightforward which places the chosen mark on the seamline at a 90° angle to the line as shown in the image to the left.

Bisctor:

Intersection:



On the final pattern that you print, the passmarks will look like this:

Layout

Overview

A Layout Image contains the final version of your selected pattern pieces as they appear in Detail Mode. It does not include internal hatch marks, points, or point labels.

Each Layout Image has a background size that determines how the pattern pieces will be placed, and how many sheets are included in the Layout Image. FOR YOUR CONVENIENCE, the Layout Image background size can be selected from pre-defined sheet paper sizes, roll paper sizes, or you can create a custom size.

The background size is NOT REQUIRED to be your printer's paper size.

The background size must be big enough to hold your largest pattern piece. A multisheet Layout Image is created when the background size can hold your largest pattern piece but can't hold ALL pattern pieces.

A Layout Image can be printed:

- directly from **Seamly2D**
- to a single sheet of paper if your single sheet Layout Image fits within your printer paper
- across multiple sheets of paper:
- as a tiled PDF if your single sheet Layout Image is bigger than your printer paper,
- as shown in your multi-sheet Layout Image if each sheet matches or is smaller than your printer paper

Create a Layout Image

Select a Layout Image background size from the paper sizes or create a custom paper size.

The background size must be able to hold your biggest pattern piece, otherwise this error message appears: **"Several work pieces left not arranged, but none of them match for paper."**

To print a Layout Image as a tiled PDF, the background size must be bigger than the size of the paper in your printer and must be big enough to hold all pattern pieces.

Sheet paper size:

Best for printing multisheet Layout Images. Multisheets are displayed in the right-hand column of Layout Mode. (Example: Your multisheet Layout Image is A0 size. You select **File/Layout/Print** to print to your plotter which uses **A0** paper.)

Roll paper size:

The width will be the roll paper size, the length will adjust as needed

Best option for saving and printing as tiled PDFs. (Example: Your single sheet Layout Image uses 24" roll size. You select **File/Layout/Print as Tiled PDF** to print to your desktop printer which uses **Letter** paper.)

Custom paper size:

Good option for saving and printing as tiled PDFs but requires time to find best width and length.

Begin with width and length larger than you need and reduce to find best size

Review Dialog options before clicking 'OK'. Select your printer to reserve the correct border widths for printer margins. Select **Unite pages if possible** to convert a multisheet Layout Image into a single sheet Layout Image. Select **Autocrop unused length** to reduce blank space in tiled PDFs.

Print a Layout Image

Select **File/Layout/Print** if your single or multi-sheet Layout Image background size fits within your printer paper.

Select **File/Layout/Print as Tiled PDF** if your single sheet Layout Image background size is bigger than your printer paper.

Note: If your multi-sheet Layout Image background size is bigger than your printer paper, then you should recreate your Layout Image

Save a Layout Image

Select **File/Layout/Save as Tiled PDF** to save your single sheet Layout Image as a tiled PDF. When you read or print this tiled PDF, your application must import the PDF at 96ppi and the 'Scale to Fit' print option should be de-selected.

Select **File/Layout/Export** to save and export the Layout Image to a **raster** (.png, .jpeg) or **vector** (.pdf, .hpgl, .eps, .ps, .svg, .dxf) file format.

Credits

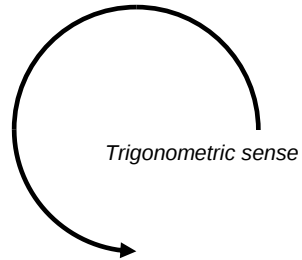
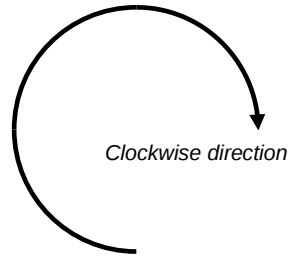
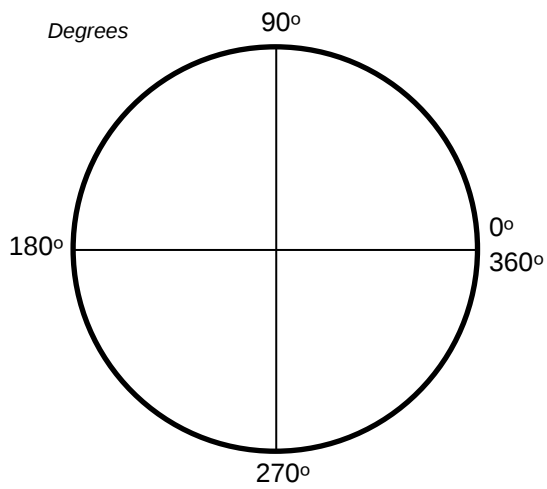
Cover Picture – The elements are the property of **Seamly2D**.

This is a combined effort mostly taken from the Wiki Tutorials which has been created by people using and developing **Seamly2D** for everyone to use when learning to use the software.

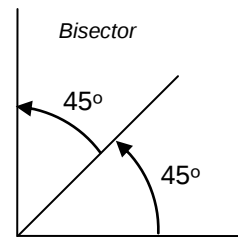
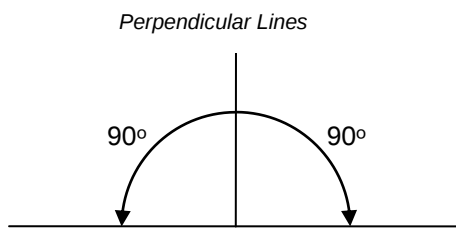
To all who contributed, whether by asking a question in the forum, by adding to the Wiki, by developing the software, by creating a video tutorial or just by using the software, we offer our most sincere thanks.

Glossary – Angles

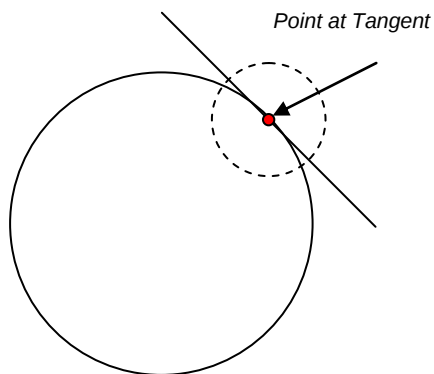
Angles



Straight



Tangent



Annexure A

Keyboard Shortcuts

Seamly2D provides various keyboard shortcuts to speed up the process of creation pattern. As the software is still in development, this list is not completed and will be extended in future.

A keyboard shortcut may conflict with a shortcut that a Window manager uses for its own purpose - in this case the **Seamly2D** shortcuts will not work. On some systems, an application based on Qt keyboard shortcuts will not work either.

Action	Keyboard Shortcut
New file	Ctrl+N
Save	Ctrl+S
Save all	Ctrl+Shift+S
Export pattern (layout)	Ctrl+L
New pattern piece	Shift+Ctrl+N
History	Ctrl+H
Zoom in	Ctrl++
Zoom out	Ctrl+-
Fit to best	Ctrl+=
Fit to best current pattern piece (<i>since v0.6.0</i>)	Ctrl+M
Original zoom	Ctrl+0
Undo	Ctrl+Z
Redo	Shift+Ctrl+Z
Table of variables	Ctrl+T
Delete selected item	Del
Exit Seamly2D	Ctrl+Q
Activate last used tool	L

Mouse Shortcuts

Action	Keyboard shortcut
Zoom In	Ctrl+Scroll up
Zoom Out	Ctrl+Scroll down
Drag	Middle mouse button

ANNEXURE B - Patternmaking References

Books

For those interested in the art of patternmaking, there are lots of books to choose from – they should all be available on Amazon or at your local bookshop. Here is a list you may find useful in learning the craft:

- Winifred Aldrich
 - o Metric Pattern Cutting for Women's Wear
 - o Metric Pattern Cutting for Menswear
 - o Metric Pattern Cutting for Children's Wear and Babywear
- Natalie Bray
 - o Dress Pattern Designing: The Basic Principles of Cut and Fit
 - o More Dress Pattern Designing
 - o Dress Fitting: Basic Principles and Practice
- Bunka Fashion College
 - o Textbook 1: Fundamentals of Garment Design (Japanese and English translation)
 - o Textbook 2: Skirts and Pants (Japanese and English translation)
 - o Textbook 3: Blouses and Dresses (Japanese and English translation)
 - o Textbook 4: Jackets and Vests (Japanese and English translation)
- Helen Joseph-Armstrong
 - o Patternmaking for Fashion Design
- Lori A. Knowles
 - o Practical Guide to Patternmaking for Fashion Designers: Juniors, Misses and Women
- Lucia Mors de Castro
 - o Patternmaking in Fashion (English, French, German, Spanish, Italian translations)
 - o Patternmaking in Practice (English, French, German, Spanish, Italian translations)
- M. Muller & Sohn
 - o Schnittkonstruktionen fuer Kleider und Blusen (Dresses and Blouses) (German)
 - o Schnittkonstruktionen fuer Roেকে and Hosen (Skirts and Trousers) (German and English translation)
 - o Schnittkonstruktionen fuer Jacken und Maentel (Jackets and Coats) (German and English translation)
 - o HAKA Schnittkonstruktionen 1 Sakkos und Westen (Jackets and Vests) (German)
 - o HAKA Schnittkonstruktionen 2 Sakkos (Jackets) (German)
 - o HEMDEN Schnittechnik (Shirts) (German)
 - o HAKA Schnittkonstruktionen Hosen (Trousers) (German)
 - o Vittorina Rolfo, Ernestine Kopp, Lee Gross and Beatrice Zelin
 - o Designing Apparel Through the Flat Pattern
- Teresa Gilewska (Eyrolles)
 - o Le modélisme de mode - Volume 1 à 7 — Édition Eyrolles (French)
 - o Schnittkonstruktion in der Mode: Herrenkleidung: Zuschneiden und Zusammennähen (Menswear) (German)
- Don McCunn
 - o How to Make Sewing Patterns (Skirts, Pants, Bodice and Sleeves; Pattern Alteration; Garment Design) (English)
 - o How to Make a Custom-Fit Slopers (English) (EBOOK with videos)
 - o How to Make a Custom Dress Form (English) (EBOOK with videos)
 - o How to Make Bust Sling Bras (English) (EBOOK with videos)
 - o How to Make Custom-Fit Corsets (English) (EBOOK with videos)
 - o An Introduction to Pattern Design (English) (EBOOK with videos)
 - o How to Make Custom-Fit Bras (English) (EBOOK with videos)
 - o How to Make Bikinis & Bandeaux (English) (EBOOK with videos)
 - o Patterns for Fashion Dolls (English) (EBOOK with videos)
- International Fashion Design School
 - o Édition Esmod <http://www.esmod-editions.com>
- Claire Wargnier

- o Collection Devenir modéliste / Become a pattern drafter Book Series — Claire Wagnier (Français / English)

Online instruction

The following is a list of free online sources for patternmaking instruction.

[Leena's Pattern Drafting Lessons](#) This site is frequently down and the server times out. When the site is available it does contain good reference material on basic patternmaking techniques.

[Pattern Design Guides – Notes by Don McCunn](#) The notes section of this website provides supplemental information that is intended to be used with Mr. McCunn's books or ebooks.