

Wollo University



Kombolcha Institute of Technology

School of Textile, leather & Fashion Technology

LERCTRA CAD software user manual

For Garment Engineering Student

July 2020

Kombolcha/Ethiopia

Computer Aided Pattern Making Manual

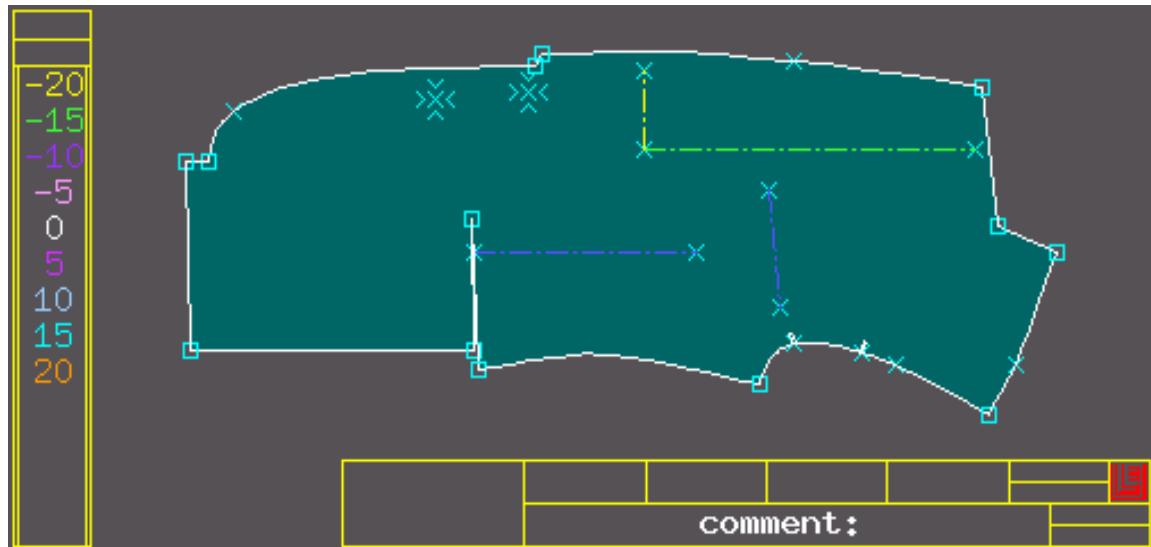


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1. INTRODUCTION

The course aims to produce tech-savvy CAD professionals (Lectra system) who can cop up with the global requirements of apparel manufacturing in term of speed and accuracy. The course provides and hands – on experience of pattern making, Grading and Marker making using advanced Lectra software tools. While manual pattern making is time consuming and labour intensive; usage of Apparel CAD provides accurate and fast results. Considering the growth of the Ethiopian Garment Manufacturing Industry, the demand for Tech-savvy CAD professionals bound to grow in near future, and preparing such professional is need of the hour.

Lectra is one of the reputed company deals with Integrated Technology Solutions, CAD/CAM equipment, and associated services, especially for Industries, contributing using fabrics, leather, technical textiles, and composite materials to manufacture their products. It serves major world markets: Fashion, Automotive, and Furniture, as well as a broad array of other industries. (Aeronautics, Marine, wind power, etc.).

The course enable the candidates skilled in pattern development with scientific knowledge of latest tools and techniques through usage of Lectra software for Pattern making, Grading and Lay marker planning, lead to handle and control CAD/CAM systems in Garment Industry.

What you will gain after completion...

- ☐ Being able to develop a flat pattern for any style (shirt-shirt, skirt etc....) using advanced computer software tools
- ☐ Being able to do computerized Pattern Grading for a specified Size ranges
- ☐ being able to make a Marker of the patterns with better efficiency
- ☐ being able to make a print out of marker for fabric cutting
- ☐ Being able to Digitize a manually made pattern to reduce errors

1.2. Advantages - CAD over Manual

- | | |
|--|--|
| <input type="checkbox"/> Ability to draw Very accurate Designs | <input type="checkbox"/> Easy modification of drawings |
| <input type="checkbox"/> Saves time | <input type="checkbox"/> Able to be accessed from anywhere |
| <input type="checkbox"/> Gives higher marker efficiency | <input type="checkbox"/> It is the Industry standard |

1.3. Disadvantages – CAD over Manual

- ☐ Requires high investment
- ☐ Operator has to update their skills for every new release of the CAD software

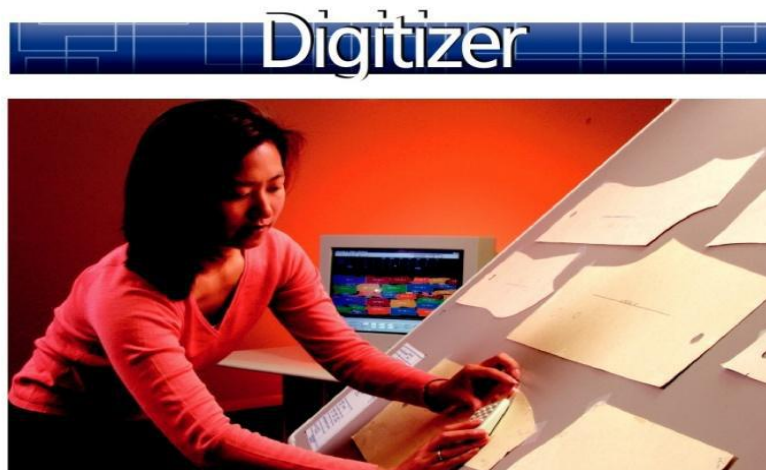
2. LECTRA SOFTWARE

Lectra as its major business area produces software packages that help the apparel industry on design and product development areas.

Lectra software packages includes the following systems/activities

Pattern drafting systems: drafting system is helps to draft apparel patterns from scratch by using lines, arcs, curves and points.

Digitizing systems: Digitizer input original pattern to the computer for use and store. The pattern pieces are place on the digitizing tablet by follows X and Y axes lines. Computer scans the pattern pieces and store on its memory.(4)



Grading systems: After input pattern, it is graded up and down in size. One particular point is considered as a “growth point”. Every pattern are indicate a grade rules on the growth point that the way to know the computer for moves the pattern in X and Y coordinates in order to increase and decrease the size. (4)

Marker making systems: In this system all of graded pattern appear on the computer screen in small scale so that the operator can easily see the all of different pattern that he working with and he can easily move to arrange an efficient marker for reduce the fabric waste. It is also possible to produce automatic marker on the computer. In automatic marker, operator has allowed changing something of pattern to make more efficient marker such as alignment and rotation of pattern. (5) & (11)

Plotting Systems: Plotting is the printing system of marker and Marker making system and plotting system are connected to each other and allow the marker to be printed in varying scale. Individual pattern and nested pattern in various scales also can be printed by the plotter. (18)

2.1. Lectra's CAD software packages:

- Modaris: It is product development software used for pattern making, grading and digitizing.
- Diamino: used for marker making.
- Just print: used for plotting

3. HOW TO START WITH USING LECTRA SYSTEM

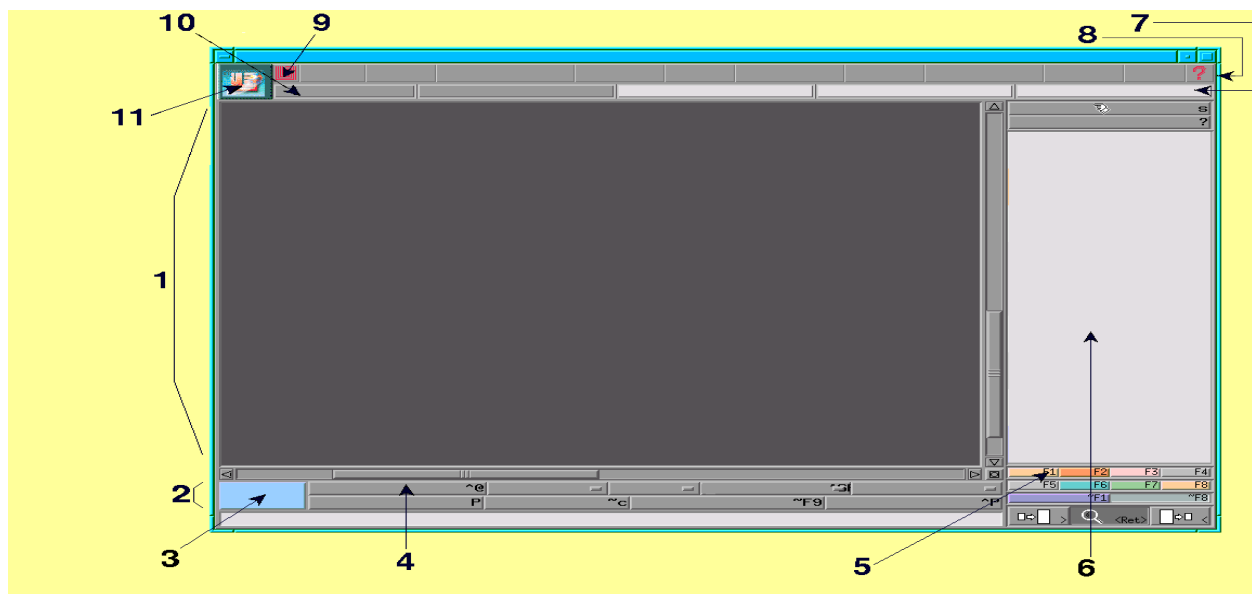
3.1. Storage of files and folders

All Models (patterns) and size tables are stored in the MODEL directory which is found in C:\Lectra\Files\Models All Markers are stored in the MARKERS directory which is found in C:\Lectra\Files\Markers The parameter files for the plotter are stored in C:\Lectra\config\VigiP\

4. MODARIS

4.1. The Modaris window

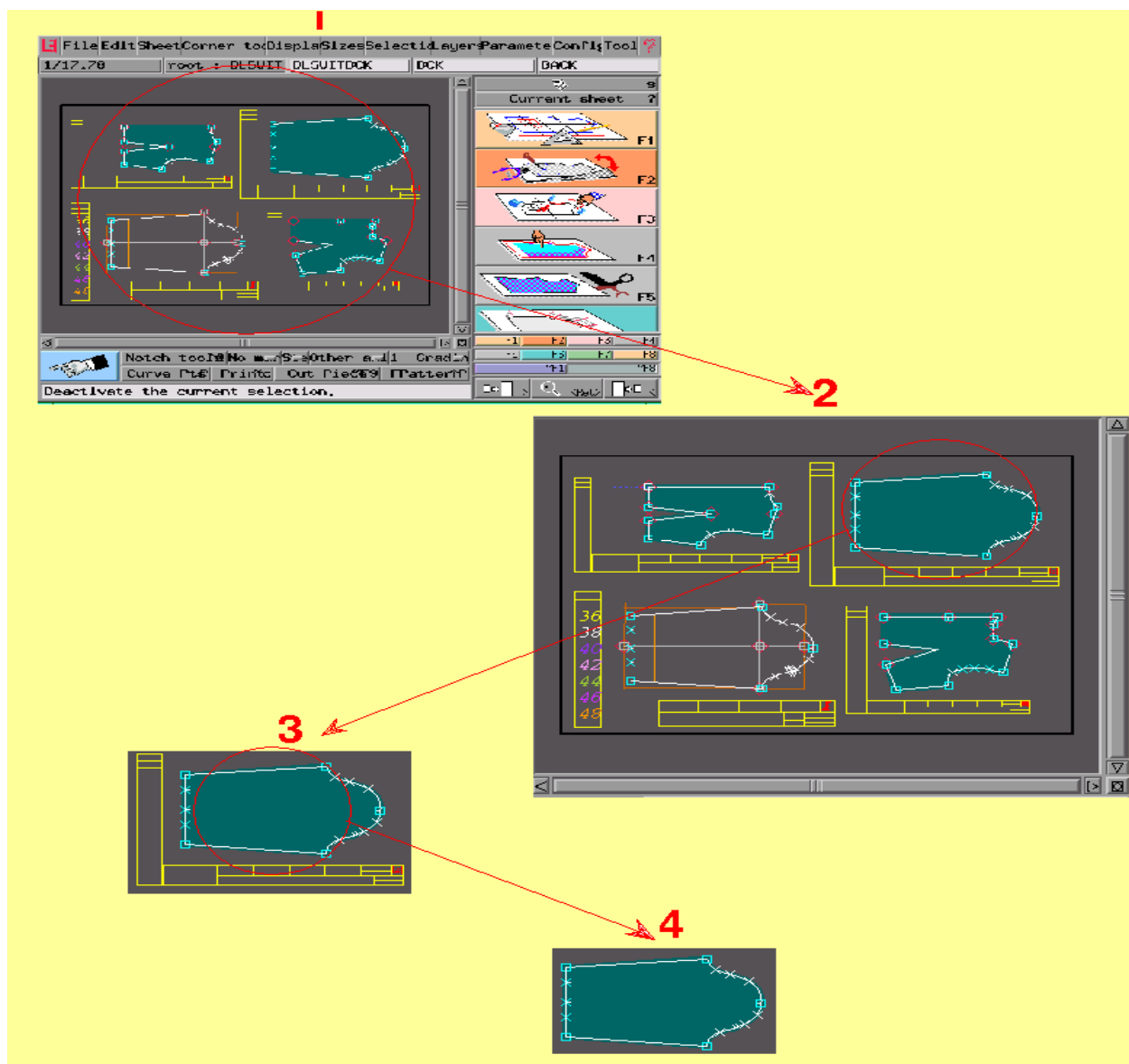
The main window is the pattern/stylist work environment. It is composed of the work area (in the centre) called the desktop, pull-down and removable menus, and tool boxes with the piece modification and creation functions (see figure 3.1). Figure 3.1 Presentation of the main window



- 1: Desktop
- 2: State bar
- 3: Active function indicator
- 4: Dynamic on-line help bar
- 5: "Trade" function selection bar
- 6: "Trade" function display area
- 7: Dynamic identification bar
- 8: Removable menu bar
- 9: Display of the Modaris version
- 10: Desktop scale
- 11: Connection to Lectra on line

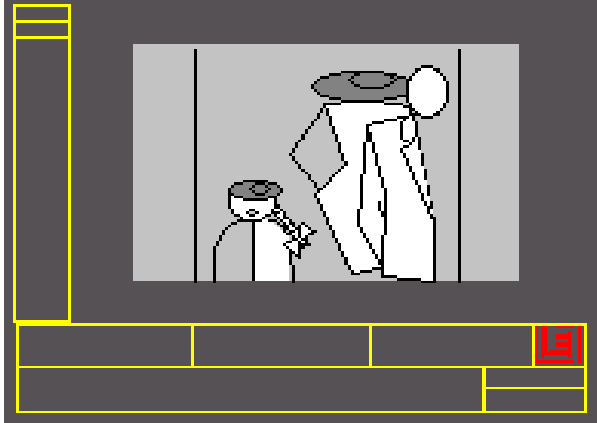

The work window is a desk for the pattern maker/stylist. This work window is called the "Desk".

Figure 3.2 Organization of the desk

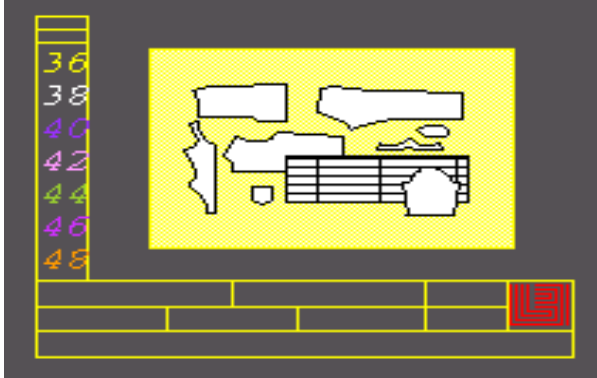



- 1: Main window
- 2: Desk
- 3: Sheet
- 4: Graphic objects

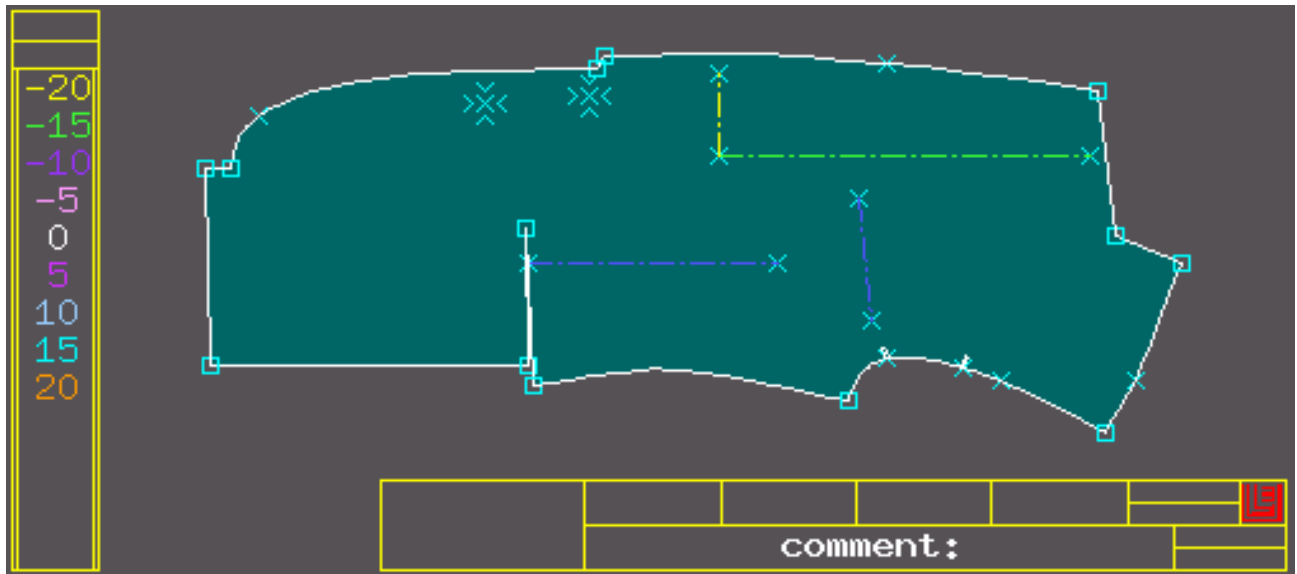
The desk is made up of "sheets". There are three types of sheet: - the sheet which identifies the model (evolution system of the model, model name ...) illustrated as follows.

Default identification sheet of a model	Customized identification sheet of a model
	

By default, the illustration of the model sheet corresponds to the left figure above, but it could be customized (right figure) with an illustration taken from a technical drawing. - the sheets which identify the different variants of the model illustrated as follows :

Default identification sheet of a model variant	Customized identification sheet of a model variant
	

By default, the illustration of a variant sheet corresponds to the left figure above, but it can be customized (right figure) with an illustration taken from a technical drawing (see § Personalization of illustrations on model and variant sheets). - the sheets which contain graphic objects that can be a model, a piece, a line, a point etc :



- ✓ It is not possible to draw on a model identification sheet and on a variant sheet.
- ✓ A "sheet" represents the sheet the pattern maker/stylist desk, where the patterns are created or the cardboard templates are placed.
- ✓ The sheets can be translated, turned, mirrored, and associated. The sheets can be placed on the desk wherever the user likes.
- ✓ A sheet can either be opaque or transparent.
- ✓ The flat pattern is on a single sheet.
- ✓ All pieces that have already been defined or are in the process of being defined, will automatically be placed on a sheet.

5.2. Pattern making and Grading Menus:

- F1 – Points and Lines.
- F2 – Notches, Orientation, and Tools.
- F3 – Modification.
- F4 – Industrialization, Piece.
- F5 – Derived Pieces, Folds, and CAM.
- F6 – Grading.
- F7 – Evolution System, Nest Modification.
- F8 – Measurements, Assembly, Variants.

5.3. Accelerator/short cut tools

<ul style="list-style-type: none"> ▪ Ctrl+J = Access paths ▪ ctrl+U = Title block ▪ shift+N = New sheet ▪ Enter = zoom in ▪ J = arrange desktop ▪ Home = visualize one piece ▪ Ctrl+Z = Undo ▪ ctrl+W = Redo ▪ S = Select/exit a function ▪ Z = delete sheet ▪ Page up = see previous piece ▪ Page down = see next piece ▪ 8 = Visualize all ▪ End = move sheets 	<ul style="list-style-type: none"> ▪ I = select sheets ▪ 7 = visualize selection ▪ F6+F12+F9 = visualize sizes ▪ F9= Nest ▪ F10 = hide sizes ▪ Shift+T = Rectangle ▪ Shift+X = Parallel ▪ B = Bezier ▪ Shift+H = Handles ▪ R = Reshape ▪ 0 = Straight line ▪ V = developed ▪ Shift+L+enter = show line measurement ▪ Ctrl+E = save
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5.4. HOW TO WORK WITH MODARIS

Create Data Saving Folders

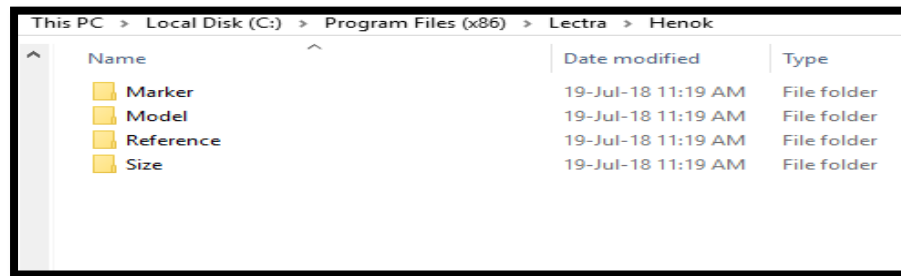
The first thing to do before starting to work with modaris is we have to create a folder on which we save our works. **Modal**, **Size**, **Marker** and **Reference** are the four folders that folders are used to save the work we have done.

- i. **Modal:** the pattern pieces you developed will be saved in
- ii. **Size:** saves alphabetic or numeric sizes created in a simple notepad and used later in grading.
- iii. **Marker:** Marker will be saved in
- iv. **Reference:** uses to feed pattern information at later stages

To do so,

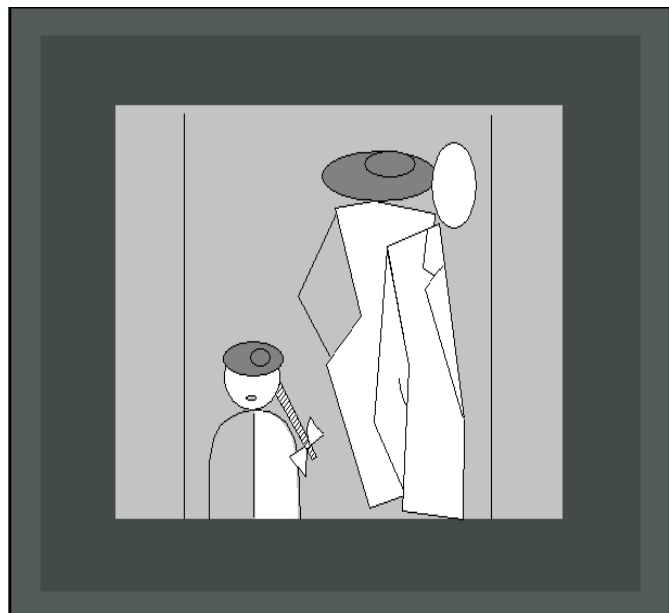
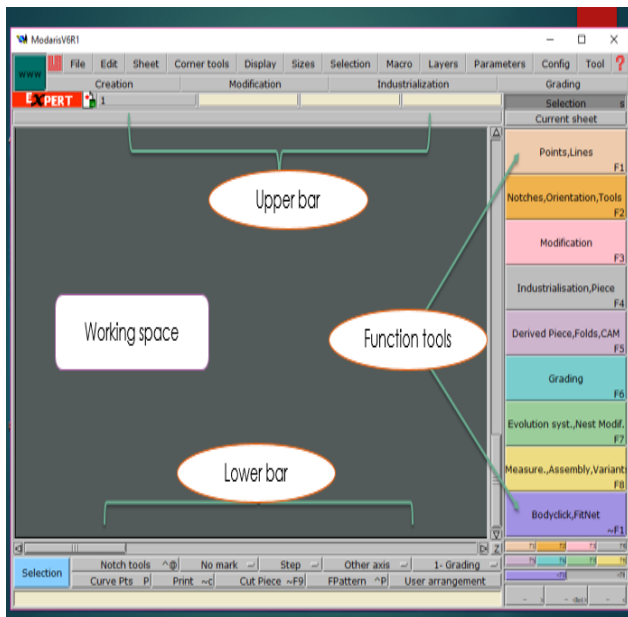
- Click on all programs \Rightarrow my computer \Rightarrow Local disc (C:) \Rightarrow Lectra \Rightarrow create New Folder and rename/create 4 new folders

- New folder (Rename “Model”)
 - New folder (Rename “Size”)
 - New folder (Rename “Marker”)
 - New folder (Rename “Reference”) **OR**
- We can find *my computer* short cut on our *desktop* then we will follow the above steps



- **How to enter the software**

- Go to start ➡ Lectra Modaris ➡ Modaris V5R1 ➡
- You will notice the light on your PC, will flash.
- Wait until you see black grid appear on your screen. On the blue bar on top of your software two boxes, one small and one big. By clicking the big box you will be able to increase the size of the screen to its maximum.



- **Shutting down your PC**

- Make sure all your work is saved
- You must not exit Open Partner without closing all your software, remember when your software is iconize this does not mean it is closed. Close all the open or iconize software.
- In Open Partner go to FILE and then to QUIT. You will now be at the gray screen where you started.
- Double click on shutdown and wait until you see typing on the screen which has stopped scrolling. Now press Alt and F3 at the same time and wait until you read “THE SYSTEM IS HALTED.”
- Now switch your PC off and all the other equipment e.g. Printer, Plotter, and Digitizer.

5.5. Title blocks:

- To display the title blocks use **Title block** (*CTRL + U*) and (*use F10*) in the **Display** menu.
- On a sheet, there are two types of title blocks: the *size title block* by evolution type and the *sheet identification title block*.
- The size title block by evolution type is **on the left of the sheet**. This title block will only appear if there is a size system on the sheet.
- The sheet identification title block is **at the bottom of the sheet**. The contents of this title block vary depending on what there is to do on a *Model, Variant, and Pattern or Piece sheet*.

Model sheet title block

1	2	3	
			4
			5

- **name (1)** : corresponds to the model name. By default, it has the model file name. The model name corresponds to the **Root** field of the various other sheets.
- **acd (2)** : corresponds to the analytical code.
- **ref (3)** : corresponds to the reference field compatible with LSMODEL III

- **Sect (4)** and **Garm typ (5)** : these are alphanumeric fields dedicated to the Made To Measure and corresponding to the respective coding of the activity sector and garment type of this sector.

Variant sheet title block

1	2	6	
3	4	5	7

- **Root (1)** : corresponds to the root of the name that will identify all sheets of a piece depending on the variant.
- **name (2)** : corresponds to the variant name.
- **acd (3)** : corresponds to the analytical code.
- **gcd (4)** : corresponds to the garment identification used as a base.
- **col (5)** : corresponds to the name of the collection.
- **utilp (6)** and **utilc (7)** : corresponds to the notion of utility garment dedicated to the marker. These fields can only have the value 1 or 0.

Pattern sheet title block

1	2	3	4	
			5	7
			6	8
				9

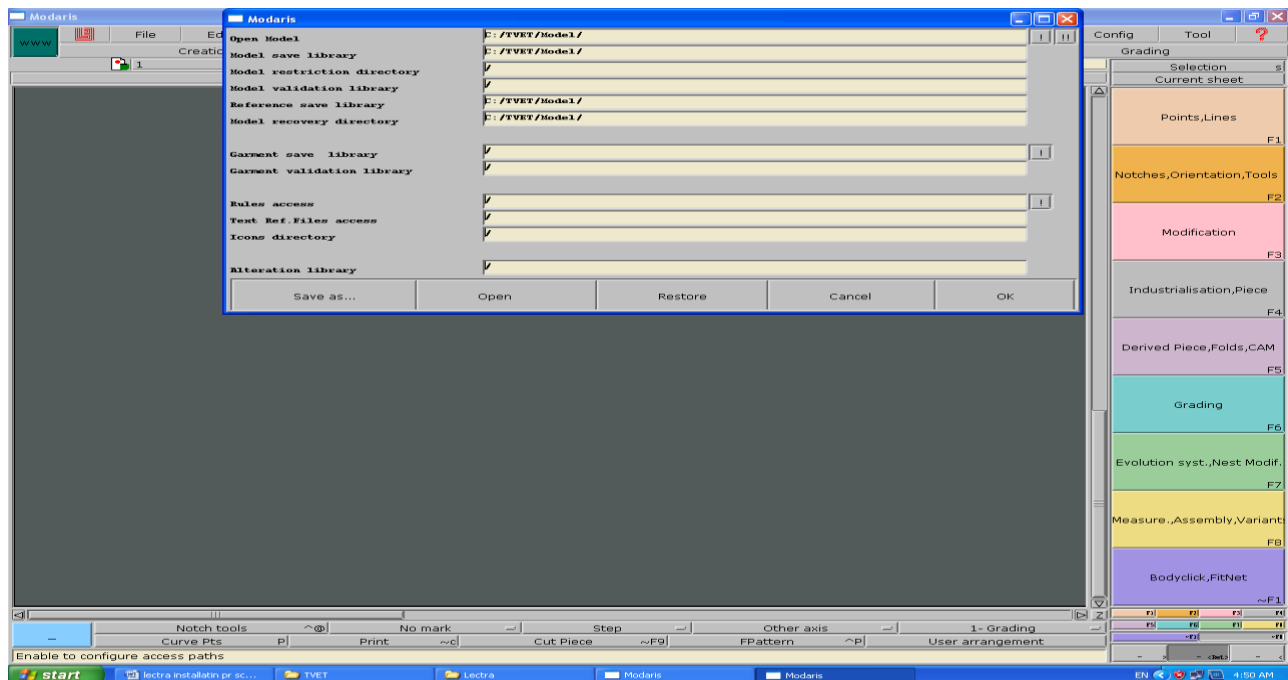
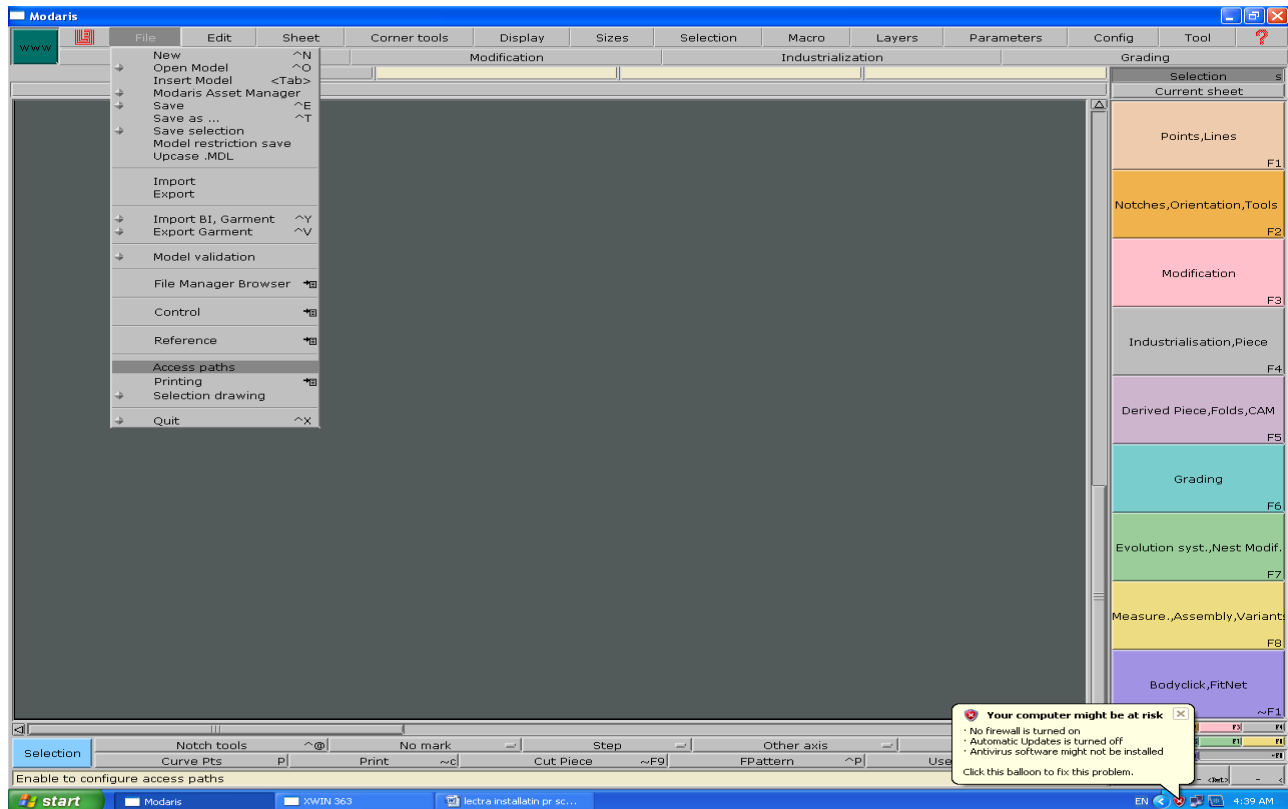
- **root(1)** : corresponds to the root of the name which identifies all sheets of the pieces which are dependent on the pattern. By default, this root takes the Model **name (2)** :corresponds to the pattern name. By default, the name takes the Model name.
- **acd(3)** : corresponds to the analytical code
- **ref(4)** : corresponds to the reference field compatible with LSMODEL III
- The fields **Sect(5)**, **Garm typ(6)**, **Chart**, **Bal** and **Hist** are dedicated to the Made to Measure and Body Click.

Piece sheet title block

9	1	2	3	4		
						7
						8

- **Area (9)** on the left of the title block : displays the name of the variant to which the piece belongs followed by its quantity in the variant and its fabric type.
- **root(1)** : corresponds to the root of the name that will identify all piece sheets depending on the pattern.
- **name(2)** : corresponds to the piece name. By default it takes the pattern name ended by a figure indicating the number of sheets.
- **acd(3)** : corresponds to the analytical code
- **ref(4)** : corresponds to the reference field compatible with LSMODEL III **Cut qual.(7)** and **Seam qual(8)** : dedicated to **Leather industry**, these fields correspond to cutting quality and seam quality.

5.6. Creating Access path



5.7. Creating size table

All size tables (ranges) are created in the SIZETABLE directory. There are 2 types of size tables that you can have, namely *alpha* and *numeric*. *Numeric* size tables comprise only of numbers e.g. 32,34,36,38 etc. *Alpha* size tables comprise of alphabet sizes as well as anything else which is not only numeric e.g. S, M, L, XL as well as 2_3, 3_4, 4_5 etc.

PROCEDURE

Go to *Start/All Programs/Accessories/Notepad* and in the notepad program type in the information required for your particular size table, following the guidelines below:

1. For an **ALPHA** size table comprising of S, M, L, XL type: alpha (*must be in lower case*)

- S
- M
- L
- XL

The word alpha must be on the top line and in lower case letters. Every size is listed one under the other with an asterisk (*) in front of the base size.

2. For a **NUMERIC** size table comprising of sizes 32, 34, 36, 38, 40 type:
Numeric

- 32 (tap the spacebar once) 2
- *34
- 40

The space followed by a 2 shows that the size increment is 2 or every second size i.e. 32, 34 and not 32, 33, 34.

The star shows that 34 is the base size. You don't need to input every size for a numeric size table as the computer can work out that a size 36 is before a size 38 etc.

- Click on ***File/Save As*** and select your saving path C:\Lectra\Files\Sizetables.
- Then type in the name of the size table and click on “***Save as type***” arrow and change to Text Doc.
- Then click ***Save***.
- Go to Modaris and press F7 menu and then ***IMP.EVT***.
- Click on your page.
- Choose the size table you want from the list that appears and press ***Open***.

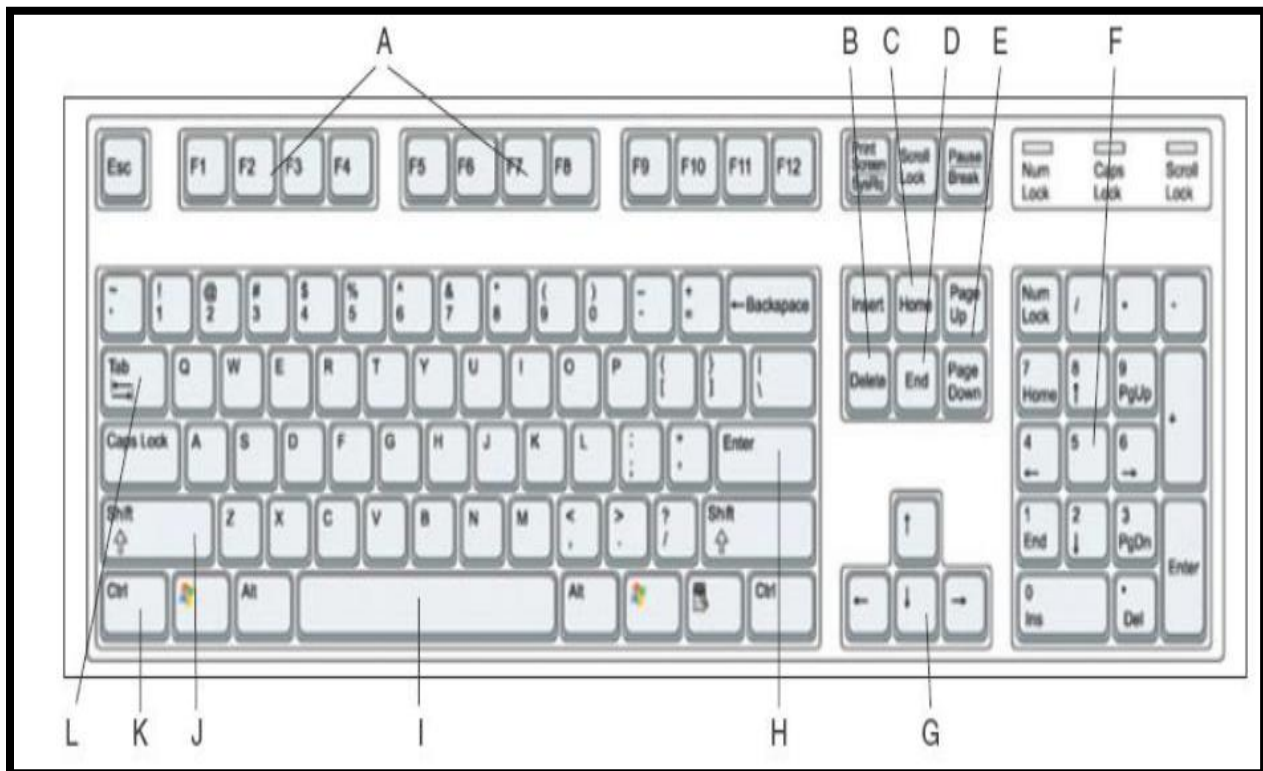
5.8. Naming Pieces

- You must visualize the title block first, by going to ***DISPLAY*** menu, and select ***TITLE BLOCK***.
- You may have to zoom onto the title block if you cannot see it well (press ***Enter*** and ***click and drag*** around area to zoom in).
- Then go to ***EDIT*** menu, and select ***EDIT***.
- Click next to ***Name:*** of the piece in the horizontal bar of the title block, e.g. 1234FR (only 9 characters available)
- Click next to ***ACD:*** (analytic code), and type it in, e.g. FR (front)
- Click next to ***Comment:*** and type in, e.g. Jacket Front x2
- Repeat with every piece.
- Go to ***FILE***, and ***SAVE*** the model.

N.B

- Do not type next to ***ROOT***
- Do not Use / - \
- If you require a spacing use an _ underscore (SHIFT and -)

5.9. F –MENUS (Application of Function Menus)



Specific keys

A: Function keys (F1, F2 etc.).	Shortcuts to function menus on the screen.
B: Delete .	Alternative method of deleting anything. Use with caution.
C: Home .	Brings a single selected sheet to full screen.
D: End .	Used with the mouse to pick up and move a sheet.
E: Page up or Page down .	Scroll between successive sheets.
F: Number keypad .	Use for entering specific number values.
G: Movement keys.	Use for moving between value fields when entering measurements.
H: Enter .	Use with mouse to 'click and drag' a rectangle for enlargement.
I: Space bar.	The choice bar, when more than one option is available with a function.
J: Shift .	Used to vary a function.
K: Control .	Used to vary a function.
L: Tab .	Used for inserting existing files into the current file. Tab can also be used to display a list of options.

5.9.1. TOOLS AND APPLICATION OF FUNCTION F1 POINTS

- **SLIDER**

A slider point is a reference point that slides along a line and has no real accuracy. It acts as a guide.

- Click on a reference point.
- Click on the line.
- By using the space bar you can change direction of the point along the line.
- No grading can be done on this type of point, the software will grade proportionally in all the sizes.
- No X and Y values can be used; it will run directly on the line.
- Use F3 – Insert point to change a slider to a characteristic point
- Use F3 – Reshape to move a slider

- **DEVELOPED**

This is a measuring point. You have a standard length for all sizes from the reference point.

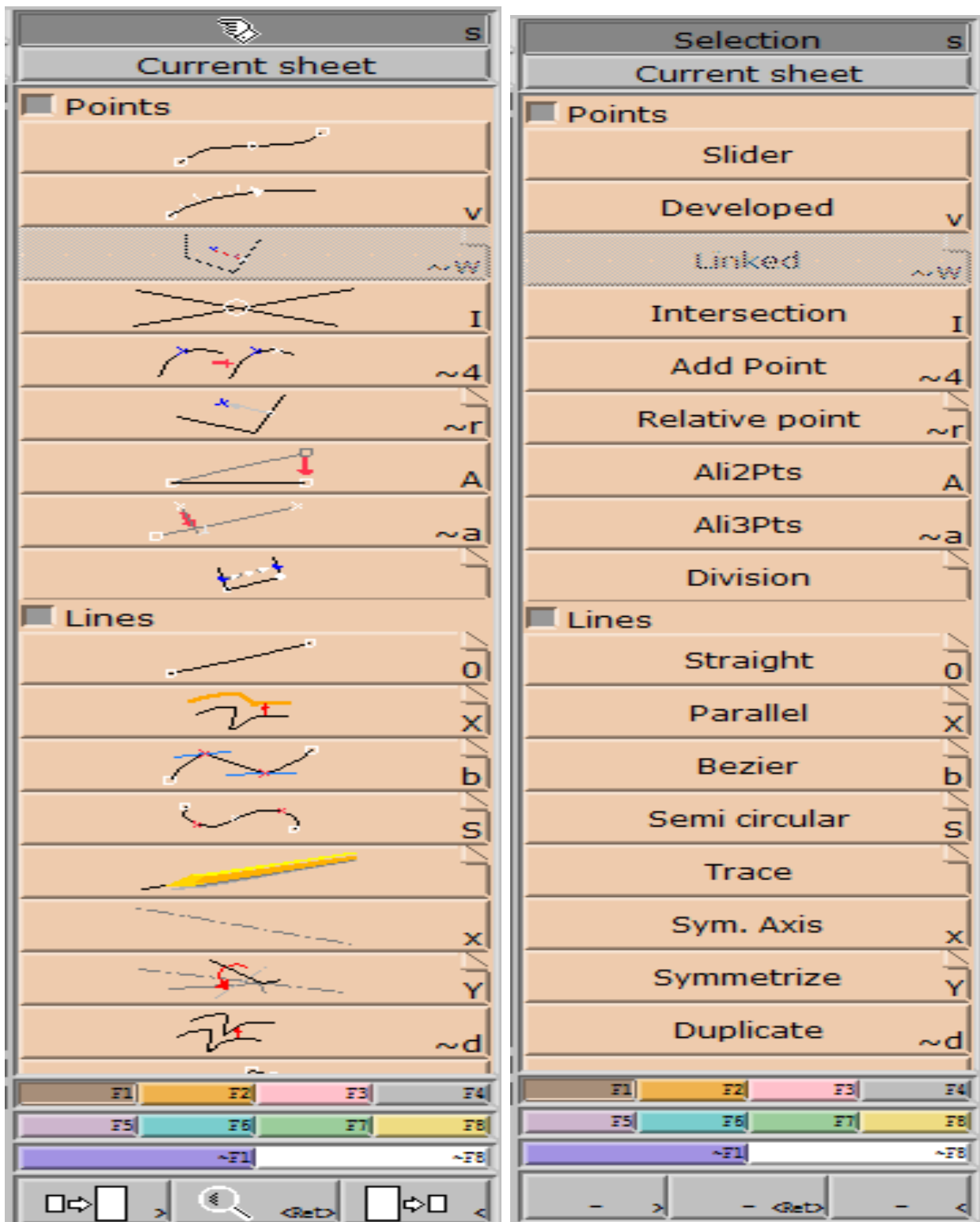
- Click on a reference point.
- Move the cursor along the line – you can use the *spacebar* to change direction.
- To be accurate you can input a value by using the down arrow key, you will notice that a window will pop up on the top left-hand side of your screen.
- This point will always be the same distance from the reference point in all sizes even if the reference point is moved.

- **INTERSECTION**

This will add a point to any intersection when two lines are crossing.

- Click on the intersection and you will see a point is added.
- When one line of the intersection is removed this point will become a slider.

- When the lines are moved, the intersection point moves along the lines.



- **ADD POINT (Characteristic point or Curved point)**

This will add a characteristic point or a curved point.

- Click on a reference point.
- Use the down arrow key to type in an exact amount in Length.
- Click on the line where you want the point, for it to be added.
- For a curve point (view curve points), press the SHIFT key before clicking on this line.

For an extremity point, first add a characteristic point and then change it in F3 - SECTION to an extremity point.

- **RELATIVE**

This is what we use for internal points. It does not matter whether it is inside or outside a shape.

- Click on a reference point.
- Click the point down in to position or use your down arrow key and input the exact measurements.

If you add a point here, for it to be plotted you need to go to F2, MARK, OR make sure that MARK TOOLS – align 2 points 35,36 or 37 are selected at the bottom of the screen before you add it.

- **ALI2PTS**

This is used to putting them at the same level in the X or Y direction.

- Click on a reference point.
- Click on the point you would like to move.

- **ALI3PTS**

This is used to put 3 points in a straight line.

- Click on 2 reference points.
- Click on the 3rd point. It will be aligned with the reference points.

- **DIVISION**

This function we use to divide the inside or outside of a pattern into even parts (points will not be attached to the contour)

- Click on the 2 reference points of the area you wish to divide.
- Type in the number of divisions you require and press enter.
- The area is divided up using relative points.

LINES

- **STRAIGHT** This allows you to draw a straight line.

- Click on your starting point and drag your line into position.
- Click again once you are at the end of your line.
- CTRL key will give you a straight line in X, Y or 45°.

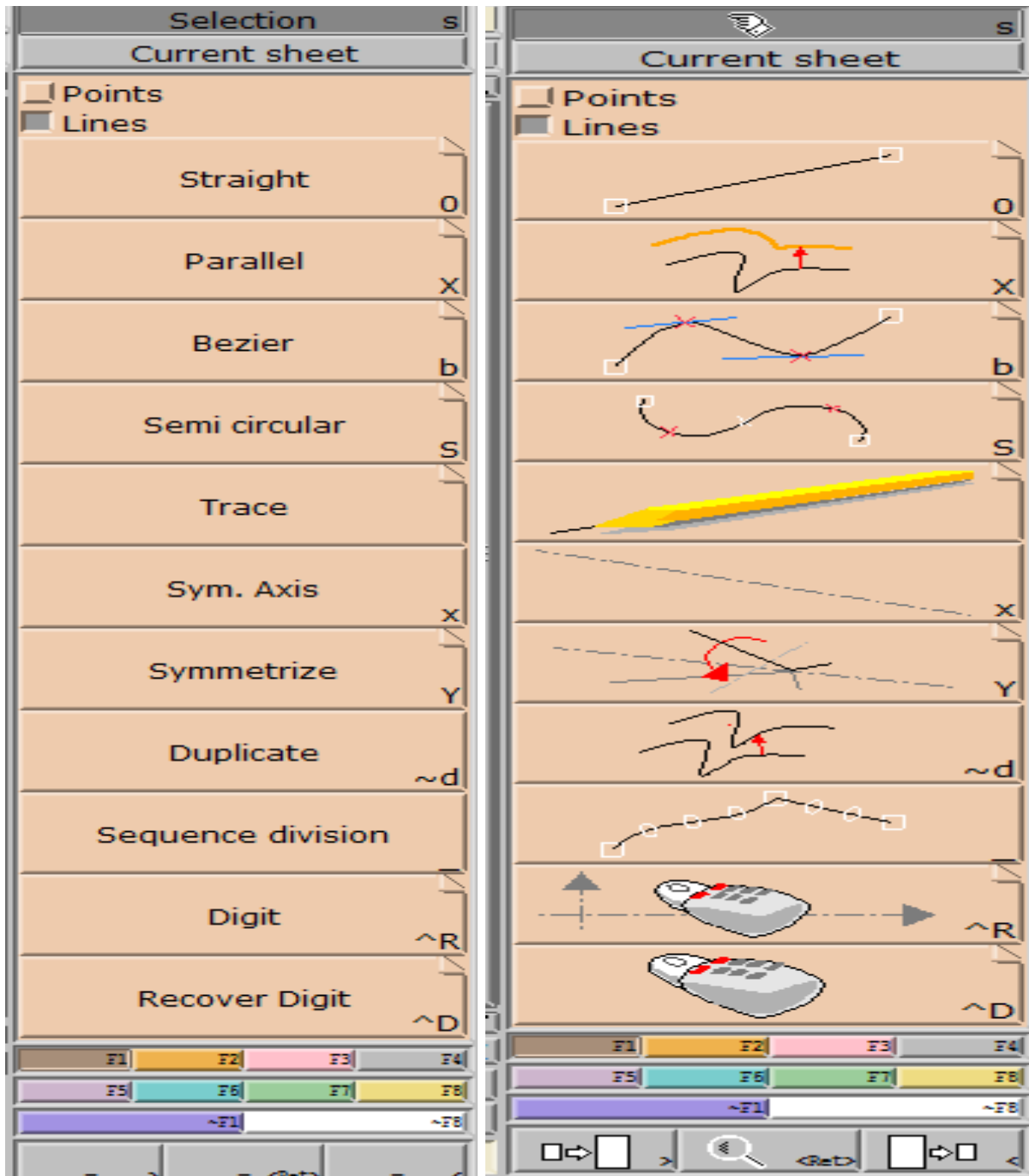
- **PARALLEL**

This allows you to construct a line parallel to an existing line i.e. for back neck facings.

- Click the function and then click on the existing line from which you want to create a parallel line.
- Type in a distance from the first line to the new position and press enter.
- Depending on the shape of the curve, your new parallel line will not necessarily touch both sides of your shape.

If there is a gap, go to F3 - Len.Str.

Line and click on each side of the parallel line, extending it to outside the shape.



- **BEZIER**

This allows you to draw curve lines and straight lines in one function.

- Click on the position you would like to start.
- Click again and you create a straight line.
- Hold down your SHIFT key and click to create a curve point.

- To end your line click on Right button (Right click).
- Use F3, RESHAPE to modify the position of the points if required.
- **SEMI-CIRCULAR**
 - Works in the same way as Bezier, holding SHIFT to curve the semi-circle. The number of curve-points should be uneven.
- **DUPLICATE**

Allow you to copy a line or series of lines.

If you require a series of lines to duplicate, first click button 3 (right click) on the first line, hold Shift and click button 3 (right click) on the other lines.

If you want the one line only, merely click on that line. If you want the entire piece, click inside the piece.

- Use x or y (lowercase only) to flip the line into the position you require.
- q and w allow you to rotate the line by 1°
- a and s to rotate the line by 10°.
- Click it into place using shift and click button 1 (left click) to place the line exactly over another point.

- **SEQUENCE DIVISION**

This function we use to *divide the contour of a pattern* into even parts (points will be attached to the contour)

- Click on 2 points
- Type in how many divisions you would like. This will divide the line with slider points. Therefore, if the line is moved, the sliders will move with the line, keeping the proportions.

It creates slider points on the outer line. They can be changed to characteristic points using F3 and Insert Point.

- **DIGIT** Used to digitize patterns. If activated accidentally click button 3 (right click)

5.10. DIGITISING

5.10.1. Preparation before digitizing:

- To open a new Model, go to **File/New**. Give the model a name. You will now see a Grey Sheet on your screen.
- Go to **Sheet** and click on **New Sheet**. One pattern piece will fit onto one sheet, if you have six pattern pieces you will need six sheets.
- Go to **Display**, and click on **Title Block**.
- Press F7 on your keyboard and click on **IMP.EVT** to select your size range and then click on the blank sheet. A window shows the size ranges that would have been created beforehand. Click on the one you would like and **Open**. You will see the sizes displayed in the title block.
- These sizes will be carried onto all the digitized pieces in the model.
- Ensure that the cursor (mouse) is inside the new sheet.
- Stick the pattern pieces on the digitizing table, use masking tape, as this is less sticky than cello tape and would therefore leave less glue on your board.

5.10.2. DIGITIZING PROCEDURE

- F1 menu
- Click on **DIGIT**
- Click “A” on the left end of the GRAINLINE
- Click “A” on the right end of the GRAINLINE
- Start with “2” on the first point and corners (extremity points)

“I” on in-between points (characteristic points) “C” on curves (bezier curve) “3” on internal points (relative points) “6” on notches “D” deletes a point To end: “F” exits current shape or line 2nd “F” exits digitizing function

Internal Lines “7” on the first point
 “1” or “2” or “C” on the line
 “2” on the end
 “7” on the end
 “F” on the end
 “F” again, to exit digitizing

Digitize one shape after another

- Digitize shape as normal
- “F” once to end the shape or line
- “O” to get a new sheet
- Click “A” on the left and right grain line
- Digitize the points on the shape as normal.

RECOVER DIGIT

When activated accidentally press F on the keyboard

5.11. TOOLS AND APPLICATION OF FUNCTION-F2

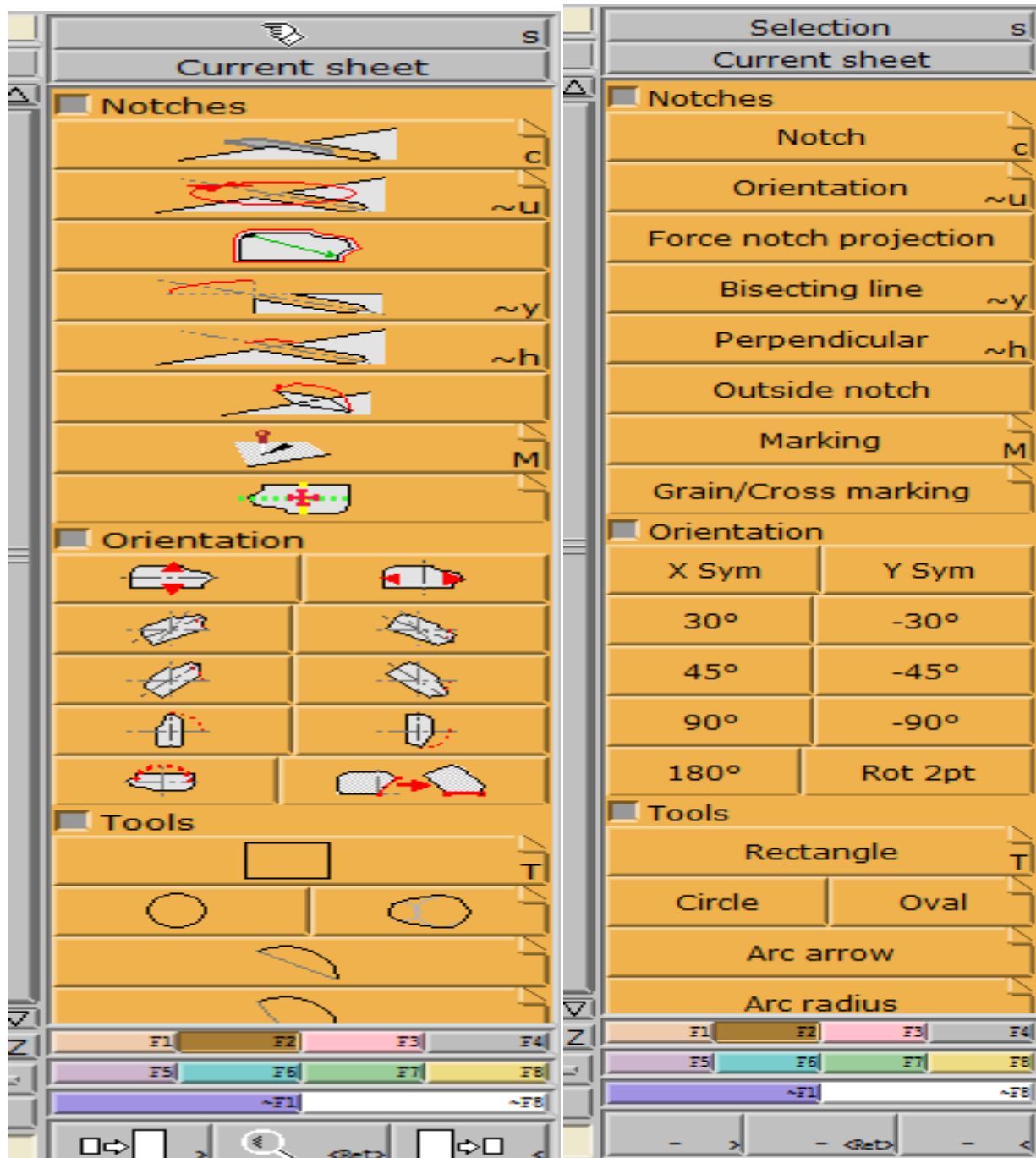
• NOTCHES

- Notches: types 21, 22, 23, 24 your default notch is a type 21. (This is your notch used in digit [button 6].)
- It is not necessary to have a point to create a notch, the point will create itself.
- Click on the notch function.
- Click on the line or point where you want the notch.
- The notch is put perpendicular to the line.
- To delete a notch, go to F3, DELETE, and click on the end of the notch.

• ORIENTATION

Orientation is giving the notch a new direction; it is possible to give special orientation for each size.

- Click on the notch.
- Drag your mouse in the direction you need the notch to face and click.



- **BISECTING LINE**

This orients the notch so that it bisects the line on which it lies.

- **PERPENDICULAR**

This makes the notch perpendicular to the line on which it lies.

- **OUTSIDE NOTCH** This allows you to have a notch facing outwards.

- Click on the function.
- Select your notch type.
- Check the result with CUT PIECE at the bottom of the screen.

- **MARKING**

This is to convert a relative point into a **drill hole** that will be **plotted or cut**. So you have control over a cutter or plotter to drill this type of point or not.

- Go to the top horizontal menu and click on TOOLS.
- Click on Mark Tools, you can now select which kind of marking you would like on your marker. Types of tools 35, 36 or 37.
- Click on the function MARKING.
- Click on the relative point.
- **TOOLS**
- **RECTANGLE**

This allows for the creation of a rectangle. Click on the sheet and input your width and height values. Press enter and then click on the sheet. Press home.

- **CIRCLE**

- Click on circle.
- Click on your sheet
- Drag the mouse to the required position and click button 3 (right click) to end.
- Alternatively, use the arrow down key, and type in the value of the DIAMETER of the circle and click button 3 (right click) to end.

- **OVAL** The oval is created by 2 circles. The size of each circle and the distance apart of the 2 circles, will determine the oval shape.

- Give the radius of the first circle e.g. 50mm
- Give the radius of the second circle e.g. 85mm
- Input the height if the oval is needed

- You may move the oval shape manually if required by clicking on the outline.
 - **ARC ARROW** This function will bend a line by a certain measurement.
The curve formed is a semi-circular curve.
- Click on the function.
- Click on the first point and input a value.
- Click on the second point.
 - **ARC RADIUS**

This is a **curve on a line** which is built on a certain radius of a circle.

- Input the radius of the circle
- Click the first point
- Click the second point

5.12. TOOLS AND APPLICATION OF FUNCTION-F3

• **DELETION**

This deletes a point or line. You can use button three on the mouse (right click) to multi-select an area to delete.

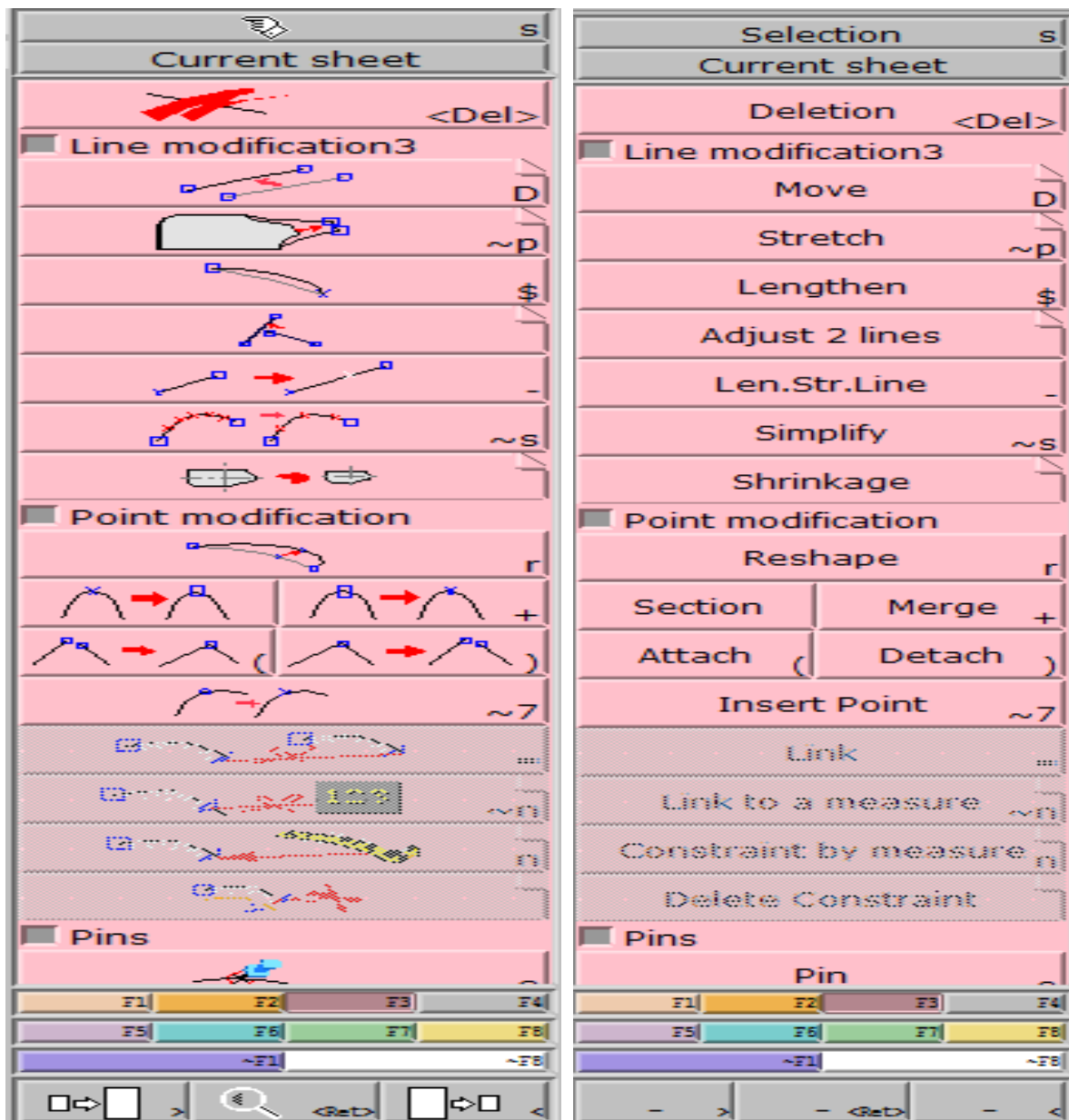
Hold shift when you want to delete an entire line and all the points on that line will be deleted.

• **MOVE**

You can move lines or the whole shape with this function. Use PINS to stabilize two outside points of the line you want to move. You will then notice that all the points on the line will move together.

- Click on the function MOVE.
- Click on the point you would like to modify.
- Click it down in the new position OR press your ARROW DOWN ↓ key and type in your new values.

DX (length moved in X direction), DY (length moved in Y direction) and DL (total length moved in a straight line), can be entered on the keyboard.



• LENGTHEN

This is used to increase or decrease the length of a **curved line**.

- Click on the function.
- Click on the line to be lengthened or shortened.
- Use the arrow down key to input the value. Input the new line length, or dl.

(Distance the line must move in or out)

ADJUST 2LINES This is used to **attach two different lines**.

- Click on the function.
- Click on the first line that is attached.
- Click on the second line to be attached.

- **LEN STR LINE**

You can lengthen a straight line using this function. The grading of the line prolongs with this extension. Press the arrow down key to enter the value of the extension in mm.

- **SIMPLIFY:** This function will remove all unnecessary curve points from a line.
- Display the curve points (press the CURVEPOINT function at the bottom of the screen to visualize curve points)
- Activate **PRINT** at the bottom of the screen (to see points removed)
- Click on Simplify
- Click on the line and input the value of tolerance in mm (how much the line can change shape).
 - **SHRINKAGE:** You can shrink or enlarge a piece by an x value, y value, or both. The shrinkage may be done in:
 - % scale, where 100 is full scale. (e.g. 80 shrinks by 20%)
 - fraction scale (e.g. $1 - 1/4 = 3/4$ of the original size)
 - Real scale (1000 is the full scale, 800 would be shrunk by 20%)

All size shrinkage:

- All size shrinkage not selected will calculate the shrinkage on all sizes from the base size e.g. = base size + 10%, base size + 20% etc.

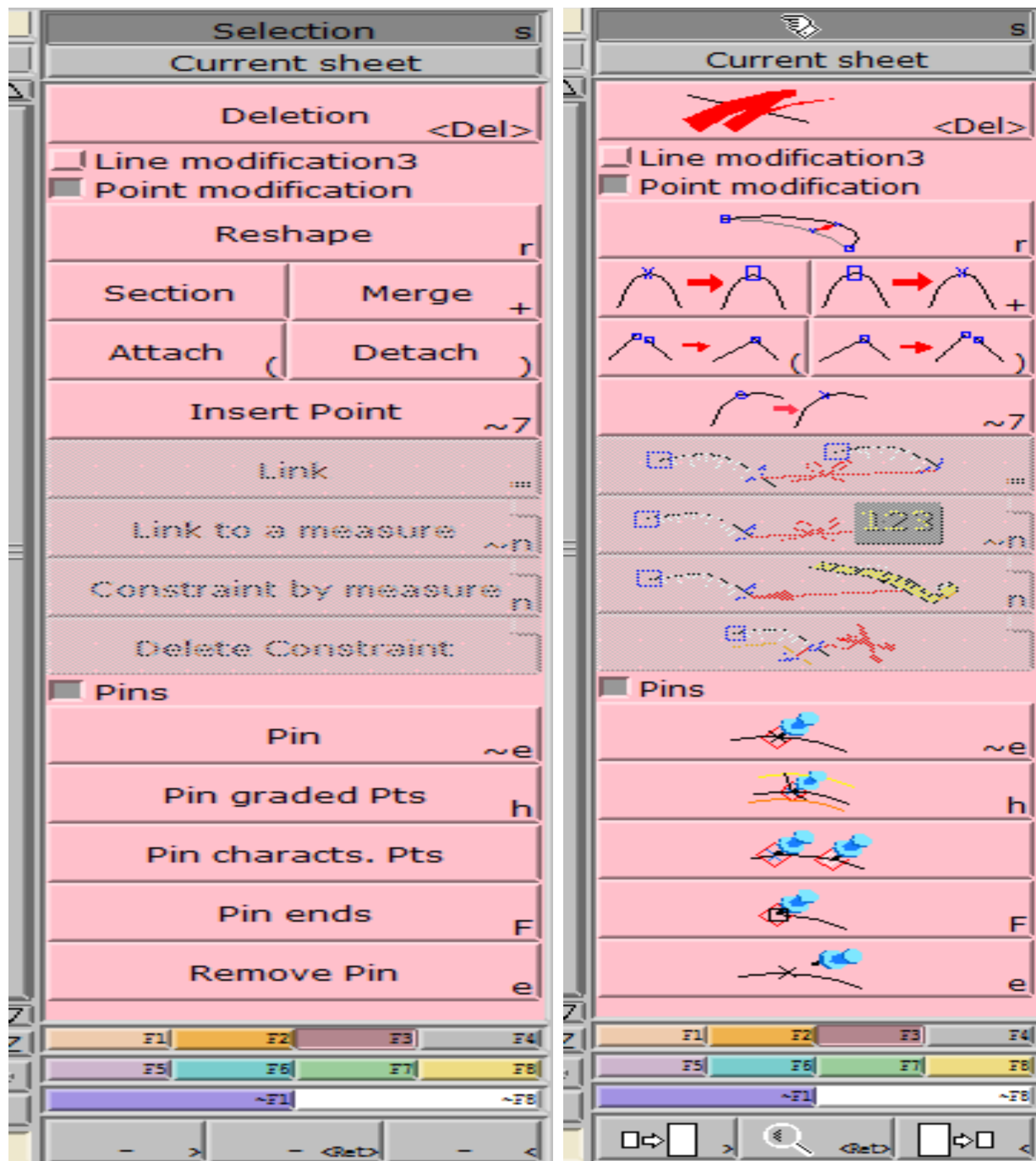
- All size shrinkage selected will calculate the shrinkage on the next size up.
e.g. = base size + 10%, next size + 10% etc.
- **POINT MODIFICATION**

RESHAPE: This function is to modify the position of a point or a curve point, (press the CURVEPOINT function at the bottom of the screen to visualize curve points.)

- Click on RESHAPE.
- Click on the point you would like to modify.
- Click it down in the new position OR press your ARROW DOWN ↓ key and type in your new values.

DX (length moved in X direction), DY (length moved in Y direction) and DL (total length moved in a straight line), can be entered on the keyboard. **SECTION** Converts characteristic point to an extremity point (e.g. to break one complete line into smaller ones)

- Click on the function
- Click on the point to be made an extremity point
- **MERGE:** Converts an extremity point to a characteristic point
- Click on the function
- Click on the point



- **ATTACH**

This allows you to attach one point onto another point. The first point attached will follow the grading of the second point to which it has been attached.

- Click the function
- Click the point to be moved and attached

- **DETACH**

When you create a shape with, e.g. bezier lines, the points are attached by default. You may need to detach them, to perform certain operations. You can select which line to detach and move away by using the space bar.

- Click on the function
- Click on point to detach
- Click on point again
- The two points are now separate.

- **INSERT POINT**

Converts a slider, intersection point or developed point to a characteristic point

- Click on function
- Click on point to convert

- **PIN**

This is to pin points, which should not move when doing a modification on the pattern. This will work on extremity points, characteristic points and curve points.

- Click on the PIN.
- Click on the points you want pinned.
- To remove the pin from a point, click on the point

- **PIN GRADED POINTS:** Pins all the graded points

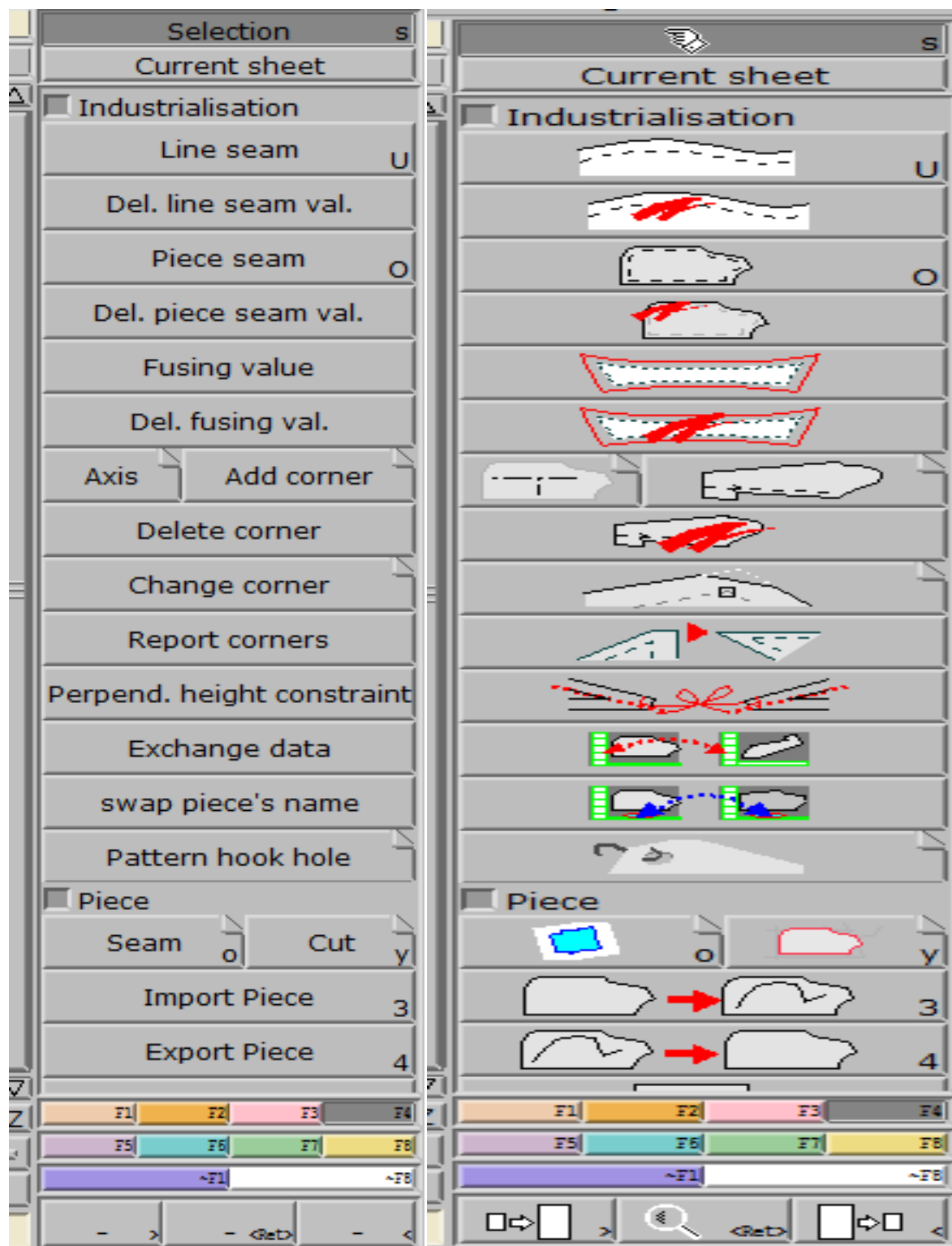
- **PIN CHARACTS PTS:** Pins all characteristic points (corners, notches, characteristics etc).

- **PIN ENDS:** Pins only the main corner points – extremity points.

- **REMOVE PIN**

All pins will be removed at once

5.13. TOOLS AND APPLICATION OF FUNCTION-F4 INDUSTRIALISATION



- **LINE SEAM**

This function is used to put seam allowance on a line.

You can add the seam to one specific line or by multi selection using the shift key to select certain lines.

- Click LINE SEAM.
- Click on the line.
- Press your ARROW DOWN ↓ key and type in seam values for the beginning and end of the line selected.

NOTE: See the information at the top of the screen to visualize the seam value.

Use CUT PIECE at the bottom of the screen to visualize (red = cutting line and Yellow = seam (sew) line)

- **DEL. LINE SEAM VAL.**

Used to delete the line seam value given to a line

Can use multi-selection to remove multiple lines' seam values

- Click on the function
- Click on the line where you want the line seam value deleted

Use CUT PIECE at the bottom of the screen to visualize (red = cutting line and Yellow = seam (sew) line)

- **PIECE SEAM**

Use to add a seam value to a pattern. You can use button three on the mouse to multi-select lines on which the seam should be added

- Click PIECE SEAM.
- Click on the line.
- Press your ARROW DOWN ↓ key and type in seam values for the beginning and end of the line selected.

NOTE: See the information at the top of the screen to visualize the seam value.
Use CUT PIECE at the bottom of the screen to visualize (red = cutting line and Yellow = seam (sew) line)

- **DEL. PIECE SEAM VAL.** Used to delete the piece seam value given to a line. NOTE: If a line seam value has also been added, this is not deleted.
Can use multi-selection to remove multiple lines' seam values

- Click on the function
- Click on the line where you want the piece seam value deleted

Use CUT PIECE at the bottom of the screen to visualize (red = cutting line and Yellow = seam (sew) line) **AXIS** Click on tools and select the type of axis

- Grain line: This is used to define an axis/grain line on a piece. You may draw many different grain lines on a flat pattern, and before extracting, you should select the one you want.
- When you change the orientation of the axis by using the axis function the orientation of the piece in the variant changes but not the one on the desk.
- Cross line: This is perpendicular to the grain line. It may be useful as a guiding line for pattern creation.
- Commentary axis: You may orient pattern information as required (Name and size of piece etc.)
- Grading axis: You can create a line in the pattern in order to orient the pattern in a certain direction, without affecting the grading.
- Special axis: A special text of at least 15 characters can be input on an axis. First create an axis, then go to EDIT, EDIT sub menu, and enter the text.
- Ref Axis: This function enables you to associate a long text to a piece, which can be plotted with this text if required.
- Draw the axis

- Go to EDIT, EDIT sub menu, and enter the name you will give to the text file. e.g. SPECS.TXT
- Make sure the LIBRARY access paths in the FILE menu are set pointing to the TEXTELIB library.
- Go to OPEN PARTNER, TEXTELIB library, and create a file e.g. SPECS.TXT
- Drag this file onto the TEXT EDITOR, and enter the contents of the SPEC file as you require. SAVE, QUIT.

Make sure the parameters on the plotter are set to print a reference text file. When this piece is plotted, the file will appear at the position of the axis.

- Other axis: This line could be for any use, perhaps a construction line, or e.g. to mark pleat positions
- **ADD CORNER** Used when you would like to add a corner to a straight line, separated by a characteristic point.
 - Click on function
 - Select STEP in the corner tools menu
 - Click on piece seam function
 - Click on the 2 parts and input their respective values
 - A step seam is formed
- **CHANGE CORNER**
 - Select the corner type required in the TOOLS menu
 - Click on the corner of the shape to add the corner. The shape needs to have the seam line showing in the inside of the shape.
 - Next symmetry

Define the corner using the space bar and then leave the mouse to see the new angle of seam. You have various options go to Change corner and select a type of corner.

- **EXCHANGE DATA**

Swaps title block information between two sheets (name, comment, and etc.)

- Click on one sheet
- Click on the other sheet
- **SWAP PIECE'S NAME** Swaps only the piece name between two sheets
- Click on one sheet
- Click on the other sheet

- **PIECE SEAM**

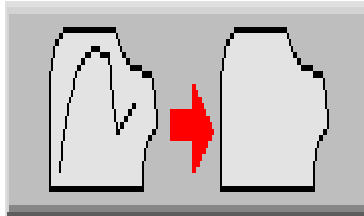
This function allows you to extract a shape from a flat pattern or existing shape, e.g. a side front panel from a front piece, in the result, the seam line will be visible with lines and points.

- Click in the area you want to extract (the area must be closed or the function will not work).
- If you want more than one section, click button 1 (left click) in each section and then end with button 3 (right click).
- **Press page down** to see the new piece. Senior
- **CUT** This function allows you to extract a shape from a flat pattern or existing shape, and in the result, only the cut line will be visible with lines and points.
- Click inside the areas of the shape required, ending with button 3. The shape is automatically extracted.
- **Press page down** to see the new piece

- **EXPORT PIECE**

- If you do not want all the marks inside a shape, it is possible to export them back to the flat pattern.

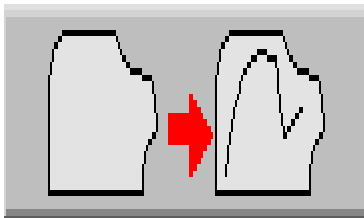
- They are all carried forward by default
 - Select the points
 - Click on the function
 - Click on the points

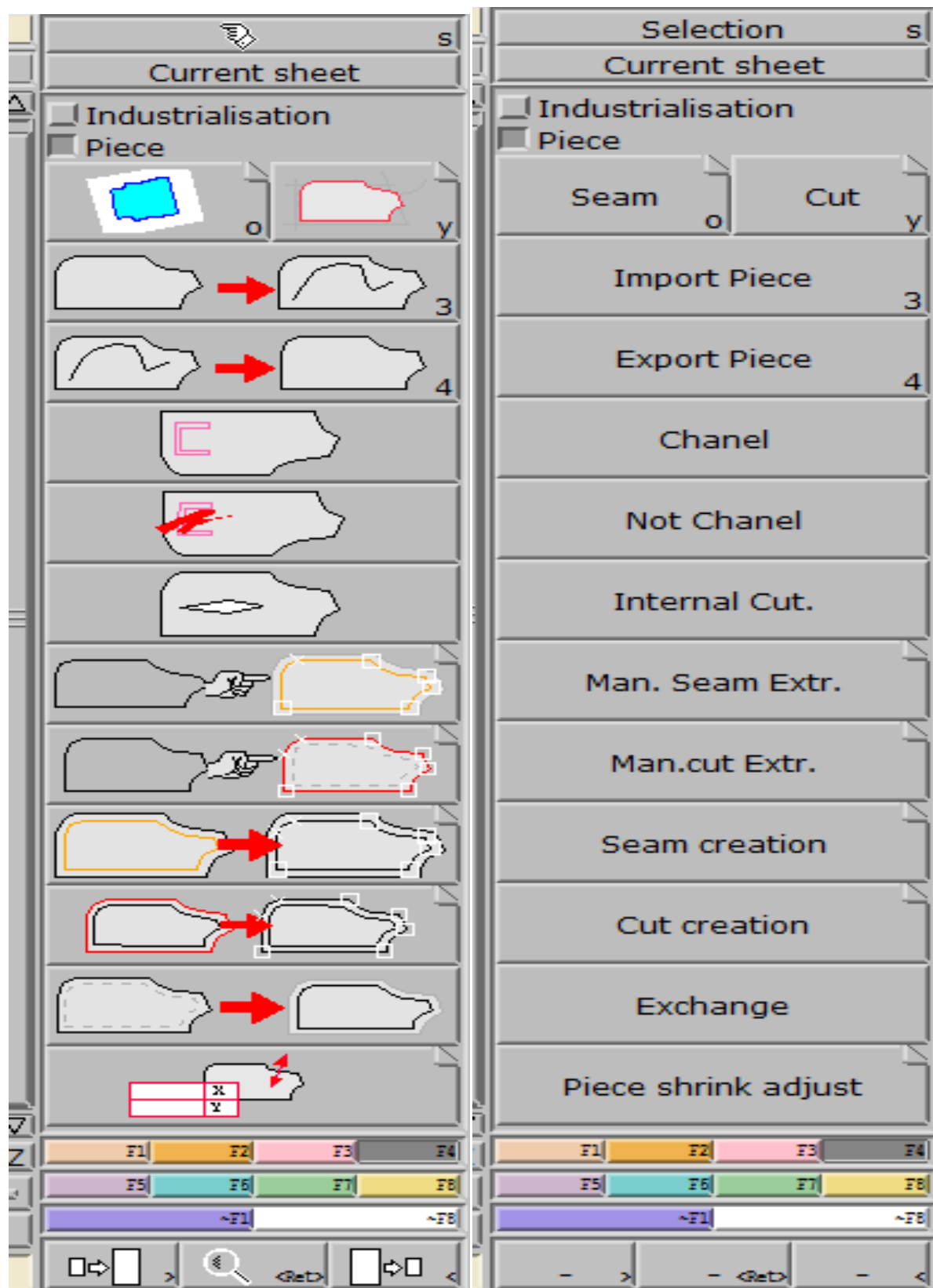


- **IMPORT PIECE**

If you want some marks inside a shape that are on the flat pattern, it is possible to import them back onto the shape from the flat pattern

- Click FLATPATTERN function at the bottom of the screen. (It is the superimposed under the shape)
- Select the points
- Click on the function
- Click on the points
- Click FLATPATTERN function at the bottom of the screen, to make flat pattern disappear.





- **INTERNAL CUT**

If a line is created in the inside of a shape, e.g. cuff opening, it will not automatically be plotted, depending on how the line was created. (If Bezier was used, it will not be plotted).

Click on the function CUT PIECE at the bottom of the screen. If the line is white, it will not be plotted or cut. If its beige, it will be plotted and cut.

To enable plotting and cutting, do the following:

- Click the function
- Click on the beginning of the cut line
- Click on the end of the cut line with button 3
- Check again with the CUT PIECE function

- **SEAM CREATION**

- This function adds lines and points on the seam line.
- On digitized shape the points and lines are on the cut line.
- Modaris assumes the computer already has seam allowance added.
- To visualize it:
 - Go to LINE SEAM - 10mm (the seam does not show on the shape)
 - SEAM CREATION
 - Click on one of the selected lines, and the seam line is visualized

- **CUT CREATION**

This function adds lines and points on the cut line. On a shape created on the screen, Modaris assumes the computer has not had seam allowance added.

In this case, when adding the seam allowance with LINE SEAM, the points and lines remain on the seam line.

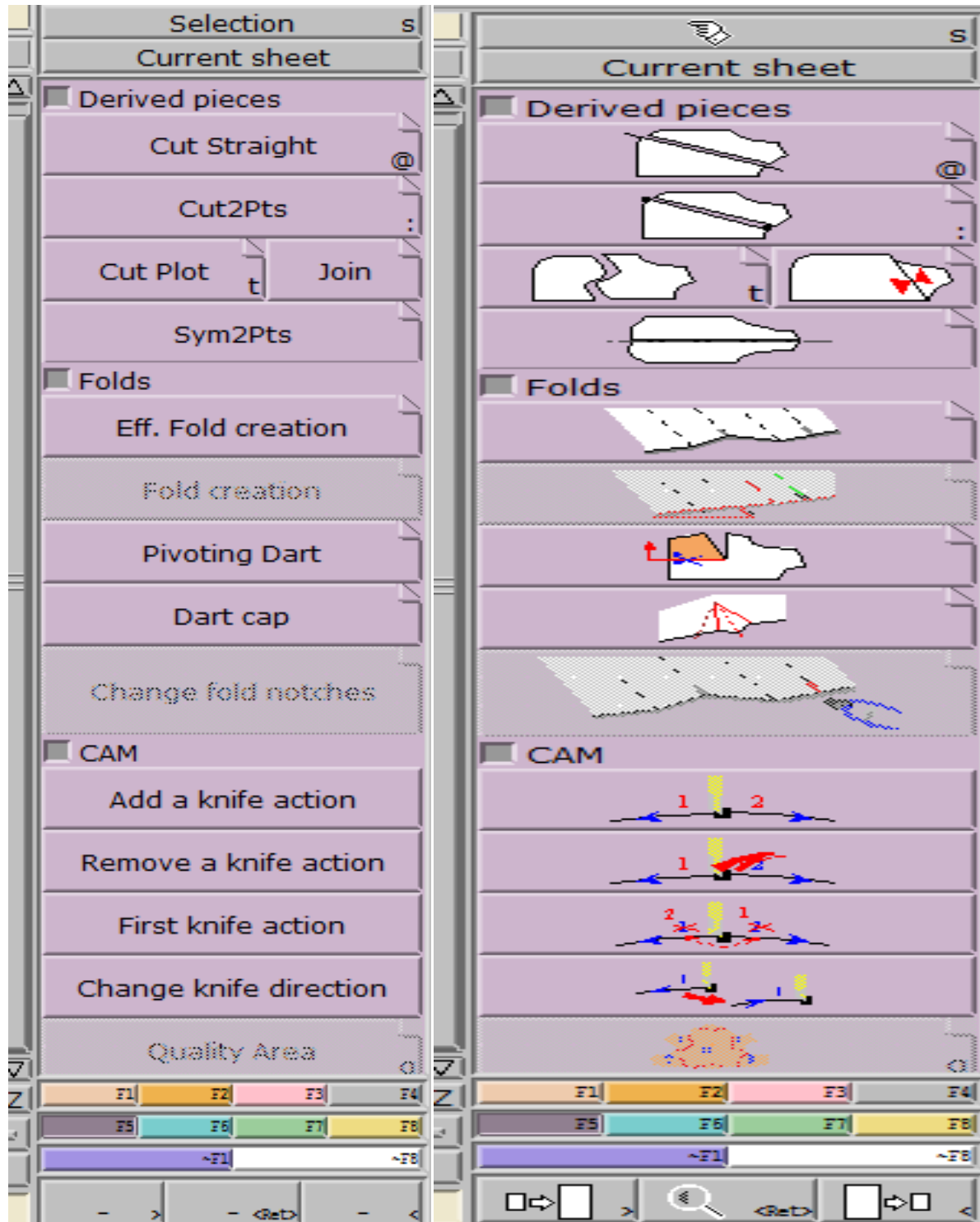
If you need them to be on the cut line, then go to CUT CREATION

- Go to LINE SEAM - 10mm (the seam shows on the shape)
- CUT CREATION
- Click on one of the selected lines, and the cut line is visualized with lines and points
- **EXCHANGE**

When adding a seam allowance with LINE SEAM, if the software adds a seam on the inside of the shape instead of the outside, or vice versa, then uses this function to reverse the position of the seam line.

- Select the lines to exchange
- Click the function
- Click on one of the selected lines

5.14. TOOLS AND APPLICATION OF FUNCTION-F5 DERIVED PIECES



- **CUT STRAIGHT**

Cut a straight line through a shape.

By default, there is standard grading on the line.

- Click on a reference point
- Press arrow down and fill in the value of movement, and angle. q / w moves 1° and a / s moves 10°
- Press PAGE DOWN to see the two cut pieces.

- **CUT2PTS**

This only works on a shape.

- Click one point, and then the other point that you want to cut through.
- Press PAGE DOWN to see the two cut pieces.

- **CUT PLOT**

- Use only **on a shape**.
- Draw internal lines on the shape.
- Click on the common line to cut the shape into pieces

- **JOIN**

This will join two shapes together. This only works **on shapes**.

- Click two points on the first shape.
- Click two points on the second shape in the corresponding position.

NOTE: *Press x or y to flip* the second shape before clicking on the two points of the second shape.

- **SYM2PTS**

This only works on a shape.

- Click on a point on the folded edge.
- Click on the other point on the folded edge.

- Press PAGE DOWN to see the new opened piece.

- NOTE:

- *MIRROR PIECE*: Based on the position of the associated parameter Mirror piece, the two pieces may be dependent on the originating piece.
 - If you delete the original half image, it does affect your new shape.
 - If you reshape your original image, the new derived piece is also altered.
 - Also, any modifications of the symmetrical source is reflected in the symmetry
- *CENTER AXIS*: The cross and grain line will be placed in the pattern centre.

- **FOLDS**

- **EFF. FOLD CREATION**

Create darts and pleats. You may create 4 points at the correct positions if required with the correct grading, otherwise grading is proportional.

- Click two points to form a line marking the pleat center on the top and bottom of the shape.
- Click two more points to form a line marking the pleat depth on the top and bottom of the shape.
- Page down to see your new shape.
- Use CNTRL to make straight lines

- **FOLD CREATION**

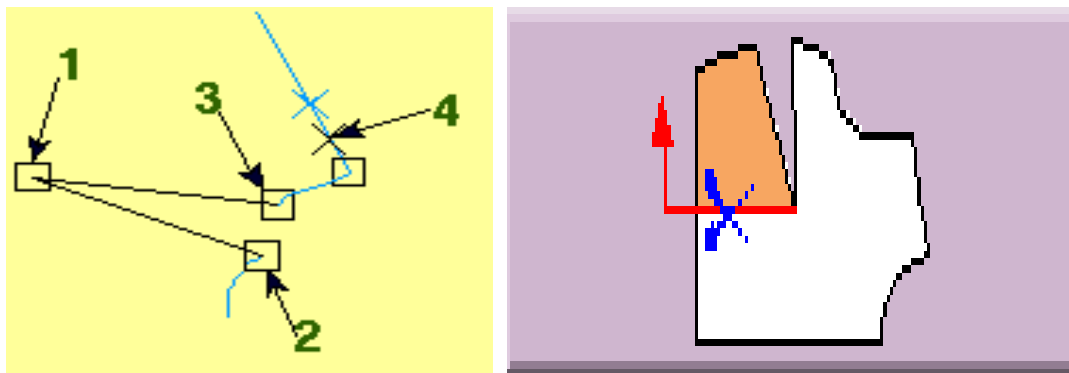
The method here is the same as the Eff. Fold Creation function. However, the result is not visualized as a new shape.

- Go to VISUALISE, EXTRACTION to see the full shape, which will be plotted.
- This function can be used well if you have the EXPERT module.

- **PIVOTING DART**

Use this function to **move a dart to a different position**.

- Create a point marking the new dart position, with the correct grading
- Click 4 points as follows:
- Define the line of the dart that will stay stable:
- Click on the apex of the dart, and then on the one side.
- Define the second line of the dart to be joined to the stable line above: Click on the apex of the dart, and the other side of the dart that will move
- Click on the point marking your new dart position
- Click any other point on the shape that is at a *greater angle than the dart angle*.



• DART CAP

This function adds a cap onto a cut out dart. Notches are created as defined in FOLD NOTCHES

- Click on the three points of the dart
- first at the apex
- second on the one side and lastly on the other side

• CHANGE FOLD NOTCHES

- Here you can define the notches and relative points you will need after using the functions in this FOLDS menu.
- To alter this, use the CHANGE FOLD NOTCHES menu

5.15.1. GRADING



- **ACCELERATOR KEYS**

- **F9** = visualize the grading.
- **F10** = hide the grading.
- **F11** = visualize the 3 main sizes = small, basic and large.
- **F12** = visualize all sizes.

- **SIZES**

- Basic size represented by white.
- Small size represented by yellow.
- Large size represented by orange.
- Break size represented by red – only if required.

5.15.1 GRADING PROCESS

- Click on DISPLAY and click on TITLE BLOCKS.
- You will now see a vertical box displaying your sizes.
- Click on F11 and F9 and you will see the 3 standard sizes-small, basic and large size.
- Click on F12 and F9 again to visualize the whole nest.
- For the special selection of sizes use the SHIFT key and select sizes required, then click on the F9 function and only the sizes chosen will be displayed.

- **CONTROL**

This function is to grade the shape, to check the grading or to modify the grading.

- Click on CONTROL.
- Click on the point.
- A window will pop up. Work with the column with ddx or ddy.

For even grading, click on the small size and drag your mouse down to the large size, highlighting all the sizes in the chart. Input the X and Y grading and press ENTER. For irregular grading, input the different values for the different sizes.

NOTE: For grading a developed point you can only use ddl. Curve points can also have a specific grade.

- **NEST:** Visualize the grading = F9
- **PACKING:** This function is used to group the nest on a different point.
 - It is used for TEMPORARILY grouping the sizes.
 - To remove grouping, click inside the sheet outside the pattern.
- **EFF. PACKING:** This function is the same as Packing, but is permanent, and cannot be undone
- **ORIENT 2 PTS:** This will the shape and all of its grading to be stacked on the X axis.
 - Click on the two points you require to be on the X axis.

5.15.2 GRADING MODIFICATION

- **FREE GRADING**

By default the slider, developed and the curve points pre-graded by the system with proportional grading. A point which is graded by the computer is WHITE in color. Once we input our own grade, the point becomes BLUE. The free grading function brings back to us the original default grading done by the system.

When we do free grading on extremity we come back to the zero grading as the extremity points have to be graded manually and there is no grading by default.

- **LINEARISE**

The line arise function assists in creating an even grade if the small size and large size have been changed

- Highlight the stable points in the size bar., or select the points with button 3.
- Click on the function and then on the point. The sizes you have selected do not move

- **REPORT X:** Copies the X grade only
- **REPORT Y:** Copies the Y grade only
- **EQUATE:** Copies the X and Y grade
- **REPORT X / REPORT Y / EQUATE:** Here you can copy the grading from a point to another or from one point to several other points on the same shape or onto a different shape.
 - Click on the relevant function.
 - Click on the point you would like to copy.
 - Click on the point where you want the new grade.
 - Can use multi selection before using the function – SHIFT and Right click
- **CANCEL GRADING**

This function is used to cancel or delete the grading on a specific point.

- Click on the function.
- Click on the point you would like the grading to be cancelled from.
- To do a multi-selection use your button 3 and select your points by clicking on them before you enter the function.

- **GRAPRO**

This function is used to get a proportional grading in between two points.

- Click on the function.
- Click on the first point and then on the last point, keep your finger on the mouse, and use your spacebar to determine in which direction you would like to proportional's the grading.

- **PRO2PTS**

This function is similar to GRAPRO, but does not work on only the outline of the shape.

It can be used to proportionally grade e.g. internal points as well.

- Click on the function
- Click on the two reference points
- Click on the un-graded point - it grades proportionally to the other two points

- **GRAROT**

This function is useful when grading "made to measure" garments. You can rotate a whole area of the shape by grading one point. e.g. rounded shoulder.

- Grade a point - the value to pivot the shape e.g. on the center back line, -5mm
- Click this new graded point, then another point which must remain stable e.g. underarm point.
- The whole top of the garment pivots round 5mm per size.

- **ORIENTED GRADING**

This is used to grade in a particular direction off an angled line like a shoulder slope. This grading does not work in the x and y axis but at an angle.

- Click on the function
- Two arrows can appear depending on where you click. Give the grading direction by using the spacebar. If you want to change their direction use ROTATION option in the pink window.
- The pink window is where you will input the values or grading increments between each size e.g.
- 36:38....5mm 38:40....5mm 40:42....10mm
- **XSVM:** Modify the grading direction of a rule in relation to the X axis of the rule.
 - Click on function
 - Click on grade point where grading direction has to change

- **YSYM:** Modify the grading direction of a rule in relation to the Y axis of the rule.
 - Click on function
 - Click on grade point where grading direction has to change
 - **REPSQ**

This is to copy grading from one pattern piece to another. It is important to have the same number of points on both patterns (although they do not have to be the same type of points - slider, characteristic). This is also important for curve points.

- Click on the function
- Click two points on the sheet you would like to copy from
- Tap the space bar to get the correct section
- Click two points onto sheet you would like to copy it

5.16 TOOLS AND APPLICATION OF FUNCTION-F7 EVOLUTION SYSTEM

- **ADD C.S.**

If you have certain sizes in a model, and you need to import an image with another size range, it is possible with this function to tell the system which sizes on the new shape match up with which sizes on the existing shape.

Go to MODEL SIZE to check the sizes correspond

- Click the function
- Go to SIZES, CORRESPONDENCE to get two sizes bars next to each other
- Link similar sizes together. You can link one new size to more than one old size
- Go to MODEL SIZE to check
- **DEL C.S.**

Undo links if you change them

- **ADD SIZE TO PROD**

This is useful for adding a smaller or bigger size to your size table. Click the function and then click on the size table and type in the name of the sizes you require in the new box, which opens.

- If the size is not accepted, type the size above or below it with either a + or a – following it i.e. to
- Add a SS to a size table which is S, M, L, XL, **type S-1 and to add a 2XL, type XL+1.**
- Press Enter and then go to EDIT/EDIT and give the size a new name (SS or 2XL).
- Go to REP.ETV (F7) and then copy this new table to all other sheets in the model.
- Check your grading of the new size.
- Use SIZE/CORRESPONDENCE to check for any sizing errors.

- **DEL SIZE TO PROD**

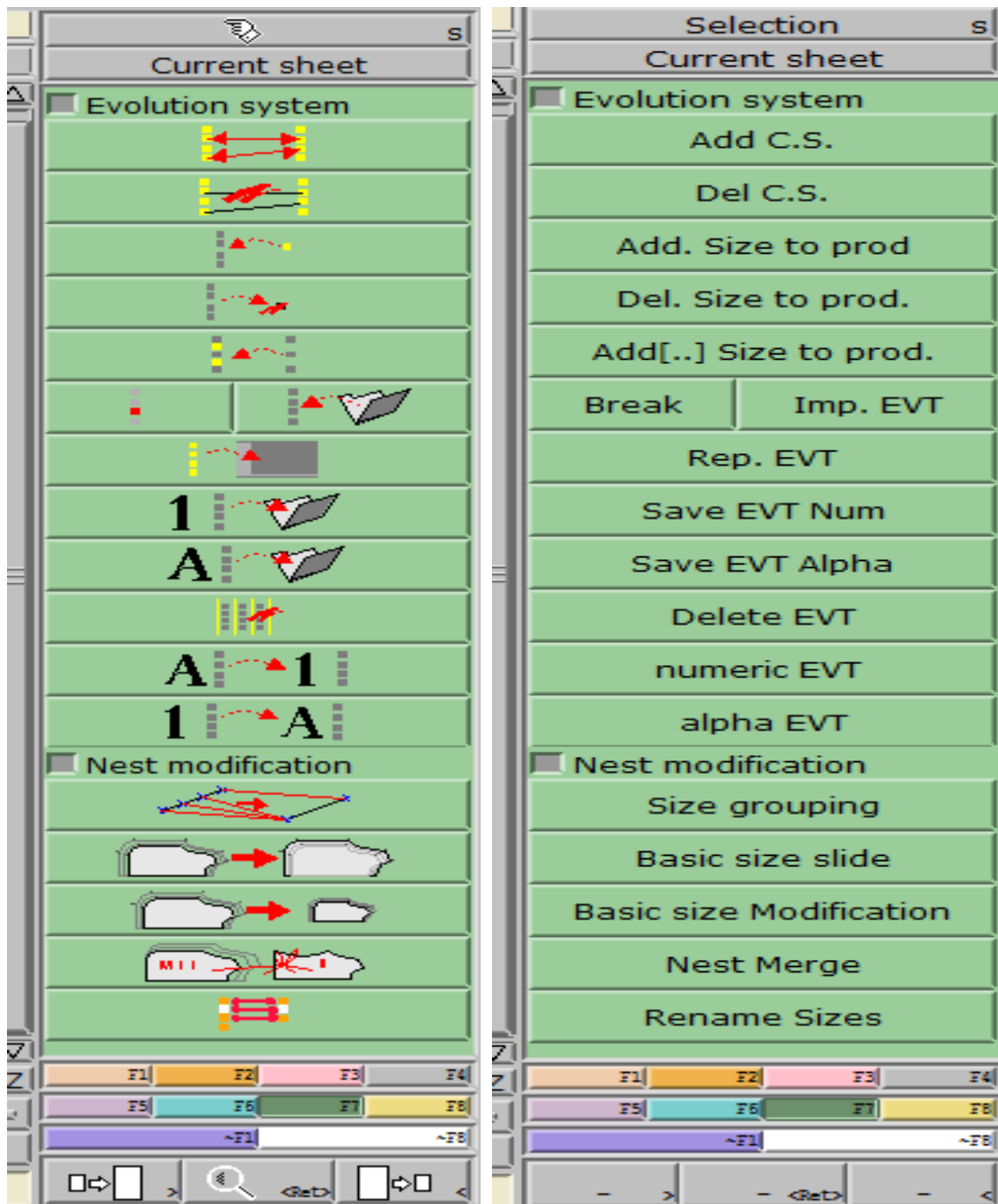
Use this function to delete sizes

- Click on the size in your title box, which you no longer require.
- Check your SIZE/CORRESPONDENCE.

- **ADD [...] SIZE TO PROD**

Use this function to add sizes in between the smallest the biggest size Click the function

- Click the in-between size
- If it is a numeric table type in the new size
- If it is an alpha size, Input size + 1, or size - 1, or size + 1/2, or size + 1/4 (e.g. XL+1, or SS-1/2)
- Go to EDIT, EDIT again, and name the size as you require



- **BREAK** : A break size is indicated by the color red. If a pattern is imported from LSMODEL, the middle size (MS) will be red. You may click on any size to create a break size. It will then be plotted in the partial nest

- Click to create the break size or Click to undo the break size
 - **IMP.EVT:** This will call a size table onto the sheet.
- Click on the sheet.
- Select the size table required and click on OPEN.
 - **REP.EVT:** This will copy the size table from one sheet to another.
- Click on the vertical size bar of the sheet with the correct size table.
- Click on the sheet which needs this size table.
- You can copy a size table from one sheet onto many others at once.
- Press CTRL and A together – all the sheets will be selected, and then apply the function.
- Click button 3 (Right click) in a space to deselect.

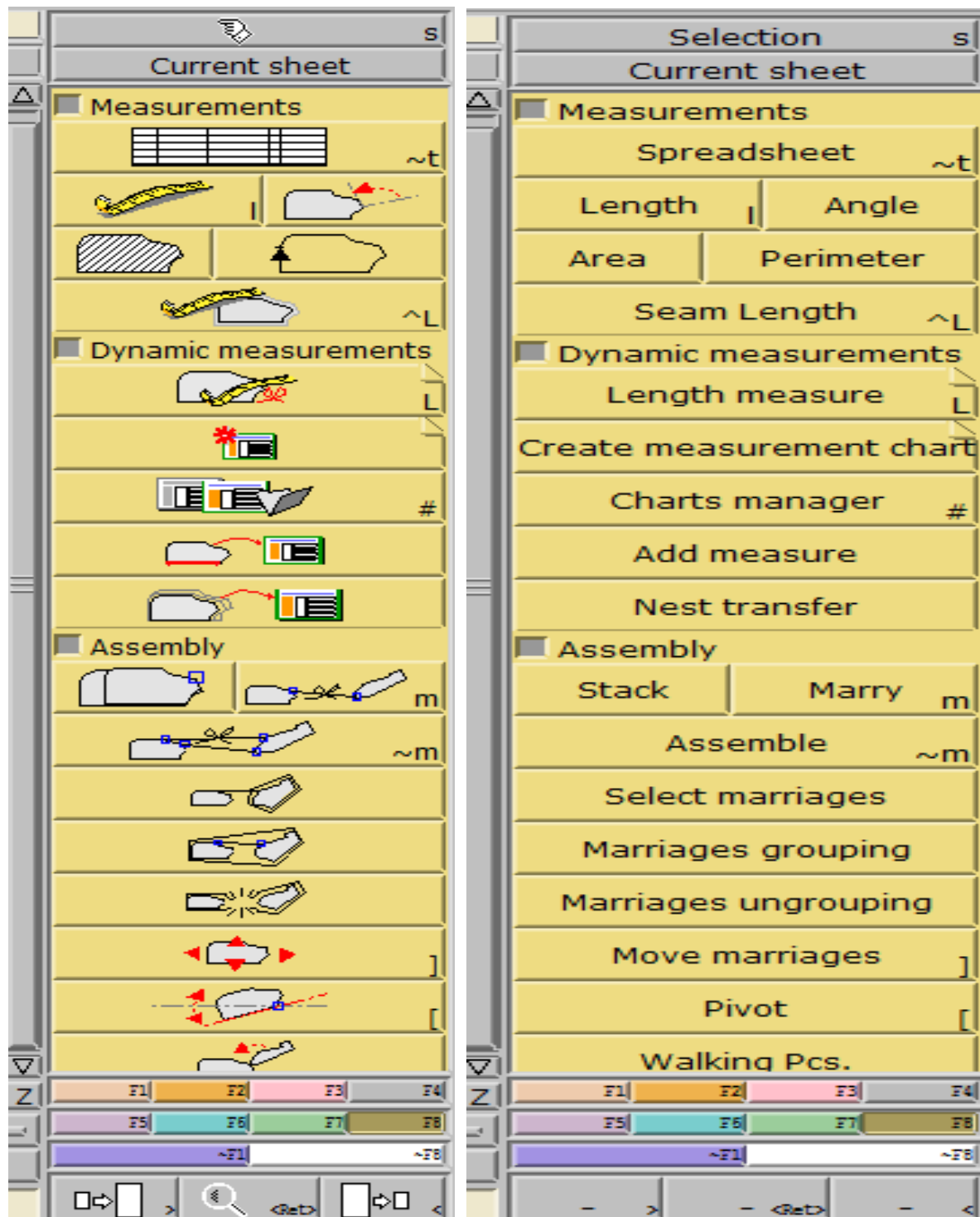
NEST MODIFICATION

- **SIZE GROUPING** This is to stack than one size on the same grading.
 - Click on the function
 - Group on size e.g. 34 (All the sizes will stick on this point)
 - From: size e.g. 32 to: 36 (These sizes move)
 - **BASIC SIZE SLIDE** This will slide the basic size onto another size.
 - Click on the function
 - Click on the new basic size
- **BASIC SIZE MODIFICATION**

This function modifies the dimension of the basic size onto the dimension of another size, although the name of the size remains unchanged

- Activate PRINT at the bottom of the screen (to visualize change on pattern)
- Click on the function
- Click on the size in the size bar, or input the size at the top of the screen.

5.17 TOOLS AND APPLICATION OF FUNCTION-F8 MEASUREMENTS



- **LENGTH**

This function allows you to check the length you need to check.

- Click on the function.
- Click on the first point.
- Tap the space bar to get the opposite line's length.
- Click on the second point keeping your finger on the mouse.

On the top left hand side of the screen you will see the length.

There is a measurement for:

- **LENGTH:** Measurement is around the outline.
- **DX :** Measurement of X between the two points
- **DY :** Measurement of Y between the two points
- **DL :** Measurement straight across between the points (as the crow flies)

SPREADSHEET

The spreadsheet shows all the measurements you have taken. You can change the spreadsheet presentation from vertical to horizontal if you so prefer. On the spreadsheet, the length is shown in three main sizes. If other sizes were selected on the size bar before measuring, they will also be shown on the spreadsheet. If you click on the spreadsheet the length is also shown there

- Click on the function.
- A window will pop up showing all your measurements you have made with length and seam length.

It will give you the following options:

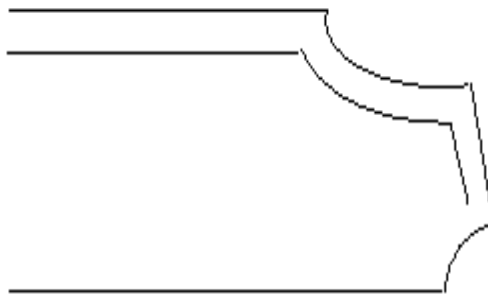
- *Seam Length* - Here you have both seam length and cut length. Use the spacebar to change from one to another.
- *Eraser* - To clear the spreadsheet use the eraser icon.
- *Edit* - You can change the name of the line measured.

- *Mes Deletion* - Deleting on the spreadsheet. If you delete dx, then dx gets deleted in all length measurements in the spreadsheet.
- *Export* - To export a spreadsheet, for it to be used in software, Click on Text File. A window will pop up and show a list of Libraries. Click on the library you would like it saved in. This file is known as the ASCII file.
- *Cumul File* - Click on Cumul to get an accumulated measurement of the measurements you have on the spreadsheet.

○ **SEAM LENGTH**

This function allows you to check the seam length you need to measure.

- If no seam line is shown already, go to F4, PIECE SEAM, and input the value of the seam allowance on the lines required.



To measure the stitching line of the armhole, you need to input a seam value for the side seam and the shoulder seam.

- Click on the SEAM LENGTH function.
- Click on the first point.
- Tap the space bar to get the opposite line's length.
- Click on the second point keeping your finger on the mouse.
- On the top left hand side of your screen you will see the seam length and cut length shown.
- If you click on spreadsheet the lengths is also shown there.

- **AREA:** Measures the area of a shape
 - Click on the Function
 - Click on the area you want to measure
 - See the measurement in the spreadsheet
- **PERIMETER**
 - Click on the function
 - Click on the perimeter you would like
 - See the measurement in the spreadsheet
- **ANGLE:** This will measure an angle in degrees
 - Click on the apex of the angle
 - Click on the side point of the angle and then on the other side point of the angle
 - See the measurement in the spreadsheet
- **DYNAMIC MEASUREMENTS**

Chart manager

The screenshot shows the 'Chart manager' application window. At the top is a 'Menu Bar' with options like 'Fichier', 'Edition', 'Affichage', 'Sélecteur', 'Fenêtre', and 'Aide'. Below it is a 'Toolbar' with icons for various functions. On the left is a 'Chart explorer' panel showing a tree view of the project structure. The main area is the 'Chart table', which contains a table of measurements. Below the table is a 'Formula editor' with a text input field and buttons for mathematical operations. At the bottom is a 'Status bar' with the text 'Display formulas'.

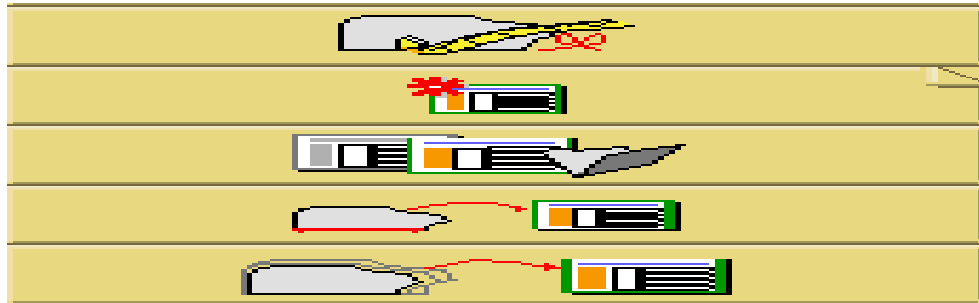
		Nom	Commentaire	Axe	38,4	40,4
Standard	longueur_dos_manche	longueur dos manche		I	249.27	250.19
Standard	longueur_e_d			I	248.57	256.17
Standard	longueur_re_signe_manche			I	102.20	105.67
Standard	longueur_deuxieme_signe_devant_manche	longueur deuxième signe devant manche		I	140.32	153.33
Standard	longueur_d'épaule_devant2	longueur d'épaule devant2		I	226.98	234.85
Standard	emboi_dos	emboi dos	formule		0.70	1.05
Standard	emboi_total	emboi total	formule		24.24	26.17

Formula editor: $\text{longueur_devant} = \text{longueur_premiere_signe_devant_manche} + \text{longueur_deuxieme_signe_devant_manche} + \text{longueur_d'épaule_devant2}$

Status bar: Display formulas

The measurement unit is displayed at the top of the chart table and corresponds to the unit defined in the Modaris window

- **GENERAL REMARKS** The dedicated dynamic measurement functions are in F8 Dynamic measurements and in the Chart manager:

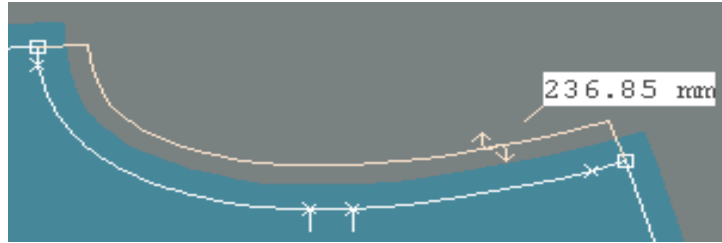


The charts are associated to the current model and therefore, saving the model saves the associated charts. If measurements on the model are altered, the chart is dynamically updated.

			Nom	Commentaire	Axe	36,4	38,4	40,4	42,4
Standard	longueur_dos_sur_manche	longueur dos sur manche		I		240.43	249.47	250.20	264.47
Standard	longueur_emmanchure_sur_dos	longueur emmanchure sur dos		I		220.07	227.17	234.07	244.07
Standard	longueur_emmanchure_sur_devant	longueur emmanchure sur devant		I		129.15	133.04	130.92	140.92
Standard	embu_dos	embu dos	formule			20.36	22.31	20.33	20.33





Mesure formule
 longueur_dos_sur_manche - longueur_emmanchure_sur_dos
 Nom formule: embu_dos
 OK
 Insérer mesure
☒ Insertion rapide
 Effacer
 = longueur_dos_sur_manche-longueur_emmanchure_sur_dos
 NUM

5.18 INTRODUCTION TO DYNAMIC MEASURES



Symbols: A measurement is graphically represented as a dimension with a value (current unit) associated to a symbol found on the dimension line.

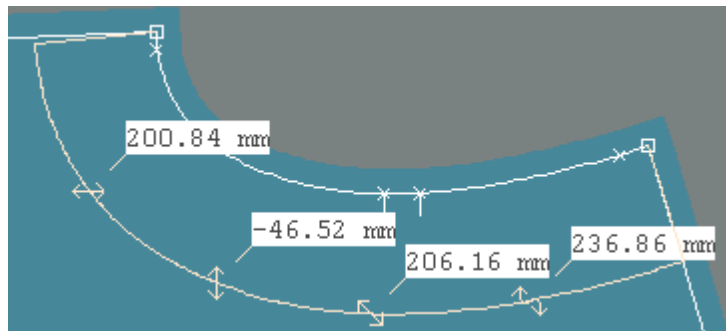
The symbols may take the following forms:

-  developed length **l** of a line between two points
-  length in a straight line **dl** between two points
-  length along the vertical axis **dy** between the first point and the second point
-  length along the horizontal axis **dx** between the first point and the second point



The **l**, **dl**, **dy**, **dx** dimensions for these different lengths can be found in the **Axis** column of the [Chart manager](#).

- **Display measurements:**
 - Depending on the type of your measurement, when you measure between two points, the **developed length** or the **straight line length dl** is displayed by default.
 - You can display all the associated measurements (dl, dx, dy) using the Display>Show related measures command

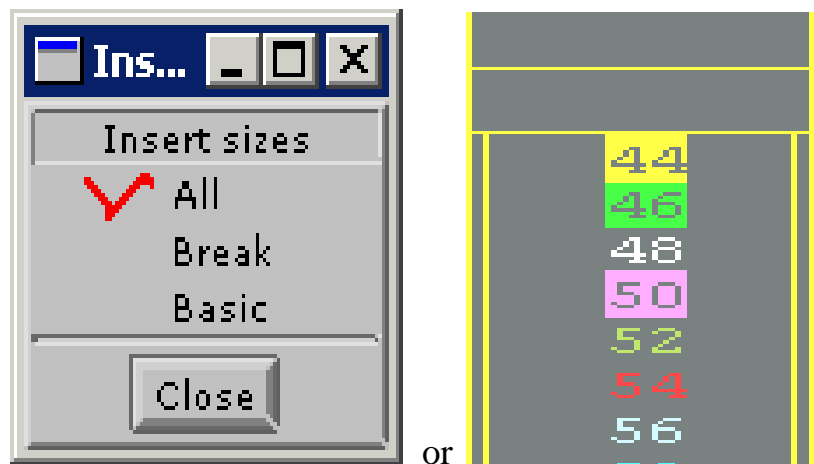


- You can Show/Hide the measurements using the **Display>Hide measurements** command



5.19 CREATE A MEASUREMENT CHART

Creating a measurement chart is done by adding a measurement chart table named by default, visible in the *Chart manager*. You can, depending on your choice, create a measurement chart on a model, a variant or a piece. This measurement chart will display the sizes you selected in the parameters associated with the command or the sizes you selected in advance in the size title block.



As your measurement chart is named by default, you can rename it in the *Chart manager*

To create a measurement chart:

1. If necessary, select the sizes either in the parameters associated with the **Create measurement chart command** or in the sizes title block.
2. Click on **Create measurement chart**
3. Click on the model, variant or piece sheet, depending on your choice.
4. If necessary, rename the measurement chart in the *Chart manager*

See also: Create measurement chart in the *Chart manager*

- **HOW DO I MEASURE**



You can measure the different lines of your model delimited by their extremity points or even between two non-existent points. In the latter case, the points are automatically added to the measurement points.



Every measurement taken is automatically sent to the current measurement chart in the Chart manager.

The measurement values taken by default correspond to:

- the developed length **l** for a curve
- the length in a straight line **dl** between two points
- the cutting area for a piece, **only** when you use the

Add measurement function

If a chart has not been previously created, the measurement will be sent to a chart created by default in the basic size.

- ***To measure a line:***

1. Click on **Length measure**.
2. Click on the line. Display graduations on the line
3. Click apart from the line to confirm the measurement. or
4. Click on each extremity point of the line.



Use the **spacebar** to set the line to be measured.

- ***To measure a portion of a line:***

1. Click on **Length measure**.
2. Click, on the line, on the measurement start point.

3. A slider point is created at the start point and the interactive graduation is displayed.

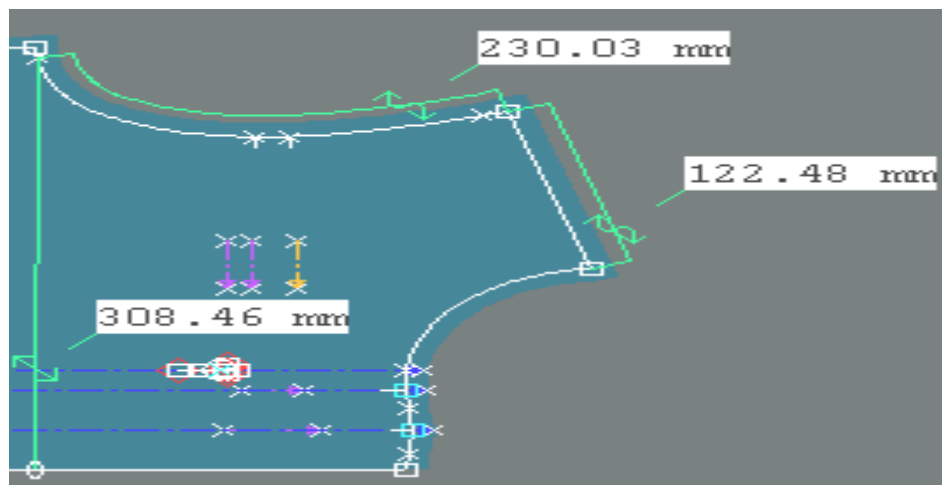
4. Click on the extremity point of the measurement.

- ***To measure outside a line:***

1. Click on **Length measure**.

2. Click on the measurement start point. If this point is on a line, activate the spacebar to exit the piece measurement line.

3. Click on the extremity point of the measurement.



When making a measurement, first check in the chart manager that the current chart is the one you want.

NAME MEASUREMENT

You can name a measurement with a comment either in the Chart manager or in the Modaris window.

- **To name a measurement in the Modaris window**

1. Select **Edit>Edit***

2. Click on the measurement line

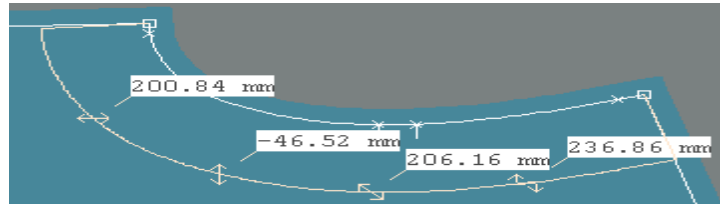
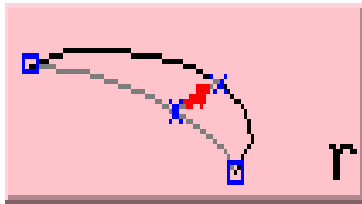
The edit box appears

3. Enter the name and comment. Press the **Tab** key to select predefined measurement names.

4. Click on **Close**.

MOVE MEASUREMENT

For better reading of a measurement, you can move it using the **Reshape** (F3)



ADDING MEASUREMENTS TO THE CURRENT CHART

To add a selection of measurements:

1. Click on Add measure
2. Select the measurements of your choice



The measurement values taken by default correspond to:

- the developed length l for a curve
- the length in a straight line dl between two points
- the cutting area for a piece

To add a dl , dx or dy measurement:

1. Select Display>Show related measures
2. Click on the *symbol* of the required measurement



developed length l of a line between two



length in a straight line dl between two points



length along the vertical axis dy between the first point and the second point



length along the horizontal axis dx between the first point and the *second point*

- **Transfer of measurements into a chart for certain sizes**



The **Nest transfer** displays the measurements and sizes selected in the Modaris window size title box, in the current chart.



When you perform a **Nest transfer**, the sizes of the existing measurements in the current chart are replaced by the new sizes.


To transfer a nest




1. Select the sizes in the size title block
2. Click on **Nest transfer**.



If no size is selected, the measurements are sent to the basic size.

CREATING PICTURES FOR DYNAMIC MEASUREMENT CHART

- In Modaris - model go to *Display* and *Hide measures* as well as the *Titleblocks*
- Press *J* to ensure pictures of the pattern pieces are small
- Press the button *PrintScrn* on keyboard
- Select *Start – All programs – Accessories – Paint*
- Go to *Edit* in Paint and select *Paste*
- Click on the  *Select* button and make a selection of the area on the picture that's needed to show the measurement area.
- Go to *Edit* in Paint and select *Copy*
- Go to *File* and select *New*
- Click on *No* for the warning that appears to save the current image
- Go to *Edit* in Paint and select *Paste*
- Click on *Image – Attributes* and select *Black and white*

- Click on *Yes* for the warning that appears
- Click on *Image* – select *Invert Colours*
- Click on the  *Curve* button and select the line thickness.
- Draw the measurement line (there are only 2 moves to shape the curve line)
- Go to *File* and select *Save as*
- Next to *Save in* choose the directory where the images should be saving to
- e.g. *Local disk C: - Lectra – Files – DMC Images*
- Next to *File name* type the name of the picture (measurement)
- *NB: Must be exactly the same in the Measurement chart – case sensitive*
- Next to *Save type*  as click on the button and select 
- Click on *Save*

NB: *If the pictures were created after taking the measurements in Modaris: Open the Chart manager*

Click on MCM – customize Click on Measurement images tab – OK

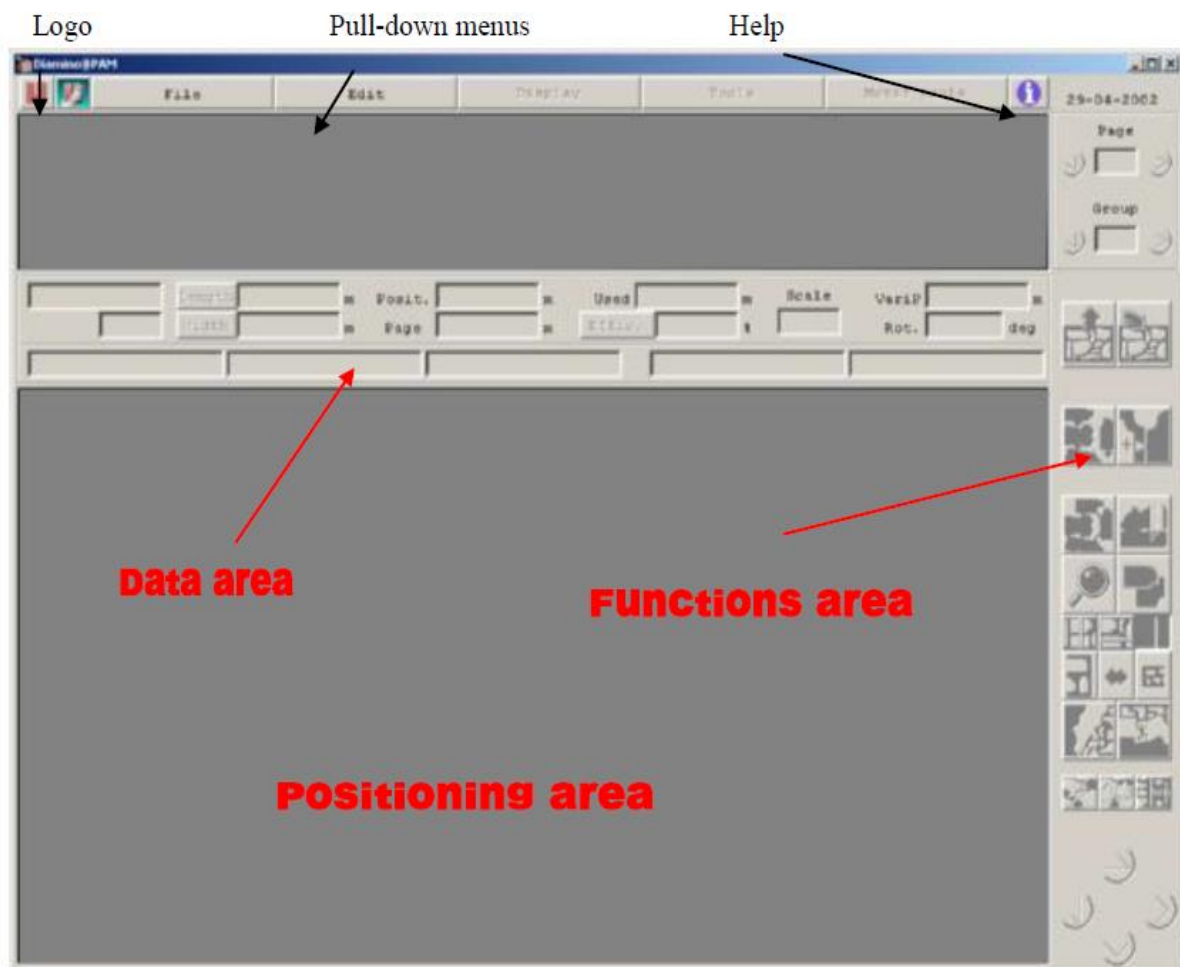
- **ASSEMBLY STACK** One piece can be stacked temporarily onto another.
 - Click on 1 point of the piece you want to
 - Click on the point on the other piece that you want to stack the first piece on.
You can re-stack as necessary.
 - Click j to separate the pieces again
- **VARIANT VARIANT**
- Click the function.
- Input the variant name and enter. A new page appears.
- Pull the page to the bottom of the screen so that you can see the pattern pieces.
- Go to Create Piece Article (see below)

- **CREATE PIECE ARTICLE**

- Click on the function.
- Click on the pieces required in the variant, in the main fabric and fusing, etc.
- Pull the variant menu up again, so it is visible.
- Enter SINGLE, DOUBLE and FABRIC for each piece.
- Close the window.
- Press J to visualize the variant on the desktop.
- Go to FILE and SAVE the model.

6 DIAMINO BASICS

6.1. THE MAIN DIAMINO START-UP WINDOW



- DATA AREA:** This area is used for visualizing the information and the various parameters on the work in Process: the value of the various parameters, the name of the pieces and the marker, the scale of The Marker area etc. No field can be modified in this area. The chart below lists all the indicators that can be displayed on the screen.

All the information fields are blank, until a file has been loaded. The two top lines are reserved for data concerning the marker. The bottom line concerns the marker piece when it is dotted in the Marker area.

The numbered parameters are as follows:

1. Marker name.
2. Information field reserved for marking on leather.
3. **Length** Max. length of the marker.
4. **Width** Total extent of the fabric width.

5. **Posit.** Position of the beginning of the screen page relative to the beginning of the fabric width. Only a reduced part of the fabric width is visualised (lengthways) on the screen. Lengthways movement is possible.
6. **Page** Length of the fabric width visualized on the screen page.
7. **Used** Length of the fabric width used by the marker.
8. **Effic./Loss Efficiency** percentage of the material occupied in relation to the surface required for production. This indicator is displayed alternatively with **Loss** which is also expressed as a percentage. To display this data, just click on the enhanced button.
9. **VARIP** Variable position
10. **Rot.** Rotation angle of the piece.
11. **Sca.** Representation scale of the marker used in the Marker area.
12. Name of the piece selected in the Marker area associated with a Piece Information item
13. Size, conformation, stature. The designation of conformation is separated from the stature by a colon ":".
14. Piece analytical code.
15. Field not used.
16. Variant name to which the piece belongs, followed in brackets by its Order number in the marker.

6.2. HOW TO CREATE A MARKER FILE

Go to → **FILE** → **NEW**

- Enter the information below

- **Marker Composition / Generalities**

Marker generalities

Marker :

Name

Code

Comments

Width :

Width m

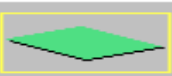
Maximum length m

Selvage value mm

Fabric :

Name

Code


Type 

Required efficiency %

Global spacing 1/10mm

Fabric edges (1/10mm)

Moving tolerance mm

Fine rotation  deg

Marker composition

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Model name/variant name	Size	Dir.	Group	Qty	Comments

Close

Restore

Paths

Save

6.3. EXPLANATION OF MARKER GENERALITIES

Name	Name of the marker. Each name must be unique. It is automatically given a suffix of .PLA or .PLX when it is saved
Code	A code given by you. This code can be plotted on each piece or on the marker heading (maximum 31 characters)
Comments	Is used to add a comment (maximum 160 characters)
Width	Enter the width of the fabric (between 10cm and 300cm)
Length	Enter the length of the cutting table in meters
Selvage	Width of the selvedge in mm
Plain / Motif	Either Plain fabric, or Motif which is checks and stripes
Fabric Name	Corresponds to the fabric name defined in the FILE – CONSTRAINTS menu, FABRIC CREATION function. (maximum 31 characters)
Fabric Code	Corresponds to the fabric code defined in the FILE – CONSTRAINTS menu, FABRIC/VARIANT CREATION function. (maximum 31 characters)
Packaging	Is either Single ply, Folded, Tubular, or Double ply presentation
Fabric Type	Refers to the fabric type used in the Variant – set in the MODARIS program
Required Efficiency	A goal efficiency set. This value will be marked with a V on the upper selvage in the marker
Global spacing	A spacing value is applied around each piece when marking
Fabric edges	A distance from the fabric edge. These values can be either positive or negative.
Moving Tolerance	A gap between pieces can be allowed if needed when marking. The maximum gap allowed is equal to the value input here.
Fine Rotation	A value in degrees gives the amount of rotation of pieces allowed. Click on the icon here, and then free rotation is allowed

6.4. EXPLANATION OF MARKER COMPOSITION

Model Name	Corresponds to the name of the model from MODARIS (the .MDL file) You may double click to select the model name
Variant Name	Corresponds to the name of the variant in the model if a model name is input. (Otherwise it corresponds to a .VET file) You may double click to select the variant name
Size	The size is input here. (It can include conformation and stature with the format: Size : Conformation : Stature) You may double click to select the sizes available
Direction	Input 0 or 1

	0 brings up the variant pieces in the direction they have been saved in the model 1 brings up the variant pieces in the opposite direction that they were saved in the model
Group	This function groups several sizes together, so they can be marked together in the marker as one group. Group 1 is the first group, group 2 the next group etc.
Quantity	Enter the quantity of garments to be cut in the particular size.
Comments	Add a text if required (maximum 160 characters)

- Click the SAVE button to save this file.
- Click the CLOSE BUTTON to exit this window

6.5. HOW TO MAKE THE MARKER

- Go to FILE OPEN to open the marker file created
- Click the SELECTOR button to choose your marker from a list if the correct name does not appear in the window.

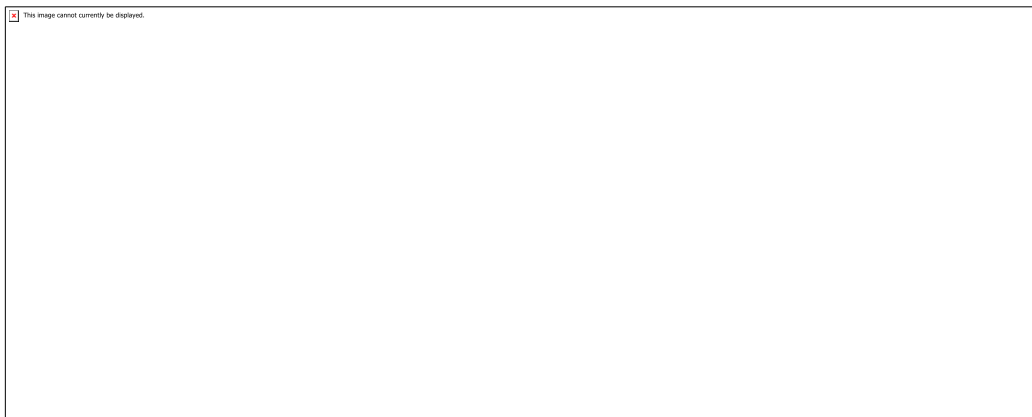
- **TOP CHART:** You may mark pieces in a chart presentation or graphic presentation. This can be changed in the preferences menu, or when opening a marker in the following window:



Chart presentation brings the marker in with the sizes and number of pieces displayed in chart form, as follows:



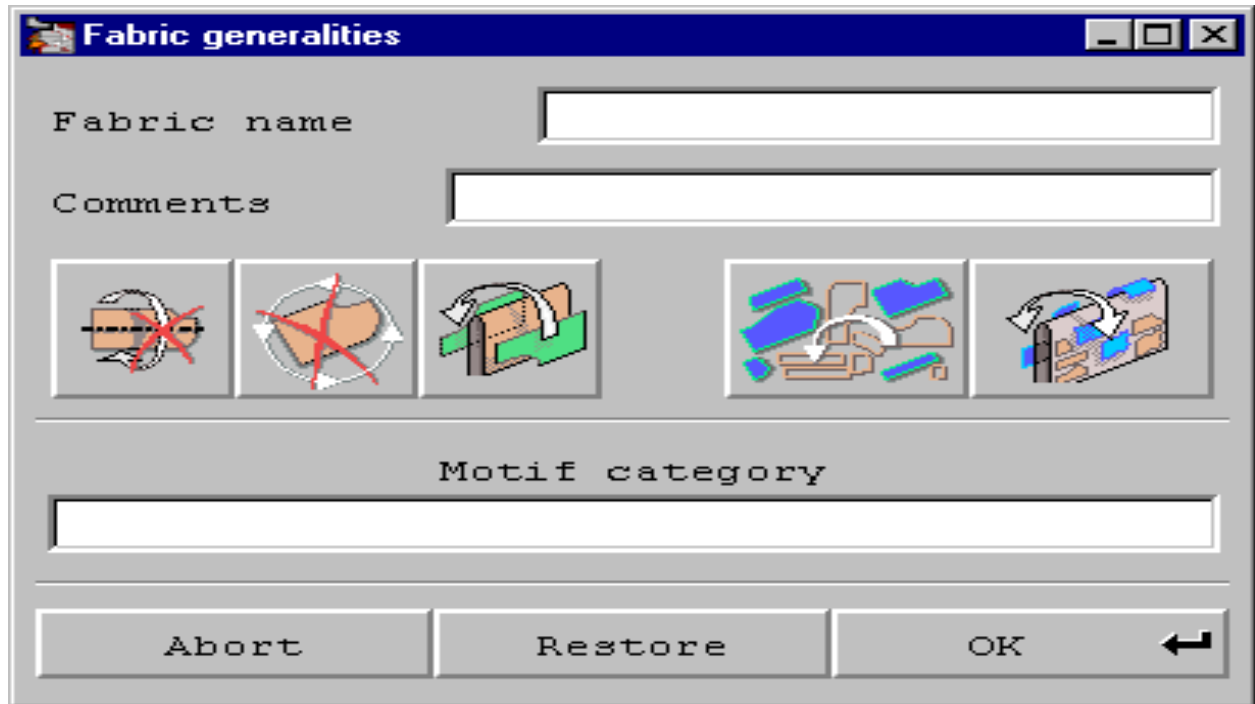
Graphic presentation brings the marker in with a pre marked marker, and a picture of each piece, as follows:



6.6. FABRIC CONSTRAINTS

It is possible to create a fabric file that will be used to control the movement of certain pieces in the marker. e.g. When using open fabric, no pieces can be flipped over (e.g. you may get two right sleeves!)

- Go to FILE
- CONSTRAINTS
- Fabric creation



- Type in a name for your fabric file
- Comments
- Click on the icon to change the option

A	Flips a piece over, or not
B	Rotates pieces 180 degrees, freely or no rotation
C	Modify the position of a piece relative to the edge for folded, tubular and double ply markers
D	Rotation of a same size variant
E	Turns over a size in tubular markers

6.7. FABRIC / VARIANT CONSTRAINTS

Certain features can be added to one type of piece in this function (e.g. All collars to have 6mm blocking allowance) However, the fabric /variant constraints file must be made under a fabric constraints file

Fabric Constraints File

OPEN FABRIC



Fabric /variant constraints file






Collar Block 6mm Sleeve rotation allowed 3degrees

	BI	A.C.	Sym\X	Step(deg)	Fine(mnt)	Ret.	X	Y	%X	%Y Centred Sym	+X	+Y	-X	-Y
1			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
2			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
3			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
4			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
5			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
6			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
7			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
8			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
9			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
10			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				
11			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>				

Close Restore Save











6.8. BASIC MARKER FUNCTIONS




No	Tools	Function
1		To move pieces
2		Send pieces back to the top
3		Page back and forward. The position of the mouse determines the amount of page to move.
4		Rotate pieces
5		Changes screen scale
6		Rotates pieces by degree
7		Supra validation
8		Put piece in the previous position
9	<ul style="list-style-type: none"> • • Marriage of pieces • Separation of married pieces • Complete cancellation of marriage • Marriage of a large number of pieces 	
10		Get a piece onto your mouse
11		<ul style="list-style-type: none"> • Cutting a piece • Pivot cutting axis by 90 degrees • Free pivoting of cutting axis • Rebuilding of the previous cut piece • Rebuilding of all cut pieces

12	 	Moving tolerance
13		Blocking
14	 	X/Y Symmetry of piece

6.9. FUNCTION PUSH BUTTONS REPRESENTED AS ICONS

To activate functions directly from within windows or dialogue boxes, select the appropriate icon.

No	Icons	Function
1		Send a marker group from the Marker area to the Presentation area.
2		Lower the parts into the Marker area, as they were marked and saved when the file was opened.
3		Manual / Automatic marker mode
4		Accumulated spacing / Single spacing / Contact mode
5		Marriage mode
6		Marker modification
7		Zoom
8		Overlapping analysis
9		Displays the end-of –marker and additional vertical/horizontal work bar
10		Modification of the marker scale
11		Splits a marker to fit parts into the space made

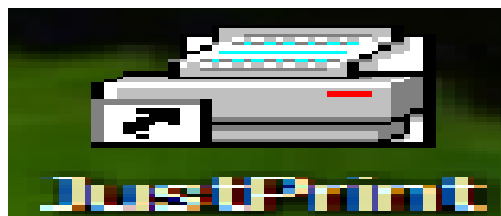
12		Launches the FlashMark automatic pre-marker
13		Launches the Diamino_Expert automatic pre-marker
14		Launches the Shaker function to optimize the marker placement

7. JUST PRINT

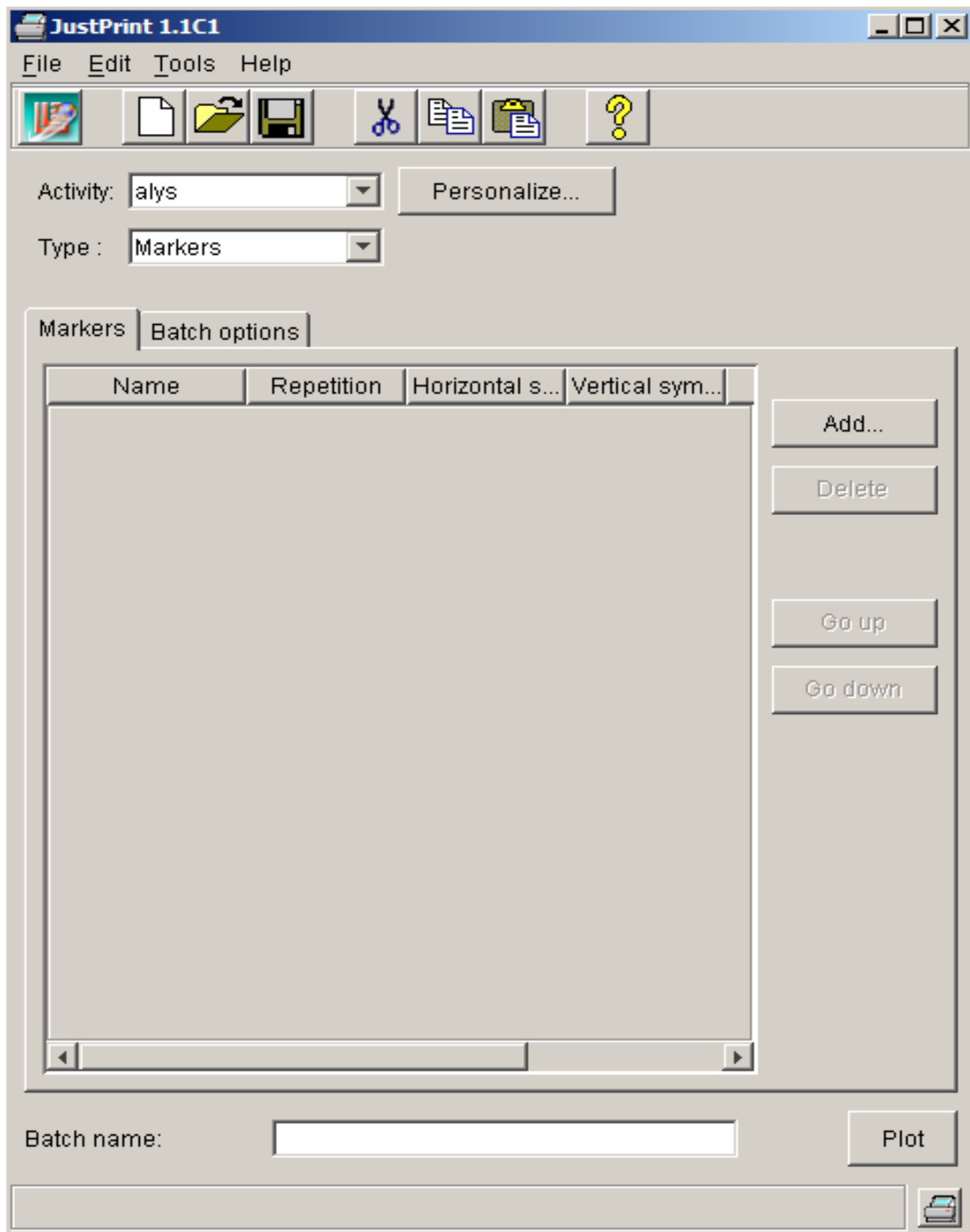
7.1. PLOTTING



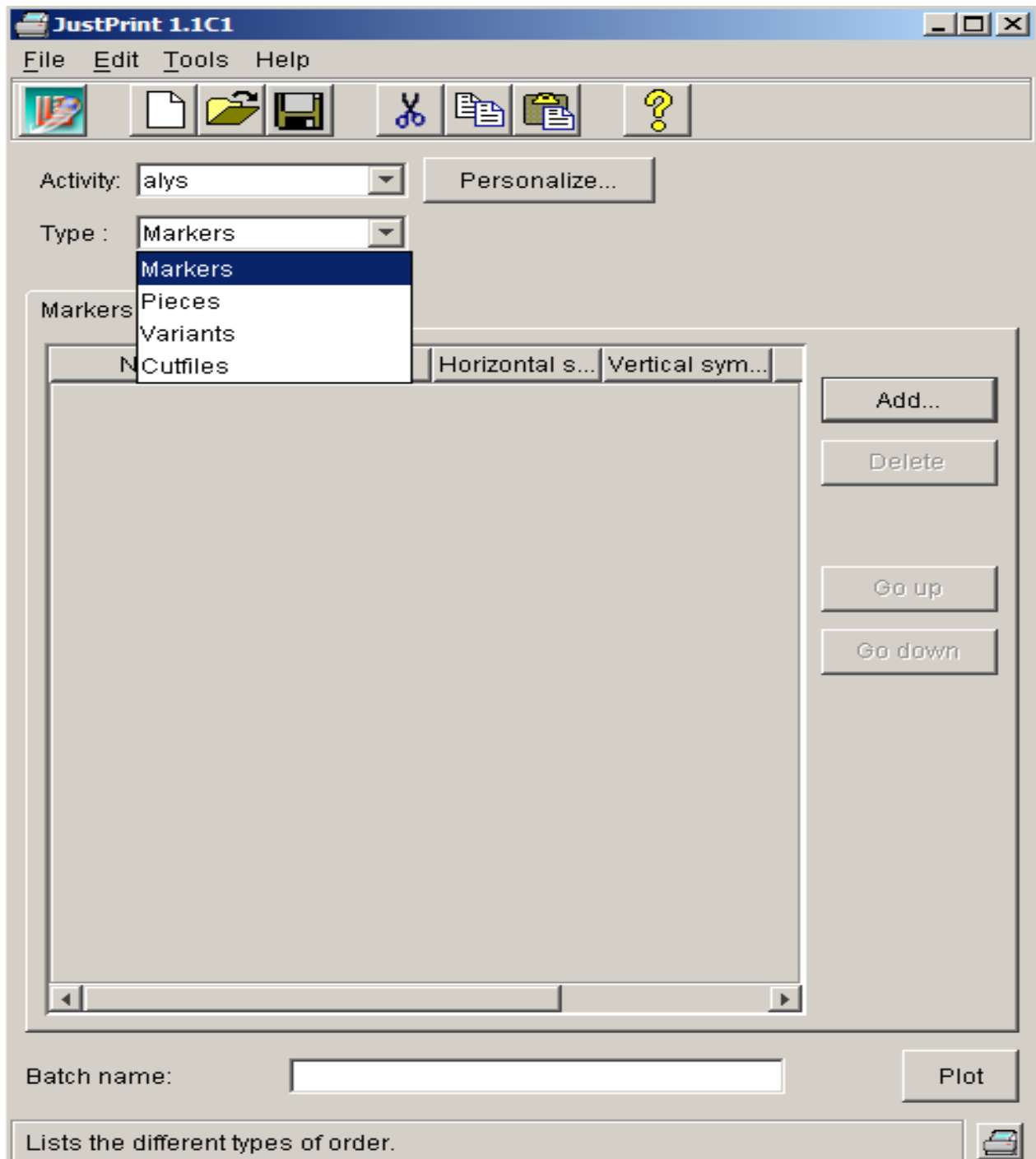
- Just print is used to print the marker file, with the help of plotter
- To start printing with just print open just print



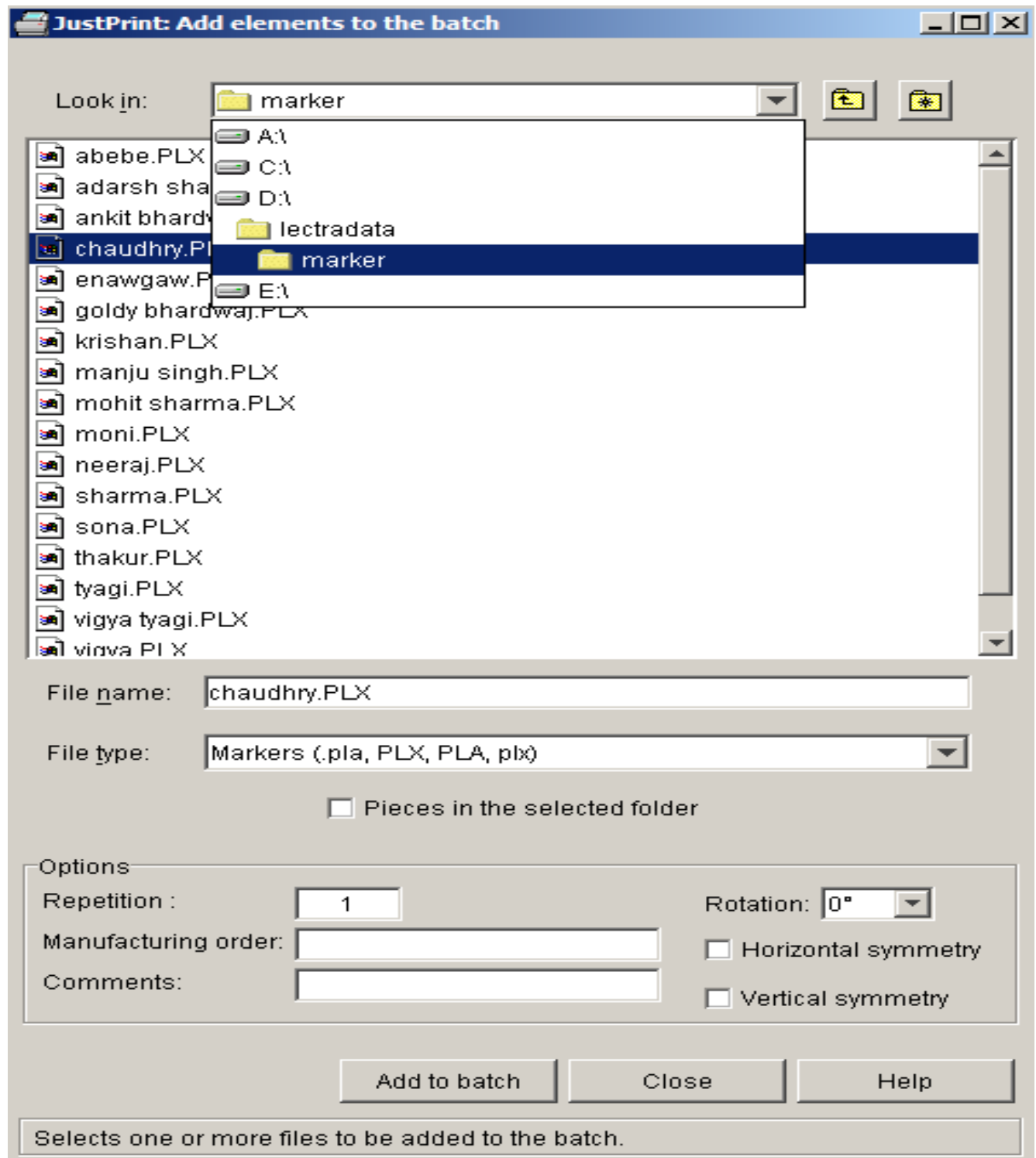
Window of just print opens up,



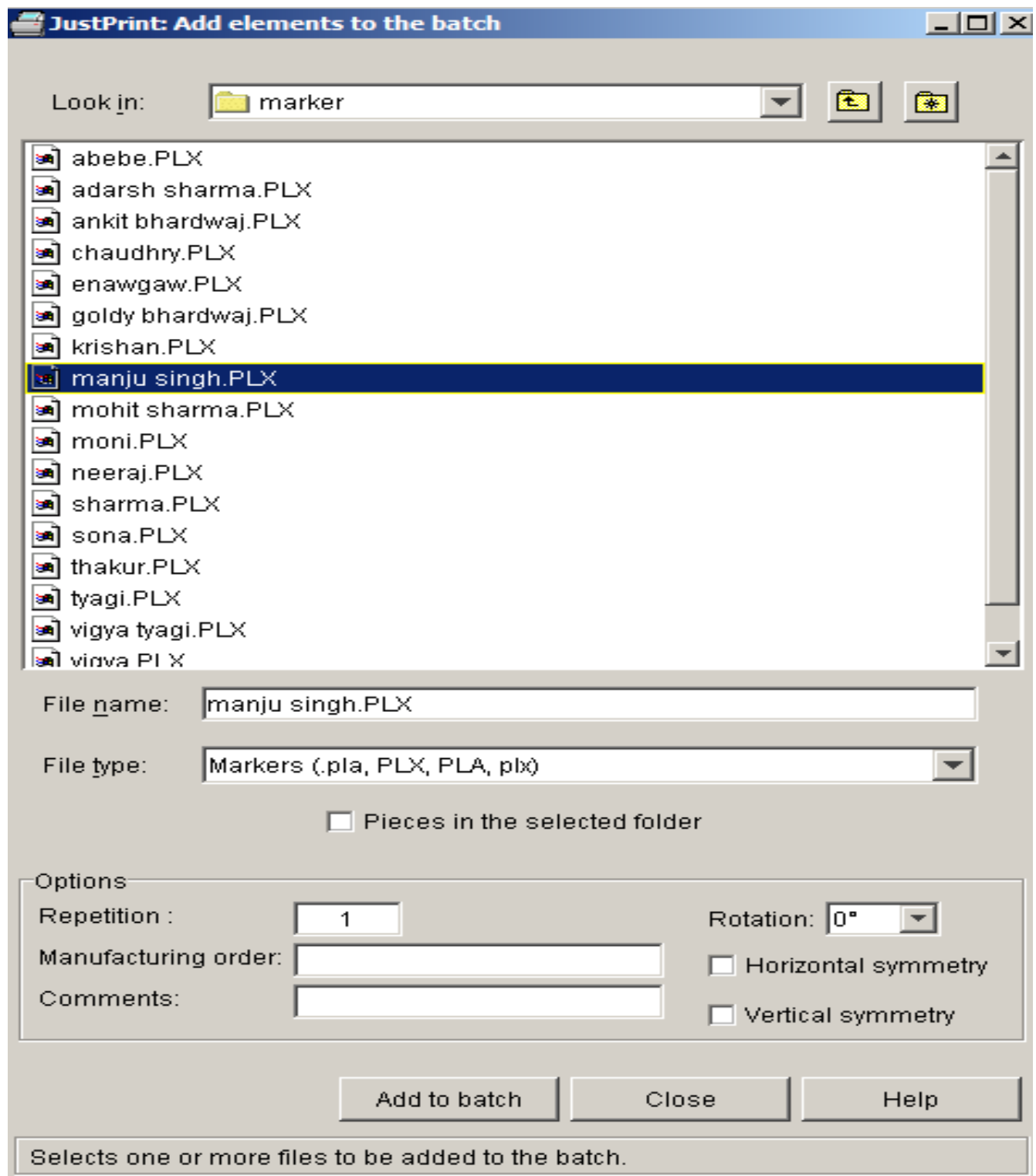
- Select the type of file you want to print(ex- marker file, pieces, variant files, Cut files)



- Select the desired file and click on icon Add
- Just clicking on Add, a new window on right side opens up (Look in:)

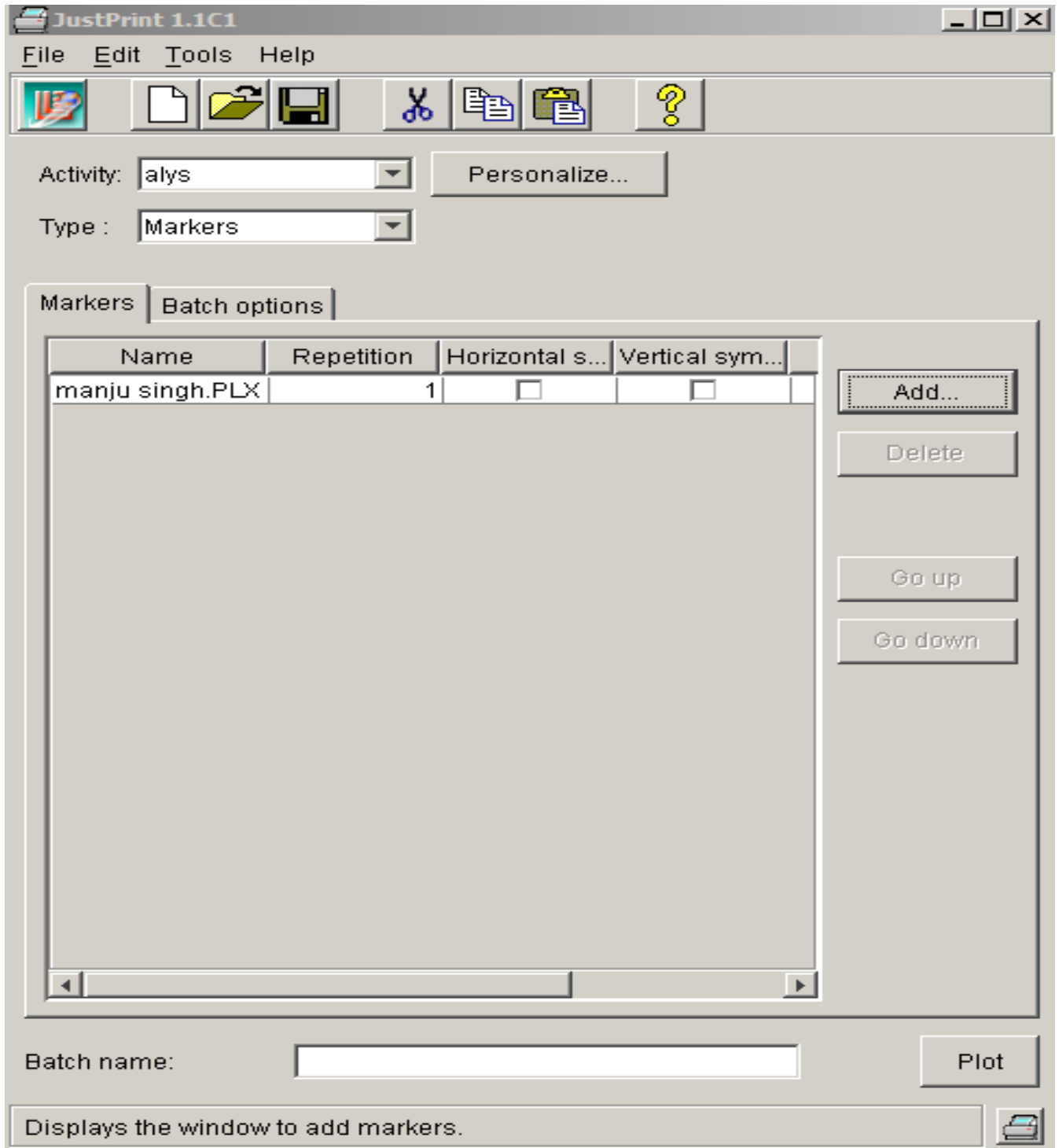


From look in , select the path of file to open the file to be printed (ex- To print a marker file select D:\ ,lectra data, marker name)

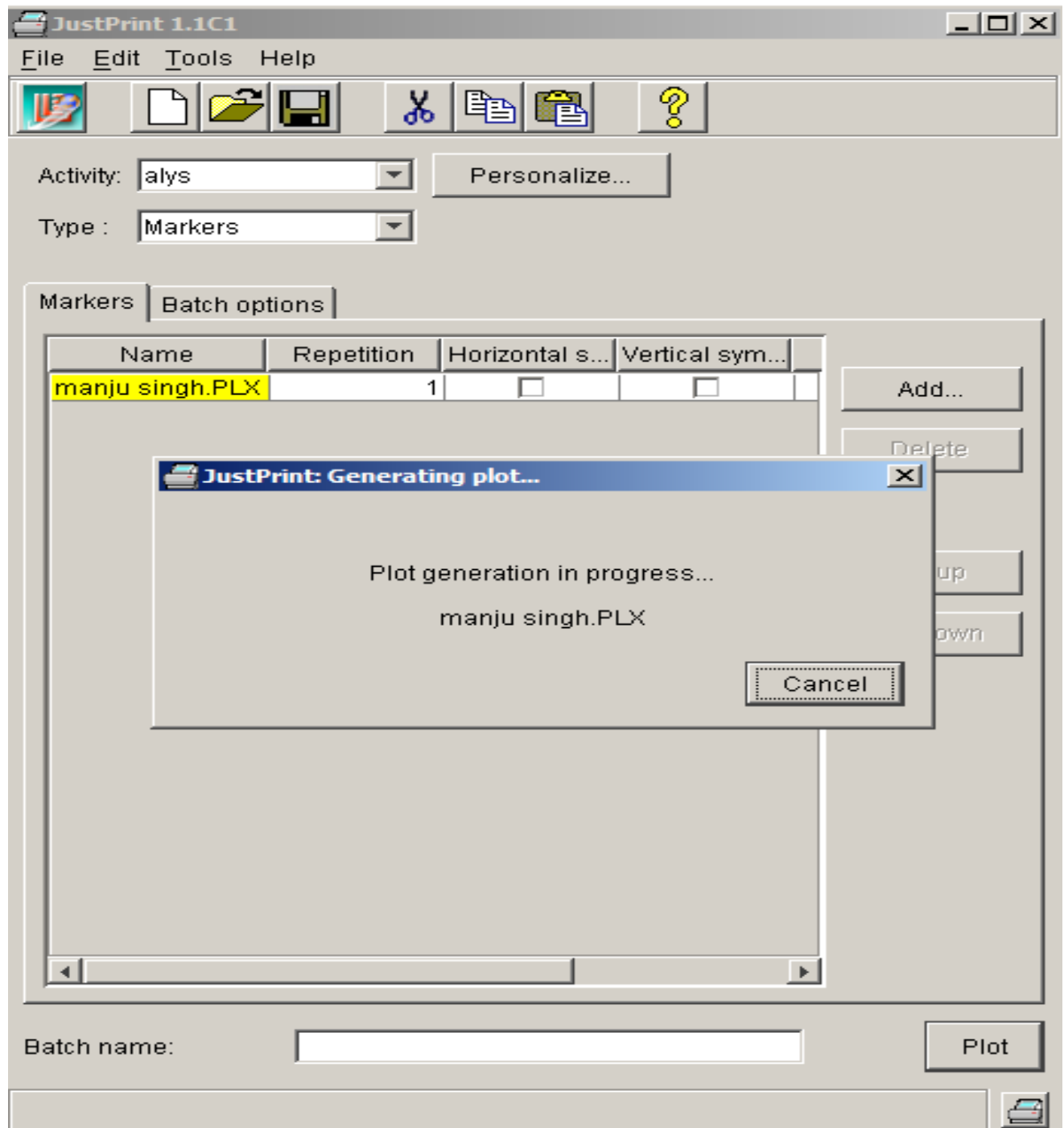


- Then click on Add to batch command at the bottom
- The selected file would get added to the series of files to be printed,

- In that section there are various options in relation to printing ex- if we want two copies of same marker than for that we can use the tool
- Repetition, we can add number of repetition we need, the same is for Style of printing that is horizontal and vertical printing



- After Adding that file, click on command Plot at the bottom, now the is ready to print



Reference

1. pattern cutting for clothing using CAD-lectra modaris 2nd edition
2. work book 1- a step by step guide to lectra modaris V7R7