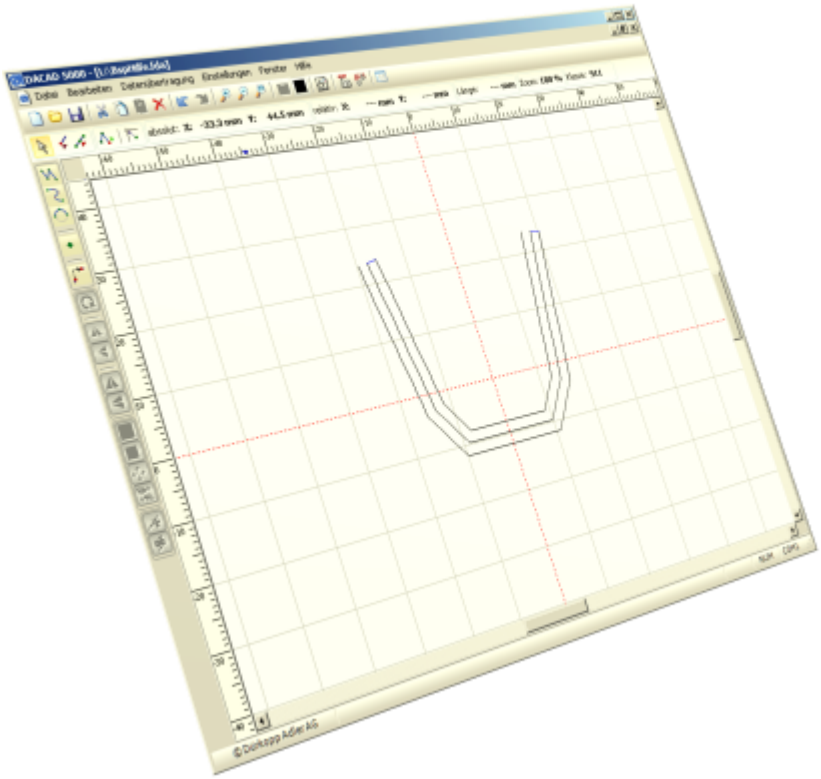
DA-CAD 5000

User Manual



DA-CAD 5000

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Part I

Welcome

1 Welcome

DA-CAD 5000

Dürkopp Adler welcomes you to the **"DA-CAD 5000"** software application for creating seam programs.

This software will enable you to develop seam programs on the PC for the Dürkopp Adler sewing machines and sewing units. The application includes utilities which allow you to draw seam sections simply and intuitively.

After you draw the seam sections you can also edit the resulting stitches. Operations such as scaling, moving and copying are possible.

The seam program which you create can then be transferred to the desired machine class using a data storage device (such as a USB stick/flash drive).

The introductory chapter First Steps 2-3 will present a summary of important issues in order to help you to get to know this software.

The subsequent chapters present a detailed description of the user interface 3-3, the drawing process 4-3 and the editing 5-3 of seam programs including the data transfer to the machine 6-3.

Part II

1. Steps

2 1. Steps

This section should help you to become more quickly familiar with the "DA-CAD 5000" software.
A general explanation or process summary of the individual subjects can be found here. More detailed information is contained in the following chapters.

The structure of a seam program

A seam program is made of individual seam sections.

These seam sections are described using support points including start and end points, as well as certain shapes (such as circular segments or spline curves) and additional mid-support points.

Each seam section is divided into stitches.

The processing views in the program are based on and correspond to these seam sections.

The program's processing views

There are three different views when working with the program:

	Seam sections	Drawing and editing seam sections
	Support points	Editing support points
	Stitches	Editing stitches

Drawing of seam sections

A variety of seam section shapes are available for drawing. They can be activated in the "Drawing" toolbox:

	Line(s)
	Circular arc defined by three points
	Spline curve
	Rectangle
	Single stitch
	Non-sewn stitch

The mouse can be used to draw directly in the drawing box.

Mouse actions

Drawing action	Mouse action
Establishing the coordinates for a seam section	Left mouse button
End the drawing of seam sections with any number of support points (spline curves, lines)	Right mouse button
End the drawing of seam sections with a fixed number of support points (circular arcs)	None (ends automatically after establishing the last support point)
Cancel the drawing of seam sections with a fixed number of support points (circular arcs)	Right mouse button

Edit	Mouse action
Select a seam section, support point or stitch	Place the cursor on the seam section, support point or stitch. Then click the left mouse button.
Select multiple seam sections	Use the left mouse button to pull out a border around the seam section
	Position the cursor over the seam section; Press the CTRL key and the left mouse button
Select multiple stitches	Use the left mouse button to pull out a border around stitches

Seam section

All seam sections can be processed individually or in any combination. The more important processing methods are:

- Scaling: using the menu or border + mouse
- Moving: using the menu or border + mouse
- Configuring: using the menu (stitch length, zigzag, etc.)
- Mirroring (reflection) rotating via mouse in drawing box

Support points

Support points offer the following possibilities:

- They can be moved with the mouse.
- Their coordinate values in the table can be changed.
- They can be deleted .
- A support point can also be added.

Stitches

Stitches can be processed individually or selected in groups:

- Moving: move with the mouse or by the coordinate values in the table.
- Deleting by in the table or in the drawing box.
- To insert a stitch in the table: .

Configuring the seam program

- Default values : valid for each new seam section, such as rotational speed, stitch length, with/without zigzag.
- Seam section : each seam section can have its own configuration values

Machine classes

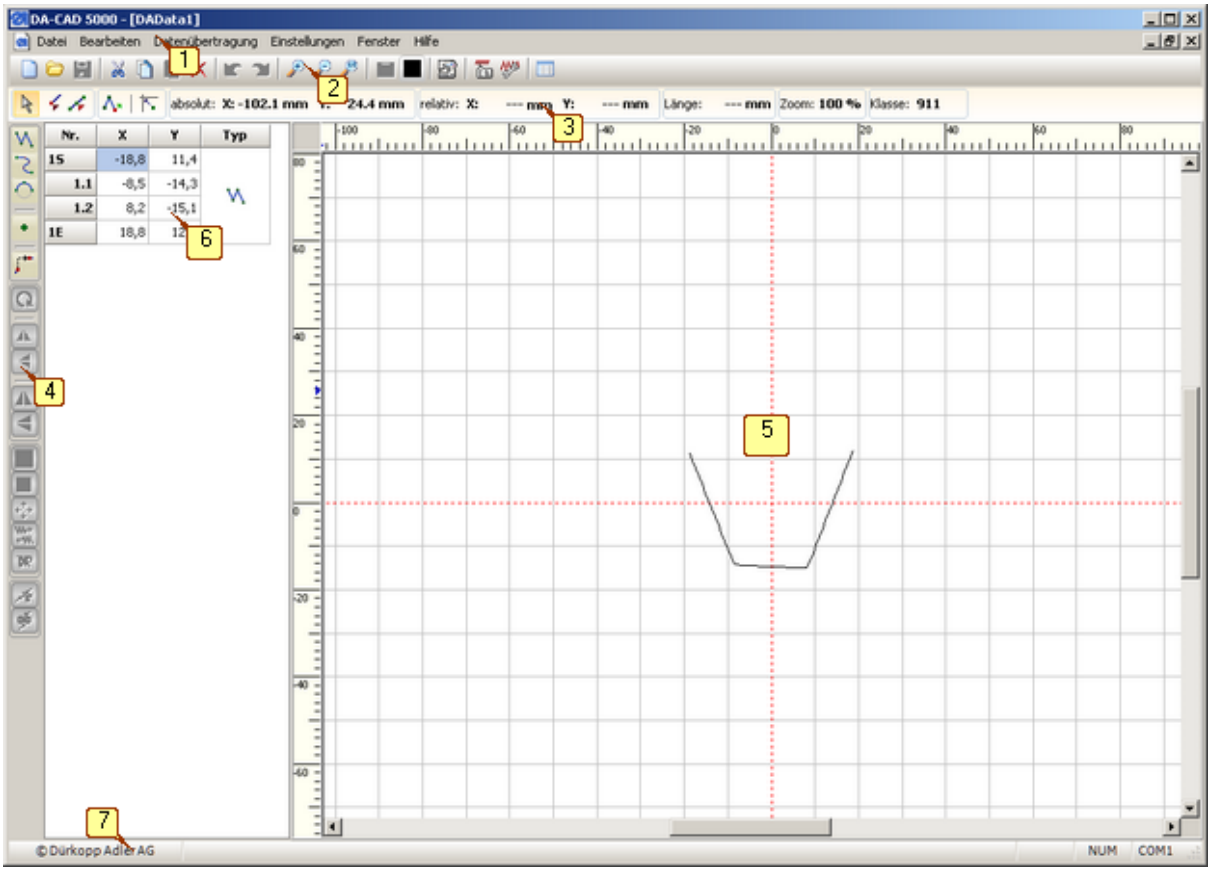
The drawing of a seam program is totally independent of the particular, selected machine class. In the Icon menu bar, you can select a machine class and an appropriate sewing field with the icon **Machine Class** . This allows parameters to be defined which are dependent on the machine type, such as rotational speed, maximum stitch length, or the maximum number of action points. In addition, the format and type of data transmission is then determined (for example, dongle or USB).

Part III

The user interface

3 The user interface

The user interface consists of seven main fields:



1. **The main menu bar** 3-4: a standard pull-down menu as found in standard Windows®- applications.
2. **The Icon menu bar** 3-13: a standard icon menu, as found in standard Windows®- applications.
3. **Function and information bar** 3-15: for selection of the view and special functions. Drawing information is also displayed here (coordinates, class category, etc.)
4. **Tools menu bar** 3-16: for selection of tools to draw and edit seam programs.
5. **Drawing box** 3-18: box for drawing and editing seam programs.
6. **Table** 3-20: shows the X and Y coordinates for seam sections, support points, stitches and action points.
7. **Status bar** 3-21: displays context-sensitive help information, the COM interface which has been set, etc.

3.1 Menu bar

The main menu bar consists of:

- File 3-4: functions for file handling, such as opening and saving.
- Edit 3-10: standard functions such as copying and pasting.
- Data transfer 3-10: creating, saving and importing files for transmitting to the machine via the data storage medium.
- Settings 3-11: basic settings, such as for language and default parameters.
- Window 3-11: alignment and selection for opened windows.
- Help 3-12: help file and information about the program.

3.1.1 File

Icon	Name	Description
	New	Opens a new window. The new window is opened with the same settings as the start-up setting for the program (machine class, sewing field, grid lines).
	Open	Opens a saved seam program. The file extension for seam programs is ***.fda**. **Note:** Files from **"DAProgrammers"** with the file extension ***.fkn** can also be loaded. This format does not include all information so the majority of the seam programs can only be accessed as individual stitches!
	Close	Closes the current window. This function is not available if only one window is closed. If changes are made in a window, then you will be first asked to save your changes.
	Save	Saves the seam program in the current window using the current file name. If no file name has been given since the file's creation, then the Save Menu is opened and you can specify a file name there. The file extension for seam programs is ***.fda**.
	Save as ...	Save as allows you to specify a file name to use for saving the seam program in the current window. The file extension for seam programs is ***.fda**.
	Import	Invoke the sub-menu for Importing other formats 3-5.
	End	This is used to exit the "**DA-CAD 5000**" software. If changes are made in a window, then you will be first asked to save your changes before exiting.

3.1.1.1 Import

This option allows you to import other, third-party formatted files. These files can then be pasted into the current window.

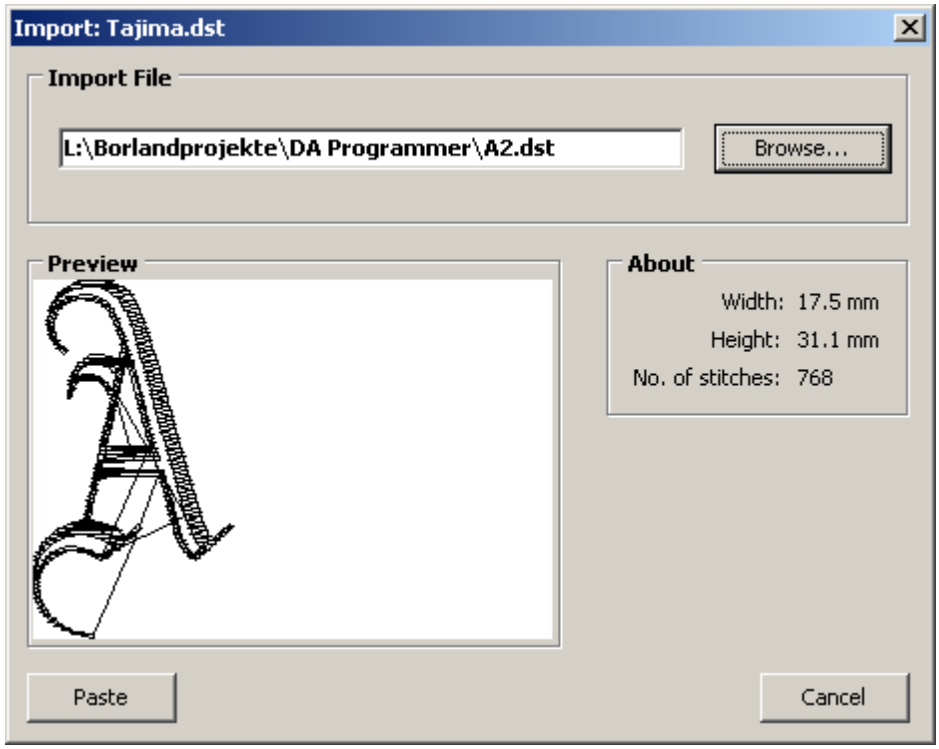
The following formats can currently be imported:

Type	Extension
Embroidery format	Tajima (*.dst)
AutoCAD	DXF (*.dxf)

3.1.1.1.1 DST

Work flow: steps for importing Tajima Files

1. Select the type and extension of the format from the menu **File > Import**
2. The Import window opens automatically.
3. After selecting the desired file, a preview of it is shown.

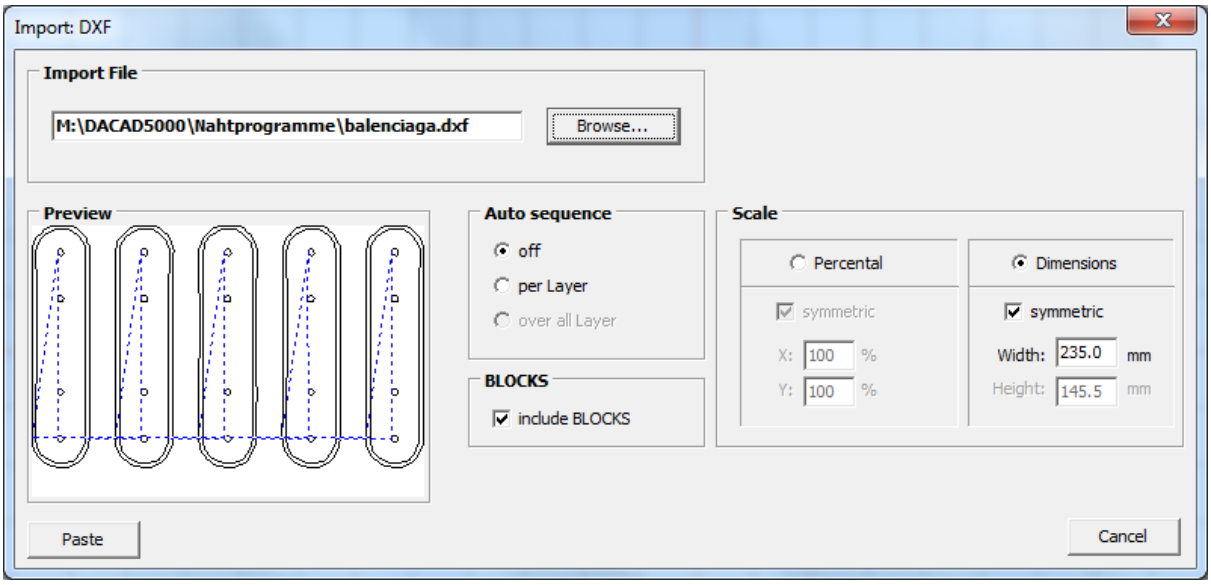


4. Click on the **Insert** button in order to convert the file and paste it into the current window as a seam section.
5. You can click on the **Cancel** button to leave the menu without making any changes.

3.1.1.1.2 DXF

Work flow: steps for importing DXF Files

1. Select the type and extension of the format from the menu **File > Import**
2. The Import window opens automatically.
3. After selecting the desired file, a preview of it is shown.



4. Kind of Auto sequence:
   - **off**: All element are represented in order of the occurrence in the DXF file.
   - **per Layer**: Per Layer the contained elements are sorted in such a way that the elements are connected with the shortest distance.
   - **over all Layer**: Over all Layer the contained elements are sorted in such a way that the elements are connected with the shortest distance.
5. With **BLOCKS** you can chose if the section BLOCKS should be included.
6. With **Scale** you can change the dimensions of the imported data.
7. Click on the **Insert** button in order to convert the file and paste it into the current window as a seam section.
8. You can click on the **Cancel** button to leave the menu without making any changes.

3.1.1.2 Exportieren

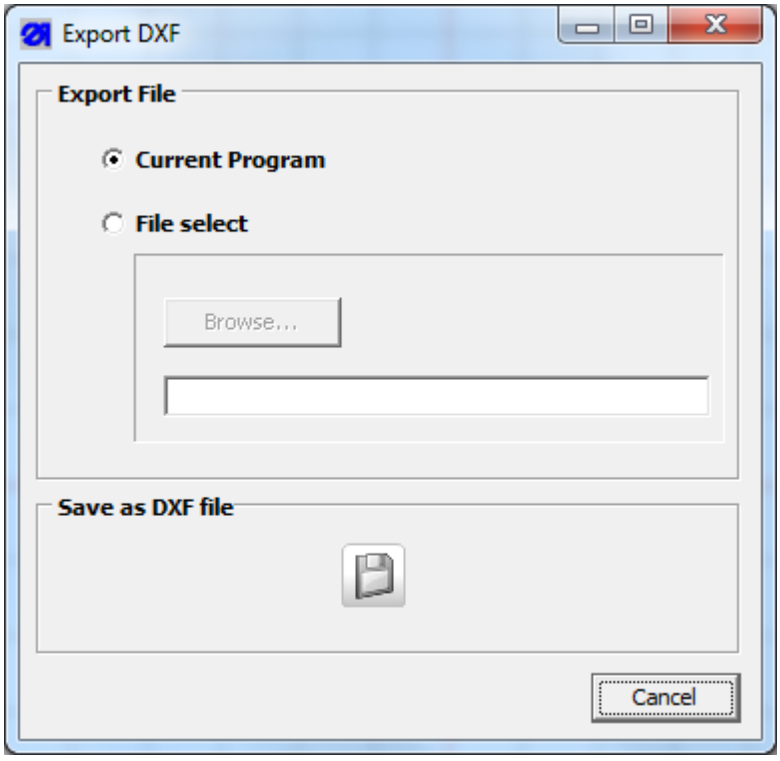
This option allows you to export other, third-party formatted files.

The following formats can currently be imported:

Art	Typ
AutoCAD	DXF (*.dxf) 3-7

Work flow: Export third-party formatted files

1. Select the type and extension of the format from the menu **File > Import**
2. The Import window opens automatically



3. Two possibilities exist of specifying which program is to be saved:
   a. **Current Program**: The seam program on the current drawing board is stored.
   b. **File select**:
      Click on **Browse** to open the standard Windows® file selection window. Select the desired seam program and close the window.

4. The  icon is activated after a file is selected.
5. Click on Icon  to convert and save the selected seam program. This window is automatically closed after the save operation is successfully completed.
6. You can click on the **Cancel** button to leave the window without saving..

3.1.2 Edit

Icon	Name	Description
	Undo	The last action is undone (reversed). Up to 30 sequential actions can be undone.
	Restore	Once an action is undone, this command causes it to be recreated.
	Copy	Copy selected seam sections 5-5 to the clipboard.
	Insert	Paste seam sections from the clipboard.
	Cut	Cut out the selected seam sections.
	Delete	Delete the selected seam sections.

3.1.3 Data transfer

Currently there are two different data transfer media which can be used for transfer to the machine:

- Dongle 3-10: a DA memory stick for transfer connecting with DAC 3/4 controllers.
- USB memory stick 3-11: a standard USB flash drive.

The type used depends on the machine class. .

Note:

With both the dongle and the USB stick, class-specific data formats are used for saving to the storage medium.
These class-specific formats must be re-converted to a generic format when loading from the data storage medium. Depending on the machine class, this reconversion process can result in loss of information.

Sub-menu: Dongle

Icon	Name	Description
	Contents	The content of the dongle is displayed.
	Load (dongle → PC)	The seam program is read from the dongle, converted to the PC format, and saved.
	Save (PC → dongle)	The seam program is converted to the class-specific dongle format and saved. The dongle must be formatted.
	Delete	Seam programs on the dongle can be deleted.
	Format	This is used to create a machine-class-dependent dongle.

Sub-menu: USB memory stick

Icon	Name	Description
	Load (USB → PC)	The seam program is read from the USB stick, converted to the PC format, and saved.
	Save (PC → USB)	The seam program is converted to the class-specific USB format and saved.

For a detailed description of the data transfer process, please refer to the "Data transfer to the Machine" 6-3 chapter.

3.1.4 Settings

Icon	Name	Description
	Default parameters ...	Opens up the input window for the class-specific default parameters 7-4 for the current window.
	Machine class ...	Opens the selection window for the machine class 7-12 and the sewing field for the current window.
	Interface ...	Opens the settings window for the serial interface 7-13.
	Language ...	Opens the selection menu for the language 7-12.
	Grid lines ...	Opens the settings window for configuring the grid lines 7-13 in the current window.
	Background image ...	Opens the selection window for configuring the background image 7-14 for the current window.

Detailed information about the individual windows and menus can be found in the "Input Windows" 7-3 chapter.

3.1.5 Window

Icon	Name	Description
	Overlapping	All opened windows are displayed with overlap.
	Align horizontally	All opened windows are aligned horizontally.
	Align vertically	All opened windows are aligned vertically.

In addition, all opened windows are listed. You can select a window from this list to make it the current window.

3.1.6 Help

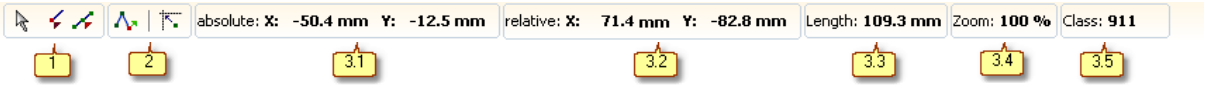
Icon	Name	Description
	Info...	Opens an information window showing the version number.
	Help ...	Opens the help file.

3.2 The Icon Menu Bar

Icon	Name	Description
	New	Opens a new window. The new window is opened with the same settings as the start-up setting for the program (machine class, sewing field, grid lines).
	Open	Opens a saved seam program. The file extension for seam programs is ***.fda**. **Note:** Files from the older **"DAProgrammer"** with the file extension ***.fkn** can also be loaded. This format does not include all information so the majority of the seam programs can only be accessed as individual stitches!
	Save	Saves the seam program in the current window using the current file name. If no file name has been given since the file's creation, then the Save Menu is opened and you can specify a file name there. The file extension for seam programs is ***.fda**.
	Cut	Cut out the selected seam sections 5-5.
	Copy	Copy selected seam sections to the clipboard.
	Insert	Paste seam sections from the clipboard.
	Delete	Delete the selected seam sections.
	Undo	The last action is undone (reversed). Up to 30 sequential actions can be undone.
	Restore	Once an action is undone, this command causes it to be recreated.
	Zoom in	Magnify the drawing box. The zoom factor is increased by 10%. Maximum zoom factor: 900 %
	Zoom out	Zoom out of the drawing box. The zoom factor is decreased by 10%. Minimum zoom factor: 40 %
	Zoom 1:1	The zoom factor is set at 100%.
	Background image	You can activate or deactivate the background image for the current window. This function is available when a background image has been selected in the menu Settings > Background image ... 3-1, 3-1
	Drawing color	A drawing color can be chosen for the current window.
	Machine class ...	Opens the selection window for the machine class 7-12 and the sewing field for the current window.
	Config. seam section	Opens the window for the Configuration 7-8 of the selected seam sections.
	Default parameters	Open up the input window for the class-specific default parameters 7-4 for the current window.
	Sequence window	Opens the window to change the sequence 5-26 of seam sections.

Icon	Name	Description
	Display table	Display of the table of values 3-20 can be activated and deactivated for the current window.
	Enlarge table	The presentation of the table can be enlarged if not all columns are visible.
	Insert before	A column is created before the active column and assigned a value (→ insert support point 5-38 or insert stitch 5-55)
	Insert after	A column is created after the active column and assigned a value (→ insert support point 5-38 or insert stitch 5-55)
	Delete column	The selected column is deleted.

3.3 Function and information bar



1. Icon group: Views

There are three different views when working with the program:

	Seam sections	Drawing and editing seam sections
	Support points	Editing support points
	Stitches	Editing stitches

2. Icon group: Continue and capture

	Continue	The new seam section automatically begins with the end point of the last previously drawn seam section. Thus the start point of the new seam section does not need to be set. If the shared coordinates are somehow altered (for example, with a move), then this alteration influences both seam sections.
	Capture	When drawing support points, the point located closest to the intersecting grid lines is automatically selected as the coordinate value. Grid lines can be changed in a configuration window 7-13.

3. Info group

3.1 Absolute: The actual, real coordinate position of the cursor in the drawing box.

3.2 Relative: The position of the cursor relative to the last set support point is shown here.

3.3 Length: The length from the last support point to the current cursor position is shown here.

3.4 Zoom: The current zoom factor is shown here.

3.5 Class: The selected class is shown here.

3.4 Tools menu bar

The tools menu bar consists of three tool boxes:

- Draw 3-16: Tools for drawing seam sections.
- Rotate & mirror 3-16: Tools for rotating and mirroring.
- Scale & move 3-17: Tools for scaling, moving, etc.
- Interpolation 3-17: Interpolate transition of sewing sections.
- Divide & Connect 3-17: Tool to divide connected seam sections.

Drawing tool box

Icon	Name	Description
	Active Tool	Drawing tool remains active
	Line(s)	Drawing lines 4-4.
	Spline curve	Drawing a spline curve 4-6 with any number of points.
	Circular segment	Drawing a circular segment 4-5 (three points on the segment).
	Single stitch	Drawing a single stitch 4-7. Be sure to observe the maximum stitch length!
	Non-sewn	Drawing non-sewn points 4-8.

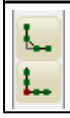
Rotate & mirror tool box

Icon	Name	Description
	Rotate	Rotate 5-8 the selected sewing section at its center point.
	Rotate via menu	Rotate the selected sewing section using the rotate window. 7-15
	Horiz. mirror	Mirror horizontally 5-11 the selected support point.
	Vert. mirror	Mirror vertically 5-11 the selected support point.
	Horz. mirror & copy	Mirror horizontally and copy 5-12 the selected support point.
	Vert. mirror & copy	Mirror vertically and copy 5-12 the selected support point.

Scale & move tool box

Icon	Name	Description
	Scale	Scale 5-15 the selected support point using the scale window.
	Equidistant	Generate an equidistant 5-20 counterpart for the selected seam sections.
	Move	Move 5-13 the selected seam sections using the move window.
	Positioning	To position 5-17 the selected sections using the positioning window.
	Duplicate	Duplicate 5-18 the selected seam sections.
	Reverse seam direction	Reverse 5-22 the seam direction of the selected seam sections.
	Delete action points	Delete all action points 5-24 for the selected seam sections.
	Non-sewing	Change to a non-sewing 5-25 seam section.

Interpolation tool box

Icon	Name	Description
	Start interpolation	Interpolate 5-26 transition of sewing sections.
	Cancel interpolation	Cancel the interpolation of the transitions.

Divide & Connect tool box

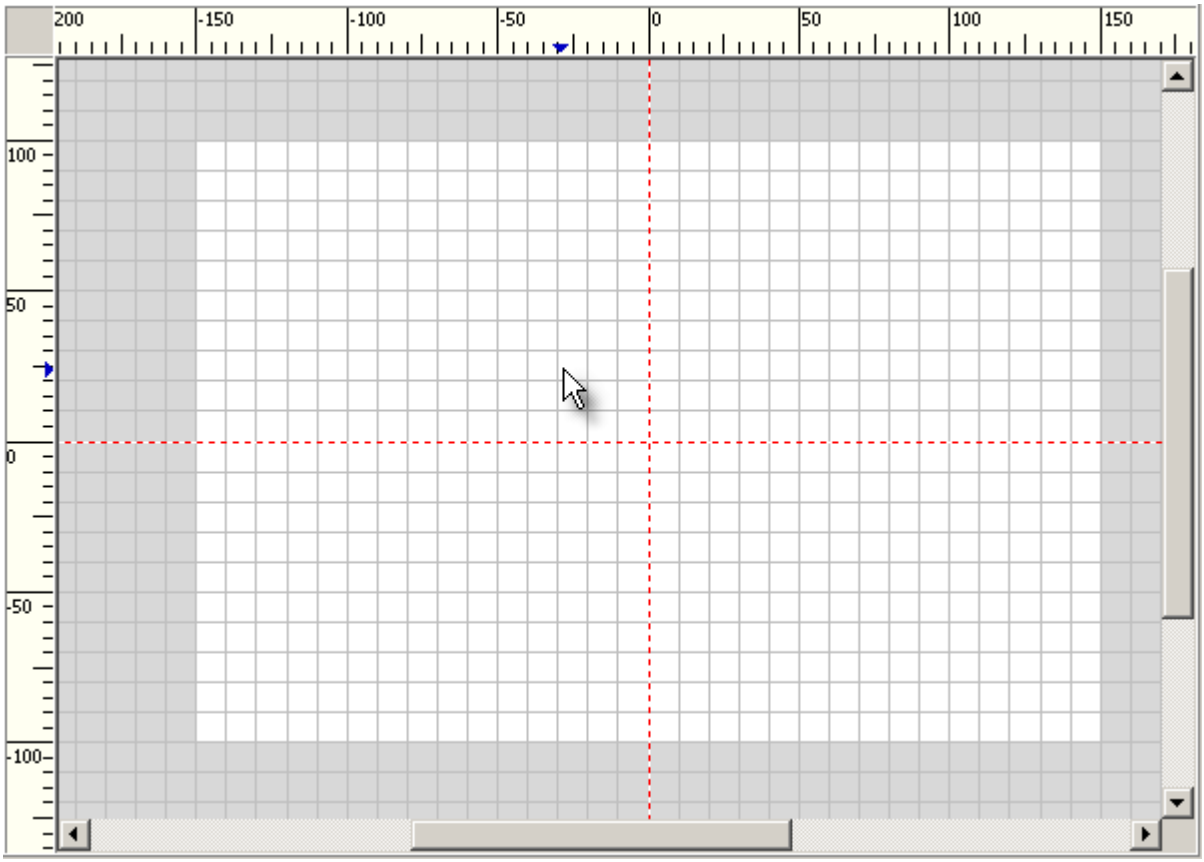
Icon	Name	Description
	Connect	Connect 5-40 two seam sections.
	Move & Connect	Move and connect 5-43 two seam sections.
	Divide	Connected seam sections can be divided 5-46.

3.5 Drawing box

The drawing box is a canvas area which is used for drawing and editing seam sections, support points and stitches.

It consists of the following:

- Rulers 3-18: horizontal and vertical
- The canvas or drawing area 3-19.



Rulers:

- The unit of ruler measurement is the millimetre.
- The rulers are subdivided by dashes. The interval between the dashes in dependent on the current zoom factor:

Distance between two interval dashes	Zoom factor range
5 mm	40 - 50%
2 mm	60 - 100 %
1 mm	110 - 790 %
0.5 mm	800 - 990 %

- When the cursor is located in the drawing box, its position is shown by a blue triangle on the rulers.

Drawing area

- The drawing area (canvas) is shown in two colours:

white	indicates the selected sewing field for the selected machine class If no machine class has been selected, the entire drawing area is white.
grey	The areas shown in grey lie outside of the selected sewing field.

- Drawing is allowed anywhere in the box, regardless of the colour of the drawing area. If the seam program lies outside of the sewing field, this is first detected when the seam program is written to the class-specific data storage medium.
- The drawing area can be subdivided using grid lines 7-13. These are configured 7-13 using a separate configuration window.
- A background image can be depicted on the drawing area. This can be set up in the menu Settings > Background image... 3-11. Background images can be moved and scaled in the drawing area (with a process similar to seam sections 5-5).
  In order to fade in or fade out on the background image, use the  icon in the Icon menu bar.
- The Cartesian coordinates system is used at all times. This can not be changed.

3.6 Table

The table is used both for showing the coordinate values of support points and stitches, as well as for changing these coordinate values.

There are two views available:

- Support points 3-20: with the seam section view 3-13 and support point 3-13
- Stitches 3-20: with the stitches view 3-13.

Support points view

This view shows the absolute X and Y coordinate values of the support points based on the zero point of the coordinate system. They can be changed here.
In addition, the seam section type is shown:

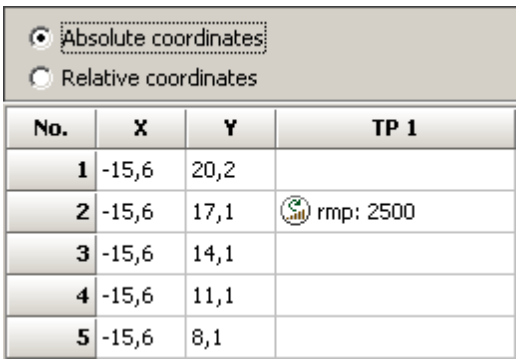
	Line(s)
	Circular arc
	Spline curve
	Single stitch
	Non-sewn stitch

If two seam sections are connected to each other, the cells which show their coordinates are connected and shown in red[1].

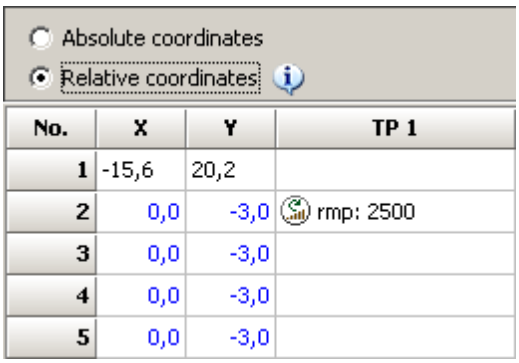
Nr.	X	Y	Typ
1S	-69,0	48,5	
1.1	-60,2	17,2	
1E	-48,8	27,3	
2S	-27,6	36,6	
2.1	-26,0	20,7	
2E	-15,4	26,8	
3S	1		
3.1	-0,8	13,0	
3E	-3,4	10,3	

Stitches view

You can select whether the coordinate values should be shown absolutely or relative to each other:



No.	X	Y	TP 1
1	-15,6	20,2	
2	-15,6	17,1	rmp: 2500
3	-15,6	14,1	
4	-15,6	11,1	
5	-15,6	8,1	



No.	X	Y	TP 1
1	-15,6	20,2	
2	0,0	-3,0	rmp: 2500
3	0,0	-3,0	
4	0,0	-3,0	
5	0,0	-3,0	

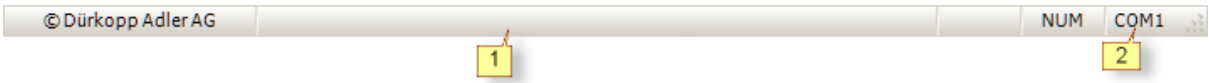
- **Absolutely**: All stitches are represented in X and Y values based absolutely on the zero point of the coordinate system. Absolute coordinates are shown in black.
- **Relatively**: All stitches within a seam section are shown relative to one other as X and Y values. The first coordinate of a seam section is indicated absolutely. Relative coordinates are shown in blue. Both absolute and relative coordinates can be changed directly in the table.

Note:

Remember that if a change is made to the relative coordinates in the table, this leads to a change in the absolute coordinates of the subsequent stitches in this seam section.

- **Action points**: after the X/Y coordinates, there are columns for action points. The number of action point columns depends on the class. In order to edit action points, you should activate the appropriate cell in the table by **double clicking**. An input window for editing technology points 5-56 then opens up.

3.7 Status line



In addition to the copyright notice, the important details are:

[1]: A field used for showing context-sensitive help. If an object (such as an icon) is covered by the cursor, after a short time a relevant help text appears here.

[2]: The number of configured serial interfaces is shown here. This is set with the menu Settings > Interface 3-11.

Part IV

The drawing of seam programs

4 The drawing of seam programs

Note:

You can only draw while in the "Seam sections" 3-13 view.

You will be automatically switched to the "Seam sections" view when you activate any of the drawing tools from the "Drawing" tools menu bar 3-16.

A seam program consists of multiple seam sections which can be individually drawn and edited.

There are two methods for drawing seam sections:

1. A new, independent seam section can be created.
2. The new seam sections continues from the previous seam section. The end position of the previous seam section is automatically selected as the new start position of the new seam section and is not marked.

Several different contour types are available:

- Line 4-4
- Circular arc 4-5
- Spline 4-6
- Single stitch 4-7

In addition, a non-sewing movement 4-8 can be defined.

4.1 Drawing a line

The section describes the following:

- How a new line 4-4 is drawn.
- How a previous seam section is continued with a line 4-4.

Note:

The set default values 7-4 (seam length, rotational speed, etc.) are valid for the new seam section.

Work flow: Drawing a line

1. Click on the **Line** icon found in the "Drawing" tools menu bar 3-16.
2. Position the mouse in the drawing box so that the cursor is over the desired starting coordinates. Then confirm with the **left mouse button**.
3. Position the mouse cursor over the line's end point and confirm selection with the **left mouse button**.
4. If you want to continue this seam section with an additional line, go back and repeat step 3.
5. If you are done and need no additional lines, click on the **right mouse button**.

Work flow: Resuming (continuing) a seam section with a line

1. Click on the **Continue** icon found in the Function bar.
2. In the "Drawing" tools menu bar, 3-16 click on the **Line** icon. The start position of the new line is the same as the end point of the previous seam section. Thus it does not need to be set.
3. Position the mouse cursor over the line's end point and confirm selection with the **left mouse button**.
4. If you want to continue this seam section with an additional line, go back and repeat step 3.
5. If you are done and require no additional lines, click on the **right mouse button**.

Note:

With the pushed down icon **Active Tool** the drawing tool is still activated.

4.2 Drawing a circular arc

The section describes the following:

- How a new circular arc 4-5 is drawn.
- How a previous seam section is continued with a circular arc 4-5.

Note:

The set default values 7-4 (seam length, rotational speed, etc.) are valid for the new seam section.

Work flow: Drawing a circular arc

1. In the "Drawing" tools menu bar, 3-16 click on the **Circular arc** icon.
2. Position the mouse in the drawing box so that the cursor is over the desired starting coordinates. Then confirm with the **left mouse button**.
3. Position the mouse cursor over the circular arc's end point and confirm selection with the **left mouse button**.
4. You can now extend the circular arc by moving the mouse. Once the desired size has been reached, click on the **left mouse button** to confirm and end the operation.
5. You can use the **right mouse button** to cancel the drawing before you have set the third point.

Work flow: Resuming (continuing) a seam section with a circular arc

1. Click on the **Continue** icon found in the Function bar.
2. In the "Drawing" tools menu bar, 3-16 click on the **Circular arc** icon. The start position of the arc is the same as the end point of the previous seam section. Thus it does not need to be set.
3. Position the mouse cursor over the circular arc's end point and confirm selection with the **left mouse button**.
4. You can now extend the circular arc by moving the mouse. Once the desired size has been reached, click on the **left mouse button** to confirm and end the operation.
5. You can use the **right mouse button** to cancel the drawing before you have set the third point.

Note:

With the pushed down icon **Active Tool** the drawing tool is still activated.

4.3 Drawing a spline curve

The section describes the following:

- How a new spline curve 4-6 is drawn.
- How a previous seam section is continued with a spline curve 4-6.

Note:

The set default values 7-4 (seam length, rotational speed, etc.) are valid for the new seam section.

A spline curve consists of at least three points (including the start and end points). The seam section is automatically discarded if the drawing ends after only two points.

Work flow: Drawing a spline curve

1. In the"Drawing" tools menu bar, 3-16 click on the **Spline curve** icon.
2. Position the mouse in the drawing box so that the cursor is over the desired starting coordinates. Then confirm with the **left mouse button**.
3. Position the mouse cursor over the next point on the spline curve and confirm selection with the **left mouse button**.
4. Repeat step 3 to define additional spline points.
5. End the drawing action by clicking on the **right mouse button**.

Work flow: Resuming (continuing) a seam section with a spline curve

1. Click on the **Continue**   icon found in the Function bar.
2. In the "Drawing" tools menu bar, 3-16 click on the **Spline curve** icon. The start position of the arc is the same as the end point of the previous seam section. Thus it does not need to be set.
3. Position the mouse cursor over the next point on the spline curve and confirm selection with the **left mouse button**.
4. Repeat step 3 to define additional spline points.
5. End the drawing action by clicking on the **right mouse button**.

Note:

With the pushed down icon **Active Tool** the drawing tool is still activated.

4.4 Positioning a single stitch

Note:

Single stitches are always sewn stitches. If non-sewn positions need to be drawn, then you should program a non-sewing movement 4-8 for this purpose.

Work flow: Drawing a single stitch

1. In the "Drawing" tools menu bar, 3-16 click on the **Single stitch** icon.
2. Position the mouse in the drawing box so that the cursor is over the desired coordinates. Then confirm with the **left mouse button**.
3. If additional single stitches are needed, go back to step 2 and repeat.
4. After the point has been defined, the action is completed and no further action is required.

Note:

An action point can be assigned to a single stitch using the "Reworking seam programs 5-3" function.

4.5 Defining a non-sewing movement

A non-sewing movement is used to define a movement that is made outside of the sewing process. This can be used, for example, to move around obstacles.

Work flow: Drawing a non-sewing movement.

1. In the "Drawing" tools menu bar, 3-16 click on the **Non-sewing**  icon.
2. Position the mouse in the drawing box so that the cursor is over the desired coordinates. Then confirm with the **left mouse button**.
3. If an additional point is needed for a non-sewing movement, go back to step 2 and repeat.
4. After the point has been defined, the action is completed and no further action is required.

Note:

An action point can be assigned to a non-sewn coordinate using the "Reworking seam programs 5-3" function.

Part V

Editing seam programs

5 Editing seam programs

A seam program consists of individual seam sections joined together.

These seam sections are described using support points including start and end points, as well as certain shapes (such as circular segments or spline curves) and additional mid-support points.

Each seam section is divided into stitches.

In order to edit a seam program, you must determine what will be edited:

- Seam sections 5-4: the entire seam section can be edited, for example, by moving, scaling, or assigning a new stitch length.
- Support point 5-32: a support point in a seam section can be edited, for example, by moving or deleting it.
- Stitch or stitches 5-49: one or more stitches can be edited, for example, by assigning an action point, by moving, or deleting.

5.1 Editing a seam section

Note:

Seam sections can be edited in the "Seam sections" 3-13 view.

Seam sections must first be selected or activated in the drawing box 5-5 before they can be edited.

The following types of seam sections are available:

	Line(s)
	Circular arc
	Spline curve
	Rectangle
	Single stitch
	Non-sewing stitch

A variety of functions are available for editing the selected seam sections:

- Change configuration 5-6: here you can, for example, change the stitch length of the seam section or define a zigzag seam.
- Rotate 5-8: the selected seam sections can be rotated to any angle around their mid-point.
- Mirror 5-11: the seam section can be mirrored either along the horizontal or vertical axis.
- Mirror & copy 5-12: a copy can be inserted that is either a horizontal or vertical mirror (reflection).
- Move 5-13: the selected seam sections can be moved in any direction.
- Scaling 5-15: the selected seam sections can be scaled to the desired size.
- Generate an equidistant counterpart 5-20: an equidistant counterpart can be inserted for the selected seam sections.

Note:

Dividing 5-46 sewing sections is made by editing support points.

5.1.1 Selecting seam sections

Note:

Seam selections can only be selected in the Seam section 3-13 view.

There are two ways to activate seam sections:

- click directly on the desired seam section 5-5,
- pull out a border 5-5 around the desired seam section(s).

Work flow: selecting seam sections directly

1. Position the mouse cursor over any point on the seam section.
2. Select the seam section with the **left mouse button**.
3. A border appears around the seam section.
4. If you need to activate another seam section, position the mouse cursor over any point on the new seam section.
5. Use the **CTRL** + **left mouse button** combination to select the seam section.
6. The border will now enclose all of the activated seam sections.
7. If you need to select another seam section, go to step 4 and repeat.

Work flow: Selecting seam sections by pulling out a border

Note:

The selected seam sections must be completely enclosed by the extended border.

1. Position the mouse cursor over any point outside of the seam section that you wish to activate.
2. Press and hold the **left mouse button**.
3. A border will be extended when you **press the left mouse button**.
4. The left mouse button can be released when the border encloses all of the desired seam section(s).
5. All of the seam sections are activated when they are completely enclosed by the border. The border will now enclose all of the activated seam sections.

5.1.2 Change configuration of seam section

The following can be configured:

- Stitch length (or alternatively, the stitch count) (→ new calculation for the support point),
- Whether or not the seam section have a zigzag shape (→ new calculation for the support point),
- Zigzag parameters (→ new calculation for the support point),
- technology points that need to be completed before the first stitch.

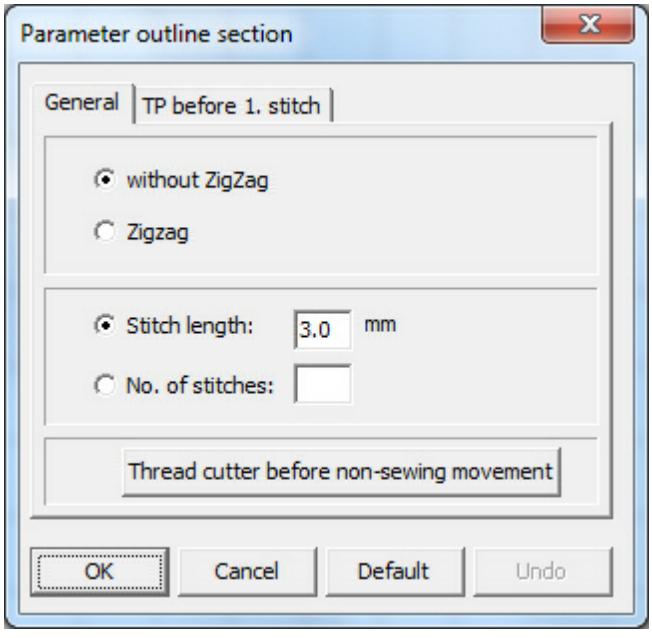
Note:

All stitch-related technology points will be lost if a new calculation for the seam section is required.

Exception: technology points that are located on a start or end point of the newly configured seam section.

Work flow: Configuring seam sections

1. You must first select the seam sections that you want to configure in the drawing box 5-5.
2. In the Icon menu bar, 3-15 click on the **Seam section configuration** icon.
3. The configuration window for seam sections 7-8 is then opened:



4. Make the changes in this window (→Config. window description 7-8) and exit the menu by clicking

on **OK**. If a **new calculation** is required, it will be automatically carried out.

5. It is possible to **cancel** at any time.
6. **Undo** resets all values back to what they were before the window was opened.
7. By clicking on **Default,** all parameters are reset to the values of the default parameters 7-4.

Note:

If you are dealing with lines in the seam section, then the individual sections can be separately configured 5-46 by using their support points.

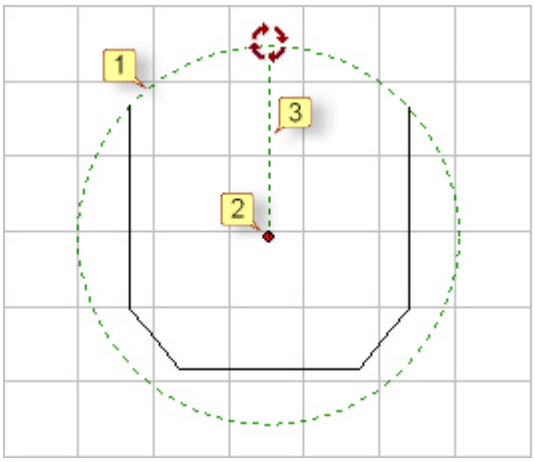
5.1.3 Rotate the seam section

There are two ways to rotate the seam sections:

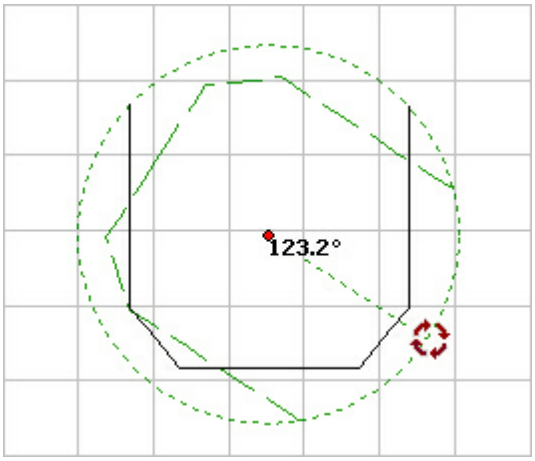
- Rotate the selected seam sections in the drawing box 5-8.
- Rotate the selected seam sections in the rotate window 5-10.

Work flow: Rotating seam sections

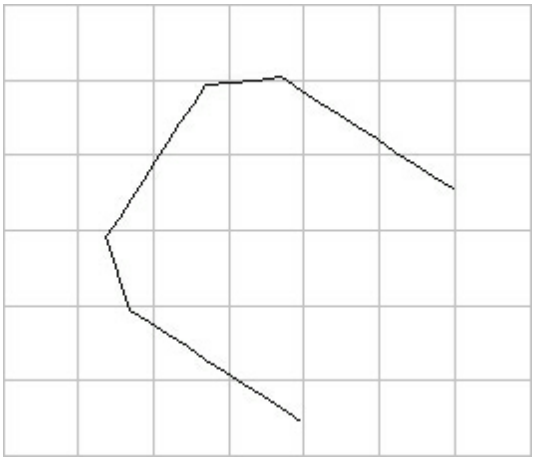
1. You must first select the seam sections that you want to rotate in the drawing box 5-5.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Rotate** icon. A rotation circle [1], a mid-point [2], and a rotational axis [3] are then visible around the seam section.



3. Using the mouse, move the cursor over the intersection of the rotational axis and rotation circle. When this point is located, the cursor changes its appearance:
4. In order to rotate the seam section, click on the **left mouse button** and **hold down** while moving the cursor in the desired direction (dragging). During this motion, the position of the axis and the current rotational angle are shown.
5. When you release the left mouse button, the rotated position of the seam section is also shown in dashes.



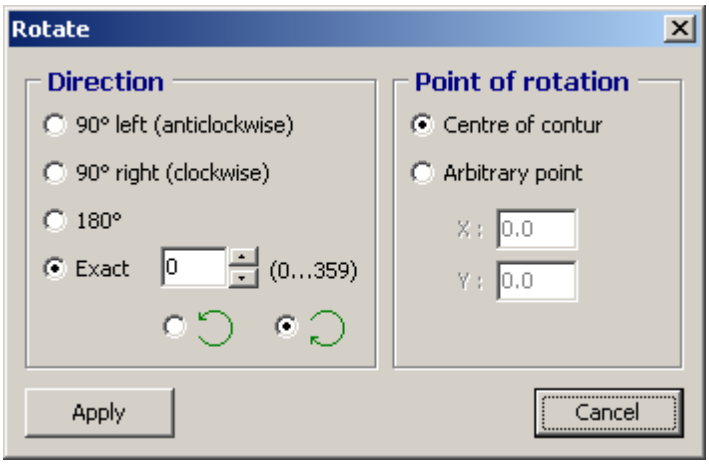
6. If you wish to change this angle, go back to step 3 and the following steps.
7. If the desired position has been reached, confirm with the **right mouse button**. The new position will then be adopted.



8. **Cancel**: You can cancel the rotate process at any time by clicking on the **left mouse button** outside of the rotational area.

Work flow: Rotating seam sections using the rotate window

1. You must first select the seam sections that you want to rotate in the drawing box 5-5.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Rotate window** icon.
3. This opens up the Rotate 7-15 input window:



4. Enter the desired direction, angle and position of the centre (→Description of Rotate window 7-15) and close by clicking on **Apply**. The move operation is then automatically carried out.
5. You can cancel this window without any changes to the seam section by clicking on **Cancel**.

5.1.4 Mirroring a seam section

There are two methods for mirroring the selected seam sections:

- Mirroring along the horizontal middle axis of the seam sections 5-1.
- Mirroring along the vertical mid-perpendicular bisector of the seam sections 5-1.

Work flow: Mirroring along the horizontal middle axis (= vertical mirroring)

1. You must first select the seam sections that you want to mirror in the drawing box 5-5.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Mirror vertically** icon.
3. The mirrored position is automatically implemented.

Work flow: Mirroring along the vertical mid-perpendicular bisector (= horizontal mirroring)

1. You must first select the seam sections that you want to mirror in the drawing box 5-5.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Mirror horizontally** icon.
3. The mirrored position is automatically implemented.

5.1.5 Mirror and copy

With the function "mirror and copy", a mirrored copy of the selected seam section is inserted.

There are two possibilities here:

- Mirroring and copy along the horizontal middle axis of the seam sections 5-12.
- Mirror and copy along the vertical mid-perpendicular bisector of the seam sections 5-12.

Work flow: Mirror and copy along the horizontal middle axis (= vertical mirroring)

Note:

When performing a vertical mirror and copy, the lower border line of the seam section is always the mirroring axis.

The copied seam section is attached to the seam program!

1. You must first select the seam sections that you want to mirror in the drawing box 5-8.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Mirror and copy vertically** icon.
3. The seam section is then automatically copied in.

Work flow: Mirror and copy along the vertical mid-perpendicular bisector (= horizontal mirroring)

Note:

When performing a horizontal mirror and copy, the right vertical border line of the seam section is always the mirroring axis.

The copied seam section is attached to the seam program!

1. You must first select the seam sections that you want to mirror in the drawing box 5-8.
2. In the "Rotate, mirror & copy" tools menu bar, 3-16 click on the **Mirror and copy horizontally** icon.
3. The seam section is then automatically copied in.

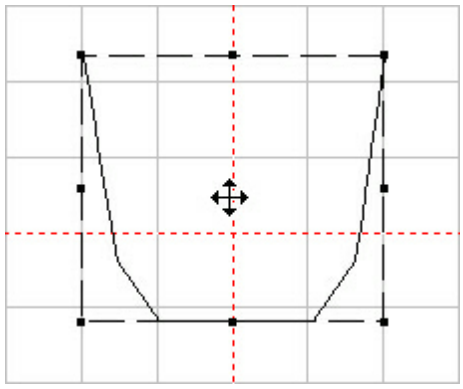
5.1.6 Move a seam section

There are two methods available for moving the selected seam sections:

- Move in the drawing box by using the mouse 5-13.
- Move by changing parameters in the Move input window 7-19.

Work flow: Move within the drawing box

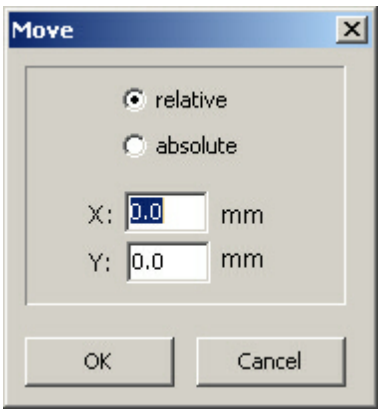
1. You must first select the seam sections that you want to scale in the drawing box 5-5.
2. If you move the mouse cursor within the marking frame, the cursor takes the shape of the move symbol:



3. **Hold down and press the** left mouse button.
4. Press down on the **left mouse button** and move the mouse in order to move the selected seam section.
5. Release the mouse button when the desired position has been reached.
6. The seam section is then automatically moved.

Work flow: Move using the input window

1. You must first select the seam sections that you want to scale in the drawing box 5-5.
2. Click on the **Move** icon in the "Scaling and Moving" tool box 3-16.
3. This opens up the Move 7-19 input window:



4. Enter the desired movement distance as absolute or relative values(→Description of Move window 7-19) and close by clicking on **OK**. The move operation is then automatically carried out.

5. You can cancel this window without any changes to the seam section by clicking on **Cancel**.

5.1.7 Scale a seam section

Note:

A new calculation for the seam section is required with a scaling operation. This causes all stitch-related action points and all stitch reworking operations to be lost.

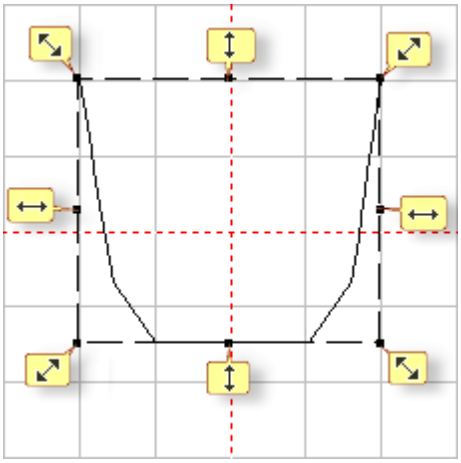
Exception: Action points that are located on a start or end point of the scaled seam section.

There are two methods available for scaling (resizing) the selected seam sections:

- Scale in the drawing box by using the mouse 5-15.
- Scale by changing parameters in the Scale input window 7-17.

Work flow: Scale within the drawing box

1. You must first select the seam sections that you want to scale in the drawing box 5-5.
2. In order to scale with the mouse, the cursor must be positioned over one of the eight scaling fields surrounding the marking frame. When the cursor is over one of the scaling fields around the marking frame, it then changes to the scaling symbol shape. The cursor symbol indicates which direction will be used for the scaling operation.

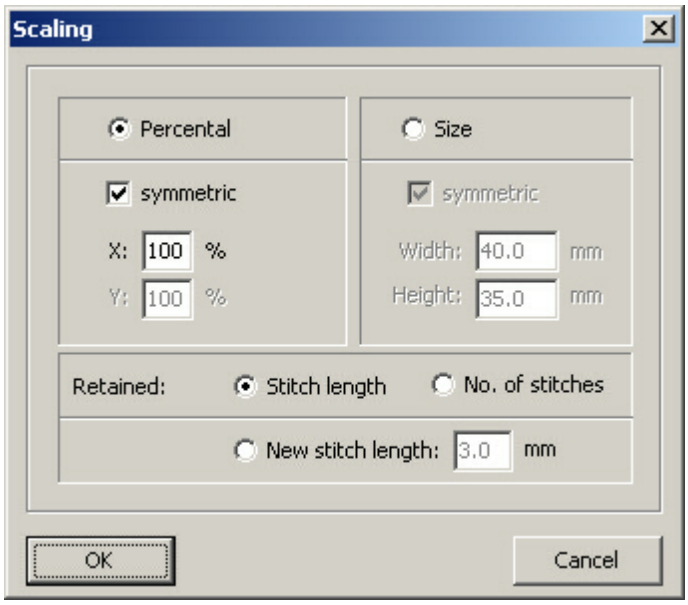


3. **Hold down and press the** left mouse button.
4. With the **left mouse button pressed down,** you can change the selected seam sections by moving the mouse.

5. Release the left mouse button when the desired size is reached. The newly scaled size will then be automatically adopted.

Work flow: Scale using the input window

1. You must first select the seam sections that you want to scale in the drawing box 5-5.
2. Click on the **Scale** icon in the "Scaling and Moving" tool box 3-16.
3. This opens up the Scale 7-17 input window:



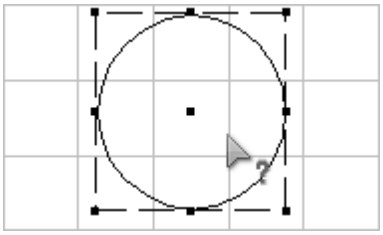
4. Enter the desired scale change as absolute or relative values (→Description of Scale window 7-17) and close by clicking on **OK**. The scale operation is then automatically carried out.
5. You can cancel this window without any changes to the seam section by clicking on **Cancel**.

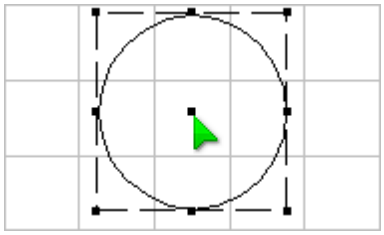
5.1.8 Positioning a seam section

With the function "Positioning a seam section" you can set the position of a margin point:

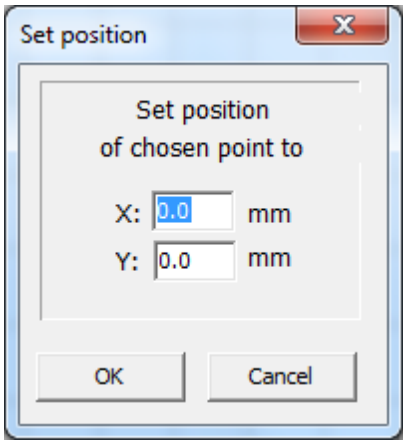
Wotk flow: Positioning a seam section

1. You must first select the seam sections that you want to scale in the drawing box 5-5.
2. Click on the **Positioning of a seam section** icon in the "Scaling and Moving" tool box 3-16.
3. Mith the mouse choose one of the margin points or the center. If you hit one of this points the cursor change his appearance:

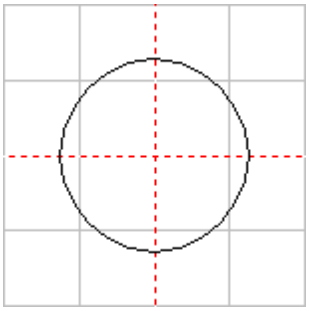




3. **Click left mouse button.** This opens the **Set position** input window:



4. Set position for the chosen point in the input window (→Positioning input window 7-21) and close by clicking on **OK**. The move operation is then automatically carried out:



5. You can cancel this window without any changes to the seam section by clicking on **Cancel.**

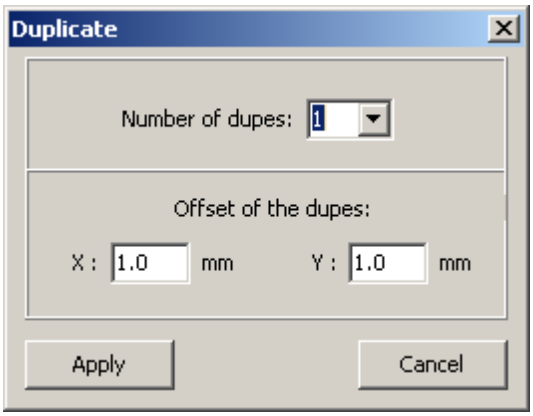
5.1.9 Duplicate a seam section

Note:

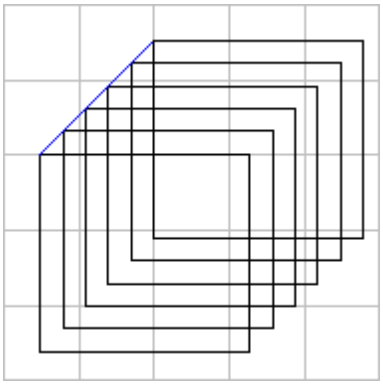
When duplicate a seam section the technology points of the original are also on the dupes.

Work flow: Duplicate as seam section

1. You must first select the seam sections that you want to duplicate in the drawing box 5-5.
2. Click on the **Duplicate** icon in the "Scaling and Moving" tool box 3-16
3. This opens up the Duplicate 7-22 input window:



4. Select number of dupes and the distance between two dupes and close by clicking on **Apply**. The duplicate operation is then automatically carried out



5. You can cancel this window without any changes to the seam section by clicking on **Cancel.**
6. You can reverse the seam direction of individual dupes (→Reverse seam direction 5-22).

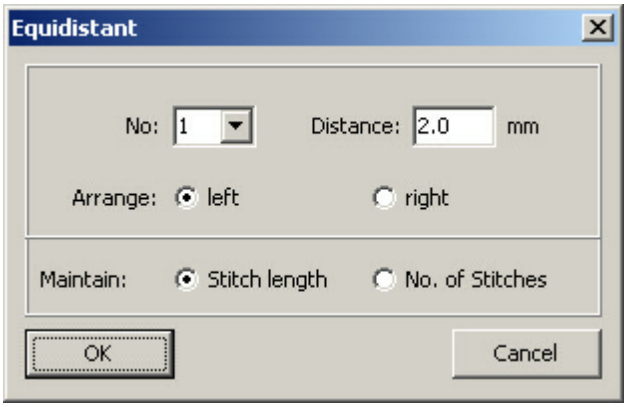
5.1.10 Generate an equidistant counterpart

Note:

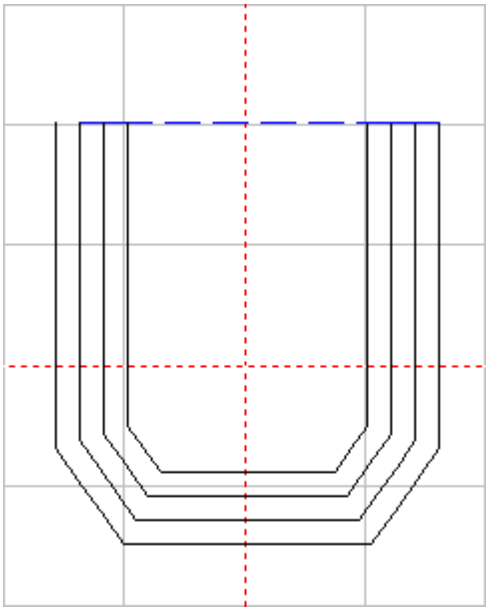
The action points of the original are not transferred when generating a new equidistant counterpart.

Work flow: Creating an equidistant counterpart

1. The seam section for which you want to form an equidistant counterpart should first be selected in the drawing box 5-5.
2. Click on the **Equidistant** icon in the "Scaling and Moving" tool box 3-16.
3. This opens up the Equidistant 7-20 input window:



4. Enter the desired number of equidistant counterparts and the gap between them (→Description of Equidistant window 7-20) and close by clicking on **OK**. The desired equidistant counterparts are then created automatically.



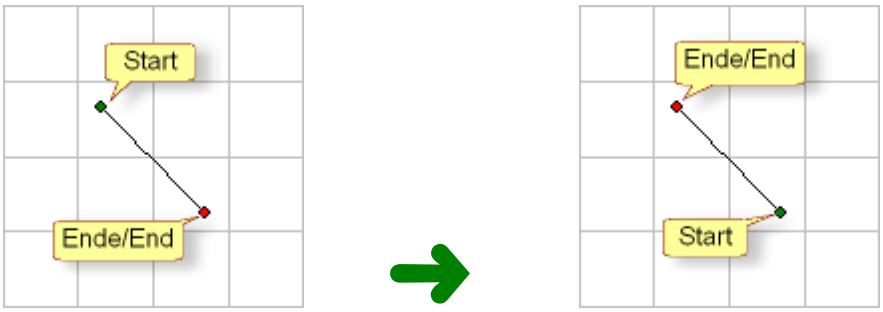
5. You can cancel this window without any changes to the seam section by clicking on **Cancel**.
6. It is possible to reverse the seam direction for individual equidistant counterparts (→Reverse seam direction 5-22).

5.1.11 Reverse seam direction

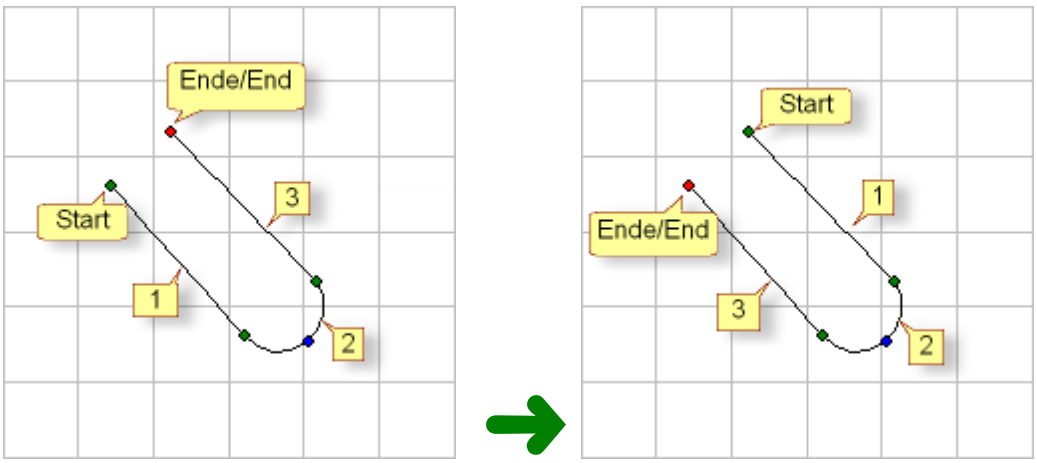
With this function you can reverse the seam direction for seam sections:

Work flow: Reverse seam direction

1. The seam sections must first be selected in the drawing box 5-5.
2. Click on the **Reverse seam direction** icon in the "Scaling and Moving" tool box 3-16.
3. The reversal for the seam sections is then carried out automatically.



If multiple sequential seam sections are selected, then both the seam direction and the order of the seam sections are automatically reversed:



Note:

After a reversal of seam direction, all action points are maintained at their original places.

Be sure to check if the action points are still intended at these positions (for example, when using a "cut" action point, or a rotational speed reduction).
It is possible to delete all of the action points 5-24 in a single seam section.

5.1.12 Delete all technology points

This function allows you to delete all technology points for the selected seam sections.
To change or delete individual technology points, use the stitch editing 5-56 function.

Work flow: Delete technology points from a seam section

1. The seam sections must first be selected in the drawing box 5-5.
2. Click on the **Delete technology point icon** in the "Scaling and Moving" tool box. 3-16
3. All technology points from the selected seam section are then deleted.

5.1.13 Deleting a seam section

Work flow: Deleting a seam section

1. You must first select the seam sections that you want to delete in the drawing box 5-5.
2. Click on the **Delete** icon to delete the selected seam sections.
3. Alternatively, the selected seam sections can be deleted by using the **Del** key.
4. The change is then automatically carried out in the seam program.

5.1.14 Change to non-sewing section

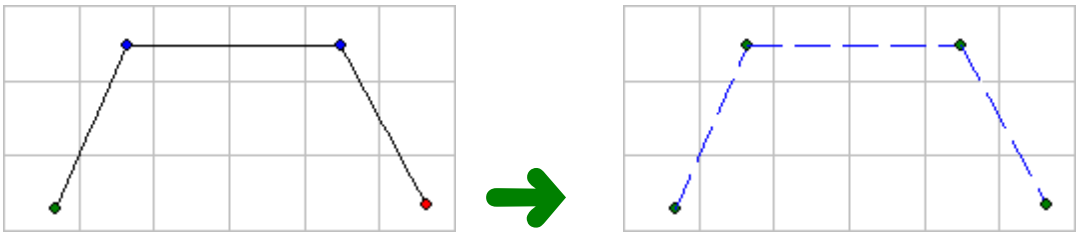
With this function you can change sewing seam sections to non-sewing sections.

Hinweis:

You can only change lines to a non-sewing seam section.

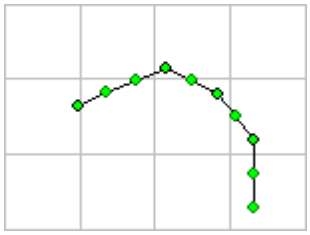
Work flow: Change to non-sewing seam section

1. The seam sections must first be selected in the drawing box 5-5.
2. Click on the **Change to non-sewing** icon in the "Scaling and Moving" tool box 3-16.
3. The change for the seam sections is then carried out automatically.

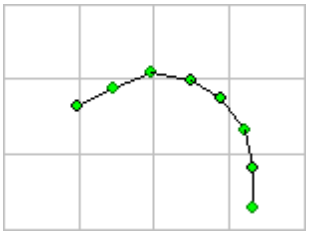


5.1.15 Interpolation

With the function Interpolation you can manage that the stitches will be uniformly distributed over the selected seam sections.
An end or start point of a seam section represents not necessarily a stitch.



no interpolation



with interpolation

Note:

In case of the interpolation corner stitches can be disappear.

Work flow: Interpolation

1. The seam sections must first be selected in the drawing box 5-5.
2. Click on the **Interpolation** icon in the "Scaling and Moving" tool box 3-16.
3. Calculation the stitches starts automatically.

Work flow: No interpolation

1. The seam sections must first be selected in the drawing box 5-5.
2. Click on the **Interpolation** icon in the "Scaling and Moving" tool box 3-16.
3. Calculation the stitches starts automatically.

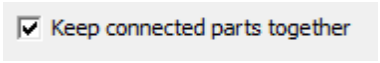
5.1.16 Sequence window

It is possible to change the sequence of the seam sections.

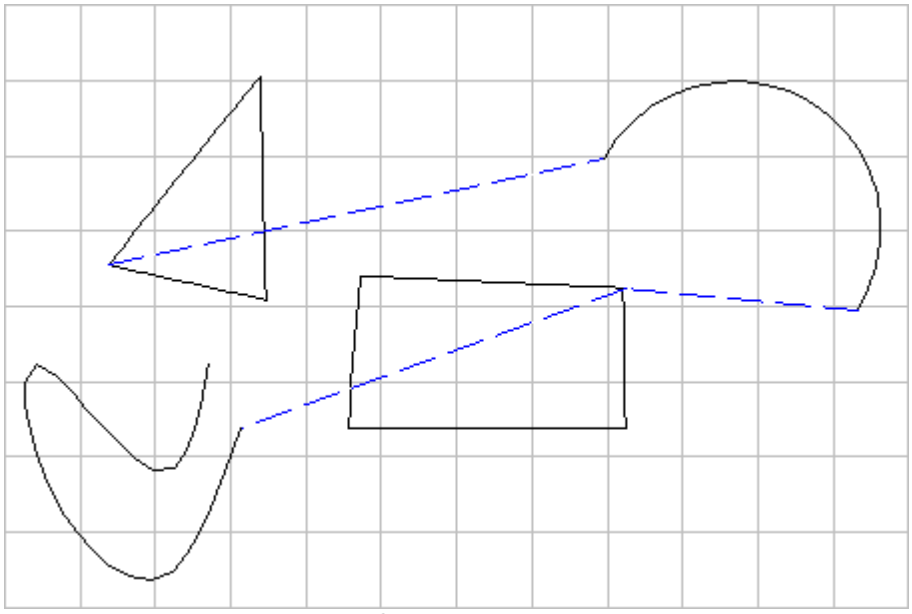
Note:

There are two different ways:

a. Connected seam sections stay connected. They will be moved together.



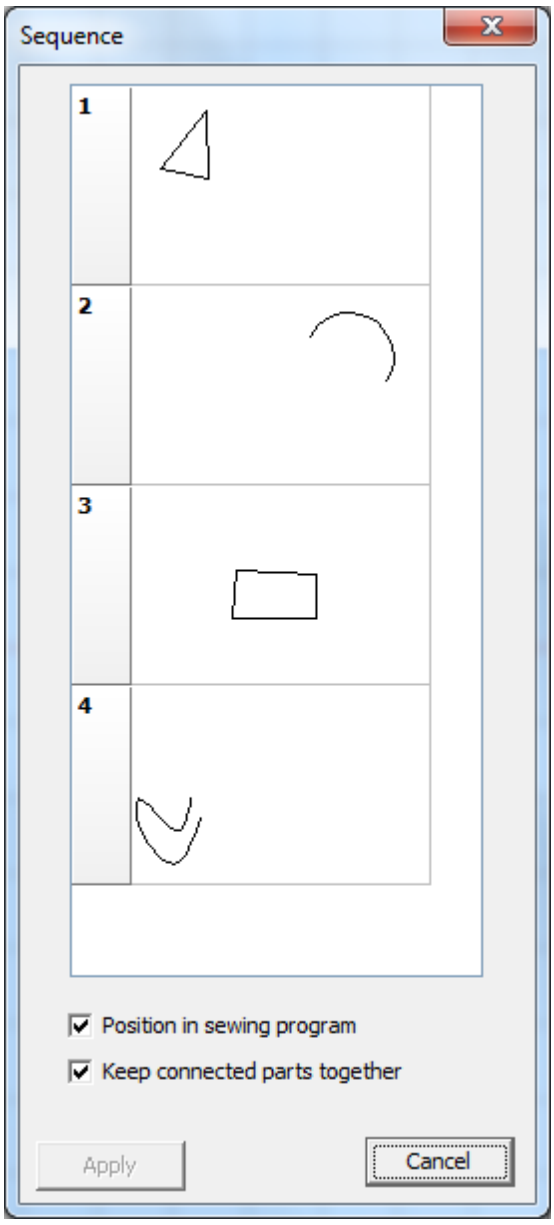
b. You can change the position of every seam section.

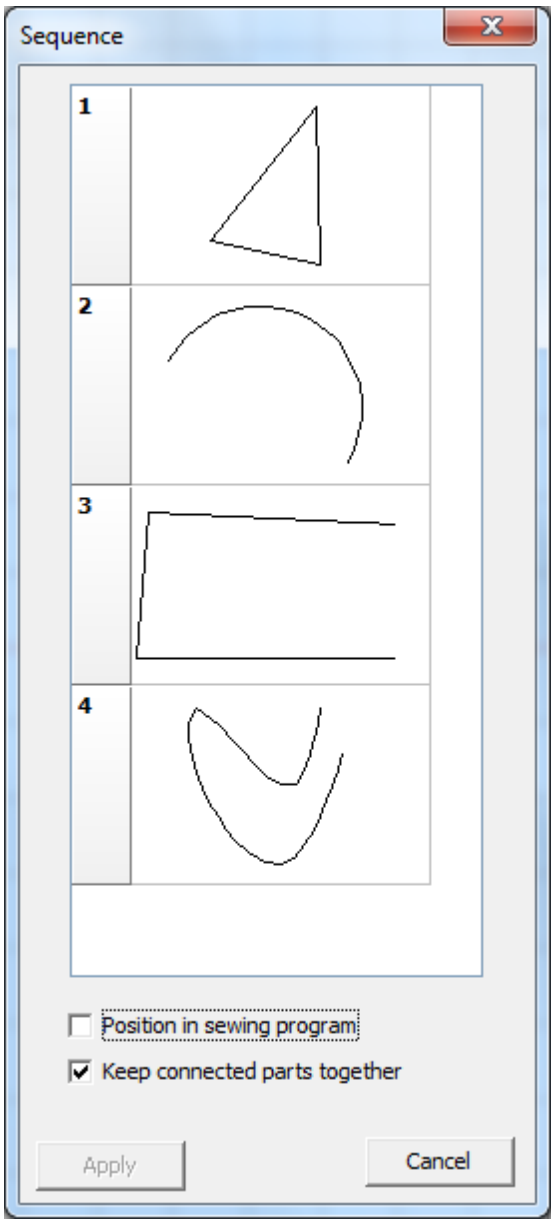


Beispiel einer Sequenz von Nahtabschnitten

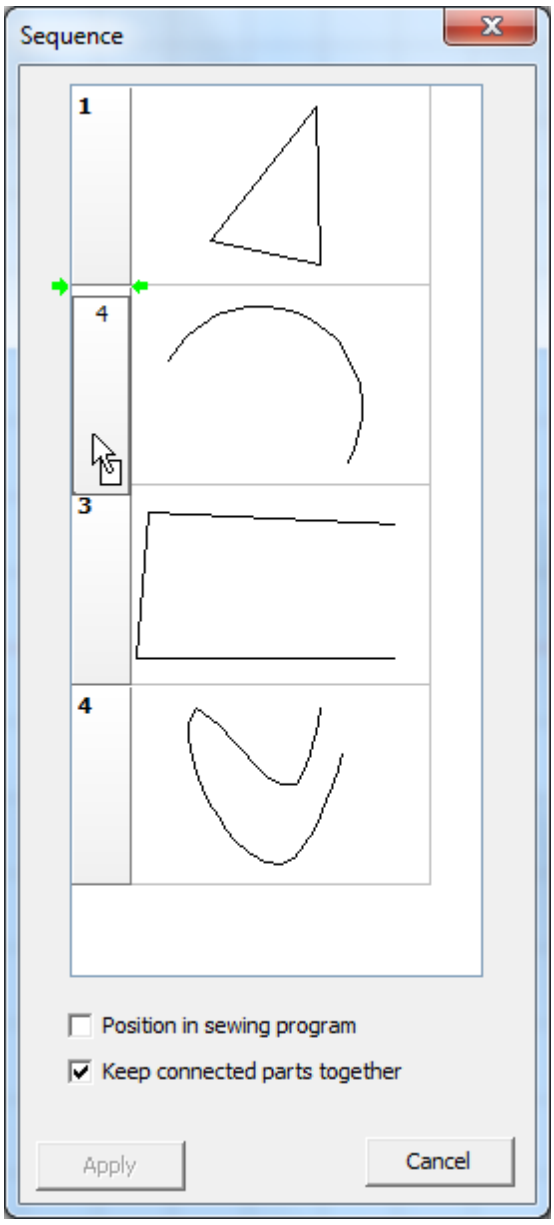
Work flow: Change sequence

1. In the Icon menu bar, 3-13 click on the **Sequence** icon.
1. The sequence window is then opened:

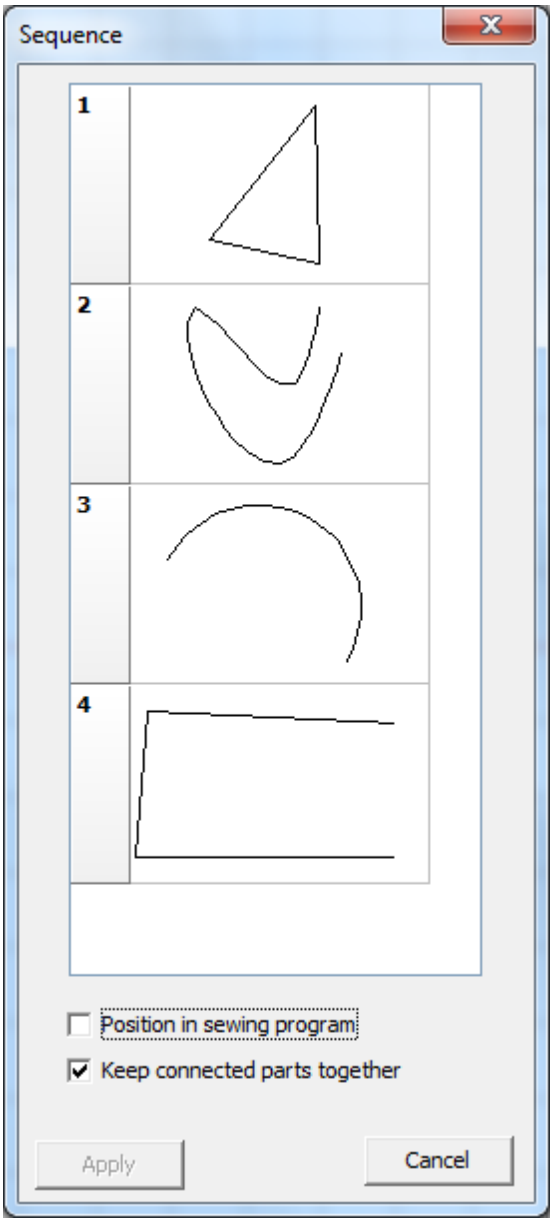




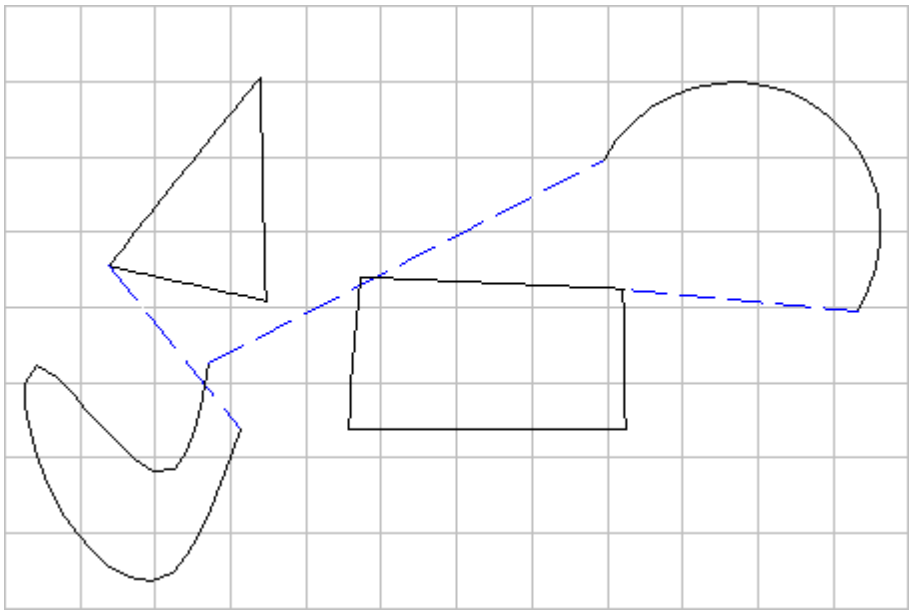
2. Choose the position number by **click and hold left mouse button** and move to the new position:



3. You set the new position by release the mouse button:



4. With apply you close the sequence window. Calculation the new position starts automatically:



5. You can cancel this window without any changes to the seam section by clicking on **Cancel**.

5.2 Edit a support point

Note:

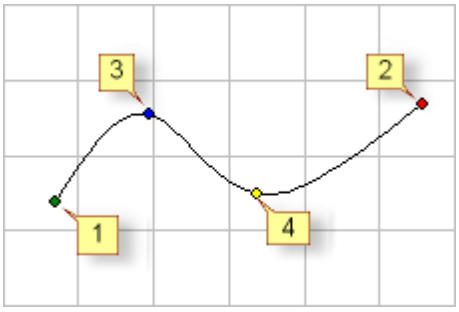
Support points can be edited in the "Support point" 3-13 view.

A support point must first be selected or activated in the drawing box 5-34 before it can be edited.

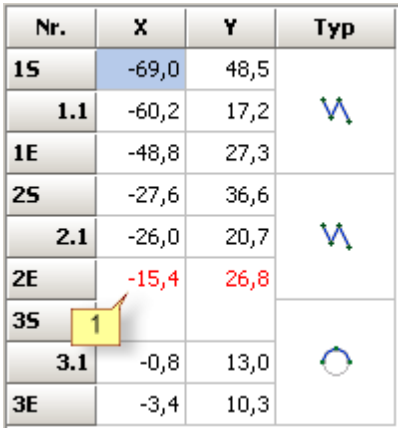
These seam sections are described using support points including start and end points, as well as certain shapes (such as circular segments or spline curves) and additional mid-support points.

In the **drawing box** of the "Support points" view, these are shown with different colours:

1	Start point	green
2	End point	red
3	Mid-support point	blue
4	Selected support point	yellow



Support points are shown as X and Y coordinates (in millimetres) in the **table**. The type of seam section 5-4 is also shown.
If two seam sections are connected to each other, the cells which show their coordinates are connected and shown in red[1].



A variety of functions are available for editing the selected support points:

- Move 5-36: the selected support point can be moved in any direction.
- Delete 5-37: Support points can be deleted (with a few restrictions).
- Insert 5-38: Additional support points can be inserted for the seam section types line and spline.
- For seam section consisting of multiple lines, it is possible to separately configure 5-46 individual sections.

5.2.1 Selection of support points

Note:

Support points can only be selected in the Support point 3-15 view.

There are two ways to activate a support point:

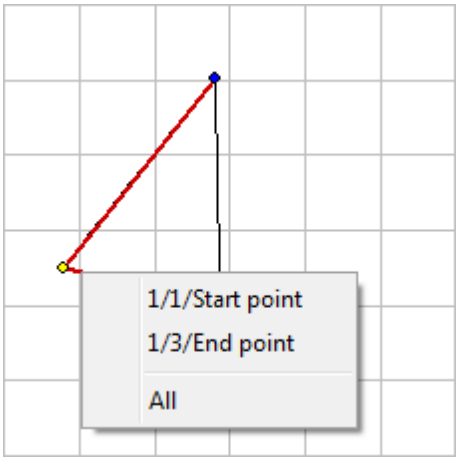
- you can mark it in the drawing box,
- or you can select it in the values table.

Work flow: Selection of a support point in the drawing box

1. Position the mouse cursor over the desired support point.
2. Select the support point with the **left mouse button**.
3. The selected support point will then be shown in yellow.
4. If the table view 3-13 is activated, then the X value for this support point is selected.
5. In the case of a seam section with connected lines, when a support point is selected the individual section is simultaneously activated whose end point is this support point (→Configuration of individual sections 5-46). The individual section is then shown with a dark red line.

Note:

If the chosen coordinate represents more than one support point, a drop down menu appear, where you can choose one or all points.



Meaning: **1/3/End point**: End point of the 3. part of the 1. seam section

Work flow: The selection of a support point in the table

Note:

In order to work with the table, the table view must be activated in the Icon menu bar 3-13, by clicking on the **Table** icon .

1. Select the appropriate cell in the table containing the X/Y coordinates for the desired support point.
2. The selected support point will then be shown in yellow in the drawing box.
3. In the case of a seam section with connected lines, when a support point is selected the individual section is simultaneously activated whose end point is this support point (→Configuration of individual sections 5-46). The individual section is then shown with a dark red line.

5.2.2 Moving a support point

It is possible to move a support point:

- in the drawing box 5-36.
- or by using the values table 5-36.

Note:

A new calculation for the seam section is required when a support point is moved. This causes all stitch-related action points and all stitch reworking operations to be lost.

Work flow: Moving a support point in the drawing box

1. You must first select the support point that you want to move in the drawing box 5-34.
2. Position the mouse cursor over the desired support point.
3. Press and hold the**left mouse button**.
4. Press down on the **left mouse button** and move the mouse in order to move the selected support point.
5. Release the left mouse button when the desired position is reached.
6. The seam section is then automatically moved.

Work flow: Moving a support point in the table

1. Activate the X/Y coordinates of the support point that you wish to move in the table by **double clicking** on them.
2. Enter the desired values and confirm by pressing **Return**.
3. The support point is then automatically moved and this is shown graphically.

5.2.3 Delete a support point

It is possible to delete a support point:

- in the drawing box 5-37.
- or by using the values table 5-37.

Depending on the type of seam section, the following rules are relevant:

Line	As long as more than one individual section exists, any point from the seam section can be deleted.
Circular segment	No support point can be deleted. Instead you must delete the entire seam section 5-24.
Spline curve	Start and end points can not be deleted. As long as more than one mid-support points exist, any mid-point can be deleted.

Note:

A new calculation for the involved seam section or partial section is required after deleting a support point. This causes all stitch-related action points and all stitch reworking operations to be lost.

Work flow: Deleting a support point in the drawing box

1. You must first select the support point that you want to delete in the drawing box 5-34.
2. Click on the **Delete** icon to delete the selected support point.
3. Alternatively, the selected support point can be deleted by using the **Del** key.
4. The change is then automatically carried out in the seam program.

Work flow: Deleting a support point in the table

1. Activate the X/Y coordinates of the support point that you wish to delete in the table by **double clicking** on them.
2. Click on the **Delete** icon to delete the selected support point.
3. Alternatively, the selected support point can be deleted by using the **Del** key.
4. The change is then automatically carried out in the seam program.

5.2.4 Insert

Note:

The insertion of support points is only supported for seam sections which are types line or spline .

There are two basic options for inserting a support point in the table:

- before 5-38 the selected support point.
- after 5-39 the selected support point.

The possibilities available depend on the selected support point, as follows:

selected support point		
Start	Middle	End

Depending on the type of insertion, the newly inserted support point is placed:

- **Before**: halfway between the selected support point and the support point that is positioned before it.
- **After**: halfway between the selected support point and the support point that is positioned after it.

The newly inserted support point can then be edited (for example, moved).

Note:

A new calculation for the seam section is required when a support point is inserted. This causes all stitch-related action points and all stitch reworking operations to be lost.

Work flow: Insert before the selected support point

1. **Click** on the X/Y coordinate value of the support point in the table to activate the location before which a support point will be inserted.
2. Click on the **Insert before** icon to insert an additional support point on the seam section before the selected support point.
3. The change is then automatically carried out in the seam program and a new calculation of the seam section is performed.
4. If desired, the new support point can now be moved 5-36.

Work flow: Insert after the selected support point

1. **Click** on the X/Y coordinate value of the support point in the table to activate the location after which a support point will be inserted.
2. Click on the **Insert after** icon to insert an additional support point on the seam section after the selected support point.
3. The change is then automatically carried out in the seam program and a new calculation of the seam section is performed.
5. If desired, the new support point can now be moved 5-36.

5.2.5 Connect

With this function you can connect two seam sections.
This connection will be represented by an additional line.

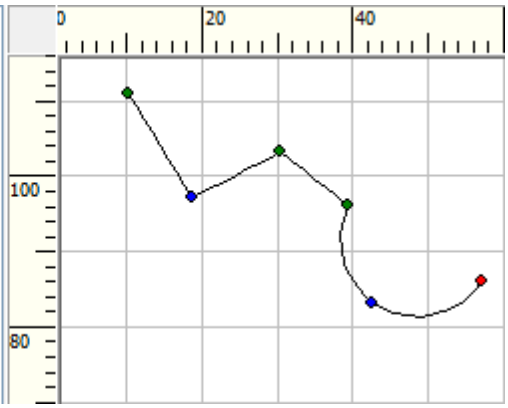
Note:

You can only connect an end point of a section with a start point of an other seam section.

Nr.	X	Y	Typ
1S	10,1	111,1	
1.1	18,6	97,1	
1E	30,4	103,2	
2S	39,5	96,1	
2.1	42,7	83,3	
2E	57,3	86,2	

connecting seam section 1 with section 2:

Nr.	X	Y	Typ
1S	10,1	111,1	
1.1	18,6	97,1	
1E	30,4	103,2	
2S			
2E	39,5	96,1	
3S			
3.1	42,7	83,3	
3E	57,3	86,2	



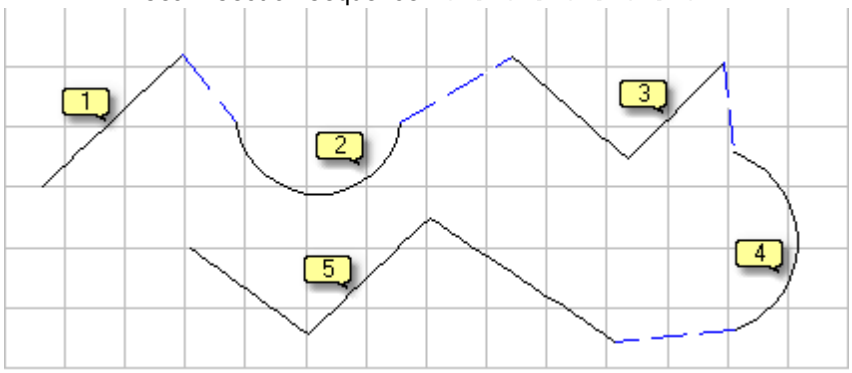
Note:

If two not sequential seam sections are connected, the sequence of the seam sections changes by connecting.

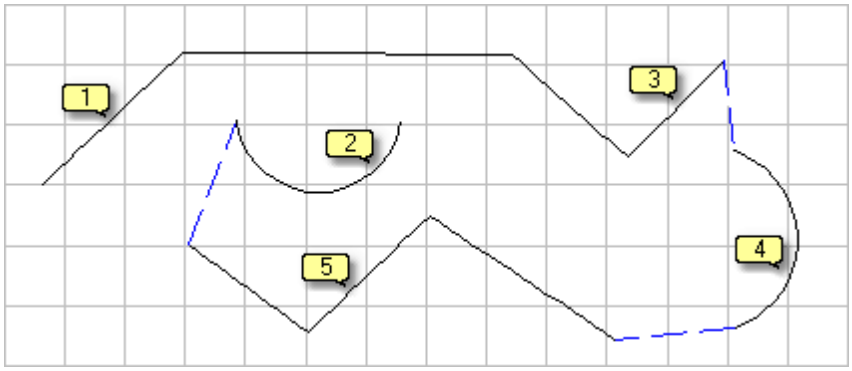
All sections,which follow that the new connected section, are shifted.

Ex.:

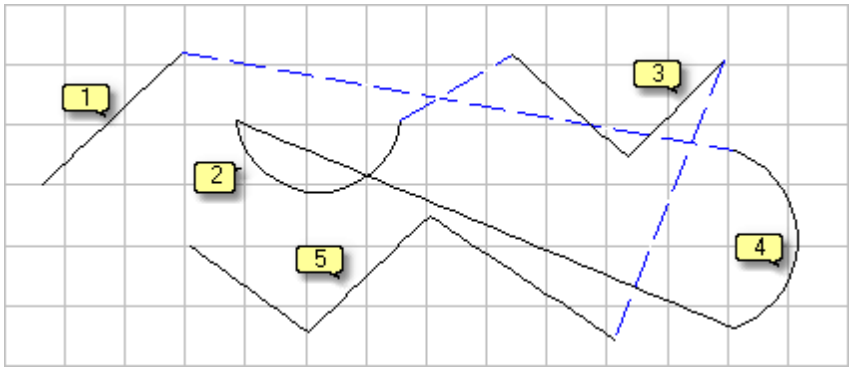
seam section sequence: ①→②→③→④→⑤



① connect with ③ : ①→③→④→⑤→②

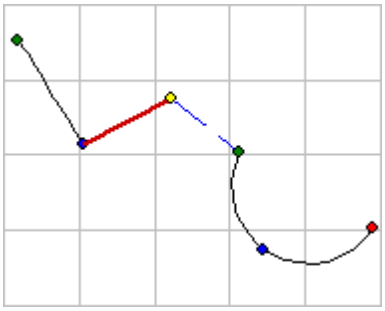


④ connect with ② : ①→④→②→③→⑤

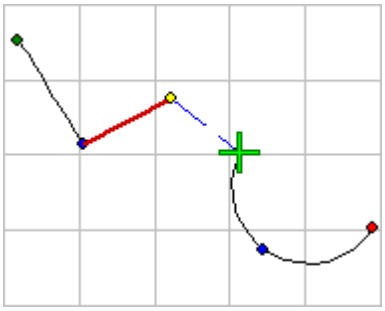


Work flow: Connecting seam sections

1. The end point of one seam sections must first be selected in the drawing box 5-5.



2. Click on the **Connecting** icon .
3. Choose with the cursor the start point of one seam section. If this start point is permissible, the cursor changes its appearance:



4. Confirm this point with the **left mouse button**.Connecting the two seam sections is then carried out automatically.
5. **Cancel**: You can cancel the connecting process at any time by clicking on the **right mouse button.**

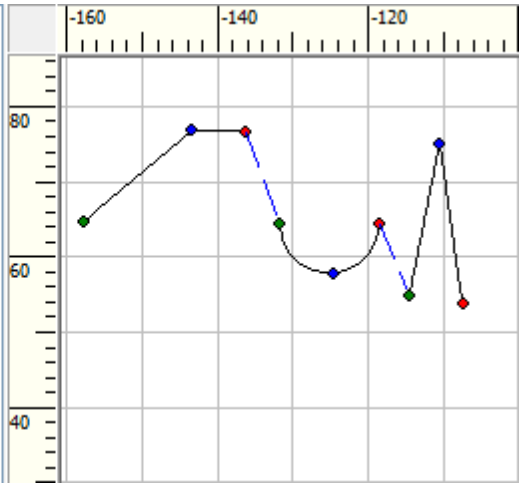
5.2.6 Move & Connect

With this function you can connect two seam section by moving the second section to the connecting point.

Note:

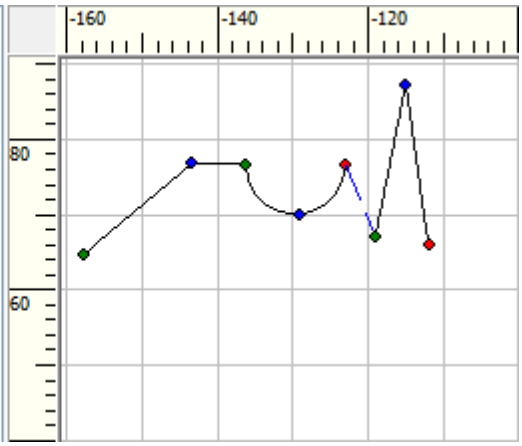
You can only connect an end point of a section with a start point of an other seam section.

No.	X	Y	Type
1S	-157,8	64,7	
1.1	-143,5	76,9	
1E	-136,3	76,7	
2S	-131,8	64,5	
2.1	-124,7	57,8	
2E	-118,6	64,5	
3S	-114,6	54,9	
3.1	-110,6	75,1	
3E	-107,4	53,8	



connecting seam section 1 with section 2:

No.	X	Y	Typ
1S	-157,8	64,7	
1.1	-143,5	76,9	
1E	-136,3	76,7	
2S			
2.1	-129,2	70,0	
2E	-123,1	76,7	
3S	-119,1	67,1	
3.1	-115,1	87,3	
3E	-111,9	66,0	

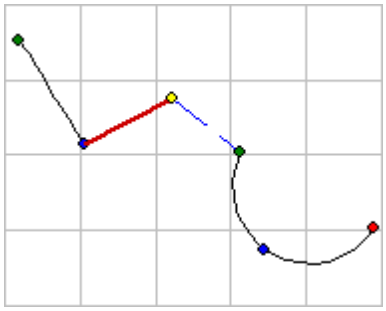


Note:

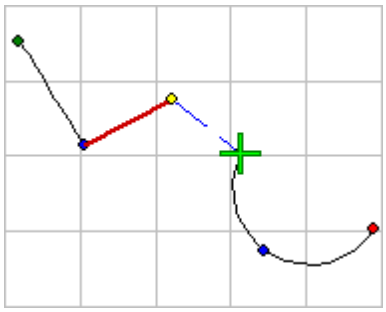
If two not sequential seam sections are connected, the sequence of the seam sections changes by connecting (s. Connect 5-40).

Work flow: Connecting seam sections

1. The end point of one seam sections must first be selected in the drawing box 5-5.



2. Click on the **Move & Connecting** icon .
3. Choose with the cursor the start point of one seam section. If this start point is permissible, the cursor changes its appearance:



4. Confirm this point with the **left mouse button**.Connecting the two seam sections is then carried out automatically.
5. **Cancel**: You can cancel the connecting process at any time by clicking on the **right mouse button.**

5.2.7 Divide seam sections

There is a possibility of separating connected seam sections so that the separate sections can be worked on independently.

Note:

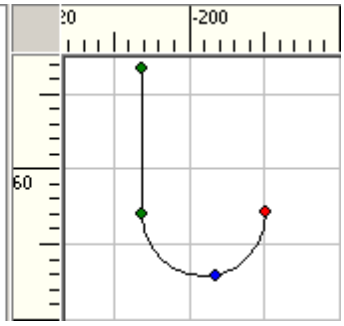
Seam sections can only be divided on start or end points.

Work flow: Divide seam sections

1. You must first select the support point that you want to divide in the drawing box 5-34.
2. In the tool menu bar click on the **Divide** Icon.
3. The separation is made automatically. Now there are two seam sections. These can be worked on separately.

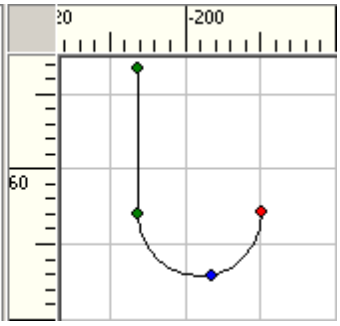
before divide:

Nr.	X	Y	Typ
1S	-206,4	73,5	
1E	-206,4	54,1	
2S			
2.1	-196,6	45,9	
2E	-189,9	54,4	



after divide:

Nr.	X	Y	Typ
1S	-206,4	73,5	
1E	-206,4	54,1	
2S	-206,4	54,1	
2.1	-196,6	45,9	
2E	-189,9	54,4	



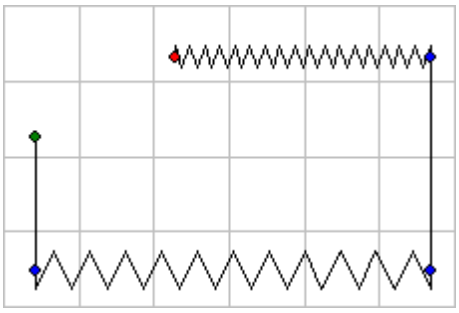
5.2.8 Configuration of individual sections

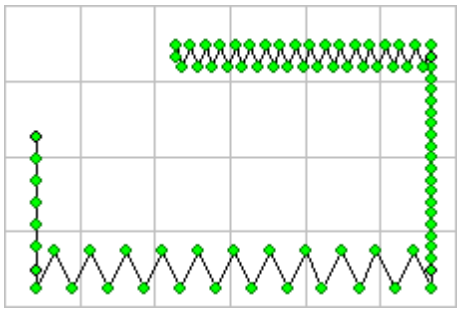
Note:

This chapter is only relevant for seam sections which are of type Line .

If a seam section consists of multiple lines, each individual section can be assigned its own

configuration values. Thus, within a seam section, it is possible to change the stitch length or to sew one section with a zigzag pattern.



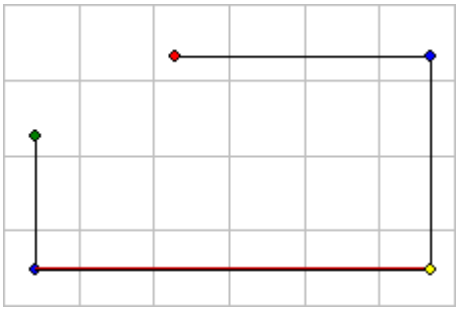


Note:

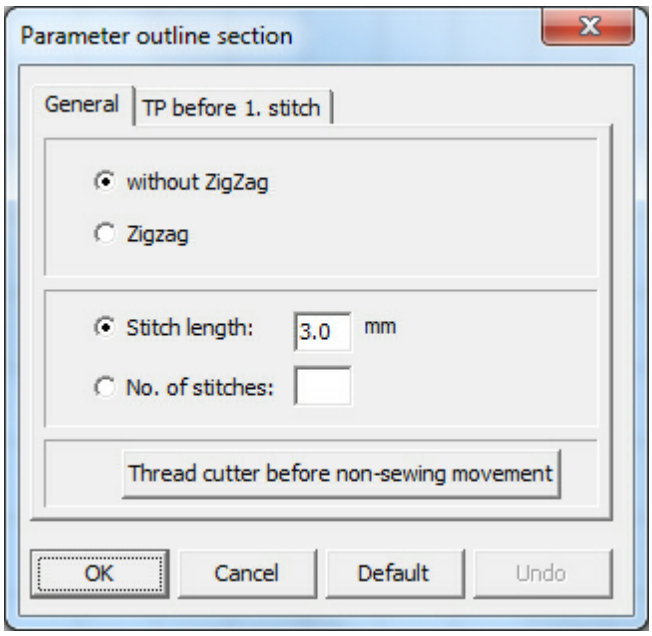
All stitch-related action points for the individual section will be lost if a new calculation is required because of the configuration of this section.

Work flow: Configuring individual sections

1. The **end point** of the individual section to be configured must first be selected in the drawing box 5-34 . The individual section is then shown with a dark red line.



2. In the Icon menu bar, 3-13 click on the **Seam section configuration** icon.
3. The configuration window for seam sections 7-8 is then opened:



4. Make the required changes in this window (→Config. window description 7-8) and then end the data entry by clicking on **OK**. A **new calculation** will be automatically carried out if required.
5. It is possible to **cancel** at any time.
6. **Undo** resets all values back to what they were before the window was opened.
7. By clicking on **Default,** all parameters are reset to the values of the default parameters 7-4.

5.3 Edit stitch or stitches

Note:

Stitches can be edited in the "Stitches" 3-13 view.

Stitches must first be selected or activated in the drawing box 5-50 before they can be edited.

When drawing seam sections, stitches are automatically shown according to the pre-set stitch length. It is possible to edit these stitches.
The following functions are available for editing the selected stitches:

- Move 5-53: individual stitches or a group of stitches can be moved.
- Delete 5-54: individual stitches or a group of stitches can be deleted.
- Insert 5-55: stitches can be inserted.
- Edit action point 5-56: action points can be attached to individual stitches and these action points can be edited.

Stitches are shown as filled circles:

green	non-activated stitch
black	activated stitch

Note:

If a seam section needs to be recalculated (for example, after scaling), then the stitches in this seam section must be regenerated.

All stitching work performed on this seam section up to this point are then lost and must be redone.

5.3.1 Selection of stitches

Note:

Stitches can only be selected in the Stitch 3-15 view .

There are several ways to activate stitches. First you must determine if you are selecting a single stitch or multiple sequential stitches:

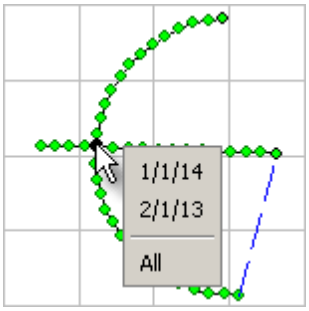
- Click directly on the desired stitch 5-50.
- Pull out a border 5-50 around the desired seam stitch or stitches.
- Select one or more stitches in the values table 5-51

Work flow: Selecting a stitch directly

1. Position the mouse cursor over the desired stitch.
2. Select the stitch with the **left mouse button**.
3. The selected stitch is then shown in black.
4. If the table view 3-13 is activated, then the X value for this stitch is selected.

Note:

If the chosen coordinate represents more than one stitch, a drop down menu appear, where you can choose one or stitches.



Meaning: **2/1/13**:13. stitch of the 1. part of the 2. seam section

Work flow: Selecting stitches by pulling out a border

Note:

The selected stitches must be completely enclosed by the extended border.

1. Position the mouse cursor over any point outside of the stitch that you wish to activate.
2. Press and hold the **left mouse button**.
3. A border will be extended when you **press the left mouse button**.
4. The left mouse button can be released when the border encloses all of the desired stitch or stitches .
5. All of the stitches are activated when they are completely enclosed by the border. All activated stitches are shown in black.

Work flow: The selection of a stitch in the table

Note:

In order to work with the table, the table view must be activated in the Icon menu bar 3-13, by clicking on the **Table** icon .

1. Select the appropriate cell in the table containing the X/Y coordinates for the desired stitch.
2. The selected stitch will then be automatically shown in black in the drawing box.

Work flow: The selection of a stitch in the table

Note:

In order to work with the table, the table view must be activated in the Icon menu bar 3-13, by clicking on the **Table** icon .

1. Position the mouse cursor in the "**No.**" column, at the beginning of the range that you wish to activate for the desired stitches.
2. Press and hold the **left mouse button**.
3. The proper stitches are then marked by making an up or down motion with the **left mouse button pressed down**.
4. Release the left mouse button when all desired stitches in the table have been marked.
5. The selected stitches will then automatically be shown in black in the drawing box.

5.3.2 Move stitch

When moving a stitch, it is important to determine the following:

- one stitch is activated: it is possible to move in the drawing box and in the table
- multiple stitches are selected: it is possible to move only in the drawing box.

Work flow: Move within the drawing box

1. You must first select the stitches that you want to move in the drawing box or table 5-5.
2. Position the mouse cursor over a marked stitch.
3. Press and hold the **left mouse button**.
4. Press down on the **left mouse button** and move the mouse in order to move the selected stitches.
5. Release the left mouse button when the desired position is reached.
6. The stitches are then automatically moved.

Work flow: Moving by making changes to the table

Note:

The table makes use of two coordinate systems:

- absolute coordinates
- relative coordinates

1. Activate the X/Y coordinates of the stitch that you wish to move in the table by **double clicking** on them.
2. Enter the desired values and confirm by pressing **Return**.
3. The stitch is then automatically moved and this is shown graphically.

Note:

Remember that if a change is made to the relative coordinates in the table, this leads to a change in the absolute coordinates of the subsequent stitches in this seam section.

5.3.3 Delete stitch

It is possible to delete a stitch:

- in the drawing box 5-37.
- or by using the values table 5-37.

Work flow: Deleting stitches in the drawing box

1. You must first select the stitch that you want to delete in the drawing box 5-34.
2. Click on the **Delete** icon to delete the selected stitch.
3. Alternatively, the selected stitch can be deleted by using the **Del** key.
4. The change is then automatically carried out in the seam program.

Work flow: Deleting a stitch in the table

1. You must first select the stitches that you want to delete in the table 5-5.
2. Click on the **Delete** icon to delete the selected stitch.
3. Alternatively, the selected stitch can be deleted by using the **Del** key.
4. The change is then automatically carried out in the seam program.

5.3.4 Insert stitch

There are two basic options for inserting a stitch in the table:

- before 5-55 the selected stitch,
- after 5-55 the selected stitch.

Depending on the type of insertion, the newly inserted stitch is placed:

- **Before**: halfway between the selected stitch and the stitch that is positioned before it.
- **After**: halfway between the selected stitch and the stitch that is positioned after it.

The stitch can then be edited or, for example, moved.

Work flow: Insert before the selected stitch

1. **Click** on the X/Y coordinate value of the stitch in the table to activate the location before which a stitch will be inserted.
2. Click on the **Insert before** icon to insert an additional stitch on the seam section before the selected stitch.
3. If desired, the new stitch can now be moved 5-53.

Work flow: Insert after the selected stitch

1. **Click** on the X/Y coordinate value of the stitch in the table to activate the location after which a stitch will be inserted.
2. Click on the **Insert after** icon to insert an additional stitch on the seam section after the selected stitch.
3. If desired, the new stitch can now be moved 5-53.

5.3.5 Edit action point

It is possible to assign technology points to each stitch. The maximum number of possible technology points and the type of allowed technology points both depend on the machine class.
In the case where no machine class has been selected, all known technology points should first be assigned. Machine-specific criteria are then automatically taken into account during the machine-class-specific data transfer 6-3 process.

The stitch-specific technology point list can be edited by inserting, changing and deleting technology points.
If you wish to delete all technology points in a seam section, a seam section editing function is available for this purpose (→Delete all technology points 5-24).

The following can be determined for the technology points:

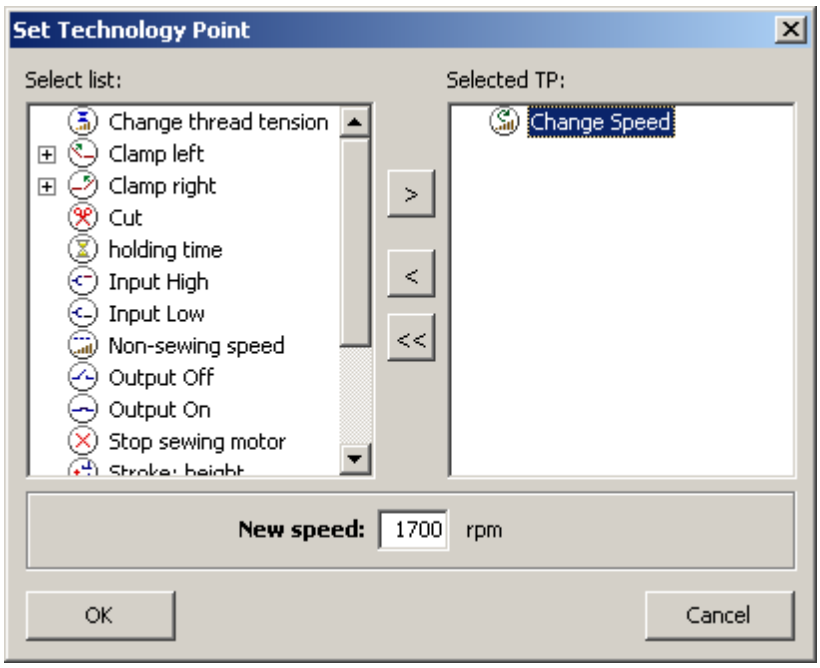
- technology point with a value: changes to rotational speed or thread tension, setting a designated output, querying a designated input, etc.
- technology point without a value: cut, thread burner on, lower clamp, etc.

Note:

In order to work with the table, the table view must be activated in the Icon menu bar 3-13, by clicking on the **Table** icon .

Work flow: Editing an technology point

1. You must first select the stitch where you want to edit the technology point list. This can be selected in the drawing box or table 5-5.
2. **Double click** with the **left mouse button** in the table's technology point column. It is not important which technology point column is clicked on.
3. The "Edit technology point" menu then opens automatically.



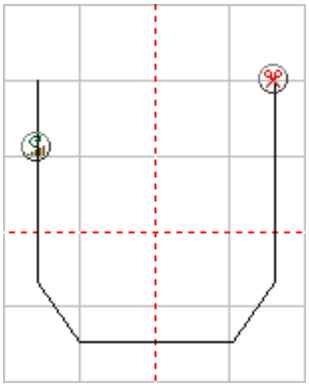
4. You can add or delete the desired technology points, or change technology point values (→ Description of technology point editing window 7-23) .

5. Click on **OK** to leave the menu. The new technology point list is now automatically valid and the current technology points are shown in the table.

No.	X	Y	TP 1
1	-15,6	20,2	
2	-15,6	17,1	
3	-15,6	14,1	
4	-15,6	11,1	rmp: 1700
5	-15,6	8,1	
6	-15,6	5,1	

6. You can click on the **Cancel** button to leave the menu without making any changes.

If at least one technology point is assigned to a stitch, then this is indicated in the drawing box by a technology-point-list icon:



Part VI

Data transfer to the machine

6 Data transfer to the machine

This capital describes how to transfer the seam program from the PC to the machine.

Two types of data media are supported, depending on the class of the machine:

- Dongle 6-3: a Dürkopp Adler memory stick for connecting with the DAC3 and DAC4 control units.
- USB memory stick 6-14: a standard USB flash drive for connecting with the USB interface on the machine (e.g., BFT).

Note:

- The desired machine class must be defined before writing to a data storage medium (→ Setting the machine class 3-1).
- The seam program which is to be written to the data medium must first be saved on the PC. It is not possible to save a newly drawn seam program to the data medium which has not first been saved to the PC.
- The generic format of the seam program is converted to a machine-specific format and then written to the data medium.

6.1 Dongle

Note:

The PC must have a serial interface available. This interface must be configured with the menu option Settings > Interface ... 3-1.

The dongle must be first be formatted according to the machine class before you can work with it.

The following functions are available when working with a dongle:

- Format 6-4: Class-specific format of dongle.
- Read contents 6-5: Read the dongle's table of contents.
- Save 6-7: Save the seam program to the dongle.

6.1.1 Format

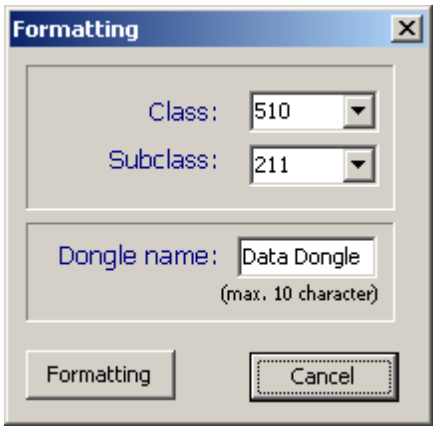
The dongle must be first be formatted according to the machine class before you can work with it.

Note:

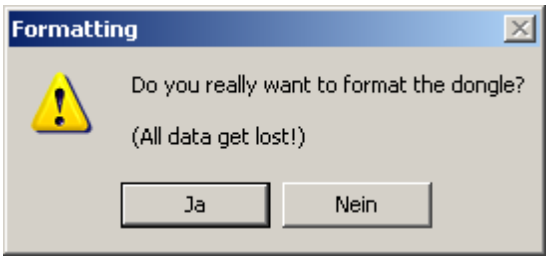
The PC must have a serial interface available. This interface must be configured with the menu option Settings > Interface ... 3-1.

Work flow: Formatting a dongle

1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Format** .
3. The formatting window in then opened:



4. Select the class and sub-class. You can also assign a name to the dongle.
5. Click on **Format** and then confirm the confirmation dialogue in order to start the format process.



6. Click on **Cancel** or **No** in the confirmation dialogue in order to cancel the window without making any change.
7. The following error message appears if no dongle can be found (for example, if not present or incorrectly inserted):

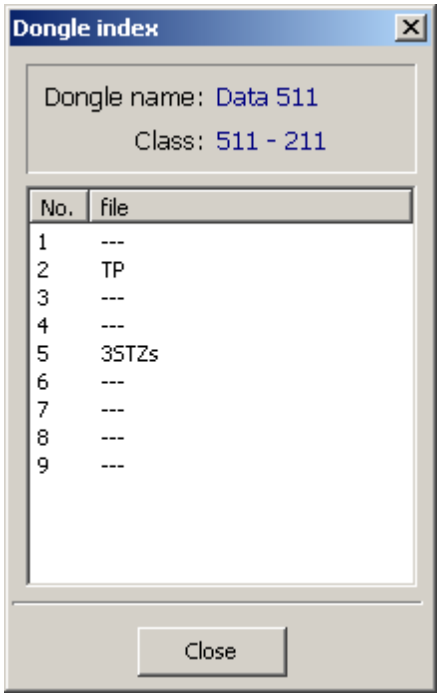
6.1.2 Read contents

Dongles are not only used for transferring seam programs between PCs and machines. They can also be put to use as boot dongles. This then contains the machine program.
This function is used to read and display the content of a dongle.

Work flow: Read the dongle's contents.

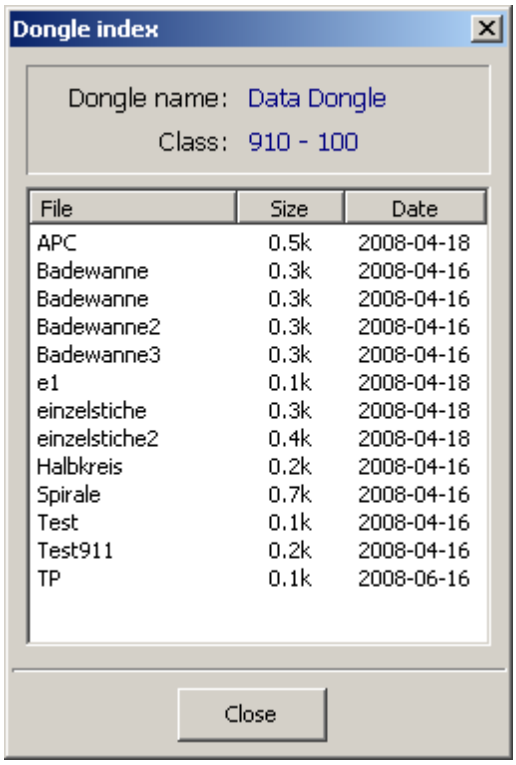
1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Contents**.
3. An information screen appears, depending on the machine class and type of dongle:

   3.1 Machine classes with a fixed memory capacity (for example, class 511):

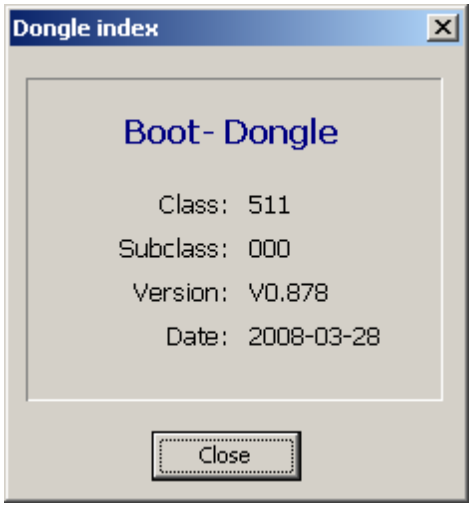


3.2 Machine classes with freely allocated memory management (for example, class 910):

Here you can sort according to name, size or date.



3.3 Boot dongle connected:



4. Click on **Close** in order to re-close this screen.

5. The following error message appears if no dongle can be found (for example, if not present or incorrectly inserted):

6.1.3 Saving to a dongle

This function enables you to save seam programs on a dongle.

Depending on the class, there are two methods for saving which you should be aware of:

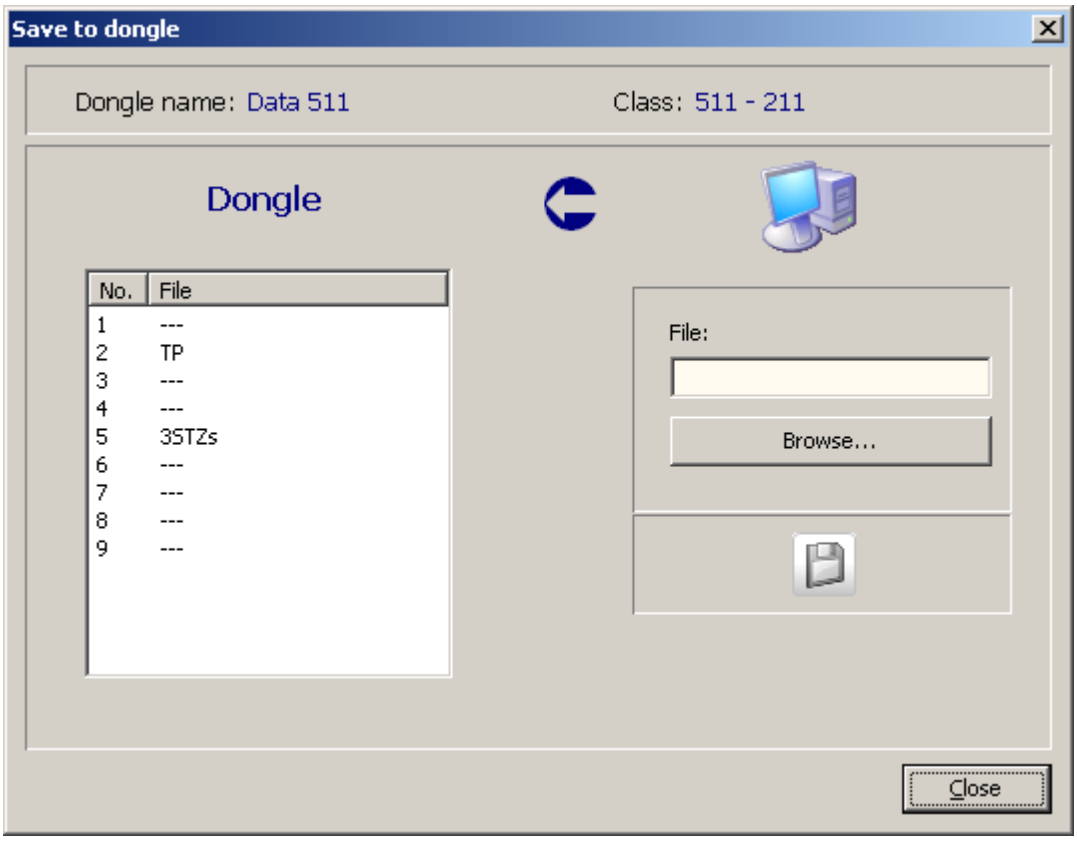
- Machine classes with fixed memory capacity 6-7: A save destination must be specified.
- Machine classes with freely allocated memory management 6-9: The program can automatically determine what storage space is free.

Note:

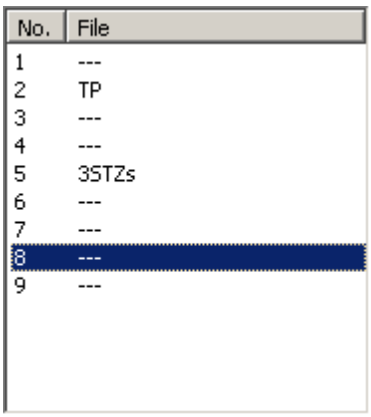
In order to write to a dongle, the dongle must first be formatted according to the machine class in use.

Work flow: Saving on a dongle for machine classes with fixed memory capacity

1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Save (PC→Dongle)**.
3. A window is opened for saving to the dongle.



4. Define the required memory location by **clicking** on the desired location.



5. Click on **Browse** in order to open the standard Windows® window for file selection. Select the desired seam program and close the window.
   The is activated after a file has been selected and a memory location has been specified. This icon is deactivated if either of these criteria has not been fulfilled. .
6. Click on the icon. The desired file is then transferred to a class-specific format and written to the dongle.

Note:

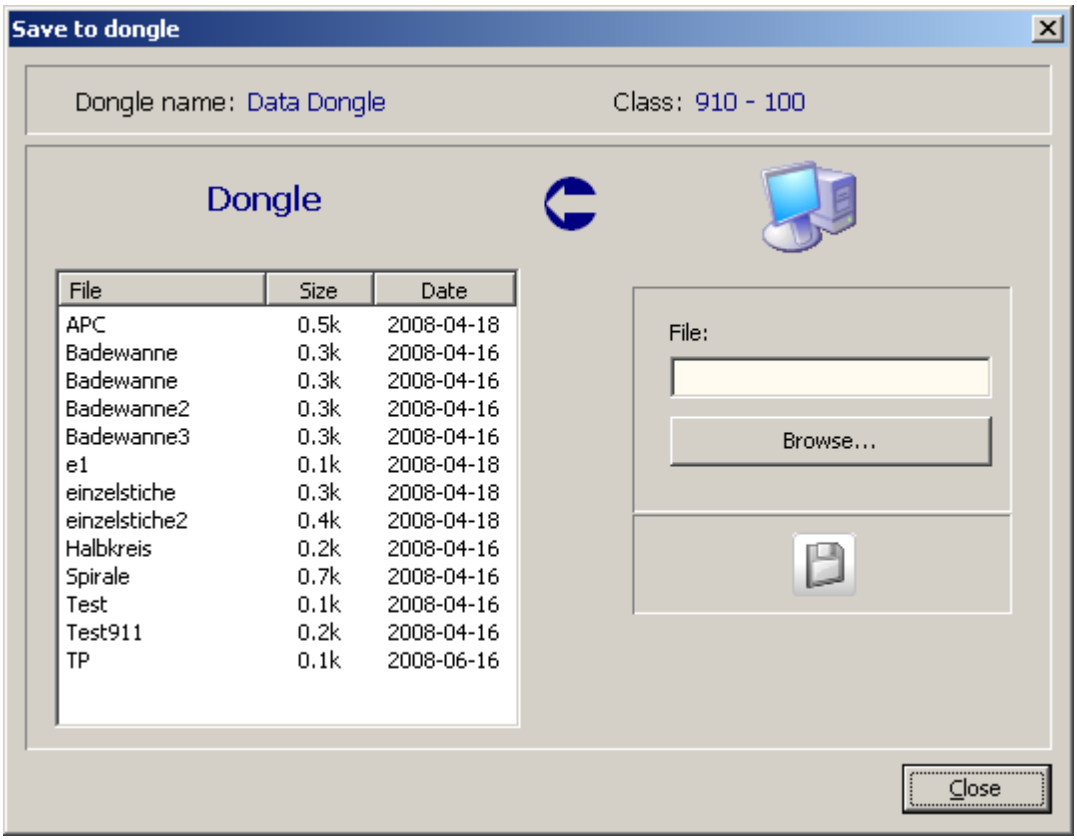
Files with identical names can be archived more than once.

---

7. When the save process is over, the contents are redisplayed.
8. Go back to step 4 if you need to save another file to the dongle.
9. Exit the window by clicking on **Close**.
10. The following error message appears if no dongle can be found (for example, if not present or incorrectly inserted):

Work flow: Saving on a dongle for machine classes with freely allocated memory management

1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Save (PC→Dongle)**.
3. A window is opened for saving to the dongle.
   Here you can sort according to name, size or date.



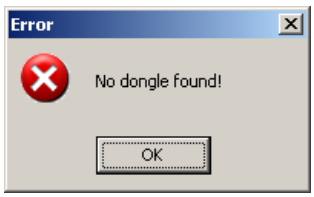
4. Click on **Browse** in order to open the standard Windows®; window for file selection. Select the desired seam program and close the window.
   The icon is activated after a file is selected. The icon is not activated when no file has been selected: .
5. Click on the icon. The desired file is then transferred to a class-specific format and written to the dongle.

Note:

Files with identical names can be archived more than once. There is no validation and existing files with the same name are not overwritten.

---

6. When the save process is over, the contents are redisplayed.
7. Go back to step 4 if you need to save another file to the dongle.
8. Exit the window by clicking on **Close**.
9. The following error message appears if no dongle can be found (for example, if not present or incorrectly inserted):



6.1.4 Load

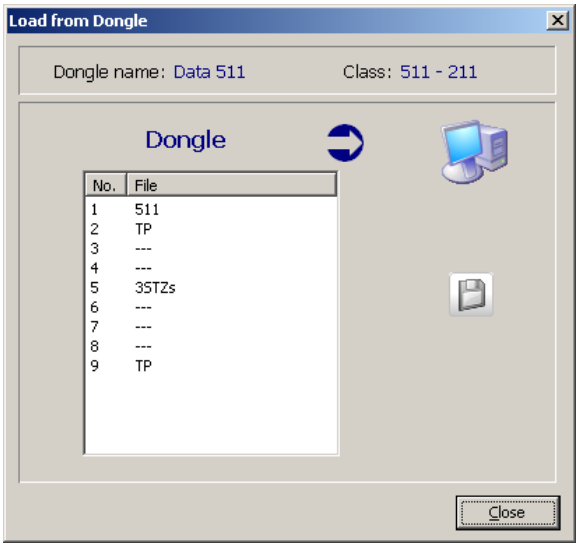
A sewing file can be loaded from the dongle again, in order to be able to work on it with this software "DA-CAD 5000" further.

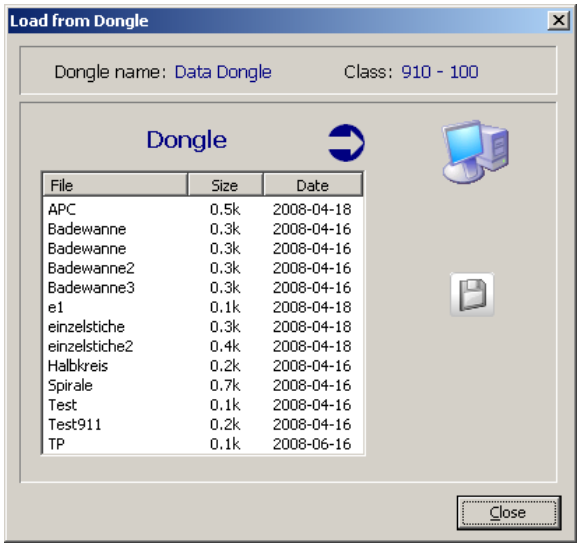
Note:

When loading from the dongle, the seam program must be converted into the general format.Machine-class-dependently there can be information losses, because the seam sections consist only single stitches.

Work flow: Load from Dongle

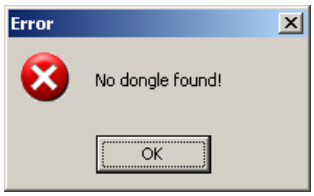
1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Load (Dongle→PC)**.
3. A window is opened for deleting sewing files on the dongle. In the contents window all programs contained on the dongle are represented. Classes with free storage administration (e.g. Class 910) can be sorted additionally according to name, size or date.





4. Specify the desired program with **Click** in the contents window.
5. If a file were selected, the switch is activated. Otherwise the switch is deactivated: .
6. Click on button in order to open the standard Windows® window for file selection. The desired file is stored on the PC (converted into the PC-specific format).
7. Go back to step 4 if you need to load another file from the dongle.
8. Exit the window by clicking on **Close**.
9. The following error message appears if no dongle can be found (for example, if not present or

incorrectly inserted):

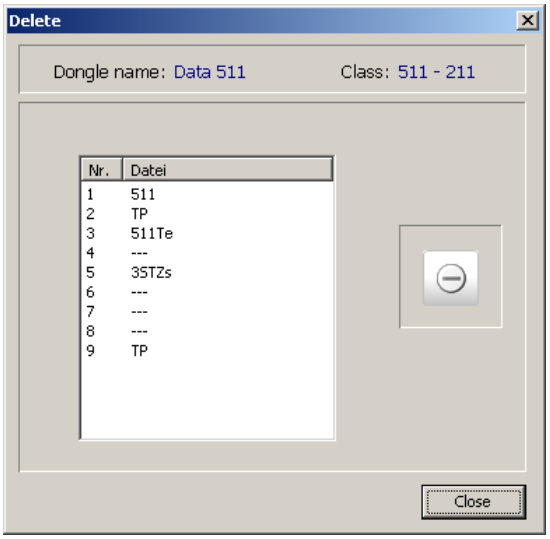


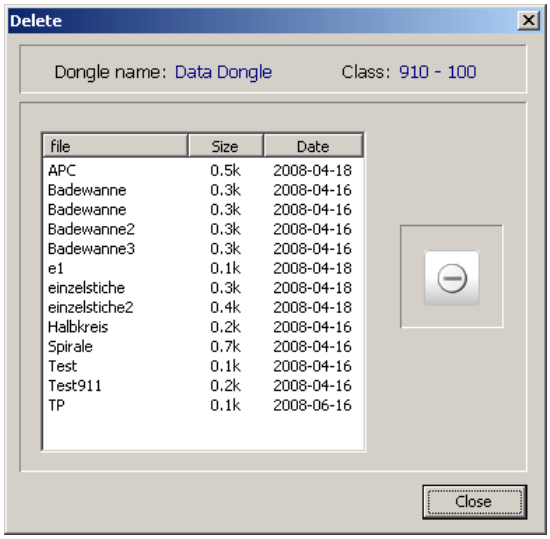
6.1.5 Delete

There is the possibility of deleting seam programs on the dongle:

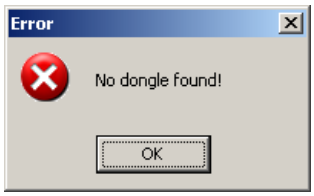
Work flow: Delete on the Dongle

1. Plug the dongle into the serial port.
2. Select the menu choice **Data transfer > Dongle > Delete**.
3. A window is opened for deleting sewing files on the dongle. In the contents window all programs contained on the dongle are represented. Classes with free storage administration (e.g. Class 910) can be sorted additionally according to name, size or date.





4. Specify the desired program with **Click** in the contents window.
5. If a file were selected, the switch is activated. Otherwise the switch is deactivated: .
6. Click on button . The selected file is deleted. Subsequently, the representation of contents is updated.
7. Go back to step 4 if you need to delete another file on the dongle.
8. Exit the window by clicking on **Close**.
9. The following error message appears if no dongle can be found (for example, if not present or incorrectly inserted):



6.2 USB memorystick (flash drive)

Note:

A USB port must be available on the PC.

The following functions are available when working with a USB flash drive:

- Save 6-14: Save the seam program to the USB flash drive.
- Load 6-16: Load (read in) the seam program from the USB flash drive.

6.2.1 Saving to a USB "stick" flash drive

This function enables you to save seam programs on a USB flash drive.

The generic format of the seam program is converted to a machine-specific format and then written to the USB flash drive. The program keeps its name during this process. Only the file extension is changed. The file extension indicates that the format and file are specific to the machine class:

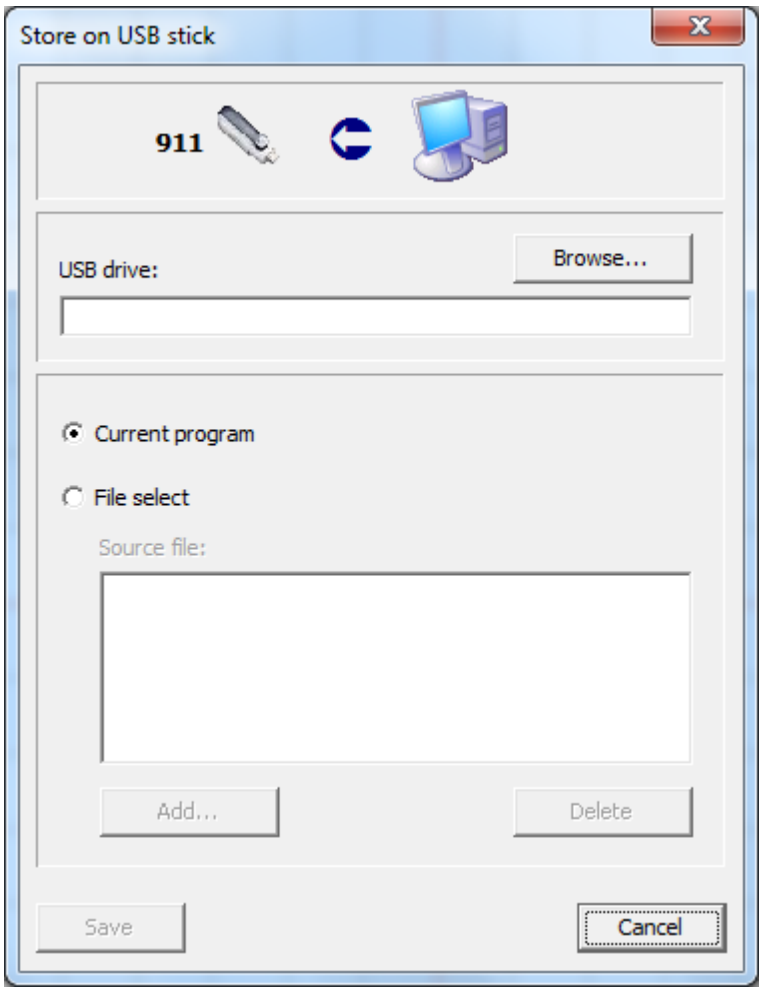
***.fnpxxx**, where xxx indicates the class number, for example 911 → ***.fnp911**

Note:

The correct machine class must first be defined in the menu Settings > Machine class 3-11 in order to write to the USB flash drive.

Work flow: Saving to a USB flash drive

1. Insert the flash drive into a USB port.
2. Select the menu choice **Data transfer > USB flash drive > Save (PC→USB)**.
3. A window is opened for saving to the USB flash drive.



4. Define the target (USB) drive: Click on **Browse** in order to open the standard Windows® window for selecting a drive. Select the desired drive and close this window.
5. Two possibilities exist of specifying which program is to be saved:
   a. **Current Program**: The seam program on the current drawing board is stored.
   b. **File select**:
      I. Select source files: Click on **Add** to open the standard Windows® file selection window. Select the desired seam program and close the window.
      II. All selected seam programs are then displayed in a list. A file from the same directory can only be added once.
      III. If you need to delete one or more files from the list, mark them with a **mouse click** and click on **Delete**.
6. Click on **Save** in order to convert the selected seam program to a machine-specific format and then save it to the USB flash drive. This window is automatically closed after the save operation is successfully completed.
7. You can click on the **Cancel** button to leave the window without saving.

6.2.2 Load from a USB flash drive

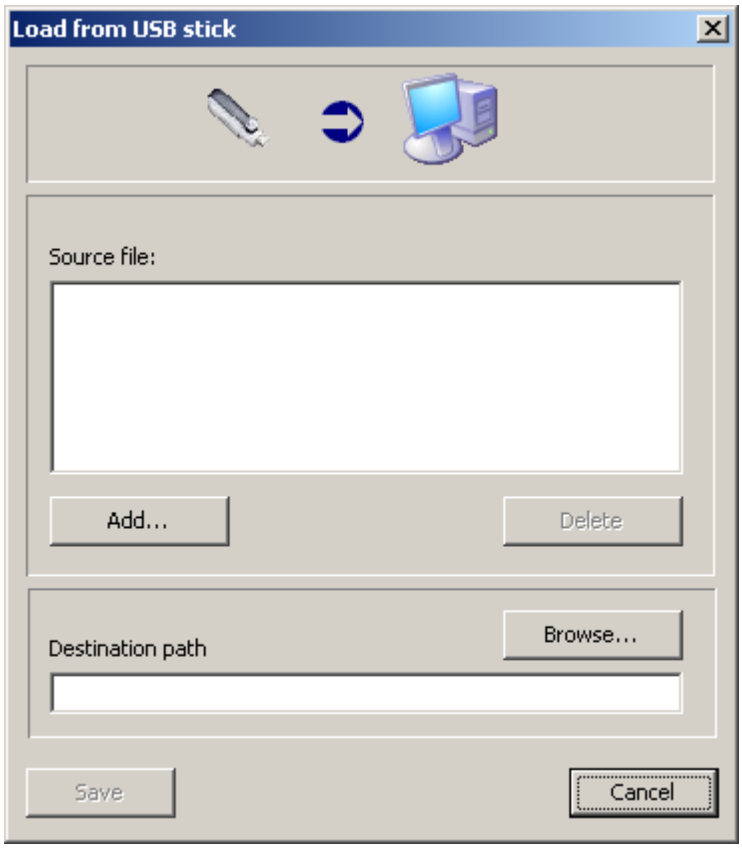
Seam programs can be reloaded from a USB flash drive and then edited with the "DA-CAD 5000" software. During the loading, the seam program is reconverted into the generic format. In contrast to loading from a dongle, there is no loss of information when loading from USB.

Work flow: Reading from the USB flash drive

1. Insert the flash drive into a USB port.

1. Select the menu choice **Data transfer > USB flash drive > Load (USB→PC)**.

2. A window is opened for saving to the USB flash drive.



3. Select USB source files: Click on **Add** to open the standard Windows® file selection window. Select the desired seam program and close the window.

4. All selected seam programs are then displayed in a list. A file from the same directory can only be added once.

5. If you need to delete one or more files from the list, mark them with a **mouse click** and click on **Delete**.

6. Define the target drive: Click on **Browse** in order to open the standard Windows® window for selecting a drive. Select the desired drive and close this window.

7. Click on **Save** in order to convert the selected seam program and then save it to the speficied location on the PC. This windows closes automatically after the file has been saved successfully. All loaded programs are displayed automatically in separate windows.

8. You can click on the **Cancel** button to leave the window without saving.

Part VII

Input windows

7 Input windows

The following chapter describes the different input windows.
This is divided into input windows for:

- Settings 7-3: Machine class, default parameters, etc.
- Editing 7-15 of seam sections: move, scale, etc.

7.1 Settings

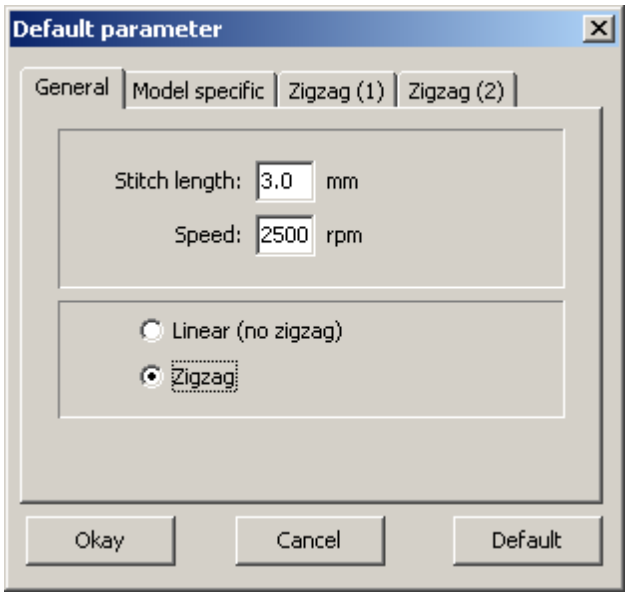
The editing windows for the following settings are described in this section:

- Default parameters 7-4
- Configuring seam sections 7-8
- Selecting the machine class 7-12
- Selecting the language 7-12
- Configuring the serial interface port 7-13
- Setting the grid lines 7-13
- Selecting a background image 7-14

7.1.1 Default parameters window

The default parameters input window is divided into four tabs. Tabbed sections three and four are only visible if a zigzag seam needs to be sewn.

Tab 1: General

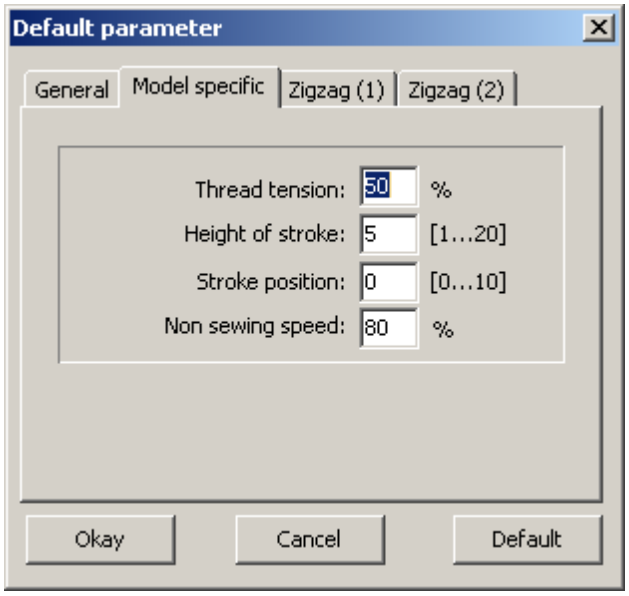


Parameter	Description
Stitch length	Length between two needle entry points, in millimeters. The length of a seam section should be divided into sections of this length.
Rotational speed	The rotational speed that will be used to sew the seam program. This is the starting speed. It is specified in revolutions per minute.

Selected option	Description
Linear (without zigzag)	The seam sections are calculated linearly between the support points. When this is selected, the third and fourth tabs are not visible.
Zigzag	The seam section will be executed as a zigzag. When this is selected, the third and fourth tabs are visible.

Tab 2: Model specific

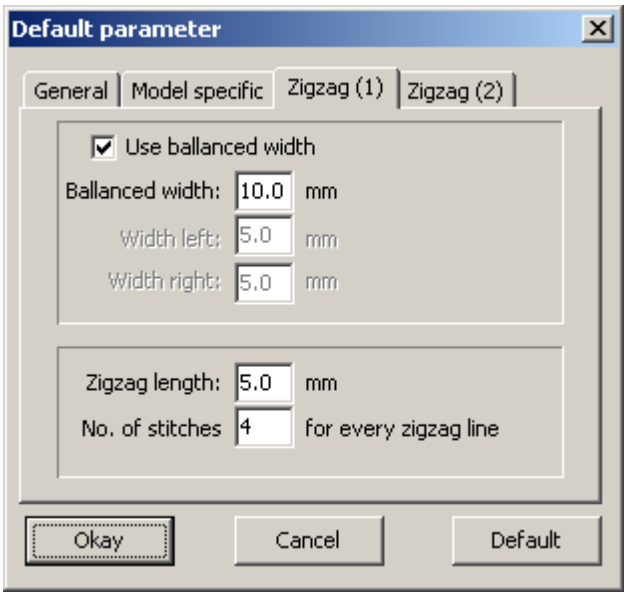
Machine specific parameters can be set here. If the selected machine class does not support a parameter, then the parameter is greyed-out and can not be changed.

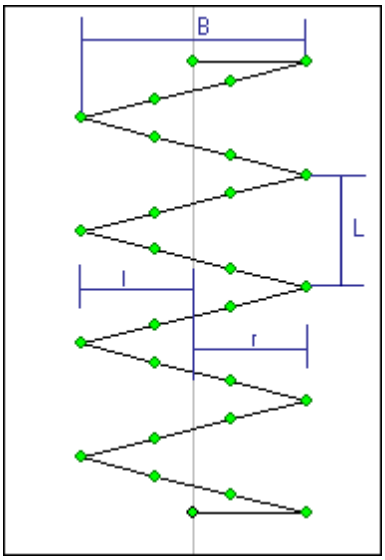


Parameter	Description
Thread tension	The thread tension value, in percent, that will be used to sew the seam program.
Stroke height	The height of the stroke motion made by the oscillating sewing feet during the sewing process. Setting range: 1 to 20.
Stroke position	The position of the sewing foot in the lowered position. Setting range: 1 to 10. 0 = smallest clearance space to material 10 = largest clearance space to material
Empty run speed	The speed used for non-sewing movements. This is specified as a percent of the sewing speed.

Tab 3: Zigzag (1):

Only shown when **Zigzag** is selected in Tab 1.





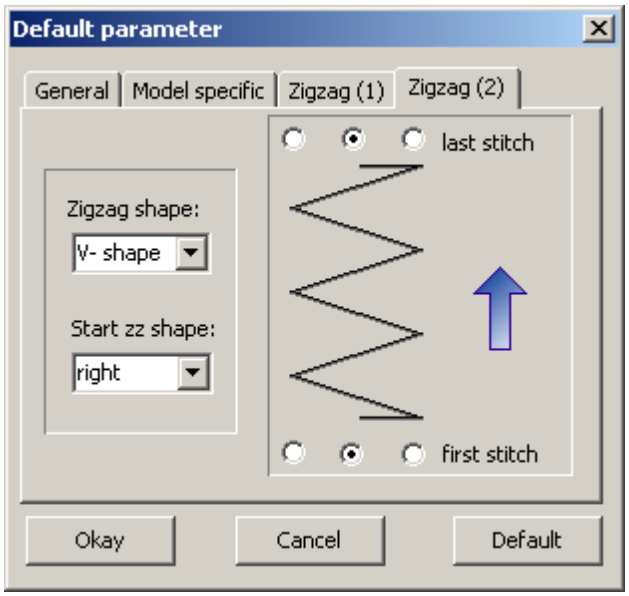
Symmetrical width	Description
☑ yes	The zigzag will be drawn symmetric to the seam section line. One value is given for the total width.
☐ no	The zigzag is drawn with two different widths: one each for the left and right side of the seam section line. Separate values for the left and right side widths can be specified.

Width	Description
Sym. width	The total width of the zigzag which is situated symmetrical to the seam section line (shown in diagram as B). Activated if **Symmetrical width** is selected.
Left width	The width of the zigzag on the left side (shown in diagram as l). Activated if **Symmetrical width** is not selected.
Right width	The width of the zigzag on the right side (shown in diagram as r). Activated if **Symmetrical width** is not selected.

Parameter	
Length of zigzag	The length of a zigzag (consisting of two zigzag paths) (shown in the diagram as L).
Number of stitches	The number of stitches that are present on one leg of the zigzag. (shown in the diagram as 4).

Tab 4: Zigzag (2):

Only shown when **Zigzag** is selected in Tab 1.



Zigzag shapes	Description
V shape	The zigzag has a V shape.
N shape	The zigzag has an N shape.

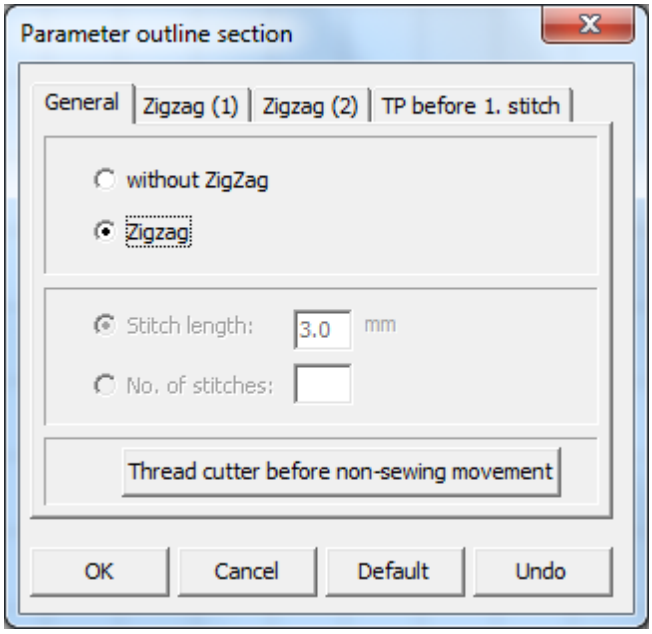
Start ZZ shape	Description
Right	The first zigzag leg will start on the right side. V shape: N shape:
Left	The first zigzag leg will start on the left side. V shape: ;N shape:

Stitch position	Description
First stitch	Select the position at which the first stitch will be executed: left, middle, right
Last stitch	Select the position at which the last stitch will be executed: left, middle, right

7.1.2 Configuration window for current seam section

The seam sections configuration window is divided into four tabs. Tabbed sections two and three are only visible if a zigzag seam needs to be sewn.

Tab 1: General



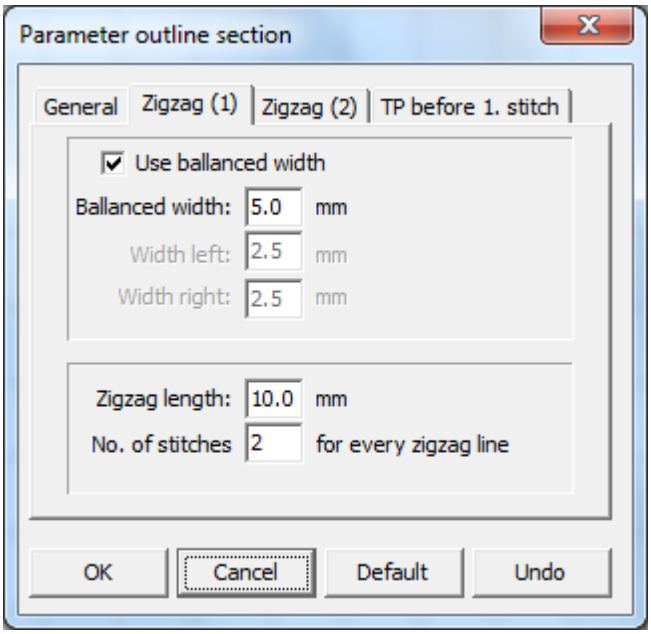
Selected option	Description
Linear (without zigzag)	The seam sections are calculated linearly between the support points. When this is selected, the second and third tabs are not visible.
Zigzag	The seam section will be executed as a zigzag. When this is selected, the second and third tabs are visible.

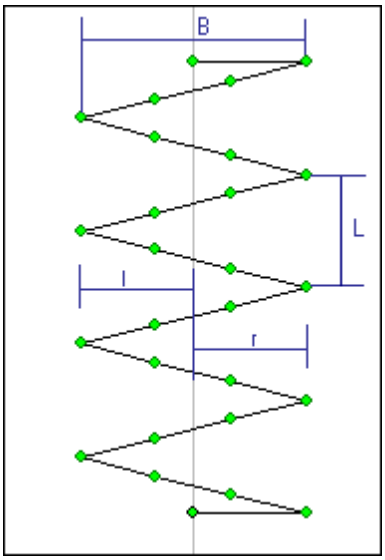
Selected option	Description
Stitch length	Length between two needle entry points, in millimeters. The length of a seam section should be divided into sections of this length. Only activated if **Linear** has been selected.
Number	Number of stitches that make up a seam section. The number of sections shown is (gap - 1). Only activated if **Linear** has been selected.

Click on **Thread cutter before non-sewing movement** adds this action point before each non-sewing movement of the chosen outlines and is then shown by the symbol.

Tab 2: Zigzag (1):

Only shown when **Zigzag** is selected in Tab 1.





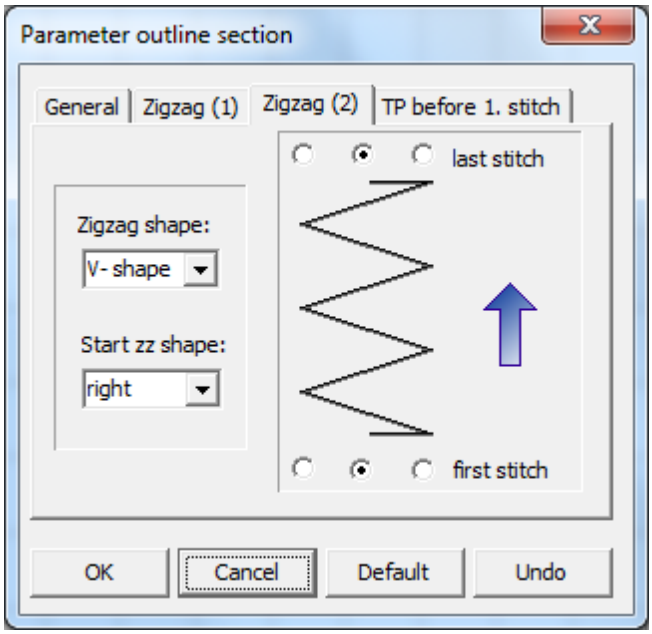
Symmetrical width	Description
☑ yes	The zigzag will be drawn symmetric to the seam section line. One value is given for the total width.
☐ no	The zigzag is drawn with two different widths: one each for the left and right side of the seam section line. Separate values for the left and right side widths can be specified.

Width	Description
Sym. width	The total width of the zigzag which is situated symmetrical to the seam section line (shown in diagram as B). Activated if **Symmetrical width** is selected.
Left width	The width of the zigzag on the left side (shown in diagram as l). Activated if **Symmetrical width** is not selected.
Right width	The width of the zigzag on the right side (shown in diagram as r). Activated if **Symmetrical width** is not selected.

Parameter	
Length of zigzag	The length of a zigzag (consisting of two zigzag paths) (shown in the diagram as L).
Number of stitches	The number of stitches that are present on one leg of the zigzag. (shown in the diagram as 4).

Tab 3: Zigzag (2):

Only shown when **Zigzag** is selected in Tab 1.



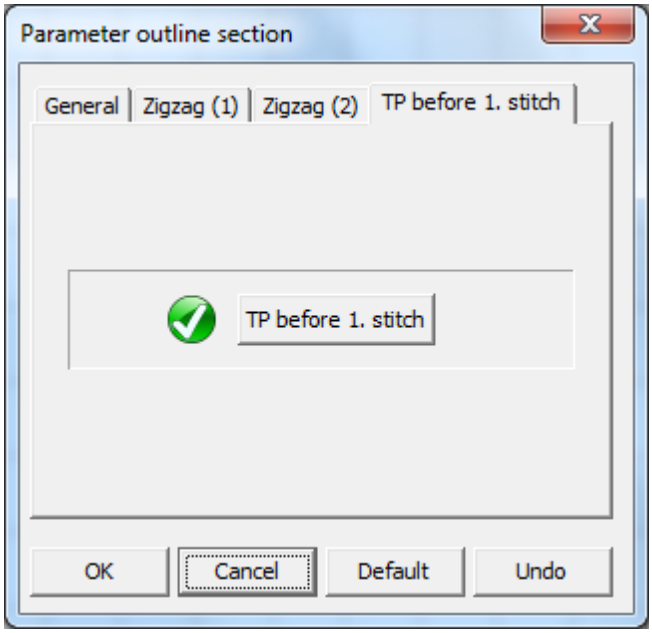
Zigzag shapes	Description
V shape	The zigzag has a V shape. 
N shape	The zigzag has an N shape. 

Start ZZ shape	Description
Right	The first zigzag leg will start on the right side. V shape:  N shape: 
Left	The first zigzag leg will start on the left side. V shape:  N shape: 

Stitch position	Description
First stitch	Select the position at which the first stitch will be executed: left, middle, right
Last stitch	Select the position at which the last stitch will be executed: left, middle, right

Tab 4: Action point before first stitch

It is possible to execute an action point before sewing begins on the seam section. These actions points can be defined here.

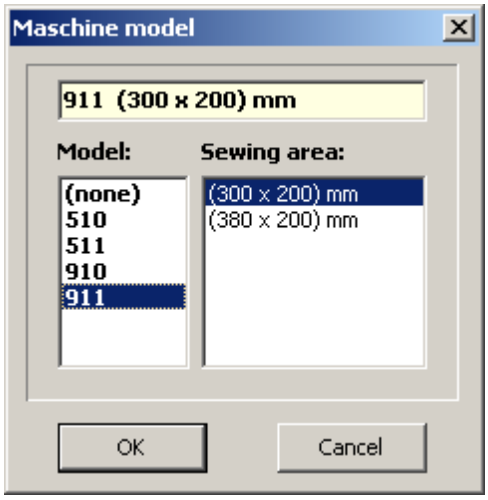


Click on the "TP before 1. stitch" button to open the Editing action points 7-23 input window. This window is used for adding, changing or deleting action points.

If at least one action point has been assigned, this is then shown by the symbol.

7.1.3 Machine class

This window is used to specify the machine class and the sewing field size.



Selection menus	Description
Class	A list of all the machine classes support by this software. It is also possible to choose no class.
Sewing field	All the available sewing field sizes for the selected class are listed here.

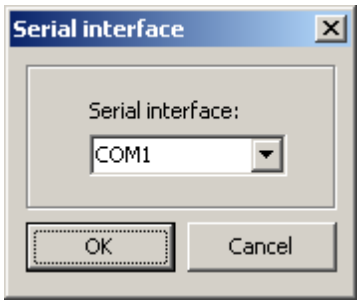
7.1.4 Language

This window is used to specify a language for the software program. The language selection goes into effect immediately.

Selection menus	Description
Deutsch	The software language is German.
English	The software language is English.

7.1.5 Serial interface

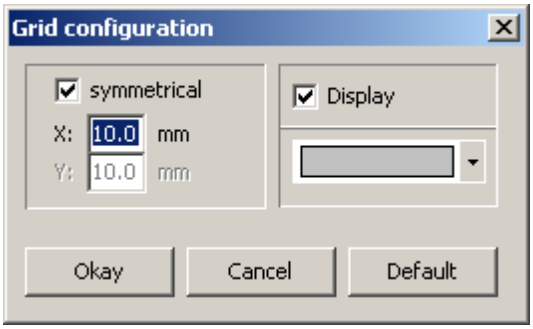
This window is used to specify the serial port that will be used when working with a dongle. Additional configuration is not required.



Selection menus	Description
COMx	A list of all available serial ports on the PC.

7.1.6 Grid lines

This window is used for configuring the grid lines for all windows.



symmetrical	Description
☑ yes	Grid lines will be displayed using identical intervals for both the X and Y axes.
☐ no	Different values can be given for the intervals in the X and Y axes.

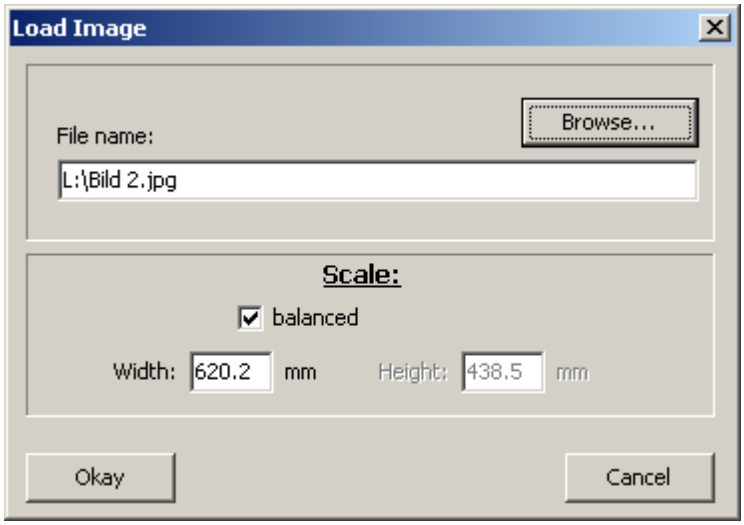
Grid line interval	Description
X	Grid line interval for X axis, in millimetres.
Y	Grid line interval for Y axis, in millimetres. Activated only if **symmetrical** is selected.

Show	Description
☑ yes	Grid lines will be shown using the specified interval and the selected colour.
☐ no	No grid lines will be shown.

Colour	Description
	Selection of the grid line colour.

7.1.7 Background image

Here you can choose a background image for the current window.
Only **BMP** and **JPG** files can be used as background images.



Click on Browse to open the standard Windows® file selection window. Select the desired background image and close the window.

Change proportionally	Description
☑yes	When the width is changed, the height is automatically changed proportionally.
☐ no	The width and height can be specified separately. This can lead to distortion of the image.

Dimensions	Description
Width	The width of the background image.
Height	The height of the background image. Activated only if **change proportionally** is not selected.

7.2 Edit

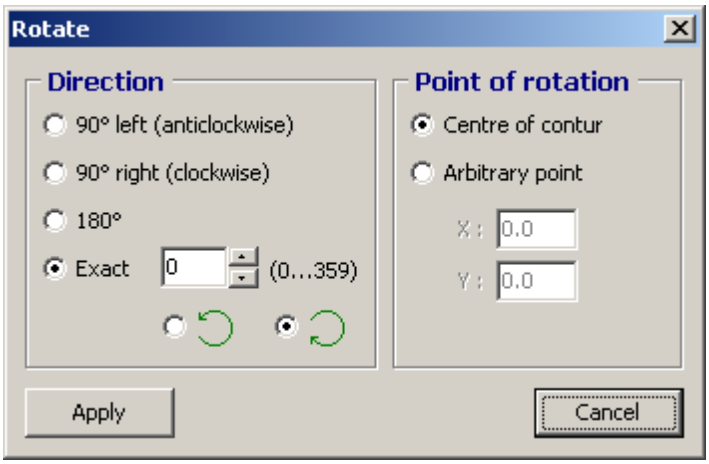
The following editing windows are described in this section:

7.2.1 Rotate

Window to rotate selected sewing sections.

It can be selected:

- direction of rotation,
- angle of rotation,
- position of the centre of rotation.



Configuration of the direction and the angle of rotation:

Selection	Description
90° left	Rotate the selected sewing sections 90° anticlockwise.
90° right	Rotate the selected sewing sections 90° clockwise.
180°	Rotate the selected sewing sections 180°.
Exat	Angle of rotation can be assigned freely.

Exact is activated:

Angle	Description
0...359	Angle of rotation

Selection	Description
	Rotate the selected sewing sections anticlockwise.
	Rotate the selected sewing sections clockwise.

Configuration of the position of the centre of rotation:

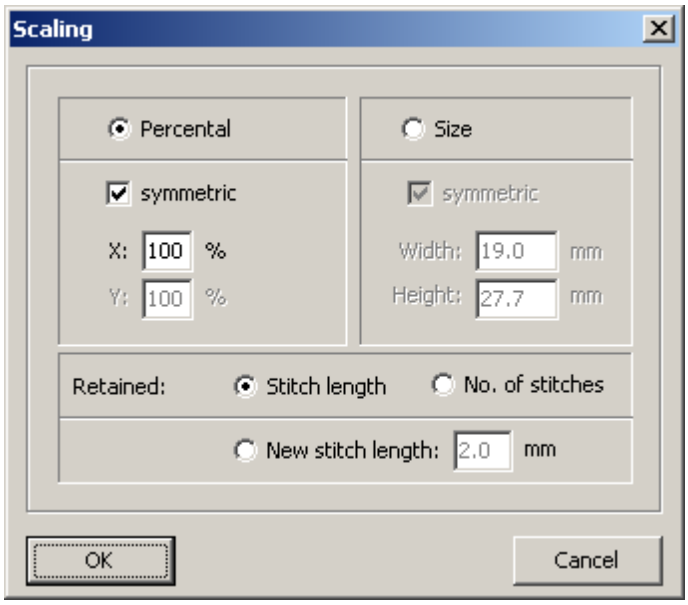
Selection	Description
Centre of contour	It is turned around the centre of the selected sewing sections.
Arbitrary point	The position of the centre of rotation can selected arbitrary.

Arbitrary point is activated:

Selection	Description
X	X- Coordinate value of the centre of rotation.
Y	Y- Coordinate value of the centre of rotation.

7.2.2 Scale

The window for scaling (resizing) the selected seam sections.



Selection	Description
Percent	The seam sections are resized based on a percentage. When this option is selected, the scaling percent fields are activated and the absolute size fields are greyed out.
Size	Seam sections are resized based on an absolute value measurement. When this option is selected, the absolute size fields are activated and the scaling percent fields are greyed out.

Percent activated:

Symmetrical	Description
☑ yes	When the X value is changed, the Y value automatically changes by the same percentage to avoid any distortion of the seam section.
☐ no	Different percentage values can be specified for the X and Y axes. Distortion of the seam section is not ruled out.

Dimensions	Description
X	Width of the selected seam sections, in percent.
Y	Height of the selected seam sections, in percent. Activated only if **symmetrical** is not selected.

Size activated:

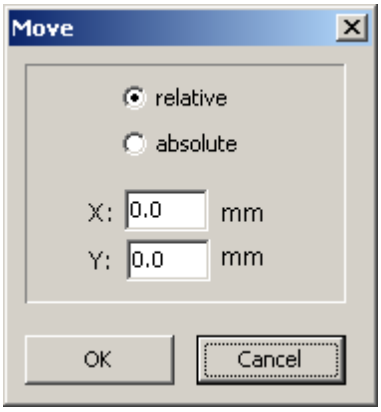
Symmetrical	Description
☑ yes	When the width is changed, the height is automatically changed proportionally.
☐ no	The width and height can be specified separately. This can lead to distortion of the seam section.

Dimensions	Description
Width	Width of the selected seam sections.
Height	Height of the selected seam sections. Activated only if **symmetrical** is not selected.

Selection	Description
Stitch length	Previous stitch length of the seam section is maintained.
Number of stitches	Previous stitch count for the seam section is maintained: The stitch length will then change.
New stitch length	Specify a new stitch length, in millimetres.

7.2.3 Move

Window for moving the selected seam sections.



Selection	Description
Relatively	Move the seam sections using the specified X and Y directional values.
Absolutely	Move the start point of the first selected seam section to the specified coordinates (X and Y value pair).

Relatively activated:

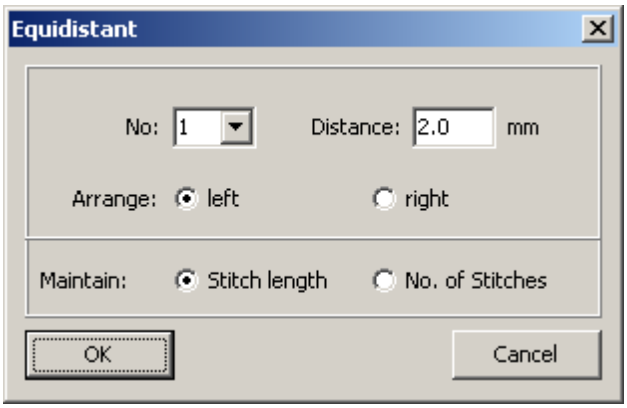
Dimensions	Description
X	The distance value that the selected seam sections should be moved (along the X axis).
Y	The distance value that the selected seam sections should be moved (along the Y axis).

Absolutely activated:

Dimensions	Description
X	The X coordinate value of the start point of the first seam section in the selected seam sections.
Y	The Y coordinate value of the start point of the first seam section in the selected seam sections.

7.2.4 Generate an equidistant counterpart

This window is used for settings the parameters needed generate an equidistant counterpart for the selected seam sections.



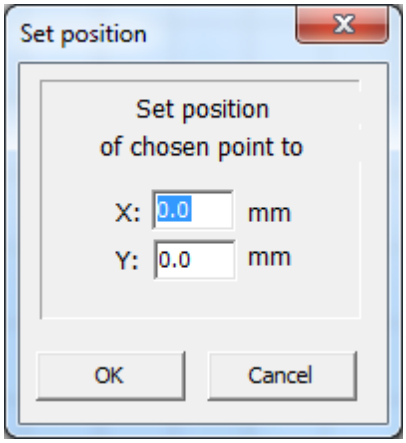
Parameter	Description
Number	The number of equidistant counterparts that should be generated. Range: 1 ... 5
Gap	Gap between the first counterpart to the seam section (and between the other equidistant counterparts), in millimeters.

Alignment	Description
Left	Relative to the seam direction, the counterpart will be created on the left side.
Right	Relative to the seam direction, the counterpart will be created on the right side.

Maintain	Description
Stitch length	Previous stitch length of the seam section is maintained
Number of stitches	Previous stitch count for the seam section is maintained: The stitch length will then change.

7.2.5 Positioning

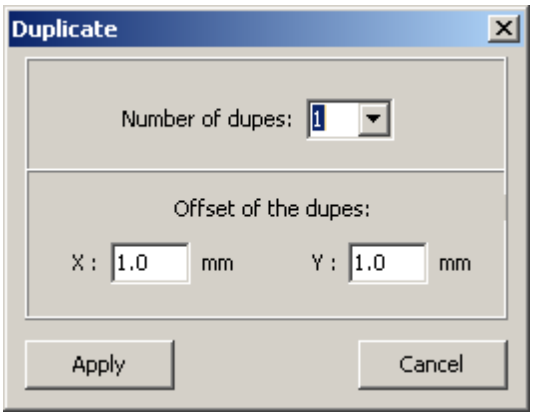
Input window to set position of chosen seam sections:



Dimensions	Description
X	The X coordinate value for the chosen margin point of the selected seam sections.
Y	The Y coordinate value for the chosen margin point of the selected seam sections.

7.2.6 Duplicate

This window is used for settings the parameters needed to generate an dupes for the selected seam sections.



Parameter	Description
Number of dupes	Number of dupes that should be generated. Range: 1 ... 20

Distance	Description
X	Distance of all dupes to each other in millimetre in x- direction.
Y	Distance of all dupes to each other in millimetre in y- direction.

7.2.7 Edit technology points

Action points can be assigned to a stitch (sewn or non-sewn) as well as a seam section.

The following factors depend on the machine class in use:

- Which technology points can be used.
- How many technology points are possible.
- Value ranges for certain technology points, such as rotational speed, thread tension, etc.

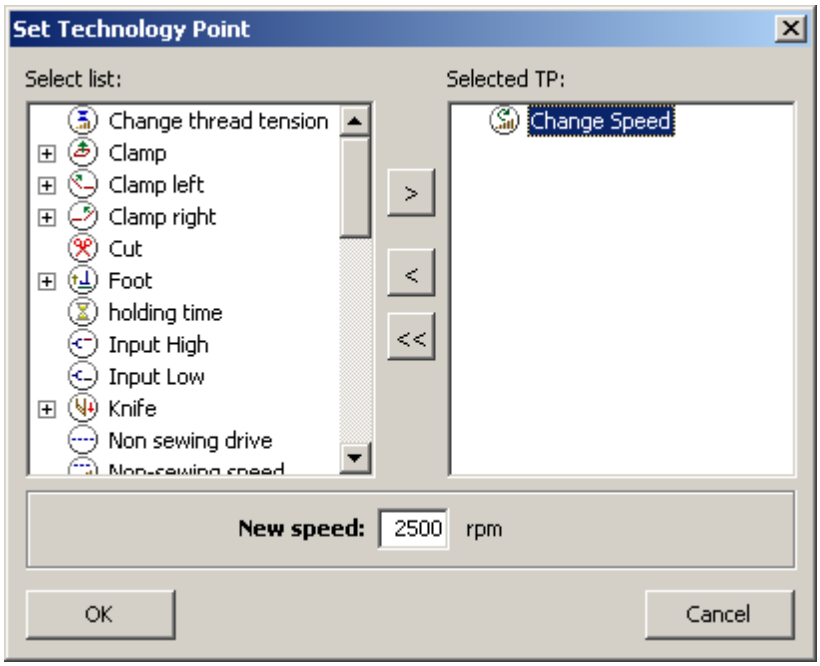
The appropriate technology point is entered into the technology point list by **double clicking** in the selection list.
Buttons are also available:

> : Add the highlighted technology point on the left side to the technology point list

< : Delete the technology point highlighted on the right side from the list.

<<: Delete all technology points from the list.

The **>** will be deactivated when the maximum number of technology points has been reached.



Lists	Description
Available list	A list of all possible technology points available for the specified machine class.
Selected technology points	A list of all technology points which have been selected.

Parameter	Description
Value	Certain technology points can be assigned a value (for example, thread tension or rotational speed).
Number	A number must be assigned to outputs and inputs.

Part VII

Context-sensitive menu

8 Context-sensitive menu

A context-sensitive menu is available in the drawing box. You can open the context-sensitive menu by clicking on the **right mouse button**.

The menu then opens up depending on the context view:

- Seam section 8-3,
- Support points 8-4,
- Stitches 8-5.

8.1 Editing a seam section

There are certain commands available in the context-sensitive menu when editing a seam section. A different set of menu options are available depending on three different cases:

1. The drawing box is empty.
2. The drawing box is not empty and no seam section is activated.
3. At least one seam section is activated.

Menu option	Description	1	2	3
Undo	The last action is undone (reversed). Up to 30 sequential actions can be undone.	X	X	X
Restore	Once an action is undone, this command causes it to be recreated.	X	X	X
Support points view	Switch to mode for editing support points.	X	X	X
Stitches view	Switch to mode for editing stitches.	X	X	X
Select all	Select all seam sections.		X	X
Cut	Cut out the selected seam sections.			X
Copy	Copy selected seam sections to the clipboard.			X
Insert	Paste seam sections from the clipboard.	X	X	X
Delete	Delete the selected seam sections.			X
Default parameters	Open up the input window for the class-specific default parameters 7-4 for the current window.	X	X	
Config. seam section	Opens the window for the Configuration 7-8 of the selected seam sections.			X

Depending on the program context, a menu command can be either active or deactivated. For example, you can only insert or paste when something has previously been copied to the clipboard. Similarly, the restore command is only active when a previous command has been undone.

8.2 Editing a support point

There are certain commands available in the context-sensitive menu when editing a support point. A different set of menu options are available depending on two different cases:

1. no support point is activated,
2. a support point is activated,

Menu option	Description	1	2
Undo	The last action is undone (reversed). Up to 30 sequential actions can be undone.	X	X
Restore	Once an action is undone, this command causes it to be recreated.	X	X
Seam section view	Switch to mode for drawing and editing seam sections.	X	X
Stitches view	Switch to mode for editing stitches.	X	X
Delete	Delete selected support points.		X
Config. seam section	Opens the window for the Configuration 7-8 of the selected seam sections.		X
Insert support point before	Insert a new support point before the selected support point.		X
Insert support point after	Insert a new support point after the selected support point.		X
Insert non-sewing point before	Insert a non-sewing point before a start point of a seam section to an existing non-sewing part.		X
Divide	Connected seam sections can be divided.		X

Depending on the program context, an menu command can be either active or deactivated. Similarly, the restore command is only active when a previous command has been undone. Whether a support point can be inserted before or after depends on the type of seam section (line, circular arc, etc.) and the type of activated support point (start, middle or end).

8.3 Editing stitches

There are certain commands available in the context-sensitive menu when editing stitches. A different set of menu options are available depending on three different cases:

1. no stitch is activated,
2. one stitch is activated,
3. more than one stitch is activated.

Menu option	Description	1	2	3
Undo	The last action is undone (reversed). Up to 30 sequential actions can be undone.	X	X	X
Restore	Once an action is undone, this command causes it to be recreated.	X	X	X
Seam section view	Switch to mode for drawing and editing seam sections.	X	X	X
Support points view	Switch to mode for editing support points	X	X	X
Delete	Delete the selected stitches.		X	X
Change action point	Opens the windows for editing action points		X	
Insert stitch before	Insert a new stitch before the selected stitch.		X	
Insert stitch after	Insert a new stitch after the selected stitch.		X	

Depending on the program context, an menu command can be either active or deactivated. Similarly, the restore command is only active when a previous command has been undone.

Part IX

Glossary and Refernce

9 Glossary and Refernce

This section contains the following:

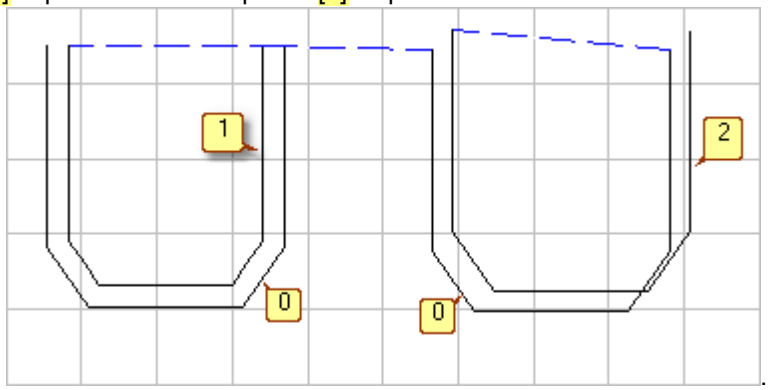
- A glossary: "What is ...?" 9-3
- A reference 9-5 with a description of key combinations and mouse actions.

9.1 "What is a ...?"

... equidistant counterpart

The equidistant counterpart is positioned parallel to the seam section. The support points of the equidistant counterpart are perpendicular to that seam section which is the basis for the equidistant formation.
A equidistant counterpart is not a duplicate of the original:

[0] Original [1] Equidistant counterpart [2] Duplicate



... seam section

A seam program is made up of individual seam sections. A seam section is one section characterized by a certain type (for example, a circular arc or spline curve). Support points are used to describe seam sections.
Each seam section is divided into stitches.

... stitch

A stitch is the insert point made by the needle.

Note:
In other contexts outside of this program, a stitch often refers to the area between two needle insertions.

... stitch length

This is the length between two needle insertions. It is specified in millimetres.

... support point

Support points are used to define a seam section. They can be start points, end points, or certain additional mid-points (defining shapes such as circular segments or spline curves).

... action point

An action point defines a point in the seam program where a certain action will be executed by the machine.

For example, this may be:

- Waiting for an input,
- Setting an output,
- Activating the thread cutter,
- etc.

9.2 Reference

1. Key combinations

Key combination	Consequence
CTRL + C	Copy to the clipboard
CTRL + N	Open a new window
CTRL + O	Open a file
CTRL + S	Save
CTRL + V	Paste from the clipboard
CTRL + X	Cut text and then paste the text to clipboard
CTRL + Y	Restore
CTRL + Z	Undo
F1	Display help file

2. Keyboard and mouse combinations

Key combination	Consequence
CTRL + left mouse button	Insert selection
SHIFT + left mouse button	Insert selection

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- U -

- W -