

BERNINA Embroidery Software 7 – Auto Fabrics Explanation

1 Fabric Types and Auto Fabrics

The automatic fabric settings function (auto fabrics) in the BERNINA Embroidery Software 7 makes embroidery easier and improves the stitch quality, while adjusting settings specifically to the fabric. That way an embroidery design can be stitched out on a woven fabric as well as on a stronger jeans fabric. To do this, only the fabric type needs to be changed.

This document explains the automatic fabric settings function and the corresponding fabric table. The update V7.0T has led to an enhanced function that now can be deactivated. The fabric setting table has been updated and replaces the table in the manual in chapter embroidery quality, see below. It can be downloaded on the BERNINA website.

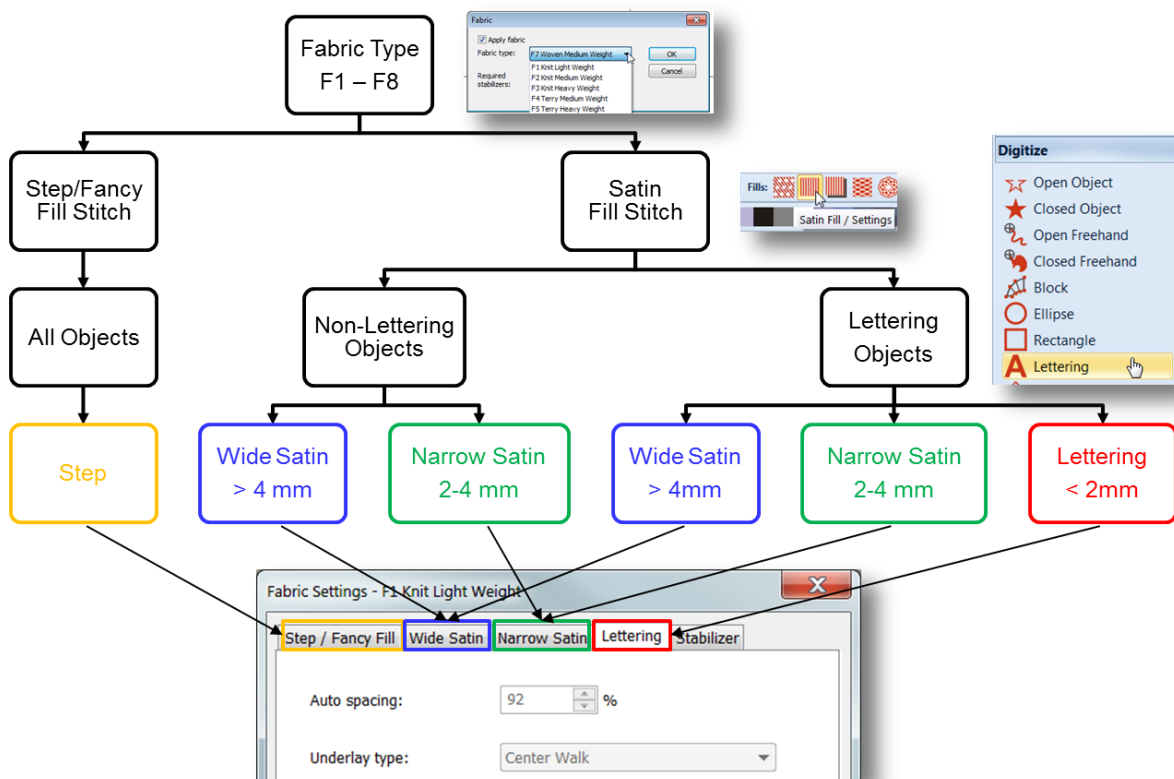
Old Table (see ReferenceManual.pdf)

Weight	Fabrics	Pull Comp (mm)	Satin (Manual)
Factory defaults	N/A	0.200	0.4
Knit Light	T-shirts	0.250	0.37
Knit Medium	Polo shirts / Pique	0.250	0.37
Knit Heavy	Fleece / Sweatshirts	0.350	0.36
Terry Medium	Towels	0.250	0.36
Terry Heavy	Towels / Bath Robes	0.250	0.36
Woven Light	Batiste / Cotton / Satin	0.200	0.38

New Table (see ReleaseNotes.pdf)

Fabric	Step length	Step spacing	Satin auto spacing	Underlay Type	Layer 1 len.
F6 Woven Light Weight					
Lettering			117%	Center Walk	2.2
Narrow Satin			108%	Edge Walk	2
Wide Satin			100%	Edge Walk + Zigzag	2
Step	4.2	0.5		Step	4.2
F7 Woven Medium Weight					
Lettering			90%	Center Walk	2
Narrow Satin			90%	Center Walk	2
Wide Satin			90%	Edge Walk + Zigzag	2
Step	4	0.4		Edge Walk + Step	2

The chart below shows how to read the table and where the table values can be found in the software. The fabric and the object properties determine the stitch settings. Please note that not all objects (e.g. applique objects) are subjected to fabric conditioning.



The document is structured as follows: In the first chapter, the interdependency between fabric types, object properties and stitch settings is exemplified. In the second chapter, three use cases show, how to use the fabric settings, depending on the user experience level. In the third chapter, two different digitizing methods are explained in depth.

1.1 Fabric Types – Effects on the settings

With auto fabrics, the stitch settings are adjusted according to the chosen fabric. The advantage is that your embroidery design gets very flexible regarding the choice of fabrics.

The example below illustrates the effects on the underlay, when changing the weight of woven fabrics from F6 to F8. The stitch width for the letter “C” remains unchanged for all fabric types.

Fabric	Step length	Step spacing	Satin auto spacing	Underlay Type	Layer 1 st. len.	Layer 1 st. spac.	Layer 2 st. len.	Layer 2 st. spac.	Pull comp.
F6 Woven Light Weight									
Lettering			117%	Center Walk	2.2				0.2
Narrow Satin			108%	Edge Walk	2				0.2
Wide Satin			100%	Edge Walk + Zigzag	2		5	5	0.25
Step	4.2	0.5		Step	4.2	5			0.4
F7 Woven Medium Weight									
Lettering			90%	Center Walk	2				0.2
Narrow Satin			90%	Center Walk	2				0.2
Wide Satin			90%	Edge Walk + Zigzag	2		3.6	2	0.2
Step	4	0.4		Edge Walk + Step	2		3.6	2	0.2
F8 Woven Heavy Weight									
Lettering			98%	Center Walk	2.2				0.2
Narrow Satin			96%	Center Walk + Edge Walk	2.2		2		0.2
Wide Satin			92%	Edge Walk + Double Zigzag	2		12.7	5	0.2
Step	4	0.4		Step	4	2.5			0.17

The selected fabric type (F6, F7, F8), the stitch type (satin stitch), the object type (lettering) and the stitch width (> 4 mm) define the settings for the stitch spacing, the underlay stitch type and the pull compensation.

F6 – Woven Light Weight	F7 – Woven Medium Weight	F8 – Woven Heavy Weight
C = Wide Satin with Edge Walk and wide Zigzag Underlay	C = Wide Satin with Edge Walk and narrow Zigzag Underlay	C = Wide Satin with Edge Walk and Double Zigzag Underlay
Required stabilizer:	Required stabilizer:	Required stabilizer:
Topping: Wash Away Backing: Light Weight Tear Away	Topping: Backing: Poly Mesh or Cut Away x 2	Topping: Wash Away (if rough texture) Backing: Poly Mesh or Cut Away x 2

1.2 Object Properties – Effects on the settings

In the previous example, the fabric type was changed from F6 to F8 and this had an effect on the underlay. In this example, the object type and size are changed to show that the chosen object properties affect the stitch properties as well. The fabric type is F7 and remains unchanged.

Lettering Objects with Satin Stitch

When creating Lettering objects with satin fill, the applied automatic fabric settings depend on the (minimum) outline width of the Lettering objects.

- If min stitch width $\leq 2\text{mm}$ \rightarrow Lettering category fabric settings are applied
- If min stitch width is between 2mm to 4mm \rightarrow narrow satin values are applied
- If stitch width is $> 4\text{mm}$ \rightarrow wide satin values are applied

Non-Lettering Objects with Satin Stitch

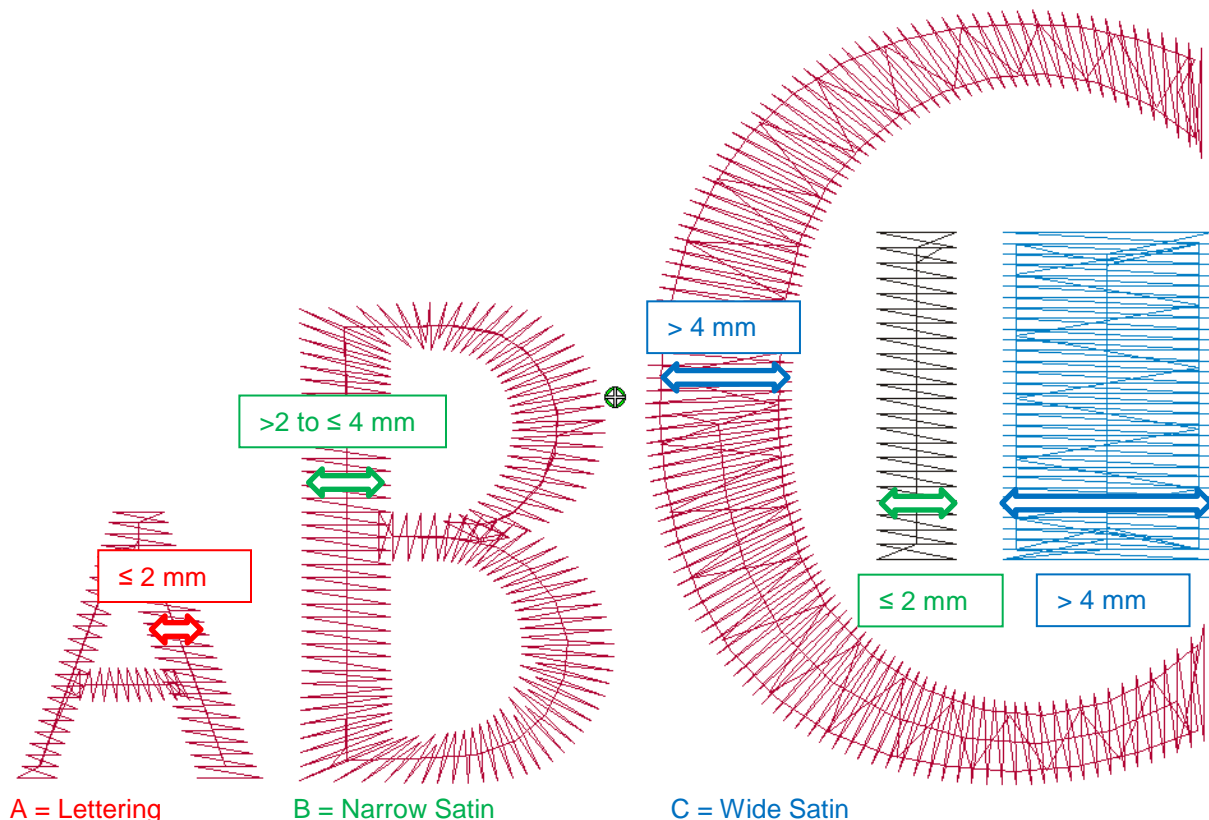
For non-lettering objects that have a satin contour, only the settings for narrow satin or wide satin stitch are applied:

- If stitch width $\leq 4\text{mm}$ \rightarrow narrow satin
- If stitch width $> 4\text{mm}$ \rightarrow wide satin

Example

In the following example, the letters A, B and C have different sizes and thus different satin stitch widths. Depending on the stitch width, different settings are applied to the lettering object, so the underlay stitch type changes for example.

The same goes for non-lettering objects. The black satin contour has a stitch width of 2 mm and a underlay stitch type of a narrow satin, while the blue satin contour having a stitch width of 6 mm and a wide satin.

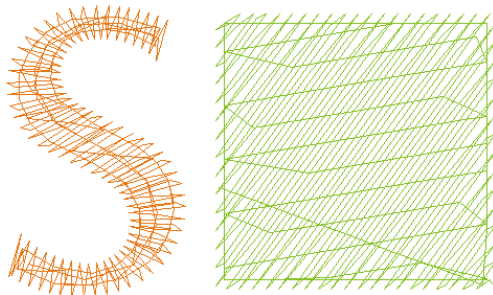


Fabric	Step length	Step spacing	Satin auto spacing	Underlay Type	Layer 1 st. len.	Layer 1 st. spac.	Layer 2 st. len.	Layer 2 st. spac.	Pull comp.
F7 Woven Medium Weight									
Lettering			90%	Center Walk	2				0.2
Narrow Satin			90%	Center Walk	2				0.2
Wide Satin			90%	Edge Walk + Zigzag	2		3.6	2	0.2
Step	4	0.4		Edge Walk + Step	2		3.6	2	0.2

Objects with Step Stitch

With step fills, the object size is not relevant, so only one setting is applied to all objects types.

For example the lettering object “S” and the Rectangle object have a step fill and a step underlay.



S = Step

Fabric	Step length	Step spacing	Satin auto spacing	Underlay Type	Layer 1 st. len.	Layer 1 st. spac.	Layer 2 st. len.	Layer 2 st. spac.	Pull comp.
F7 Woven Medium Weight									
Lettering			90%	Center Walk	2				0.2
Narrow Satin			90%	Center Walk	2				0.2
Wide Satin			90%	Edge Walk + Zigzag	2		3.6	2	0.2
Step	4	0.4		Edge Walk + Step	2		3.6	2	0.2

Additional Information / Constraints

- The sequence of underlay is set automatically by the program. The first underlay is always the slightest. This means a center walk or an edge walk come always before a zigzag underlay

2 Use Cases

The template and fabrics are two excellent tools to customize settings. The table below recommends the use cases according to your level of embroidery experience.

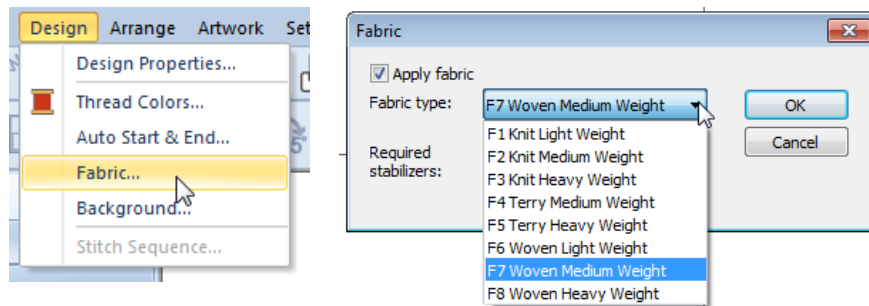
User Type	Standard Fabric F1-F8	Customized Fabric	Customized Template
Beginner	X		
Intermediate User	X	X	
Professional User	X	X	X

2.1 Beginner

Beginners should simply work with the predefined **Fabric types F1-F8**.

The procedure is as follows:

- Select **New**
- Select the fabric according to the project, go to **Design > Fabric**
- Insert embroidery design with **Insert design**

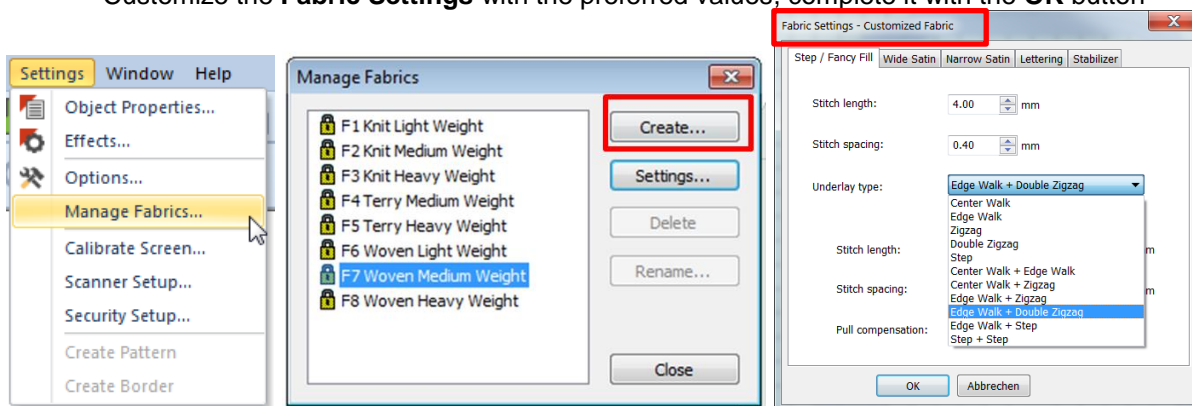


2.2 Intermediate User

Intermediate users can create their own **Customized Fabric** on the basis of an existing fabric.

Customized fabrics can be created as follows:

- **Setting > Manage Fabrics...**
- **Create...**
- Enter a new fabric name and select basis fabric
- Confirm it with **OK**
- Customize the **Fabric Settings** with the preferred values, complete it with the **OK** button



Additional Information / Constraints

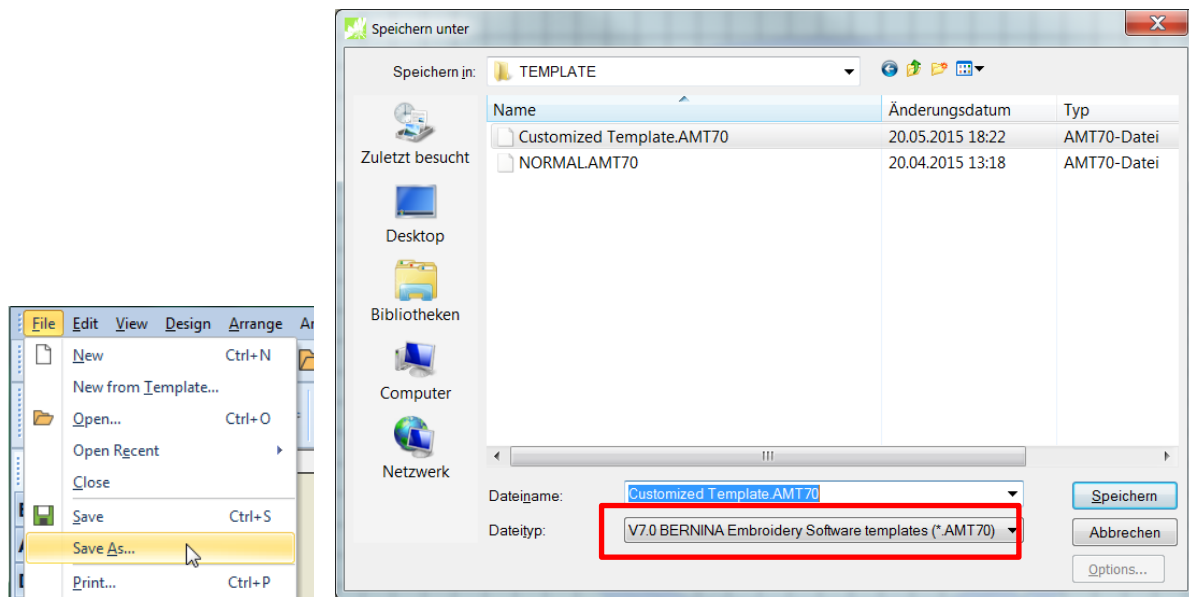
- Not every underlay stitch can be applied to every object, although set in the own fabric. For example the double zigzag does not apply for **Rectangle** and **Closed Objects**. This is why a zigzag underlay is applied. But a double zigzag applies for **Block**, **Ellipse** and **Lettering Objects**.

2.3 Professional User

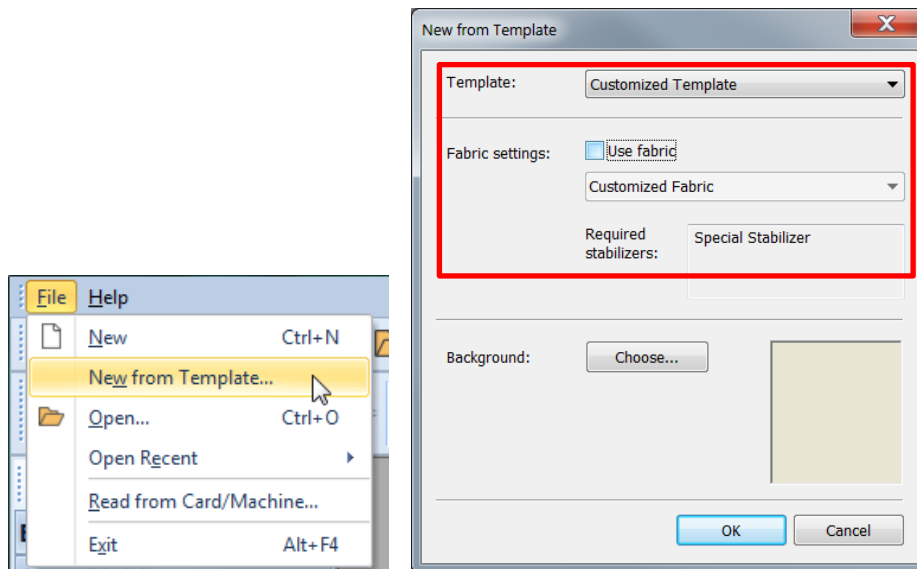
Professionals can even set their own **Customized Template**. In combination with their own customized fabric, they can speed up their digitizing routine. Additionally to the preferred stitch settings start and end point, hoop, background, position markers etc. can be set to their template. It is also possible to store a default object with lettering. This is practically for company logos that are complemented with different names.



Save the custom template under **File > Save As...** with the file type **AMT** format.



To use the **Customized Template** and your **Customized Fabric**, you have to load it from **File > New from Template...** Depending on the project, you can also activate or deactivate the **Fabric settings**.



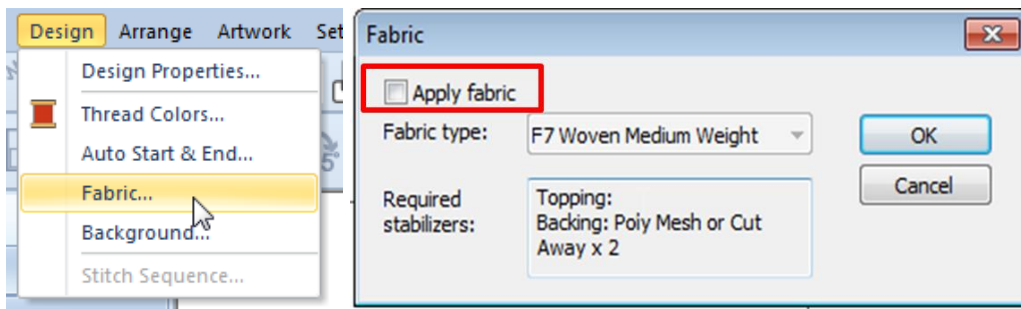
3 Digitizing Methods

3.1 Digitizing without Auto Fabrics

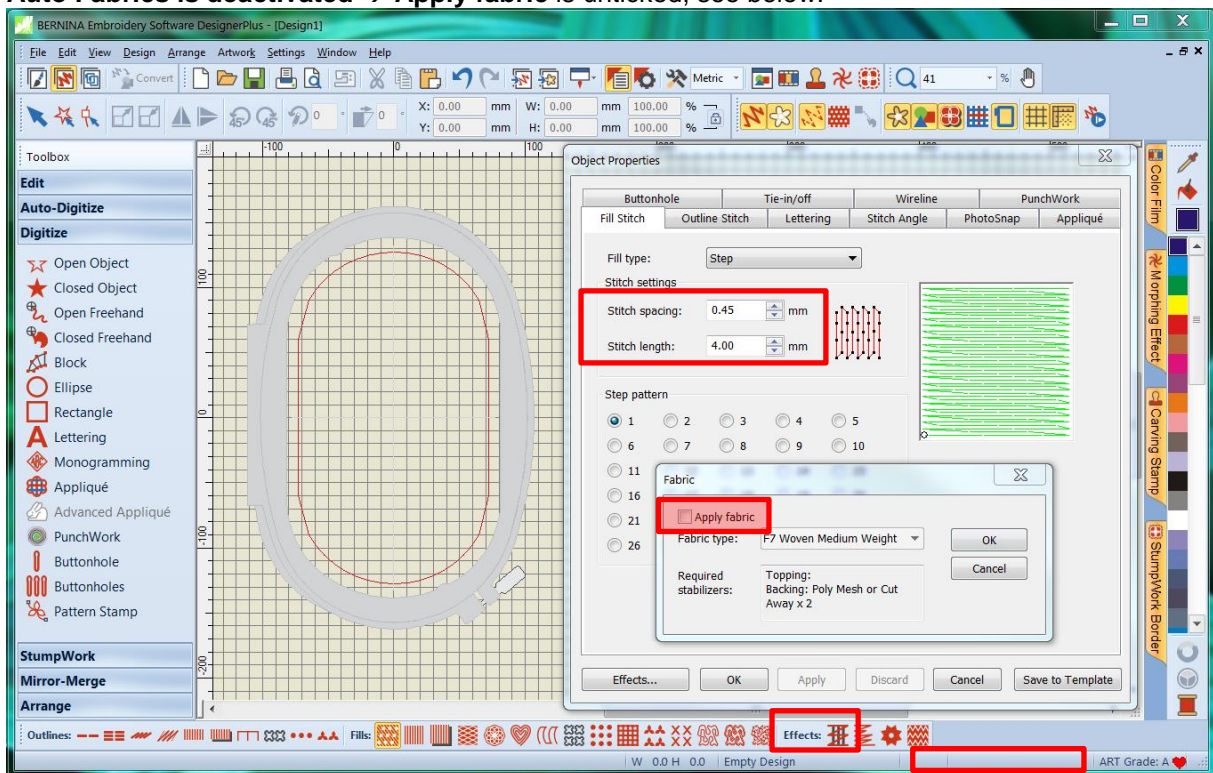
In general, BERNINA recommends digitizing on a preset fabric in order to easily switch the fabric type according to your physical embroidery project. For experienced users, who like to use their own settings, or for specific objects that do not require underlay stitches (lace designs or certain design details), the automatic fabric settings function and thus the automatic underlay function can be deactivated. It is also possible to disable the function for a part of a design only.

The automatic fabric settings can be deactivated as follows:

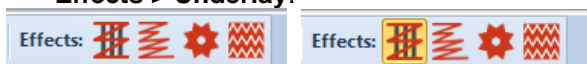
- Select **Design > Fabric...**
- Untick the **Apply fabric** box, then auto fabrics is deactivated
- Now the object properties can be set manually, like in V6



Auto Fabrics is deactivated → Apply fabric is unticked, see below:



- All settings are unlocked, so that the underlay and the stitch settings can be set manually.
- By default, newly added objects do not have underlay stitches. When auto fabric is deactivated (**Apply fabric** is unticked) auto underlay is enabled so that if it is pressed in, it is highlighted and an auto underlay will be applied for new objects digitized. This underlay can be seen under **Effects > Underlay**.

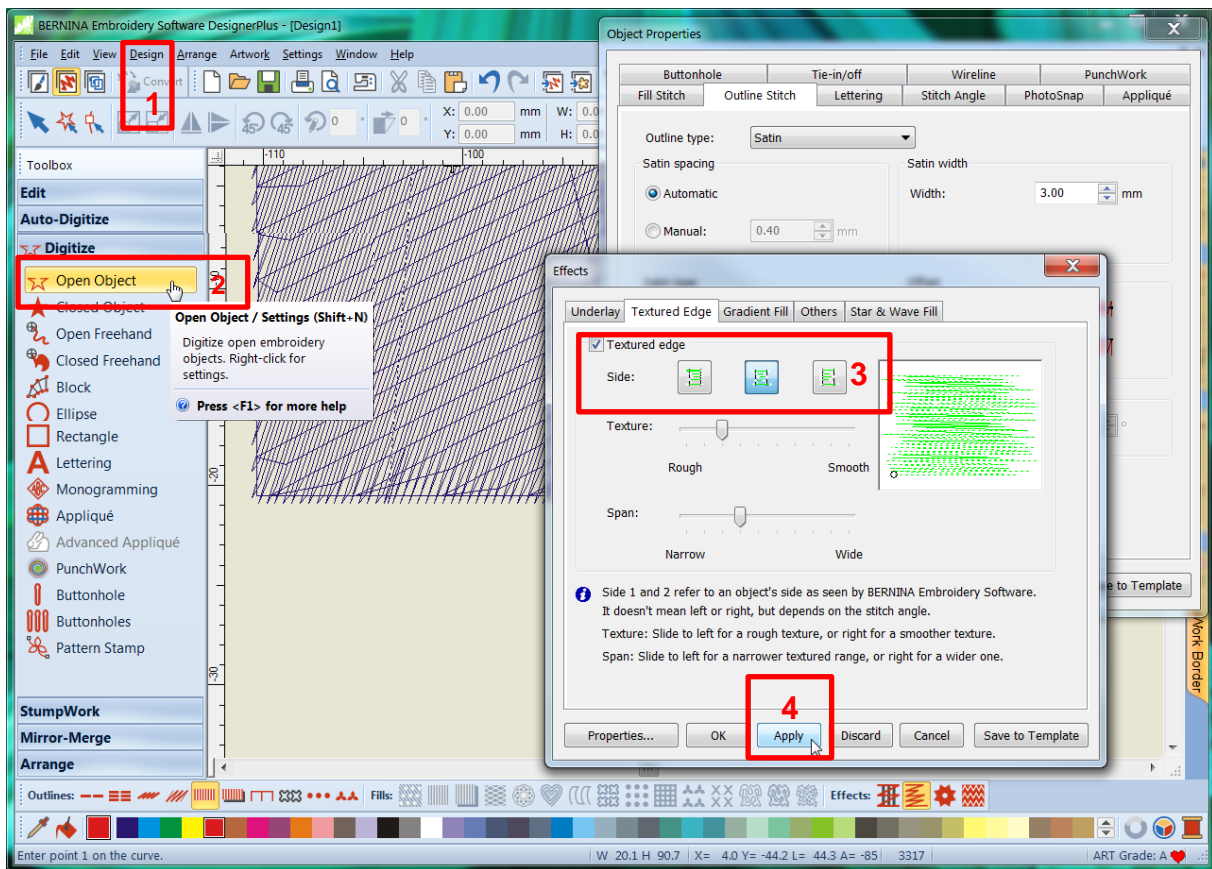


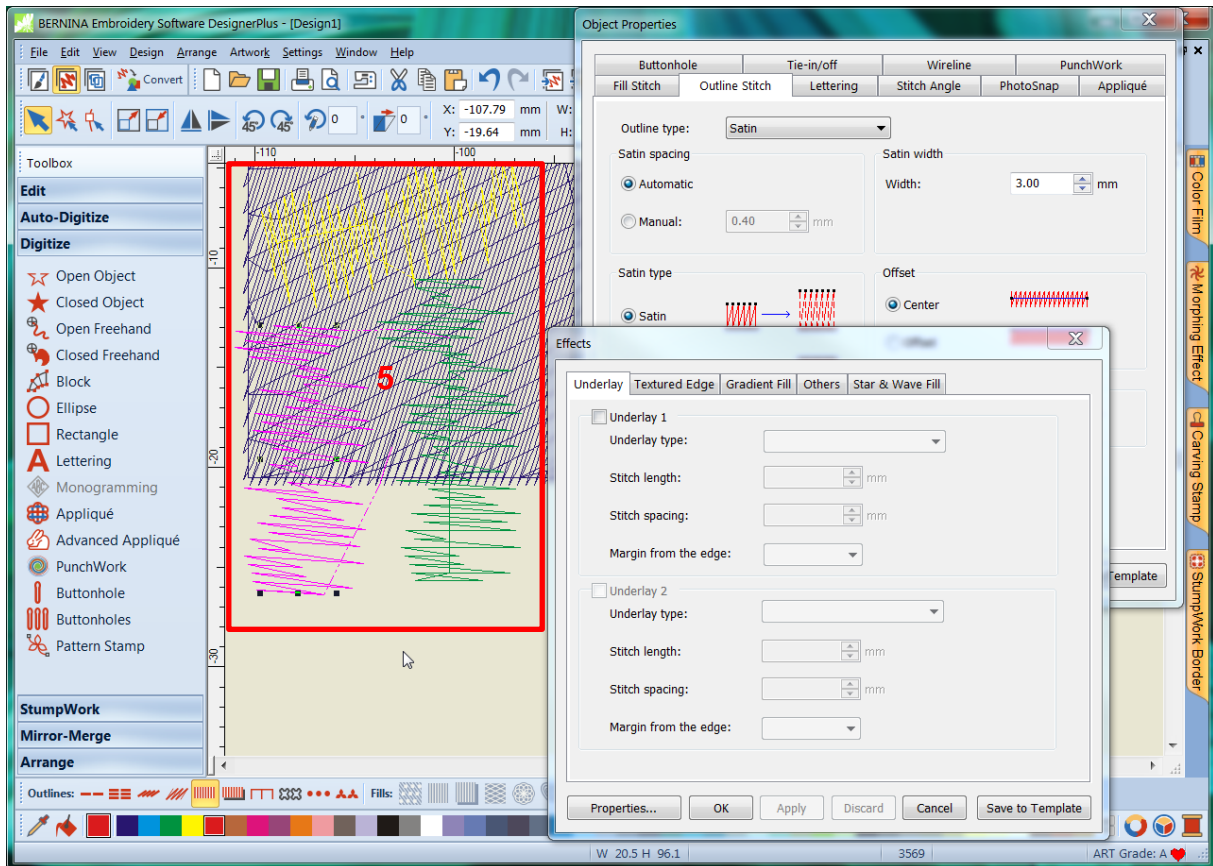
3.2 Digitizing Routine with Auto Fabrics Deactivated

To create complete designs or parts of designs without the automatic fabric settings, this function can be deactivated at any time. This is the case if objects have been digitized with a step filling on the fabric type F7 and now more Satin contours are added with a textured edge, but without underlay stitches.

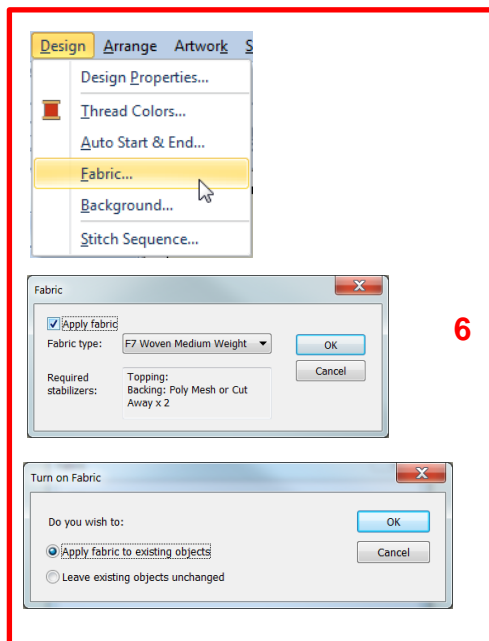
The procedure is as follow:

- Select fabric type und digitize all objects that should have these default settings. If digitized directly with custom fabric type, then skip this point.
- Untick **Apply fabrics** in **Design > Fabrics...** (1)
- Right-click on the digitizing tool to open the **Object Properties** (2)
- Make all changes in the properties and confirm them with **Apply** button. As a visual guidance all set parameters are marked yellow (3+4)
- Continue to digitize the other objects that should be created with the customized settings (5).





- If you want to continue digitizing objects with the default fabric settings, the auto fabrics function can be reactivated (6)



Additional Information / Constraints

- When adding a fabric type to existing objects, the previous settings will be adjusted to the fabric, but they will not be replaced. Elsewise you would lose all your settings like stitch length, when changing the fabric type F1-F8.
- A non-underlay object stays a non-underlay object when changing or adding a fabric.