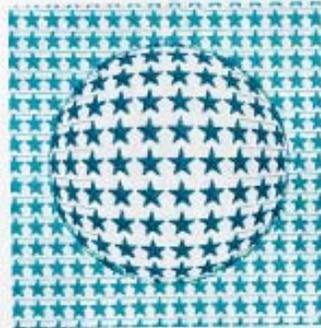


BERNINA Embroidery Software 8

DesignerPlus



Color PhotoStitch



3D Globe Effect



Couching

More BERNINA tips and tools at:
www.bernina.com/V8

made to create **BERNINA**

REFERENCE MANUAL

BERNINA DesignerPlus

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Level 3, 1-9 Glebe Point Rd, Glebe
Sydney, New South Wales, 2037, Australia
PO Box 1094 Broadway NSW 2007
Phone: +61 2 9578 5100
Fax: +61 2 9578 5108
Web: <http://www.wilcom.com>

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NOTE

The screen illustrations in this publication are intended to be representations, not exact duplicates of the screen layouts generated by the software.

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CONTACT

If you have any questions, please contact your BERNINA distributor, or
BERNINA International AG
CH-8266 Steckborn/Switzerland
Tel: (41) 52-762 11 11
Fax: (41) 52-762 16 11

Rev 1 May 2016

CHAPTER 1

INTRODUCTION

Welcome to BERNINA® Embroidery Software, the leading embroidery design application for home users. This is an MS Windows®-based product incorporating many of the conventions with which most PC users are already familiar.

BERNINA Embroidery Software is unique in providing seamless integration with CoreIDRAW® Essentials X6, the most popular vector-based drawing package for home users. This combination offers a more efficient, user-friendly approach to embroidery design by combining the embroidery capabilities of BERNINA Embroidery Software with graphical capabilities of CoreIDRAW®. It also allows users to create not just embroidery, but true, multi-medium designs.



First-time users

If you are new to BERNINA Embroidery Software, you'll be pleased with its flexible digitizing capabilities, the ease with which you can create and edit designs, and how simple it is to add or create your own lettering. However, before you begin working with the product, please read **Getting Started**. This chapter presents an overview of the basic concepts of digitizing with BERNINA Embroidery Software and provides you with important guidelines on how to use this software to achieve the best results.

Update users

BERNINA Embroidery Software is an enhanced version of our earlier products. It has many new and expanded features. Please read the Release Notes available from the **Help** menu to quickly familiarize yourself with the scope of these improvements.

Check that your PC meets the system requirements. Check CPU/RAM as well as hard disk space. The table below provides minimum system requirements.



Note If you are upgrading from a previous version of the software, you are advised not to remove any earlier versions until after installing the new software. This gives you the option of merging user-defined settings, including user-defined motifs, into the new installation.

System requirements

In order to run your software, you need to ensure that the following pre-requisite system requirements are met.

PC specifications

Component	Minimum	Recommended
CPU	Intel® Core 2 Duo or AMD Athlon™ 64	3GHz + Latest 64-bit (x64) multi core processor

Component		Minimum	Recommended
Operating system	‡	Windows® 7 (32-bit or 64-bit Editions) with latest service packs installed.	Windows® 10 (64-bit Edition) or Windows® 8.1 (64-bit Edition), with latest service packs.
Browser		I.E. 9.0 or Later	I.E. 11.0 or Later
Memory		4 GB	8 GB or more
Hard disk size		80 GB	256 GB or More (Solid State Drive)
Free disk space	†	40 GB	60 GB or More
Graphics card		Support for Highest Color (32bit) and resolution (1366 X 768)	Support for DirectX 9 graphics with: WDDM Driver 1GB of graphics memory (non-integrated) Pixel Shader 2.0 in hardware bits per pixel Dual Monitor Capable
Monitor	¥	1366 X 768 screen resolution	Dual monitors capable of displaying 1920 X 1080 screen resolution
Mouse		USB mouse	USB mouse
USB port		Required for software installation.	
Sound card		Required for online video help.	
Internet connection		Required for product activation and registration. Internet connection may also be required during installation in order to download Windows features such as .Net Framework 3.5.	

Supported operating systems ‡

Although Windows® 7 (32-bit or 64-bit edition) is supported, we recommend updating to Windows® 10 (64-bit edition) or Windows® 8.1 (64-bit edition) with latest service packs installed. You will, however, need to uninstall any versions of CorelDRAW earlier than X6.

Free hard disk space †

BERNINA Embroidery Software occupies up to 5GB of hard disk space, depending on options installed. CorelDRAW Essentials also takes up an additional 3GB.

Screen resolution ¥

Some controls may be hidden on the user interface if you run your monitor at low resolutions. The physical size of your monitor will have a bearing on the optimum screen resolution. Larger fonts will exacerbate the problem. If you experience visibility issues, try adjusting both screen resolution and font size. For example, a resolution of 1366 X 768 with a font size of 100% or 125% should be acceptable.

System security

The software is shipped with a product key which can be found inside the software kit. Each product key allows your system to be uniquely identified. You will be prompted to enter the product key to register and activate the product when the software is launched

the first time following installation. Please keep the product key in a secure place.



Note Each licensed copy of the software is for a single user. It entitles you to three (3) activations: two (2) on different computers, and one (1) in case of hardware failure or replacement.

Integration with CorelDRAW®

CorelDRAW® Graphics Suite is the most popular vector-based drawing package for the decorated goods industry. It features 'best-of-breed' bitmap-to-vector tracing, enhanced illustration capabilities, photo-editing together with a library of professional clipart images.

BERNINA Embroidery Software comes together with an installation of CorelDRAW® Essentials X6. The built-in CorelDRAW Graphics window includes CorelDRAW drawing tools which offer many techniques for drafting outlines and shapes on screen. Vector objects can be converted to embroidery designs. CorelDRAW® Essentials X6 and its sister product, Corel PHOTO-PAINT® Essentials X6 can also be run as standalone applications.

For a full description of the tools, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics mode Help** menu.



Note CorelDRAW is installed together with Windows .NET Framework. To ensure that CorelDRAW is correctly installed with your embroidery software with the correct version of .NET, make sure you install it when prompted to do so. It can take up to 20 minutes or more to install the .NET Framework on some computers.

Installation



Double-click to start BERNINA® Embroidery Software.

Below are instructions for installing the software on your PC. If you are upgrading or updating your software from Version 5 to 7, you will need your previous version hardware dongle and attach it to the PC when prompted. It will no longer be working after the update process.

Before you start...

The BERNINA® Embroidery Software kit includes a USB Drive and Product Key to activate the software.



Before commencing, make sure you have the following...

- ▶ Software product key which is located in the kit.
- ▶ If you are upgrading, you will need your previous version hardware dongle. Do not attach until prompted.
- ▶ When you install the software, you will be prompted to reboot your PC to complete the installation. Make sure that you save any files and close all applications beforehand.

To install the software

- 1 Ensure your computer meets the technical requirements for the software. See [System requirements](#).
- 2 Close all MS Windows® applications and temporarily disable your anti-virus software.
- 3 Insert the Installation USB stick. The installation program should start within 30 seconds and a welcome screen displayed.
- 4 Follow the onscreen instructions to complete the installation. You will be prompted to choose:
 - ▶ where the software will be installed on your PC (default location recommended).
 - ▶ which components will be installed – e.g. additional languages.
 - ▶ which documentation files will be installed.
- 5 Reboot the PC when prompted. Save any files and close all applications beforehand.
- 6 Double-click the icon on the desktop to start the software for the first time.
- 7 A CorelDRAW configuration message will appear. Click **OK**.



Note If you are installing on Windows 10, you will be prompted to uninstall any previously installed versions of CorelDRAW Essentials.

- 8 When prompted, enter the product key (located in your software kit) and your registration details in the fields provided.

Register and Activate Product

Please register and activate the software by entering the following information. All fields are mandatory.

Product key: - - - -

Please keep the product key in a safe place. The key is needed when re-installing the software.

First name:

Last name:

Email address:

State:

Country:

OK Cancel

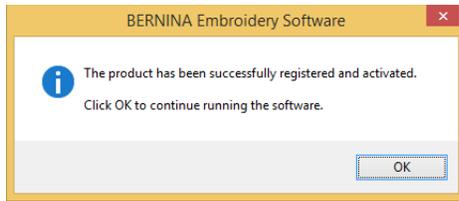
- 9 Click **OK** and the software will connect to our activation server to activate the software.
- 10 If you have purchased an upgrade kit, attach the old hardware dongle when prompted.

Security device not found

Please attach your current working dongle and click OK to continue.

OK Cancel

11 Once activated, you can now use the software.



12 When the new software is correctly running, discard the old dongle if you have one.



Note If you encounter problems with the installation, please contact your dealer.

Modify installation

Whether you are upgrading your current software or wanting to uninstall it, you follow the same procedure. When you run the installation program again, it will automatically detect if there is an existing copy of the software on your system and give you an option to modify, repair or remove it. This will prevent the installation of more than one release version of the software on your computer.

To modify an existing installation

- ▶ Close all MS Windows® applications but leave Windows running.
- ▶ Insert the Installation USB. If the software is already installed on the computer, you will be prompted to:

Option	Notes
Modify	Change selection of installed components.
Repair	Reinstall same components.
Remove	Uninstall the software.



Note Upon successful installation of the software and any additional MS Windows® files that need upgrading, the **Maintenance Complete** screen appears. If you have selected **Repair** as your installation option, currently installed components will be reinstalled.

Hardware setup

Different devices are set up in different ways – some in MS Windows®, via the Control Panel, others within BERNINA Embroidery Software itself. For instructions on connecting devices to your computer and setting

up in MS Windows®, see the documentation for the device as well as your MS Windows® documentation.

Setting up embroidery machines

Your BERNINA embroidery machine should be connected to the USB port of your computer. See your BERNINA embroidery machine manual for details on connecting the machine to your computer.

Setting up scanners

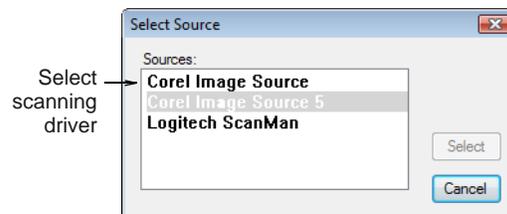
BERNINA Embroidery Software supports TWAIN-compatible scanners.



Note Some scanners will not work with BERNINA Embroidery Software because they require their own scanner software. If this is the case with your scanner, use your scanner software for scanning, save the image to your hard drive, then load the image into BERNINA Embroidery Software.

To set up scanners

- 1 Connect the scanner using the accompanying instructions.
- 2 Set it up in MS Windows® using the accompanying instructions and/or the Microsoft MS Windows® documentation.
- 3 Start BERNINA Embroidery Software.
- 4 Select **Settings > Scanner Setup**.
The **Select Source** dialog opens displaying a list of scanner drivers loaded on your computer.



- 5 Select the scanning driver to use, then click **Select**.



Note If you have trouble with scanning after re-starting BERNINA Embroidery Software, there may be a conflict with previously installed scanner drivers. Re-install BERNINA Embroidery Software and test the scanner. If the selected scanner driver does not work in BERNINA Embroidery Software, select another scanner driver from the list. There are usually two installed for each scanner.

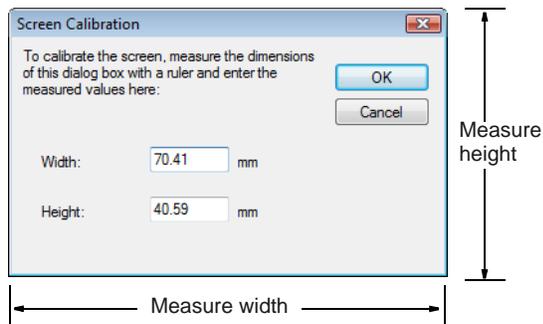
Calibrating the monitor

Your monitor needs to be correctly calibrated so that designs at 1:1 scale appear at real size. In most cases this the software will self-calibrate on later versions of Windows OS. However, it's a good idea to check screen calibration when you first install BERNINA Embroidery Software or whenever you change monitors.

To calibrate the monitor

1 Select **Settings > Calibrate Screen**.

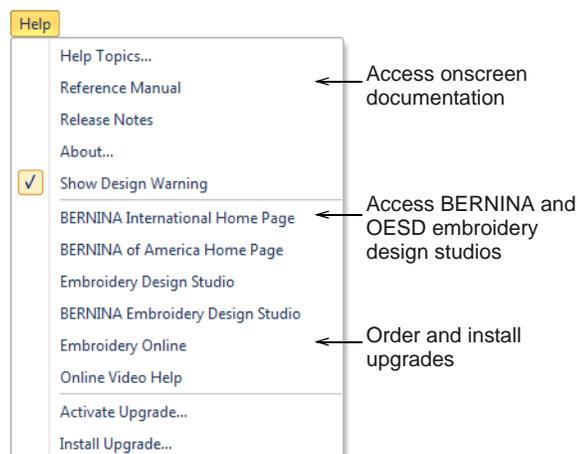
The **Calibrate Screen** dialog opens.



- 2 Measure the height and width of the dialog box.
- 3 Enter the measurement in the **Width** and **Height** fields.
- 4 Click **OK**.

Resources & support

BERNINA Embroidery Software provides various ways to access information about the software and how to use it. It also provides links to sources of ready-made embroidery designs.



Onscreen documentation

Onscreen documentation is provided in two formats – HTML Help and Adobe Acrobat. Depending on your product level, documentation components will include some or all of the following:

Release notes

A set of release notes is included with the software installation. These provide detailed information about new and improved features as well as direct links to the relevant sections of the Reference Manual.

Reference manual

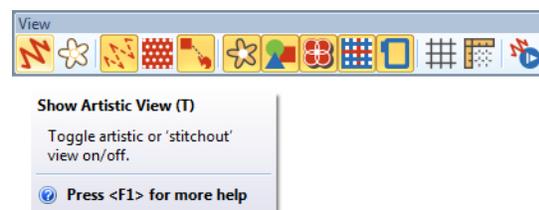
The Reference Manual provides detailed procedures covering all features of the BERNINA Embroidery Software 'Embroidery Canvas'. It contains step-by-step instructions together with samples and screen images. The BERNINA Cross Stitch and BERNINA Quilter applications are documented in separate supplementary manuals described below.



Note For a full description of the CorelDRAW® tools available in Artwork Canvas, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics mode Help** menu.

Onscreen help

Onscreen help provides quick access to general information on BERNINA Embroidery Software features and step-by-step instructions. An **F1** keypress accesses context-sensitive help.



Supplementary help

With your BERNINA Embroidery Software installation, you will have also received the following supplementary help:

- ▶ **BERNINA Cross Stitch:** This covers the capabilities of the special BERNINA Cross Stitch application. See also **Cross stitching**.
- ▶ **BERNINA Quilter:** This covers the capabilities of the special BERNINA Quilter application. See also **Quilting**.

Online resources

There are many other sources of ready-made embroidery designs which you can purchase and

adapt as you wish. Your BERNINA Embroidery Software directs you to two rich sources – BERNINA and OESD embroidery design studios.

Conventions used in the manual

The following conventions are adopted and used throughout the manual.

Commands

In this manual, commands on a menu or submenu are referred to by both the menu and command names. For example the 'Show all Colors' command in the 'View' menu is referred to as **View > Show all Colors**.

Dialog boxes

Dialog boxes are referred to as 'dialogs' and are shown in the manual only if they provide important information on using BERNINA® Embroidery Software. The screen images provided are intended to be representations, not exact duplicates of the layouts generated by the software.

Keyboard conventions

Instruction	Symbol	Action
Click		Click the left mouse button.
Right-click		Click the right mouse button.
Double-click		Click the mouse button twice without moving the mouse.
Click OK	 or 	Click OK with the mouse or press the Enter key on the keyboard to complete the action.

Keyboard shortcuts

Shortcut	Action
 + 	While holding down the Control key (Ctrl), press the S key to save design.

For a complete list of keyboard shortcuts, see [Keyboard Shortcuts](#).

PART I

THE BASICS

Designs created in BERNINA Embroidery Software are composed of 'embroidery objects'. They are called 'objects' because they are discrete entities which can be manipulated independently of each other. Each object has certain defining characteristics or 'properties' such as color, size, position, and so on. The most important property of an embroidery object is its stitch type.

Getting started

BERNINA Embroidery Software provides embroiderers with a fast, flexible way of creating and editing embroidery designs. This section outlines the main uses you will make of your BERNINA Embroidery Software, together with references to the sections of the reference manual where you can obtain more in-depth information. See [Getting Started](#) for details.

Basic procedures

This section describes how to start BERNINA Embroidery Software and access the available commands and tools. It covers basic procedures to do with opening, creating and saving design files. It explains how to activate hoops and grids and it covers accessing [object properties](#). See [Basic Procedures](#) for details.

Managing designs

This section describes how to open and view designs in Embroidery Library as well as adjusting viewing settings. It also covers browsing for and accessing designs in folders. See [Managing Designs](#) for details.

Viewing designs

This section explains the design viewing modes available in BERNINA Embroidery Software as well as the various design viewing settings. It describes zooming and panning as well as how to view the stitching sequence. It covers displaying design [backdrops](#) and changing backgrounds. It also explains how to obtain information about your designs. See [Viewing Designs](#) for details.

Selecting objects

This section describes how to select objects using the selection tools and keyboard. It also shows how to select color blocks or individual objects using the Color Film. See [Selecting Objects](#) for details.

Software setup

This section describes how to set up embroidery machines, and scanners and describes how to calibrate the monitor. It also deals with changing grid spacing and hoop options. The setting of general options – such as automatic save, pointer position display options, etc – is also covered. See [Software Setup](#) for details.

CHAPTER 2

GETTING STARTED

If you are new to BERNINA Embroidery Software or machine embroidery, you are probably asking yourself 'where do I start?!'.

It's safe to say that you will spend many hours learning how to get the most out of your BERNINA embroidery machine and the design software which supports it. The two work together hand-in-hand and it takes practice and patience to master both the creation and production of fine embroidery.

The results, however, will speak for themselves, making the time you invest all the more valuable. With each project you complete, you will gain in experience and confidence and be ready to tackle the next challenge.

This section outlines the main uses you will make of your BERNINA Embroidery Software, together with references to the sections of the reference manual where you can obtain more in-depth information.



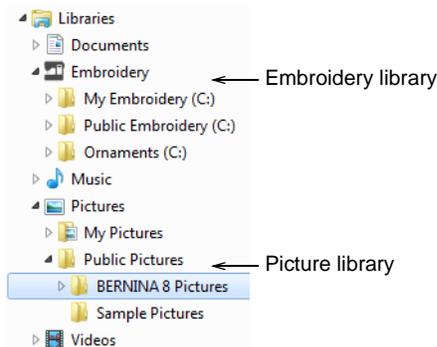
First things first

You don't need any experience to start with BERNINA Embroidery Software. You can simply open a design and send it to your machine to 'stitch out'. And this is the best place to start. As you gain experience, you will be able to 'read' designs and identify which are good and which may cause problems.

Sample designs & artwork

BERNINA Embroidery Software contains hundreds of ready-to-stitch designs, including many attractive ornaments, samples and digitizing **backdrops**. Design

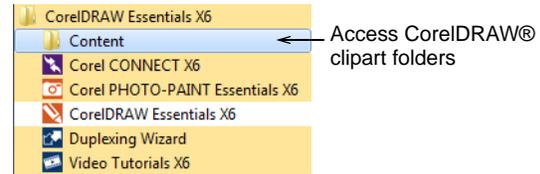
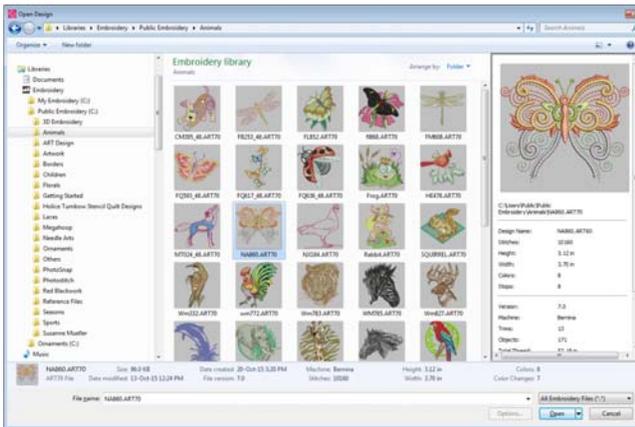
files (ART files) and images (BMP, JPG, and WMF files) can be found in your Embroidery and Picture libraries.



The most valuable thing you can do when starting out as a new user, is to spend some time exploring these designs and getting to know what's available.

Clipart

CorelDRAW® Essentials X6 is packaged with a selection of clipart which can be accessed via the program group.



Make sure you get familiar with the many clipart samples. Many can be adapted for use with embroidery design, either as digitizing backdrops or direct conversion. See also **Browsing clipart**.

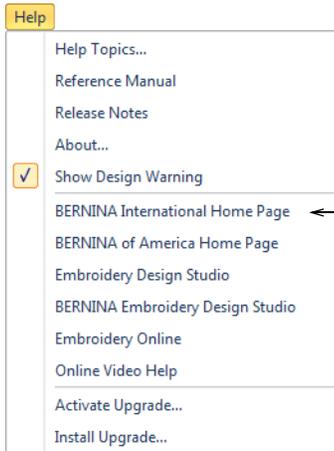


Note BERNINA Embroidery Software includes its own **Embroidery Library** design management application to view and manage your embroidery designs. Alternatively, explore design folders using MS Windows® Explorer.



Other sources

There are many other sources of ready-made embroidery designs which you can purchase and adapt as you wish. Your BERNINA Embroidery Software directs you to two rich sources – BERNINA and OESD embroidery design studios.



Access BERNINA and OESD embroidery design studios

It may be more convenient to take a copy of the entire CorelDRAW® Essentials X6 Clipart folder and copy it to **My Designs - Embroidery Software 8** folder for easy reference.



Caution Included artwork (clipart) and embroidery designs are only available for personal use – i.e. they cannot be commercially sold in any form.

Rules of good embroidery

Keep the following points in mind when looking at embroidery designs, both your own and others:

- ▶ Stitches are neat, smooth and even
- ▶ Design looks good – shapes, colors, balance
- ▶ Shapes are filled with correct fill and outline stitches
- ▶ Stitches are angled to match shapes
- ▶ Shapes are stitched correctly – no unwanted gaps
- ▶ Details are clearly defined
- ▶ Lettering is clear and easy to read.

The stitchout should also have the following characteristics:

- ▶ The design sews efficiently on the machine
- ▶ The fabric does not pucker around stitched areas
- ▶ The design is free of loose ends.

Good embroidery quality starts with good design. You then need a good quality machine to stitch it out. But even that is not enough if you do not use the correct fabric, threads, backings, tension, and so on. Consult your machine manual for advice and get as much advice from other embroiderers as you can.

Working with embroidery

Before starting, let's take a look at the scenarios that you will find yourself working with. Typically, you will be involved in one or all of the following:

- ▶ Take a ready-made design and sew it out
- ▶ Make global changes to a design
- ▶ Create a lettering design
- ▶ Combine lettering with a design
- ▶ Adapt a design by changing parts
- ▶ Create new embroidery from artwork using automated techniques
- ▶ Create new embroidery manually
- ▶ Use special embroidery features

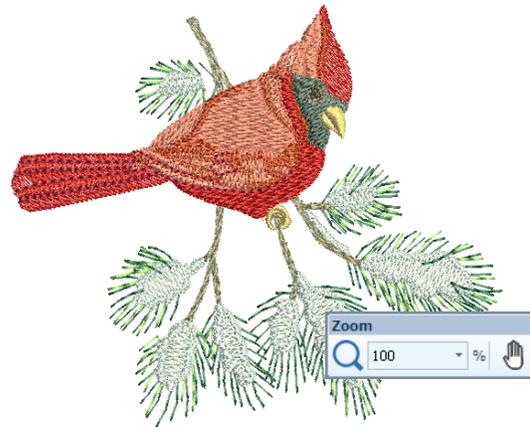
Let's look at those cases one by one.

Sew a ready-made design

For many embroiderers, it is enough to take an existing design and stitch it out. This is certainly where most will start. Once you have found a design you like, you will want to preview it to see how it will sew out. A number of steps are involved. We outline the main ones here with reference to the manual.

To sew out a design

- 1 Open the design in BERNINA Embroidery Software. See [Opening designs](#) for details.



- 2 Adjust viewing settings as desired. See [Viewing Designs](#) for details.
- 3 Check the fabric type and change as necessary. See [Status bar](#) for details.
- 4 Check thread colors and if necessary, change charts to suit the one you are using. See [Assigning thread colors](#) for details.
- 5 Preview the stitchout so you understand how the design will sew on the machine. See [Viewing stitch sequence](#) for details.
- 6 Choose a hoop and check location within the hoop. See [Selecting hoops](#) for details.
- 7 Preview the design and print out a design worksheet before sewing out as desired. See [Printing designs](#) for details.
- 8 Send the design to machine directly or via data media (usually memory stick). See [Stitching out designs](#) for details.

Check your BERNINA machine documentation for steps involved after transferring the design to machine.

Modify an entire design

Once you are used to the steps involved in sewing out designs – either clipart or ones you have purchased – you will soon want to make global design modifications such as resizing, or changing thread colors and fabric types. These are all relatively simple operations.

To modify an entire design

- 1 Open the design you want to use. See [Opening designs](#) for details.



- 2 Check design dimensions, and resize as required. See [Scaling objects](#) for details.

For example, if you are stitching a left chest design, maximum size will be approximately 4.25" or 108 mm square.

- 3 Adjust design thread colors as desired. See [Changing thread colors](#) for details.



- 4 Check the fabric type and change as necessary. See also [Changing fabrics](#).
- 5 Select a hoop of the required size. See [Selecting hoops](#) for details.

- 6 Visualize the design on a garment or article. See [Visualizing finished articles](#) for details.



- 7 Print a worksheet and send the design to machine. See [Printing designs](#) and [Stitching out designs](#) in the Reference Manual for details.

Create a simple lettering design

Once you are used to sewing out designs and resizing, changing colors and fabric types, you will definitely want to create your own lettering designs. While it takes practice to obtain a good quality lettering stitchout, it is as simple as typing letters on-screen to create attractive lettering in BERNINA Embroidery Software.

To create a simple lettering design

- ▶ Typically you'll want to add lettering to an existing design.
- ▶ Add embroidery lettering to designs quickly and easily, either on-screen using current settings or via 'object properties'. See [Adding lettering to embroidery designs](#) for details.



- ▶ It's then a simple matter to adjust baselines, formatting, spacing settings, and colors. See [Lettering Essentials](#) for details.



- ▶ Try stitching out your lettering design. Study the stitch quality. Be aware that different fonts sew out better at different sizes. See also [Embroidery Fonts](#).

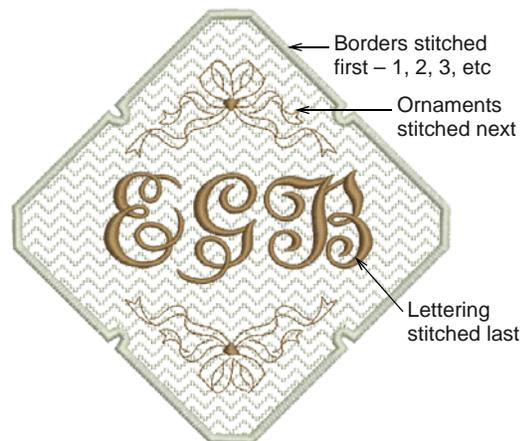
Create more advanced lettering

Once you have tried your hand at creating lettering designs and sewing them out, you will want to do more adventurous things, such as monograms, fancy lettering, flair scripts, raised lettering with trapunto, as well as special 'elastic lettering' effects. The creative possibilities are endless. Your appetite to try new things will be stimulated as you gain experience and confidence. Part of that involves becoming adept at using your BERNINA machine as well as sampling and checking design quality.

Monogramming

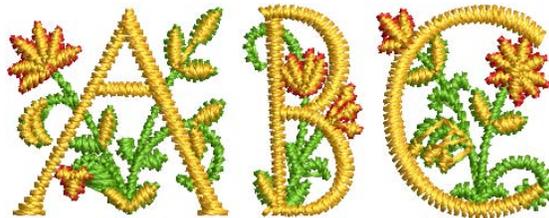
BERNINA Embroidery Software makes the creation of monogramming designs quite simple with the 'all-in-one' **Monogramming** tool. Optionally include lettering, ornaments, and/or up to four concentric

borders in your monograms. See [Monogramming](#) for details.



Fancy fonts

BERNINA Embroidery Software includes a number of fancy fonts such as **Creative Cross** and **Secret Garden-Caps**. These fonts include multiple colors and miniature designs. See [Adding fancy lettering](#) for details.



Flair script is a special font which allows you to add decorative flairs to the end of text objects, mimicking flamboyant handwriting flourishes. See [Adding flair script lettering](#) for details.



Lettering stitch effects

By default, lettering objects are filled with satin stitching. You can apply other fill stitch types, such as **Step** or **Fancy**, as with any [embroidery object](#). See

Applying different stitch types & effects to lettering for details.



Elastic lettering

Apply 'elastic lettering' effects to embroidery lettering to make it bulge or arch, stretch or compress. See [Creating 'elastic lettering' effects](#) for details.



Tip Remember to study the sample designs included with your BERNINA Embroidery Software installation.

Adapt a design

Adapting designs is perhaps the most common scenario in embroidery. You will sometimes want to create a new design, usually from artwork, but more often you will want to take an existing design and 're-purpose' it. We've already seen how to make global changes such as sizing, changing colors and fabrics. It won't be long before you want to try more 'invasive' changes such as reshaping, removing, combining, duplicating, resequencing, changing stitch

types and effects, etc. Here is a sampling of the things you may want to try.

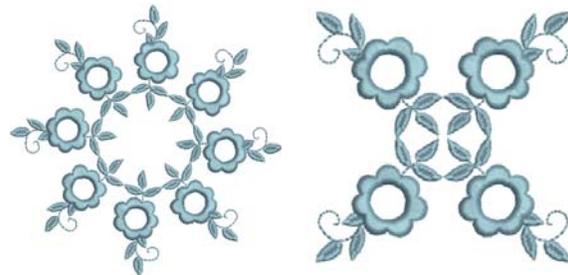
Combine designs

One technique you will undoubtedly use is combining design elements. This will in turn teach you a lot about other editing operations such as resizing, positioning, rotating, sequencing objects, as well as removing underlying stitching. See [Inserting designs](#) for details.



Transform design elements

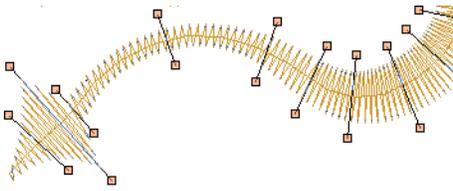
Depending on the type of design work you are doing, you can make use of BERNINA Embroidery Software tools for duplicating, rotating, and mirroring design elements to create wreathes, kaleidoscopes, and other effects. See [Mirroring objects](#) for details.



Reshape elements

Reshaping operations may be called on for anything from minor modifications to object shapes to reshaping letters for special effects. In all cases, if it

is selectable, it can be reshaped. See [Reshaping & Editing Objects](#) for details.



Apply artistic stitch effects

It won't take long before you get bored with simple fills and outlines and want to try out some of the many artistic stitch types and effects BERNINA Embroidery Software provides. See [Decorative Stitching](#), [Stitch Effects](#) and [Stitch Patterns](#).



Tip Remember to study the sample designs included with your BERNINA Embroidery Software installation.

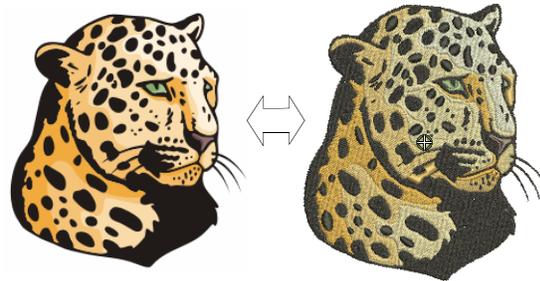
Create 'automatic embroidery'

If you have graduated this far in your exploration of your BERNINA machine and BERNINA Embroidery Software, you are doing well. You can already achieve a great deal without having to actually do your own design or digitizing work. However, if you have graduated this far, that is probably exactly what you want to do!

One of the quickest ways to get started is to use the automated techniques BERNINA Embroidery Software provides. While there are limitations to what can be done this way, it nevertheless allows you to prototype design ideas relatively simply and may be sufficient for your purposes. At least for now!

Vector artwork conversion

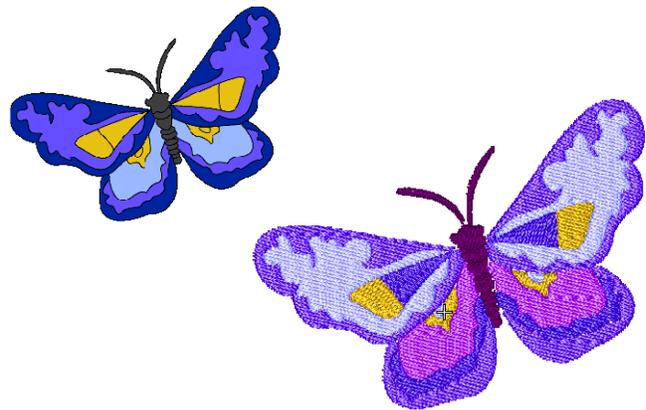
Special conversion tools in BERNINA Embroidery Software automatically convert **vector objects** and text to **embroidery** or lettering objects. These can be modified as required. See [Converting vector artwork](#) for details.



Tip A good starting point is to use some of the many clipart samples packaged with CoreIDRAW®. Many of these can be adapted for use in embroidery design.

Bitmap artwork conversion

The **Magic Wand** tool provides everything necessary to digitize shapes in **bitmap** images automatically. An extension of this technology, **Auto-Digitize** recognizes shapes in artwork and makes decisions about the most suitable stitch types to use. See [Auto-digitizing with Magic Wand](#) and [Auto-digitizing with Auto-Digitize](#) in the Reference Manual for details.



Photographic conversion

Use the powerful **Color PhotoStitch** tool to create embroidery from photographs and other images. See [Auto-digitizing with Color PhotoStitch](#) for details.



Create new embroidery from scratch

If you have reached this point, you have already mastered 90% of the techniques that most embroiderers need. However, coming to grips with the 'black art' of manual digitizing is the next step in becoming an embroidery master. But you don't have to dive off the deep end. You can start with quite simple projects and work your way up to more complicated designs with more complicated stitch effects.

Start with good artwork

To create good quality embroidery, you need to choose suitable artwork for use as a digitizing backdrop. Unless you are an experienced digitizer, don't use complicated artwork.



Scanned in 256
color mode

Scanned in RGB color
mode (millions of colors)

Artwork that is not in digital format needs to be scanned. This can be done via CorelDRAW® which is included with BERNINA Embroidery Software. Possible sources include:

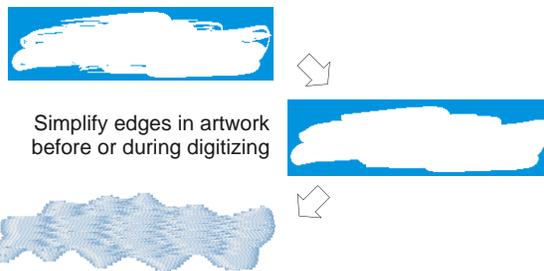
- ▶ books

- ▶ internet or CD clipart
- ▶ children's art
- ▶ your own original artwork.

And remember that a good starting point can be found with some of the many clipart samples packaged with CorelDRAW®. Many of these can be adapted as 'digitizing backdrops'.

Prepare your artwork

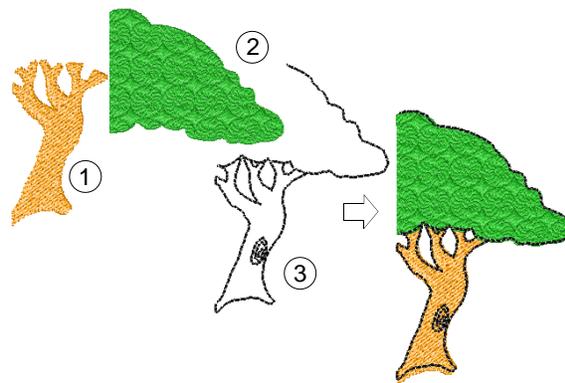
Before digitizing, you need to analyze and plan design shapes and stitching sequence carefully. Design shapes need to be clearly defined to make them easy to embroider. The easiest shapes to embroider have a relatively constant width, with smooth edges, no sharp turns and no small, protruding details. See also [Digitizing with Backdrops](#).



Simplify edges in artwork
before or during digitizing

Digitize your design

In BERNINA Embroidery Software, you build designs from basic shapes or 'embroidery objects'. The process of creating embroidery objects on-screen is called 'digitizing'.

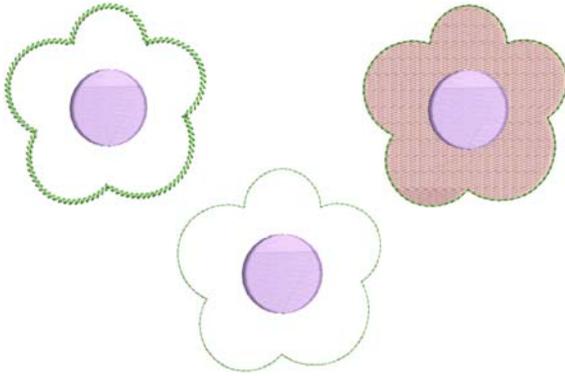


As with creating designs in graphics applications, embroidery digitizing involves the use of different tools or methods. These are used in conjunction with stitch types to create embroidery objects. See [Digitizing Methods](#) for details.

Choose stitch types

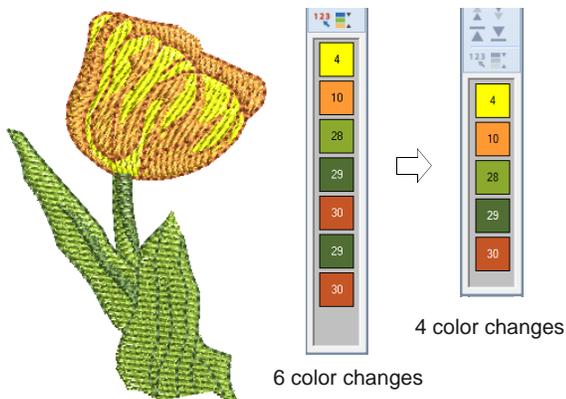
Decide which stitch types you will use for each design shape. BERNINA Embroidery Software lets you

change them at any stage. See also [Outline & Fill Stitching](#).



Sequence your design elements

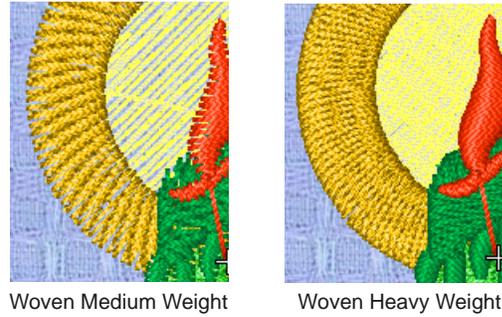
Design sequence is the order in which objects are created and therefore in which they are stitched out. You can change the object sequence to improve sewing – for example, to minimize color changes. Details should be stitched last. See also [Sequencing embroidery objects](#).



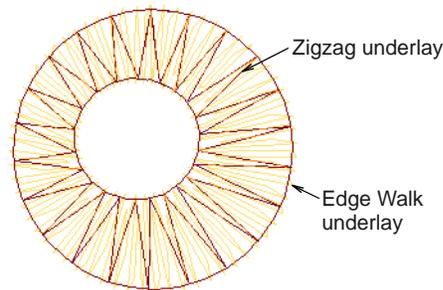
Improve stitch quality

Through trial and error you will get a feel for the issues that affect stitch quality. BERNINA Embroidery Software automates many of the quality issues such as stitch bunching, **push-pull** effect, and embroidery stability. This single most important setting in this

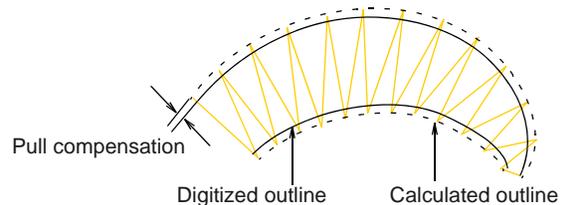
regard is choice of fabric type. See [Changing fabrics](#) for details.



Other factors come into play such as choice of **underlay** type. See [Stabilizing with underlays](#) for details.



Pull compensation is the other stitch quality setting which you may have to consider, although default settings are generally sufficient. See [Compensating for fabric stretch](#) for details.



Use special embroidery features

Once you have mastered manual digitizing, you are in a position to take advantage of the full range of stitch types and effects that BERNINA Embroidery Software offers. Many of them you will be familiar with, having already adapted existing designs for different purposes.

Freehand embroidery

Some of them, like **Freehand Embroidery**, cannot be applied to existing objects but must be digitized from scratch. This is a technique that lets you create

designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods. The aim is to mimic designs formed on an embroidery machine by freehand motion. The difference is that the fabric is secured in an embroidery hoop, allowing the needle to 'draw' on the fabric surface, exactly as you have drawn on-screen. See [Creating freehand embroidery](#) for details.



Patterned stamps, runs & fills

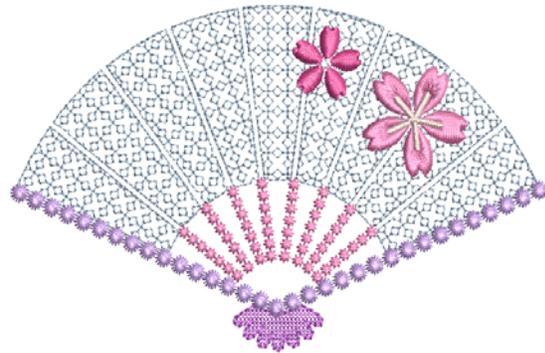
Patterns are pre-defined design elements, such as hearts, leaves or border patterns, that can be quickly inserted into a design. They generally consist of one or more simple objects, and are stored in a special pattern set. Use them to create patterned borders or fills, or use them standalone. See [Embroidery Patterns](#) for details.



Craft stitch borders & fills

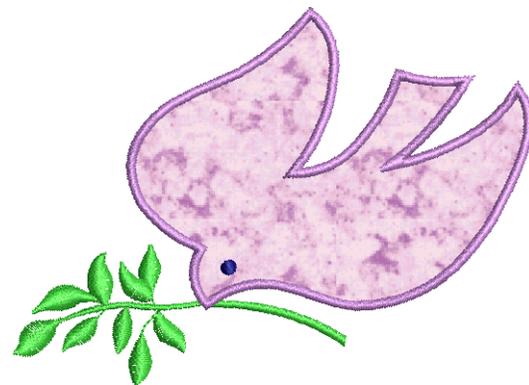
BERNINA Embroidery Software provides a range of craft stitches which you can use to mimic some traditional hand-worked embroidery. They include a large range of blackwork and candlewicking patterns

suitable for both outlines and fills. See [Creating craft stitches](#) for details.



Appliqué

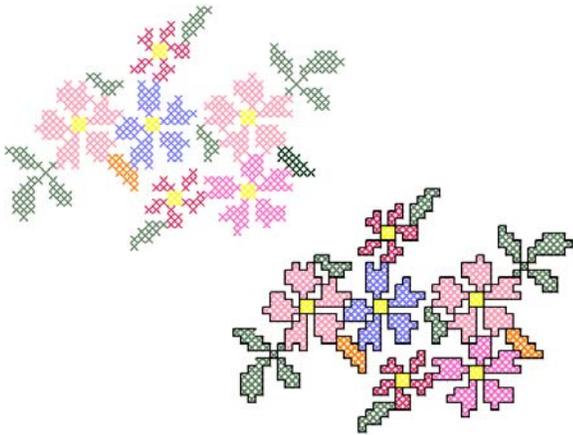
Appliqué is an important craft in home sewing, and the **Appliqué** feature provides an easy way to create quality work. Use it to generate the stitching you require for closed-object appliqué. See [Digitizing for Appliqué](#) for details.



Cross stitching

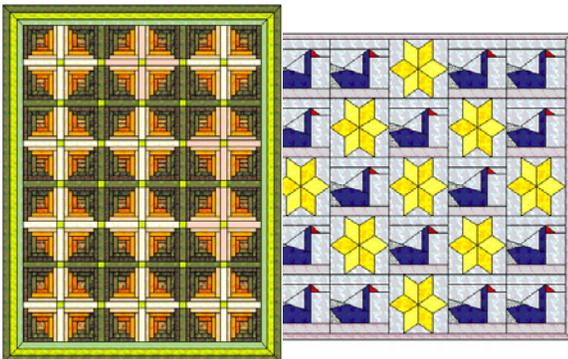
Cross stitching is a popular technique for filling large areas with low stitch counts. It can also be used for outlines and borders. It is suitable for homeware, tablecloths, children's clothes and folk designs. Cross stitch is sometimes combined with appliqué. The BERNINA Cross Stitch application lets you create dedicated cross stitch designs or add cross stitching

to embroidery. See BERNINA Cross Stitch Supplement for details.



Quilting

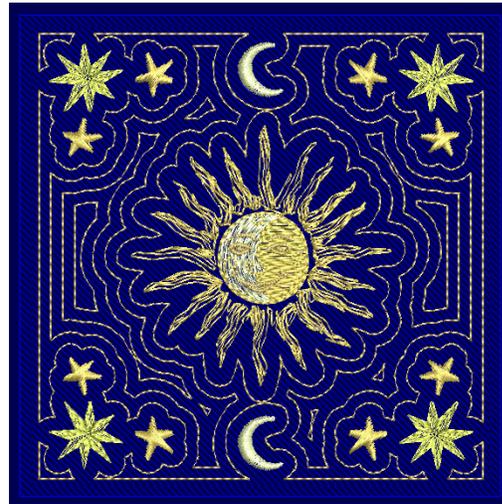
Patchwork is a popular technique for designing and sewing patches into blocks. BERNINA Quilter can be used to design patchwork quilts, either from existing designs or patterns, or from designs of your own making. Use BERNINA Quilter to experiment with patches and colors enabling you to create beautiful, personalized quilts. See BERNINA Quilter Supplement for details.



Embroidery quilting

Quilted embroidery creates dimension by stuffing or filling areas to produce a raised surface. It employs a technique known as 'trapunto', also referred to as 'stuffed embroidery'. Using **Layout** tools, it's a simple matter to define quilt blocks of specified size. You can then arrange elements around the block, with or

without a central design element. See **Quilted embroidery** for details.



Buttonholing

BERNINA Embroidery Software allows you to insert preset buttonholes, either singly or in a line. You can specify their size and merge them into a design. See **Creating buttonholes** for details.



Multi-decoration

With the inclusion of CoreIDRAW[®], BERNINA Embroidery Software supports multi-medium design. A popular technique is to combine digital print with embroidery to create multi-decoration work. This is intended to be both digitally printed and embroidered.



Typically, transfer paper is used together with a normal color printer. Images are reversed during printing and the transfer then ironed onto the garment. Check the available options and use one that lets you reverse the image.

This will alert you to the key issues to consider when doing your own work.

All the best. And have fun!

Raised embroidery

Finally, if you have exhausted all the techniques outlined above, or if you have a particular interest in fiber-arts crafts, you may be tempted to lift your embroidery right off the canvas so to speak, and venture into raised or 'sculpted' surfaces. Thankfully BERNINA Embroidery Software provides some smart methods to make this easier for you to achieve. See [Raised Embroidery](#) for details.



Happy embroidery!

Do good work with your BERNINA machine and BERNINA Embroidery Software. With this equipment you have everything you need to create top quality, fully professional embroidery. The only thing you lack is the capacity to mass produce!

Remember that Rome wasn't built in a day. It takes practice and patience to master all the techniques and approaches outlined above. But the results will more than reward the time you invest in the fascinating art and craft of embroidery decoration.

Remember to make good use of the packaged designs and clipart. When in doubt, go back to first principles. And when you find you want to expand and extend your repertoire, study the sample designs carefully to see how it's done.

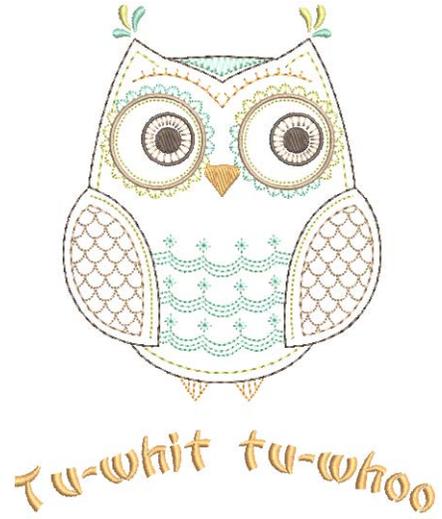
As a final word of advice, try stitching out sample designs before you embark on your own creations.

CHAPTER 3

BASIC PROCEDURES

To start using BERNINA Embroidery Software, you need to know the basic procedures, such as starting up, opening and creating designs, and saving. Once you start BERNINA Embroidery Software, you use commands or icons, and dialogs to complete your tasks. You select commands in the same way as other MS Windows® applications – from menus or toolbars.

BERNINA Embroidery Software opens a range of native ART files, as well as some other embroidery file formats, from computer hard disk, USB stick, or CD-ROM. BERNINA Embroidery Software gives you a wide range of standard factory-supplied hoops to select from. Grid lines help you accurately align or size embroidery objects. The most important dialog in BERNINA Embroidery Software is the Object Properties dialog. This and the Effects dialog are 'modeless', meaning that they stay on the design window as long as you need them.



Note This section describes how to start BERNINA Embroidery Software and access the available commands and tools. It covers basic procedures to do with opening, creating and saving design files. It explains how to activate hoops and grids and it covers accessing object properties.

BERNINA Embroidery Software interface

BERNINA Embroidery Software integrates with CorelDRAW® Essentials X6 into a single application, allowing users to create, not just embroidery, but true, multi-medium designs. The application has one workspace or 'design window' but you interact with it in separate operating modes: **Artwork Canvas** and **Embroidery Canvas**. A third mode, **Multi-Hooping**, is available for multi-hooping large designs.

Starting the software



Double-click to start BERNINA® Embroidery Software.

BERNINA Embroidery Software can be opened via the desktop icon or MS Windows® **Start** menu. It defaults to **Embroidery Canvas**. This allows you to create and edit **embroidery objects** using the embroidery **digitizing** toolset.

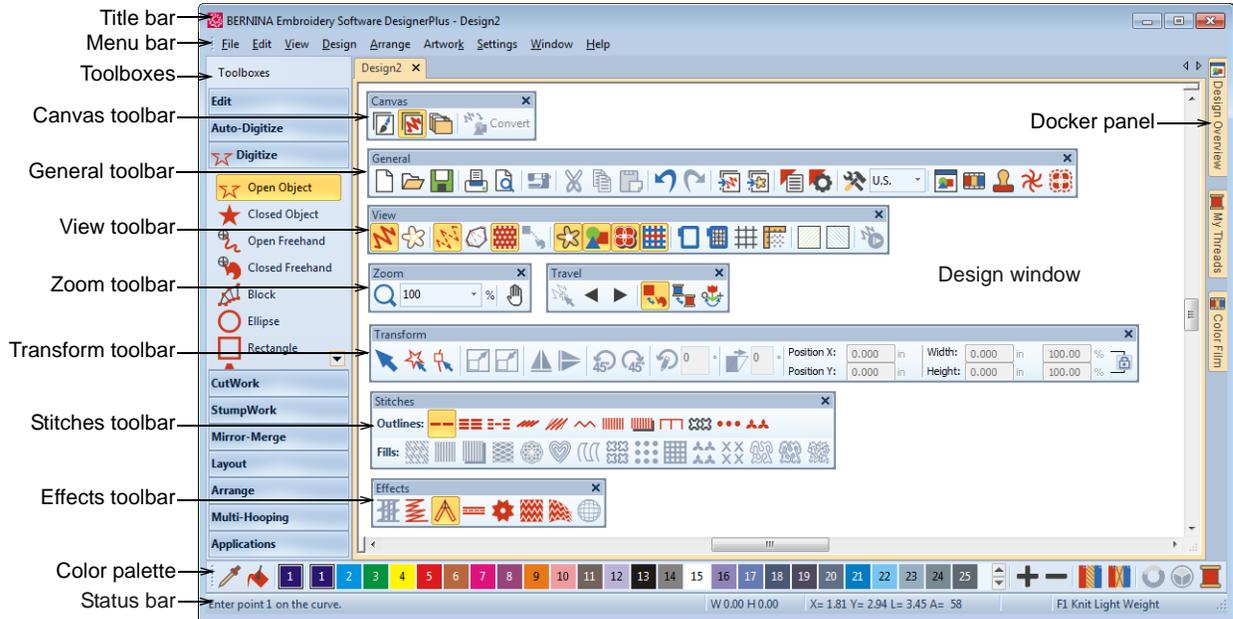
To start BERNINA Embroidery Software

- ▶ Double-click the BERNINA Embroidery Software shortcut icon on the MS Windows® desktop or

select it via the Windows **Start > Programs** group.

BERNINA Embroidery Software opens in **Embroidery Canvas** with a new, blank design (Design1). The screen image below displays an

exploded view of **all** toolbars in the BERNINA DesignerPlus product. Depending on your product level, you will have access to some or all of these options.

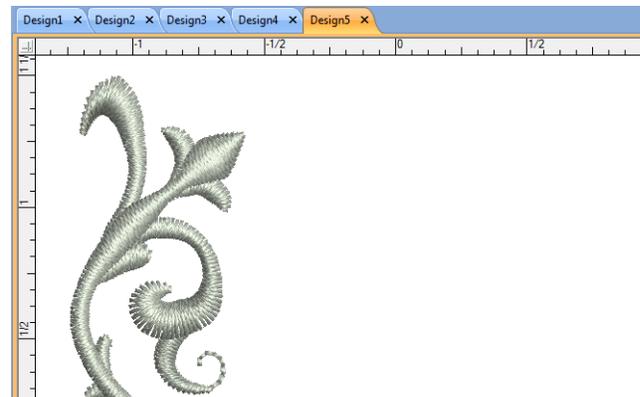


- ▶ Customize the design window by showing or hiding the grid, changing the grid dimensions, as well as showing and hiding toolbars. See [Displaying the grid](#) for details.
- ▶ Dock or 'float' toolbars and dockers in any configuration that suits.
Toolbars are dockable left, right, top and bottom, and can be 'floated' anywhere in the design window. The **Color Palette** and **Stitch** toolbars can be docked vertically for convenience. See also [Quick Reference](#).
- ▶ BERNINA Embroidery Software allows you the choice of large or small button icons with or without text names. See [Setting general options](#) for details.

Design tabs

BERNINA Embroidery Software makes it easy to see and switch between open designs with new design tabs. This also makes it easy to copy/paste between

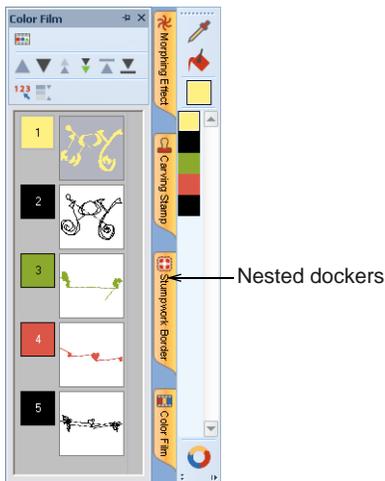
designs, including drag and drop operations. Optionally, you can tile multiple design tabs.



Docking panes

BERNINA Embroidery Software includes 'dockers' for key functions. **Embroidery Canvas** has docking panes for **Color Film**, **Carving Stamps**, **Morphing Effects**, **StumpWork**, as well as an **Overview**

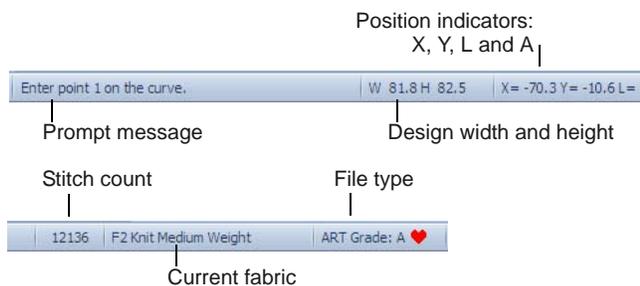
Window. All panes are dockable at the right side of the design window.



Dockers can be 'nested' to increase available workspace. When nested, tab buttons for each dialog appear to the side. All dockers can be fixed or minimized. By hovering the mouse over the tab, a minimized docker will 'fly out', allowing you to access its functions. It automatically minimizes when not in use. Dockers may also be 'floated' by dragging the caption bar to the design window or double-clicking it when 'pinned' in place.

Status bar

A **Status Bar** at the bottom of the **Embroidery Canvas** design window provides continuous display of current cursor position status as well as instructions for use of selected tools.



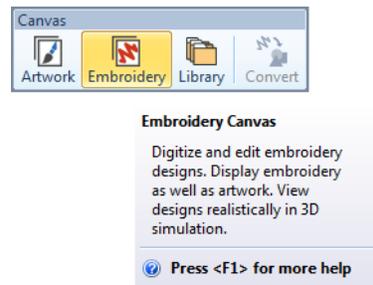
Information displayed includes:

- ▶ Prompt message: guides you through use of selected functions
- ▶ Design size – width and height
- ▶ Coordinates of current needle position (X/Y), and length (L) and angle (A) of current stitch. See also [Measuring distances onscreen](#).
- ▶ Stitch count: total number of stitches in design
- ▶ Current fabric: fabric settings take into account the type of fabric you are stitching on. See also [Changing fabrics](#).

- ▶ File type: indicates grade of ART design – BERNINA Embroidery Software native ART designs are classified in four grades depending on how the file was created. See [Embroidery design formats](#) for details.

Operating modes

BERNINA Embroidery Software has one workspace or 'design window' but you interact with it in different modes or 'canvases'. These are accessed via the **Canvas** toolbar.

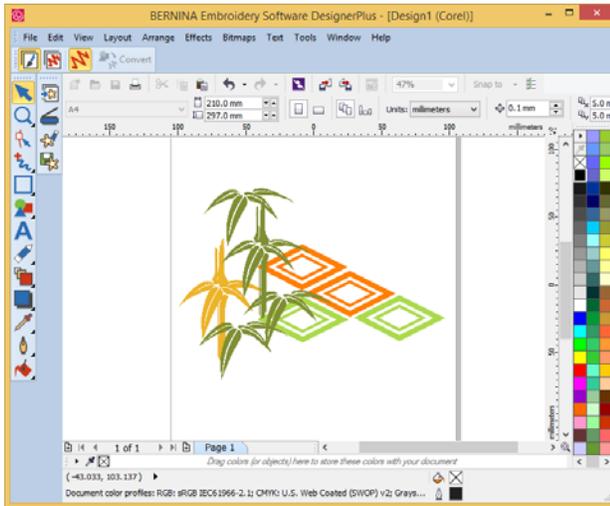


Artwork Canvas

-  Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.
-  In Artwork Canvas mode, click Canvas > Show Embroidery to Show or hide any embroidery components.

Below is a screen image of the **Artwork Canvas** workspace which is accessed via the **Canvas** toolbar. This mode allows you to create and edit **vector** graphics using the CoreIDRAW® Essentials X6 toolset

which offer many sophisticated techniques for drafting outlines and shapes onscreen.



In addition to the CorelDRAW® Essentials X6 toolset, Artwork Canvas provides capabilities to convert **vectors** and vector text directly to **embroidery objects**. Vector graphics or text created or imported into the **Artwork Canvas** can be converted directly to embroidery designs. You can use **Artwork Canvas** to insert or paste third-party vector graphics such as clipart for use in embroidery designs. Alternatively, insert, paste or scan **bitmap** artwork for use as digitizing templates or 'backdrops'. See **Loading vector artwork** for details.



Note For a full description of the CorelDRAW® Essentials X6 tools, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics** mode **Help** menu.

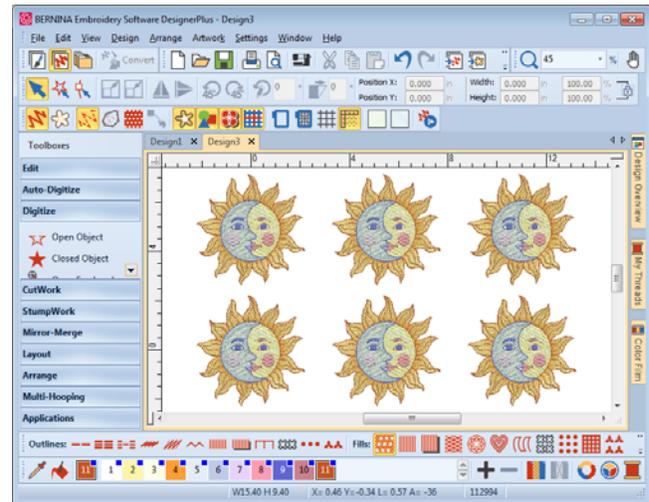
Embroidery Canvas



Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.

Below is a screen image of the **Embroidery Canvas** workspace which is accessed via the **Canvas** toolbar. This mode allows you to create and edit **embroidery**

objects using the embroidery **digitizing** toolset. See also **BERNINA Embroidery Software interface**.



Use this mode when you want to create embroidery from digitizing '**backdrops**'. Various types of image file can be loaded in BERNINA Embroidery Software. See also **Digitizing with Backdrops**.

Embroidery Canvas also offers a graphical representation of what the final embroidery will look like. Use **Show Artistic View** together with a background fabric to see how your design will look when stitched out. See also **Backdrops & backgrounds**.

Embroidery Library

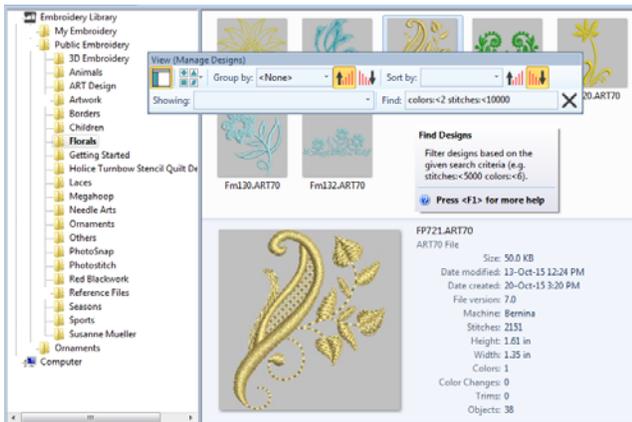


Use Canvas > Embroidery Library to view and manage all embroidery designs and artwork on your system.

The built-in Embroidery Library provides an efficient way to view and manage embroidery designs. It recognizes all design file formats used by the software. The library also makes it easy to search, sort and browse all embroidery designs on your system. In a nutshell, it lets you:

- ▶ Find designs anywhere on your local hard drive or external device such as USB or ZIP drive.
- ▶ Search for designs by various means, including known design information.
- ▶ Create an organizing structure for easy categorization.
- ▶ Batch-convert selected design files to many machine formats such as JEF, SEW, DST, EXP, and others.
- ▶ Print selected designs or send them to embroidery machine for stitchout.
- ▶ Find embroidery designs anywhere on your hard drive or external storage device and, optionally,

add them to your embroidery library. See [Managing Designs](#) for details.



Using commands & tools

Once you start BERNINA Embroidery Software, you use commands or icons, and dialogs to complete your tasks. You select commands in BERNINA Embroidery Software in the same way as other MS Windows® applications – from menus or toolbars. Keyboard shortcuts are also available for the most frequently used commands. See [Keyboard Shortcuts](#) for details.

Selecting commands from toolbars

Toolbars provide quick and easy access to BERNINA Embroidery Software commands. Click a toolbar button to activate a command or, where applicable, right-click to set its properties.

To select commands from toolbars

- ▶ Rest the pointer over an icon to see its name in a 'tooltip'.
- ▶ Click the icon to activate the command.
- ▶ Right-click to adjust settings or activate the secondary command.

For many tools, right-click accesses current command settings. For example, left-click **Lettering** selects the input method, while right-click accesses **Object Properties**.



Note **Object properties** can be modified **with** or **without** objects selected. The former affects only selected objects. The latter affects current settings. See also [Working with object properties](#).

Undoing & redoing commands



Use General > Undo to cancel last command or series of commands.



Use General > Redo to re-apply cancelled commands.

You can undo the effects of most commands. If you change your mind, you can redo them again. BERNINA Embroidery Software remembers the last few commands you used.

To undo and redo a command

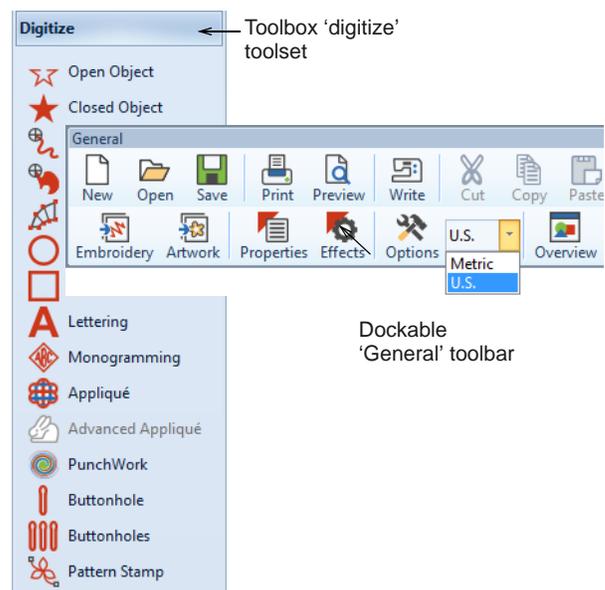
- ▶ To undo a command, click the **Undo** icon. When BERNINA Embroidery Software cannot remember more commands, **Undo** is dimmed.
- ▶ Click the **Redo** icon to re-apply an 'undone' command.

Toolbox & toolbars

BERNINA Embroidery Software contains a 'toolbox' which is permanently docked to the left of the design window. In addition, toolbars provide quick and easy access to BERNINA Embroidery Software commands. Toolbars are 'dockable'. This means you can move them around the design window.

To move or dock a toolbar

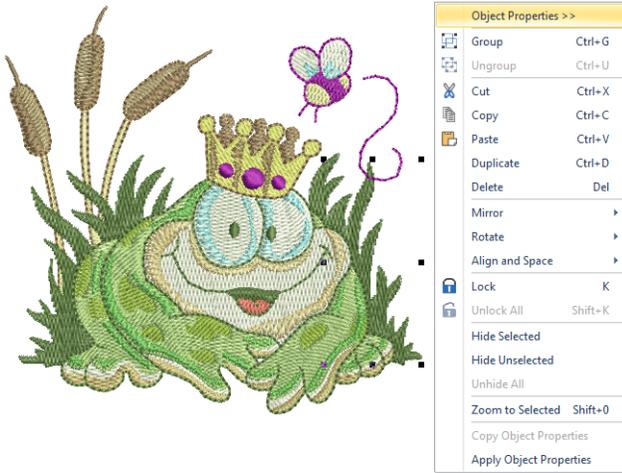
- ▶ To move a toolbar to a more convenient location, click and drag it:
 - ▶ Toolbars are dockable left, right, top and bottom.
 - ▶ They can be 'floated' anywhere in the design window.



- ▶ To dock it in its normal position, double-click the toolbar title.

Popup menu for easy editing

Right-clicking a design or selected object invokes a popup menu which provides access to useful commands in context.



Working with design files

By default BERNINA Embroidery Software saves designs to its native 'ART' file format. This format contains all information necessary both for stitching a design and for later modification. BERNINA Embroidery Software opens a range of native ART files, as well as some other embroidery file formats, from computer hard disk, USB stick, or CD-ROM. You can save designs in ART as well as other file formats. See [Working with Machine Files](#) for details.



Caution You cannot open ART files created with a later version of the software to the one you are running. If you attempt to, you will be prompted to update your system to the current version.

Opening designs



Use General > Open Design to open an existing design.

BERNINA Embroidery Software opens a range of embroidery files in addition to its own ART format. Native ART designs are classified in four grades depending on how the file was created. See also [Starting the software](#).

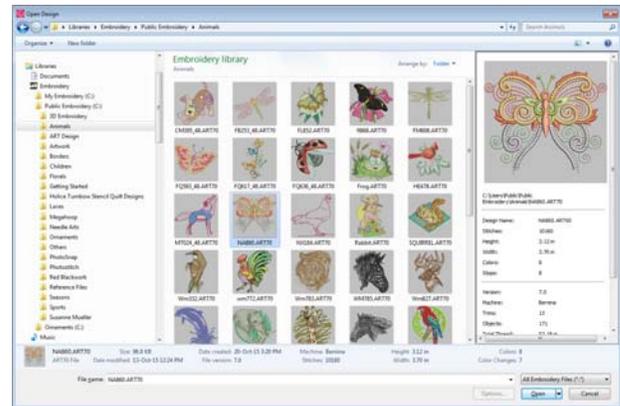


Note BERNINA Embroidery Software contains hundreds of ready-to-stitch designs, including many

attractive ornaments, samples and digitizing backdrops. Design files (ART files) and images (BMP, JPG, and WMF files) can be found in your **My Designs - Embroidery Software 8** folder. The most valuable thing you can do when starting out as a new user, is to spend some time exploring these designs and getting to know what's available. See also [Managing Designs](#).

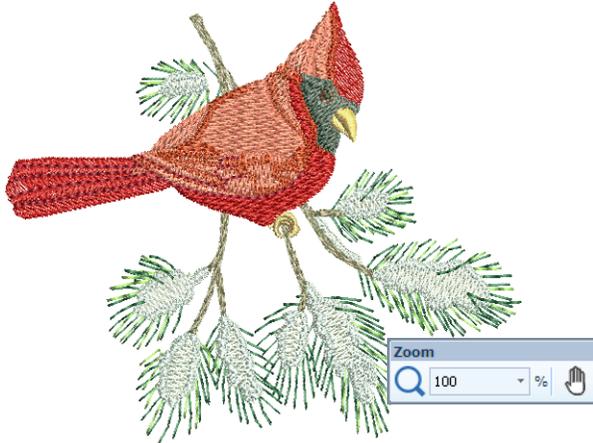
To open a design

- 1 Click the **Open Design** icon.
The **Open Design** dialog opens.



Characteristics include:

- ▶ Large, re-sizeable **Open Design** dialog with full folder browsing.
 - ▶ Windows Explorer search ability within the dialog.
 - ▶ More extensive design preview info panel like Windows Explorer.
 - ▶ Design thumbnails and preview ranging from small to extra large.
- 2 Select a folder from the **Look In** list.
You can read designs stored on USB stick or CD-ROM, as well as computer hard disk.
 - 3 If the design is not in ART format, select a file type from the **Files of Type** list. See [Working with Machine Files](#) for details.
 - 4 Select a design or designs.
 - ▶ To select a range, hold down **Shift** as you click.
 - ▶ To select multiple items, hold down **Ctrl** as you click.
 - 5 Select the **Preview** checkbox to preview the design (for supported file formats) together with design data. This includes stitch and color numbers, design height and width, and software version number.

6 Click **Open**.

Note By default, designs are automatically grouped upon opening or insertion into another design. See [Setting other general options](#) for details.

7 Check the design size in the **Status Bar**. See [Status bar](#) for details.8 Set the zoom factor and other viewing settings as required. See [Viewing Designs](#) for details.

Note You can also read designs from your embroidery machine memory or BERNINA design card. See [Working with Machine Files](#) for details.

Starting designs



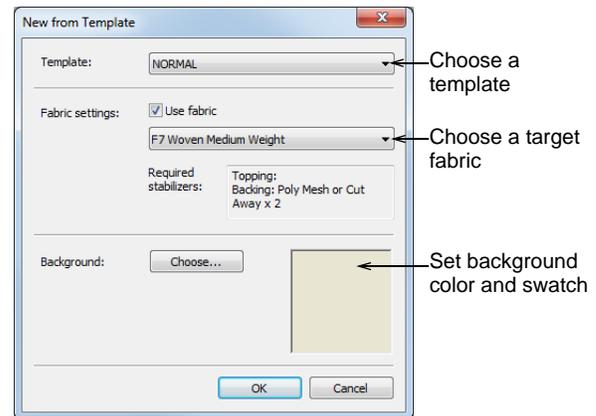
Use **General > New Blank Design** to create a new empty design.

When you create a file, template settings are copied into the new design. Templates contain pre-set styles, defaults or objects, to make digitizing quicker and easier. You can choose to base default settings on a selected template as well as fabric settings. Optionally, choose a background fabric swatch to match selected fabric settings. See also [Properties, Fabrics & Templates](#).

To start a design

- ▶ Click the **New Blank Design** icon.
A blank design opens in the design window based on the NORMAL template.

- ▶ To use custom settings, select **File > New from Template**.



- ▶ Select a template from the list and click **OK**. See also [Properties, Fabrics & Templates](#).
The only template available when the software is first run is the NORMAL template.
- ▶ Optionally, choose a fabric type from the droplist.
Fabric settings are a subset of template settings, fine-tuned to different fabric types. Selecting a matching fabric automatically customizes object properties for the intended fabric. See also [Changing fabrics](#).
- ▶ Optionally, choose a background fabric swatch to match selected fabric settings.

Saving designs



Use **General > Save Design** to save the current design.

BERNINA Embroidery Software designs can be saved in pure ART format as well as a number of non-native formats. Saving a design records its file name, location and format, and updates it with any changes you make. When you save an existing design under a new name, to a different location or format, you create a copy of the original design. See also [Working with Machine Files](#).

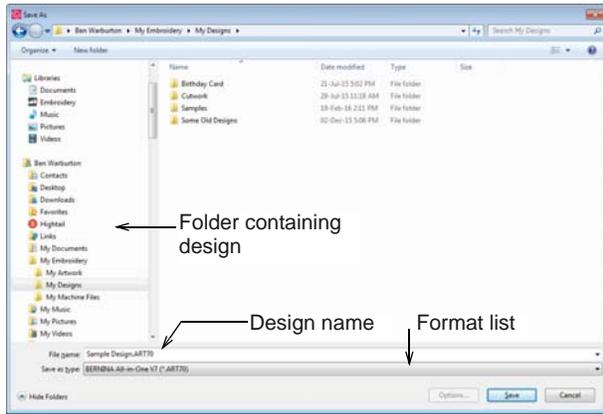


Tip Save your designs early and often. Do not wait until you finish working. To save changes to an existing file but preserve the original, use **Save As**. Once you have saved a design, every time you click **Save Design** on the toolbar the file will be updated.

To save a design

- 1 Click the **Save Design** icon.

If this is the first time you have saved the design, the **Save As** dialog opens.



- 2 Select the folder where you want to save the design from the **Save In** list.
- 3 Enter a name for the design in the **File name** field.
- 4 Select a file format from the **Save as type** list. See [Supported machine file formats](#) for details.
- 5 Click **Save**.



Note You can also write designs to your embroidery machine memory or BERNINA design card. See [Writing designs to machine](#) for details.

Hoops, grids & rulers

Fabrics should be hooped before stitching out on the machine. BERNINA Embroidery Software gives you a wide range of standard factory-supplied hoops to select from. Grid lines help you accurately align or size **embroidery objects**.

Displaying the hoop



Click View > Show Hoop to show or hide hoop. Right-click for settings.



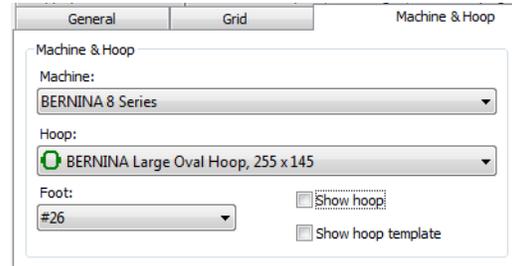
Click View > Show Hoop Template to show or hide hoop template.

Whenever you create a new design, a single hoop representing the one you attach to your embroidery machine appears by default in the design window. As you position objects, the hoop position adjusts automatically so that it is always centered around objects in the window. See also [Selecting hoops](#).

To display the hoop

- ▶ Click the **Show Hoop** icon to toggle hoop display.
- ▶ Right-click the **Show Hoop** icon.

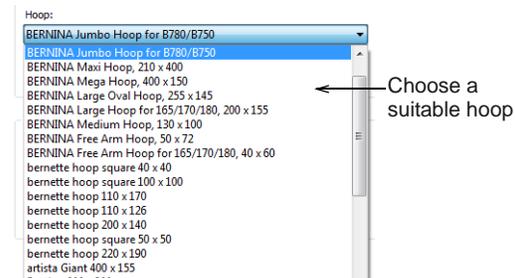
The **Options > Machine & Hoop** dialog opens.



- ▶ Choose your machine. The hoop list is filtered to display compatible hoops.



- ▶ Select a hoop to suit your current design.



- ▶ Click the **Show Hoop Template** icon to toggle hoop template display.



Displaying the grid



Click View > Show Grid to show or hide workspace grid. Right-click for settings.

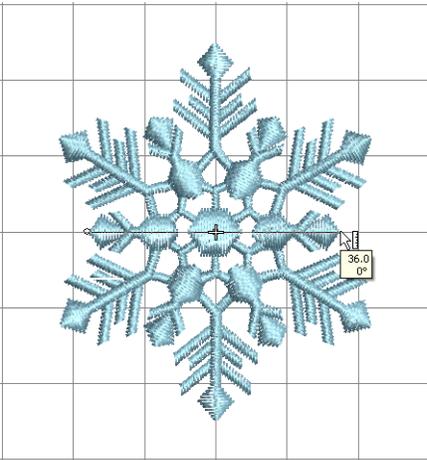
Use grid lines to help accurately align or size **embroidery objects**. You can show or hide the grid.



Tip You can change the grid spacing, select a reference point and turn **Snap to Grid** on or off in the **Options** dialog. See [Setting grid options](#) for details. See also [Adjusting display colors](#).

To display the grid

- ▶ Click the **Show Grid** icon to turn on the grid display.



- ▶ Click the **Show Grid** icon again to turn off the grid display.

Displaying rulers & guides



Click View > Show Rulers & Guides to show or hide workspace rulers and guides. Right-click for settings.

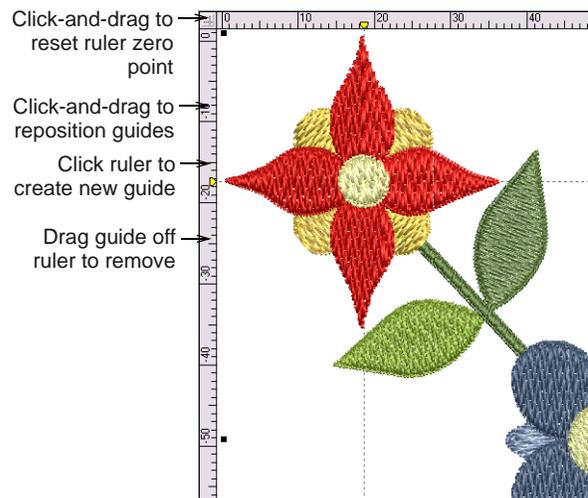


Drag the Ruler Zero Point to reset a new ruler zero point.

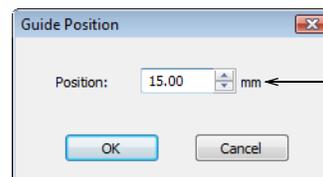
The software allows you to turn rulers on and off and create guides for more accurate digitizing. These make it possible to accurately position and size objects and whole designs. The unit of measurement – mm or inches – defaults to the regional settings in the MS Windows® Control Panel. These, however, can be changed from within the software. See also [Setting measurement units](#). See also [Adjusting display colors](#).

To display rulers & guides

- ▶ Click the **Show Rulers & Guides** icon or press **Ctrl+R**.



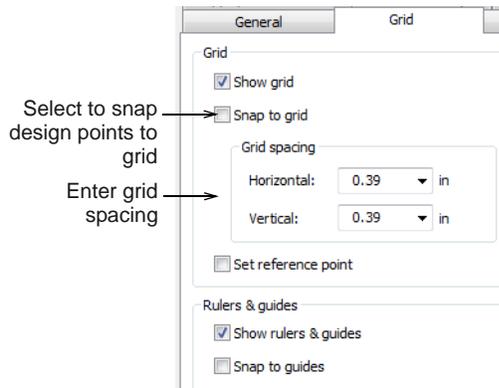
- ▶ Reset the ruler zero point by clicking and dragging the box in the top left-hand corner to the required point in the design.
- ▶ To create a guide, click on either ruler – horizontal or vertical – and click-and-drag it into position. Multiple guides can be created and just as easily removed.
- ▶ For more accurate positioning of guides, double-click the yellow handle. In the **Guide Position** dialog, enter a precise distance from the zero point, and click **OK**.



- ▶ To remove a guide, drag the yellow guide handle off the design window.



Tip You can turn **Snap to Grid** and **Snap to Guide** on or off in the **Options** dialog. See also [Setting grid options](#).

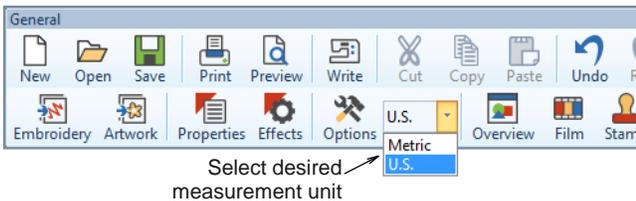


Setting measurement units

The first time you run BERNINA Embroidery Software, the measurement system will default to whatever the operating system is using. You can use different measurement units within BERNINA Embroidery Software without having to exit and change system settings.

Accessing the feature

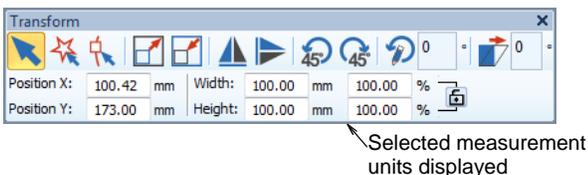
The measurement system may be changed via a droplist on the **General** toolbar:



Note Technically, when you select 'U.S.', you will get the imperial measurement system – inches, feet, and yards.

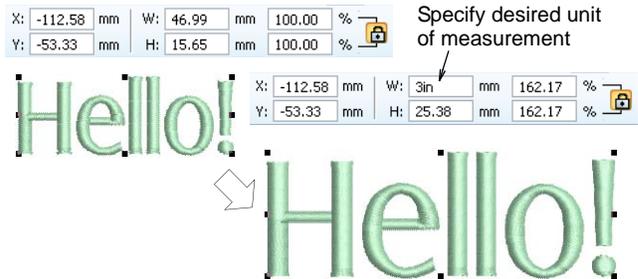
Ripple-on effects

Changing the measurement system will change the units used by most controls – e.g. **Transform** toolbar units of measurement.



Specifying measurement units on-the-fly

As an alternative to changing the overall measurement system used in BERNINA Embroidery Software, you can specify units of measurement when typing values into a measurement control. The software automatically converts the entered value into the units of the control.



Say, for example, you are using the metric measurement system so your lettering heights are in mm. Simply enter '3/4in' or '3/4 in' into the **Lettering Height** field and it is automatically converted to 19.05mm. Supported units include:

- ◀ millimeters, mm
- ◀ inches, in
- ◀ feet, ft
- ◀ yards, yd
- ◀ centimeters, cm
- ◀ meters, m



Tip BERNINA Embroidery Software also allows entering units in text form, both English and the language the software is currently running in.

Measuring distances onscreen

Measure the distance between two points in the design window using the **Measure** command. This command displays coordinates, distance and angle of the mouse pointer from a point corresponding to the center of a hoop in an empty design. View the measurements in the **Status Bar** or in a tooltip. See [Interpreting pointer position values](#) for details.



Tip For more accurate results, zoom in before you measure. The measurement is always the actual size, and is not affected by the zoom factor.

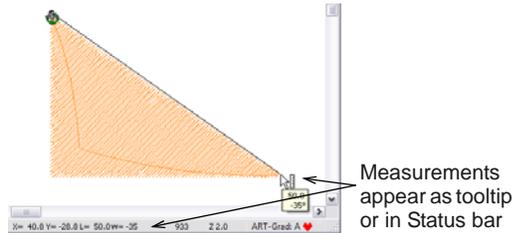
To measure a distance onscreen

- 1 Select **View > Measure** or press **M**.
- 2 Click the start point.
- 3 Move the pointer to the end point and hold the mouse still.

The following information displays in the **Status Bar**:

- ▶ Position coordinates of the end point (**X=**, **Y=**).
- ▶ Length of the measured line (**L=**).
- ▶ Angle of the line relative to the horizontal (**A=**).

Measurements are shown in millimeters or inches, depending on current selection.



Tip If activated, length and angle measurements will also appear in a tooltip. See [Setting other general options](#) for details.

- 4 Press **Esc** to finish.

Accessing object properties



Use General > Object Properties to set current properties or properties of selected objects.



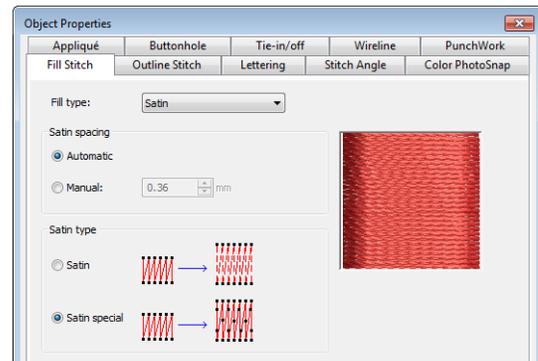
Use General > Effects to apply stitch effects to selected embroidery objects or preset with nothing selected.

Designs created in BERNINA Embroidery Software are composed of '**embroidery objects**'. They are called 'objects' because they are discrete entities which can be manipulated independently of each other. Each object has certain characteristics or 'properties' such as color, size, position, and so on. The most important dialog in BERNINA Embroidery Software is the **Object Properties** dialog. See also [Working with object properties](#).

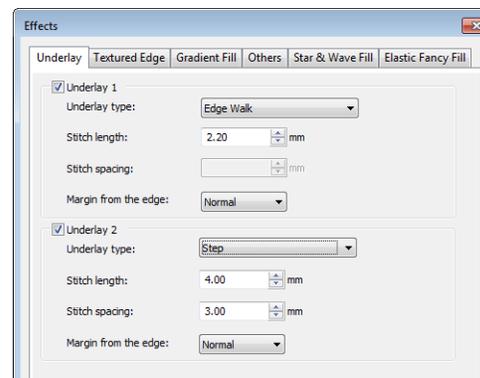
To access object properties

- ▶ Open the **Object Properties** dialog by any of the following means:
 - ▶ Click the **Object Properties** icon.

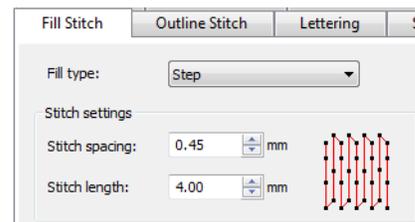
- ▶ Double-click or right-click any object in the design window.



- ▶ Select a tab to access the object property set you want to adjust.
- ▶ Use fields, droplists, radio buttons, checkboxes, and slider controls to key in or adjust settings.
- ▶ Click the **Effects** button to access a separate set of more specialized object property settings such as Underlay, Textured Edge, Gradient Fill, etc.



Note This dialog, in turn, includes a **Properties** button which opens the **Object Properties** dialog. You can choose to close the **Object Properties** dialog automatically whenever the **Effects** dialog is opened, and vice versa. See [Setting other general options](#) for details.



Tip Graphic tips are incorporated into the **Object Properties** dialog to give you visual feedback on particular settings. These are displayed whenever you hover the mouse over a control. For example,

with the mouse placed over the **Stitch Spacing** control, a graphic tip appears beside it.

- ▶ Apply settings by means of the **Apply** button at the bottom of the dialog or by pressing **Enter**.
 - ▶ If one or more objects are selected, changes are applied to all relevant objects.
 - ▶ If no objects are selected, changes are made to the current settings – these will affect any newly created objects.
 - ▶ If you have modified settings on a number of tabs, all changes that can be applied will be applied.
- ▶ Click the **Save to Template** button to save settings to the current template. These become the defaults whenever you create new files based on this template. See [Working with design templates](#) for details.
- ▶ Click the **Discard** button or press the **Esc** key to discard any changes.
- ▶ Click **OK** to close the dialog and apply any pending changes.

Launching ancillary applications

In addition to CorelDRAW®, BERNINA Embroidery Software includes a number of ancillary applications which can be launched from the **Applications** toolset.

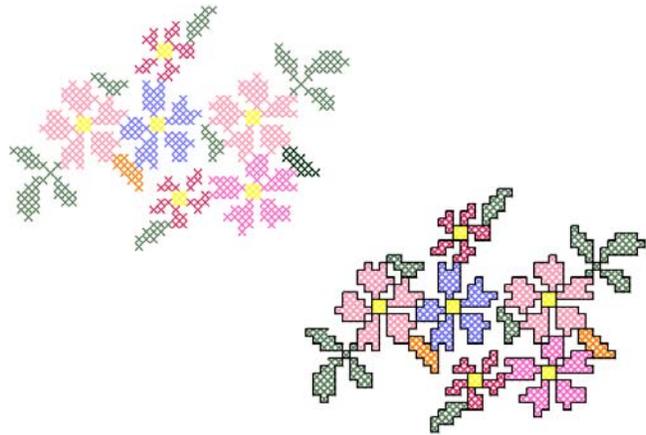


Launching BERNINA Cross Stitch

 Use Applications > Cross Stitch to launch BERNINA Cross Stitch from within BERNINA Embroidery Software.

Cross stitching is a popular technique for filling large areas with low stitch counts. It can also be used for outlines and borders. It is suitable for homeware, tablecloths, children's clothes and folk designs. Cross stitch is sometimes combined with appliqué. The BERNINA Cross Stitch application lets you create

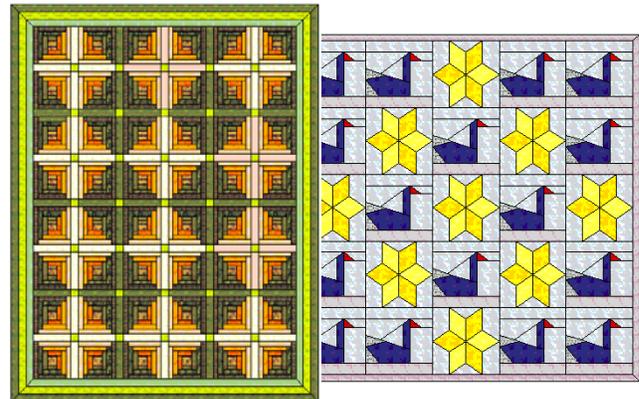
dedicated cross stitch designs or add cross stitching to embroidery. See also [Ancillary Applications](#).



Launching BERNINA Quilter

 Use Applications > Quilter to launch BERNINA Quilter from within BERNINA Embroidery Software.

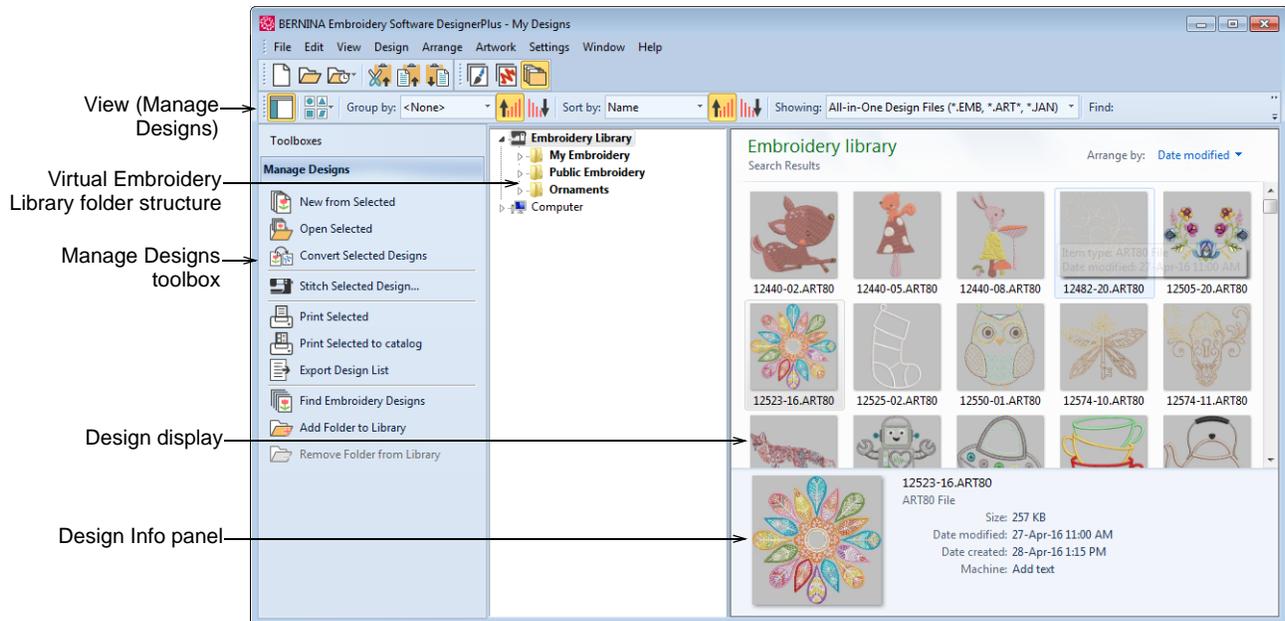
Patchwork is a popular technique for designing and sewing patches into blocks. BERNINA Quilter can be used to design patchwork quilts, either from existing designs or patterns, or from designs of your own making. Use BERNINA Quilter to experiment with patches and colors enabling you create beautiful, personalized quilts. See also [Ancillary Applications](#).



CHAPTER 4

MANAGING DESIGNS

The built-in Embroidery Library provides an efficient way to view and manage embroidery designs. It recognizes all design file formats used by the software. The library also makes it easy to search, sort and browse all embroidery designs on your system.



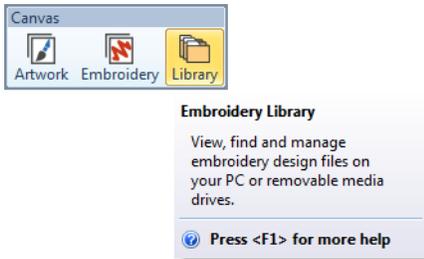
In a nutshell, Embroidery Library lets you:

- ▶ Find designs anywhere on your local hard drive or external device such as USB or ZIP drive.
- ▶ Search for designs by various means, including known design information.
- ▶ Create an organizing structure for easy categorization.
- ▶ Batch-convert selected design files to many machine formats such as DST, EXP, SEW, and others.
- ▶ Print selected designs or send them to embroidery machine for stitchout.

Find embroidery designs anywhere on your hard drive or external storage device and, optionally, add them to your embroidery library. This section describes how to open and view designs in Embroidery Library as well as adjusting viewing settings. It also covers browsing for and accessing designs in folders.

Accessing the library

The Embroidery Library is accessed from the **Canvas** toolbar.



It has five components – two toolbars, a toolbox, a navigation tree, a design display area, and an info panel – as summarized here...

Component	Function
Manage Designs toolbar	Use the toolbox on the left to open selected designs, convert them, print them, or output them to any connected embroidery machine or data media, or find folders containing the designs and add/remove folders to/from embroidery library.
Navigation tree	<ul style="list-style-type: none"> Right-click the navigation tree to access a popup menu. Use it to cut, copy and delete without leaving the software. Use it also to zip designs and folders. <p>Note, however, that the navigation tree in the Embroidery Library is not an exact duplicate of your Windows Explorer folder structure. Because the library only deals with embroidery designs, you will only see folders which have already been added to the library.</p>
Design display	The design display area shows any designs in selected folders corresponding to the filter selected and search criteria entered in the Manage Designs toolbar. Use this toolbar to filter the design display.
Design info	When a design is selected, summary information is displayed in the info panel.
Manage Designs toolbar	Search or sort the entire embroidery library or any chosen folders on any criteria selected. See below.
Standard toolbar	Create new designs, open existing designs, open recent designs, and cut, copy and paste selected designs.



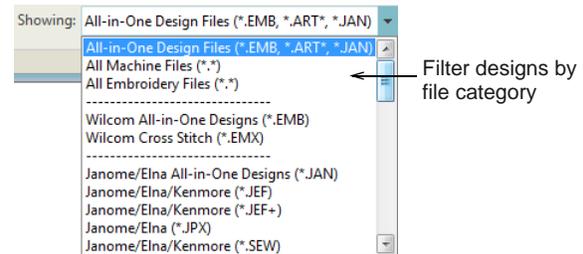
Note There are differences in the way the info panel is displayed in different versions of Windows OS. Your display may differ slightly from the screen images shown here.

Opening embroidery files

Embroidery files fall into two broad categories – embroidery or ‘design files’ and machine files. Design files are generally ones you open and modify in the software. Machine files are generally ones you send to machine for production. There is some inter-convertibility between the two formats.

Embroidery files

You can filter your embroidery library between file categories – design, machine, or all.



Design files

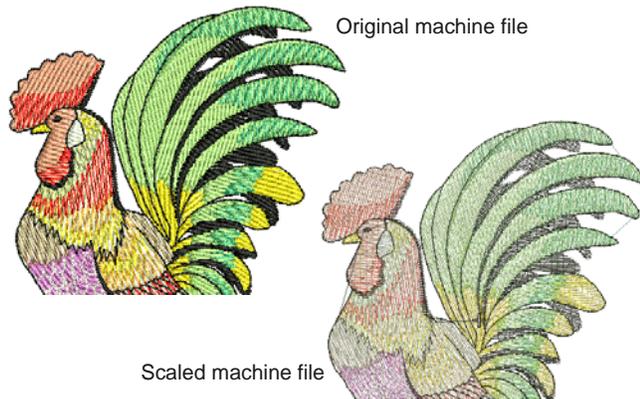
Design files, also known as ‘all-in-one’ files, are high-level formats which contain object outlines, object properties and stitch data. When you open a design file in the software, corresponding stitch types, digitizing methods and effects are applied. Design files can be scaled, transformed and reshaped without affecting stitch density or quality. After modification, you can save to any supported file format.

Machine files

Different embroidery machines speak different languages. Each has its own commands for the various machine functions. Machine files, also known as ‘stitch files’, are low-level formats for direct use by machines. They contain information about the position, length and color of each stitch. When they are read into the software, machine files do not contain object information such as outlines or stitch types, but present the design as blocks of stitches.

You can scale machine files but because the stitch count does not change, the density increases or decreases with the design size. Thus you should not

scale them by more than $\pm 5\%$ or some areas may be too thickly or too thinly covered.



Open design files



Use **Manage Designs > Open Selected** to open design(s) selected in the embroidery library.



Use **Manage Designs > New From Selected** to create new designs based on designs selected in the embroidery library.

Using the Embroidery Library, you have the option of opening one or more selected designs in their own design tabs. Simply select a design or designs by holding down **Ctrl** as you click, and then click **Open Selected**. This command opens the original file. Alternatively, click **New from Selected**. The only difference for practical purposes is that **New From Selected** creates a copy which opens in a new design tab, thus preserving the original design file.



Caution Be careful not to open too many designs simultaneously. Potentially you could select all designs in the library and click **Open Selected**. This operation cannot be stopped and may result in the computer running out of memory.



Tip If you want to open one design into another, an **Insert Design** function is available. Combine designs or design elements into a single design layout. See [Combining objects](#) for details.

Open machine files

While machine files are generally not suited to modification, the software can 'recognize' object outlines, stitch types and spacing from stitch data with some success. By default, machine files are converted to outlines and objects upon opening in the software. These 'recognized' designs can be scaled with stitches recalculated for the new outlines. Processing is effective for most stitch designs but cannot produce the same level of quality as original

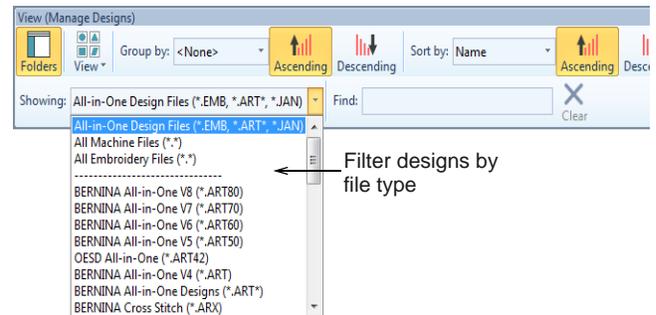
outlines and may not handle some fancy stitches. See also [Working with Machine Files](#).

Browsing designs

The Embroidery Library makes it easy to search, sort and browse all embroidery designs on your system. If you are already familiar with Windows Explorer, the interface will be quite intuitive to you. But there are some differences. The embroidery library is a 'virtual library' in that any designs on your system can be located and displayed within the navigation tree. The design software doesn't care where they physically reside on your hard disk or external storage devices. Any folder containing embroidery designs can be included in the navigation tree.

Filter & sort designs

The **Manage Designs** toolbar provides a powerful means for sorting, filtering, and searching for designs in your embroidery library. For instance, filter the library to show only certain file types.



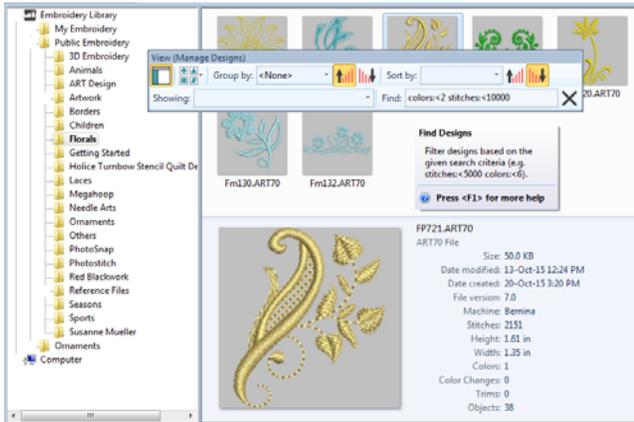
Use it also to search for names or keywords or sort them by name, create date, or other criteria. Use it also to control display of the navigation tree as well as thumbnail appearance.

Find designs

The 'Find' field is very powerful. For instance, go to the **Decorative Accents** folder and search on tags such as 'linework' or 'lace' to bring up the results you want. In fact, you can search on any criterion displayed on the **Info** panel. For example:

'author: OSED colors: <5 stitches: <3000'

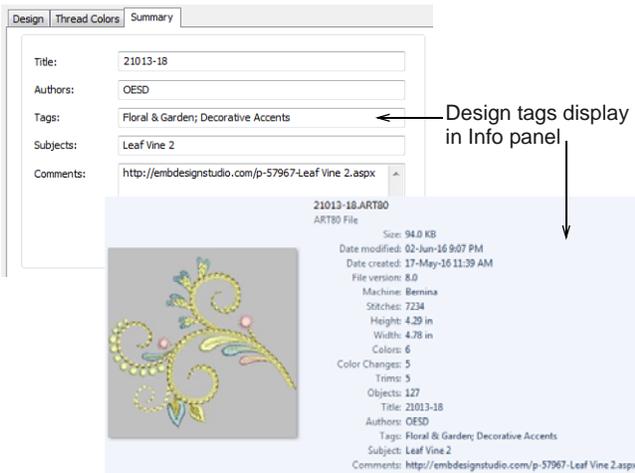
This will narrow the search to only those designs which have been authored by 'OESD', which have less than 5 colors, and which have less than 3000 stitches.



Make sure you use correct syntax. Each field name must include a colon ':' after the name. Use the **Clear** button to clear the **Find** field before conducting another search.

Design tags

All packaged designs are tagged for easy search and find. BERNINA designs use the same tags as OESD. Use the **Summary** tab to view, edit, or enter summary information about a design. The **Info** panel displays the same information. See also [Viewing design properties](#).



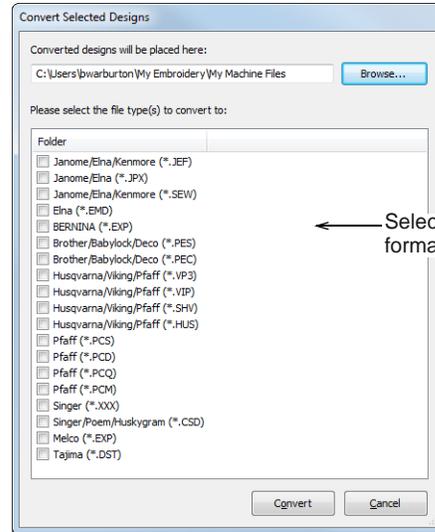
Converting designs



Use Manage Designs > Convert Selected Designs to convert the design selected in the embroidery library into different machine file types.

By default BERNINA Embroidery Software saves designs to its native 'ART' file format. This format contains all information necessary both for stitching a design and for later modification. However, the software supports many machine file formats such as DST, EXP, SEW, and others. You can convert your ART and other design files to and from other file formats directly from the Embroidery Library. See also [Working with Machine Files](#).

- ▶ Select the file(s) to be converted and click the **Convert Selected Designs** icon. The dialog lists all machine file formats supported by the software.



- ▶ Select the file types you want to convert to.
- ▶ Click **Browse** to locate a destination folder for the converted designs.
- ▶ Click **Convert** to start the conversion. The converted designs will be stored in the nominated folder.

Outputting selected designs

Send designs directly to machine for stitching. Create hard copy reports of a selected designs using a printer or plotter. Report types may include design worksheets, appliqué patterns, color films, hooping sequence reports, as well as catalogs and lists of selected designs.

Send designs to machine



Use Manage Designs > Stitch Selected Design to stitch the design selected in the Embroidery Library.

The software supports various machine models. Some can be connected by cable directly to your PC via the USB port. Older-style machines do not support direct

connection but they do read ATA PC cards and/or USB memory sticks. See also [Working with Machine Files](#).



Tip When working with designs that are larger than the available physical hoop, you can split them into parts, each containing an object or group of objects. The software automatically calculates which files are to be sent and shows you how they will look. See [Creating multiple hoopings](#) for details.

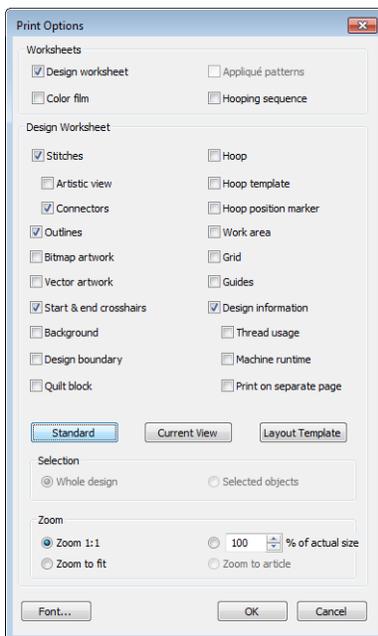
Print selected designs



Use Manage Designs > Print Selected to print designs selected in the embroidery library.

You can print worksheets for selected designs, and include thumbnails of each in the worksheet. Unlike **Print Designs**, this option can provide design and sewing information.

- ▶ Sort the designs to be printed using **Sort**.
- ▶ Select a design and click the **Print Selected** icon. The **Print** dialog opens.
- ▶ To customize the printout, click **Options**.



- ▶ Set worksheet options to show the information you want in the format you require.

Report	Purpose
Design worksheet	This provides complete sewing information for the design. All related information, such as bobbin length, design size, garment fabric, etc, is provided.
Appliqué patterns	This shows appliqué patterns – cutter information – isolated from the design. These can be used as a guide to cutting out fabric pieces. They also show which appliqué pieces are to be included.
Color film	Provides a list of colors in the design, together with color and stitch information for each color layer. This helps the machine operator to see each stitch color in order of stitchout.
Hooping sequence	If there is more than one hooping in the design, this option displays hoopings in their correct color sequence.

- ▶ The Design Worksheet panel provides options for further customization. See also [Printing designs](#).
- ▶ Click OK and ensure correct printer settings in the Windows **Print Setup** dialog. The dialog and the settings available vary from printer to printer. See your printer manual for details.

Print design catalogs

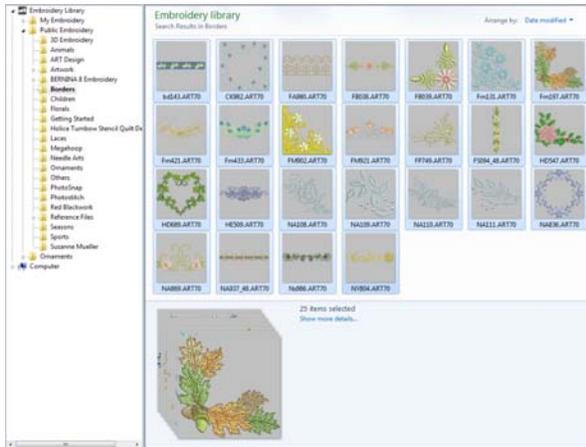


Use Manage Designs > Print Selected to Catalog to print selected designs to a catalog.

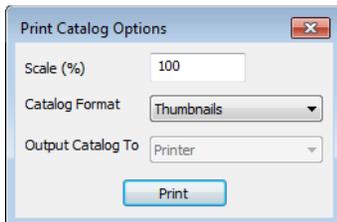
Printed catalogs of your designs contain thumbnails of the designs plus limited text details. You can prepare catalogs of all your designs to suit your needs.

To print a design catalog

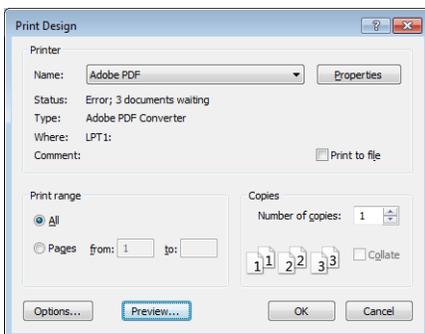
- 1 Open Embroidery Library and filter designs as desired. See [Filter & sort designs](#) for details.



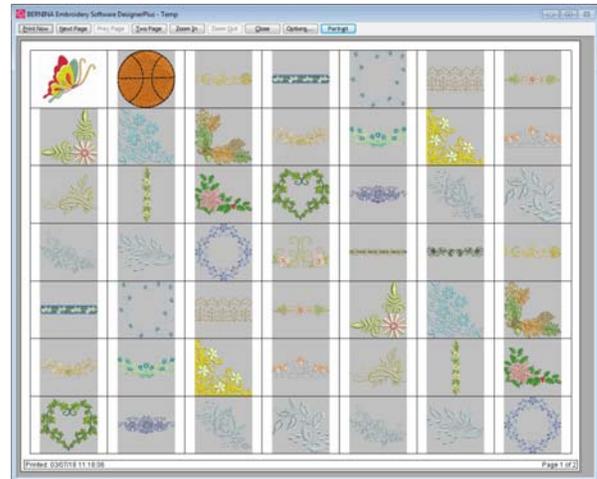
- 2 Select the designs you want to include in the catalog.
- 3 Select **Manage Designs > Print Selected to Catalog**. The **Print Catalog Options** dialog opens.



- 4 Change **Scale (%)** to adjust thumbnail size.
- 5 Select a catalog format – thumbnails with or without design details.
- 6 Click **Print**. The **Print Design** dialog opens.



- 7 Click **Preview** to view the catalog.



- 8 Click **Print Now** to print the catalog.



Tip If the catalog requires more than one page, you can select which page to print in the MS Windows® **Print Setup** dialog.

Export design lists



Use **Manage Designs > Export Design List** to export selected files to Tab and CSV (Comma Separated Value) formats suitable for use by most spreadsheets.

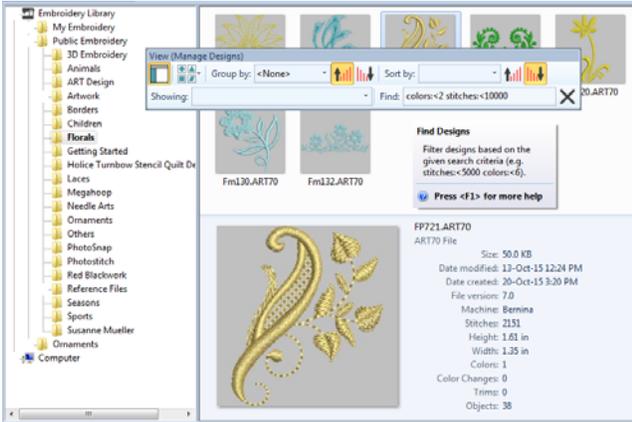
The **Export Design List** option can be used to print design lists for selected folders. This option allows you to create a simple design report which can easily be imported into a spreadsheet. You may want to use this in order to manage designs by file name.

- ▶ Preset the measurement units you want to use – metric or U.S.



- ▶ Open the Embroidery Library and select a design folder.

- ▶ Sort and filter the designs to be printed.



- ▶ Click the **Export Design List** icon and choose a location to save the list. Choose whether to save as a tab-delimited or comma-separated text file.
- ▶ Open the text file in a spreadsheet for further sorting and printing.

	A	B	C	D	E	F	G
1	BabyAnimal_zebra-applique-W.EMB	2015/09/15:08:05:10.000	3.96 in	4.00 in	9179	5	
2	BabyAnimal_monkey-applique-W.EMB	2015/09/15:08:05:10.000	4.16 in	4.34 in	13110	7	
3	BabyAnimal_giraffe-applique-W.EMB	2015/09/15:08:05:10.000	3.06 in	4.91 in	5771	4	
4	Teddy Frame-JA.JAN	2015/07/27:14:37:48.000	3.78 in	5.13 in	7025	4	
5	Rubberduck-JA.JAN	2015/07/27:14:37:46.000	3.92 in	3.11 in	13824	9	
6	Our Family-JA.JAN	2015/07/27:14:37:46.000	3.66 in	2.24 in	3048	4	
7	Face-JA.JAN	2015/07/27:14:37:46.000	1.59 in	1.15 in	2115	2	
8	Elephant-JA.JAN	2015/07/27:14:37:46.000	3.28 in	4.98 in	17037	5	
9	Doll-JA.JAN	2015/07/27:14:37:44.000	2.49 in	3.48 in	6415	4	
10	Clown-JA.JAN	2015/07/27:14:37:44.000	2.36 in	3.16 in	4668	7	
11	Clothesline-JA.JAN	2015/07/27:14:37:44.000	6.97 in	1.91 in	7125	5	
12	Boy-JA.JAN	2015/07/27:14:37:44.000	1.74 in	1.59 in	2240	2	
13	Border-JA.JAN	2015/07/27:14:37:44.000	4.09 in	3.06 in	5766	7	
14							



Tip Designers frequently want to distribute designs for viewing in real colors, in Artistic View or otherwise, with or without fabric backgrounds. Screen images can be captured in PNG format and send as email attachments.

Managing folders

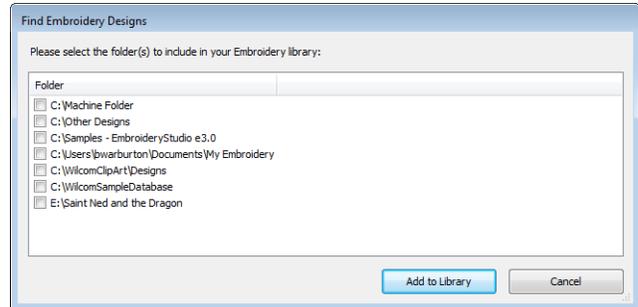
The Embroidery Library is a 'virtual library' in that any designs on your system can be located and displayed within the navigation tree. The design software doesn't care where they physically reside on your hard disk or external storage devices. Any folder containing embroidery designs can be included in the navigation tree.

Find designs to add



Use Manage Designs > Find Embroidery Designs to locate all compatible designs on your hard disk.

Finding all compatible designs on your hard disk and any external devices such as USB, zip drive, etc, is simply a matter of clicking the button. You will be prompted to select the folders containing designs you want to add to the embroidery library. Simply select the folders you want to include in your Embroidery Library, and click **Add to Library**.

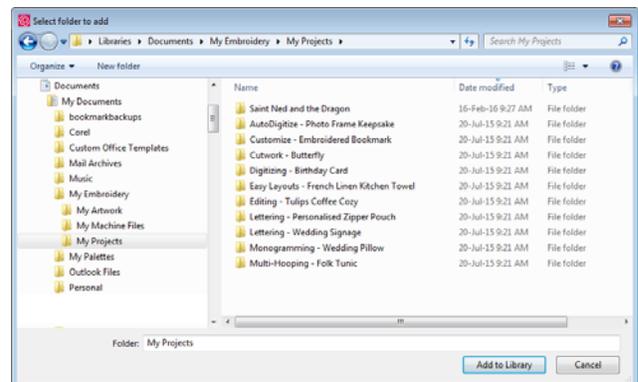


Select folder to add



Use Manage Designs > Add Folders to Library to add an existing folder to the Embroidery Library. This enables faster searching and filtering of the folder.

Alternatively, simply click the **Add Folder to Library** button to locate a folder of your choice. In the dialog, click **Add to Library** to add the folder to your embroidery library.



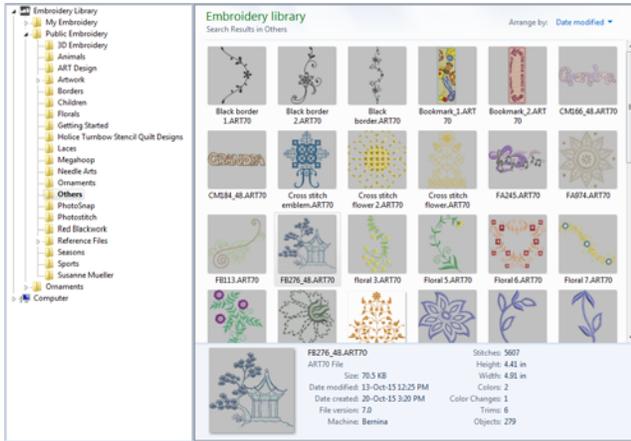
Remove folders



Use Manage Designs > Remove Folder from Library to remove a folder from the Embroidery Library. This only removes the link to the folder from within the library. It does not actually delete the files in the folder from storage.

Remember that the Embroidery Library is a 'virtual library'. When you add or remove folders from the

navigation tree, this only affects the Embroidery Library. It does not affect the folder structure on your hard drive. To remove a folder from the Embroidery Library, select and click the **Remove** icon. When you remove a folder, all subordinate folders will also be removed from the navigation tree.



- 3 Browse the folders for the clipart you are interested in.



Note To open the clipart in BERNINA Embroidery Software, you will need to do so via **Artwork Canvas**. See also [Loading vector artwork](#).



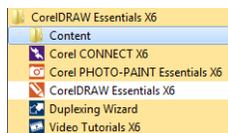
Tip It may be more convenient to take a copy of the entire CorelDRAW® **Clipart** folder and copy it to **My Designs - Embroidery Software 8** folder for easy reference.

Browsing clipart

CorelDRAW® Essentials X6 itself is packaged with a selection of clipart which can be used as digitizing **backdrops** or converted directly into embroidery. See also [Converting vectors to embroidery](#).

To browse clipart

- 1 Access the CorelDRAW® Essentials X6 folder via the Windows **Start > Programs** group.



- 2 Select the **Content** folder and choose **Clipart**.



CHAPTER 5

VIEWING DESIGNS

BERNINA Embroidery Software provides many viewing features to make it easier to work with your design. Zoom in on an area to see more detail or view the design at actual size. Show or hide various design elements with the available display settings. Preview an existing design in different colors on different fabrics.



When working with embroidery designs, you need to understand the stitching sequence. You can check a design's stitching sequence in BERNINA Embroidery Software by 'traveling' through it stitch-by-stitch. You can also check the sequence by simulating the design stitchout onscreen.

BERNINA Embroidery Software also provides information about designs in a variety of ways and formats. Before even opening BERNINA Embroidery Software or your design, you can check some design information for ART files directly from MS Windows® Explorer. You can view stitching details about a design in the Design Properties dialog. Also the Print Preview provides essential design information, including a design preview, the size of the design, color sequence and any special instructions.

This section explains the design viewing modes available in BERNINA Embroidery Software as well as the various design viewing settings. It describes zooming and panning as well as how to view the stitching sequence. It covers displaying design backdrops and changing backgrounds. It also explains how to obtain information about your designs.

Embroidery view settings

You can show or hide embroidery elements in **Embroidery Canvas** with a variety of display settings. See a graphical representation of the final embroidery. Show or hide needle penetration points and stitches themselves. Or show/hide selected colors.

Viewing embroidery elements

-  Click View > Show Artistic View to show or hide simulation of stitched embroidery.
-  Click View > Show Stitches to show or hide embroidery stitching.
-  Click View > Show Outlines to show or hide object outlines. Turn off stitches to view outlines only.



Click **View > Show Connectors** to show or hide connecting stitches between embroidery objects.



Click **View > Show Needle Points** to show or hide the needle points in embroidery stitching.

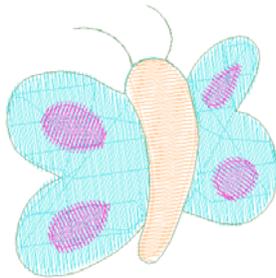
You can show or hide stitches and object outlines as you work. For instance, hide stitches to see outlines more clearly when reshaping. See [Reshaping & Editing Objects](#) for details.



Note To make sure your design is being displayed correctly in **Artistic View**, calibrate your monitor. See [Calibrating the monitor](#) for details.

To view embroidery elements

- ▶ Click **Show Stitches** to turn stitches on or off.
- ▶ Click **Show Outlines** to turn object outlines on or off, with or without stitches.

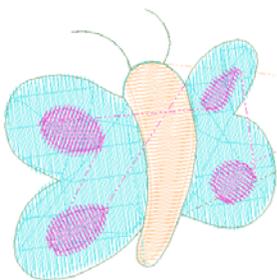


Stitches ON



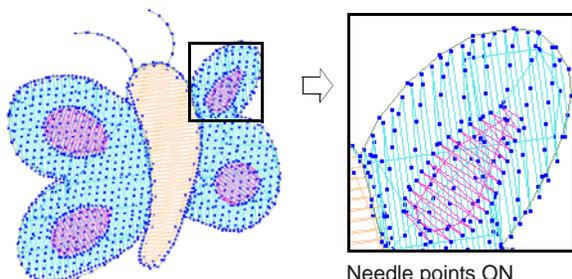
Outlines ON

- ▶ Click **Show Connectors** to turn stitches on or off.



Connectors ON

- ▶ Click **Needle Points** to show or hide needle points. See also [Adjusting display colors](#).



Needle points ON

- ▶ To view simulated embroidery (**Artistic View**), toggle the **Show Artistic View** icon on.

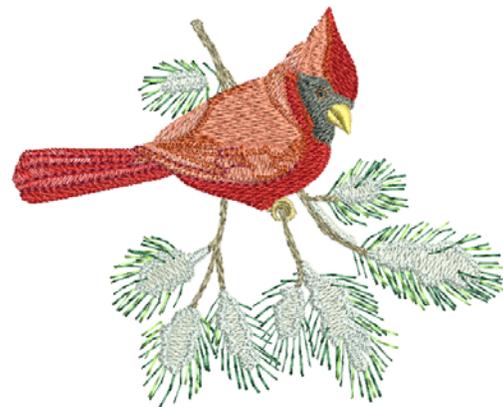


Viewing objects by color

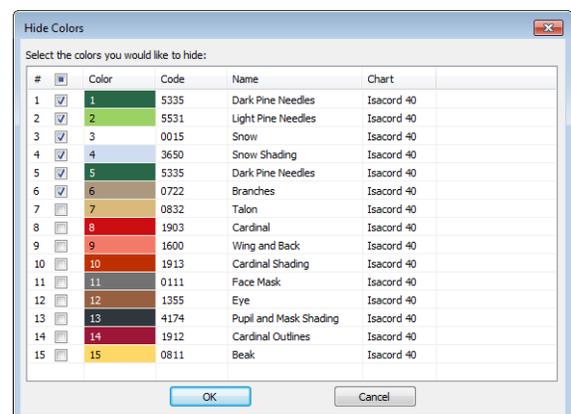
The **Hide Colors** function helps you isolate individual design elements for checking or manipulation. This is particularly useful when you are resequencing objects by color. See also [Sequencing by color](#).

To view objects by color

- ▶ Create or open a design. Ungroup the design before proceeding.

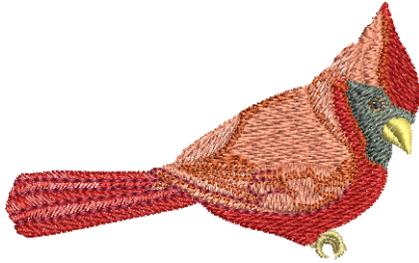


- ▶ Select **View > Hide Colors**.



- ▶ Select the colors you want to hide.
 - ▶ To select all, click the checkbox at the top of the column.

- ▶ To select a range, hold down **Shift** as you click.
- ▶ To select multiple items, hold down **Ctrl** as you click.
- ▶ Click **OK**. The design displays with only those colors left unchecked in view.



- ▶ To view all colors in the design, select **View > View all Colors**.



Tip The **Color Film** provides another way to view design objects. See [Viewing & selecting color blocks](#) for details.

Zooming & panning

Use the **Overview Window** and **Zoom** functions to quickly examine your design at different degrees of magnification.



Tip The **Status Bar** displays the current 'zoom factor'. See [Starting the software](#) for details.

Viewing designs in overview



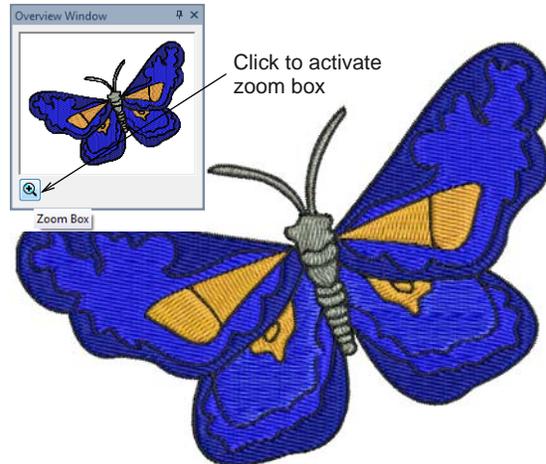
Click General > Overview Window to show or hide the docker. Use to zoom and pan thumbnail of current design.

Use the **Overview Window** to view design thumbnails. The window updates whenever you make a change and can be used to zoom into or pan across the design window.

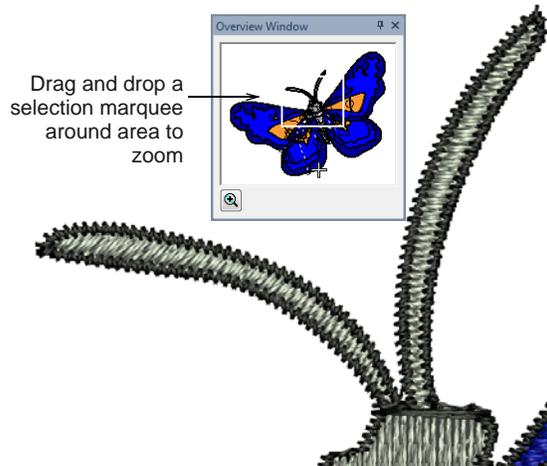
To view designs in overview

- 1 Click **Overview Window** icon.

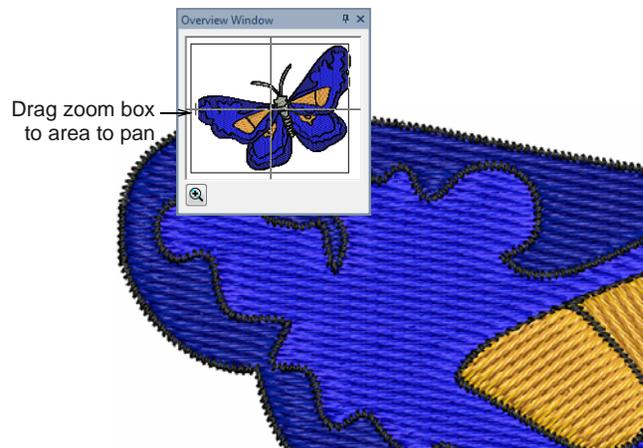
The **Overview Window** opens.



- 2 To zoom in or out, click the **Zoom** button on the Overview Window and drag a **selection marquee** around the area to zoom and drop.



- 3 To pan across the design, move the cursor inside the zoom box – it changes to a four-way arrow cursor – and drag and drop.



Zooming in & out

 Click **Zoom > Zoom** to left-click to zoom in, right-click to zoom out, or drag a 'zoom box'.

 Use **Zoom > Zoom Factor** to select a preset zoom scale from the droplist or key in your own zoom scale and press Enter.

 Click **Zoom > Pan to Drag** to pan across the design at high zoom factors.

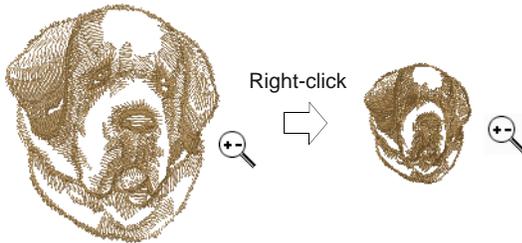
Magnify your view of the design by zooming in on individual stitches or details, or zoom out to display more of the design in the window. See also [Keyboard Shortcuts](#).



Note To make sure your design is being displayed at the correct size, calibrate your monitor. See [Calibrating the monitor](#) for details.

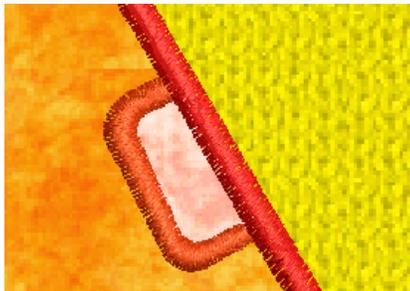
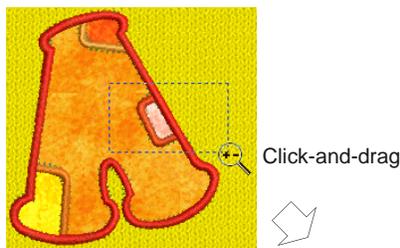
To zoom in and out

- ▶ Click the **Zoom** icon or press shortcut key **B**. The cursor becomes a magnifying glass.
- ▶ Left-click to zoom in, right-click to zoom out.

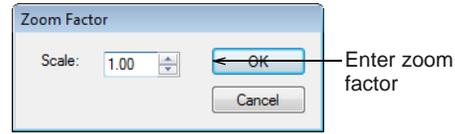


Tip The **Zoom Factor** field updates accordingly.

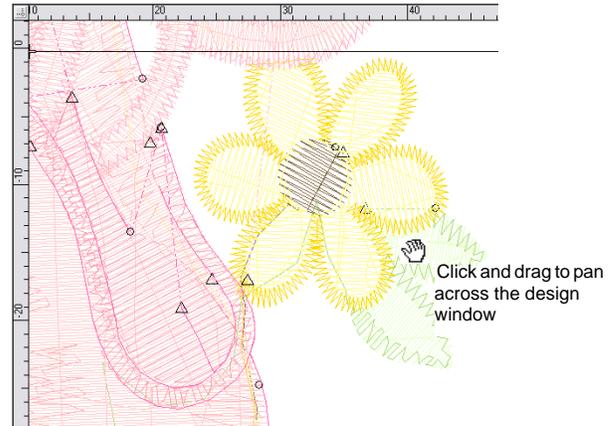
- ▶ Click-and-drag a **selection marquee** around the zoom area and release.



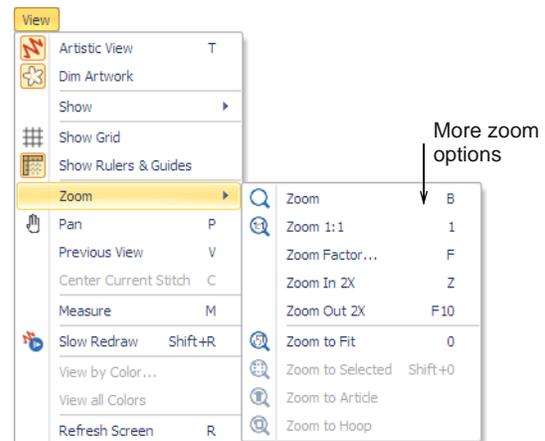
- ▶ To display the design at a particular scale, enter a scale factor in the **Zoom Factor** field as a percentage of the actual size and press **Enter**. Alternatively, press **F** on the keyboard. Enter a scale as a ratio and click **OK**.



- ▶ To pan across a design in the design window, use the scroll bars. Alternatively, select **Pan** or press **P** and use the 'grabbing hand' tool. Click to 'hold' the design window and drag it around.



- ▶ Alternatively, use the **View > Zoom** commands to access more zoom options.



- ▶ Select **Zoom > Zoom to Fit** to display the whole design. Alternatively, press shortcut key **O** (zero).
- ▶ To display the design at actual size, select **Zoom > Zoom 1:1**. Alternatively, press shortcut key **1**. See also [Calibrating the monitor](#).
- ▶ Press **Esc**, **Enter** or **Spacebar** keys to exit **Zoom** mode.



Tip Use **Auto Scroll** to scroll the design automatically while digitizing. This can be more convenient than using panning or scroll bars. See also [Setting auto scroll options](#).

Viewing stitch sequence

When working with embroidery designs, you need to understand the stitching sequence. You can check a design's stitching sequence by 'traveling' through it by stitches, colors or objects. You can also check the sequence by simulating the design stitchout onscreen. BERNINA Embroidery Software simulates stitching out by changing stitches from black to their allocated thread colors as they are 'stitched'. See also [Viewing & selecting color blocks](#).

Traveling through designs



Click View > Show Stitches to show or hide embroidery stitching.



Click View > Show Artistic View to show or hide simulation of stitched embroidery.



Click Travel > Jump by Object to travel to the previous or next object in the design. Use in conjunction with Forward/Back buttons.



Click Travel > Jump by Color to travel to the previous or next color block in the design. Use in conjunction with Forward/Back buttons.



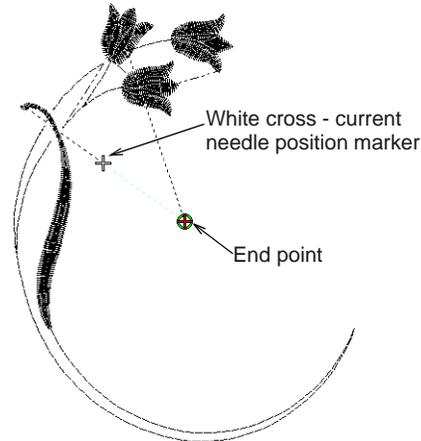
Click Travel > Jump to Start/End to travel to the start or end of the design. Use in conjunction with Forward/Back buttons.

BERNINA Embroidery Software provides a **Travel** toolbar with buttons to 'travel' through the stitch sequence by object and color block. Use in combination with keyboard arrow keys to travel by stitches. Keyboard shortcuts also exist to travel through designs by object or color block. See also [Keyboard Shortcuts](#).

To travel through the design

- ▶ Ensure that **Show Stitches** is on and **Artistic View** is off. See [Viewing embroidery elements](#) for details.
- ▶ Press **Esc** to ensure that **Select Object** is deselected.
The current needle position is indicated by a large white cross or 'needle position marker'. Initially, this is located at the end of the design. The current stitch number appears in the **Status Bar**.
- ▶ To travel to the start of the design, press the **Home** key.

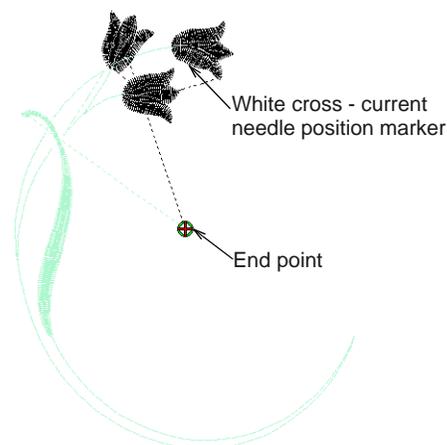
The white cross moves to the first stitch and the whole design appears black. As you travel through the design, the needle position marker moves accordingly.



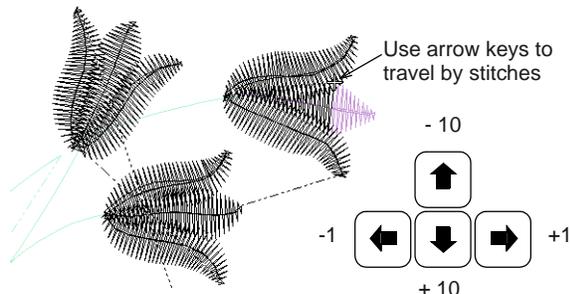
- ▶ To travel by object or color block, select a toggle and click the Forward/Back buttons. You can also jump to start or end by this method.



- ▶ Alternatively, to travel to the next object, press **Ctrl+T**. Press **Shift+T** to go back.
- ▶ To travel to the next color, press **Page Down**. Press **Page Up** to go back.



- ▶ Use the arrow keys to travel by 1 or 10 stitch increments. Use + or - keys on the keypad to travel 100 stitches at a time.



- ▶ To travel to the end of the design, press the **End** key. Or use the **Travel** toolbar.



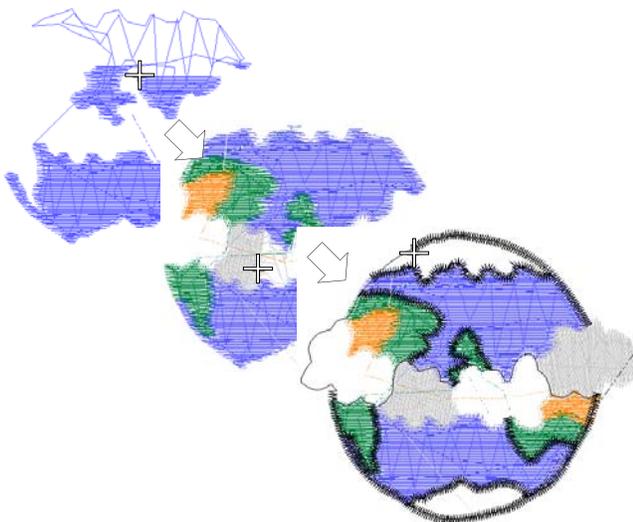
Tip If you travel outside the visible area, press the **C** key to center the current stitch on the screen.

Simulating design stitchouts



Use View > Stitch Player to simulate embroidery design stitchout onscreen in either stitch or artistic view.

Stitch Player is an important tool in BERNINA Embroidery Software. It lets you simulate the actual embroidery design stitchout on screen. Because **Stitch Player** emulates the movements of the embroidery machine, you are able to make decisions about how to optimize your design in order to lessen the load on the machine.



To simulate the design stitchout

- ▶ Choose a design view to visualize your design.
Stitch Player can be run in both Artistic View and Stitch View.

- ▶ Select **View > Stitch Player** or press **Shift+R**.



- ▶ To redraw only a section of design, specify the start and end stitch in the **Stitch Range** field.
- ▶ Use the controls to stitch forwards or backwards through the design. Typical 'media player' buttons are available for play, pause, rewind operations.
- ▶ Use the slider bar to adjust redraw speed.
- ▶ Use Auto Scroll when running Stitch Player at high zoom factors.

Backdrops & backgrounds

You can display a **backdrop** while you digitize. Hide it temporarily while you work, or dim it for easier stitch viewing. You can also change the background of the design window to match your fabric.



Displaying backdrops



Use View > Show Bitmap Artwork to show or hide any bitmap artwork included in the design.



Use View > Dim Artwork to dim backdrops in order to show stitches more clearly when digitizing.



Use View > Show Vector Artwork to show or hide any vector artwork included in the design such as CoreIDRAW® clipart.

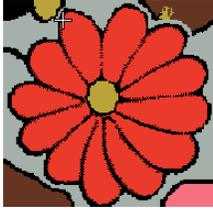


Use View > Show Appliqué Fabric to show or hide background fabric / color of any appliqué objects in the design.

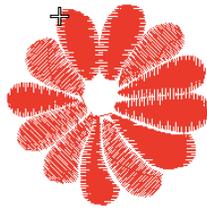
You can display a **backdrop** – **bitmap** or **vector** – while you digitize, or hide it temporarily. Hiding backdrops does not delete them from the design. You can also dim backdrops to make it easier to view stitches. See also **Digitizing with Backdrops**.

To display a backdrop

- ▶ To toggle backdrops on/off – both bitmap and vector graphics – click the corresponding icon. See also **Importing artwork**.

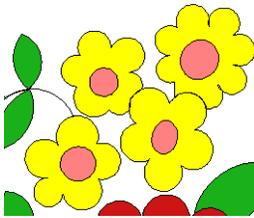


With background ON

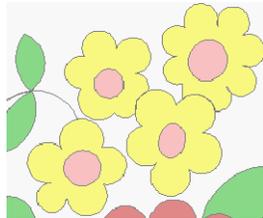


With background OFF

- ▶ To dim a backdrop, click the **Dim Artwork** icon.

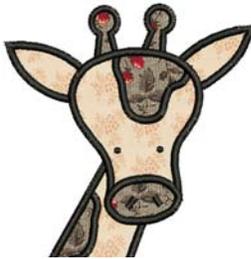


Original bitmap image

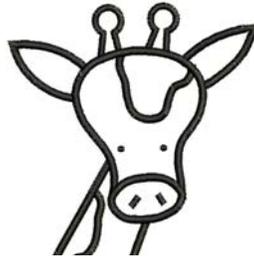


Dimmed bitmap image

- ▶ Click the **Show Appliqué Fabric** icon to toggle appliqué fabrics/colors on or off. See also **Digitizing for Appliqué**.



With appliqué fabric ON



With appliqué fabric OFF

Setting backgrounds

In BERNINA Embroidery Software, you can change the background of the design window to match your fabric. The background is saved with the design.

To set a background

- 1 Select **Design > Background**.

The **Background and Display Colors** dialog opens.



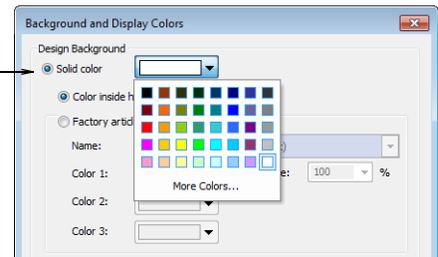
Select background color, fabric, or article

- 2 Select the background type you want:

Option	Purpose
Color	Set background color of design window
Fabric	Select a fabric texture corresponding to your target fabric.
Article	Select a product image that represents the article you will be embroidering. This can also be displayed on the design worksheet.

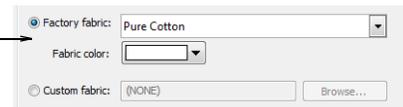
- 3 Select the color or fabric you want to use:

- ▶ To select a background color, select a color from the droplist.



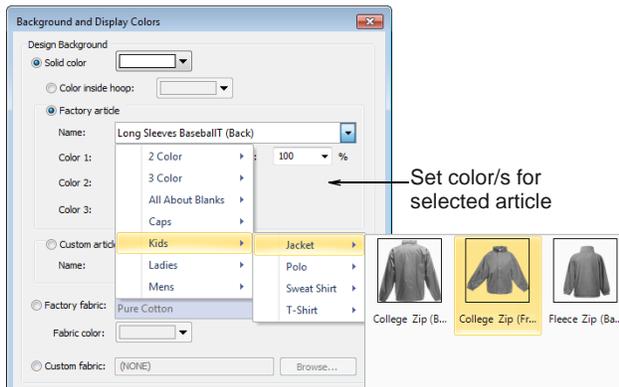
Select background color from droplist

- ▶ To select a fabric, select **Factory Fabric** and choose a fabric and color from the droplists.



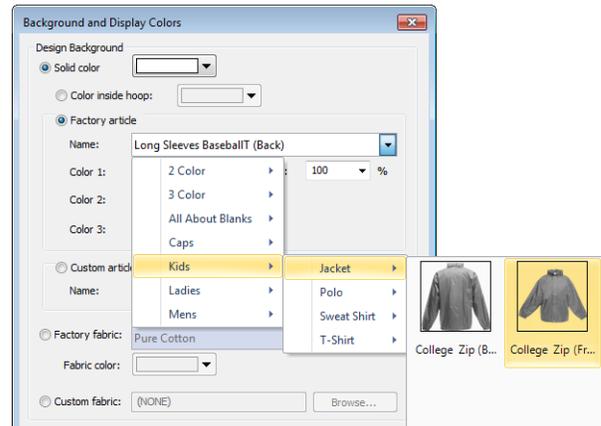
Select fabric from droplist

- ▶ To select a product image that represents the article you will be embroidering, select **Factory Article**. See also [Visualizing finished articles](#).



Set color/s for selected article

The **Background and Display Colors** dialog opens.



4 Click **OK**.



Color background

Fabric background



Tip Design worksheets include an option to print designs with or without backdrops. See also [Printing designs](#).

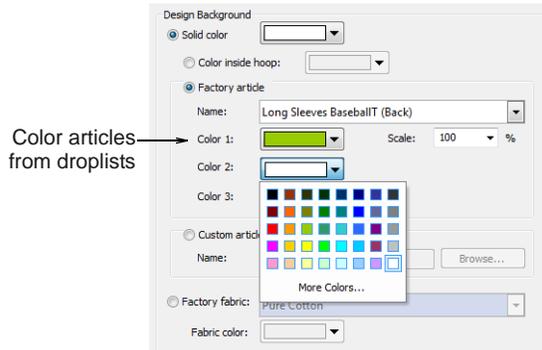
Visualizing finished articles

BERNINA Embroidery Software lets you choose an article as a backdrop upon which to position your decorations. Use it to visualize location, size and overall appearance. The software provides a library of articles to choose from, including multi-color garments. Alternatively, insert your own photo or image.

To visualize finished articles

- ▶ Select **Design > Background**.

- ▶ Choose an article from the droplist.
- ▶ Select a color or colors. If you have chosen a 2- or 3-color article, more palettes become available.



- ▶ Scale the article as a percentage.

Scale should be adjusted according to garment size – XS, S, M, L, XL, or XXL. Rule of thumb: L = 100%. For a small size garment, scale down to approximately 70%.



Tip Measure the garment using the **Measure** command. See also [Measuring distances onscreen](#).

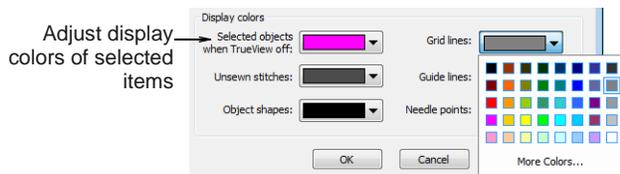
- ▶ If you have an electronic image of your own article, select the **Custom** option and click **Browse** to locate.



Tip Design worksheets include an option to print designs with or without backdrops. See also [Printing designs](#).

Adjusting display colors

In addition to background color or fabric, display colors for needle points, selected stitches, etc, are part of backgrounds. Change them if they are not visible against the current background color.

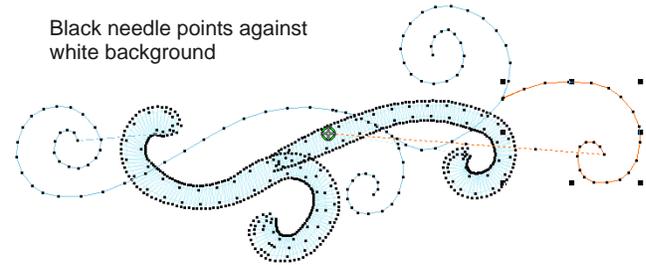


Adjust colors as required for:

Item	Description
Selected	Selected objects or stitches.
Unsewn	Unsewn stitches as they appear when traveling through the design.
Shapes	Object outlines as they appear when Show Stitches is deactivated. See Viewing embroidery elements for details.
Grid	Depending on the colorway, you may need to adjust grid display colors in order to view them against the background color. See Displaying the grid for details.
Guides	Depending on the colorway, you may need to adjust guide display colors in order to view them against the background color. See Displaying rulers & guides for details.

Item	Description
Needle points	Needle points can be activated via the View toolbar or by pressing '.' (period). See Viewing embroidery elements for details.

Display colors are saved with the colorway. You can save the colorway as an EMT template file for use in future designs.



Viewing design information

BERNINA Embroidery Software provides information about designs in a variety of ways and formats. Before even opening BERNINA Embroidery Software or your design, you can check some design information for ART files directly from MS Windows® Explorer. You can view stitching details in the **Design Properties** dialog. The **Print Preview** tool provides essential design information, including a design preview, the size of the design, color sequence and any special instructions.

Viewing design properties



Use Color Palette > Thread Colors to search for and match threads from different charts, and assign for use. Right-click to access Design Properties > Thread Colors summary tab.

You can check software version number and other design information through the **Design Properties** dialog. Stitching details are also provided. Most of the fields cannot be modified directly.

To view design properties

- ▶ Select **Design > Design Properties**. The **Design Properties > Design** dialog opens. This tab contains information about height and

width and stitch count and colors. The data is extracted from the design and cannot be modified.

Design name: 21013-18
Version: 8.0
Stitches: 7234
Color changes: 5
Colors: 6
Trims: 5
BERNINA machine runtime: 0:11:09 ← Machine runtime estimate

Fabric type:
Required stabilizers:

From start point ...

Left:	2.39 in	Right:	2.39 in
Up:	2.15 in	Down:	2.15 in
End X:	0.00 in	End Y:	0.00 in
Height:	4.29 in	Width:	4.78 in

EMB grade: A ♥ Pure EMB Outlines
Pure EMB Stitches

- ▶ Information on this tab is included on the **Design Worksheet**. Details include:
 - ▶ Stitch count, color changes, trims, as well as estimated machine runtime. Runtime depends on the current machine type. See [Changing hoops](#) for details.
 - ▶ If you are using a design fabric, required stabilizers are listed. See also [Working with fabrics](#).
 - ▶ The **Design** tab also indicates grade of ART design – BERNINA Embroidery Software native ART designs are classified in four grades depending on how the file was created. See [Supported machine file formats](#) for details.
- ▶ The **Design Properties > Thread Colors** tab provides summary information about threads used in the design.

Click to print chart

Current thread chart → Thread chart: Isacord 40 Print...

Code	Name	Chart
0003	Ghost White	Isacord 40
0010	Silky White	Isacord 40
0015	White	Isacord 40
0017	Paper White	Isacord 40

Search: Code Name

- ▶ The **Print** option allows you to print the thread list in the current thread chart as a shopping reference when purchasing threads. See [Printing thread charts](#) for details.
- ▶ You can use this tab as an alternative means for managing thread charts. See also [Managing thread charts](#).

- ▶ Select the **Summary** tab to view, edit, or enter summary information about a design.

Title: 21013-18
Authors: OESD
Tags: Floral & Garden; Decorative Accents
Subjects: Leaf Vine 2
Comments: http://embdesignstudio.com/p-57967-Leaf-Vine-2.aspx

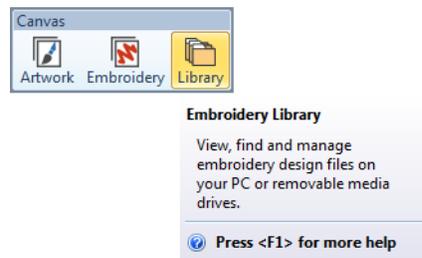
- ▶ Click a field and enter any text which will help you identify or search for the design at a later date. See also [Browsing designs](#).



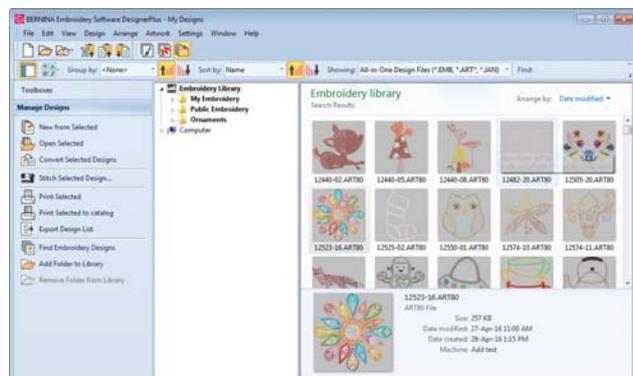
Note Information from this tab is included on the **Print Preview** as well as the **Summary** tab of the **Windows Properties** dialog. See [Viewing designs in Windows Explorer](#) and [Previewing designs](#) for details.

Viewing designs in Embroidery Library

Embroidery Library provides an efficient way for viewing and managing embroidery designs. The library is integrated into main application.

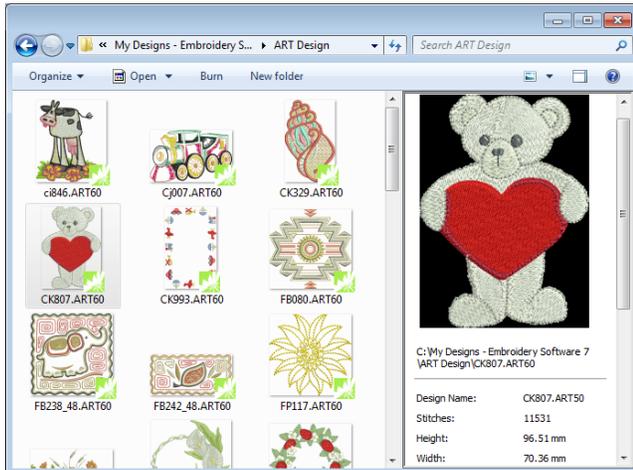


This design management tool can access design files stored on your computer hard disk, CD-ROM, or floppy disk. Embroidery Library even lets you view design files in folders which have been archived by means of the popular WinZip utility. It recognizes all design file formats used by BERNINA Embroidery Software. See [Managing Designs](#) for details.



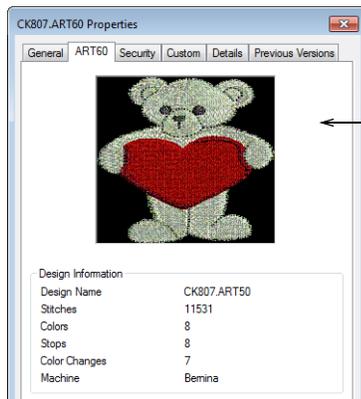
Viewing designs in Windows Explorer

Before opening ART files, you can view design thumbnails and details via MS Windows® Explorer. The **Properties** dialog displays a design preview together with design information such as stitch count, number of stops and color changes. You can also view general file information, such as file size and modification dates. Design thumbnails are displayed in **Windows Explorer**.



Note This same dialog can be accessed from within the **Open** dialog in BERNINA Embroidery Software. See also [Opening designs](#).

Right-click a file and select **Properties** from the popup menu.



ART design details available in Windows Properties dialog

The **Summary** tab provides some of the same information entered in the **Design Properties** > **Summary** tab in BERNINA Embroidery Software. See [Viewing design properties](#) for details.

Previewing designs



Click General > Print Preview to preview the print preview onscreen.

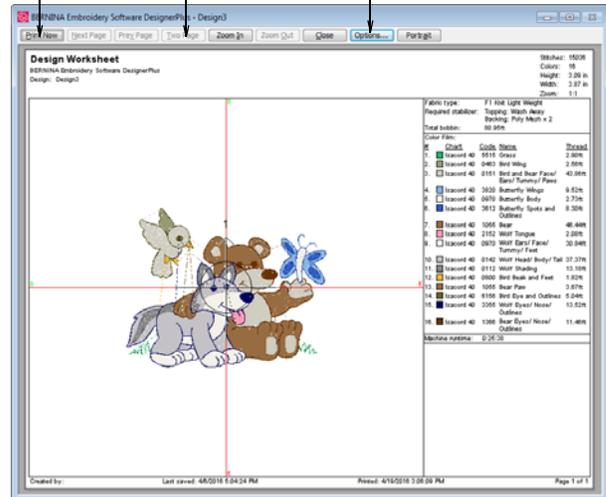
The **Print Preview** contains a design preview and essential design information, including the size of the design, color sequence and any special instructions. See also [Printing designs](#).

To preview designs

- 1 Click the **Print Preview** icon.

The design preview displays in a preview window.

Click to print design Click to display one or two pages Click for print options



- 2 Adjust the view as required:

- ▶ To change the orientation of the paper, click **Landscape** or **Portrait**.
- ▶ To adjust information and printing preferences, click **Options**. See also [Setting worksheet options](#).
- ▶ Use zoom and page controls to check design information. Large designs may be displayed over a number of pages.
- ▶ To print the design, click **Print**.
- ▶ To close the print preview, click **Close**.

CHAPTER 6

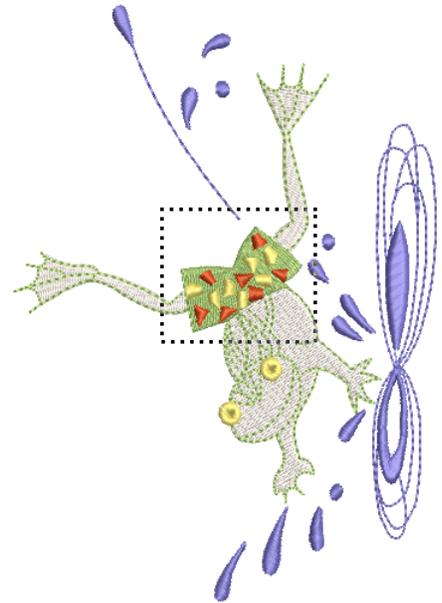
SELECTING OBJECTS

BERNINA Embroidery Software provides various means for selecting the objects comprising an embroidery design. These include techniques such as point and click, selection marquee, and multiple object selection. You can select all objects in a design or individual ones for precise modification. BERNINA Embroidery Software allows selection of object outlines or fill stitches.



Note Designs must be ungrouped before objects can be selected. See [Grouping & ungrouping objects](#) for details.

This section describes how to select objects using the selection tools and keyboard. It also shows how to select color blocks or individual objects using the Color Film.



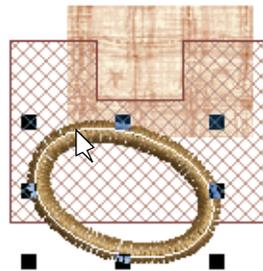
Selecting objects by point & click



Click Transform > Select Object as necessary (generally activated by default), and click objects to select.

The simplest way to select objects is by pointing and clicking with the mouse with the **Select Object** tool activated. Using **Shift** and **Ctrl** keys, you can select multiple objects. Both outlines and/or filled areas can be selected. Clicking an outline selects an object even if another is above it. Where you have a mixture of closed objects, you can select object outlines or fill stitches.

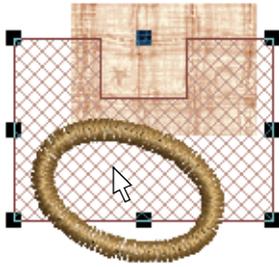
- ▶ Click an outline to select the object.



To select objects by point & click

- ▶ Click the **Select Object** icon.

- ▶ Click the fill behind a outline object to select the filled object.

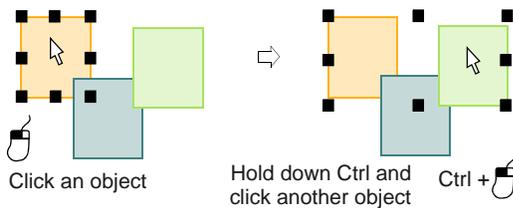


- ▶ Click the fill to select an object even if it lies within the bounds of a larger object.

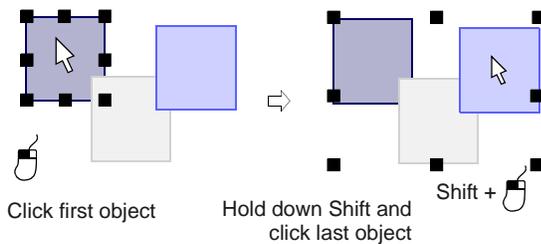


Tip To select an object which is behind another object, zoom in and click the outline. Alternatively, position the pointer over the object, hold down the **2** key, and click until the object is selected. Each click selects the next overlapping object.

- ▶ To select multiple items, hold down **Ctrl** as you click.



- ▶ Select a range of objects by holding down **Shift** while you click the first and last objects in the range.



Selecting objects by selection marquee



Use Transform > Select Object to select objects or drag a selection marquee to enclose.



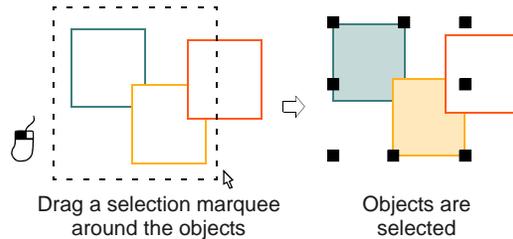
Use Transform > Polygon Select to select irregular areas or shapes – click reference points to demarcate.

With the **Select Object** tool activated, you can select objects by dragging a **selection marquee** around them. Use **Polygon Select** to select multiple objects.

To select objects by selection marquee

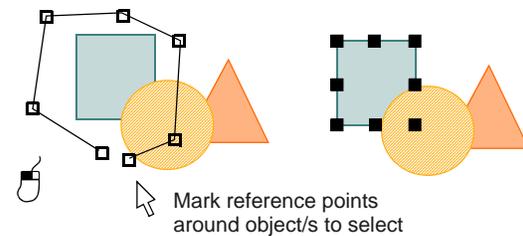
- ▶ Click the **Select Object** icon.
- ▶ Drag a selection marquee around the objects you want to select.

Objects are selected when you release the mouse button.



Note Unless they have already been grouped, only objects completely within the selection marquee will be selected when you release the mouse button. See also **Grouping & ungrouping objects**.

- ▶ Alternatively, click the **Polygon Select** icon.
- ▶ Mark reference points around the object/s you want to select.
- ▶ Press **Enter** to select.



Selecting objects by Tab

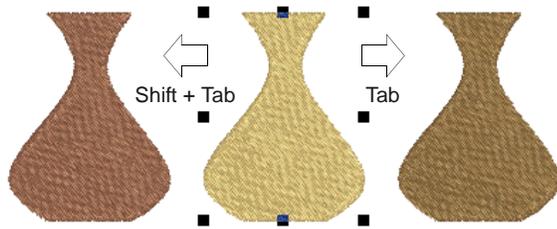


Click Transform > Select Object and press Tab or Shift + Tab to tab between objects.

With the **Select Object** tool activated, you can select the first or last object in the design sequence using the **Tab** key. If an object is selected, you can select the object before or after it in the stitching sequence. See also [Reshaping next or previous objects](#).

To select objects by Tab

- ▶ Click the **Select Object** icon.
- ▶ With an object selected, do one of the following:
 - ▶ Press **Tab** to select the next object in the stitching sequence.
 - ▶ Press **Shift+Tab** to select the previous object.



- ▶ With **no** objects selected, do one of the following:
 - ▶ Press **Tab** to select the first object in the stitching sequence.
 - ▶ Press **Shift+Tab** to select the last object.



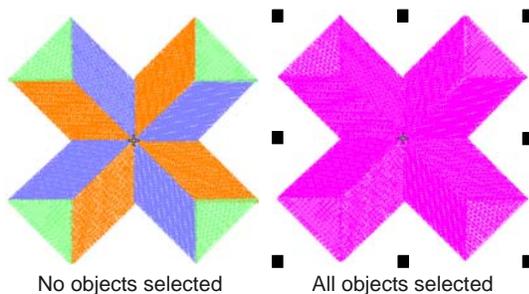
Tip Hold down the **Ctrl** key to select multiple items as you tab between them.

Selecting all objects in a design

Select all objects to apply changes to a whole design. See also [Keyboard Shortcuts](#).

To select all objects in a design

- ▶ Select **Edit > Select All** or press **Ctrl+A**.
Sizing handles appear around the entire design.



- ▶ To deselect, select **Edit > Deselect All**, press **X** or **Esc**.

Deselecting & deleting objects

Deselecting and deleting objects are basic operations which rapidly become second-nature. You can cancel all selections in the design, or remove individual objects from a group of selected objects. Various methods are available for deleting objects. See also [Sequencing with Color Film](#).

To deselect or delete objects

- ▶ Cancel a selection using any of the following methods.
 - ▶ Press **Esc**.
 - ▶ Select another object.
 - ▶ Click an empty area of the background.
 - ▶ Select **Edit > Deselect All**.
- ▶ Remove an object from a selection by holding down **Ctrl** and clicking the object to deselect.
- ▶ Select the object/s to delete, and do one of the following:
 - ▶ Press **Delete**.
 - ▶ Select **Edit > Delete**.
 - ▶ Right-click object/s in the Color Film and select **Delete** from the popup menu. See [Viewing & selecting color blocks](#) for details.

Viewing & selecting color blocks



Click **General > Color Film** to view all color blocks and objects in a design.



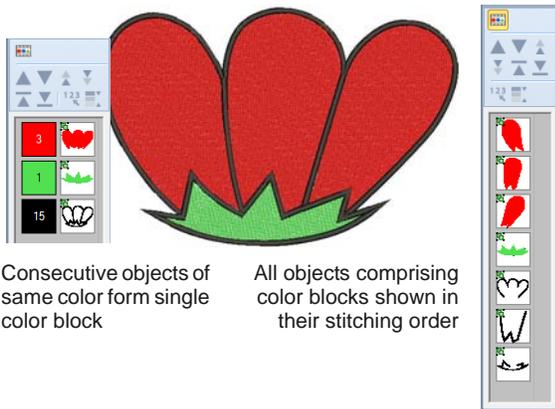
Click **Color Film > Show Individual Objects** to view individual objects in order of stitching sequence.

The **Color Film** tool provides a sequential list of objects grouped by color. Use it to select and manipulate 'color blocks' – consecutive objects of the same color. In addition, you can display, select, modify and sequence individual objects. Color Film is synchronized with the design window and vice versa. It dynamically updates whenever you select, modify or delete objects, or create new ones. See also [Sequencing with Color Film](#).

To view & select color blocks

- ▶ Click the **Color Film** icon.

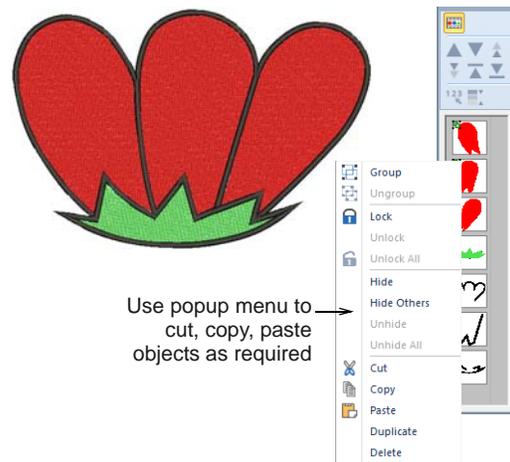
The **Color Film** toolbar opens displaying all color blocks in the design in order of stitching sequence.



Consecutive objects of same color form single color block

All objects comprising color blocks shown in their stitching order

right-clicking their icons. See also **Combining objects**.

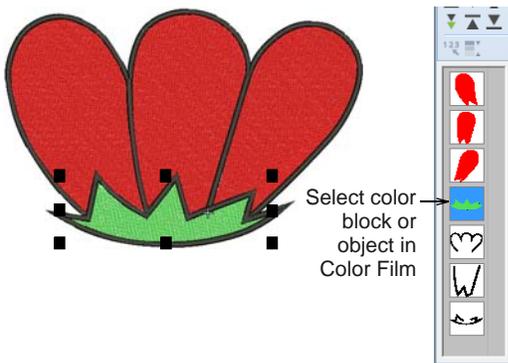


Use popup menu to cut, copy, paste objects as required

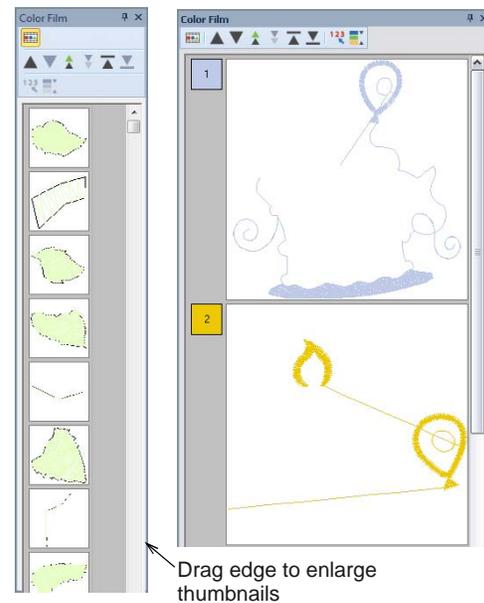
- ▶ Click the **Show Individual Objects** toggle to view individual objects. All objects within a color block are displayed in stitching order.
- ▶ Click an icon to select the color block or object.
 - ▶ To select a range, hold down **Shift** as you click.
 - ▶ To select multiple items, hold down **Ctrl** as you click.



Tip To enlarge thumbnail images of color blocks or objects, click and drag the edge of the dialog.



- ▶ Manipulate the color blocks as required. See also **Sequencing with Color Film**. You can quickly access popup menu commands for manipulating selected color blocks or objects by



Drag edge to enlarge thumbnails

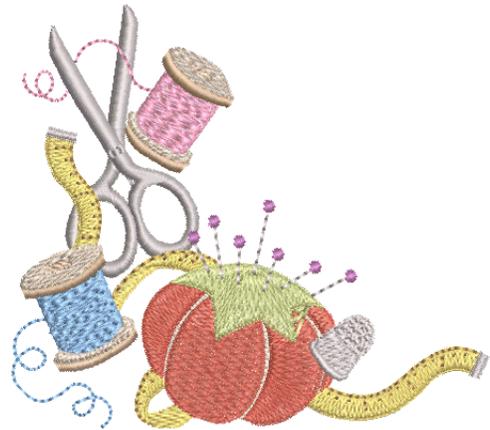
CHAPTER 7

SOFTWARE SETUP

BERNINA Embroidery Software lets you adjust various system settings controlling the appearance of designs on screen, display of design information, the behavior of the design window, and other settings.

You will also need to connect peripheral devices for use with BERNINA Embroidery Software. These may include printers, scanners and embroidery machines. See [Hardware setup](#) for details.

This section describes how to set up embroidery machines, and scanners and describes how to calibrate the monitor. It also deals with changing grid spacing and hoop options. The setting of general options – such as automatic save, pointer position display options, etc – is also covered.

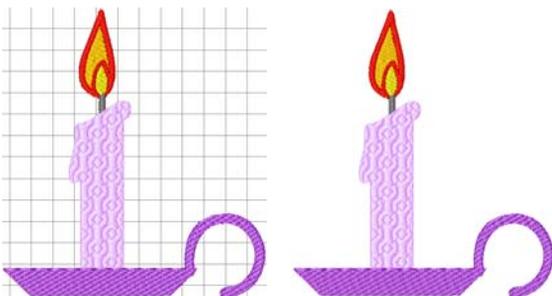


Setting grid options

 Right-click View > Show Grid to set grid reference point and spacing.

 Use General > Options to access workspace options such as grid, hoop, and scroll settings.

You can turn the grid on or off, change the grid spacing, or set a reference point. You can also turn **Snap to Grid** on or off in the **Options** dialog.



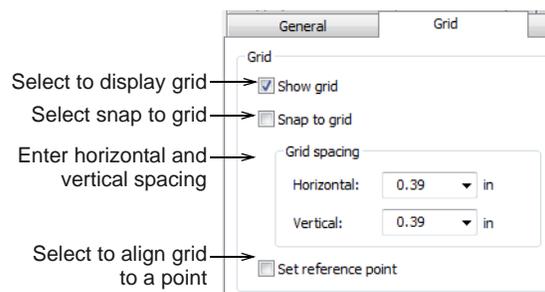
Align the grid with a specific point in the design by setting a reference point – for example, when you want grid lines to intersect the center point of the

design, or a horizontal grid line to sit under a particular object.

Use **Snap to Grid** to align objects in your design to the nearest grid lines. You can align objects to the horizontal (X) or vertical (Y) axis, or both. New reference points will ‘snap’ to the nearest grid line as you digitize. Existing objects will snap to grid when you select and move them.

To set grid options

- 1 Right-click the **Show Grid** icon.
The **Options > Grid** dialog opens.



- 2 Select the **Show grid** checkbox to display the grid.

- 3 Select the **Set reference point** checkbox to align a significant point of the design with a grid line or grid point.

For example, you can set the grid reference point to the design center. This is easier and faster than moving the whole design.

- 4 Enter **Grid spacing** values for horizontal and vertical grid lines.
- 5 Select the **Snap to grid** checkbox.



Tip To temporarily disable **Snap to grid** as you digitize, hold down **Alt**.

- 6 Click **OK**.

If you selected **Set reference point**, mark the reference point on your design. The grid aligns so that horizontal and vertical grid lines intersect at this point.

Setting auto scroll options

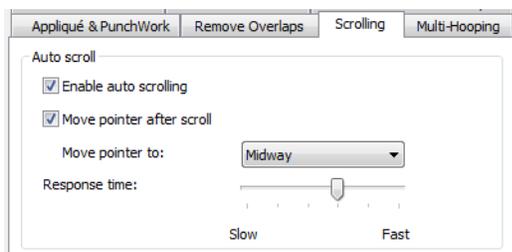


Use General > Options to access workspace options such as grid, hoop, and scroll settings.

Use **Auto Scroll** to scroll the design automatically while you are **digitizing**. This can be more convenient than using panning or the scroll bars.

To set auto scroll options

- 1 Click **Options** icon and select the **Scrolling** tab.



- 2 Select the **Enable auto scrolling** checkbox to apply.
- 3 Select the **Move pointer after scroll** checkbox to move the position of the pointer after each scroll.
- 4 Adjust the **Response time** field as required. Enter smaller values to increase scrolling speed.

- 5 Select the pointer position after scrolling from the **Move pointer to** list:

Option	Purpose
Center	Center of the window. Use this setting for large movements.
Midway	Halfway between the original pointer position and the center of the window. Use this setting for smaller movements – e.g. when zooming into a small area of the design.
Corner	The edge of the screen. Use this setting for slow scrolling.

- 6 Click **OK**.

The effect of this setting only becomes apparent when you start to digitize. The design window automatically scrolls to follow the current cursor position.



Tip Hold down the **Shift** key to temporarily deactivate **Auto Scroll**.

Setting hoop options

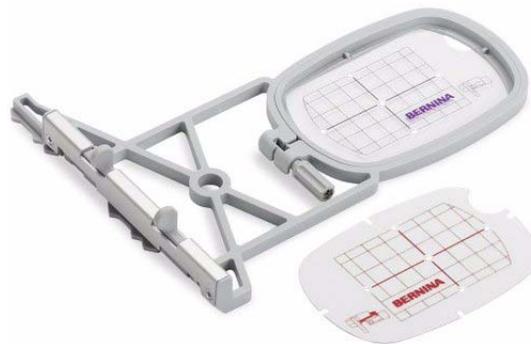


Right-click View > Show Hoop to change the hoop settings.



Use General > Options to access workspace options such as grid, hoop, and scroll settings.

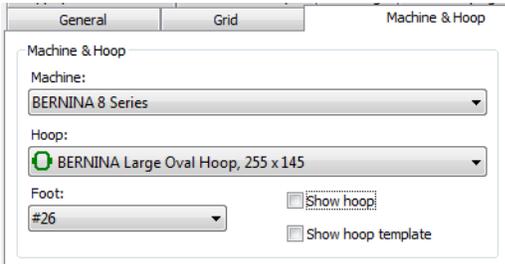
A range of sizes is available to suit the size of your design as well as a number of embroidery machines. Select the smallest hoop which fits the design from the range of hoop sizes available. This will hold the fabric tight while stitching.



To set hoop options

- 1 Select **Settings > Options** and select the **Hoop** tab or right-click the **Show Hoop** icon.

The **Options > Machine & Hoop** dialog opens.



- In the machine and hoop panel, choose from among the available options:

Option	Purpose
Machine	Choose your machine. This filters the hoop list to display compatible hoops.
Hoop	Select a hoop to suit your current design. See Selecting hoops for details.
Foot	Select the foot you are currently using. This will affect the stitchable area within the hoop.
Show...	Use the checkboxes to toggle on/off hoop display or the hoop template. The hoop template may be used to help position your design within the hoop.

- Select a position to center your hoop. See [Centering hoops](#) for details.



- Manage your own hoops with the **Custom Hoops** options:
 - Click **Create** to create customized hoops. See [Creating custom hoops](#) for details.
 - Click **Edit** to edit existing hoops.
 - Click **Delete** to delete existing hoops.
- Click **OK**.

Setting appliqué options



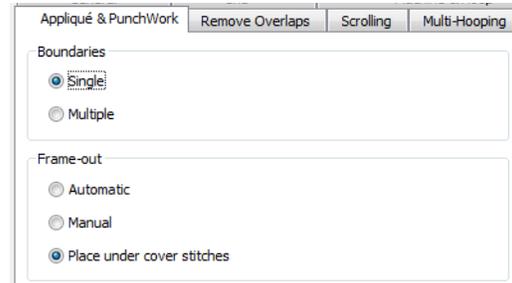
Use **General > Options** to access workspace options such as grid, hoop, and scroll settings.

Use **Appliqué** to produce all the stitching you require for closed-object appliqué. Options determining single or multiple boundaries as well as frame-out position are set in the **Options** dialog. See also [Creating closed-object appliqué](#).

To set appliqué options

- Click **Options** icon and select the **Appliqué & PunchWork** tab.

This tab contains two panels – **Boundaries** and **Frame-out**.



- Select the required **Boundaries** option:

Option	Purpose
Single	Use when creating a single closed-object appliqué object.
Multiple	Use when creating multiple closed-object appliqué objects. See Creating closed-object appliqué for details.

- Select the required **Frame-out** method:

Method	Purpose
Automatic	If selected, the frame-out position is determined automatically.
Manual	If selected, the frame-out position is marked as part of the digitizing process.
Place under cover stitches	If selected, the frame-out position is placed at the location of the last needle penetration before the frame-out would occur.

- Click **OK**.

Setting overlap removal options



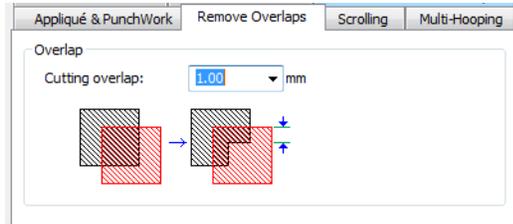
Use **General > Options** to access workspace options such as grid, hoop, and scroll settings.

Use **Remove Overlaps** to remove underlying layers of stitching. This helps to reduce the stitch count and prevent a build-up of stitches where they are not needed. See also [Removing underlying stitching](#).

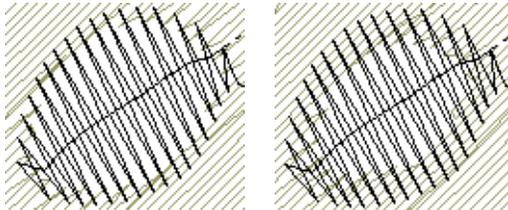
To set overlap removal options

- Click **Options** icon and select the **Remove Overlaps** tab.

The **Options > Remove Overlaps** dialog opens.



- Enter the amount of overlap required in the **Cutting overlap** field.



Cutting Overlap: 0.5 mm

Cutting Overlap: 1.5 mm

- Click **OK**.

Setting general options

BERNINA Embroidery Software lets you adjust various general settings controlling the automatic saving of designs, the position of the pointer on-screen, as well as the display of measurements. The defaults are generally good enough to get you started.

Setting automatic save



Use **General > Options** to access workspace options such as grid, hoop, and scroll settings.

Save your work automatically at regular intervals using **Auto Save** to protect you from losing work in the event of hardware or software failure. A backup file is created every time you save a design. The design will be saved in the **BACKUP** folder of your BERNINA Embroidery Software installation. It will have the same name as the original file with the extension 'BAK'.



Caution Backup files remain in the **BACKUP** folder until you delete them. To prevent the folder from using too much hard disk space, delete unwanted files regularly.

To set automatic save

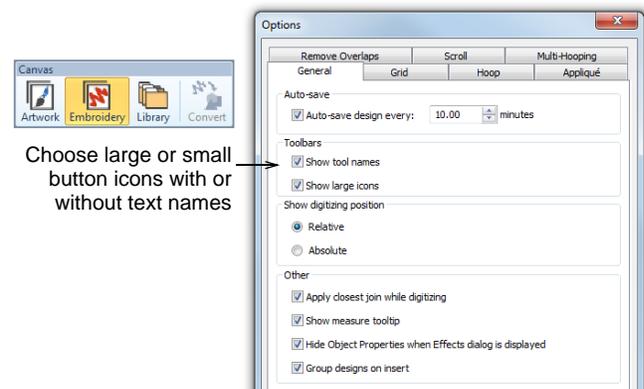
- Click **Options** icon and select the **General** tab.



- Tick the **Auto-save design** checkbox and enter the auto-save frequency.
- Click **OK**.

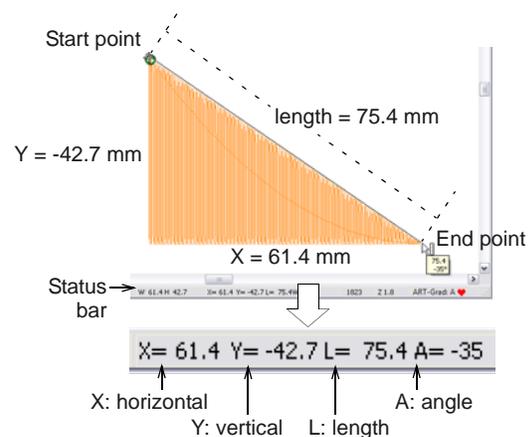
Choosing large or small button icons

BERNINA Embroidery Software allows you the choice of large or small button icons with or without text names.



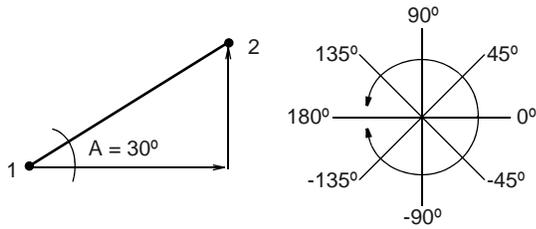
Interpreting pointer position values

The **X** and **Y** values show the horizontal and vertical distance of the pointer from the relative or absolute point. The **L** value is the length of the line connecting the pointer with the start point, while **A** is the angle of that line, relative to the horizontal.



A negative **X** value indicates that the second point was placed to the left of the first point, while a

negative **Y** value displays when the second point is below the first. Negative angles indicate angles of more than 180° – for example, an angle of -60° is equal to 300° .



Tip You can measure on-screen distances using the values in the **Status Bar**. See [Measuring distances onscreen](#) for details.

Setting pointer position display options



Use **General > Options** to access workspace options such as grid, hoop, and scroll settings.

When you move the mouse, the pointer position is displayed in the **Status Bar** at the bottom of the screen. You can optionally display the pointer position relative to the last digitized point or stitch point, or as an absolute value from the first needle point of the design.

To set pointer position display options

1 Click **Options** icon and select the **General** tab.



2 Select a **Relative** or **Absolute** setting for the pointer:

Option	Purpose
Relative	Shows pointer position relative to the last digitized point or stitch point. Useful while digitizing or editing stitches.
Absolute	Shows pointer position as an absolute value from the first needle point of the design. Useful for checking that the design fits a given area.

3 Click **OK**.

Setting other general options



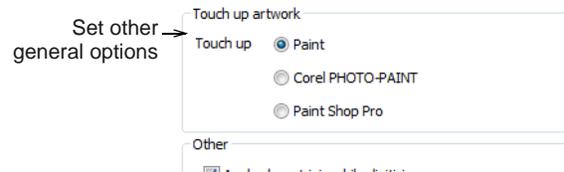
Use **General > Options** to access workspace options such as grid, hoop, and scroll settings.

The **Options > General** tab provides options for activating the following functions:

- ▶ Applying **Closest Join** while digitizing
- ▶ Displaying a measure tooltip when using the Measure command
- ▶ Hiding object properties
- ▶ Grouping designs when opening and inserting.

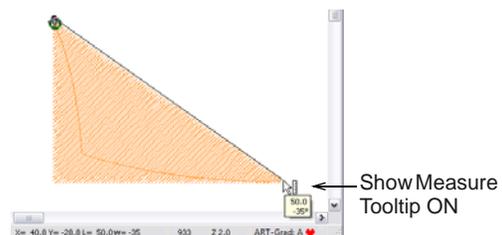
To set other general options

1 Click **Options** icon and select the **General** tab.



2 Select one or more of these options:

- ▶ **Apply closest join while digitizing:** The **Closest Join** method (the default) automatically calculates the closest join between objects while digitizing. When deactivated, all newly digitized objects are joined by the **As digitized** method. See [Digitizing closed shapes](#) for details.
- ▶ **Show measure tooltip:** shows length and angle in a tooltip when measuring distances on screen. See [Measuring distances onscreen](#) for details.



- ▶ **Hide object properties:** When selected, the Object Properties dialog automatically closes when the **Effects** dialog is opened, and vice versa. See [Accessing object properties](#) for details.
- ▶ **Group designs on open and insert:** When selected, a design is automatically grouped when first opened or inserted into another design. This makes it easier to drag into position without accidentally deselecting it. This is particularly useful when working with designs which have been placed right on top of existing design elements. See [Working with design files](#) for details.

3 Click **OK** to confirm.

PART II

DIGITIZING TECHNIQUES

In BERNINA Embroidery Software, you build designs from basic shapes or 'embroidery objects'. These are like ordinary drawing objects in that they have certain defining characteristics or 'properties' such as color, size, position, and so on. They also have properties unique to embroidery such as stitch type and density.

Outline & fill stitches

This section explains how to select basic outline and fill stitch types, as well as change stitch settings to obtain the best results. Basic outlines dealt with here include Single and Triple stitch, Satin stitch, and Blanket stitch. Basic fills discussed include Satin fill and Step fill. See [Outline & Fill Stitching](#) for details.

Digitizing methods

This section describes how to digitize shapes with the main digitizing methods. It also explains how to adjust digitizing settings to obtain the best results. See [Digitizing Methods](#) for details.

Thread colors & charts

This section describes how to select colors from the Color Palette as well as how to assign threads to the colors in your design. How to modify thread charts is also covered, as well as creating custom thread charts. See [Thread Colors & Charts](#) for details.

Object properties, fabrics & templates

This section explains how to change the object properties in your design, as well as how to apply fabric settings. It also explains how to create and maintain templates in BERNINA Embroidery Software. See [Properties, Fabrics & Templates](#) for details.

Stitch quality

This section covers adjusting fabric settings, stabilizing with underlays, and compensating for fabric stretch. It also describes how to preserve long stitches, adjust tie-in/off settings, and set automatic start and end points. See [Stitch Quality](#) for details.

CHAPTER 8

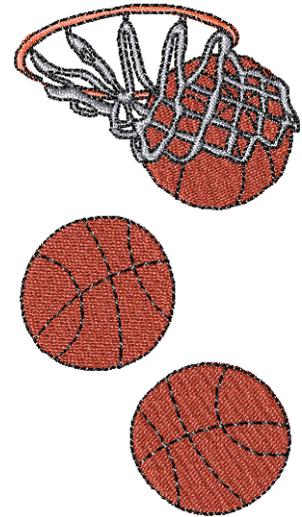
OUTLINE & FILL STITCHING

All embroidery objects in BERNINA Embroidery Software have defining settings or 'properties', the most important of which is the stitch type. Whenever you create or modify an object, stitches are generated according to the associated stitch type. Stitch settings such as spacing and length can be adjusted before or after digitizing.

Stitch types divide broadly into two categories – 'outline' and 'fill'. Outlines are used, as the name suggests, for outlines or borders of shapes and for details. Fill stitches are used to cover large areas or 'color blocks' in a design. Outline and fill stitches are generated whenever you create embroidery shapes, but they can be changed at any time.

BERNINA Embroidery Software provides a variety of digitizing methods or 'tools' for creating embroidery objects. These tools are used in conjunction with stitch types to create embroidery 'objects'.

This section explains how to select basic outline and fill stitch types, as well as change stitch settings to obtain the best results. Basic outlines dealt with here include Single and Triple, Satin, and Blanket. Basic fills discussed include Satin and Step. See also [Advanced Digitizing](#).



Selecting stitch types

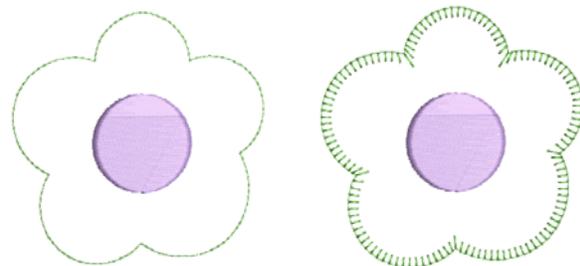
BERNINA Embroidery Software provides a number of basic outline and fill stitch types as well as those of a more artistic or decorative kind. Different stitch types suit different shapes. Whenever you create an object, it always takes the currently selected stitch type.



Outline stitching

BERNINA Embroidery Software provides basic Single, Triple, Satin and Blanket outline stitches, as well as more decorative stitch types. You can interchange

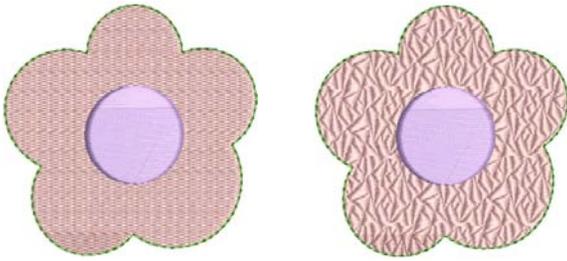
these at any time. Simply select an **Outline** stitch type from the **Stitch** toolbar.



Fill stitches

BERNINA Embroidery Software provides basic satin and step fills, as well as more decorative stitch types.

You can interchange these at any stage. Simply select a **Fill** stitch type from the to **Stitch** toolbar.



Tip Preset stitch values by changing the current properties in the **Object Properties** dialog **before** you digitize. See also [Properties, Fabrics & Templates](#).

Creating simple outlines



Use Stitches > Single Outline to create a single row of stitches along a digitized outline – used for borders or details.

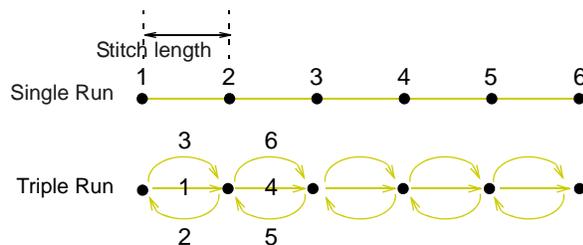


Use Stitches > Triple Outline to create a thicker outline by repeating each stitch three times – use for heavier borders or details.



Use Stitches > Sculpture Outline to create a tick-thin outline alternating single and triple stitches for a hand-stitched look.

Use the **Single** and **Triple** tools to digitize lines of single or triple outline stitching. This is the simplest type of stitching you can digitize. It can be used for anything from details, object outlines, and simple borders. **Single** places a single row of stitches along a digitized line. **Triple** repeats each stitch three times for a thicker line.



For a more hand-stitched appearance, use **Sculpture Outline**. This variant stitch type alternates single and triple stitching for a thick-thin outline.

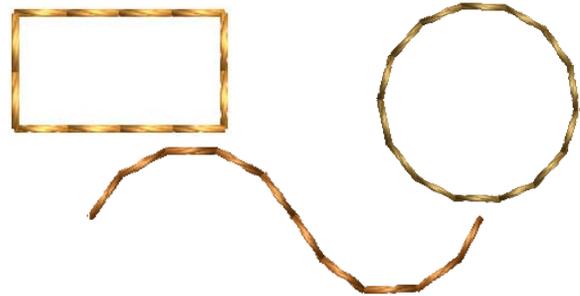


Note You can't see much difference between these stitch types on screen. To check, view the stitching with the **Travel** tools. See [Traveling through designs](#) for details.

To create a single or triple outline

- ▶ Select **Single** or **Triple** from the to **Stitch** toolbar.
- ▶ Select a digitizing tool and digitize a shape, open or closed.

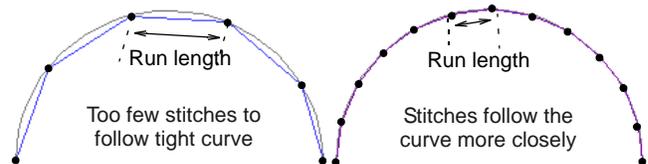
Left and right mouse clicks create reference points – corner points and curve points respectively. The outline is created with default settings. See also [Digitizing Methods](#).



- ▶ Optionally, double-click or right-click an outline object. The **Object Properties > Outline Stitch** dialog opens.



- ▶ Select **Single** or **Triple** from the **Stitch Type** list to change stitch types as necessary.
- ▶ Adjust stitch length as necessary. If a line has tight, sharp curves, reduce the length, for example to 1.8 mm, so that the stitches follow the line.



Tip You can mimic handmade embroidery with **Single** or **Triple** stitches by setting the length to 4.0 mm. See also [Creating craft stitches](#).

- ▶ Click **Apply**.

Creating functional outlines

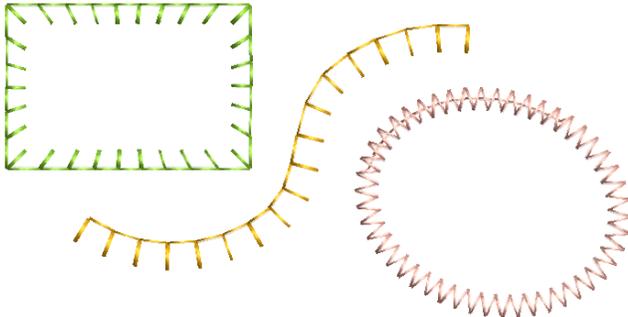


Use Stitches > Blanket Outline for narrow, open borders with a 'comb' effect.

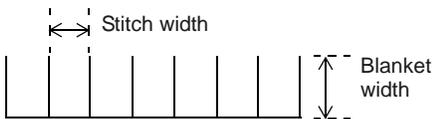


Use Stitches > Zigzag Outline for narrow, open borders with a 'zigzag' effect.

Blanket and zigzag stitches are used to create narrow, open borders with a 'comb' or 'zigzag' effect. They are generally used for practical applications, such as borders around appliqué. They can also be used for decorative effect. See also [Decorative Stitching](#).



You can adjust stitch width and spacing.



To create a blanket or zigzag outline

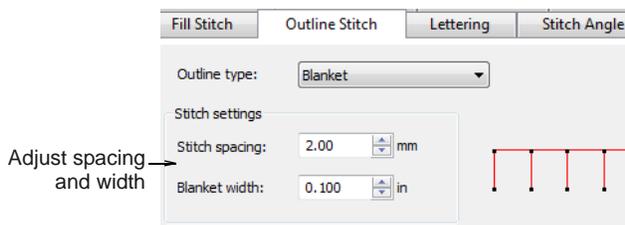
- ▶ Select blanket or zigzag from the **Stitch** toolbar.
- ▶ Select a digitizing tool and digitize a shape, open or closed. See [Digitizing Methods](#) for details.

When an open shape is digitized left-to-right, blanket stitch is oriented downwards. Otherwise, it is oriented upwards.

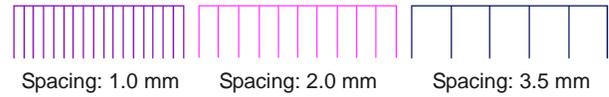


- ▶ To adjust spacing and width, double-click or right-click the object.

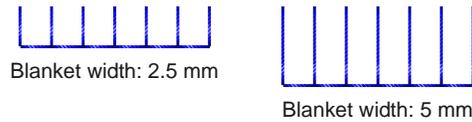
The **Object Properties > Outline Stitch** tab opens. The spacing and width controls are similar for both stitch types.



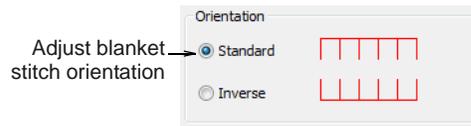
- ▶ Adjust the spacing field as necessary. This value is the distance in millimeters between each stitch.



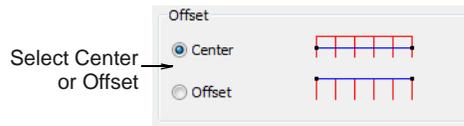
- ▶ Adjust the width field as necessary. This value controls the thickness of the border or outline.



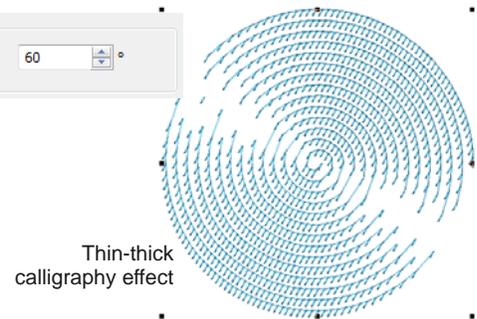
- ▶ Adjust blanket orientation as necessary.



- ▶ With blanket, stitches are positioned by default around the center of a digitized line. You can, however, offset them to one side, depending on where you want the border to sit in relation to the enclosed object/s.



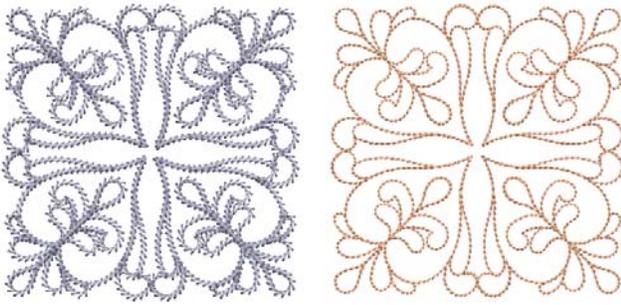
- ▶ Like satin outline, the blanket and zigzag stitch **Calligraphy** setting can be used to create thin-thick effects.



Creating specialty outlines

Backstitch and stemstitch are two versatile outline stitches. Backstitch forms a continuous thin line, similar to machine stitching, while stemstitch produces rope-like lines which can vary in thickness depending on stitch angle. Both can be used to make

a smooth continuous row of stitching suitable for outlines and for blackwork.

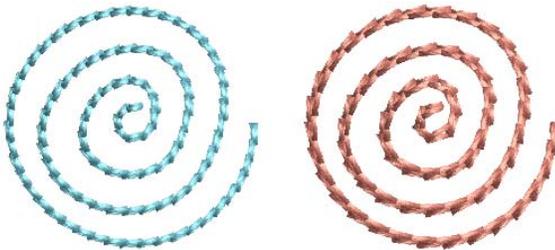


Backstitch outlines



Use Stitches > Backstitch Outline to create backstitch borders – old, adaptable stitch type used for delicate outlines.

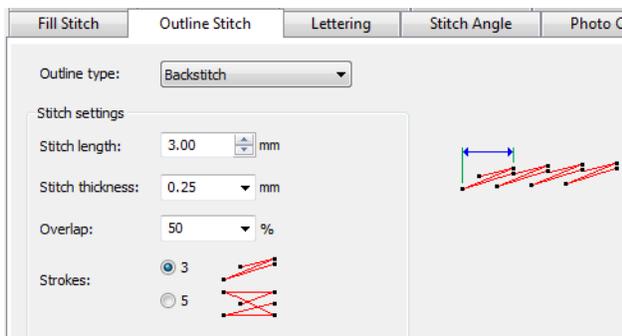
Backstitch is an old, adaptable stitch which can be used as a delicate outline. This small, even stitch follows intricate curves well. Backstitch can be used for blackwork and redwork designs. You can specify the exact stitch length, thickness and overlap values as well as the number of strokes.



Backstitch settings

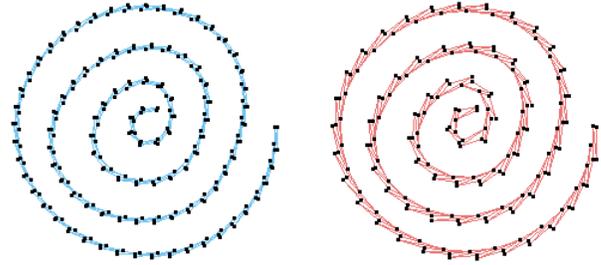
Backstitch settings can be adjusted in the usual way via **Object Properties**.

- ▶ Double-click an outline object to open the dialog.



- ▶ Hover the cursor over a field and use the graphic display to interpret the setting.

- ▶ Zoom in and activate needle points to study adjustments better.

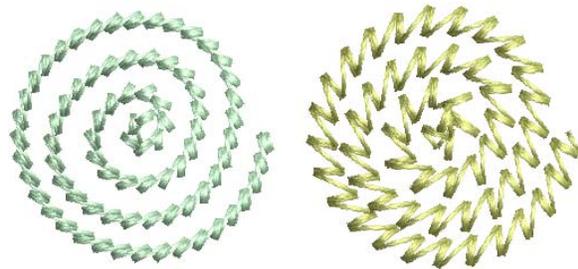


Stemstitch outlines



Use Stitches > Stemstitch Outline to create stemstitch borders or for details such as stems and vines.

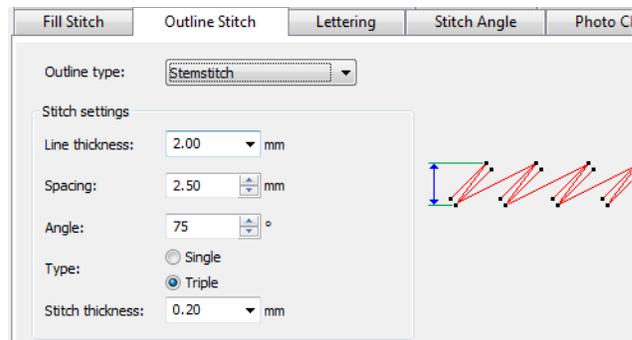
Stemstitch is a detail stitch that can be used to outline items or fill in areas. It is used for stems and vines with other decorative stitches, or as an outline for stitches such as **Satin fill** or **Pattern Fill**. You can specify various settings including line thickness, spacing, angle, single or triple, and stitch thickness.



Stemstitch settings

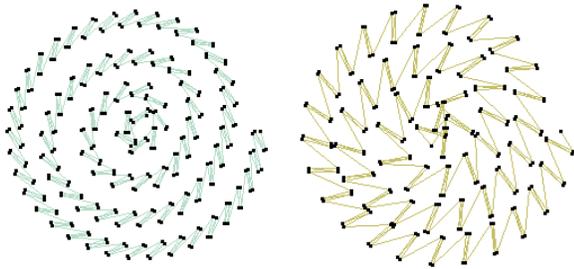
Stemstitch settings can be adjusted in the usual way via **Object Properties**.

- ▶ Double-click an outline object to open the dialog.



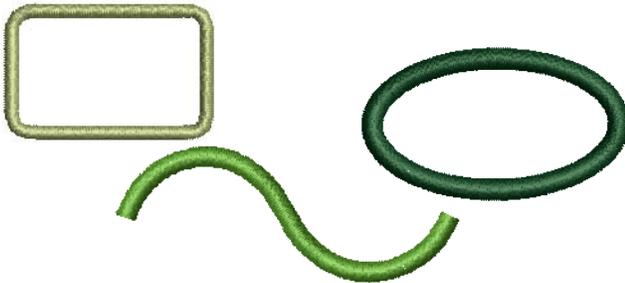
- ▶ Hover the cursor over a field and use the graphic interpret the setting.

- ▶ Zoom in and activate needle points to study adjustments better.



Creating satin outlines

Satin stitch can be used for outlines or fills. It is well-suited to thicker borders. Adjust stitch density by setting a fixed spacing value, or let **Auto Spacing** calculate it for you.



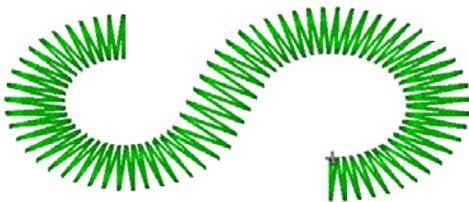
Creating outlines with satin stitch

-  Use **Stitches > Satin Outline** to create thicker borders or columns of even thickness.
-  Use **Stitches > Raised Satin Outline** to create raised satin borders – can be used with trapunto for quilting effects.

Use **Satin** outline type to create thicker borders.

To create a satin stitch outline

- ▶ Select **Satin Outline** from the **Stitch** toolbar. See also **Stitches toolbar**.



- ▶ Select a digitizing tool and digitize a shape, open or closed. See **Digitizing Methods** for details.

The outline is created with default Satin stitch settings. Stitch spacing and width can be adjusted before or after digitizing. See **Adjusting satin stitch spacing** for details.

Adjusting satin stitch spacing

 Click **General > Object Properties** to adjust stitch spacing and width.

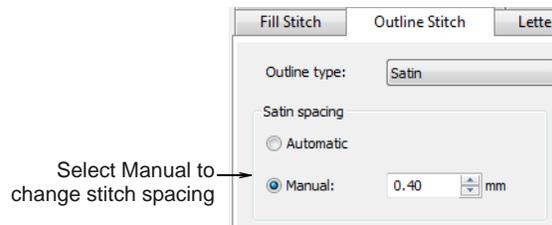
Change satin density by adjusting the spacing setting. The larger the spacing, the lower the density.



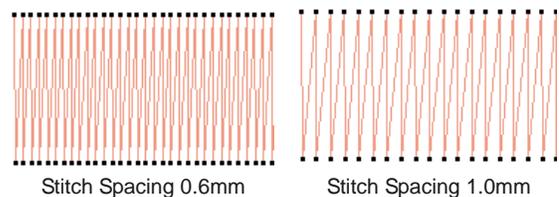
Where a border narrows, stitches need to be less dense because too many needle penetrations can damage the fabric. For varying width objects, automatic spacing adjusts spacing accordingly.

To adjust satin stitch spacing

- ▶ Double-click or right-click a satin object. The **Object Properties > Outline Stitch > Satin** dialog opens.



- ▶ Optionally, select the **Manual** option. The spacing field is activated.
 - ▶ To increase stitch density, enter a smaller value.
 - ▶ For more open stitching, enter a larger value.



- ▶ For variable satin shapes, use automatic spacing.





Tip If a satin border is wide, some stitches may exceed the maximum stitch the particular embroidery machine can produce. When **Satin Special** is applied, BERNINA Embroidery Software breaks any long satin stitches into shorter ones. See also [Splitting long stitches in satin fills](#).

Adjusting satin width & offset

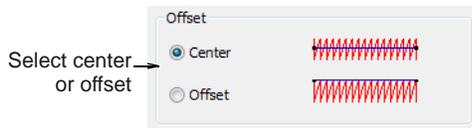


Click General > Object Properties to set stitch offsets.

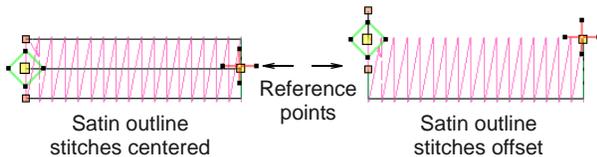
By default, stitches are positioned around the center of a digitized line. You can, however, offset them to one side. Width can be controlled interactively or via object properties. You can also create variable widths via the calligraphy setting.

To adjust satin width and offset

- ▶ Double-click or right-click a satin outline. The **Object Properties > Outline Stitch > Satin** dialog opens.



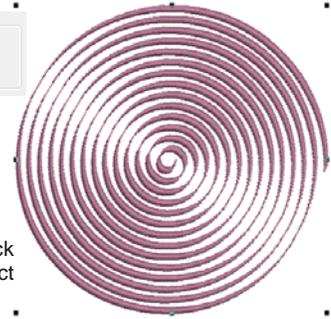
- ▶ Select an offset option – **Center** or **Offset**. This can be important for controlling overlaps when applying a satin border to filled objects.



- ▶ Adjust column width in the **Satin Width** field. The width can also be adjusted via control points in **Reshape** mode.



- ▶ The satin outline **Calligraphy** setting can be used to create thin-thick effects. See also [Creating freehand embroidery](#).



Thin-thick calligraphy effect

Creating satin fills

Satin fill is well-suited to stitching narrow borders and shapes, where the length of each stitch forms the width of the border. Satin stitches are almost parallel, with every second stitch slightly slanted. Because there are generally no needle penetrations breaking up the fill, **Satin Fill** creates a glossy, high-quality effect.



Creating fills with satin stitch

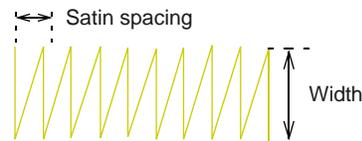


Use Stitches > Satin Fill to create stitch fills for narrow shapes.



Use Stitches > Raised Satin Fill to create raised surfaces – can be applied to lettering or used with trapunto for quilting effects.

Use **Satin Fill** when creating narrow shapes of varying width. Change the stitch density in satin fills at any stage.



Where a shape is narrow, stitches need to be less dense because too many needle penetrations can damage the fabric. The larger the spacing, the lower the density.



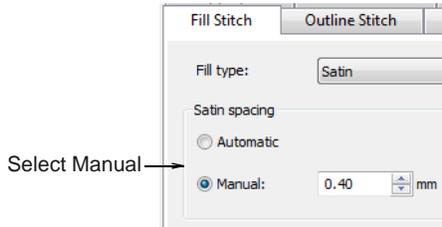
Tip Use **Raised Satin Fill** to create raised embroidery designs consisting of multiple layers of satin stitching. See also **Quilted embroidery**.

To create a satin fill

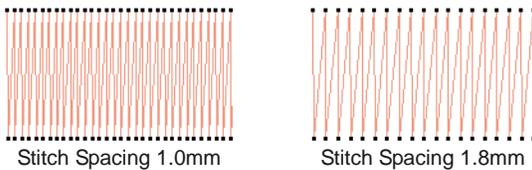
- ▶ Select **Satin Fill** from the **Stitch** toolbar and digitize a closed shape. See **Digitizing Methods** for details.



- ▶ Double-click or right-click a satin fill object to adjust settings.
The **Object Properties > Fill Stitch > Satin** dialog opens.



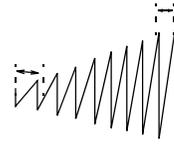
- ▶ Optionally, select the **Manual** option. The spacing field is activated.
 - ▶ To increase stitch density, enter a smaller value.
 - ▶ For more open stitching, enter a larger value.



- ▶ To apply automatic spacing, select the **Automatic**, checkbox.

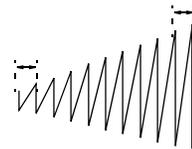
Auto spacing automatically adjusts the stitch spacing wherever a column changes width.

Automatic stitch spacing



Varying spacing depending on column width

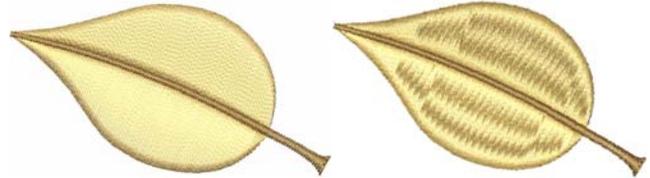
Manual stitch spacing



Constant spacing for whole object

Splitting long stitches in satin fills

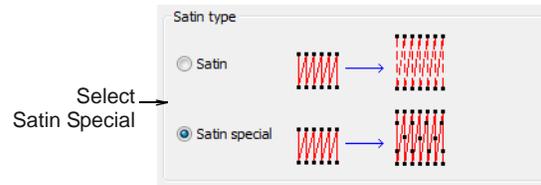
If a satin shape is wide, some stitches may exceed the maximum stitch the particular embroidery machine can produce. When **Satin Special** is applied, BERNINA Embroidery Software breaks any long satin stitches into shorter ones. It also distributes needle penetrations in a random pattern so that they do not form a line down the middle of the shape.



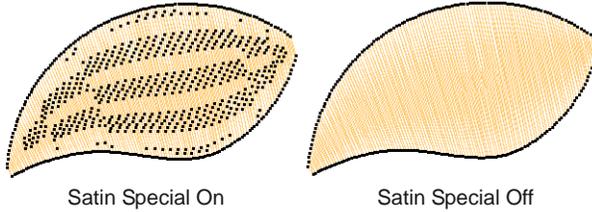
While **Satin Special** is used primarily to prevent long stitches in wide shapes, it can also be used as an alternative to Step fill. **Satin Special** looks more Satin-like and works well with turning stitches, creating soft lines and a little more depth. By contrast, Step fill is flat and can show unwanted patterns with tight curves.

To split long stitches in satin fills

- ▶ Double-click or right-click a satin fill object.
The **Object Properties > Fill Stitch > Satin** dialog opens.



- ▶ Select the **Satin Special** checkbox.



You can also specify step fill stitch length. This varies slightly to ensure that small stitches are not generated at the edges.

Creating step stitch fills

Different stitch types suit different shapes. BERNINA Embroidery Software provides normal Satin and Step fills, as well as Fancy and Craft Stitch fills.



Step fill consists of rows of straight stitches and is suitable for filling large, irregular shapes. Stitches are laid in rows going back and forth across the shape. These can be uniform or patterned. You can choose from a number of preset patterns. You can also control stitch spacing and length.



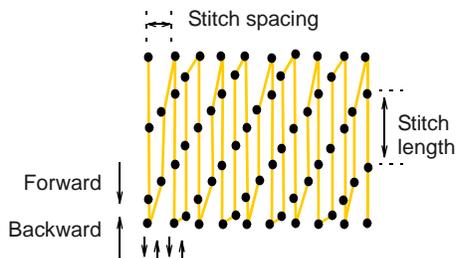
Note With Step fills you can select patterns formed by needle penetrations. The default Step pattern (No. 1) is designed to create a uniformly flat and smooth texture similar to a woven mat. See also [Applying step fill patterns](#).

Creating fills with step stitch



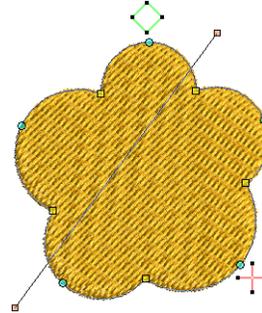
Use Stitches > Step Fill to create stitch fills for larger, irregular shapes.

Use **Step** fill for large and/or irregular shapes. Stitch spacing is the distance between two forward rows.



To create a step fill

- ▶ Select **Step Fill** from the to **Stitch** toolbar and digitize a closed shape. See [Digitizing Methods](#) for details.
- ▶ Adjust entry / exit points and stitch angle. These have a direct bearing on step fill appearance. See also [Reshaping objects](#).



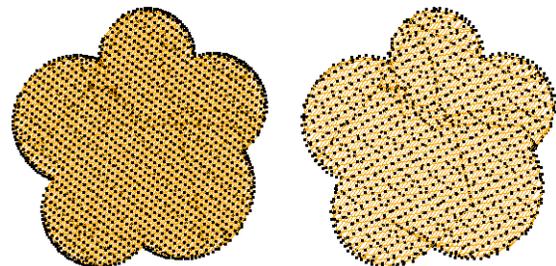
- ▶ To adjust step fill spacing and length, double-click or right-click a step fill object.

The **Object Properties > Fill Stitch > Step** dialog opens.

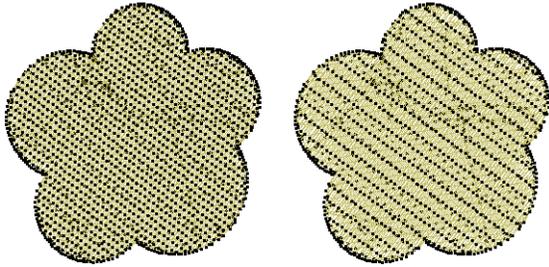


Tip You can preset stitch settings before digitizing. Click the **Object Properties** icon to access the dialog at any time.

- ▶ Use the **Stitch Spacing** field to adjust step fill spacing:
 - ▶ To increase density, enter a smaller value.
 - ▶ To decrease density, enter a larger value.

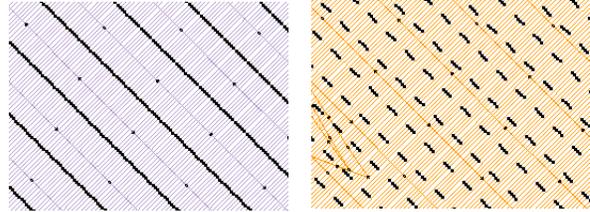


- ▶ In the **Stitch Length** field, enter the stitch length you require.



- ▶ Click **Apply**.

- ▶ Select a pattern. A preview of the pattern appears.



- ▶ Click **Apply**.

Applying step fill patterns



Click General > Object Properties to set step patterns.

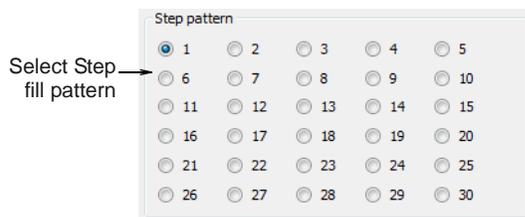
With Step fills you can select patterns formed by needle penetrations. The default Step pattern (No. 1) is designed to create a uniformly flat and smooth texture similar to a woven mat. See also [Decorative Stitching](#).



There are other preset patterns to choose from. Experiment to find the best pattern for your purpose. See [Step Fill Samples](#) for details.

To apply a step fill pattern

- ▶ Double-click or right-click a step fill object.
The **Object Properties > Fill Stitch > Step** dialog opens.



CHAPTER 9

DIGITIZING METHODS

In BERNINA Embroidery Software, you build designs from basic shapes or 'embroidery objects'. The process of creating embroidery objects on-screen is called 'digitizing'. Like creating designs in graphics applications, this involves the use of different digitizing tools or methods. These are used in conjunction with stitch types to create embroidery objects.

There are also tools for creating designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods.

This section describes how to digitize shapes with the main digitizing methods. It also explains how to adjust digitizing settings to obtain the best results.



Digitizing tools

Different **digitizing** methods or 'tools' are suited to creating different shapes or design elements. Digitizing methods divide broadly into two categories – outline and fill.

Like drawing objects, embroidery objects have certain defining characteristics or 'properties' such as color, size, position, and so on. They also have properties unique to embroidery such as stitch type and density. The most important property for an embroidery object is its stitch type. Different stitch types are suited to different shapes. See [Outline & Fill Stitching](#) for details.



Tip Drawing objects themselves can be converted to **embroidery objects** using Magic Wand. See [Auto-digitizing with Magic Wand](#) for details.

Selecting digitizing tools



Use Digitize > Open Object to digitize embroidery objects.



Use Digitize > Closed Object to digitize closed embroidery objects.



Use Digitize > Ellipse to digitize ellipse or circle embroidery objects.



Use Digitize > Rectangle to digitize rectangle or square embroidery objects. Press <Ctrl> to constrain.



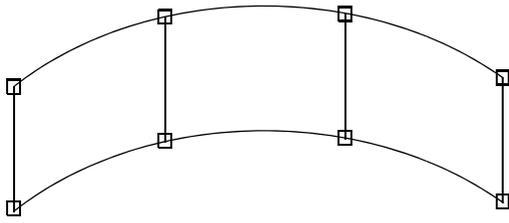
Use Digitize > Block to digitize columns with turning stitches.

Digitizing methods divide broadly into two categories – outline and fill. BERNINA Embroidery Software provides various tools with which to digitize shapes – **Open Object**, **Closed Object**, **Block**, **Ellipse**, and **Rectangle**. The **Open Object** tool is used to create outline shapes. The **Block Digitizing** tool is used to create columns of varying width and stitch angle. The **Closed Object**, **Ellipse**, and **Rectangle** tools are used to create filled or outlined shapes.

Reference points and reshape nodes

Once you have selected a **digitizing** tool, you digitize shapes by marking 'reference points' along an outline using the following conventions:

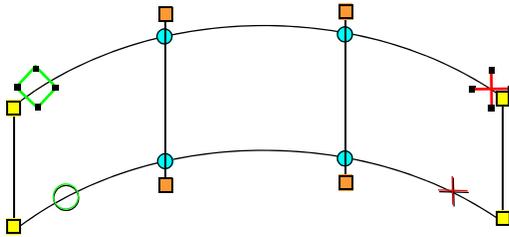
- ▶ Click to enter corner points.
- ▶ Right-click to enter curve points.



In general, you mark a reference point where:

- ▶ a curved outline changes curvature
- ▶ the outline has corners
- ▶ the outline changes from a straight line to curve.

The reference points you mark when digitizing become 'reshape nodes' during reshaping operations. Other **control points** associated with objects allow you to transform objects (rotate, skew, etc), scale (resize), adjust letter spacing, and change entry and exit points.



Reshape nodes are color-coded, corner points appearing as yellow squares, curve points as turquoise circles, and stitch angle points as orange squares. Object entry points are shown as green diamonds, exit points as red crosses. The start and end points of an entire design are indicated by a small green circle and small red cross respectively.

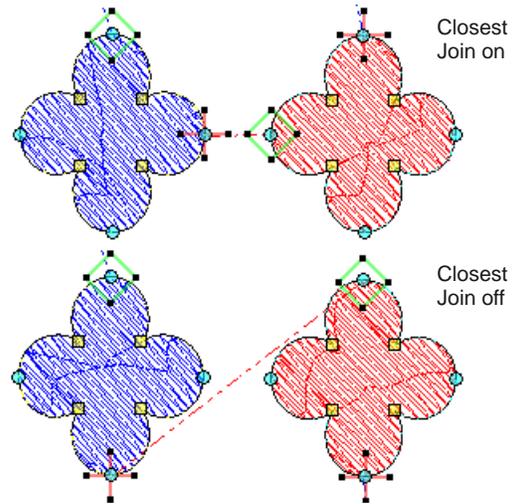


Note Most reshape nodes can be added, deleted, moved or changed to either corner or curve points. Some reshape nodes have a specific function and cannot be deleted – for example, the entry point marker. See also [Reshaping & Editing Objects](#).

Join methods

The **Closest Join** setting automatically calculates the closest join between objects while **digitizing** saving you having to think about entry and exit points. When activated (the default), all newly digitized objects are joined by this method. When deactivated, all newly digitized objects are joined by the **As Digitized** method. This means they are joined from the exit point of the last digitized object to the entry point of the new object. When Closest Join is off, you are able

to specify entry and exit points when digitizing closed objects. See [Setting general options](#) for details.



Object properties

Object properties are defined as you digitize, but they can be changed at any stage. When you create an embroidery object, you can accept the default settings for the particular digitizing method, or apply new ones. Default settings are stored in the design template. You can also define 'current' properties to influence all the objects you create in the current design. See [Properties, Fabrics & Templates](#) for details.

Digitizing regular shapes

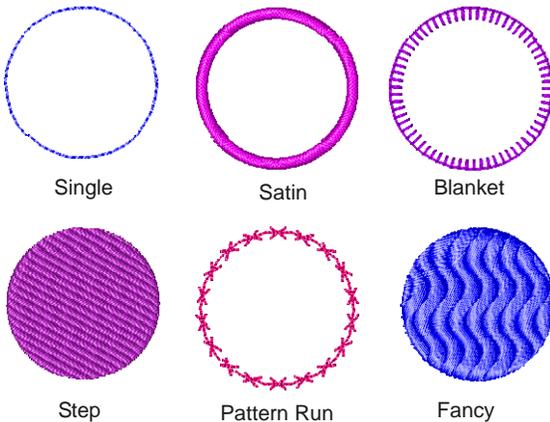
-  Use Digitize > Ellipse to digitize ellipse or circle embroidery objects.
-  Use Digitize > Rectangle to digitize rectangle or square embroidery objects. Press <Ctrl> to constrain.

BERNINA Embroidery Software provides digitizing tools for quickly creating regular shapes such as circles and squares, ovals and rectangles.

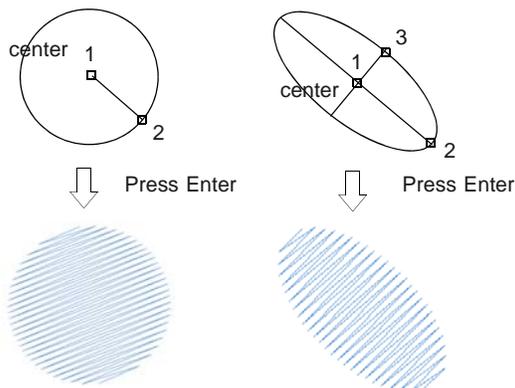
To digitize a regular shape

- ▶ Select an **Outline** or **Fill** stitch type. See [Selecting stitch types](#) for details.

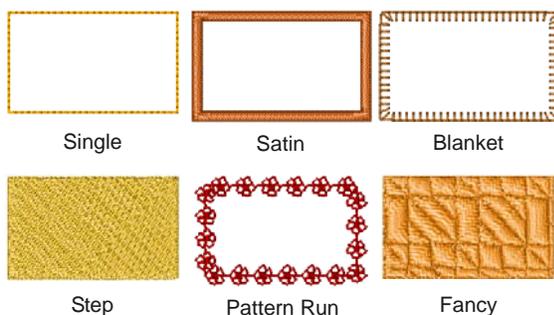
- ▶ Digitize circles and ovals with a few clicks of the **Ellipse** tool. Use any fill or outline stitch type.



- ▶ To digitize a circle or oval...
 - ▶ Click to mark the center.
 - ▶ Drag the pointer and click the radius reference point.
 - ▶ To create a circle, press **Enter**. To create an oval, mark a second radius point, and press **Enter**.



- ▶ Digitize squares and rectangles with a few clicks of the **Rectangle** tool. Use any fill or outline stitch type.



- ▶ To digitize a square or rectangle...
 - ▶ Click to mark a corner.

- ▶ Drag the pointer and click to define the opposite corner.



Tip To create a square, hold the **Ctrl** key down whilst dragging the pointer.

Digitizing complex shapes

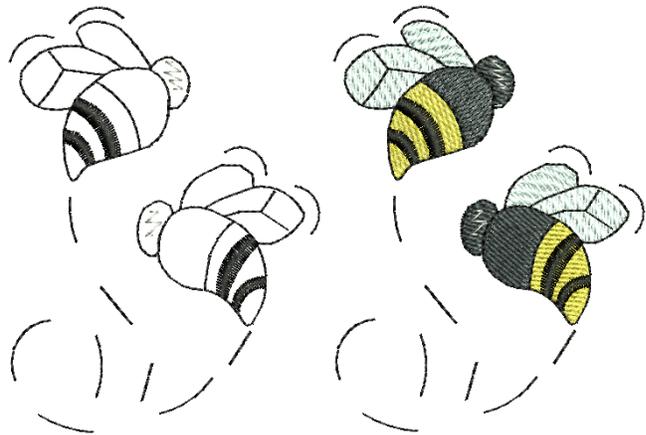
BERNINA Embroidery Software provides input tools for digitizing irregular shapes, both open and closed. Closed objects may use outline or fill stitch types.

Digitizing open shapes



Use Digitize > Open Object to digitize open shapes.

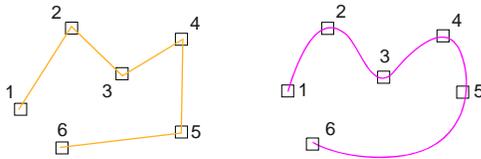
Use the **Open Object** tool to digitize open shapes of single/triple run, satin, blanket, patterned or craft stitching. **Open Object** places a row of stitches along a digitized line. This tool is typically used to add borders to designs.



To digitize an open shape

- 1 Select an outline stitch type. See [Outline & Fill Stitching](#) for details.
- 2 Click the **Open Object** icon.
- 3 Digitize the shape, by marking reference points around its outline.
 - ▶ Click to enter corner points.

- ▶ Right-click to enter curve points.

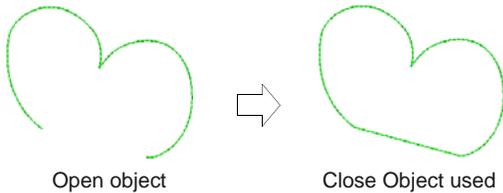


Tip Follow the prompts in the **Status Bar** to help you digitize. If you make a mistake, press **Backspace** to delete the last reference point, then continue adding reference points or press **Esc** to delete all the points so you can start again.

- 4 Press **Enter** to complete the shape.



Note If you decide to close the object, use the **Edit > Close Curve ...** commands with the option of using straight or curved points.

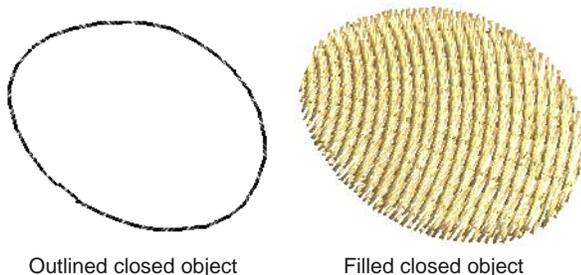


Digitizing closed shapes



Use **Digitize > Closed Object** to digitize closed shapes.

Digitize complex shapes with the **Closed Object** tool. Create objects using left and right clicks to mark reference points to form the boundary outlines.



To digitize closed shapes

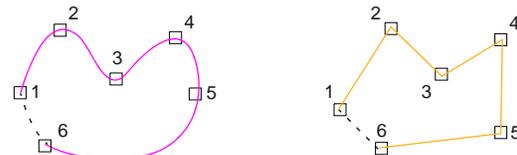
- 1 Select an outline or fill stitch type. See [Selecting stitch types](#) for details.
- 2 Select the **Closed Object** tool and digitize the boundary of the shape by marking reference points around its outline:
 - ▶ Click to enter corner points.
 - ▶ Right-click to enter curve points.



Tip Follow the prompts in the **Status Bar** to help you digitize. If you make a mistake, press **Backspace** to delete the last reference point, then continue adding reference points or press **Esc** to delete all the points so you can start again.

- 3 Close the shape.

- ▶ To close the shape with the same type of reference point as the last you digitized – i.e. corner or curve – simply press **Enter**.
- ▶ To close the shape using a different type of reference point, mark the last on top of the first and press **Enter**.

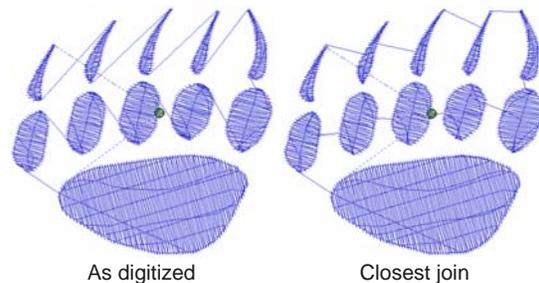


Objects are closed automatically

- 4 Repeat as many times as necessary to create more objects.



Note By default, objects are joined by the **Closest Join** method. If deactivated, all newly digitized objects are joined by the **As Digitized** method. This means you need to specify entry and exit points, following prompts in the **Status Bar**. See [Setting general options](#) for details. See also [Adjusting entry & exit points](#).



- 5 Press **Esc** to deselect the tool.

Digitizing columns of turning stitches



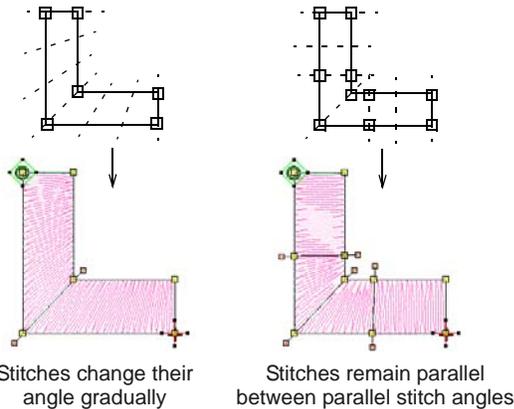
Use **Digitize > Block** to digitize columns with turning stitches.

Use the **Block Digitizing** tool to digitize columns of varying width and stitch angle. Digitized pairs of reference points define the outline, while lines connecting the pairs define the stitch angles.

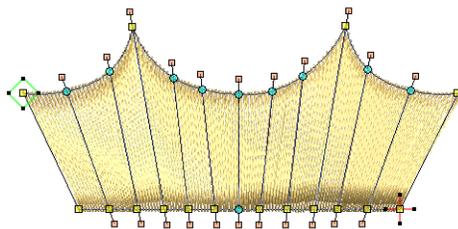
To digitize a column of turning stitches

- 1 Select a **Fill** stitch type. See [Outline & Fill Stitching](#) for details.
- 2 Click the **Block Digitizing** icon.
- 3 Digitize the column by marking reference points on alternate sides of the column.
 - ▶ Click to enter corner points.
 - ▶ Right-click to enter curve points.

Mark a pair of points wherever the outline changes, and wherever you want the stitch angle to change.



Tip The reshape nodes in a pair do not have to be the same type. For example, one can be a corner point, the other a curve.



Mixed curve and corner control points within the same pair



Tip If you make a mistake, press **Backspace** to delete the last reference point, then continue digitizing.

- 4 Press **Enter** to complete.
- 5 Repeat as many times as necessary to create more objects.

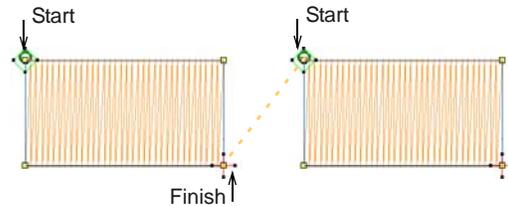
By default, objects are joined by the **Closest Join** method. If deactivated, all newly digitized objects are joined by the **As Digitized** method. This means you need to specify entry and exit points, following prompts in the Status Bar. See [Setting](#)

other general options for details. See also [Adjusting entry & exit points](#).

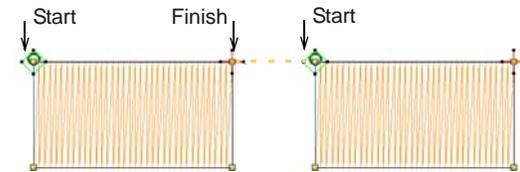


Tip If you are using the **As Digitized** method, you can choose whether to omit or include the last stitch. For example, if joining two objects, keep or omit the last stitch so that the exit point is close to where you begin the next object.

- ▶ Press **Enter** to **keep** the last stitch and place the exit point at the last reference point you marked.



- ▶ Press **Spacebar** to **omit** the last stitch and place the exit point on the opposite the last reference point you marked.



- 6 Press **Esc** to deselect the tool.

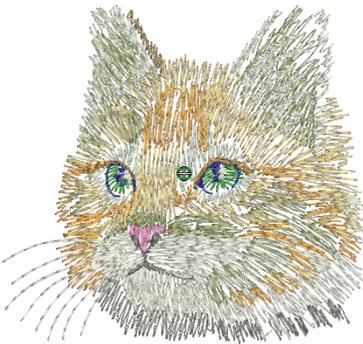
Creating freehand embroidery

The **Freehand Embroidery** feature provides functionality similar to CorelDRAW® **Freehand** and **Polyline** tools. This is a technique that lets you create designs with a hand-drawn appearance, something which is difficult to achieve through conventional digitizing methods. The aim is to mimic designs formed on an embroidery machine by freehand motion. The difference is that the fabric secured in an

embroidery hoop, allowing the needle to 'draw' on the fabric surface, exactly as you have drawn on-screen.



Other techniques include stitching on top of photographic images or detailed line drawings. For example, use the tools to manually trace a color photo-stitch design. This technique requires accuracy and control of corners, similar to the CorelDRAW® **Polyline** tool.



Alternatively, designs resembling pencil or charcoal sketches can be quickly digitized. Use the tools to create 'doodle' type drawing effects without following detailed artwork – for example, adding to a basic clipart design or decorative text and so on.



Creating freehand shapes



Use Digitize > Open Freehand to draw embroidery outlines onscreen in the current stitch type.



Use Digitize > Closed Freehand to draw closed embroidery objects onscreen in the current stitch type – outline or fill.

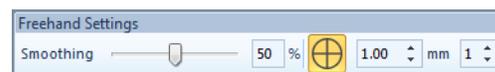
The **Freehand Embroidery** feature is deployed in two forms: 'Open Object' and 'Closed Object'. As with other digitizing tools, freehand tools can be used in conjunction with all stitch types currently available. With these tools, however, you draw objects directly on screen and, in the case of outline objects, view a stitch simulation as you draw. It is thus possible to produce artistic effects similar to free-motion machine embroidery or 'thread painting'. Use the feature to preview designs you have in mind before attempting to sew them out manually. Alternatively, once designed on screen, sew them out automatically.



Tip The **Freehand Embroidery** tools can be operated with a mouse or WACOM pen.

To create freehand shapes

- ▶ To create freehand objects, select a **Freehand** tool.
- ▶ Select a color from the **Color Palette** and any of the available stitch types.
The full range of outline stitches is available for use and, with the **Closed Freehand** tool. Most fill stitch types as well.
- ▶ Choose the preferred cursor style, and pre-set a smoothing factor to determine how closely to follow the digitized line. See [Adjusting freehand line smoothness](#) for details.

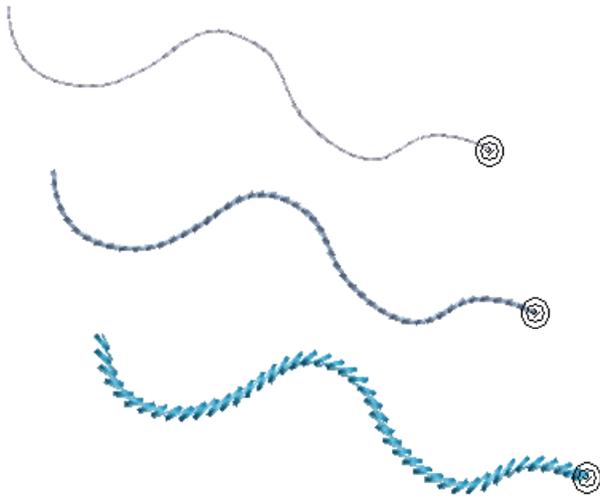


Set smoothing preference

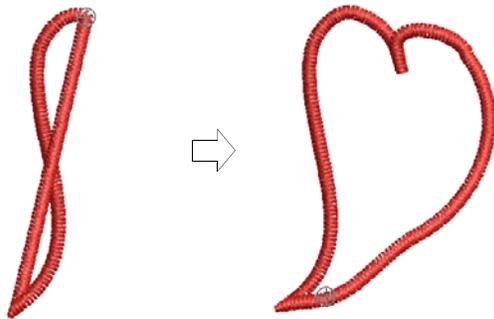
Choose cursor style

- ▶ Click and drag to draw. Release to finish.

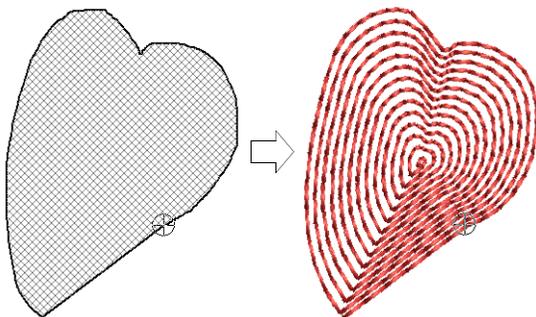
BERNINA Embroidery Software displays the stitches as you drag.



- ▶ To create closed objects, select the **Closed Freehand** tool.
- ▶ If an **Outline** stitch is selected, a 'rubber band' encloses the shape.



- ▶ If a **Fill** is selected, a wireframe 'mesh' is displayed as you drag.



- ▶ Release the mouse button.
BERNINA Embroidery Software closes and smooths the object outline.



Tip Combined with the **Satin** stitch **Calligraphy** setting, **Open Freehand** can be used to create embroidered calligraphy. For best results, a wider satin width and more layers than the default may be required. See also [Creating satin outlines](#).



Thick-thin calligraphy effect

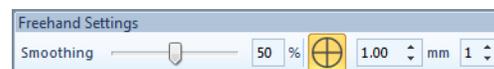
Adjusting freehand line smoothness

- ▶ Use Digitize > Open Freehand to draw embroidery outlines onscreen in the current stitch type.
- ▶ Use Digitize > Closed Freehand to draw closed embroidery objects onscreen in the current stitch type – outline or fill.

The **Freehand Embroidery** tools have a special cursor. This is designed to provide a spacing guide as you use the tools. The number and spacing of the concentric circles is controlled by the **Freehand Settings** toolbar. This toolbar can be docked or floating.

To adjust freehand line smoothness

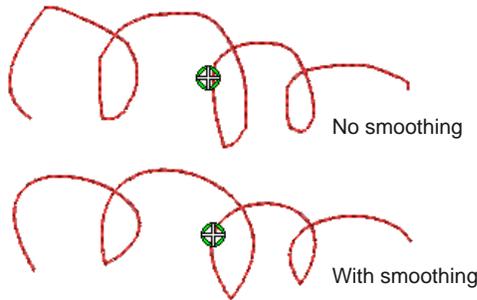
- ▶ Create a freehand design using outline and/or filled objects. See [Creating freehand shapes](#) for details.



- ▶ Adjust the 'smoothness' of your freehand lines by means of the **Smoothing** controls.

The toolbar contains a **Smoothing** control which lets you specify, as a percentage, how closely the smoothed outline follows the original. By adjusting the percentage, you increase or decrease the

number of **control points** BERNINA Embroidery Software uses to define an embroidery shape.



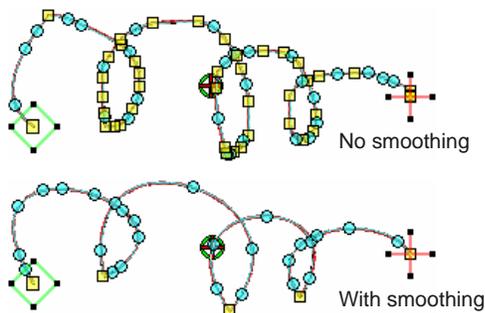
the **Shift** key, the edited path is joined with a straight line to the mouse position.



- ▶ Toggle display of the freehand cursor guide as required:

Tool	Note
	Use Show Guide to toggle freehand digitizing guide cursor – provides more control over 'freehand' drawing than the default pointer.
	Use the Guide Inner Circle Radius control to define the size of the center circle of the freehand digitizing guide.
	Use the Number of Guide Circles control to set the number of circles in the freehand cursor – if the inner circle radius is 2mm, each additional guide circle is offset by 2mm.

- ▶ You can view and edit the **control points** generated by **Freehand Embroidery** tools in **Reshape** mode.



- ▶ If you want to erase a portion of a line, press and hold the **Shift** key while dragging backward over the line before releasing the mouse. On releasing

- ▶ Alternatively, press the **Backspace** key. The last point digitized is removed.
- ▶ Release the mouse to finish the outline at the last point digitized. Or press **Esc** to cancel input of the object.

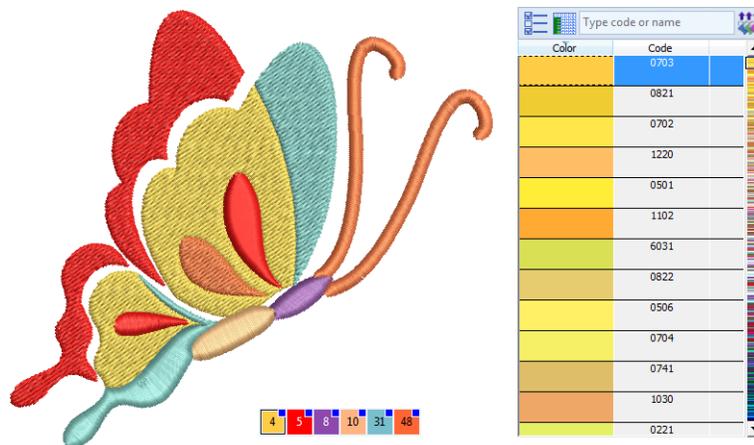


Note Objects created using the **Freehand Embroidery** tools can be reshaped in the same way as objects created via conventional methods by selecting the object and clicking the **Reshape Object** tool in the **Transform** toolbar.

CHAPTER 10

THREAD COLORS & CHARTS

When you digitize, you select thread colors for each object you create from the Color Palette in the design window. The palette contains a selection of thread colors tailored to each design. This color scheme represents the actual threads in which the design will be stitched.



You can select colors from commercial thread charts containing a range of colors from different manufacturers. To save time when setting up new color schemes, you can create your own thread chart using your favorite or most frequently used colors. In BERNINA Embroidery Software you can search for particular threads by criteria. Even match threads automatically from selected charts to colors in your design.

This section describes how to select colors from the Color Palette as well as how to assign threads to the colors in your design. How to modify thread charts is also covered, as well as creating custom thread charts.

Changing thread colors

BERNINA Embroidery Software provides various techniques to selecting and changing colors individually or across entire designs.



Note Due to the differences in computer monitors and computer video cards, the approximate colors displayed should be used only as guides. Threads should always be matched to the appropriate physical color card.

Selecting thread colors



Use Color Palette > Color Picker to pick up a color from an existing object and make it current.



Use Color Palette > Apply Current Color to apply the currently selected palette color to embroidery objects.



Use Color Palette to set current color.



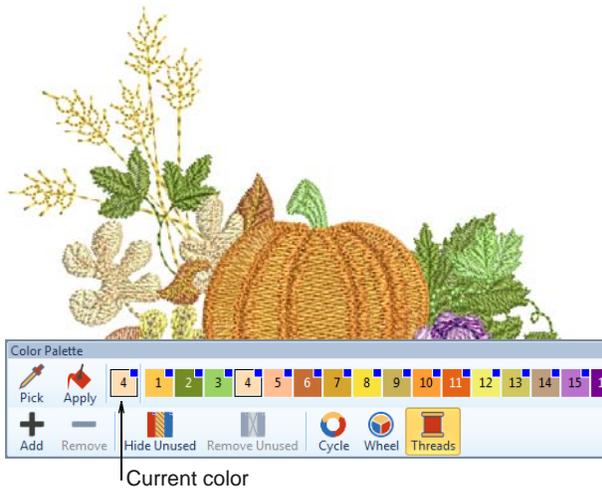
Use Color Palette > Add Palette Color to add a color to the end of the color palette.

-  Use Color Palette > Remove Palette Color to remove an unused color from the end of the color palette.
-  Use Color Palette > Hide Unused Colors to show or hide all unused colors in the color palette.
-  Use Color Palette > Remove Unused Colors to remove all unused colors from the color palette.

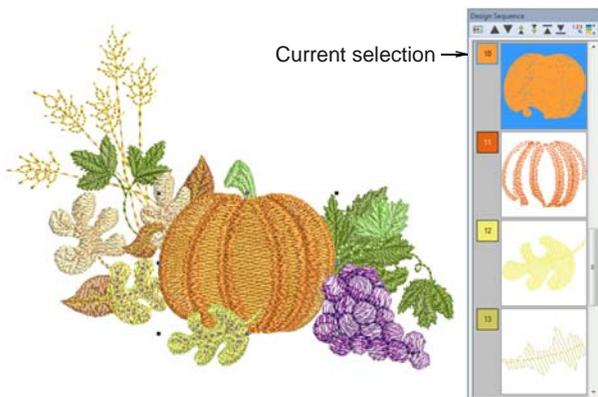
New objects are digitized using the current color on the **Color Palette**. You can change colors at any time. Used colors are tagged with a blue dot.

To select thread colors

- ▶ Deselect all objects. The currently selected (default) color is shown on the toolbar.

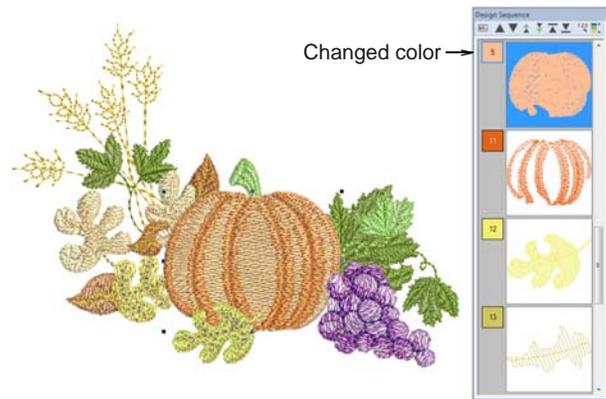


- ▶ Hover the mouse pointer over a color to view its brand, code and description in a tooltip.
- ▶ Click a color in the **Color Palette** to make it current. Alternatively, pick colors from existing objects with the **Color Picker** tool.
- ▶ Select object/s you want to recolor. Alternatively, select a color block in the **Color Film**.



- ▶ Select a color from the **Color Palette**. Alternatively, transfer colors to other objects with the **Apply Current Color** tool.

The selected objects change color accordingly. Used colors are tagged with a blue marker.



- ▶ Use the controls to hide or remove unused colors from palette.
- ▶ Use the +/- buttons to add or remove colors.

Changing color schemes

-  Use Color Palette > Cycle Used Colors to cycle through combinations of used colors. Right- or left-click.
-  Use Color Palette > Color Wheel to access Color Wheel to test combinations of related colors.

The **Color Wheel** allows you to try out and change entire color schemes. The main purpose of the tool is to create a new 'colorway' quickly and easily in order to 'spice up' old designs or place them on a different fabric.

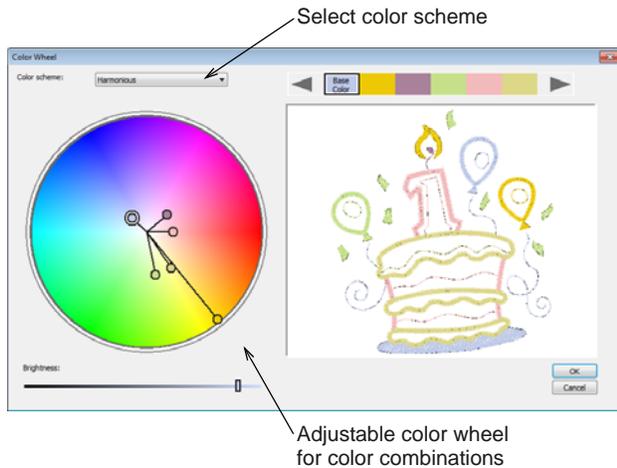
To change color schemes

- ▶ Use the **Cycle Used Colors** tool to try out different combinations using available threads.

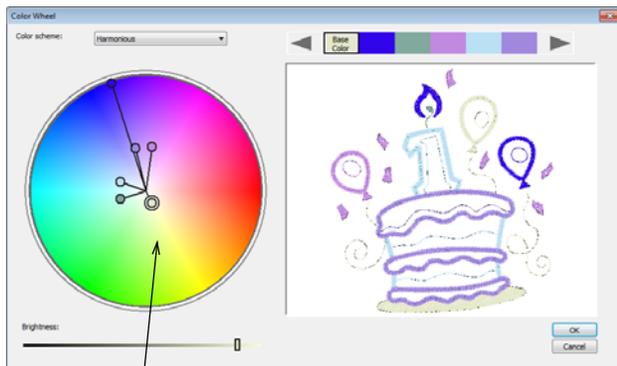


- ▶ Alternatively, select **Color Wheel** from the palette. This allows you to cycle through many color combinations using preset color schemes including

Analogous, Complementary, Harmonious, etc.



- ▶ Click and drag the 'base color' node to try out different combinations within the same **colorway**.



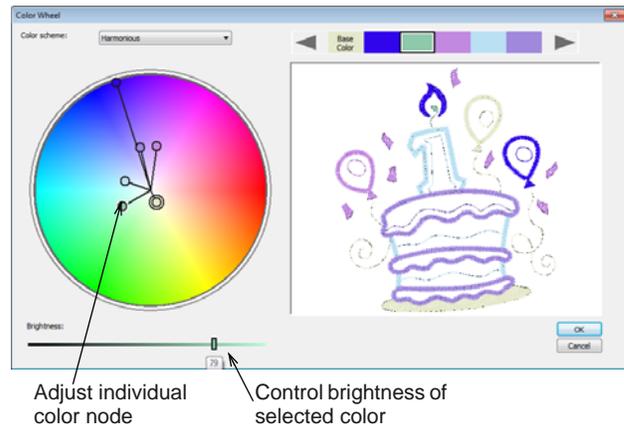
Click and drag base color node to adjust all



Note The base color nominally relates to the target fabric.

- ▶ Click and drag individual color nodes to adjust.

- ▶ Use the **Brightness** control further adjust selected colors.



- ▶ To adjust the brightness of the entire design, select the base color node and adjust the **Brightness** control.
- ▶ Click **OK** to apply changes.

The design updates to reflect the new color scheme.



Note If you have sufficient colors already defined in the color chart, they will be automatically matched.

- ▶ If you need to match and assign thread colors, you can do so manually or use the **Match & Assign All** function. See [Matching threads](#) for details.

Assigning thread colors

Typically you will want to assign actual thread colors to the **Color Palette** in these instances...

- ▶ When you convert vector graphics in **Graphics** mode, colors are appended to the color palette as RGB values which can be matched to actual threads.

- ▶ When you auto-digitize a bitmap and want to match RGB values to actual threads.
- ▶ If you read a machine file, color information will be appended to the **Color Palette**. Again, you can match these colors to actual threads.
- ▶ If you receive a design which uses colors from a thread chart you don't have, you can match them to a preferred thread chart.

In BERNINA Embroidery Software you can search for particular threads manually by various criteria and assign them. Thread color matching lets you find and change thread colors in one or several charts, based on closest match.



Tip The **Thread Colors > Print** option allows you to print the thread list in the current thread chart as a shopping reference when purchasing threads. See [Printing thread charts](#) for details.

Matching threads

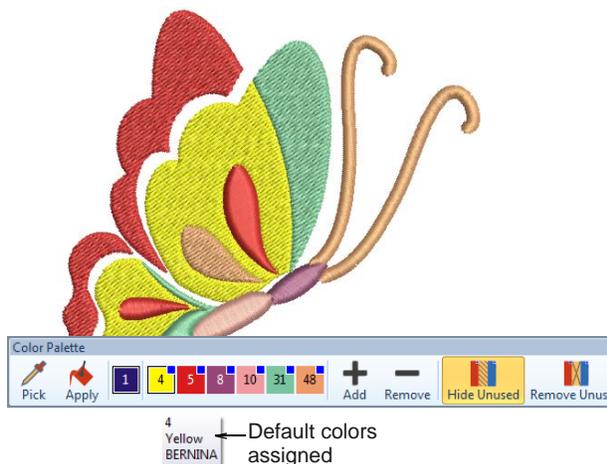


Use Color Palette > Thread Colors to search for and match threads from different charts, and assign for use. Right-click to access Design Properties > Thread Colors summary tab.

Use the **Match All** command to match design colors to threads in a selected thread chart.

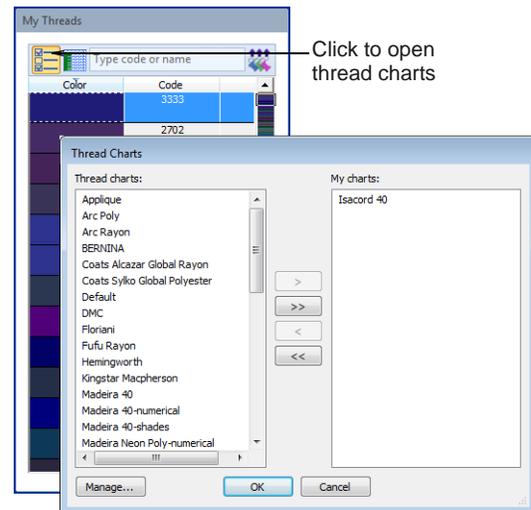
To match threads

- 1 Open a design.
The design below has been auto-digitized. Color slots have been assigned default BERNINA colors.

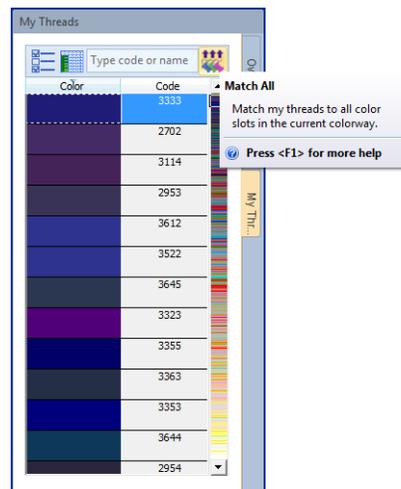


- 2 Click the **Thread Colors** icon. The **My Threads** docker opens.

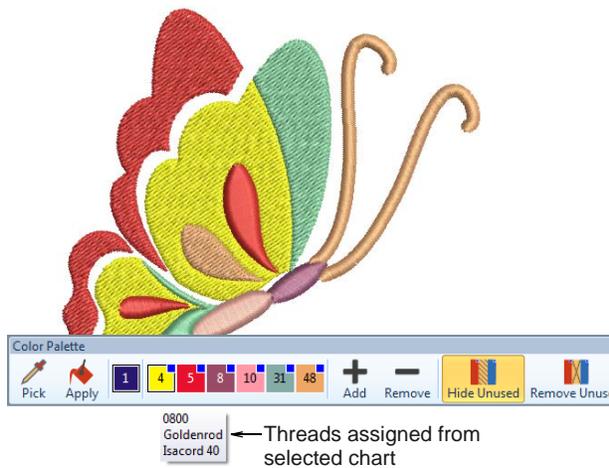
- 3 Click the **Thread Colors** button to access the thread chart listing.



- 4 Choose the chart or charts you want to match and click **OK**.
- 5 Click the **Match All** button in the **My Threads** docker.



- 6 Check the thread assignments in the **Color Palette** by hovering the pointer over the slots.



Searching & assigning threads



Use Color Palette > Thread Colors to search for and match threads from different charts. Right-click to access Design Properties > Thread Colors summary tab.

You can search for a thread by code or description and assign it to a selected design color slot. The supplied charts represent the brands of threads that BERNINA Embroidery Software supports. Each chart has a range of colors associated with it. The code, brand and description of each color is displayed so that you can easily find them in a craft or sewing shop. You can select colors by shade or by number. Select the thread chart for the brand of thread you have at home or just select a chart which has colors you like.

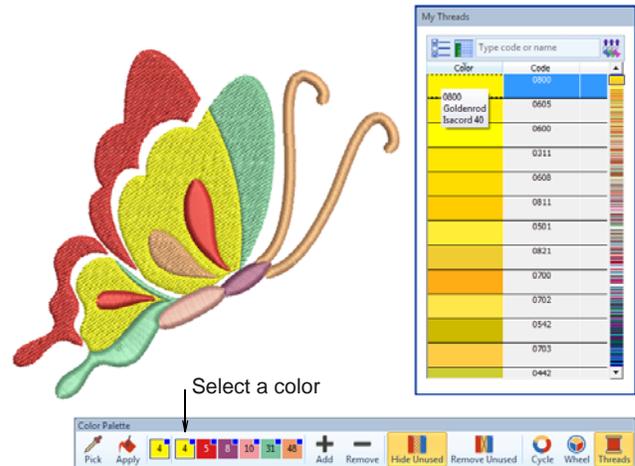


Note You can also create your own thread charts, even charts which include threads from different makers. See also [Creating charts](#).

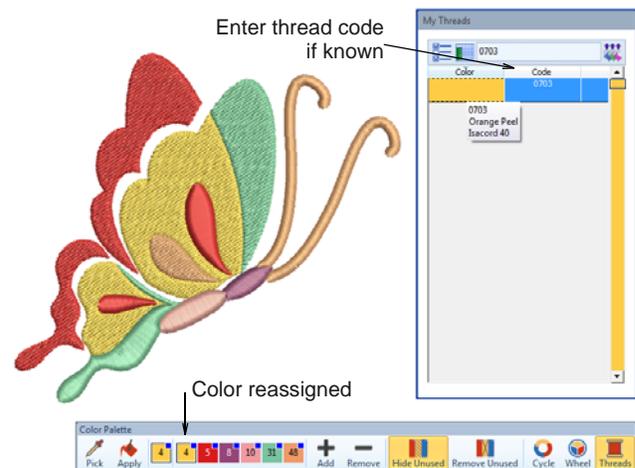
To search and assign a thread

- ▶ Deselect all objects. The currently selected (default) color is shown on the toolbar.
- ▶ Click the **Thread Colors** icon. The **My Threads** docker opens.

- ▶ Click a color in the **Color Palette** to make it current. The **My Threads** list updates accordingly.

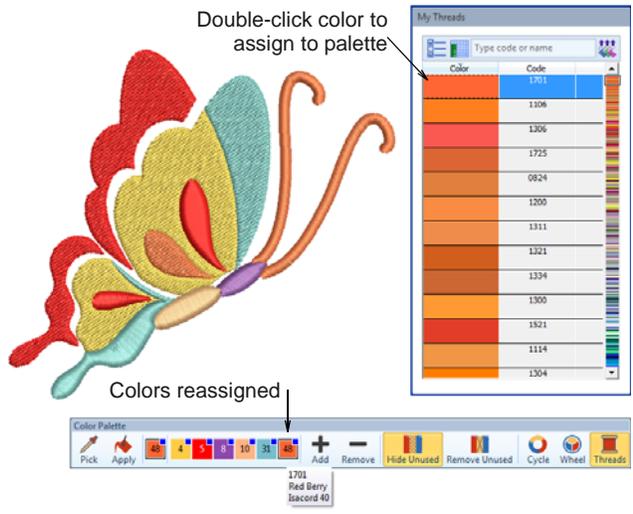


- ▶ Use the scrollbar to look for a suitable thread.
- ▶ Alternatively, in the **Search** field, enter the first few characters of the required code or name. The code is the identification number of a thread color in a brand. The system searches for the closest match and displays it in the thread color list.



- ▶ Once you've found a suitable thread, double-click to assign to the selected color slot.

- ▶ Continue to assign other threads as desired.



Note Selected color settings only apply to the current design and are part of the 'design properties'. As such they are saved with the design.

Managing thread charts

Thread charts in BERNINA Embroidery Software represent the many different brands and colors of thread available. They may not always be accurate because thread manufacturers often change, delete, and add new colors to their lines. For this reason, you can update charts as necessary.

Tip The **Thread Colors > Print** option allows you to print the thread list in the current thread chart as a shopping reference when purchasing threads. See [Printing thread charts](#) for details.

Updating existing charts

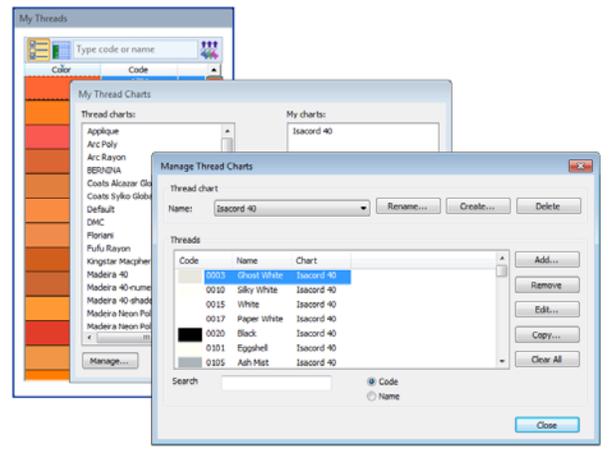
Use Color Palette > Thread Colors to search for and match threads from different charts, and assign for use. Right-click to access Design Properties > Thread Colors summary tab.

You may want to remove obsolete threads from a thread chart, rename a thread chart, or delete obsolete thread charts altogether.

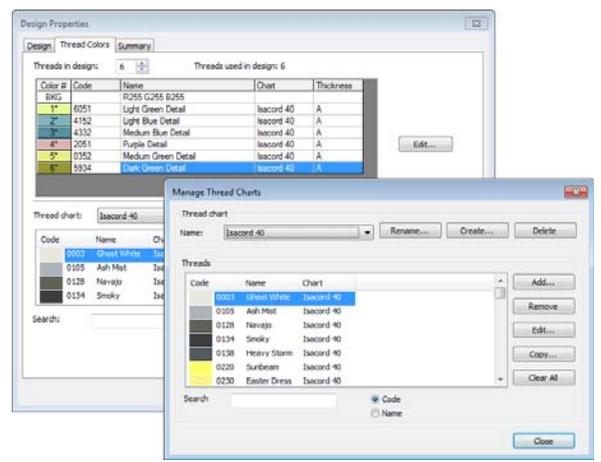
Note Be careful when deleting thread charts. If you delete the wrong chart you will need to reinstall BERNINA Embroidery Software to restore it.

To update an existing chart

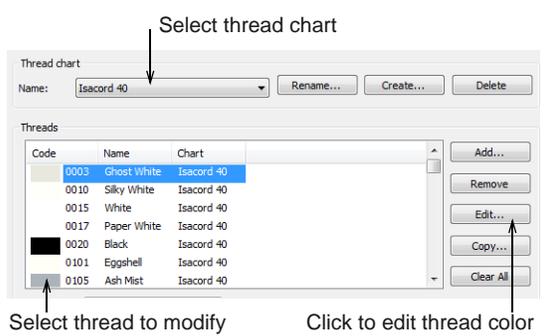
- ▶ Select **Design > Thread Colors** or click the button in the **My Thread Charts** dialog. The **Manage Thread Charts** dialog opens.



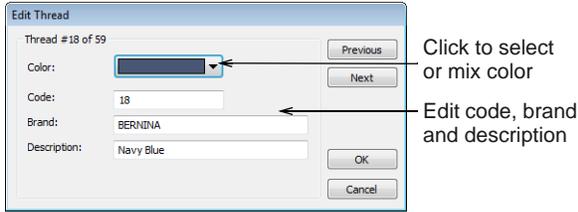
Tip You can also access the **Manage Thread Charts** dialog via **Design Properties > Thread Colors**. See also [Viewing design properties](#).



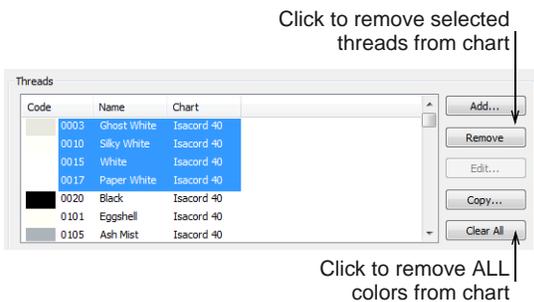
- ▶ From the **Name** list, select the chart to modify.
- ▶ In the **Threads** list, select the thread to modify.



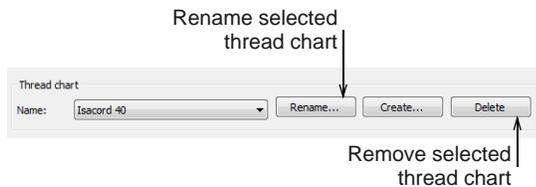
- ▶ Click **Edit**. The **Edit Thread** dialog opens.



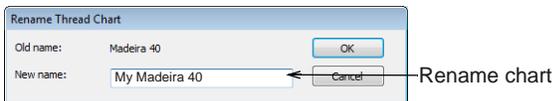
- ▶ Edit the color, code, brand, and description details for the thread as required. Code is the identification number of a thread color in a brand.
- ▶ Optionally, select the thread (or threads) to remove. Use **Shift** and **Ctrl** keys to select multiples.



- ▶ Click **Remove** to remove selected threads from the chart. Click **Clear All** to remove everything.



- ▶ Optionally, click **Rename** to change the thread chart name. Use names that will help you remember or sort frequently used charts to the top of the list.



- ▶ Optionally, click **Delete** to remove a selected thread chart altogether. Be careful. If you delete the wrong chart you will need to reinstall BERNINA Embroidery Software to restore it.

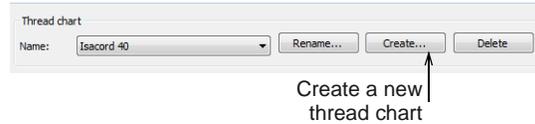
Creating charts

When you create a thread chart, you are creating a store of colors to use in your designs. For instance, you may want to create a chart consisting of threads you already have in your collection. This may include multiple brands of threads. Having a pre-sorted list in your own custom thread chart makes it easier to

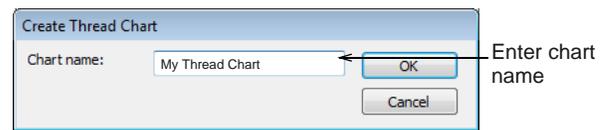
match and replace design colors with your available threads.

To create a new chart

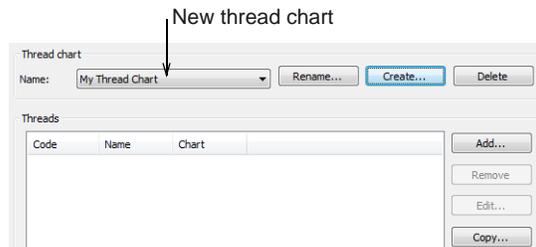
- ▶ Select **Design > Thread Colors** or click the button in the **My Thread Charts** dialog. The **Manage Thread Charts** dialog opens.



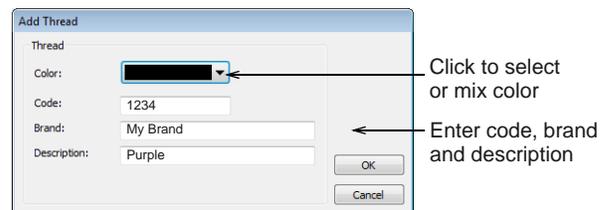
- ▶ Click **Create**. The **Create Thread Chart** dialog opens.



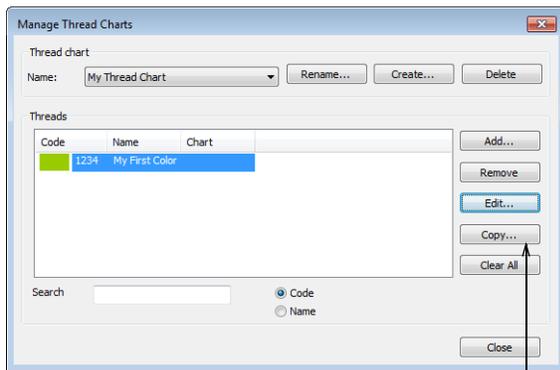
- ▶ Enter a name for the chart and click **OK**.



- ▶ Click **Add**. The **Add Thread** dialog opens.

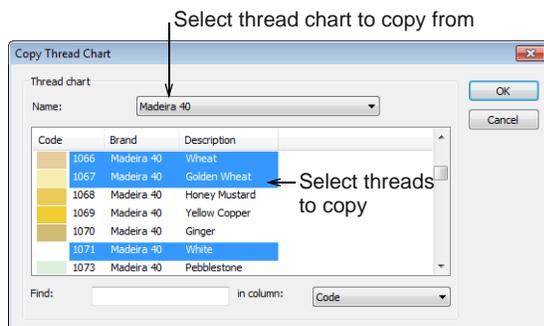


- ▶ Enter color, code, brand, and description details for the thread as required. Code is the identification number of a thread color in a brand.

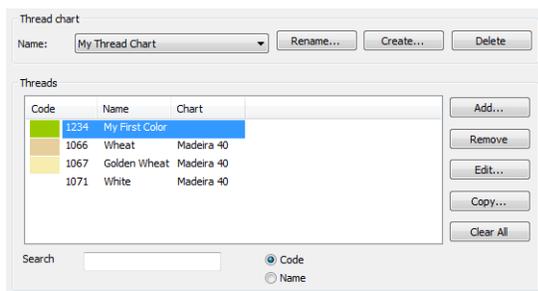


Click to copy from other chart

- ▶ Optionally, click **Copy**. The **Copy Thread Chart** dialog opens.



- ▶ Select the source chart and select the colors you want to copy. Use **Shift** and **Ctrl** keys to select multiples.
- ▶ Click **OK**. The colors are copied to the thread chart, and appear at the bottom of the list.



- ▶ Click **Close**. The new chart is created and ready for use.

CHAPTER 11

PROPERTIES, FABRICS & TEMPLATES

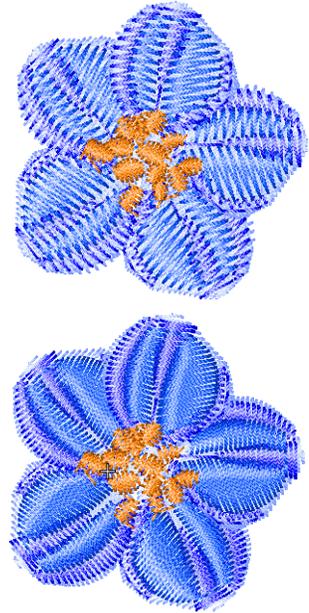
The properties of embroidery objects define general characteristics such as size and position, as well as embroidery-specific characteristics such as stitch type and density. The particular stitch settings determine how stitches will be regenerated when you reshape, transform or scale an object.

When you create an embroidery object, you can accept default settings for the particular digitizing method, or apply new ones.

BERNINA Embroidery Software provides a set of customized fabric settings so that the software will take into account the type of fabric you are stitching on.

Templates are special files used to store default settings. Use templates when digitizing frequently-used design types so that you do not have to set the current properties every time.

This section explains how to change the object properties in your design, as well as how to apply fabric settings. It also explains how to create and maintain templates in BERNINA Embroidery Software.



Working with object properties

BERNINA Embroidery Software stores three sets of **object properties**: **default**, **current** and **existing**.



Note Some object properties can be modified on-screen; for example, you can change the size properties by scaling the object with the selection handles. Other properties, such as stitch spacing or length, are modified in the **Object Properties** dialog.

Default object properties

Default object properties are the properties stored in a design template and become the starting settings used when creating a new design based on that template.

Current object properties

Current object properties are the settings used to create new objects. Unless you change these settings,

they remain the same as the template defaults. You generally change them to save time when **digitizing**. For example, you may preset the Step stitch spacing setting to use a specific density for all new Step objects you create.



Note The change affects new objects in the design, not the template itself. To apply changes to all new designs based on the current template, you need to change the **default** – not the **current** – properties.

Properties of existing objects

Properties of **existing** objects are the settings stored with each object in the design.

Setting current object properties



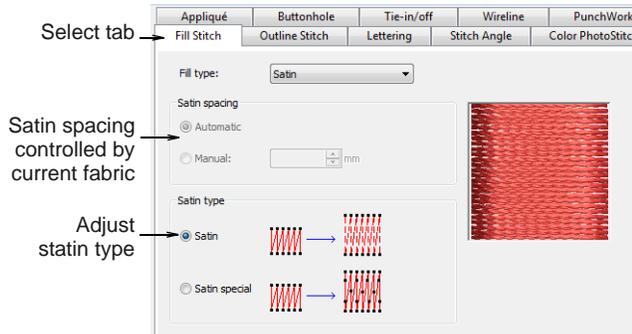
Use General > Object Properties to set current properties.

When you change **current object properties**, the new settings automatically apply to any objects subsequently created in the current design.

To set current object properties

- 1 Click the **Object Properties** icon with no object selected.

The **Object Properties** dialog opens. Tabs provide access to all possible object properties.



- 2 Click a tab to view current settings, and update as required.



Note Not all settings are available for update. Any defined by the current **fabric** cannot be overridden, except for selected objects.

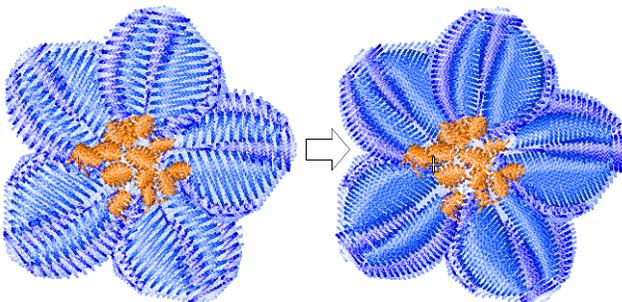
- 3 Click **Apply**.

Changing properties of selected objects



Use General > Object Properties to set current properties.

You can change the properties of selected object/s. For example, if you make a design bigger, you may want to stitch some objects with **Step** fill instead of **Satin** fill for better coverage. If you select more than one object, the **Object Properties** dialog will only display tabs that include relevant settings for **all** selected objects.



If selected objects have different current values for the same setting, the field will be blank. If you enter a new value, it will apply to all objects.



Note Changing the properties of existing objects does **not** affect the current or default settings, nor the properties of any objects **not** currently selected.

To change properties of selected objects

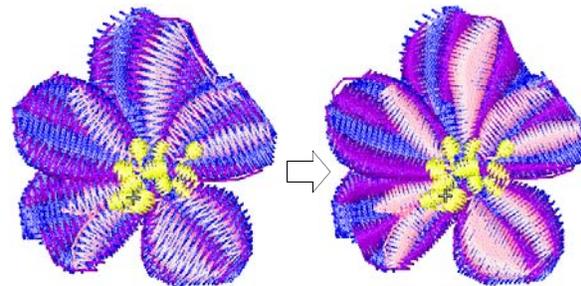
- 1 Select the object/s whose properties you want to change.
- 2 Double-click or right-click the object/s.
The **Object Properties** dialog opens.
- 3 Select the tab you want and change the settings as required.
- 4 Click **Apply**.

Changing default object properties



Use General > Object Properties to set current properties.

You can change default **object properties** at any time by saving the properties of the object you are working with to the current template. Only settings relevant to that object are saved. Other properties retain their current settings. For example, if you make the properties of a selected Satin object the default, the default Fancy Fill settings will not change. While saving changes to the template, you can choose whether settings will relate to lettering objects only, other types of objects, or both.

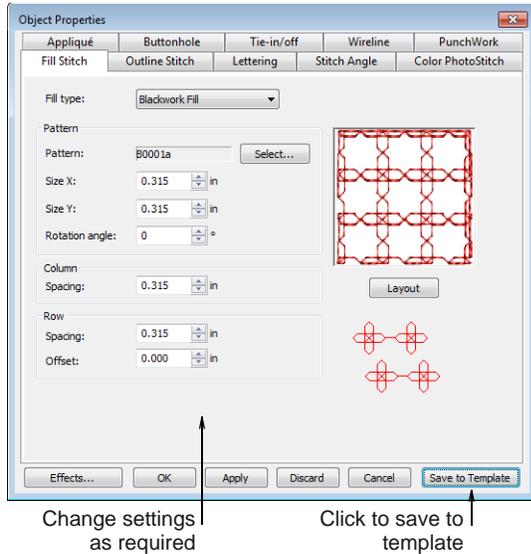


Note The change affects all new designs created using this template. If you only want the changes to apply to the design you are working in, change the **current** – not the **default** – properties. See **Setting current object properties** for details.

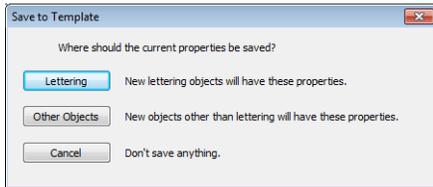
To change default object properties

- 1 Select the object/s on which you want to base the defaults.
- 2 Double-click or right-click the object/s.

The **Object Properties** dialog opens.

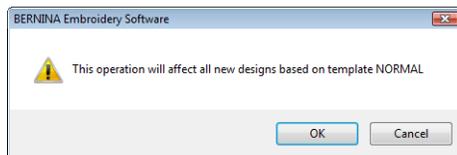


- 3 Select the tab you want and change the settings as required.
- 4 Click **Save To Template**.
The **Save To Template** dialog opens.



- 5 Select the required option:
 - ▶ **Lettering**: only new lettering objects will be affected by changed settings.
 - ▶ **Other Objects**: only new objects other than lettering will be affected.
 - ▶ **All objects**: all new objects will be affected by changed settings.

A confirmation message appears.



- 6 Click **OK** to update the template.

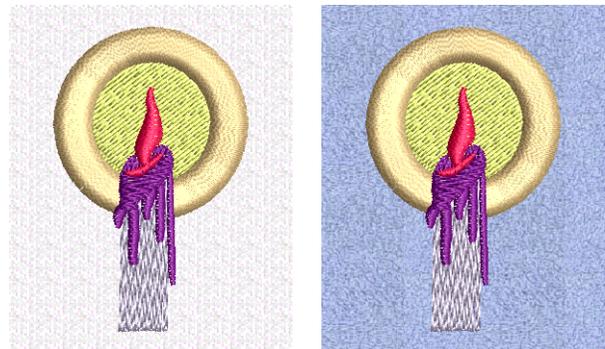
The object properties are saved to the current template and will apply to any new objects of the specified type based on this template.



Note You can also create a new template using modified object properties as defaults. See [Working with design templates](#) for details.

Working with fabrics

Embroidery stitches pull fabric inward where the needle penetrates. This can cause fabric to pucker, and gaps to appear in the embroidery. For an object to sew out correctly, it must have correct **stitch spacing**, sufficient **pull compensation** together with a suitable underlay for the combination of cover stitch type, object type, object shape and fabric. BERNINA Embroidery Software provides a set of customized fabric settings so that the software will take into account the type of fabric you are stitching on.



Fabrics are a critical element of designs and are controlled separately from **template** values. Fabric settings are fewer in number than those contained in templates. Templates set global values for designs but each design requires its own fabric settings which are saved with the design.

Stitch settings

Stitch settings for different fabric types are summarized in the table below.

Fabric	Step		Satin	Underlay:	Layer 1		Layer 2		Pull
	Length	Spacing	Auto spac.		St. len.	St. spac.	St. len.	St. spac.	
F1 Knit Light Weight									
Lettering			92%	Center Walk	2.2				0.25
Narrow Satin			90%	Center Walk + Edge Walk	2.2		2.0		0.25

Fabric	Step		Satin Auto spac.	Underlay:	Layer 1		Layer 2		Pull comp.
	Length	Spacing			St. len.	St. spac.	St. len.	St. spac.	
Wide Satin			90%	Edge Walk + Zigzag	2.0		5.0	3.0	0.25
Step	4.0	0.4		Step	3.0	2.0			0.2
F2 Knit Medium Weight									
Lettering			92%	Center Walk	2.2				0.25
Narrow Satin			90%	Center Walk + Edge Walk	2.2		2.0		0.25
Wide Satin			90%	Edge Walk + Zigzag	2.0		5.0	3.0	0.25
Step	4.0	0.4		Step	4.0	2.5			0.2
F3 Knit Heavy Weight									
Lettering			92%	Center Walk	2.2				0.35
Narrow Satin			90%	Edge Walk + Zigzag	2.0		5.0	3.0	0.35
Wide Satin			87%	Edge Walk + Double Zigzag	2.0		12.7	5.0	0.35
Step	3.8	0.35		Step	4.0	2.5			0.25
F4 Terry Medium Weight									
Lettering			92%	Center Walk	2.2				0.25
Narrow Satin			90%	Edge Walk + Zigzag	2.0		5.0	3.0	0.25
Wide Satin			90%	Edge Walk + Double Zigzag	2.0		12.7	5.0	0.25
Step	4.0	0.35		Step + Step	4.0	3.5	4.0	3.5	0.25
F5 Terry Heavy Weight									
Lettering			92%	Center Walk	2.2				0.25
Narrow Satin			90%	Edge Walk + Zigzag	2.0		5.0	3.0	0.25
Wide Satin			90%	Edge Walk + Double Zigzag	2.0		12.7	5.0	0.25
Step	4.0	0.35		Step + Step	4.0	3.5	4.0	3.5	0.25
F6 Woven Light Weight									
Lettering			117%	Center Walk	2.2				0.2
Narrow Satin			108%	Edge Walk	2.0				0.2
Wide Satin			100%	Edge Walk + Zigzag	2.0		5.0	5.0	0.25
Step	4.2	0.5		Step	4.2	5.0			0.4
F7 Woven Medium Weight									
Lettering			90%	Center Walk	2.0				0.2
Narrow Satin			90%	Center Walk	2.0				0.2
Wide Satin			90%	Edge Walk + Zigzag	2.0		3.6	2.0	0.2

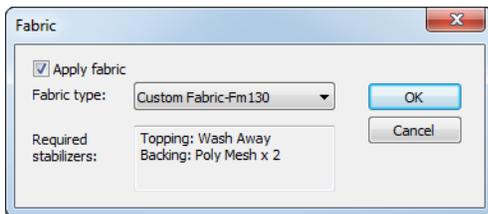
Fabric	Step		Satin	Underlay:	Layer 1		Layer 2		Pull comp.
	Length	Spacing	Auto spac.		St. len.	St. spac.	St. len.	St. spac.	
Step	4.0	0.4		Edge Walk + Step	2.0		3.6	2.0	0.2
F8 Woven Heavy Weight									
Lettering			98%	Center Walk	2.2				0.2
Narrow Satin			96%	Center Walk + Edge Walk	2.2		2.0		0.2
Wide Satin			92%	Edge Walk + Double Zigzag	2.0		12.7	5.0	0.2
Step	4.0	0.4		Step	4.0	2.5			0.17

Changing fabrics

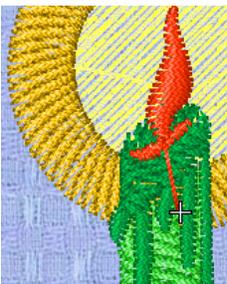
Normally you choose a **fabric** when you first set up a design although you can change it at any stage. Fabric settings affect all object types other than lettering, pattern fills, appliqué, and outlines.

To change fabrics

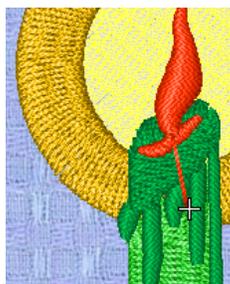
- 1 Select **Design > Fabric**.



- 2 From the **Fabric type** droplist, choose a fabric type matching or nearest to the fabric you intend to work with.



Woven Medium Weight



Woven Heavy Weight

- 3 Click **OK**.
The selected fabric settings are applied to all objects in the design. The current fabric is shown

in the **Status Bar** at the bottom of the **Embroidery Canvas**.



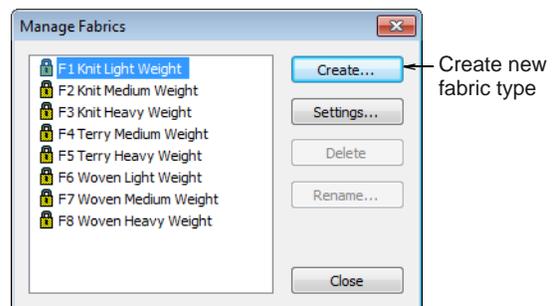
Note Changing the current **Auto Fabric** will affect all **colorways** in the design. However, the converse is not the case. While colorways allow you to select different fabric swatches, these have no bearing on **Auto Fabric** settings.

Managing fabrics

In addition to pre-defined **fabrics**, you can create custom fabrics to suit particular needs. You may find through experience that certain settings work better for certain fabrics. If you find yourself changing the same settings for each design, you may decide to set up a custom fabric which you can apply universally.

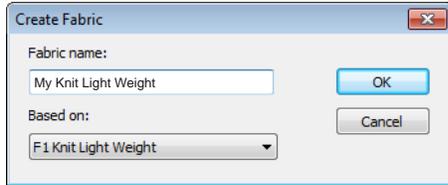
To define a new fabric

- ▶ Select **Settings > Manage Fabrics**.
The **Manage Fabrics** dialog opens.



Note If you already have custom fabrics defined, you have the option of editing, renaming, or deleting.

- ▶ Choose a fabric to modify or as a basis for a custom fabric.
- ▶ To modify an existing custom fabric, click **Settings**.
- ▶ To create a new fabric type, click **Create**. The **Create Fabric** dialog opens.



- ▶ Select a fabric as a base for your own fabric.
- ▶ Enter a descriptive name.

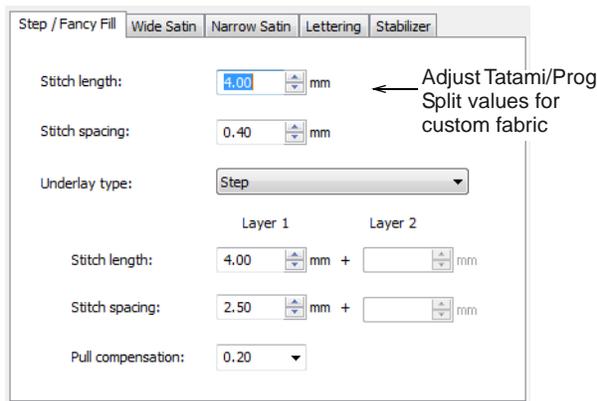


Tip You can view settings for both locked fabrics and custom fabrics, but you can't modify locked fabrics. If you want to do so, base a custom fabric based on the locked fabric, and edit as you wish.

To set step / fancy fill object values

- ▶ Click **OK**.

The **Fabric Settings** dialog opens. This dialog allows you to set the fabric values for four object groups – Step/Fancy Fill, Wide Satin, Narrow Satin, and Lettering – as well as enter details of any recommended stabilizers.



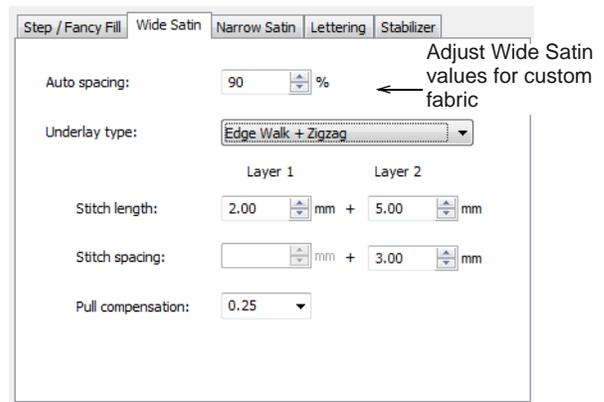
- ▶ Adjust the **Stitch Length** and **Stitch Spacing** settings as desired:
 - ▶ **Step** stitch consists of rows of run stitches and is suitable for filling large, irregular shapes. See also [Creating step stitch fills](#).
 - ▶ **Fancy Fill** is a decorative stitch type. Use it to fill wide and large areas with unique artistic effects while keeping the appearance of a solid field of stitching. See also [Creating fancy fills](#).
- ▶ Set a suitable underlay type for Step / Fancy Fill objects. See also [Stabilizing with underlays](#).

- ▶ Set a pull compensation allowance for these objects. See also [Compensating for fabric stretch](#).

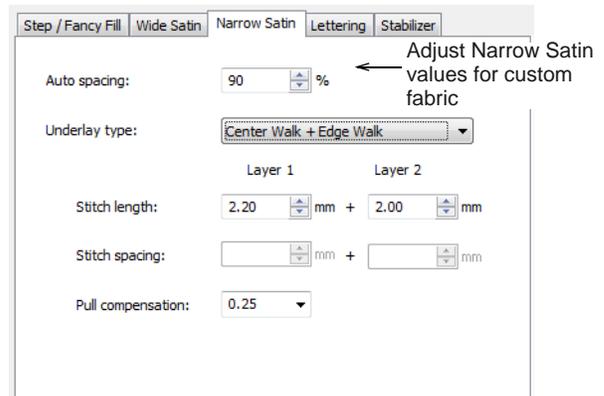


To set satin object values

- ▶ Click the tab to access the **Wide Satin** settings. These settings will become the defaults for larger Satin objects.

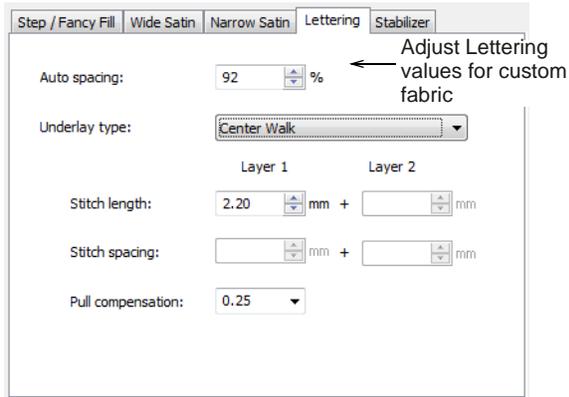


- ▶ Adjust the **Wide Satin** settings as you did for Step / Fancy Fill objects. See also [Creating satin fills](#).
- ▶ Click the tab to access the **Narrow Satin** settings and adjust as you did for Wide Satin objects. See also [Creating satin fills](#).



To set lettering object values

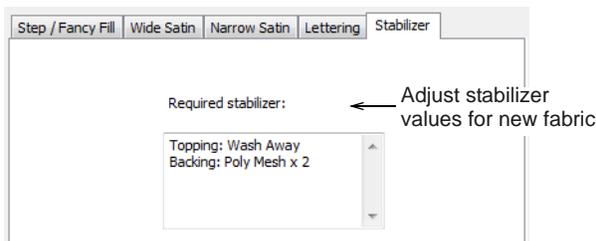
- ▶ Click the tab to access the **Lettering** settings.



- ▶ Adjust settings as you did for Satin objects. See also [Applying different stitch types & effects to lettering](#).

To set stabilizer settings

- ▶ Click the tab to access the **Stabilizer** settings.

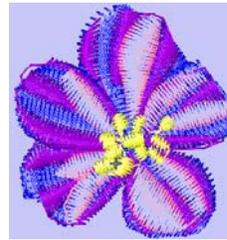


- ▶ Key in one or more recommended stabilizer(s) in the **Required Stabilizer** field, together with a description or any other relevant information on the stabilizer for the custom fabric. This information will be displayed under **Fabric Settings**. See also [Starting designs](#).

Working with design templates

Templates are special files used to store default settings. Use templates when **digitizing** frequently-used design types so that you do not have to set the current properties every time. For example, a template may include standard objects and sample lettering. It may simply have preferred stitch settings, lettering font and size, and colors set as current properties. Or it may have special density, **pull**

compensation or underlay settings set up to suit different fabrics.



Frequently used Background color can be saved in the template

The **NORMAL** template is the default template supplied with BERNINA Embroidery Software. It contains current **object properties**. If necessary, you can revert to the original **NORMAL** template after modifying it. See [Reverting to the NORMAL template](#) for details.

Creating design templates

You create templates from designs containing the required objects and **object properties**. Simply save the design, or elements of it, as a template. Templates look the same as design files, but use the file extension **AMT**. Make sure that you select a name for your new template **before** saving changes.



Note You cannot overwrite templates by accident. Each time you create a new design from a template, BERNINA Embroidery Software opens a duplicate. When you save the design the first time, the **Save As** dialog opens so you can save the template under a new name.

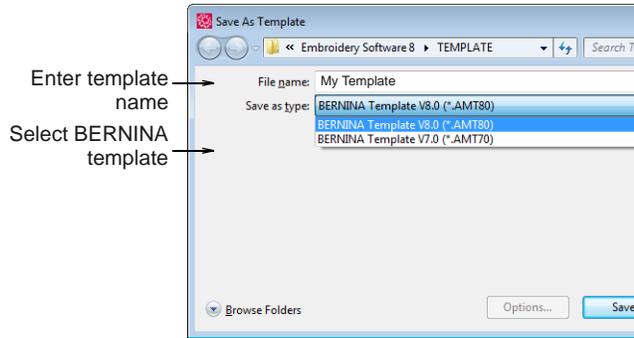
To create a design template

- 1 Start a new design or open an existing one.
- 2 Adjust the object properties as required.
- 3 Add any objects and lettering to be included in the template.

For instance, you may want to include sample lettering using different baselines. Simply overwrite the sample text when using the template. See [Applying lettering baselines](#) for details.

- 4 Select **File > Save as Template**.

The **Save as Template** dialog opens.



- 5 Select **BERNINA Embroidery Software Templates** from **Save as Type** droplist. BERNINA Embroidery Software automatically opens the **..\Program Files\BERNINA\Embroidery Software 8\template** folder. Design templates must be saved here or they will not appear in the template list when you start a new design.
- 6 Enter a name for the template in the **File Name** field.
- 7 Click **Save**.

Modifying design templates

You can modify templates in the same way as a normal design. Changes apply only to future uses of the template. Existing designs based on the template are not affected.



Note Delete templates in the same way as you would any other file using MS Windows® Explorer. Templates are located in the **..\Program Files\BERNINA\Embroidery Software 8\template** folder.

To modify design templates

- 1 Select **File > Open**.
- 2 Navigate to the **..\Program Files\BERNINA\Embroidery Software 8\template** folder.
- 3 Select **BERNINA Embroidery Software Templates** from the **Files of Type** droplist.
- 4 Select the template you want to modify and click **Open**.



- 5 Modify object properties, styles and other settings as required.



- 6 Select **File > Save as Template**.
 - 7 Select the **..\Program Files\BERNINA\Embroidery Software 8\template** folder.
 - 8 From the **Save as Type** droplist, select **BERNINA Embroidery Software Templates**.
 - 9 Select the template file and click **Save**. A confirmation message appears.
-  **Tip** To create a new template based on the modified one, type a new file name and click **Save**.
- 10 Click **Yes** to confirm.

The modified template is ready for use.



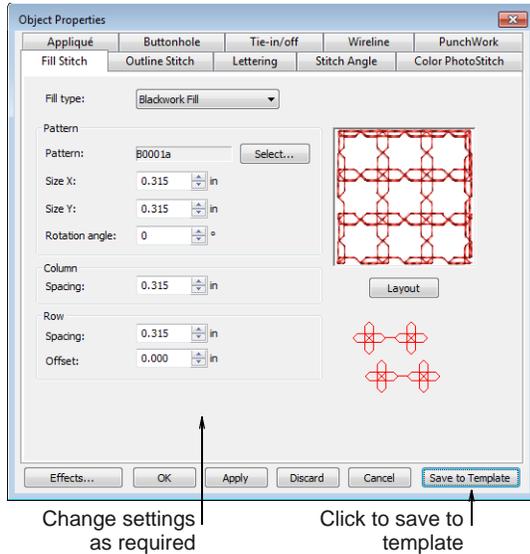
Saving current properties to a template

You can easily save current **object properties** to the current template. See also **Working with object properties**.

To save current properties to a template

- 1 Access **Object Properties**:
 - ▶ To use the **current** object properties, deselect all objects, then click the **Object Properties** icon.
 - ▶ To use the properties for a particular object, select the object, then double-click or right-click it.
- 2 Change object properties settings as required.

The **Object Properties** dialog opens.



Note It may take up to 1 or 2 minutes for the dialog to open.

- 4 Select the **Templates** checkbox and click **OK**. The original settings for the NORMAL template are restored.

- 3 Click **Save to Template**.

A confirmation message appears.



Note Only the **current** object properties – not the objects or other settings in the design – are saved to the template.

- 4 Click **OK** to update the template.
- 5 Click **Close** to return to the design window.

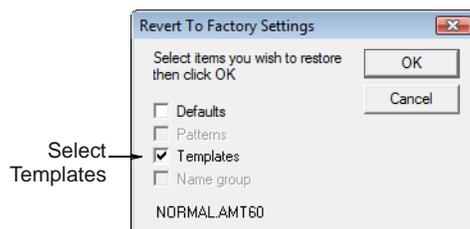
The new settings are saved in the template from which the design was created and are available for use.

Reverting to the NORMAL template

If you modify the NORMAL template supplied with BERNINA Embroidery Software, you can revert to the original version. A factory copy is always maintained so that the NORMAL template can be restored.

To revert to the NORMAL template

- 1 Close BERNINA Embroidery Software.
- 2 Click the MS Windows® **Start** button and go to the BERNINA Embroidery Software programs folder.
- 3 Select the **Tools** folder and click the **Revert** icon. The **Revert to Factory Settings** dialog opens.



CHAPTER 12

STITCH QUALITY

BERNINA Embroidery Software provides many settings to help improve the quality and efficiency of your final stitchout.

Use automatic underlay to help stabilize fabric and reduce distortion due to the pull effect. Adjust the amount of over stitching you need by varying the pull compensation setting. This is handy if you want to stitch a design on fabrics with varying degrees of stretch.

Reduce the risk of bunched, distorted embroidery in sharp corners with Automatic Corners. By applying Auto Jump, you can preserve long stitches in objects by turning them into a series of jumps.

By default, tie-in stitches are automatically inserted at the start of objects to prevent stitches from unraveling. You can control tie-in/off settings for whole designs or particular objects.

In addition, there are features which allow you to reinforce outlines as well as join selected outlines to form a single grouped outline for efficient stitchout.

Use Auto Start & End to set the positions of first and last stitches in a design. All these features are object properties, and can be applied, removed or modified at any time.

This section discusses a variety of settings and functions which can improve overall stitch quality. These include such things as adjusting underlays and compensating for fabric stretch. Amongst other things, it also describes how to preserve long stitches, adjust tie-in/off settings, and set automatic start and end points.

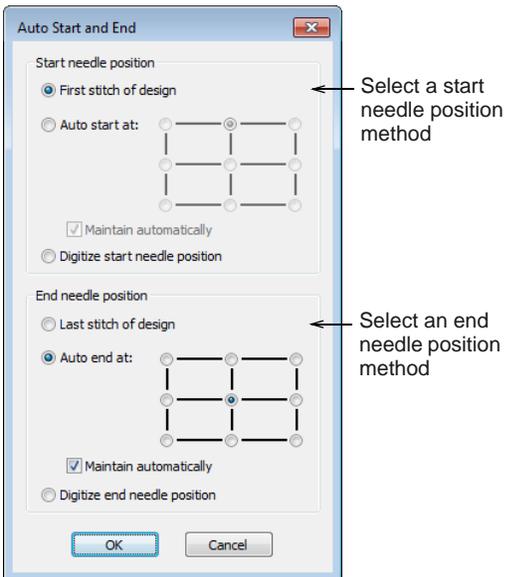


Setting automatic start & end points

Before stitching, some embroidery machines require you to position the starting needle exactly above the first needle penetration point. Use **Auto Start & End** to set the positions of first and last stitches in a design.

To set automatic start & end points

1 Select **Design > Auto Start & End**.

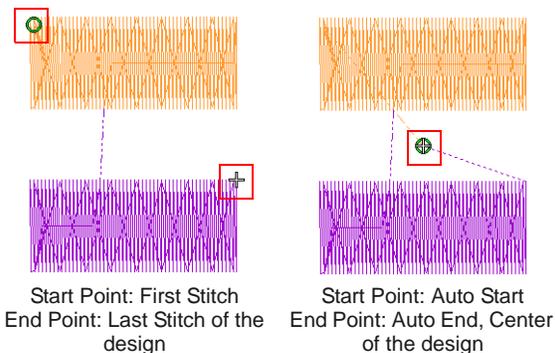


2 Select a **Start Needle Position** method:

Method	Notes
First stitch of design	The start point is set to the first stitch in the design.
Auto start at	The end point is automatically maintained at the specified point in the design. Choose from the available options,
Digitize start	You are prompted to manually mark the needle position start point.

3 Select an **End Needle Position** method. The same options apply.

4 If you choose to digitize start and end points, you will be prompted once you close the dialog.

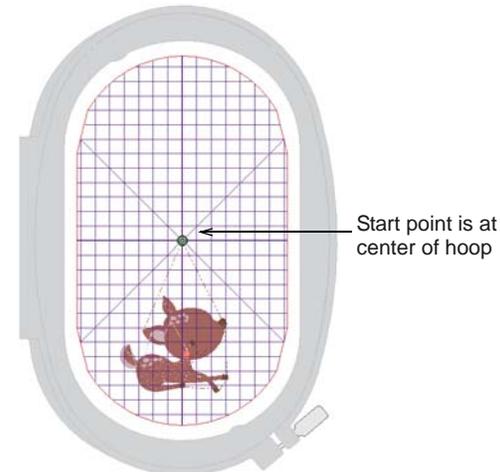


5 Select the **Maintain Automatically** checkbox (the default) to automatically maintain start and/or end needle positions. This ensures that

start/end points are maintained during any editing operations.



Tip Turn off **Maintain Automatically** if you want to position the design anywhere in the hoop. You might do this to set up continuous designs or special placements such as pockets. Use this technique with machines which always start in the center of the hoop. Make sure automatic centering is set to start needle position. See also [Centering hoops](#).



6 Click **OK**.

Connecting stitches will be inserted as required before the first and after the last stitches of the design.

Adjusting stitch spacing

You may need to change stitch density in order to stitch on a different fabric or with a different thread. Or you may want to do a test design and reduce the overall stitch count. The software lets you change the density of most stitch types across the whole or selected parts of a design.

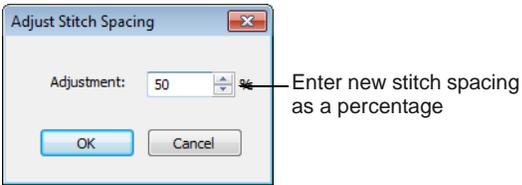


Note Use fabric settings so that the machine will take into account the type of fabric you are stitching on. See also [Working with fabrics](#).

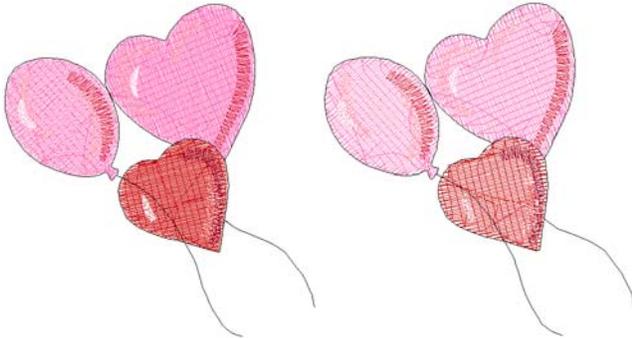
To adjust stitch spacing

1 Select the design or objects you want to adjust.

2 Select **Edit > Adjust Stitch Spacing**.



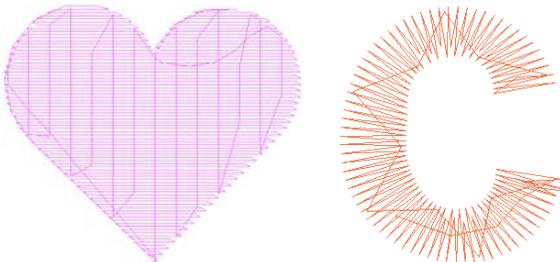
3 Click **OK**.



Tip Check any changes via the **Object Properties** dialog.

Stabilizing with underlays

To improve the quality of the stitchout, you need to add **underlay**. Underlay helps stabilize fabric and reduce distortion due to the pull effect. It also provides 'loft', raising cover stitches and preventing them from sinking into soft fabrics. When no underlay is applied, the embroidery lays flat on the fabric. It not only looks flat, but the underlying fabric often shows through. New digitizers might be tempted to increase stitch density but it is more effective to apply a proper underlay.



Note Use fabric settings so that the machine will take into account the type of fabric you are stitching on. See also [Working with fabrics](#).

Applying underlays



Use **Effects > Auto Underlay** to strengthen and stabilize objects with underlay stitching.



Use **General > Effects** to apply stitch effects to selected embroidery objects or preset with nothing selected.

The **Auto Underlay** tool generates **underlay** stitching for objects based on current settings. You can preset custom underlay settings for all newly created objects in your design, or apply them to selected objects.

To apply underlays

- ▶ Click the **Auto Underlay** icon to activate the feature.



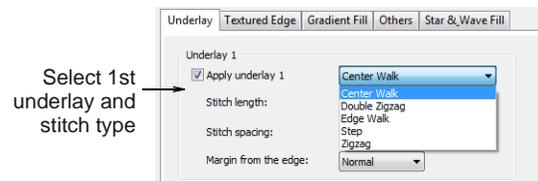
Tip To preset underlay settings, click the **Effects** icon to access the **Effects > Underlay** dialog.

- ▶ Create a closed-object – circle or square. See [Digitizing Methods](#) for details.

The object is digitized using current settings.

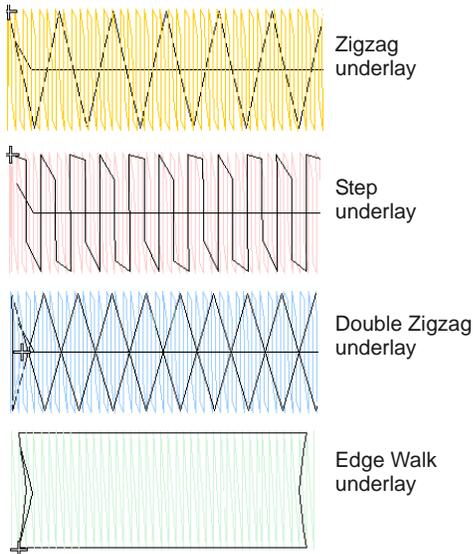
- ▶ To change **underlay** settings, select the object and right-click the **Auto Underlay** icon.

The **Effects > Underlay** dialog opens. This tab gives you the option of a single underlay or combined first and second underlays.



- ▶ Select **Apply Underlay 1** and select an underlay type from the droplist.

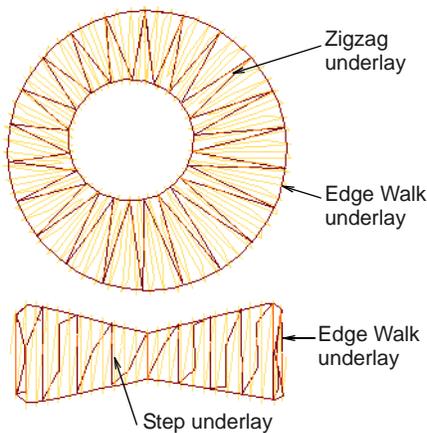
The type of underlay you choose is determined by the purpose it is to serve.



- ▶ Adjust stitch length and margin settings as required. See below for details.
All underlay types available for Underlay 1 are also available for Underlay 2.



- ▶ For extra stability, select a second underlay. Any combination of underlay types can be used.



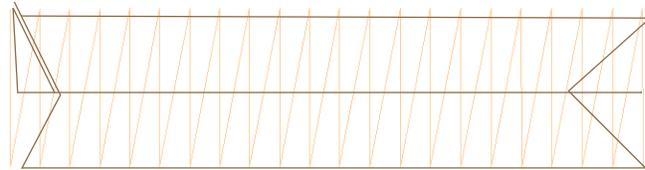
- ▶ To keep a permanent record of your custom settings, click **Save to Template**. See [Saving current properties to a template](#) for details.

Setting center & edge walk underlays



Right-click **Effects > Auto Underlay** to strengthen and stabilize objects with underlay stitching.

Center Walk underlay places a row of stitches along the center of a column. It is used to stabilize narrow columns – e.g. 2-3 mm wide. **Edge Walk** places stitches around the edge of an object. Use edge walk together with zigzag or step underlays when digitizing large shapes.



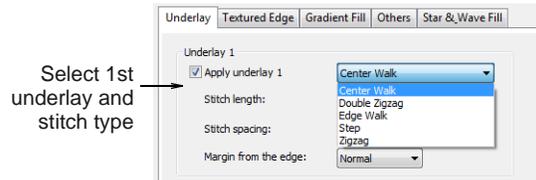
Center Walk and Edge Walk underlays used together



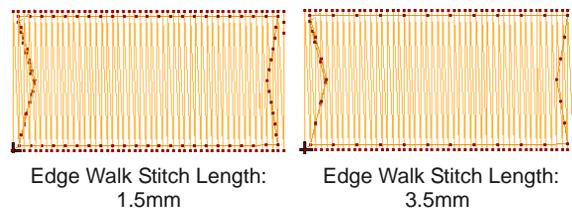
Note Stitch settings for edge walk underlays are stored separately from, and do not affect, cover stitch settings.

To set center and edge walk underlays

- 1 Select an object or objects to adjust their particular settings.
- 2 Right-click the **Auto Underlay** icon. The **Effects > Underlay** dialog opens.



- 3 Select first and second **Underlay** checkbox (as required) and select **Center Walk** and/or **Edge Walk** as the underlay types.
- 4 Adjust stitch length to ensure that underlay stitches follow the shape of curves and are not visible in the final embroidery.



- 5 Adjust underlay margins as required to prevent underlay stitches from extending outside the cover stitches. See [Setting underlay margins](#) for details.
- 6 Click **Apply**.
New or selected objects use the adjusted settings.

Adjusting zigzag underlay spacing

 Use Effects > Auto Underlay to change automatic underlay settings.

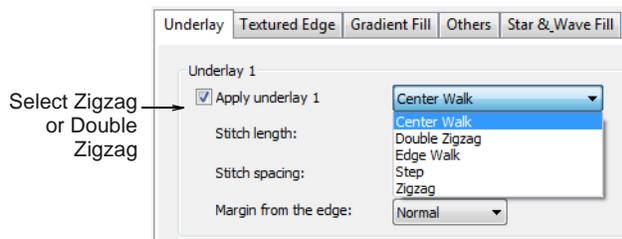
Use zigzag and double-zigzag **underlay** stitching to support wide columns. you can set stitch length for zigzag and double-zigzag underlay. Double-zigzag underlay only works with satin outline or lettering. Apply settings before or after **digitizing**.



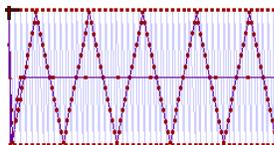
Note Zigzag underlay stitch settings are stored separately from, and do not affect, zigzag cover stitch settings.

To adjust zigzag underlay spacing

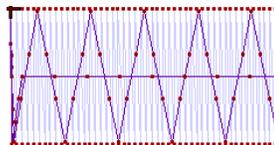
- 1 Select an object or objects to adjust their particular settings.
- 2 Right-click the **Auto Underlay** icon.
The **Effects > Underlay** dialog opens.



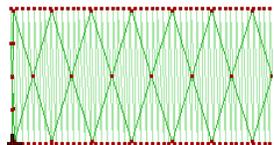
- 3 Select the **Apply Underlay 1** checkbox and select **Zigzag** or **Double Zigzag** as the **underlay** type.
- 4 Enter the required stitch length.



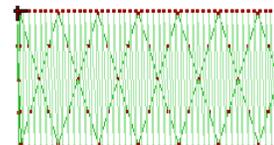
Zigzag Stitch Length: 2.5 mm



Zigzag Stitch Length: 5 mm



Double Zigzag Stitch Length: 7 mm



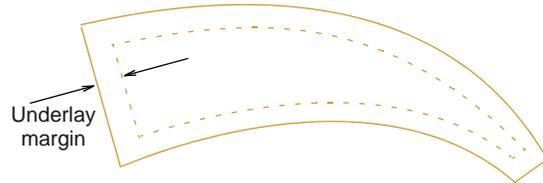
Double Zigzag Stitch Length: 3.5 mm

- 5 Click **Apply**.
Selected objects are updated with the adjusted settings.

Setting underlay margins

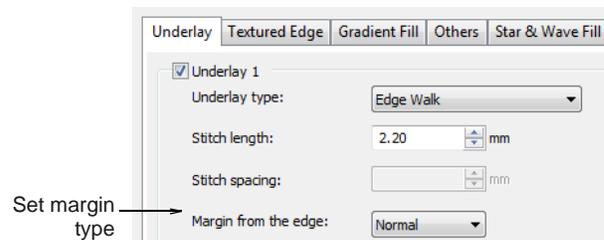
 Use Effects > Auto Underlay to change automatic underlay settings.

The **underlay** margin is the distance between an object outline and the edge of the underlay. Increase this margin to prevent underlay stitches from extending outside the cover stitches.

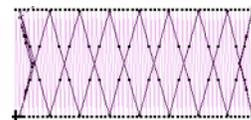


To set underlay margins

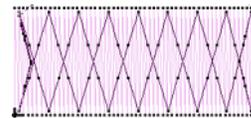
- 1 Select an object or objects to adjust their particular settings.
- 2 Right-click the **Auto Underlay** icon.
The **Effects > Underlay** dialog opens.



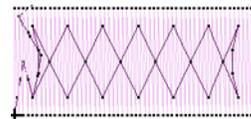
- 3 Select a **Margin** type from the droplist.



Normal



Medium



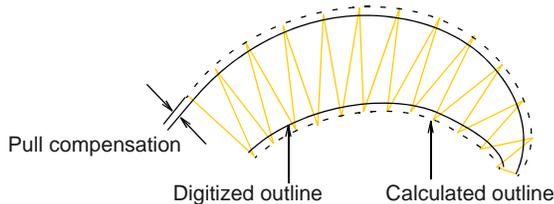
Wide

- 4 Click **Apply**.
New or selected objects use the adjusted settings.

Compensating for fabric stretch

 Use General > Object Properties to adjust pull compensation settings.

Embroidery stitches pull fabric inwards where the needle penetrates. This can cause fabric to pucker and gaps to appear in the embroidery. Shapes are slightly narrower and longer in the final embroidery than they look on the screen. **Pull compensation** counters this effect by 'overstitching' outlines of filled shapes on the sides where the needle penetrates. Apply automatic pull compensation to objects in your design, either before or after **digitizing**.



The amount pull compensation required depends on the stitchout fabric. Experiment with the fabrics you are going to use and see if the set amount is suitable before changing it. You can also adjust pull compensation to suit the fabric you are embroidering on by selecting **Settings > Fabric Settings**. See also **Changing fabrics**.



Tip Applying underlay stitching, and using appropriate backing and topping when stitching out, can also reduce pull effect. See also **Stabilizing with underlays**.

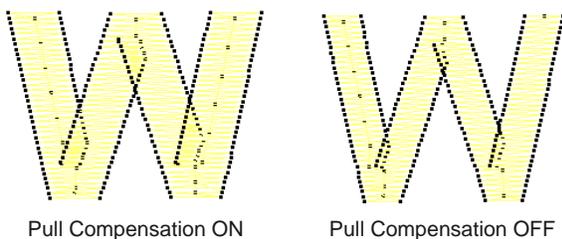
To apply automatic pull compensation

- 1 Select an object or objects to adjust their particular settings.
- 2 Click the **Object Properties** icon.
The **Object Properties** dialog opens.
- 3 Click the **Effects** button and select the **Others** tab.
- 4 Select the **Pull Compensation** checkbox.



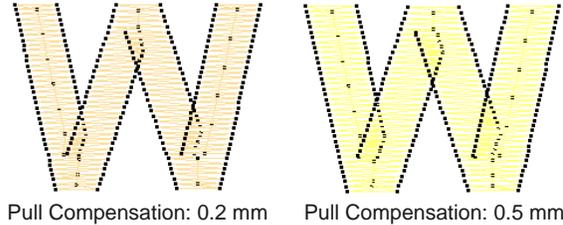
- 5 Click **Apply**.

New or selected objects use the new settings.



Tip Pull compensation is automatically set at 0.2 mm. This is suitable for most designs. However, 0.4 mm is recommended for use with automatic **digitizing**.

- 6 Enter an overstretch allowance (in mm) as required.



- 7 Click **Apply**.

New or selected objects use the adjusted settings.

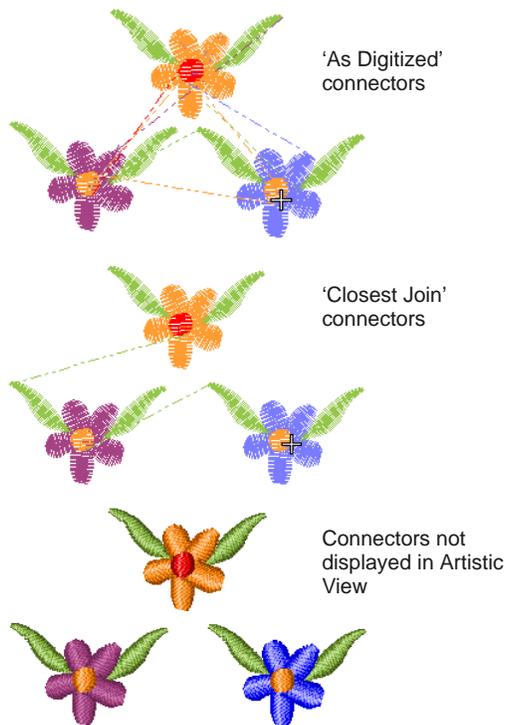


Tip Click **Save to Template** before closing this dialog to save settings permanently. Saved settings will be applied to all new designs based on the current template. See **Properties, Fabrics & Templates** for details.

Connecting embroidery objects

'Connectors' link objects in a design. They take the form of 'travel runs' or 'jumps' and are displayed in **Stitch View** but hidden in **Artistic View**. Ideally, you will plan your embroidery so that connecting stitches will be covered later by other elements of the design.

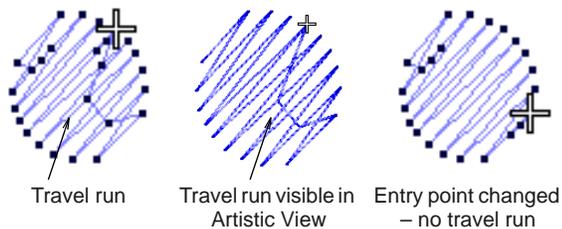
If a connecting stitch is not covered, it will need to be trimmed after stitchout.



Connecting stitches are generated automatically but you can resequence objects in order to minimize trims. You can even change entry and exit points, but the **Closest Join** setting (the default) automatically calculates the closest join between objects while **digitizing**. See [Setting other general options](#) for details.

Travel runs

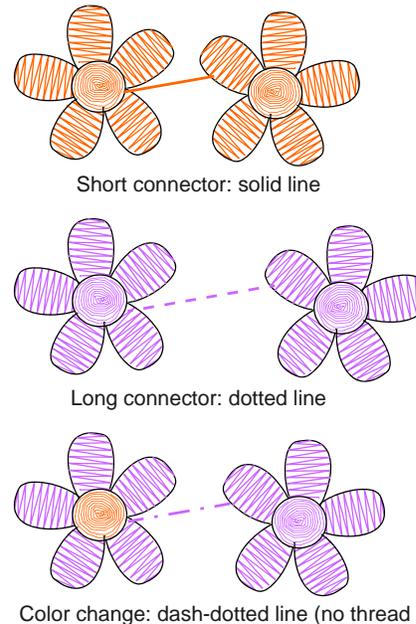
Travel runs are automatically added when the needle has to travel between segments within an object. They are always covered by the overlying stitches but may sometimes show through.



Travel runs are kept to a minimum by adjusting entry and exit points of consecutive objects. You can manually adjust entry and exit points using the **As Digitized** method, but the **Closest Join** setting (the default) automatically calculates the closest join between objects while **digitizing**. See [Setting other general options](#) for details.

Jumps

Jump connectors move the frame from one part of the design to another without needle penetrations. You generally need to trim the connecting thread. Jump connectors are displayed in **Stitch View** either as a dotted or solid line – solid lines for short connectors, dotted lines for long connectors (more than 12.1 mm). Dash-dotted lines indicate color changes.



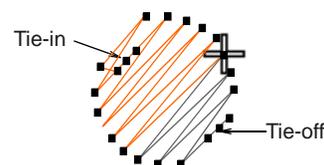
Long jump connectors have needle jumps of up to 7 mm along their length. This usually causes the machine to slow down while moving the hoop to the next needle penetration point.



Note The default connector jump length is the same as that set for **Auto Jump**.

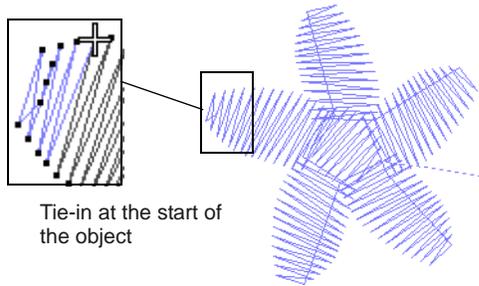
Tie-ins and tie-offs

Tie-ins and tie-offs are extra stitches that are added before and after jumps and color changes so that threads can be trimmed without stitches unraveling.



Tie-in stitches are automatically inserted at the start of objects after any **connector** longer than 2 mm or after a color change. With Satin objects, they are inserted inside the shape on the second stitch.

Likewise, tie-offs are automatically added before connectors or before a color change.



Tip Travel through the design by one stitch to check for tie-ins and tie-offs. See [Traveling through designs](#) for details.

Adjusting tie-in/off settings



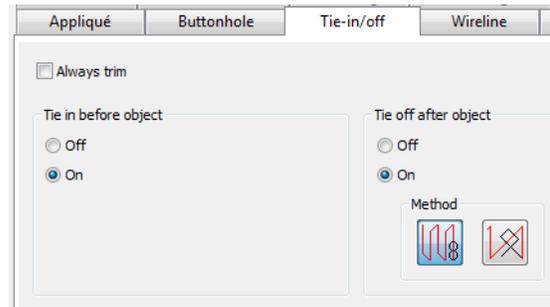
Use General > Object Properties to adjust tie-in/off settings.

By default, tie-in stitches are inserted at the start of objects to prevent stitches from unraveling. There are instances, however, where whole designs may not include tie-ins, or where selected objects, such as lettering, may not include them. BERNINA Embroidery Software gives you control over tie-in/off settings. This is necessary for specialized purposes such as 'reverse embroidery' which involves using thick threads in the bobbin. There can be no tie-offs for this. You may want to make embroidery with creative threads where tie-offs can't be used. In these cases, you can turn off tie-ins and/or tie-offs and keep threads from unraveling by cutting them long and pulling them through. See also [Adjusting entry & exit points](#).

To adjust tie-in/off settings

- ▶ Access the **Tie-in/off** controls in one of the following ways:
 - ▶ To adjust current design settings, click the **Object Properties** icon or select **Settings > Object Properties** to access the **Object Properties** dialog.
 - ▶ To adjust a particular object or objects, double-click or right-click the object(s) to access the **Object Properties** dialog.
- ▶ Select the **Tie-in/off** tab.

The tab contains two panels – **Tie in before object** and **Tie off after object** – which allow you to turn the respective option on or off.

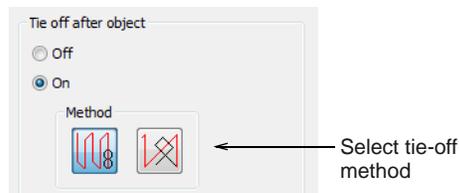


Note Existing designs created in previous versions of BERNINA Embroidery Software or other applications may have a **connector** length setting that differs from the 2 mm default setting.

- ▶ Optionally, tick the **Always Trim** checkbox to trim connectors for the selected objects. When activated, a tie-in and tie-off is inserted between selected objects, regardless of connector length. Select all objects and apply the setting to trim all connectors in the design. You can also use it to force trims within lettering objects.
- ▶ Adjust the **Tie in before object** setting as required:
 - ▶ When turned off, no tie-ins are inserted for either external or internal connectors.
 - ▶ When turned on, tie-ins are inserted if the connecting stitch before an object is greater than 2 mm.



- 1 Adjust the **Tie off after object** setting as required:
 - ▶ When turned off, no tie-offs are inserted for either external or internal connectors.
 - ▶ When turned on, tie-offs are inserted if the connecting stitch following an object is greater than 2 mm.



- ▶ Select a tie-off method:
 - ▶ The first method inserts tie-off stitches along the last stitch.

- ▶ The second inserts tie-off stitches between the last two stitches.

The first method is better suited to non-lettering objects while the second method is better for lettering objects.

- ▶ Click **Apply**.

Settings are applied to selected objects or, if no objects are selected, current properties.

Reinforcing outlines

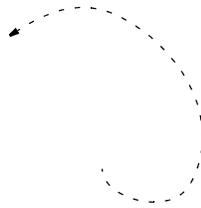
Use the **Double Run** feature to reinforce outlines. Use **Blackwork Run** to join selected outlines to form a single grouped, reinforced outline, correctly sequenced for efficient stitchout.

Reinforcing outlines with Double Run



Use Edit > Double Run to reinforce outlines, stitching it in the opposite direction.

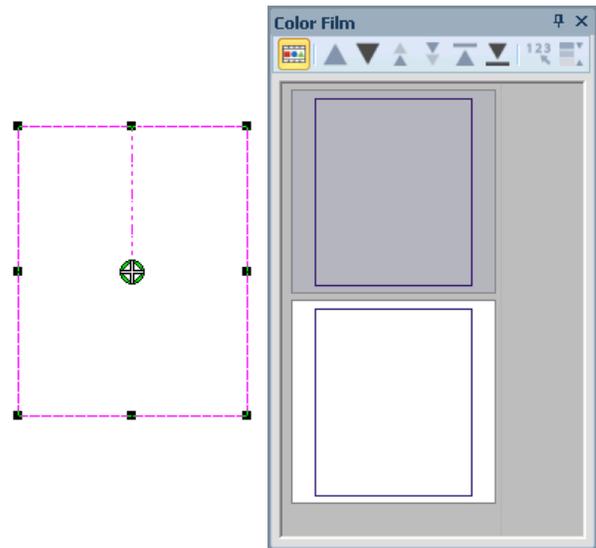
Use the **Double Run** feature to reinforce outlines. Double Run stitches in reverse direction to the original. It is typically used to make run stitch outlines thicker without creating unwanted connecting stitches. It can also be applied to filled objects.



To reinforce outlines with Double Run

- 1 Select the object/s to reinforce.
- 2 Click the **Double Run** icon, or press **Ctrl+B**.
The object is duplicated with the stitching reversed, and placed on top of the original. It is

the same color as the original and is positioned after it in the stitching sequence.



- 3 Check that the object has been duplicated by using any of the following methods:

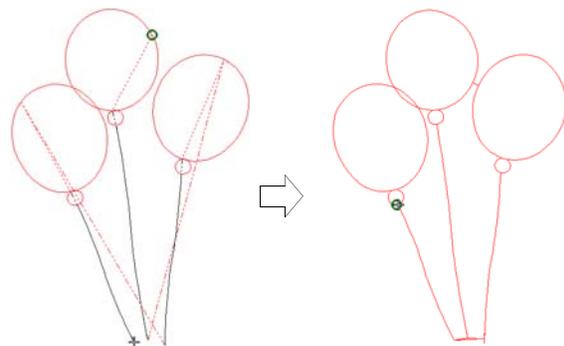
- ▶ Check the stitch count in the **Status Bar**.
- ▶ View the objects in the **Color Film**. See also [Viewing & selecting color blocks](#).
- ▶ Travel through the stitches. See [Viewing stitch sequence](#) for details.
- ▶ Use **Stitch Player**. See [Simulating design stitchouts](#) for details.

Reinforcing outlines with Blackwork Run



Use Edit > Blackwork Run to automatically sequence selected outlines for efficient stitchout.

Use **Blackwork Run** to join selected outlines to form a single grouped, reinforced outline, correctly sequenced for efficient stitchout. The resulting Blackwork Run object always follows the color of the first object in the sequence.



Blackwork Run works with embroidery outlines consisting of one or a combination of Open Object,

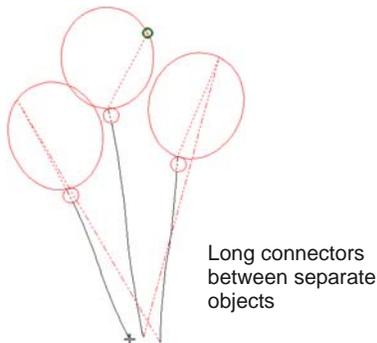
Closed Object, Ellipse, or Rectangle object types. All outline stitches can be used except for **Pattern Run**, **Blackwork Border** or **Candlewicking Border**. See [Outline & Fill Stitching](#) for details.



Note The **Ungroup** command is not available when a Blackwork Run object is selected. If you wish to access component objects, use the **Break Apart** tool. See [Splitting into component objects](#) for details.

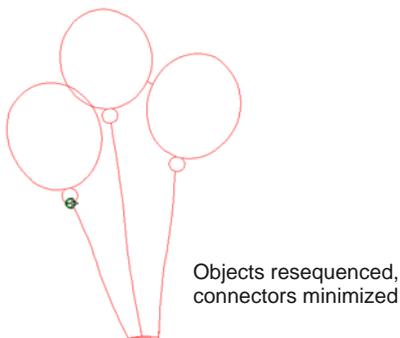
To reinforce outlines with Blackwork Run

- 1 Select outline objects.



Note The function is only available if more than one object of suitable type is selected. Any which cannot be automatically sequenced are excluded from the operation.

- 2 Click the **Blackwork Run** icon.
- 3 Digitize the entry point or press **Enter** to accept the default.
Stitches are regenerated. Component objects are grouped and take the color of the first object.



Tip Travel through the sequenced object to check stitching. See [Viewing stitch sequence](#) for details.

- 4 Change the thread color of the entire sequenced object as required. See [Changing thread colors](#) for details.
- 5 Reshape the sequenced object as required.

Sequenced objects can be reshaped as a whole. There is only one entry and one exit point, but all component objects have individual reshape points. See also [Reshaping objects using reshape nodes](#).



Note You cannot see a big difference on screen after applying **Blackwork Run** as the reinforced outlines cover each other. To check that a Blackwork Run object, travel through the stitches. See [Traveling through designs](#) for details.

Controlling corner stitching



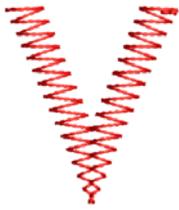
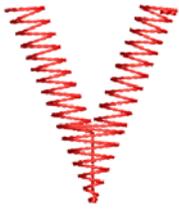
Use **Effects > Automatic Corners** to toggle mitre or cap corners in line objects with sharp turns. Can be turned on/off object-by-object.

The quality of corners is important in borders and appliqué, and satin column sewing in general. Sharp corners may cause stitch bunching which can create hard spots in the embroidery and may damage fabric or needle. Use **Automatic Corners** to reduce stitches and the risk of bunched, distorted embroidery in sharp corners.

To apply automatic corners

- ▶ Click **Automatic Corners** with or without objects selected.
With no objects selected, corners are automatically generated for all new objects. The following approaches can apply to both appliqué and satin lines.

- ▶ Click again to turn off the effect.

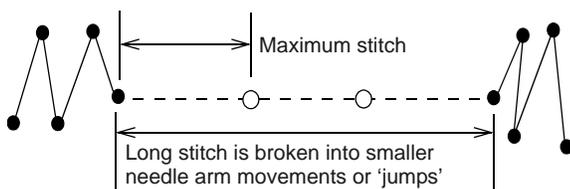
Method	Sample	Description
Default corner		Stitches curve around corners – default Satin corner handling.
Mitre corner		Corners are formed by two segments that join in a sharp point.
Cap corner		Corner is capped by an extra segment – cap stitching remains parallel to the column.

Preserving long stitches



Use General > Object Properties to adjust Auto Jump settings.

Embroidery machines have a maximum possible stitch length which is determined by the frame movement limitations of the machine itself. If a stitch exceeds this, it is broken into smaller stitches. This can affect the embroidery appearance, especially in Satin fills. By applying **Auto Jump**, you can preserve long stitches in an object by turning them into a series of jumps. See also [Splitting long stitches in satin fills](#).

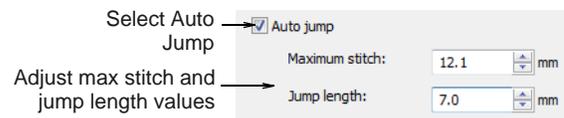


To create a narrow column with more 'loft' than normal Satin, apply Auto Jump, in conjunction with a suitable **underlay**, with the maximum stitch length set to a small value, e.g. 6 mm. If the cover stitches are short, splitting them with a jump makes them looser and thus more effectively raised off the fabric. See also [Stabilizing with underlays](#).

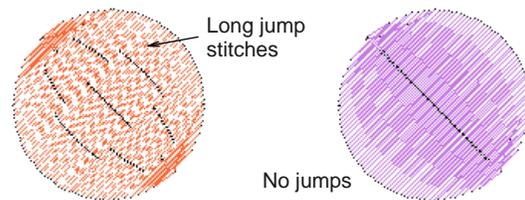
Auto Jump can also be used, for example, with manually digitized underlays. It can even be used to create quilted effects, for example, by applying it to Satin areas that are over-stitched with Run stitch or Pattern Fill. Auto Jump is stored as an object property and is activated by default. You can change its values at any time for selected or newly created objects. Auto Jump values can be adjusted for Fill stitch, Outline Satin and Outline Blanket stitch.

To apply Auto Jump

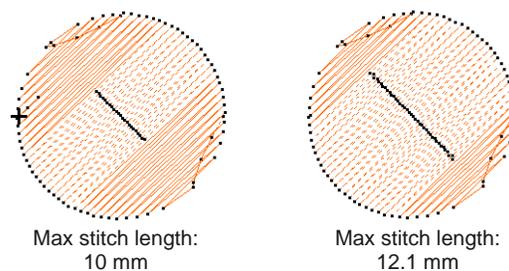
- 1 Select an object or objects to adjust their particular settings.
- 2 Click the **Object Properties** icon.
- 3 Click the **Effects** button and select the **Others** tab.



- 4 Select **Auto Jump** if not already selected and click **Apply**.

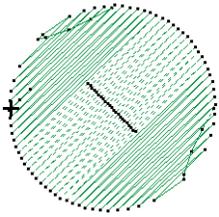


- 5 In the **Maximum Stitch** field, adjust the maximum stitch length as required. Stitches exceeding this value will have **Auto Jump** applied.

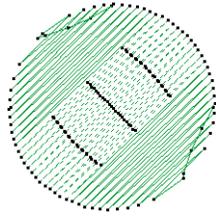


Tip Set the maximum stitch larger than the longest Satin fill stitch you want to allow in the design, otherwise some Satin stitches will be split into two or more stitches.

- 6 In the **Jump Length** field, enter the length of each jump.



Jump Length: 7 mm



Jump Length: 4 mm



Tip Smaller jumps increase the time required to stitch out but move the frame more smoothly across the design.

- 7 Click **Apply**.

New or selected objects use the adjusted settings.



Tip Click **Save To Template** before closing this dialog to save settings permanently. Saved settings will be applied to all new designs based on the current template. See [Properties, Fabrics & Templates](#) for details.

PART III

DIGITIZING WITH ARTWORK

There are two broad categories of artwork file, both of which can be imported into BERNINA Embroidery Software for use as digitizing **backdrops** – **vector** and **bitmap**. To create good quality embroidery, you need to choose or create suitable artwork of either format.

Digitizing with backdrops

This section describes how to choose suitable artwork for digitizing purposes as well as how to scan it into BERNINA Embroidery Software. It also describes how to digitize with images as backdrops, as well as how to show and hide them as you digitize. See [Digitizing with Backdrops](#) for details.

Processing images for automatic digitizing

This section describes how to prepare images for automatic **digitizing**. It explains how to prepare both outlined and non-outlined images. See [Image Processing](#) for details.

Automatic digitizing

This section describes how to automatically convert vector graphics as well as bitmap images to embroidery designs with the available techniques. It also covers how to create embroidery from photographs. See [Automatic Digitizing](#) for details.

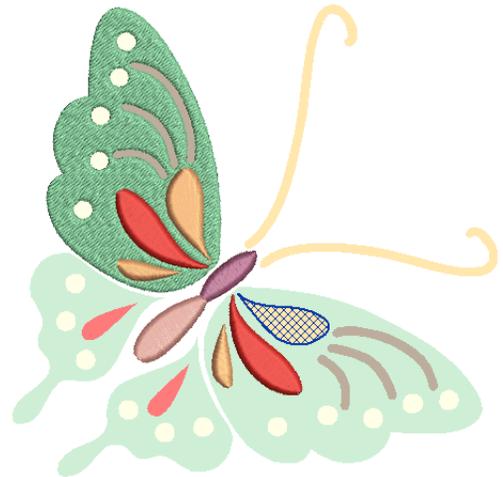
CHAPTER 13

DIGITIZING WITH BACKDROPS

Electronic artwork in both bitmap and vector formats can be loaded, pasted or scanned into BERNINA Embroidery Software for use as digitizing templates or 'backdrops'. Textured backgrounds can also be imported to show what a design will look like on real fabric. Almost any artwork can be used – photographs, magazine pictures, clipart drawings, and even fabric samples.

From within BERNINA Embroidery Software you can open images into MS Paint, Corel PHOTO-PAINT® Essentials X6, or Paint Shop Pro™. Images updated in this way are automatically re-imported into BERNINA Embroidery Software.

This section describes how to choose suitable artwork for digitizing purposes as well as how to scan it into BERNINA Embroidery Software. It also describes how to digitize with images as backdrops, as well as how to show and hide them as you digitize.



Using design backdrops

Backdrops can be used as a guide to manual digitizing. Alternatively, BERNINA Embroidery Software semi-automatic and automatic digitizing can convert **bitmaps** to embroidery designs. In summary, backdrops can help you to:

- ▶ Digitize objects manually.
You trace shapes and lines over the artwork using the appropriate digitizing tools. See [Digitizing Methods](#) for details.
- ▶ Digitize shapes automatically with **Magic Wand**.
You select a shape and **Magic Wand** automatically determines the required stitches.
- ▶ Digitize complete images automatically with **Auto-Digitize**.
You select the image and **Auto-Digitize** automatically determines the shapes and stitches

needed to digitize the design. See [Auto-digitizing with Auto-Digitize](#) for details.

- ▶ Digitize photographs with **PhotoSnap**.
Again you select the image and **PhotoSnap** automatically determines the shapes and stitches needed to digitize the design. See [Auto-digitizing with PhotoSnap](#) for details.

Artwork can be imported into BERNINA Embroidery Software in both **vector** and **bitmap** formats:

- ▶ **Vector graphics:** These consist of outlines which may be colored and may have colored fills. Vector outlines remain thin and clear even at large zoom factors, so you can digitize them accurately.
- ▶ **Bitmap images:** These consist of colored dots or pixels. When you zoom in on a small area, the outlines become jagged and are displayed as a series of colored squares or pixels.

To create good quality embroidery, you need to choose suitable artwork. Once in BERNINA® Embroidery Software, you can set general properties

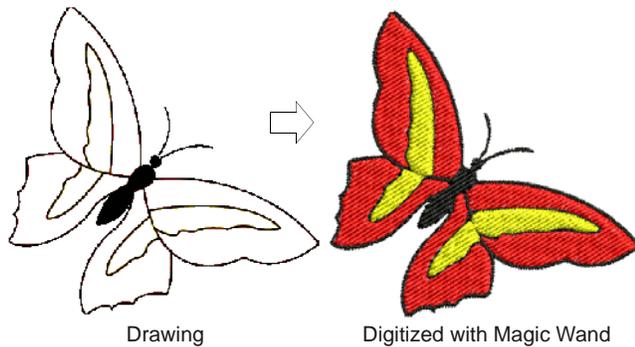
such as size and position. You can also arrange and transform artwork in the same way as embroidery designs.



Caution Included artwork (clipart) and embroidery designs can only be used for personal use – i.e. they cannot be commercially sold in any form. Changing the medium – i.e. clipart to embroidery or embroidery to clipart – does not remove copyright protection.

Vector graphics

Vector graphics can be loaded into BERNINA® Embroidery Software for use as digitizing backdrops. They are automatically converted to **bitmap** images.



Note CorelDRAW® Essentials X6 is packaged with a selection of clipart which can be used as digitizing **backdrops** or converted directly into embroidery. See also **Browsing clipart**.

Bitmap images

Bitmap images can be loaded or scanned into BERNINA® Embroidery Software for use as digitizing backdrops. For both manual and automatic digitizing purposes, 'clean' images, sometimes referred to as 'cartoons', work best. Such images have a limited number of solid colors which in turn have well-defined outlines. Ideally, they are:

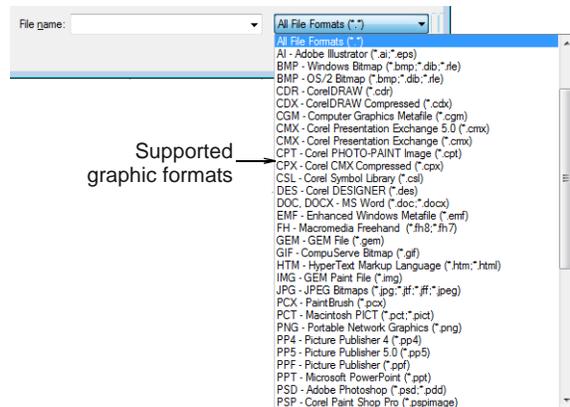
- ▶ well defined, where each shape is made up of pixels of the same color
- ▶ clearly 'blocked', where each shape is a stitchable size, at least 1 sq mm
- ▶ saved at a color depth of at least 256 colors (8 bit), or preferably millions of colors (16 bit). (Images are automatically reduced to 256 colors or less when loaded into BERNINA® Embroidery Software.)



Tip You can scale and transform **bitmap** images once they are loaded into BERNINA® Embroidery Software. However, if an image needs to be resized or rotated, it is best to do so during scanning. Scaling afterwards may distort the image.

Supported graphic formats

BERNINA Embroidery Software supports a wide variety of **vector** and **bitmap** graphic formats:



Note For a full discussion of graphics formats, refer to the CorelDRAW® Essentials X6 User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics mode Help** menu.

Automatic digitizing

BERNINA® Embroidery Software automatic digitizing techniques – **Auto-Digitize** and **Magic Wand** – produce best results with images of the type found in clipart libraries or created from scratch in a graphics application. See **Auto-digitizing with Magic Wand** and **Auto-digitizing with Auto-Digitize** for details.

Automatic digitizing can work with images from other sources but they require greater or lesser amounts of preparation. This is because most commonly available images are **not** made up of solid colors. Scanners introduce noise, while graphics applications perform 'dithering' and 'anti-aliasing' to improve image print quality.

Automatic digitizing works least effectively with photographic images which may contain many dithered colors and complex forms. With photographs, however, you can pick out shapes that you want to embroider, leaving out unnecessary detail. Alternatively, **PhotoSnap** is available to create embroidery designs from scanned photographs.

Scanned images

Images scanned from hardcopy drawings or existing embroidery typically contain a lot of introduced 'noise'. While they can be used as input to automatic digitizing, once again, best results are achieved with relatively clean images consisting of solid color blocks. Typically, logos and simple drawings scanned from business cards, letterheads, books, magazines, cards fall into this category.

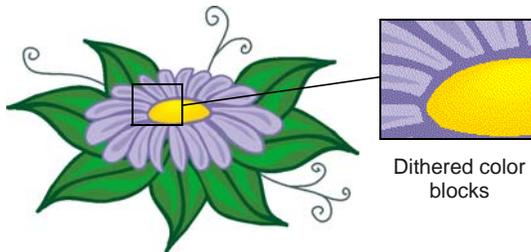


Image containing a lot of scanner 'noise'

Noisy images typically need to be prepared by reducing the color count and sharpening the outlines. See [Image Processing](#) for details.

Dithered images

Dithering is a software technique which combines existing colors in a checkerboard arrangement of pixels. It is typically used to simulate colors that are missing from an image palette.



Like noisy images, dithered images need to be color-reduced before use. Be aware, however, that while the software is excellent at processing dithered colors within a defined outline, it does not work so well with non-outlined images. See [Image Processing](#) for details.

Anti-aliased images

Anti-aliasing is a software technique similar to dithering which is used to soften hard outlines where color blocks intersect. It produces smoother outlines by 'blurring' the pixels where colors join.



Where anti-aliasing is deliberately used to blur outlines, these need to be 'sharpened' before use with automatic digitizing. See [Image Processing](#) for details.

Scanning artwork

If you have existing artwork, you can scan it with a TWAIN-compatible scanner using the BERNINA Embroidery Software scanning function. It is important to scan your artwork properly if you intend to use one of the automatic [digitizing](#) techniques; the scanned image quality will affect the quality of the final embroidered design.



Good image: good stitch quality

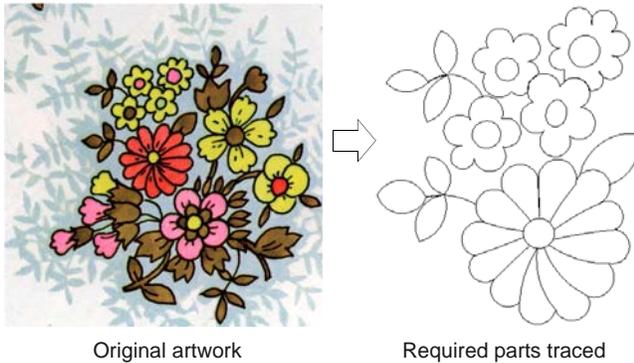
Poor image: poor stitch quality

Preparing artwork for scanning

With embroidery design, less is more. You do not need every detail in an image to create a design. You use the 'structure' of the image rather than the fine details of texture and color.

To simplify artwork, you can cover it with tracing paper and draw only the essential shapes and lines which will be filled with stitches. When scanning, take

away the original artwork and put white paper behind the tracing paper.



Original artwork

Required parts traced

Shiny surfaces, such as glossy photographs, may not scan well. Cover them with tracing paper. If the artwork has very light colors, highlight outlines with a fine black felt-tip pen.

Scanning resolution

Most scanners require you to enter scanning resolution information. Resolution determines the number of dots per inch (dpi) used to create a drawing. The higher the value, the clearer the image but larger the file. For digitizing purposes, use a maximum resolution of 300 dpi (dots per inch). A resolution of 72dpi (screen resolution) will usually be

sufficient. Generally speaking, the smaller the source image and/or more detail it contains, the higher the resolution needs to be. Use the following table as a guide.

Type of artwork	Scanning resolution
Business cards, letter heads	150 - 300 dpi
Hand sketches	150 - 300 dpi
Photos and images	150 - 300 dpi
Commercial art, line drawing	72 - 150 dpi

Color mode

Most scanners also require you to enter color mode information. First decide whether your image is line art (black and white drawing), sketch, color picture, or black and white or color photograph, then choose an appropriate mode. Black and white mode produces the smallest files. Color photograph and grayscale modes generate 256 color images and produce similar sized files. 'RGB', 'True Color' or 'millions of colors' modes generate 16.7 million colors and produce the biggest files. Use the table below to decide which mode is suitable for use with your image.



Note Note that scanners may use different terms for the same mode, some of these terms are included.

Source image	Example	Description	Recommended color mode *	No. of colors in scanned image
Line art		Two colors – usually black and white	Black/white drawing Line art	2 2
Drawing/sketch		Sketch or drawing with shades of gray	Grayscale Line art	256 2
Black & white photograph		Shades of gray	Black/white photo Grayscale	256 256

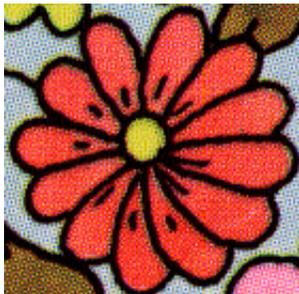
* Different scanning software uses different terms for the same mode.

Source image	Example	Description	Recommended color mode *	No. of colors in scanned image
Color photograph		Many colors	Color RGB Color photo	16 million 256
Color picture		Two colors or more	Color RGB Millions of colors Color drawing	16 million 16 million 2 - 256

* Different scanning software uses different terms for the same mode.

Scanning tips

- ▶ Do not scan line art images in grayscale mode; grayscale scanning produces fuzzy edges.
- ▶ Scan color images in RGB mode (millions of colors) rather than 256 color mode. You may not notice any difference on screen. In fact the 256 color image may look better than the RGB image. However, BERNINA Embroidery Software converts all images to 256 colors or less upon loading. It uses the extra information to produce a better image than if it was originally scanned at 256 colors.



Scanned in 256 color mode



Scanned in RGB color mode (millions of colors)

- ▶ Do not scan color images in CMYK mode as this is only used for images that will be printed and the colors may be different from RGB colors.
- ▶ If the image needs to be resized, scale it when you scan it. Scaling afterwards may distort the image.

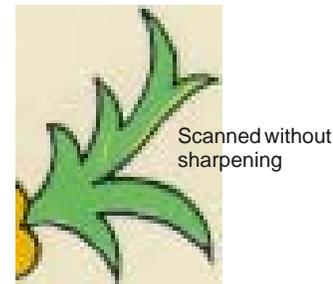
Sharpening

Some scanning software lets you apply what is called 'sharpening' as you scan. Sharpening compensates for the slight blurring in a scanned image by looking for any differences between colors in the image. Sharpening accentuates these differences which

makes the image edges more defined. It does not increase the image details; it just makes them more obvious. In general, use sharpening with images that have well-defined outlines. Do not use it with non-outlined images.



Scanned with sharpening

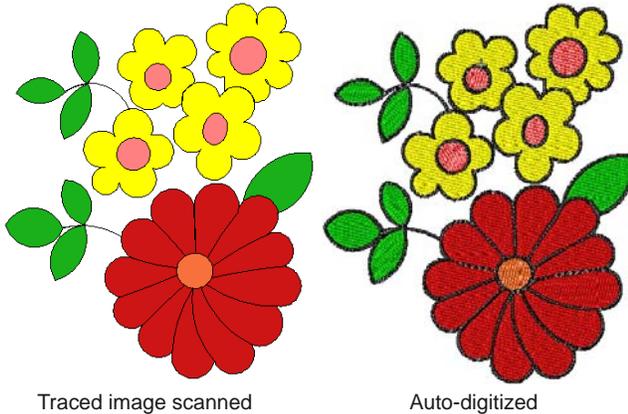


Scanned without sharpening

Importing artwork

Bitmap images and **vector** graphics of different formats can be scanned or 'loaded' into BERNINA Embroidery Software for use as digitizing **backdrops**. You can scale and transform them after importing but

it is generally better to do so during scanning. Scaling afterwards may distort the image.



Caution Included artwork (clipart) and embroidery designs can only be used for personal use – i.e. they cannot be commercially sold in any form. Changing the medium – i.e. clipart to embroidery or embroidery to clipart – does not remove copyright protection.

Scanning artwork



Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.



Use Artwork > Scan Bitmap to scan an image into BERNINA Embroidery Software.

You can scan images directly into BERNINA Embroidery Software for use as digitizing **backdrops**. The scanning feature in BERNINA Embroidery Software allows you to use most TWAIN-compatible scanners. You can use any scanning software provided that it can save the image in one of the compatible formats.



Tip You can also scan in your own textured backgrounds to see what a design will look like on real fabric. Fabrics can be scanned to provide full, centered, backgrounds to your design, or as small samples which can be tiled to fill the screen. See also [Setting backgrounds](#).

To scan artwork

- 1 Set up your scanner. See [Setting up scanners](#) for details.
- 2 Prepare the artwork for scanning. See [Preparing artwork for scanning](#) for details.
- 3 Switch to **Artwork Canvas**.
- 4 Click the **Scan Bitmap** icon.

- 5 Choose a scanning mode and resolution. See [Scanning resolution](#) and [Color mode](#) for details.



Tip If you are scanning a fabric background, set the scan to 256 colors, 100% and 72 dpi (dots per inch). These settings will give a small file which will display well on your screen without taking up too much disk space or memory.

- 6 Preview the image in the scanning program.
- 7 Select the area to be scanned and scan the image.
- 8 Save the scanned picture in a compatible format picture file to your **My Designs** folder. See also [Digitizing with Backdrops](#).



Note Scanned drawings are **bitmaps** and must be saved separately from the design file or they will be lost when you close the design. See [Saving backdrops as separate files](#) for details.

Inserting bitmap artwork



Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.



Use General > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.

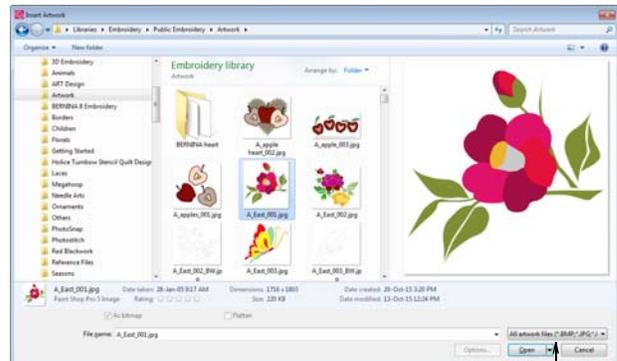


Use View > Show Bitmap Artwork to show and hide bitmap images.

You can load **bitmap** images of various formats for use as digitizing **backdrops** for manual or automatic digitizing.

To insert bitmap artwork

- 1 Switch to **Embroidery Canvas** and click the **Insert Artwork** icon.



Select format

- 2 Select a folder and select a file type from the **Files of Type** list – e.g. BMP.

- 3 Select a file and click **Open**.
- 4 Choose a digitizing technique:
 - ▶ Use the artwork as a digitizing backdrop: See [Digitizing Methods](#) for details.
 - ▶ Convert bitmap to embroidery: See [Automatic Digitizing](#) for details.



Note If you cannot see the image you loaded, make sure **Show Bitmap Artwork** icon is toggled on. See also [Displaying backdrops](#).

Loading vector artwork



Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.



Use General > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.



Use View > Show Vector Artwork to show or hide any vector artwork included in the design such as CorelDRAW® clipart.

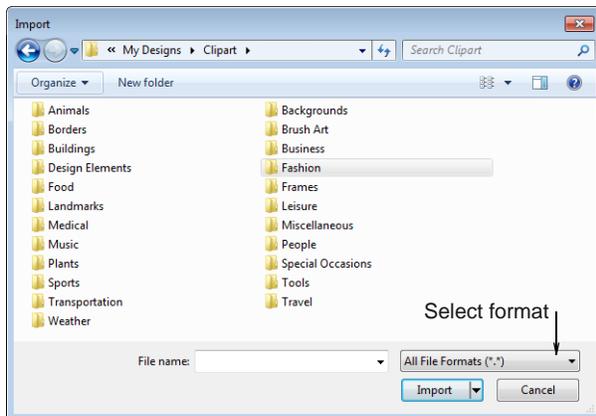
You can load **vector** artwork of various formats for use as digitizing **backdrops** for manual or automatic digitizing. You can also use this technique to insert bitmaps via **Artwork Canvas**.



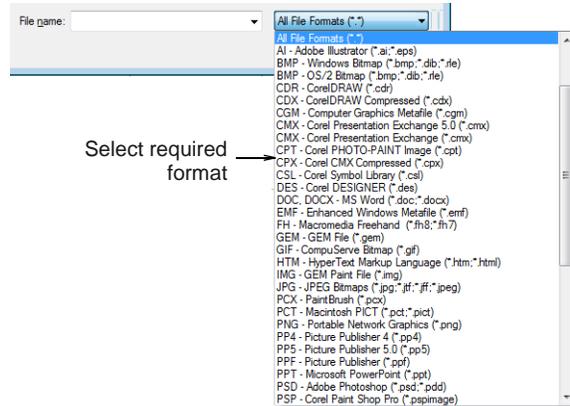
Note CorelDRAW® Essentials X6 is packaged with a selection of clipart which can be used as digitizing **backdrops** or converted directly into embroidery. See also [Browsing clipart](#).

To load vector artwork

- 1 Switch to **Artwork Canvas** and click the **Insert Artwork** icon.



- 2 Select a folder and select a file type from the **Files of Type** list – e.g. CDR.



- 3 Select a file and click **Import**.
- 4 Position the cursor in the design window and press **Enter**.
- 5 Choose a digitizing technique:
 - ▶ Convert **vectors** to embroidery: See [Converting vector artwork](#) for details.
 - ▶ Switch to **Embroidery Canvas** and use the artwork as a digitizing backdrop: See [Digitizing Methods](#) for details.



Note If you cannot see the image you loaded, make sure **Show Vector Artwork** icon is toggled on. See also [Displaying backdrops](#).



Tip Locking **backdrop** images holds them in place as you digitize, transform or reshape the embroidery objects near them. Locked objects can be unlocked for modification at any time. See also [Locking & unlocking objects](#).

Editing imported artwork

For both manual and automatic **digitizing** purposes, you may want to crop an image before digitizing. You can do this within BERNINA Embroidery Software or using a third-party graphics application. Sometimes, you may want to save backdrops as separate files after scanning or cropping.



Tip For both manual and automatic **digitizing** purposes, 'clean' images, sometimes referred to as 'cartoons', work best. Scanners introduce noise, while graphics applications perform 'dithering' and 'anti-aliasing' to improve print quality. See also [Preparing images for automatic digitizing](#).

Cropping bitmaps for digitizing

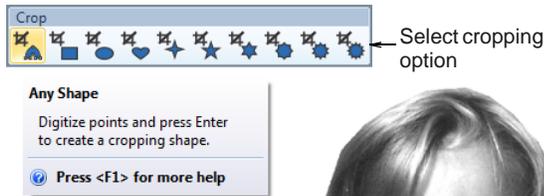
 Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

 Use Auto-Digitize > Crop Background to crop bitmap artwork for use with auto-digitizing.

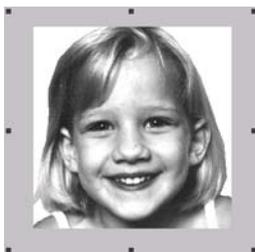
BERNINA Embroidery Software allows you to crop images prior to use. Before using **bitmap** images for design purposes, crop them to remove unnecessary detail and save processing time.

To crop a bitmap for digitizing

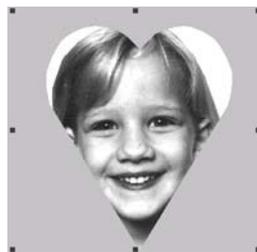
- ▶ Scan or load the image you want to use. See [Importing artwork](#) for details.
- ▶ Select the bitmap and click **Crop Background**. The **Crop** toolbar opens.



- ▶ Digitize points to create a cropping shape around the part of the image you require and press **Enter**.



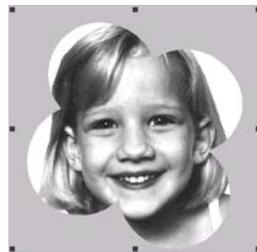
Rectangle



Heart



Star 10 points



Curve

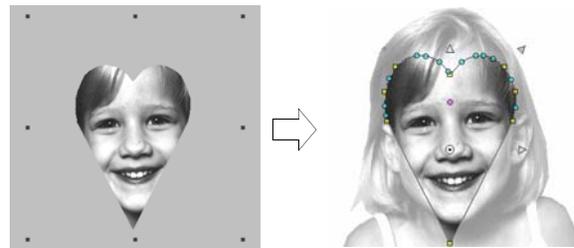
Reshaping cropped bitmaps

 Click Transform > Reshape Object to crop a free form image.

After an image has been cropped, you can reshape and transform the cropping outlines in the same way as you reshape and transform lettering. You can also use the tool to reposition cropping outlines. See also [Reshaping letters on screen](#).

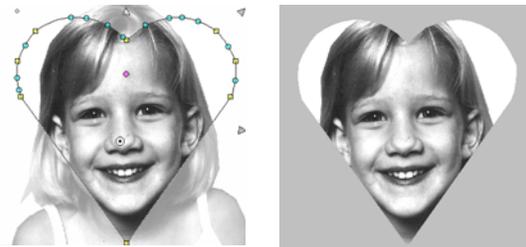
To reshape cropped images

- 1 Crop an image and select. See [Cropping bitmaps for digitizing](#) for details.
- 2 Click the **Reshape Object** icon.



- 3 Adjust reshape nodes to change the shape and press **Enter**.

The image displays the cropping outline with reshape nodes.



- 4 Press **Esc** to finish.

Touching up artwork

 Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

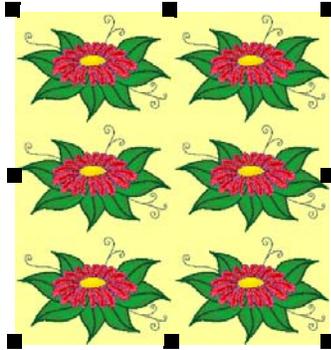
 Use Auto-Digitize > Touch Up Bitmap Artwork to edit images in a third-party graphics application.

From within BERNINA Embroidery Software you can open images into third-party graphics applications which can help you improve your scanned images. Eliminate backgrounds, flood-fill solid areas with color, or add outlines, close gaps, or reinforce outlines. Images updated in this way are automatically re-imported into BERNINA Embroidery Software.

Many graphics applications are available. At one end of the spectrum you have the simple MS Paint application. This comes free with MS Windows® but can handle few formats or color conversions. At the other end there are professional tools such as Corel PHOTO-PAINT® Essentials X6.

To touch up artwork

- 1 Scan or load the image you want to use. See **Importing artwork** for details.
- 2 Still in **Artwork Canvas** mode, select the image.



Use a graphics application to cut out part to be embroidered

- 3 Click the **Touch Up** icon. The image opens into the Corel PHOTO-PAINT® Essentials X6 application.
- 4 Edit the image as required.



Image cropped



Background removed



Outlines added

- 5 Select **File > Update Design**.

The image displays in BERNINA Embroidery Software overlaid with stripes. This means that it is still open in the graphics application.

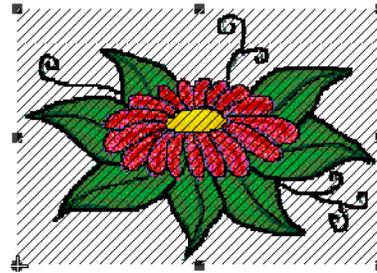


Image still open in graphics application

- 6 Select **File > Exit & Return <Filename>** to exit the graphics application.

The updated image displays in BERNINA Embroidery Software and the stripes disappear.



Tip If you want to keep the graphics application open, select **File > Close** when finished updating the image.

Saving backdrops as separate files



Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

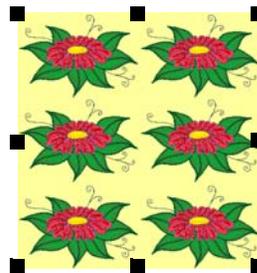


Use Artwork > Save Artwork to save a backdrop as a separate file.

All images placed in the design window, whether by scanning, pasting or inserting from hard disk, are saved together with the embroidery design in the ART file. After editing in BERNINA Embroidery Software or third-party graphics application, you may want to save the image out as a separate file.

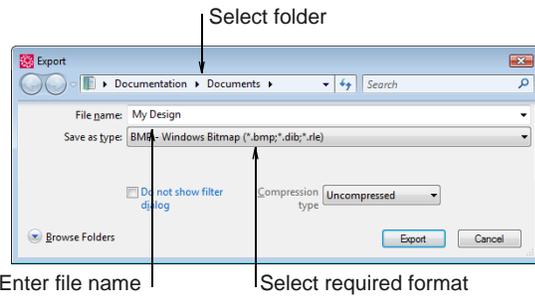
To save a backdrop as a separate file

- 1 Scan or load the image you want to use. See **Importing artwork** for details.
- 2 Still in **Artwork Canvas** mode, select the image.



- 3 Click the **Save Artwork** icon.

The **Export** dialog opens.



- 4 In the **Save In** field, select a folder, then select a format from the **Save as type** droplist.
- 5 Enter a new file name and click **Export**.
When you save the design, the reference is updated to use the new image file.



Note This file is not referenced by the ART file. Any further changes to it are not reflected in the embedded image.

CHAPTER 14

IMAGE PROCESSING

BERNINA Embroidery Software supports the automatic and semi-automatic digitizing of bitmap images. The quality of the resulting designs greatly depends on the type and quality of the original artwork. In order to make bitmap images more suitable for automatic digitizing, BERNINA Embroidery Software also provides image processing capabilities and links to graphics packages.

This section describes how to prepare images for automatic digitizing. It explains how to prepare both outlined and non-outlined images.



Preparing images for automatic digitizing

Before applying automatic digitizing, you frequently need to improve or 'clean up' artwork. To work effectively, both **Auto-Digitize** and **Magic Wand** require solid color images as input. You can improve artwork both with **bitmap** editing tools in graphics packages and/or the image processing tools provided in BERNINA® Embroidery Software. In fact, the software will not let you apply **Auto-Digitize** until the image has been suitably processed.

Outlined vs non-outlined images

Before preparing your image you need to know what type you are using. For the purposes of automatic digitizing, there are two categories – outlined and non-outlined. Outlined images ideally have a solid black outline around each colored area. Non-outlined images ideally consist of solid areas of color. Outlined

and non-outlined images require different methods of preparation.

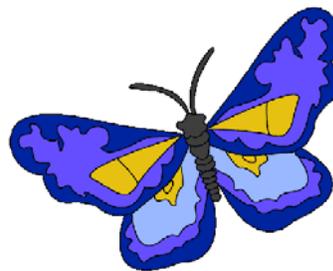


Image with outlines



Image without outlines

Image clean up

In practice, cleaning up scanned images may involve any one or a combination of the following techniques:

- ▶ reducing the number of colors
- ▶ adding or emphasizing outlines
- ▶ removing noise, dithering or anti-aliasing
- ▶ eliminating unnecessary detail
- ▶ cropping sections
- ▶ eliminating backgrounds.

Color reduction

Sometimes an image looks clean but extra colors have been introduced during scanning or in a graphics package. Color reduction means reducing the actual **number** of image colors in order to eliminate unnecessary detail and reduce each block to a single color. Color reduction also cleans the image, removing noise and anti-aliasing if present. This in turn helps minimize the number of trims and color changes required in the resulting embroidery design. Reduce colors in a non-outlined and outlined images using the **Bitmap Artwork Preparation** function.

Color reduction should only be applied if the loss of detail does not affect the image shapes. Before color reduction, the colored areas in the image below include many colors. After reduction, each area is reduced to a single color. The detail is preserved.

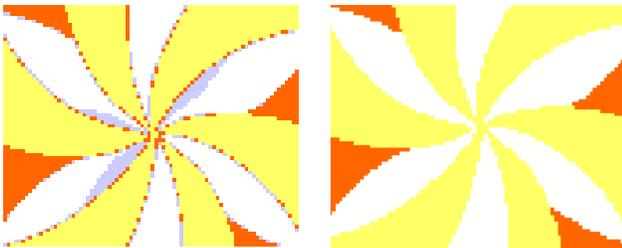


Image before color reduction

Image after color reduction

If you are scanning images, make sure you scan them correctly for best results. See [Scanning artwork](#) for details.



Scanned in 256 color mode

Scanned in RGB color mode (millions of colors)

Outline sharpening

Outline sharpening means more clearly defining the outlines bordering distinct color blocks or shapes in the artwork. These may have been indistinct in the original or made so by the scanning process. Outline sharpening is important for automatic digitizing because it makes it easier for the software to identify

the distinct areas which become embroidery objects in the resulting design.



Note Outline sharpening only works on images with black or dark outlines.

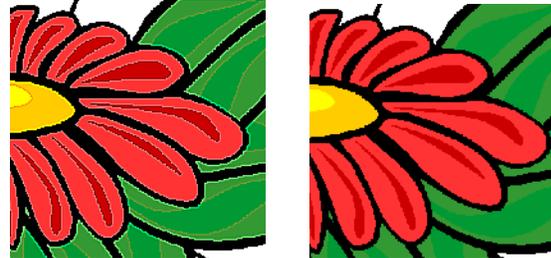


Image before outline sharpening

Image after outline sharpening

Some images have solid outlines but they may be indistinct or incomplete. These need to be rectified with the BERNINA Embroidery Software artwork preparation tools or a graphics package. See [Touching up artwork](#) for details.

Noise filtering

Noise filtering means restoring the solid color blocks of the original artwork in scanned images. This is achieved by merging different shades into one solid color. Noise filtering is important for automatic digitizing because it makes it easier for the software to identify solid color blocks which become embroidery objects in the resulting design. It also cleans up blurred or mottled areas of color.



Image of mottled colors before noise removal

Image single colors after noise removal

Artwork preparation summary

Even if your artwork looks ready to stitch when inserted into the software, it will need to be prepared and image-processed before conversion.

Action	Outlined image	Non-outlined image	Photo
Scan artwork	<ul style="list-style-type: none"> • Scan in RGB mode • Use sharpening 	<ul style="list-style-type: none"> • Scan in RGB mode • No sharpening 	Scan in RGB mode

Action	Outlined image	Non-outlined image	Photo
Scan line drawing	Scan in two-color mode	n/a	n/a
Touch up in external graphics program	<ul style="list-style-type: none"> • Crop • Add or edit outlines • Edit colors • Remove noise 	<ul style="list-style-type: none"> • Crop • Edit image shapes • Edit colors • Remove noise 	<ul style="list-style-type: none"> • Crop • Convert to grayscale • Remove background • Adjust contrast
Use Bitmap Artwork Preparation tool	Automatically: <ul style="list-style-type: none"> • Reduce each outlined block to a single color • Remove anti-aliasing, noise and dithering • Sharpen outlines. 	Automatically: <ul style="list-style-type: none"> • Reduce each block to a single color • Remove anti-aliasing, noise and dithering • Merge redundant colors. 	Color PhotoStitch contains its own image preparation methods
Digitize	<ul style="list-style-type: none"> • Manual • Magic Wand • Auto-Digitize 	<ul style="list-style-type: none"> • Manual • Magic Wand • Auto-Digitize 	<ul style="list-style-type: none"> • PhotoSnap • Color PhotoStitch

Preparing non-outlined bitmaps

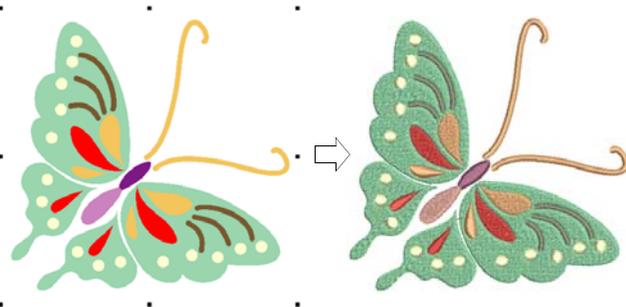


Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.



Use General > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.

The **Embroidery Canvas** provides a **Bitmap Artwork Preparation** option to prepare non-outlined images for automatic **digitizing**. This function automatically reduces color blocks in **bitmap** images to a single color, removing anti-aliasing and noise. You can let the software reduce the color count automatically or specify a precise number. The latter is useful if you want to match design colors to an exact number of threads.



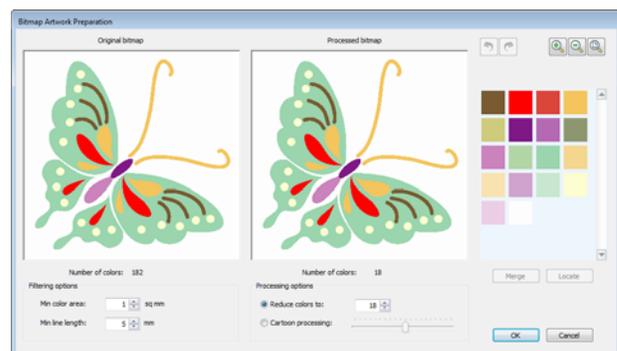
Tip Depending on the quality of the scanned image, you may need to touch it up manually before processing in BERNINA Embroidery Software. You would normally do this in order to eliminate backgrounds, flood-fill solid areas with color, or add outlines, close gaps, or reinforce outlines. See [Touching up artwork](#) for details.

To prepare a non-outlined bitmap

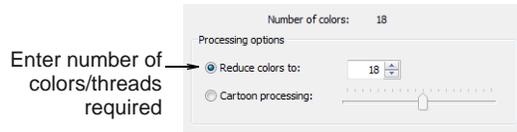
- 1 Scan or load the image you want to use. See [Importing artwork](#) for details.
- 2 In **Artwork Canvas**, select the image and crop or size as required. See [Editing imported artwork](#) for details.
- 3 Switch to **Embroidery Canvas** and select the image.



- 4 Select **Artwork > Bitmap Artwork Preparation**. The image appears in both 'before' and 'after' preview panels.



- 5 Check the number of colors in the bitmap. If there are a lot, the image probably contains 'noise'. See also [Preparing images for automatic digitizing](#). The software suggests a reduced color count and shows a preview.



- 6 First try adjusting the color count up or down to match the number of threads you wish to use.
- 7 If the image still contains 'noise', try adjusting the filtering options:

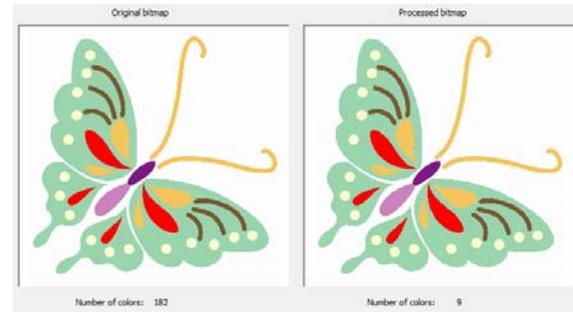
Option	Purpose
Min color area	This defines the smallest area recognized by the conversion. The default is 0.5 by 0.5 square mm (about eight pixels). Increase this value if your image has a lot of 'out-of-color' pixels. The minimum color area should not exceed 1/16 of the total area.
Min line length	This defines the smallest line length recognized as an object. The default is 2 mm. The minimum line length should not exceed 25% of the smallest dimension.

- 8 Use the zoom buttons to view the image more closely. In addition, you can use the mouse wheel to zoom in and out. You can also click and drag the image to pan it within the preview panel.
- 9 If necessary, manually locate and merge colors.



- ▶ Holding the **Ctrl** key, click like-colors in the color palette to select.
- ▶ Click and hold the **Locate** button to preview.
- ▶ Click **Merge** to merge all like-colors into a single color.

- 10 Experiment with settings to obtain the best result.



- 11 Click **OK** to apply changes.

The image is ready for automatic digitizing. See [Automatic Digitizing](#) for details.

Preparing outlined images

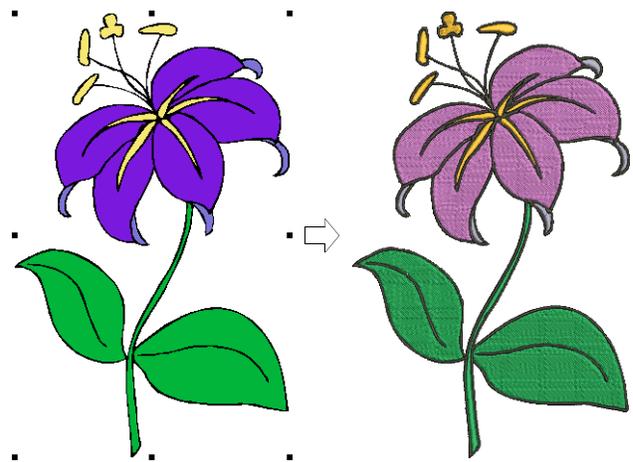


Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.



Use General > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.

Use the **Bitmap Artwork Preparation** tool to prepare outlined images for automatic [digitizing](#). Outline sharpening makes it easier for the software to recognize distinct areas in the artwork. These areas then become the [embroidery objects](#) of the finished design. Use it particularly if the outlines are blurry, fuzzy or indistinct.

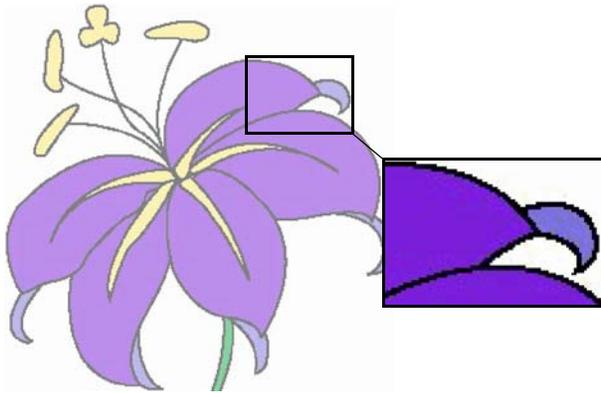


Tip Depending on the quality of the scanned image, you may need to touch it up manually before processing in BERNINA Embroidery Software. You would normally do this in order to crop an image,

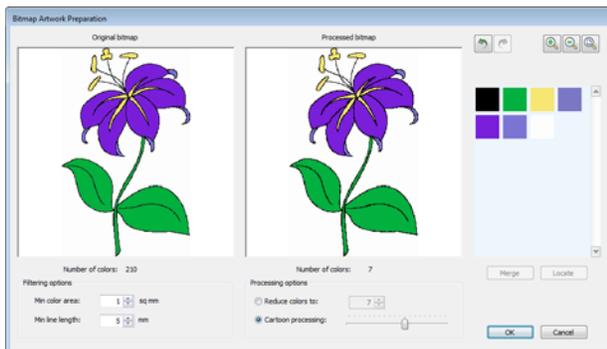
eliminate backgrounds, flood-fill solid areas with color, or add borders, close gaps, or reinforce borders. See [Editing imported artwork](#) for details.

To prepare an outlined image

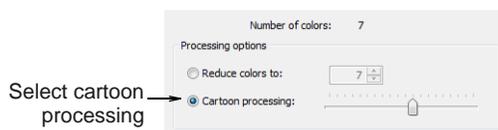
- 1 Scan or load the image you want to use. See [Importing artwork](#) for details.
- 2 In **Artwork Canvas**, select the image and crop or edit it as required. See [Editing imported artwork](#) for details.
- 3 Switch to **Embroidery Canvas** and select the image.
- 4 Zoom to view the outline.



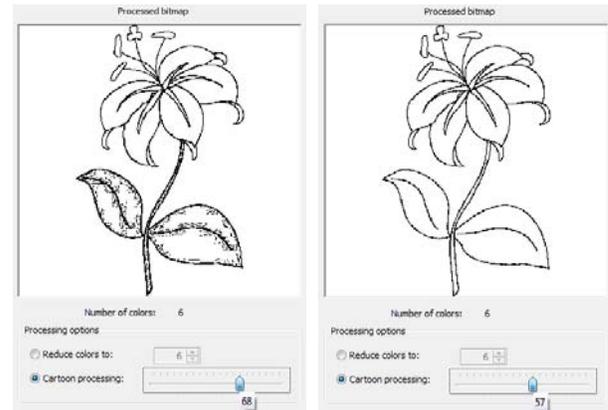
- 5 Select **Artwork > Bitmap Artwork Preparation**. The image appears in both 'before' and 'after' preview panels.



- 6 Check the number of colors in the bitmap. If there are a lot, the image probably contains 'noise'. See also [Preparing images for automatic digitizing](#).
- 7 Select the **Cartoon processing** option. The software suggests a reduced color count and shows a preview.

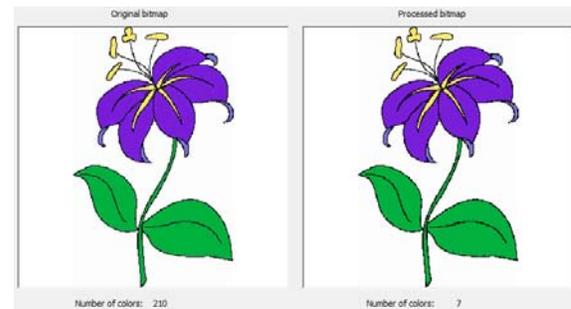


- 8 Use the slider control to set the outline contrast tolerance. This produces a black and white preview of the detected outlines.



Tip Move the slider to the right until there is too much black, then move it slowly back to the left. Stop when the image shows the outlines clearly.

- 9 Experiment with settings to obtain the best result. If necessary, manually locate and merge like colors as for non-outlined images.



- 10 Click **OK** to apply changes.

The image is ready for automatic digitizing. See [Automatic Digitizing](#) for details.

CHAPTER 15

AUTOMATIC DIGITIZING

Through its integration with CorelDRAW®, BERNINA Embroidery Software allows inter-conversion of **vector** and **embroidery objects**. The **Convert Vectors to Embroidery** tool can be applied to text as well as vector artwork.



The **Auto-Digitize** tools automatically convert artwork to entire designs with little or no intervention. With these tools, novice embroiderers can create simple designs quite quickly and easily.

BERNINA Embroidery Software also provides a **Magic Wand** tool for quickly generating simple embroidery directly from electronic artwork. This in turn frees you to spend more time on the artistic or more complicated areas of your designs.

With **PhotoSnap** you can create embroidery from photographs and other images. While **PhotoSnap** designs consist of rows of single-color satin stitching, **Color PhotoStitch** produces variegated stitching using multiple thread colors.

This section describes how to automatically convert vector artwork as well as bitmap images to embroidery designs with the available techniques. It also covers how to create embroidery from photographs.

Converting vector artwork



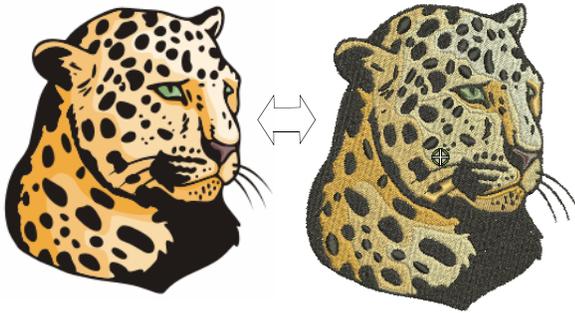
Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.



Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.

Special conversion tools in BERNINA Embroidery Software automatically convert **vector objects** and text to **embroidery** or lettering objects. In fact, entire vector drawings can be quickly and easily converted

to embroidery designs. When creating embroidery objects, the software determines optimum object and stitch type for given shapes. These can be modified as required. You can also convert embroidery designs or objects to vector objects.



Caution Included artwork (clipart) and embroidery designs can only be used for personal use – i.e. they cannot be commercially sold in any form. Changing the medium – i.e. clipart to embroidery or embroidery to clipart – does not remove copyright protection.

Conversion limitations

There are some limitations when converting some CorelDRAW® vectors to embroidery. Vector special effects, such as drop shadow, contour, and transparency, do not convert well as there is no equivalent embroidery effect. Enveloped text and **Fountain** or **Mesh** fills do not always give the expected result either.



If there is no embroidery equivalent, the object is converted with solid colors only. Enveloped text is converted to embroidery objects rather than embroidery text.

Converting vectors to embroidery



Use Canvas > Convert Artwork to Embroidery to convert selected vector or bitmap artwork to fill or outline stitches.

The **Convert Artwork to Embroidery** tool converts fill or outline properties of selected **vector artwork** to fill or outline stitch types respectively. It can be

applied to text as well as vector artwork. See also [Converting text to embroidery](#).



Note Bitmaps cannot be converted to embroidery via the **Convert Artwork to Embroidery** tool as images still need to be processed prior to conversion. See [Image Processing](#) for details.

To convert vectors to embroidery

- 1 Switch to **Artwork Canvas**.
- 2 Scan, load, and size the artwork and/or text you want to use. See also [Importing artwork](#).



- 3 Click **Convert Artwork to Embroidery**.

BERNINA Embroidery Software automatically switches to **Embroidery Canvas**.



Converting embroidery to vectors

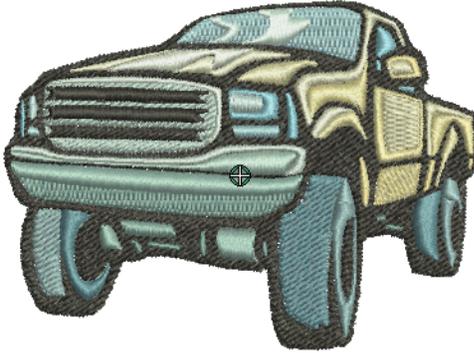


Use Canvas > Convert Embroidery to Artwork to convert selected embroidery objects to vector artwork.

The **Convert Embroidery to Artwork** tool converts selected **embroidery objects** to **vectors**.

To convert embroidery to vectors

- 1 Switch to **Embroidery Canvas**.



- 2 Select embroidery and/or lettering objects and click **Convert Embroidery to Artwork**. BERNINA Embroidery Software automatically switches to **Artwork Canvas** mode.



Auto-digitizing with Auto-Digitize

An extension of **Magic Wand** technology, **Auto-Digitize** recognizes shapes in artwork and makes decisions about the most suitable stitch types to use. It also determines the stitching sequence based on closest join. Artwork is effectively 'batch processed' to create the many **embroidery objects** that make up a design.



Note Even if your artwork looks ready to stitch when inserted into the software, it will need to be image-processed before conversion. The software will not let you apply automatic **digitizing** techniques without preliminary image-processing. See **Image Processing** for details.

Digitizing whole images automatically



Use Auto-Digitize > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.



Use View > Show Bitmap Artwork to show and hide bitmap images.



Use Auto-Digitize > Instant Auto-Digitize to automatically digitize bitmap artwork instantly.



Use Auto-Digitize > Auto-Digitize to automatically digitize prepared bitmap artwork.

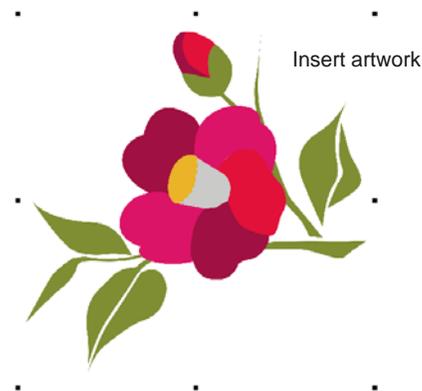
In essence, creating an embroidery design with the **Instant Auto-Digitize** tool is simply a matter of selecting the image you want to convert, and clicking the tool. The system automatically determines colors to fill, turn into details, or omit altogether. And it chooses suitable stitch types using default settings. Even if an image has not been pre-processed, **Instant Auto-Digitize** will automatically process and convert it.

For more control over object conversion, use the **Auto-Digitize** method. This too can recognize shapes in bitmap artwork and choose suitable stitch types to use. However, it provides more control over conversion settings.

Once created, you can always edit the final result using the available **digitizing** techniques. Always remember to apply underlays and you may need to reshape some objects.

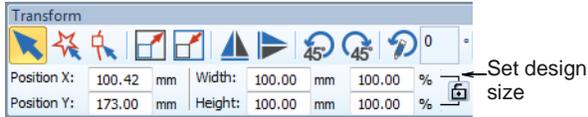
To digitize a whole image automatically

- ▶ Scan or insert the image you want to use. See **Importing artwork** for details.

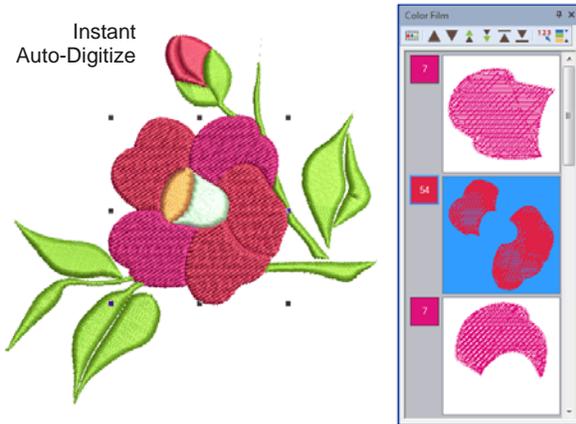


- ▶ If you cannot see the image, turn on **Show Bitmap Artwork**. See **Displaying backdrops** for details.

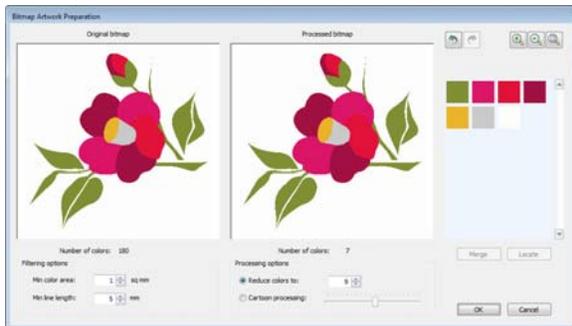
- ▶ Size the artwork for its intended purpose.



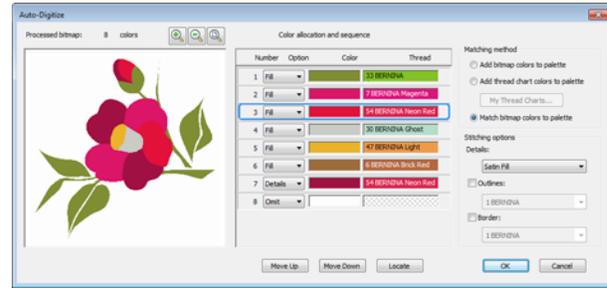
- ▶ Optionally, pre-process the image with the image preparation tool. See **Image Processing** for details.
- ▶ For an instant sample of your artwork, click **Instant Auto-Digitize**. With simple designs, the results may be sufficient to work with.



- ▶ For more control, select the image and click **Auto-Digitize**. The software checks whether the bitmap has been processed and displays the **Bitmap Artwork Preparation** dialog as necessary. See **Image Processing** for details.



- ▶ Image colors are automatically classified as fills or details, or omitted altogether.



- ▶ Select a color in the list and use the **Locate** button to preview. Should the color be treated as a fill or a detail?



- ▶ Use droplists to tag colors or omit them altogether. Fills are always stitched first, details, including borders or small areas, last.

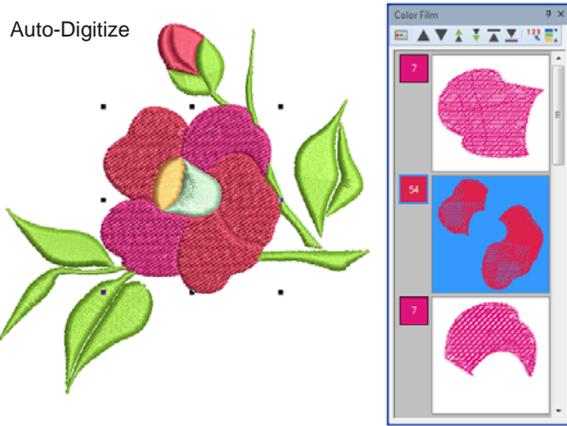


- ▶ Use Up / Down buttons to adjust the stitching sequence as preferred.
- ▶ Select a conversion method for color processing. By default, image colors are matched to the nearest thread colors in the current design palette.



- ▶ Use the 'Add Bitmap Colors to Palette' option if you want to use the exact image colors.
- ▶ Adjust stitching options for details as preferred. See **Adjusting automatic stitch settings** for details.

- ▶ Click **OK** to process the image.



Note All editing techniques are available to further refine the auto-digitized image.

Adjusting automatic stitch settings



Use Auto-Digitize > Auto-Digitize to automatically digitize prepared bitmap artwork.

Auto-Digitize lets you adjust object recognition settings for any color you identify as a 'detail'. A detail may be a centerline, a border, or a small area of the design you want stitched last. If an image color is both a fill and a detail, you can either recolor the fill color in a graphics package, or omit it for later editing. **Auto-Digitize** also allows you to automatically generate outlines during image conversion.

To adjust automatic stitch settings

- ▶ Auto-digitize your artwork using the **Auto-Digitize** method. See [Digitizing whole images automatically](#) for details.



- ▶ Select a stitching style for details from the droplist:

Style	Description
Centerline	Most suited for use with thin lines. This option will trace the center of a color identified as a detail with a run stitch.
Satin line	Suited for use with thicker lines of constant width, usually with larger designs. However, if the width of the shape varies, the software will automatically apply satin fill even if satin line is selected.
Satin fill	Most suited for use with thicker lines or small shapes of varying width.



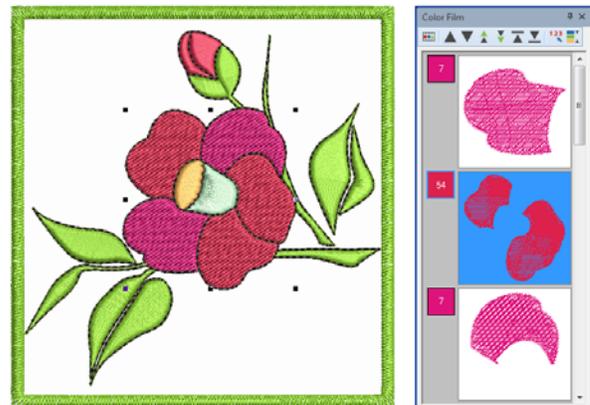
Note Do not use satin fill for areas where the stitch length exceeds 7 mm. See [Preserving long stitches](#) for details.

- ▶ Optionally, add outlines to all color blocks. Tick **Outlines** and select a color. This has the effect of reinforcing color blocks with a continuous, branched running stitch.



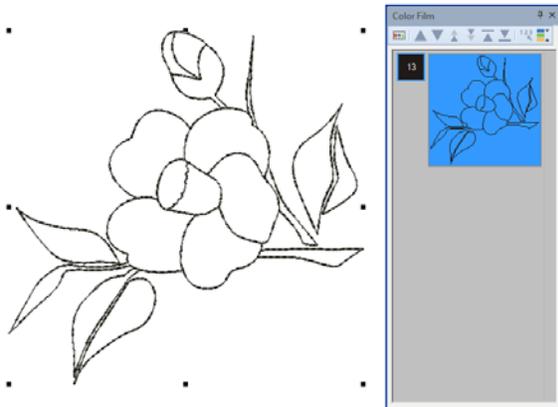
Caution If the image already contains outlines, the use of **Outlines** will result in double outlines.

- ▶ Similarly, you can add a border to the entire design by ticking the **Border** checkbox.
- ▶ Click **OK** to process the image.

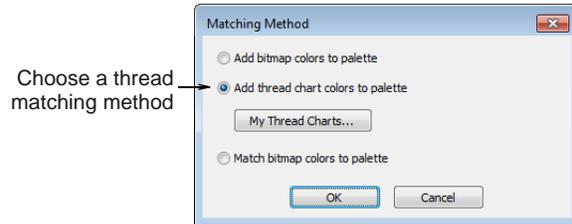




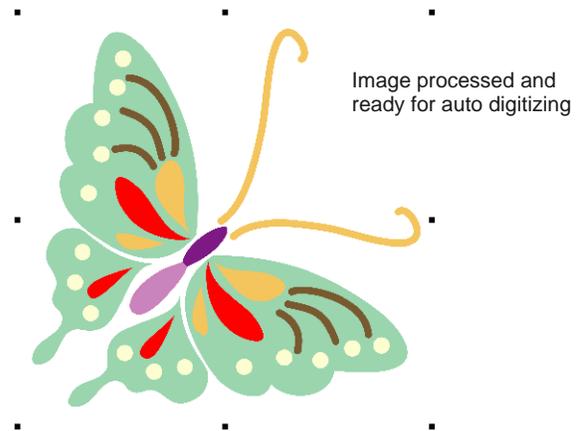
Tip You may omit all image colors from the selection criteria and choose to generate only outlines.



- Switch back to **Embroidery Canvas** and make sure **Show Bitmap Artwork** is toggled on. See also [Displaying backdrops](#).
- Use **Matching Method** to assign image colors to the color palette for manual thread matching, or automatically match them to the current color palette or current thread chart.



- Select **Magic Wand**.



Auto-digitizing with Magic Wand

-  Use General > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.
-  Use View > Show Bitmap Artwork to show and hide bitmap images.
-  Use Auto-Digitize > Magic Wand to digitize large artwork shapes with weave fill, preserving any holes within.
-  Use Auto-Digitize > Magic Wand Block Digitizing to digitize narrow column artwork shapes with satin stitch.
-  Use Auto-Digitize > Magic Wand Fill without Holes to digitize large artwork shapes with tatami fill, ignoring any holes within.
-  Use Auto-Digitize > Magic Wand Centerline to digitize centerlines in artwork with run stitching.
-  Use Auto-Digitize > Matching Method to assign image colors to the color palette for manual thread matching, or automatically match them to the current color palette or current thread chart.

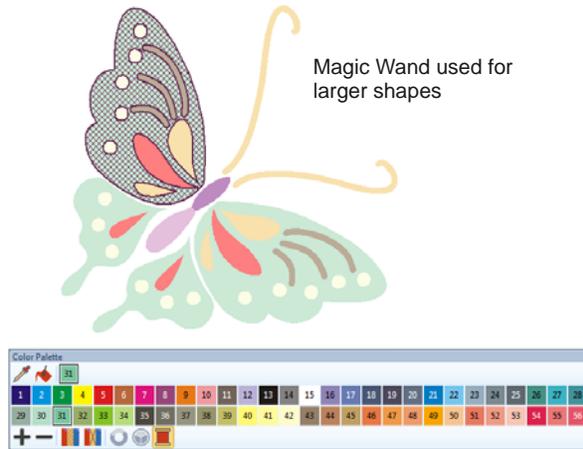
The **Magic Wand** tools provide everything necessary to digitize shapes in **bitmap** images automatically.

To digitize shapes automatically

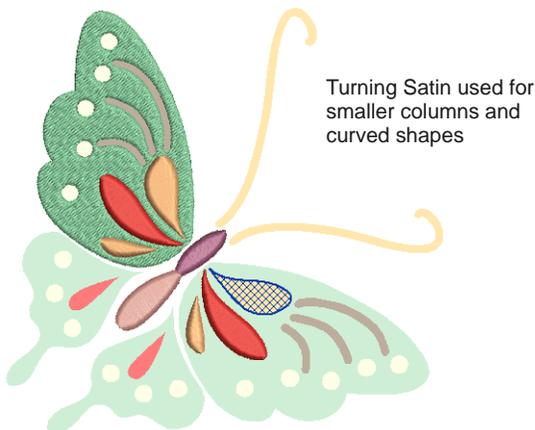
- Scan or load the image you want to use. See [Importing artwork](#) for details.
- In **Artwork Canvas**, select the image and crop or size as required. See [Editing imported artwork](#) for details.

- Click an area of the image as prompted. The software checks whether it has been processed and displays the **Bitmap Artwork Preparation** dialog as necessary. See [Image Processing](#) for details.
- Hover the mouse pointer over an area of the image, and click.

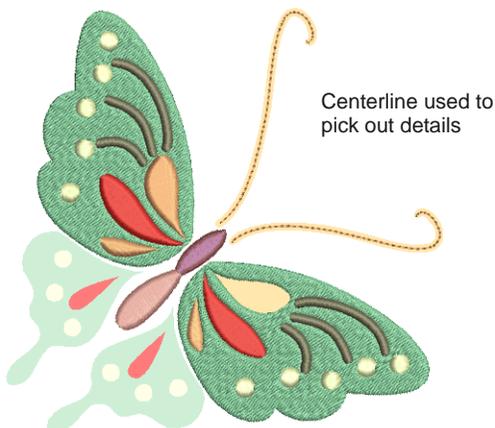
Stitches are generated according to current stitch settings. Jumps may appear if stitch length exceeds the default.



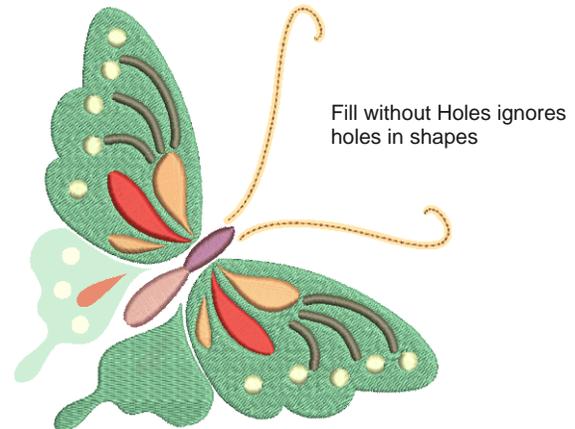
- 8 Choose **Magic Wand** tools according to object shape. Turning Satin, for instance, is suited to narrow columns.



- 9 Use the **Centerline** tool to pick out details.

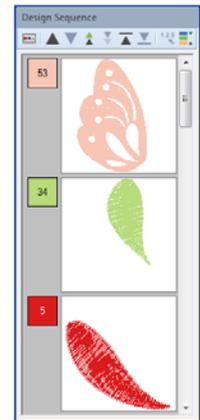
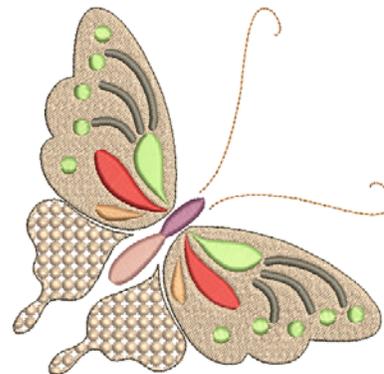


- 10 Use the **Fill without Holes** tool to ignore holes in shapes.



- 11 If you want to both fill and outline a shape, using the **Magic Wand** tool, left-click for fills and right-click for outlines.

- 12 Change thread colors and stitch type as required. See also [Selecting stitch types](#).



- 13 Use the **Color Film** to place objects in the optimum stitching sequence. See also [Sequencing embroidery objects](#).



Caution It is easy with **Magic Wand** tools to double-click and inadvertently create double-layers of stitching. Check everything you do in the **Color Film** and delete any unnecessary objects.

Auto-digitizing with Color PhotoStitch



Use Auto-Digitize > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.

-  Use View > Show Bitmap Artwork to show and hide bitmap images.
-  Use Auto-Digitize > Adjust Image to adjust image lightness and contrast.
-  Use Auto-Digitize > Touch Up Bitmap Artwork to edit images in a third-party graphics application.
-  Use Auto-Digitize > Color PhotoStitch to automatically turn photographs and other bitmap artwork into multi-colored embroidery.

Use **Color PhotoStitch** to create embroidery from photographs and other images. While **PhotoSnap** designs consist of rows of single-color satin stitching, **Color PhotoStitch** produces variegated stitching using multiple thread colors. The overall effect is like multi-colored stippling. For best results, use crisp images with well-defined subjects and constantly varying shades.



To prepare the image

- ▶ Scan or insert the image you want to use. For best stitching results, images are better imported via the **Artwork Canvas** than **Embroidery Canvas**. See also **Importing artwork**.

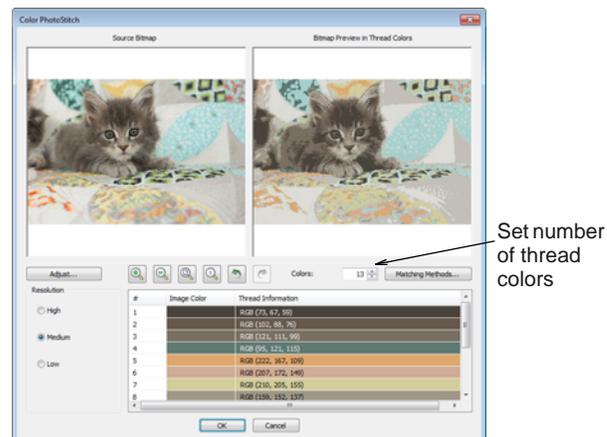


- ▶ If you cannot see the image, turn on **Show Bitmap Artwork**. See **Displaying backdrops** for details.

- ▶ Optionally, use **Adjust Image** to adjust basic lightness and contrast. These settings are designed to attune image colors to available thread colors. For the full range of image adjustment techniques, use a dedicated graphics program like PHOTO-PAINT.
- ▶ Optionally, touch up using Corel PHOTO-PAINT or similar program. See **Touching up artwork** for details.
- ▶ Optionally, crop the image. See **Cropping bitmaps for digitizing** for details.
- ▶ Size the image for its intended purpose. Optimal size is 150mm x 150mm or about 6" x 6".
- ▶ Choose the machine and hoop that you will use. See **Selecting hoops** for details.

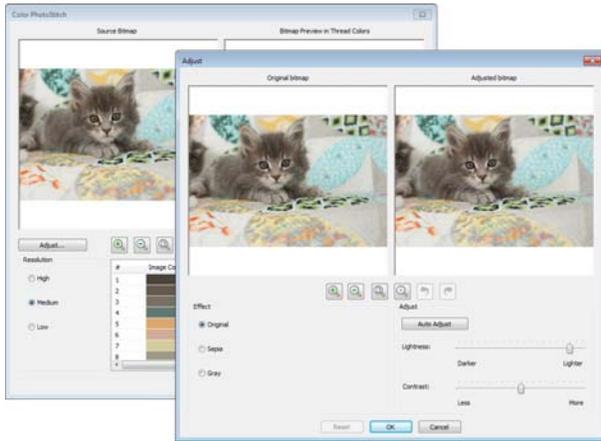
To process the image

- ▶ With the image selected, click **Color PhotoStitch**.



- ▶ Set the number of thread colors. There will be a point a diminishing returns where more colors do not always result in greater design clarity or stitchability. Usually 7 to 10 colors produce the best results.
- ▶ Use the zoom buttons to examine the previews in detail. You can also zoom in and out with the mouse wheel.

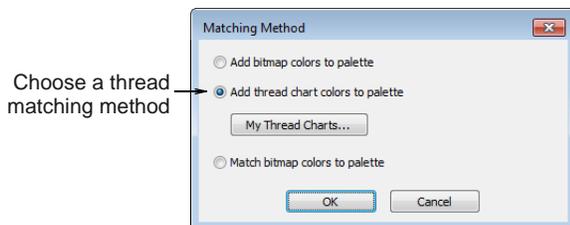
- ▶ Optionally, adjust stitching resolution to high, medium, or low. High resolution allows greater detail but with a higher stitch count.



- ▶ Click **Adjust** for further options. Choose between several image variations:

Effect	Notes
Sepia	In photographic terms, 'sepia' refers to the dark-brown color of old-fashioned prints. Originally the process involved adding a pigment made from cuttlefish ink during development.
Gray	Again in photographic terms, a grayscale or greyscale images are ones composed exclusively of shades of gray, varying from black at the weakest intensity to white at the strongest.

- ▶ Optionally, adjust basic lightness and contrast if you haven't already done so.
- ▶ Optionally, use **Matching Method** to assign image colors to the color palette for manual thread matching, or automatically match them to the current color palette or current thread chart.

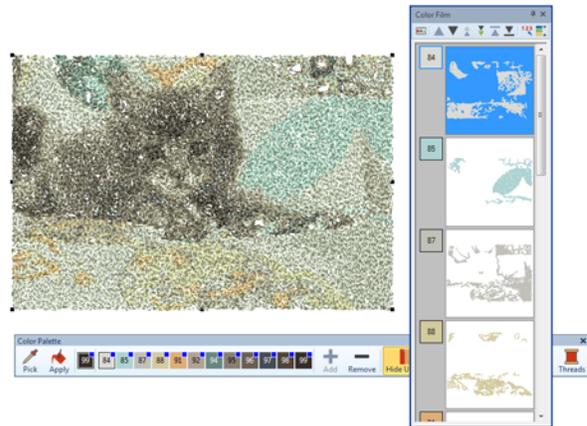


Use the button to select one or more available thread charts to match to.

- ▶ Click **OK** to process the image.

To edit the results

- ▶ Check the results with **Artistic View** on and off. Turn connector stitching on and off. See also **Embroidery view settings**.
If you are unsatisfied with the results, click **Undo** and try again. Try different settings and check the previews. You may need to touch up the image in PHOTO-PAINT if none of the results is good enough.
- ▶ Edit the results and manually merge thread colors as desired.



- ▶ If you have added RGB colors to the color palette, open the **Color Film** and **My Threads** dockers side-by-side, and select the thread charts you have available from the **Thread Charts** dialog. Select each color block in turn, check the closest match in **My Threads** docker, and manually choose a thread. Sometimes the closest match may not be the best or be unavailable. Choosing the correct thread is key to getting a good result.

Auto-digitizing with PhotoSnap

- ▶ Use Auto-Digitize > Insert Artwork to import artwork into current design as a backdrop for manual or automatic digitizing.
- ▶ Use View > Show Bitmap Artwork to show and hide bitmap images.
- ▶ Use Auto-Digitize > PhotoSnap to automatically create rows of Satin and Contour stitches of varying spacing in current color from photographs and other bitmap artwork. The effect resembles the output of a line printer.

Use **PhotoSnap** to create embroidery from photographs and other images. Use color or grayscale. Grayscale images are made up of different

shades of gray pixels. Color images are automatically converted to grayscale when you apply PhotoSnap.



PhotoSnap designs consist of rows of satin stitches of varying spacing. The effect resembles the output of a line printer.



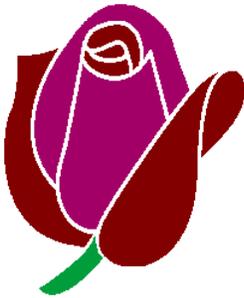
With border and lettering added



Tip For best results, use images with well-defined subjects or constantly varying shades.

To create a design with PhotoSnap

- 1 Scan or load the image you want to use. See [Importing artwork](#) for details.



Tip If you cannot see the image you loaded make sure **Show Bitmap Artwork** icon is toggled on. See [Displaying backdrops](#) for details.

- 2 In **Embroidery Canvas** mode, click the **PhotoSnap** icon and click the image as prompted. BERNINA Embroidery Software generates stitches. This process may take some time.
- 3 Right-click or double-click the resulting **PhotoSnap** design.

The **Object Properties > PhotoSnap** dialog opens.



- 4 In the **Resolution** panel, select a resolution – **Coarse**, **Medium**, or **Fine** – and click **Apply**.



Coarse



Fine

- 5 In the **Background Fabric** panel, select a background option – **Light** or **Dark** – and click **Apply**.



Light background

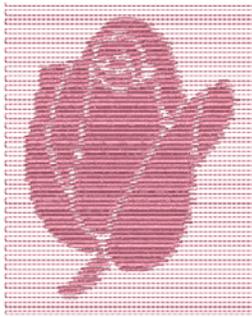


Dark background



Tip Usually the option you select depends on whether the fabric is light or dark.

- 6 In the **Fill Angle** panel, adjust the stitching angle, if required, and click **Apply**.

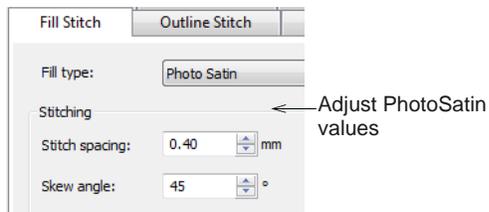


Fill angle 0°



Fill angle 45°

- 7 Select **Fill Stitch** tab and adjust **PhotoSatin** stitch values as desired.



- ▶ **Stitch Spacing:** adjusts stitch density – to increase stitch density, enter a smaller value.
- ▶ **Skew Angle:** determines the angle of the stitches themselves (as distinct from the fill angle).

Fill angle 45°
Skew angle: 0°Fill angle 45°
Skew angle: 45°

- 8 Click **Apply** to apply changes and **OK** to close.

PART IV

MODIFYING DESIGNS

After digitizing a design, you can modify it as a whole, edit individual objects or even individual stitches.

Combining & sequencing objects

This section describes how to combine objects and designs by copying and pasting, duplicating, and inserting whole designs and design elements. It also covers grouping and splitting objects, as well as sequencing objects using various techniques including Color Film. It also discusses auto-sequencing entire designs. See [Combining & Sequencing Objects](#) for details.

Design layouts

This section describes how to position and align objects by both interactive and numeric methods. It also covers scaling, rotating and skewing objects. A variety of methods for mirroring objects are also described. Special layout tools are also discussed. See [Design Layouts](#) for details.

Reshaping & editing objects

This section describes how to reshape objects with reshape nodes. It also covers adjusting stitch angles – including multiple stitch angles – as well as changing entry and exit points. It also discusses cutting objects and removing underlying stitching, as well as adding holes to existing objects, filling holes, and generating outlines. See [Reshaping & Editing Objects](#) for details.

Editing stitches

This section deals with selecting and editing stitches. See [Editing Stitches](#) for details.

CHAPTER 16

COMBINING & SEQUENCING OBJECTS

BERNINA Embroidery Software lets you easily combine designs and design elements by inserting the contents of one file into another. You can also add to designs quickly by copying or duplicating existing objects. Group selected objects or entire designs to keep them together for moving, scaling or transforming purposes.

The embroidery objects in a design form a 'stitching sequence'. Initially, objects are stitched in the order they were created. However, you can change this by a variety of methods.

For example, change the position of a selected object by cutting it, then pasting it somewhere else in the sequence. There are also techniques available to sequence objects 'as selected' or as 'color blocks'. You can also resequence objects using the Color Film.

The Stitch Sequence feature improves the quality and efficiency of the stitchout by minimizing the number of hoopings, color changes, and trims. All existing overlaps are preserved by the operation.

This section describes how to combine objects and designs by copying and pasting, duplicating, and inserting whole designs and design elements. It also covers grouping and splitting objects, as well as sequencing objects using various techniques including Color Film. It also discusses auto-sequencing entire designs.



Combining objects

A design or design objects can be copied or cut and placed on the MS Windows® Clipboard for temporary storage. It can then be pasted any number of times, either within the same or another design, until replaced on the Clipboard. Objects also can be cloned or duplicated without copying to the Clipboard. See also [Selecting Objects](#).

Inserting designs



Use General > Insert Embroidery to import embroidery design files into the current design.

BERNINA Embroidery Software lets you insert one design into another. The two (or more) designs can then be saved as a combined design. When you insert a design in another, the two color palettes are combined. Colors with the same RGB values are automatically identified as having the same thread color. If you want to preserve these as separate colors, you need to change one or other before merging.



Caution It's best, when combining designs, to use Art Grade A or Grade B file formats. Art Grade C and D designs may produce poor results if resizing. See also [Supported machine file formats](#).

To insert designs

- 1 Open the base design.
When you first open a design in BERNINA Embroidery Software, it is grouped by default. See also [Grouping & ungrouping objects](#).
- 2 Click **Insert Embroidery**.
The **Insert Embroidery** dialog opens.
- 3 Find the design file you want to use and click **Open**.
The design is placed at the end of the stitching sequence. It too is grouped by default.
- 4 Resequence objects in the combined designs as necessary, ensuring that details stitch out last. See [Sequencing embroidery objects](#) for details.
- 5 Size the inserted design as required. See also [Scaling objects](#).



- 6 Move to the required position. See also [Arranging objects](#).
- 7 Remove any underlying stitching as necessary. See also [Removing underlying stitching](#).
- 8 Save the combined designs under the original or new name.

Copying & pasting objects

-  Click General > Copy to copy selected objects to the clipboard.
-  Click General > Paste to paste copied objects in the design.

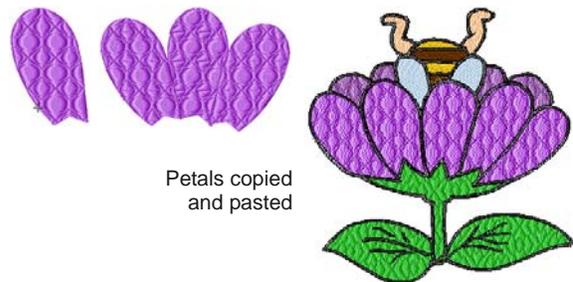
You can copy objects to create multiple, identical objects, or to insert objects from other designs. See also [Sequencing with Color Film](#).



Note You can also remove objects from a design using the **Cut** command and paste them back in again. Cut and Paste changes the stitching sequence in the design. See [Sequencing by cut-and-paste](#) for details.

To copy & paste objects

- 1 Select the object(s) to copy.
- 2 Click the **Copy** icon.
The selected object is copied to the clipboard.
- 3 Travel to the position in the stitching sequence at which you want to paste the object. See [Traveling through designs](#) for details.
You can paste between other objects in the sequence.
- 4 Click the **Paste** icon.



Note The object will be pasted exactly on top of the original object. Click and drag it off the object before deselecting.

The object remains on the clipboard and can be pasted repeatedly until the next **Copy** or **Cut** command.



Caution Make sure that there is only one copy of an object at any one position. If an object is pasted twice into the same position, it will be stitched twice.

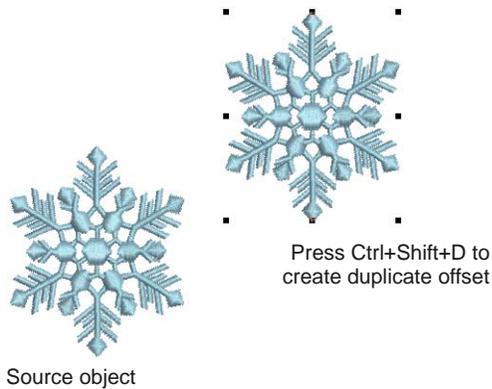
Duplicating objects

Objects can be duplicated rather than copied. When an object is duplicated, it is not copied to the clipboard. This leaves the clipboard free for you to cut or copy other objects. See also [Sequencing with Color Film](#).

To duplicate objects

- ▶ Travel to the point in the stitching sequence where you want to place the object(s). See [Traveling through designs](#) for details.
You can place the duplicate(s) between other objects in the sequence.

- ▶ Select the object(s) to duplicate.
- ▶ Select **Edit > Duplicate** or press **Ctrl+D**.
The duplicate object is placed directly on top of the original object, at the current needle position in the stitching sequence. Be sure to click and drag it off the object before deselecting.
- ▶ Alternatively, select **Edit > Duplicate with Offset** or press **Ctrl+Shift+D**. This function is best used in conjunction with the **Quick Clone** feature.



Cloning objects



Use **Transform > Select Object** to select and clone objects.

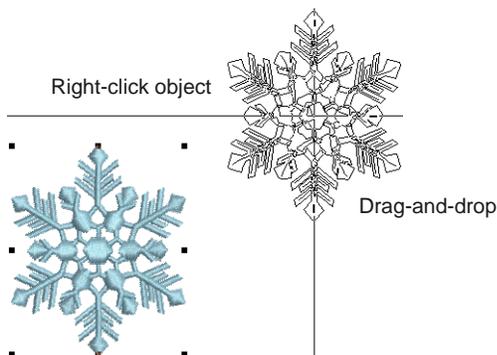
The **Quick Clone** feature lets you quickly duplicate selected objects by right-clicking, dragging and releasing at a new position.



Tip The software lets you create duplicate objects with an automatic offset. This means you can step-repeat offsets with duplicate objects.

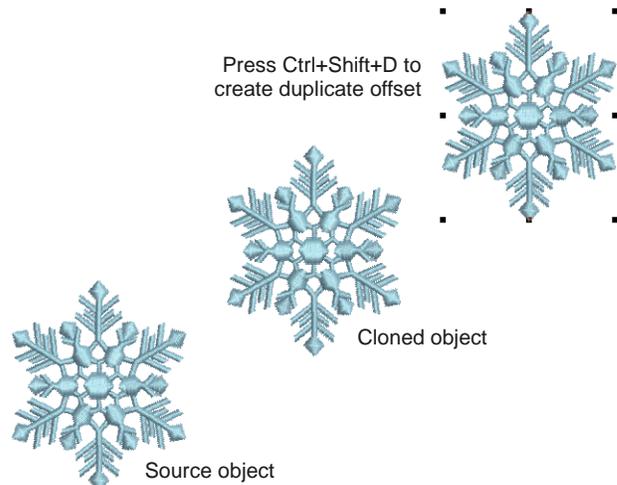
To clone objects

- 1 Select the object(s).
- 2 Holding down the right mouse button, drag to a new position.



Tip For precise positioning, hold down the **Ctrl** key while dragging – movement is constrained to X or Y axes.

- 3 Release the mouse. A duplicate object(s) is created at the release point.
- 4 Press **Ctrl+Shift+D** to repeat. A new object is created at the same offset as the cloned object.



Tip Clone objects to another window by the same method. An identical copy of the selection is created at the same coordinates as the first window, no matter where the mouse is released.

Grouping & splitting objects

You can group selected objects or an entire design to keep them together for moving, scaling or transforming purposes. BERNINA Embroidery Software makes a distinction between 'ungrouping' objects and 'breaking apart' objects. Generally speaking, objects which have been explicitly grouped by you, the digitizer, need to be 'ungrouped' in order to access their component objects. If you want to access objects which have been grouped during system operations – e.g. when generating open-object appliqué – you need to break them apart.



Note By default, designs are automatically grouped upon opening or insertion into another design. See [Setting other general options](#) for details.

Grouping & ungrouping objects



Use **Arrange > Group** to combine multiple objects into one selectable object grouping.



Click **Arrange > Ungroup** to split object grouping into component objects.

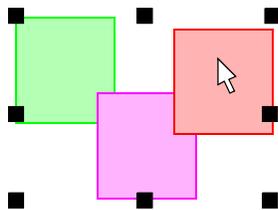
When you group objects, you can apply a change to all of them at once, saving time, and ensuring that changes are consistently applied. Group selected objects or the whole design to keep them together for moving, scaling or transforming operations. When you have finished making changes to a group, you can ungroup it and work with the objects individually.



Note When you first open a design in BERNINA Embroidery Software, it is grouped by default.

To group & ungroup objects

- ▶ Select objects to group and click the **Group** icon or press **Ctrl+G**.

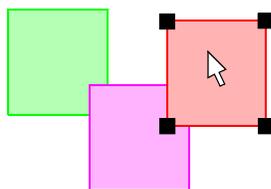


Select, move, resize or transform grouped objects as a single object

Selected objects are combined into a group. This can be selected, moved, resized and transformed as a single object. See also [Design Layouts](#) and See also [Reshaping & Editing Objects](#).

- ▶ Select the grouped object and click the **Ungroup** icon or press **Ctrl+U**.

The object is ungrouped and component objects can be individually selected. See also [Selecting objects within groups](#).



Ungrouped objects can be individually selected

Locking & unlocking objects



Click **Arrange > Lock** to lock selected object/s into position for protection.



Click **Arrange > Unlock All** to unlock all locked object/s to remove protection.

Lock objects to prevent them from being moved or modified by accident. For example, locking **backdrop** images holds them in place as you digitize, transform or reshape the embroidery objects near them. Locked objects can be unlocked for modification at any time.

To lock or unlock objects

- ▶ Select the objects to lock and click the **Lock** icon or press **K**.

The **selection handles** disappear, indicating that the object can no longer be selected or modified.

- ▶ To unlock objects, click the **Unlock All** icon.

All locked objects in the design are unlocked.

Selecting objects within groups

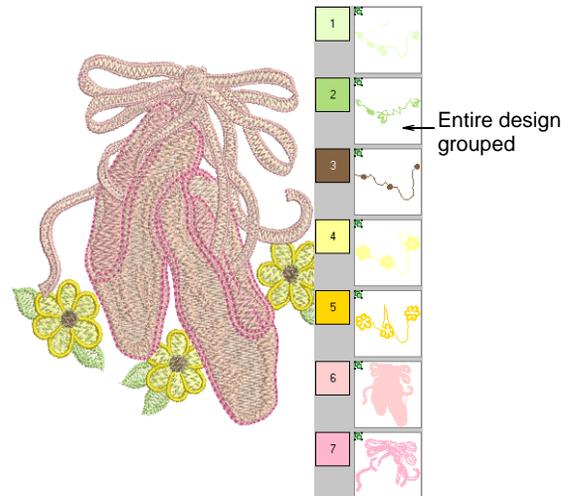


Click **Transform > Select Object** to select individual objects as well as groups or ranges of objects.

BERNINA® Embroidery Software provides a method for selecting individual objects within object groupings. The **Alt** key 'suspends' grouping temporarily. This is handy if you want to make changes 'on-the-fly' without first having to ungroup and then regroup objects.

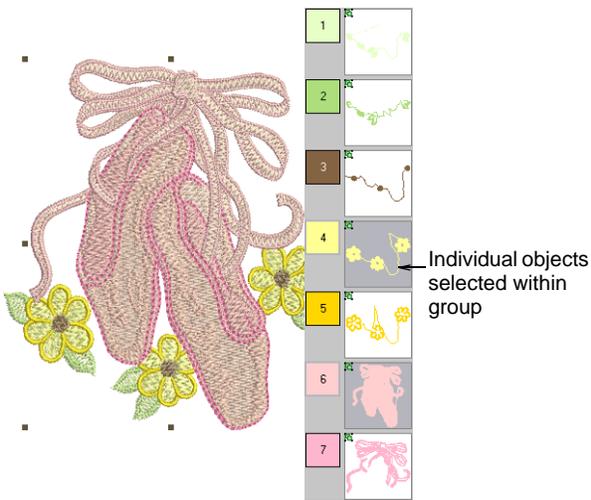
To select objects within groups

- ▶ Click the **Select Object** icon or press **O**.



- ▶ Use **Alt + Click** to select a single object within a group.
- ▶ In combination with the **Alt** key, use standard techniques to select multiple objects or a range of objects within a grouped design, both in the design window and the **Color Film**. These include:
 - ▶ Select a single object/color within a group: **Alt + Click**.
 - ▶ Add/remove a single object/color within a group: **Alt + Ctrl + Click**.

- ▶ Select a range of objects/colors within a group:
Alt + Shift + Click.



Tip You can also use a **selection marquee** or **Polygon Select** in combination with the **Alt** key. See also **Selecting Objects**.

- ▶ Once an object (or more) is selected, edit its properties, stitching and otherwise, as desired.

Splitting into component objects



Use **Edit > Break Apart** to split monograms, appliqué, lettering, and blackwork runs into component objects for editing.

The **Break Apart** tool allows you to split appliqué objects into their components. The command can also be used with monograms, lettering and blackwork runs. The effect on these objects is similar to the ungrouping operation.

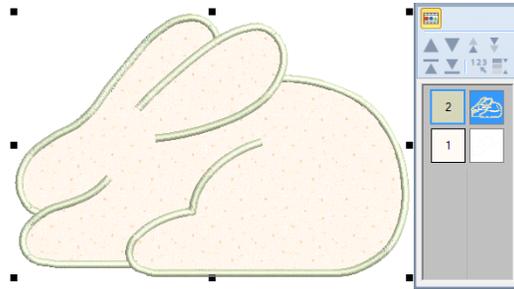


Note When saved into earlier versions of the software, monograms, appliqués, lettering, and blackwork runs may be subjected to the **Break Apart** procedure by default.

To split into component objects

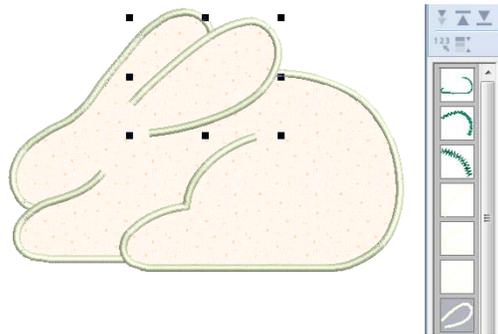
- 1 Select the object you want to split – open-object appliqué, auto-appliqué, monogram, or lettering.

The **Break Apart** command is activated.

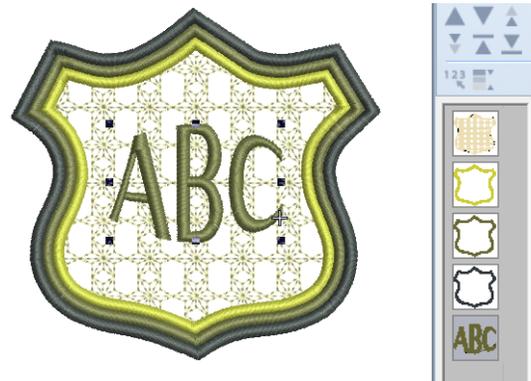


- 2 Click **Break Apart**.

The object is split into its component source (primary) and any generated (secondary) objects.



The operation ungroups open-object appliqué into its component groups – source (primary) objects, generated (secondary) objects. It also creates an auto-appliqué object from each piece of fabric in the design. These will have no stitching. See also **Digitizing for Appliqué**.



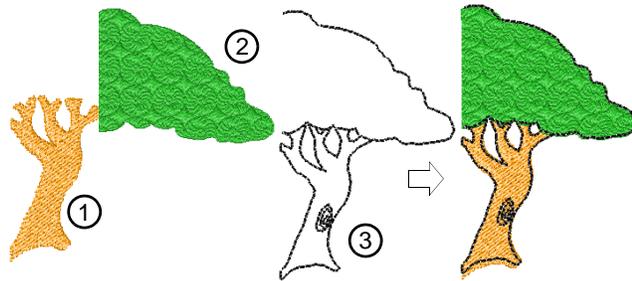
The operation ungroups monogram objects into their component groups – one lettering object, ornaments (each ornament set remaining as a group) and borders (also grouped). See also **Monogramming**.



Tip To modify individual objects – e.g. to change the stitching sequence of monogram borders – use the **Color Film** to ungroup objects and resequence.

Sequencing embroidery objects

The **embroidery objects** comprising a design form a 'stitching sequence'. Before digitizing, it is good practice to analyze and plan design shapes and stitching sequence in advance. Shapes need to be clearly defined to make them easy to embroider. The best shapes have relatively constant width, with smooth edges, no sharp turns and no small, protruding details. Details should always be stitched last. See also [Sequencing with Color Film](#).



Note When working with embroidery designs, you need to understand the stitching sequence. You can check this by 'traveling' through the design stitch-by-stitch or by slowly redrawing it on screen. See [Viewing stitch sequence](#) for details.

Sequencing by cut-and-paste



Click General > Cut to cut a selected object or objects and place them on the clipboard.



Click General > Paste to paste copied objects in the design.

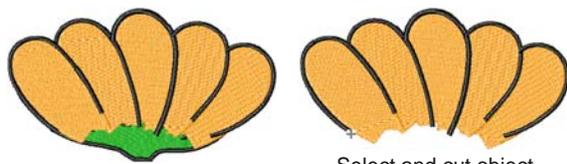
You can resequence objects by cutting an object from the design and pasting it back at a different point in the sequence. This does not change the physical location of the object.

To sequence objects by cut-and-paste

1 Select the object(s) to resequence.

2 Click the **Cut** icon.

The selected object is removed from the design and moved to the clipboard.



Wrong sequence

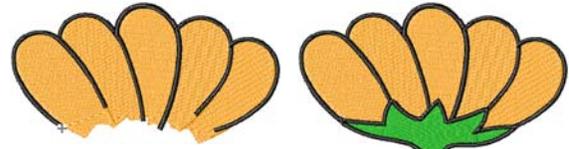
Select and cut object to be changed

3 Travel to the position in the stitching sequence where you want to paste the object. See [Traveling through designs](#) for details.

You can paste between other objects in the sequence, or 'nest' the cut object within another object.

If your current needle position marker is at the end of the design, it will be pasted at the end of the sequence.

4 Click the **Paste** icon.



Travel to the end of the design

Paste the object

The object is pasted back in the design.



Note The object remains on the clipboard and can be pasted repeatedly until the next **Copy** or **Cut** command.

Sequencing with Color Film



Click General > Color Film to open the Color Film. Resequence by dragging and dropping objects in the list.



Click Color Film > Show Objects to view individual objects in order of stitching sequence. Drag and drop object icons to resequence.

Designs are made up of individual embroidery 'objects' grouped by 'color block'. These are listed in stitch order in the **Color Film**. Use it to optimize your design by resequencing selected color or objects. Generally, you aim to keep objects of the same color together in order to minimize color changes, trims, and frame movements. Fills are always stitched first, details, including borders or small areas, last.

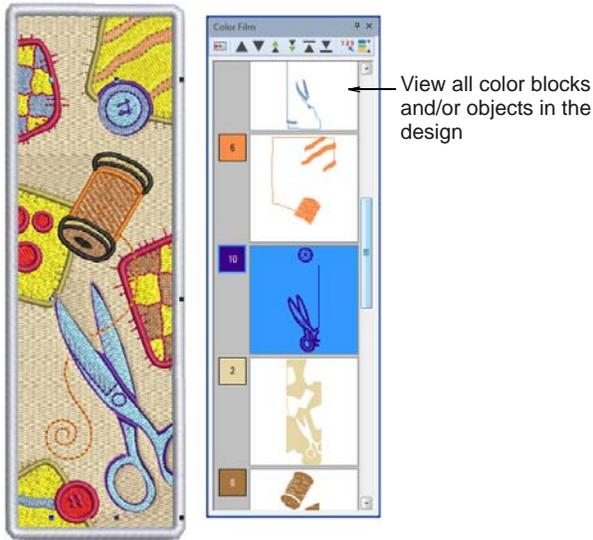


Note There are instances where colors have to be split, particularly where the same color is used for fills and details.

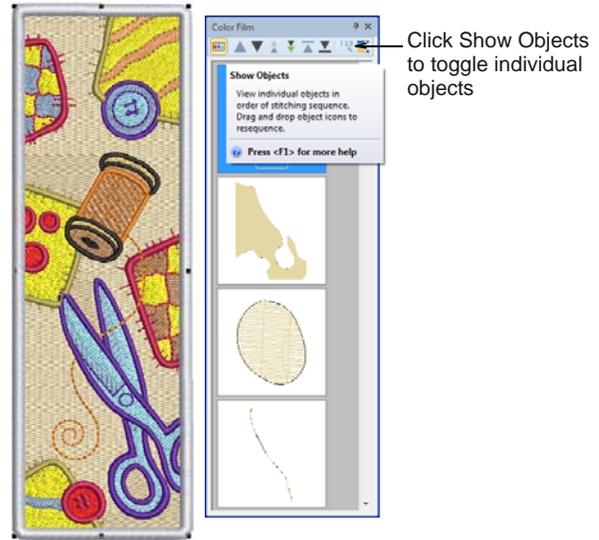
To sequence with Color Film

▶ Click the **Color Film** icon on the **General** toolbar.

The **Color Film** dialog opens displaying all color blocks in the design in order of stitching sequence.

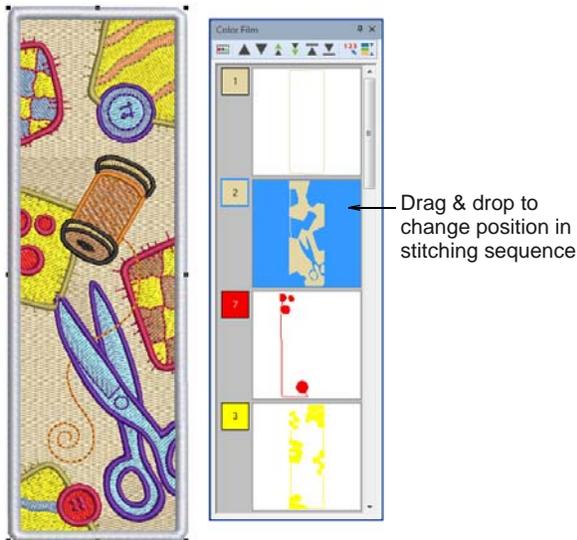


All objects within each color block are displayed in their stitching order.

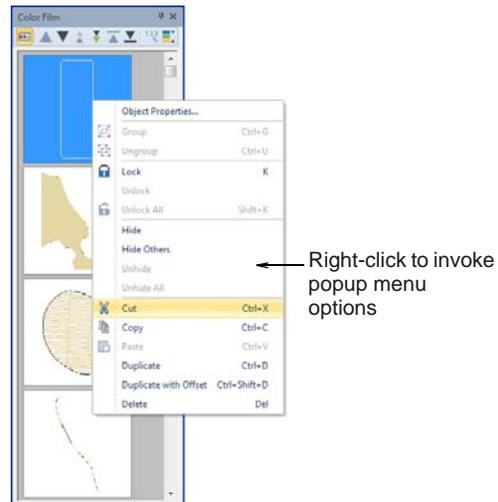


- ▶ Drag and drop color blocks to change their position in the stitching sequence.

The **Color Film** is synchronized with the design window and vice versa. It dynamically updates whenever you select, modify or delete objects, or create new ones.

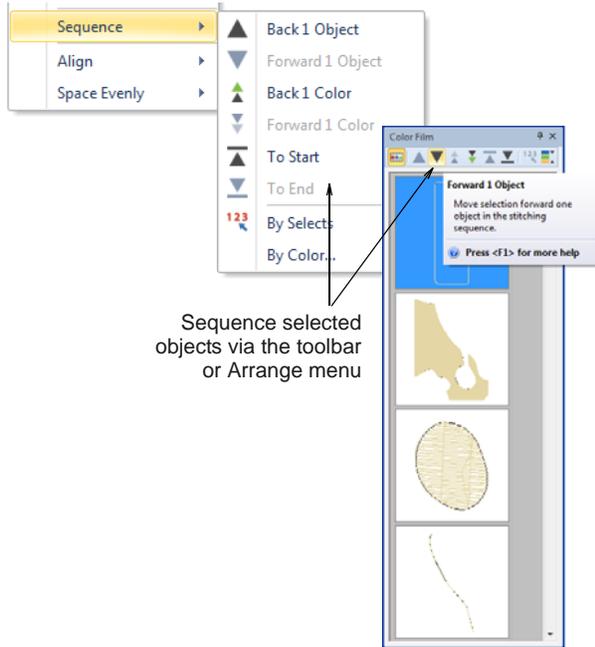


- ▶ Use the list to drag and drop object icons and resequence as required.
 - ▶ To select a range, hold down **Shift** as you click.
 - ▶ To select multiple items, hold down **Ctrl** as you click.
- ▶ Right-click any object in the list to invoke the popup menu. Use it to cut, copy, paste, or delete objects as required. See [Sequencing by cut-and-paste](#) for details.



- ▶ Click the **Show Objects** toggle to view individual objects.

- ▶ Use the **Sequence** command buttons to reposition selected color blocks or individual objects in the stitching sequence.



Auto-sequencing entire designs



Click General > Color Film to open the Color Film. Resequence by dragging and dropping objects in the list.



Select Color Film > Optimize Color Changes to resequence objects by color.

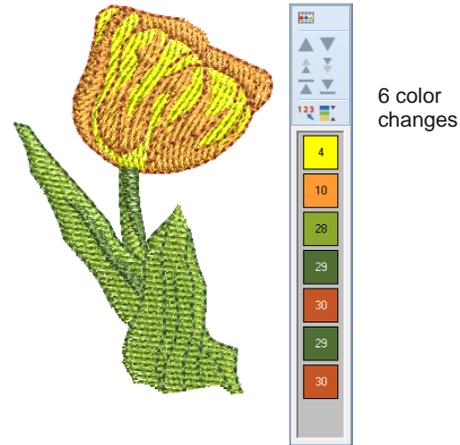
The **Optimize Color Changes** feature improves the quality and efficiency of the stitchout by minimizing the number of hoopings, color changes, and trims. All existing overlaps are preserved by the operation. The system analyzes the design and calculates:

- ▶ hoopings (if there are more than one)
- ▶ color changes (the total number in the current design window), and
- ▶ uncovered objects (if any) – i.e. any stitched objects not covered within a hooping.

Grouped objects are not ungrouped by the operation, but differently colored objects are optimally sequenced regardless of grouping. Monogramming and open-object appliqué, however, are treated as single objects. In other words, they are not internally resequenced unless you break them up with the **Break Apart** command. See also [Splitting into component objects](#).

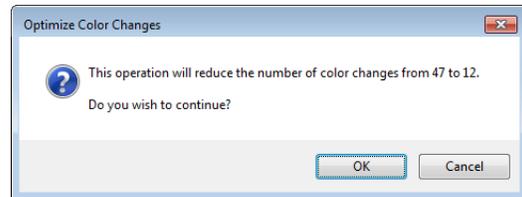
To auto-sequence an entire design

- 1 Open or create a design.



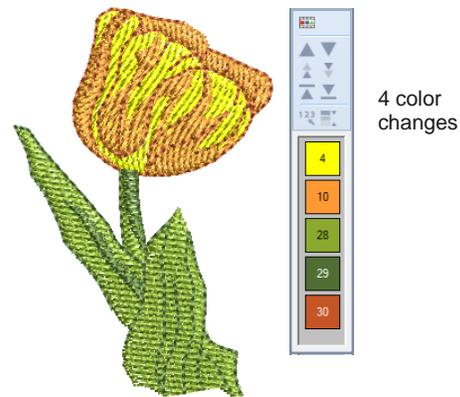
- 2 Select **Design > Optimize Color Changes**.

Alternatively, click the icon on the **Color Film**. The system analyzes all selected objects and calculates optimal hoopings, color changes and trims.



Note If your design does not fit in the current hoop, you will be alerted that there are uncovered objects. You can fix this by selecting a larger hoop or adding more hoopings. See [Creating multiple hoopings](#) for details.

- 3 Confirm whether you want to proceed.



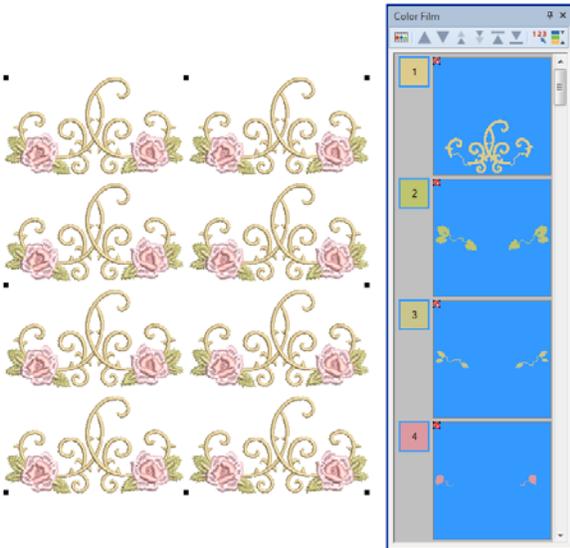
Note The **Undo** command will reverse the effect of any sequencing changes.

Sequencing by color

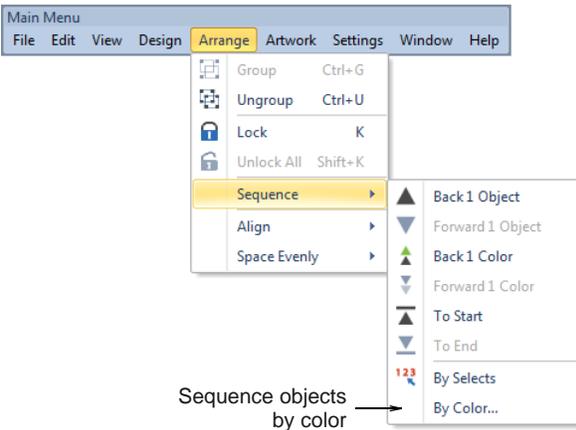
You can resequence objects by color in order to reduce the number of color changes in a design. See also [Sequencing with Color Film](#).

To sequence objects by color

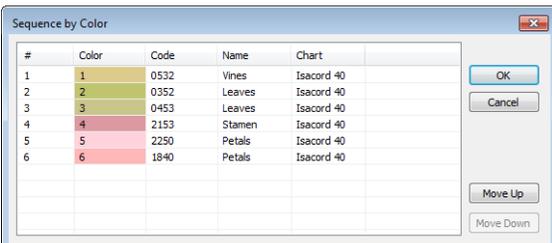
- 1 Select all objects in the design. In the sample below, each design repeat is color sequenced separately.



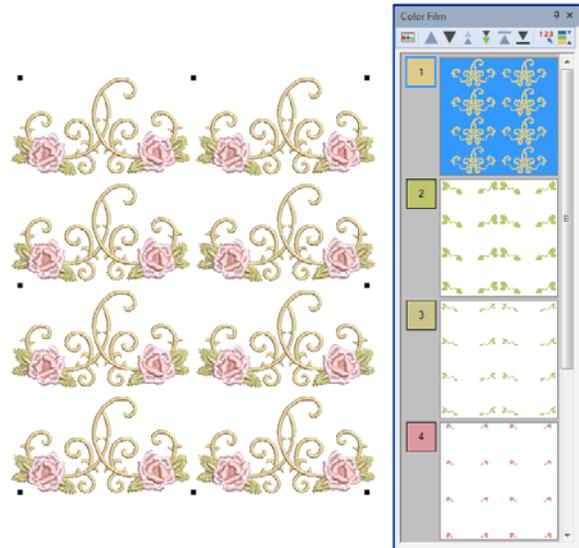
- 2 Select **Arrange > Sequence by Color**.



The **Sequence by Color** dialog opens listing the colors used in the selection.



- 3 Optionally, select a color and click **Move Up** or **Move Down** to change its position in the sequence.
- 4 Click **OK**. Colors are resequenced to stitch out as separate color blocks.



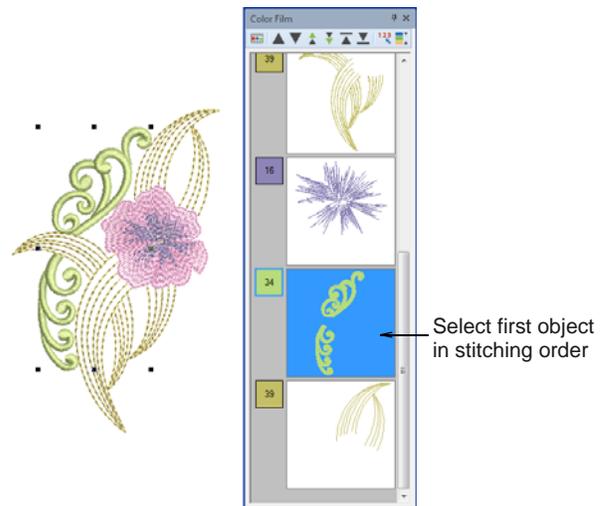
Sequencing objects by selection order

- Click General > Color Film to open the Color Film. Resequence by dragging and dropping objects in the list.
- Use Color Film > Sequence by Selects to resequence objects in the order selected.

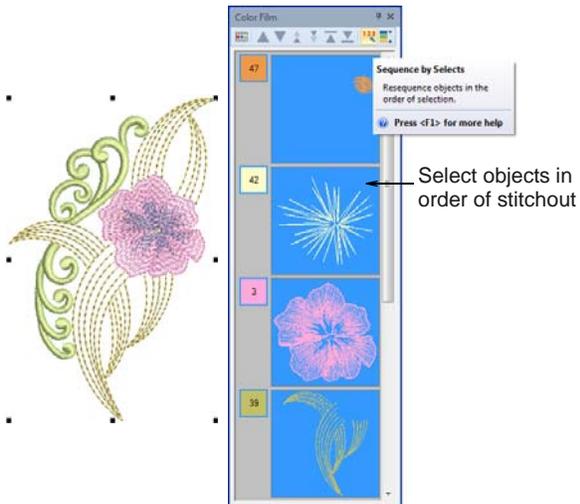
You can resequence objects by selecting them in the required stitching order.

To sequence objects by selection order

- 1 Select the first object in the range you want to resequence.

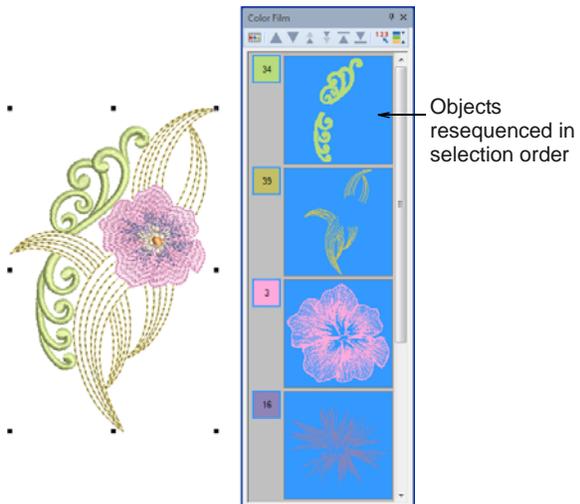


- 2 Holding down **Ctrl**, select each object or color block in order of stitchout.



- 3 With the objects still selected, select **Sequence by Selects** from the **Color Film** toolbar. Alternatively, select **Arrange > Sequence by Selects**.

The objects are resequenced in the order they were selected right after the first selected object.



CHAPTER 17

DESIGN LAYOUTS

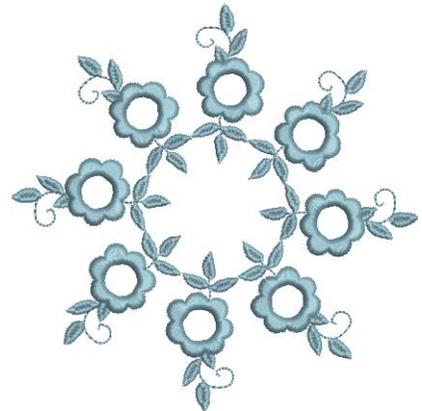
BERNINA Embroidery Software allows you to arrange and transform objects by a variety of means, both interactive and numeric. Position objects by means of click and drag, arrow keys or object properties. Align objects relative to each other using the special tools available.

Scale objects directly on-screen or by setting exact dimensions or scale percentages. Rotate, skew and mirror objects by similar means.

Special tools allow you to duplicate and transform selected embroidery objects, as well as create mirrored and rotated objects around a central axis. Layout tools allow you to arrange multiple embroidery designs on an item or fabric to be sewn.

There are also tools which allow you to quickly and easily create preset quilting and buttonhole layouts.

This section describes how to position and align objects by both interactive and numeric methods. It also covers scaling, rotating and skewing objects. A variety of methods for mirroring objects are also described. Special layout tools are also discussed.



Arranging objects

Position objects in your design using the mouse to drag them to a new position, nudging them with the arrow keys or by specifying the X:Y coordinates in the **Property** bar. Alternatively, BERNINA Embroidery Software provides tools to help you align objects relative to each other, or distribute them evenly in your design.

Positioning objects

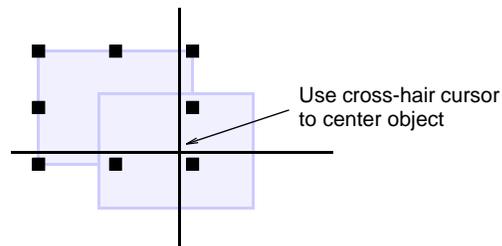
The simplest way to move an object in your design is to click-and-drag it to a new position. Use the arrow keys to 'nudge' objects into position.



Tip If no objects are selected, using the arrow keys moves the current needle position.

To position objects

- ▶ Select the objects to move and click-and-drag to a new position. See [Selecting Objects](#) for details.



- ▶ For more accurate positioning, use the arrow keys to 'nudge' an object into position.
- ▶ For even more accurate positioning, enter X:Y coordinates in the **Transform** toolbar.

The object is centered around the coordinates you set.

X:	-112.58	mm	W:	3in	mm	162.17	%
Y:	-53.33	mm	H:	25.38	mm	162.17	%

Check position of selection

Hello!



Tip Zoom in to make small adjustments. The distance the object moves depends on the current zoom factor. The greater the zoom factor, the smaller the distance moved.

Aligning objects

-  Use Transform > Select Object to select an object.
-  Click Arrange > Align Left to left-align selected objects.
-  Click Arrange > Align Centers Vertically to vertically align centers of selected objects.
-  Click Arrange > Align Right to right-align selected objects.
-  Click Arrange > Align Top to align selected objects along their top sides.
-  Click Arrange > Align Centers Horizontally to horizontally align centers of selected objects.
-  Click Arrange > Align Bottom to align bottoms of selected objects.
-  Click Arrange > Align Centers to align centers of selected objects.

BERNINA Embroidery Software provides tools to precisely align objects relative to each other. You can align to the left, right, top, bottom or center of a 'reference object'.

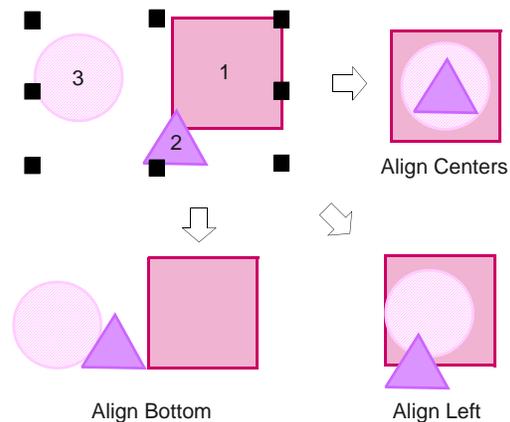
To align objects

- 1 Select the objects you want to align.
- 2 Select the object you want to align with.



Note Objects are aligned with the **last** object selected. When we select all the objects in the design by using **Ctrl+A** or a **selection marquee** all the objects are aligned with the last object in the sequence.

- 3 Click one of the alignment icons on the **Arrange** toolset.



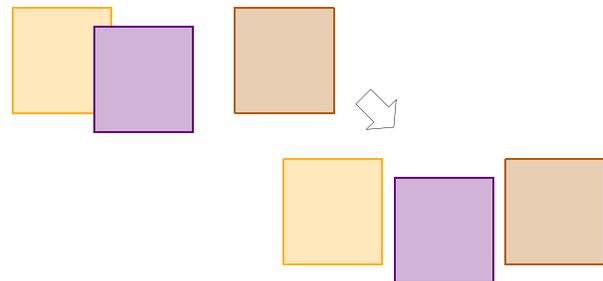
Distributing objects

-  Click Arrange > Space Evenly Across to evenly distribute three or more selected objects horizontally.
-  Click Arrange > Space Evenly Down to evenly distribute three or more selected objects vertically.

You can automatically distribute selected objects with even spacing between them, both vertically or horizontally.

To distribute objects

- 1 Select the objects you want to space. See [Selecting Objects](#) for details.
- 2 Click a spacing tool or select **Arrange > Space Evenly > ...**



Scaling objects

You can scale objects directly on-screen or by setting exact dimensions or scale percentage. As an object is scaled, the stitch count changes to preserve current stitch spacing.



Note The scalability and stitching quality of a design ultimately depends on its original source – ART Grade

A, ART Grade B, ART Grade C, or ART Grade D. Only native ART Grade A designs contain the complete set of design information required for 100% perfect scaling and transformation. See [Supported machine file formats](#) for details.

Checking dimensions

When doing any sizing work, you need to be aware of current dimensions. Typically, you will be scaling an entire design for different applications. For example, if you are stitching a left chest design, maximum size will be approximately 4.25" or 108 mm square.



Caution If you scale a machine or 'stitch' file by more than 5%, changes to stitch density will affect the design quality. See [Supported machine file formats](#) for details.

To check dimensions

- 1 Turn on the grid and/or ruler as required. See [Displaying rulers & guides](#) for details.
- 2 Select the design or object/s to scale. See [Selecting objects by point & click](#) for details.
- 3 Check design dimensions in the **Status Bar**. See [Status bar](#) for details.
- 4 Check dimensions of the selection in the **Transform** toolbar. See also [Measuring distances onscreen](#).

X:	-112.58	mm	W:	3in	mm	162.17	%	
Y:	-53.33	mm	H:	25.38	mm	162.17	%	

Check dimensions of selection

Hello!

- 5 Set the required measuring units. See [Setting measurement units](#) for details.

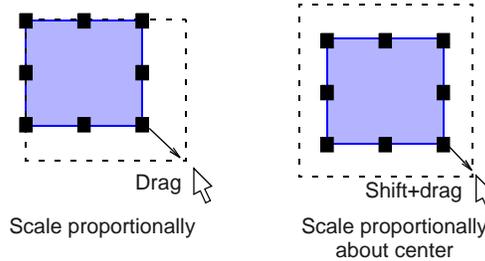
Scaling by click & drag

Change height and width of an object or entire design. Scale objects individually, or select multiple objects and scale them together. Scale proportionally using the selection handles.

To scale by click & drag

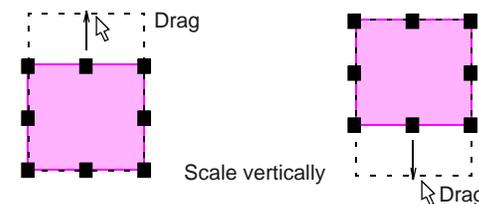
- ▶ Select the design or object/s to scale. See also [Checking dimensions](#).
- ▶ Click and drag selection handles to resize.

- ▶ To scale height and width proportionally, use a corner handle.



Tip Use the tooltip as a guide to object scale.

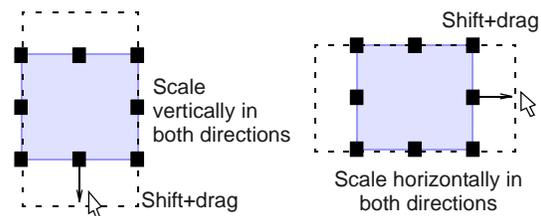
- ▶ To scale freely in vertical and horizontal planes, hold down **Ctrl** as you drag.
 - ▶ To change the height, use the handles at the center-top or center-bottom.



- ▶ To change the width, use the handles at the center-sides.



- ▶ To resize around a center anchor, hold down **Shift** while you resize.



Scaling by properties



Click Transform > Size +20% to increase size of selected object/s in 20% increments.



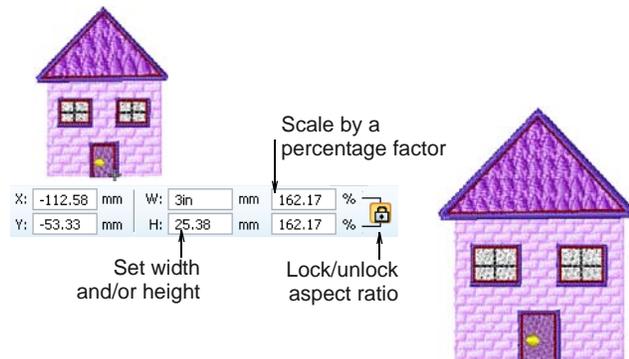
Click Transform > Size -20% to reduce size of selected object/s in 20% increments.

You can scale the height and width of selected objects or a whole design using **object properties**.



To scale by properties

- ▶ Select the design or object/s to scale. See also **Checking dimensions**.
- ▶ For quick scaling, use the **Size +20%/-20%** icons.
- ▶ For more precise scaling, adjust dimensions of selection in the **Transform** toolbar and press **Enter**. See also **Measuring distances onscreen**.



- ▶ Optionally, you can specify measurement units on-the-fly. See also **Specifying measurement units on-the-fly**.
- ▶ Use the **Aspect Ratio** toggle to decouple width and height settings.
- ▶ Press **Apply**.

Transforming objects

You can rotate or skew objects directly on-screen or by setting a precise angle.

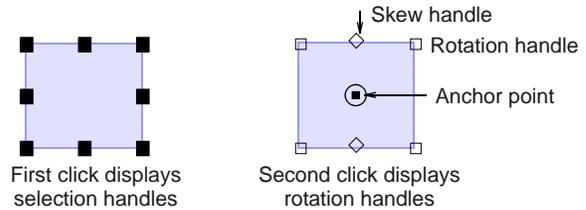
Rotating objects

- Click Transform > Rotate Right to Rotate selected objects in 45° increments to right.
- Click Transform > Rotate Left to rotate selected objects in 45° increments to left.
- Rotate selected objects by specified amount – positive or negative – in degrees.

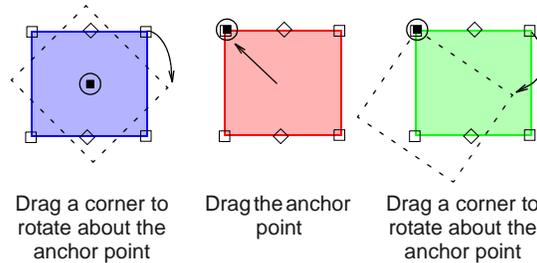
When you select an object, selection handles display at its extremities. When you click the object again, the handles change to rotation handles.

To rotate objects

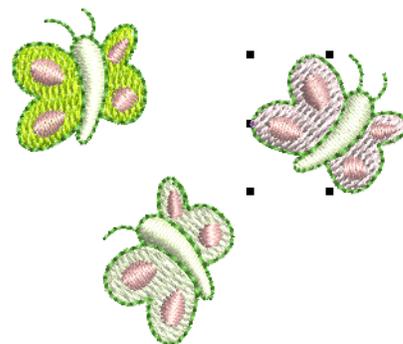
- ▶ Select the design or object/s to rotate.



- ▶ Click the object/s a second time. Rotation handles appear at the corners and an anchor point at the center of the objects.
- ▶ If required, drag the rotation anchor from the center to a new position.
- ▶ Click a rotation handle, and drag it clockwise or counter-clockwise. An outline and cross-hairs display as you rotate.



- ▶ Alternatively, click **Rotate Right / Left** on the toolbar.



- ▶ Alternatively, use the **Rotate By** field on the **Transform** toolbar to enter an exact rotation angle – plus or minus – and press **Enter**.

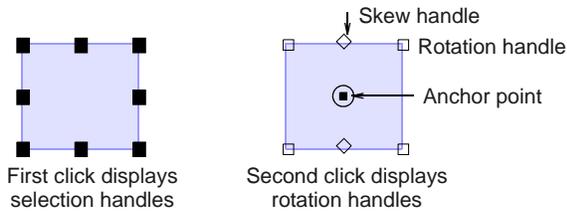
Skewing objects

- Skew selected objects by specified amount – positive or negative – in degrees.

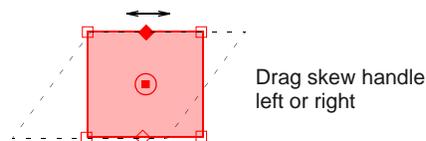
You can skew objects directly on-screen or by setting an exact skew angle.

To skew objects

- ▶ Select the design or object/s to skew.



- ▶ Click a second time. Rotation handles appear at the corners and skew handles at center-top and bottom of the object.
- ▶ Drag skew handles left or right.



- ▶ Alternatively, use the **Skew** field on the **Transform** toolbar to enter an exact skew angle – plus or minus – and press **Enter**.

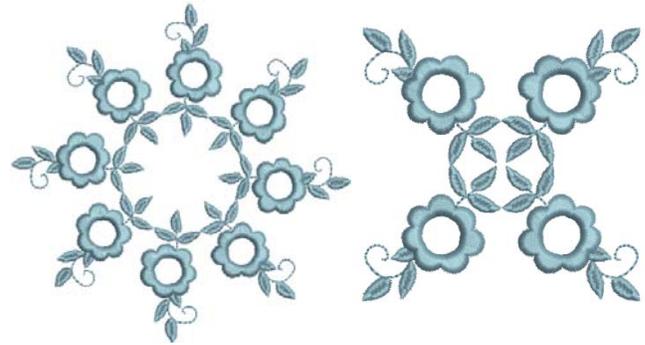
Skew

Skew

Mirroring objects

You can mirror objects horizontally or vertically using the mirroring tools or via **object properties**. Special tools allow you to duplicate and transform selected

embroidery objects, as well as create mirrored and rotated objects around a central axis.



Mirroring objects



Click Transform > Mirror X to flip selected object/s in horizontal planes.

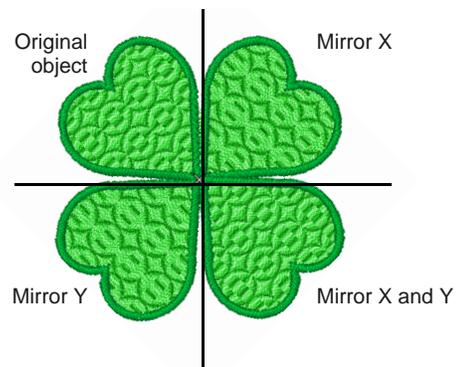


Click Transform > Mirror Y to flip selected object/s in vertical planes.

You can mirror selected objects horizontally or vertically using **Mirror X** or **Mirror Y**.

To mirror horizontally or vertically

- 1 Select the object/s to mirror.



- 2 Click the **Mirror X** icon to flip horizontally or **Mirror Y** to flip vertically.

Mirror-merging objects



Use Mirror-Merge > Mirror-Merge Horizontal to duplicate & mirror horizontally and merge overlapping objects (optional).



Use Mirror-Merge > Mirror-Merge Vertical to duplicate & mirror vertically and merge overlapping objects (optional).

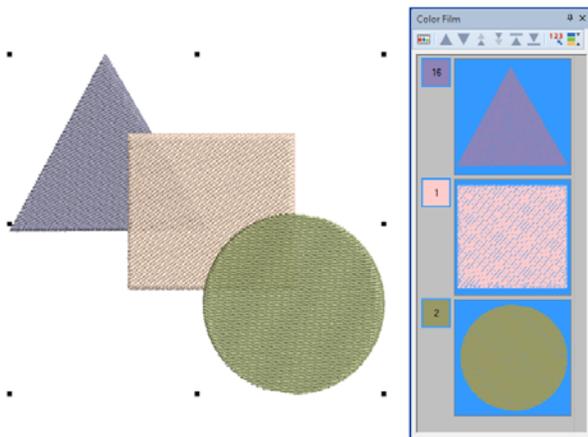


Use Mirror-Merge > Mirror-Merge Horizontal/Vertical to duplicate & mirror objects around a center point.

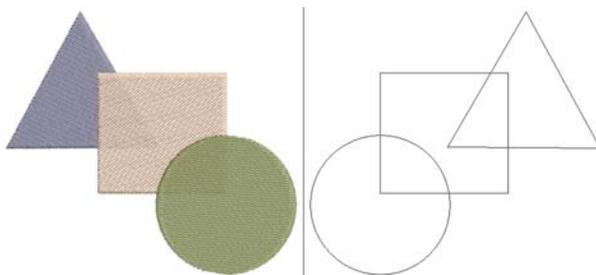
The **Mirror-Merge** tools allow you to duplicate and transform selected **embroidery objects** in vertical and horizontal planes. Colors can be automatically resequenced during the mirror-merge operation. Optionally, overlapping objects can be merged in to a single object.

To mirror-merge objects

- 1 Open or create the design you want to mirror.
- 2 Before mirror-merging a selection, you need to decide whether color blocks should be merged:
 - ▶ If you want selected objects to sew out in separate hoopings, make sure they are grouped first.
 - ▶ Alternatively, leave them ungrouped and they will be color-optimized for a single stitchout – i.e. color-block by color-block.
- 3 Select the object/s.

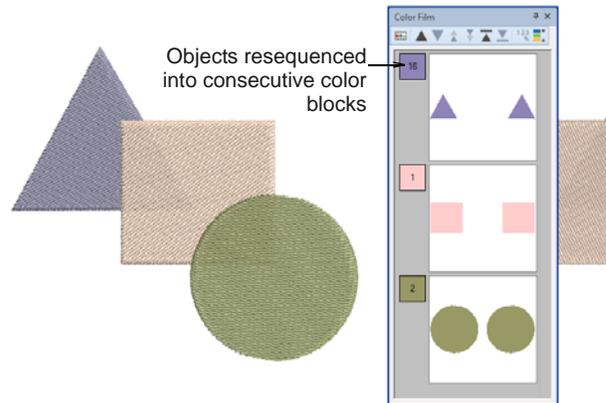


- 4 Select a **Mirror-Merge** tool – horizontal, vertical, or both. The technique is essentially the same.
- 5 Move the reference line to position mirrored objects.

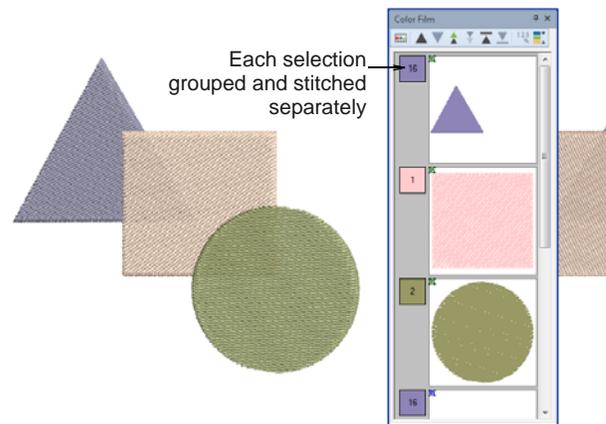


- 6 Click to place the mirror image.

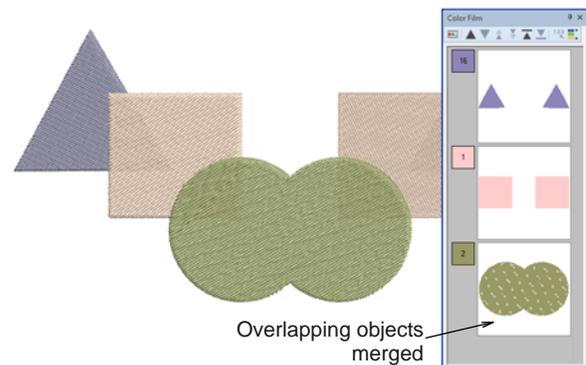
- ▶ If the selection is ungrouped, mirrored objects are resequenced into consecutive color blocks.



- ▶ If the selection is grouped, mirrored objects are also grouped for separate stitchout.



- ▶ If a mirrored object overlaps the original in an ungrouped selection, you are prompted to merge objects.



Note Sometimes you may be working with designs that are too large to accommodate within a normal hoop. With the **Multi-Hooping** toolset, you can place multiple hoopings around an entire work area. See **Creating multiple hoopings** for details.

Creating design arrays

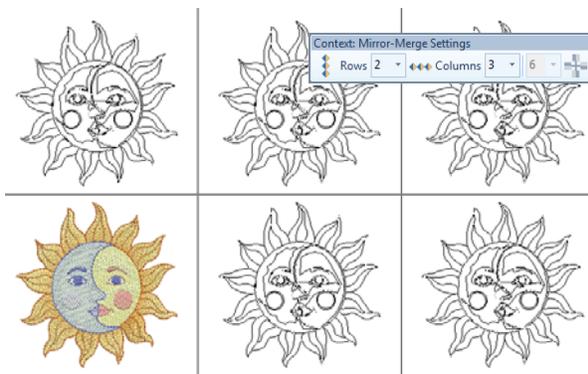


Use Mirror-Merge > Array to duplicate designs, such as badges, re-sequencing color blocks for efficient multiple design stitchouts.

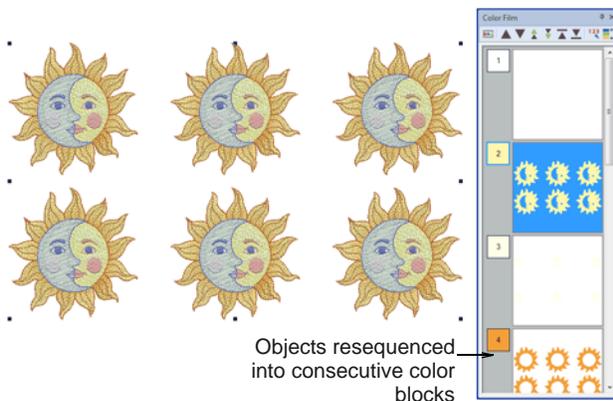
Use the **Array** tool to create multiple copies of designs, such as badges, spaced in rows and columns for easier stitchout. Color blocks are resequenced to minimize color changes.

To create design arrays

- 1 Since you will probably be using this tool to create multiple copies of the same design, leave the selection ungrouped. This way, all copies will be color-optimized for a single stitchout.
- 2 Select the object/s and click **Array**.



- 3 Set the number of rows and columns.
- 4 Move the reference line to position duplicates.
- 5 Click to confirm or press **Enter**.



Tip Use **Array** and **Reflect** with column and row repeats to automatically generate continuous embroidery designs. See also [Manual continuous embroidery](#).

Creating decorative borders

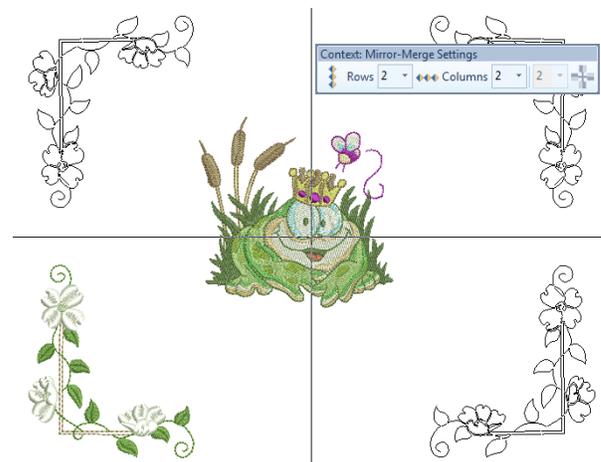


Use Mirror-Merge > Reflect to duplicate and mirror designs for decorative borders.

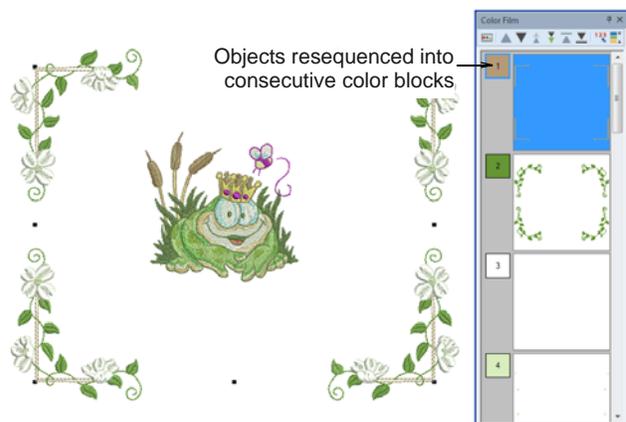
The **Reflect** tool is similar to the **Array** tool. However, because it also mirrors duplicate selections, it is particularly useful for decorative borders. As with other **Mirror-Merge** tools, color blocks are resequenced to minimize color changes.

To create a decorative border

- 1 Since you will probably be using this tool to create a decorative border, leave the selection ungrouped. This way, all copies will be color-optimized for a single stitchout.
- 2 Select the object/s to copy and click **Reflect**.



- 3 Optionally, set the number of rows and columns. Or if you are creating a decorative border, leave the setting at the default 2 x 2.
- 4 Move the reference line to position duplicates.
- 5 Click to mark the anchor point or press **Enter** to confirm.



- 6 Use the **Color Film** to further resequence colors if you are combining your border with other elements.
- 2 Select the object/s to copy and click **Wreath**.



Tip Use **Array** and **Reflect** with column and row repeats to automatically generate continuous embroidery designs. See also **Manual continuous embroidery**.

Creating wreaths

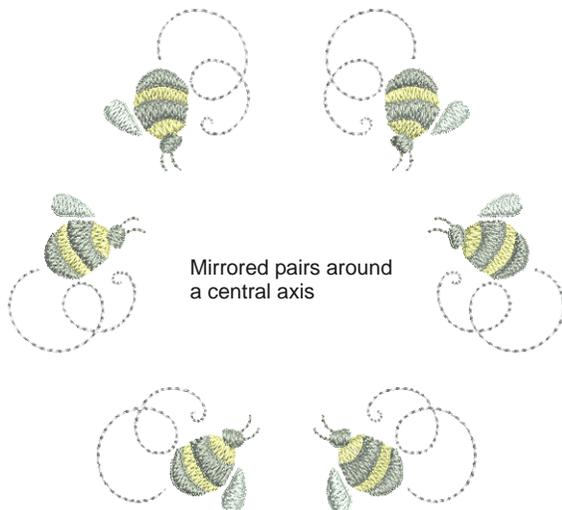


Use Mirror-Merge > Wreath to duplicate objects around a central axis. Specify duplicates in Mirror-Merge Settings bar.



Use Mirror-Merge > Mirror Alternate to mirror alternate pairs. Only enabled when copies are set to an even number.

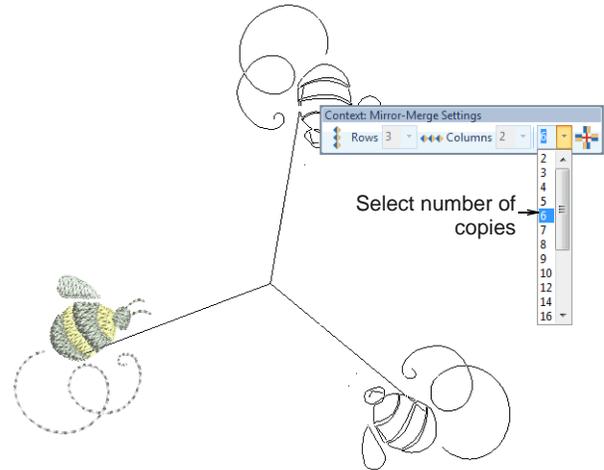
The **Wreath** tool duplicates objects around a central axis. The **Mirror Alternate** toggle works with **Wreath** to create mirrored pairs.



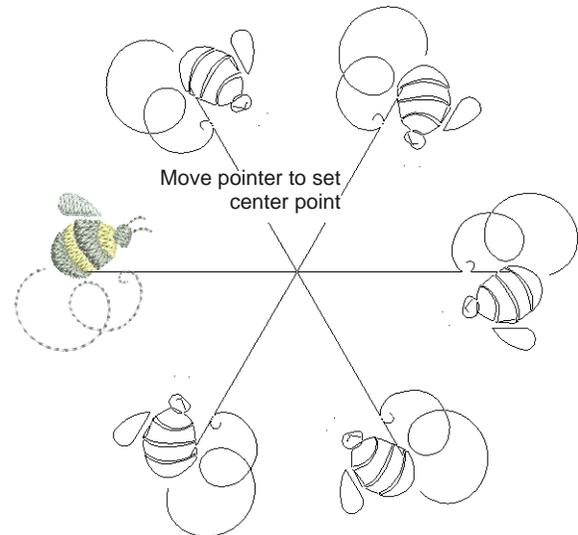
Tip Use the **Wreath** tool with fonts and numbers to create fun designs.

To create a wreath

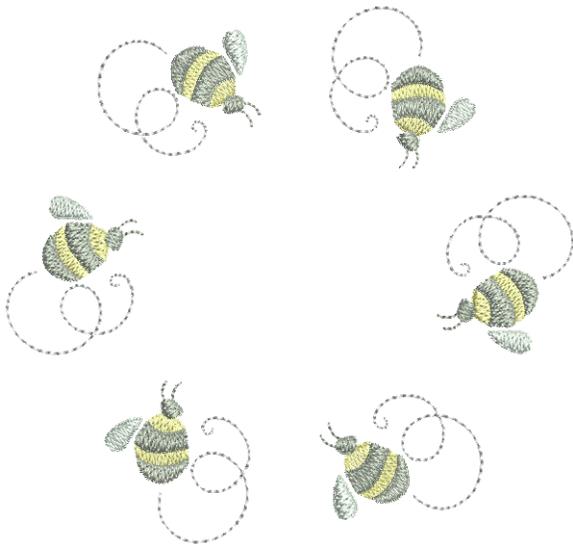
- 1 As with all **Mirror-Merge** functions, decide whether to group the selection beforehand. Leave them ungrouped if you want them color-optimized for a single stitchout.



- 3 Set the number of copies. Enter an even number to activate the **Mirror Alternate** toggle.
- 4 Move the reference point to the wreath center. Hold down **Ctrl** to constrain the line to 45° angles.

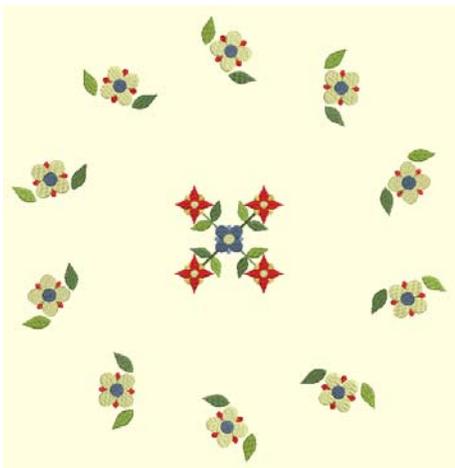


- 5 Click to confirm. Duplicates are generated. Check the object sequence in the **Color Film**.



Creating design layouts

The **Layout** toolset allows you to arrange multiple embroidery designs or design elements on a fabric, garment, or item such as tablecloth. Design layouts are not restricted to the hoop area. Large work areas – up to 3m x 3m or 10' x 10' – can be defined and designs arranged within a single layout. There is no limit to the number of hoopings possible for a large layout.



Using **Layout** tools, it's also a simple matter to define a quilt block and display it as a work area. You can then arrange elements around the block, with or

without a central design element. See also [Creating quilt block layouts](#).



Overall process

The overall process is as follows:

- ▶ Create or open a design or element that fits within one hooping.
- ▶ Define a work area – rectangular or circular.
- ▶ Lay out copies of the design, automatically placed and orientated, around the work area.
- ▶ Define multiple hoopings for the design layout.
- ▶ Split the layout into separate machine files.
- ▶ Include reference marks for positioning.

You can also print layouts with hoop position markers for use with a hoop template. Use them to physically lay out the design on the item you want to embroider. You can also print the template which can be used to position each of the hooped portions of the design. See [Printing designs](#) for details.



Note Work area has no bearing on hoop size. With the **Multi-Hooping** toolset, you can place multiple hoopings around an entire work area. See [Creating multiple hoopings](#) for details.

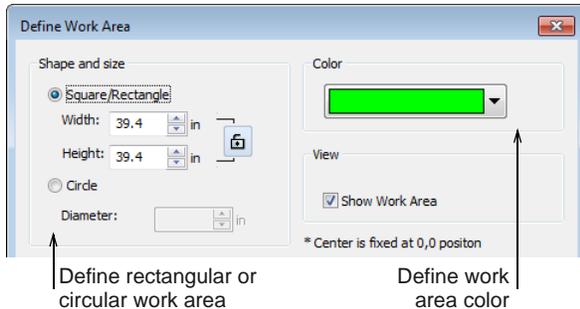
Defining work areas

-  Use View > Show Work Area to show or hide a work area defined under Layout.
-  Use Layout > Define Work Area to define a rectangular or circular work area of a specified size.

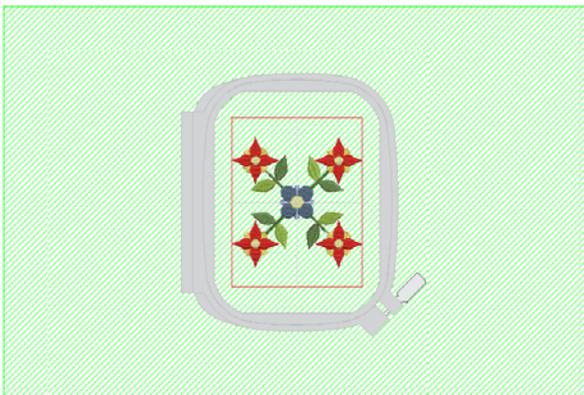
Before you can create a design layout, you first need to define a work area corresponding to the item or fabric you intend to embroider. Work areas may be rectangular or circular. The software lets you define a work area up to 3m x 3m (10' x 10').

To define a work area

- ▶ Set the measurement system via a droplist on the **General** toolbar. See [Setting measurement units](#) for details.
- ▶ Select **Define Work Area** to set a new work area.



- ▶ Specify a work area shape, size, and color.
 - ▶ Use the lock to maintain width and height proportions in rectangular layouts.
 - ▶ The color is just for on-screen viewing. It has no effect on design output.
- ▶ Click **OK** to confirm. If the checkbox is activated in the dialog, the work area will display by default. Otherwise, use the **Show Work Area** toggle.

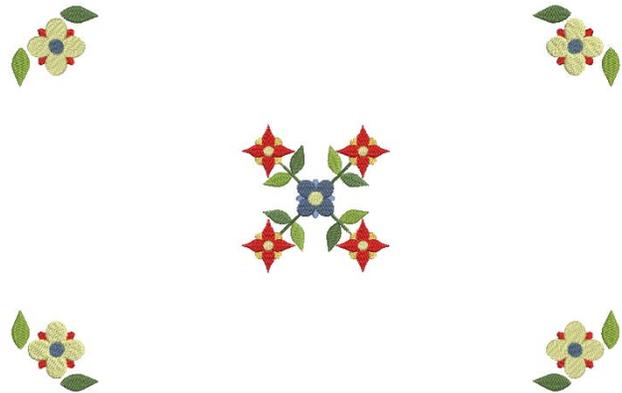


Creating rectangular layouts

-  Use **General > Insert Embroidery** to import embroidery design files into the current design.
-  Use **Layout > Auto Center to Work Area** to automatically move selected object/s to the center of the work area.
-  Use **Layout > Layout to Rectangular Work Area** to create copies of selected object/s in each corner of the work area.
-  Use **Context > Work Area Margin** to specify a margin (in mm) between edge of work area and duplicates.

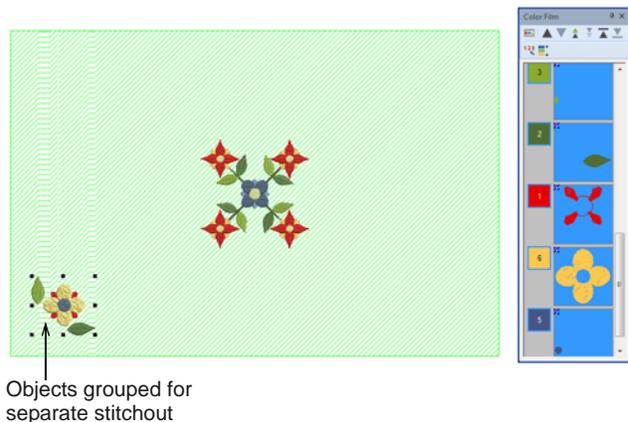
Create large embroidery layouts using **Layout** tools together with selected design/s and/or object/s. The

tools listed above are the ones you will need for rectangular layouts.



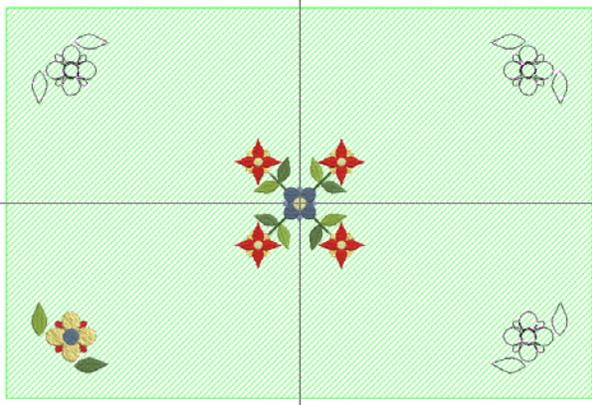
To create a rectangular layout

- ▶ Define your work area according to its application – e.g. as a layout for a tablecloth. See [Defining work areas](#) for details.
- ▶ Insert a design and/or select a design/s or object/s already on-screen. See [Inserting designs](#) for details.
- ▶ Resize as necessary. Optionally, use the **Auto Center to Work Area** tool to move selected object/s to the center of the work area. Press **Enter** to confirm.
- ▶ Insert further objects as needed. Move to the desired position in the work area. Use arrow keys to nudge into position.

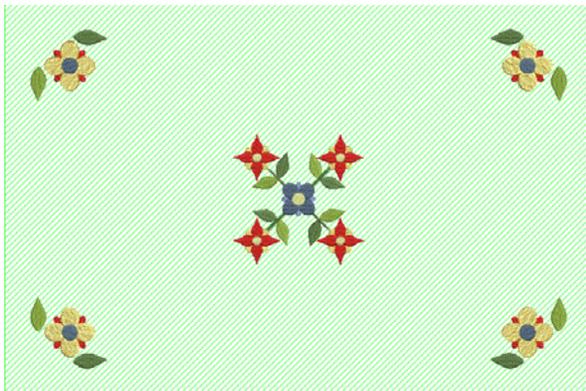


- ▶ Before you copy the design to the work area, you need to decide whether to merge color blocks:
 - ▶ If you want the selected objects to sew out in separate hoopings, make sure they are grouped before proceeding.
 - ▶ Alternatively, leave the objects ungrouped, and they will be color-optimized for a single stitchout – i.e. color-block by color-block.

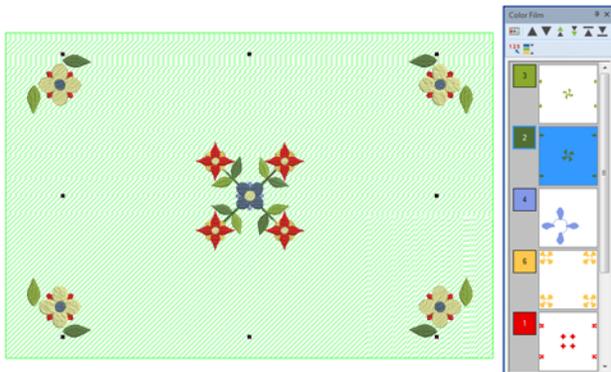
- ▶ Click **Lay out to Rectangular Work Area**. Wireframe copies are mirrored about vertical and horizontal axes.



- ▶ Use the **Work Area Margin** control on the **Context** toolbar to specify a margin (in mm) between the edge of the work area and the duplicates.
- ▶ Press **Esc** to cancel or **Enter** to confirm.



- ▶ Check the design layout in the **Color Film**. Manually resequence colors where necessary. See [Sequencing embroidery objects](#) for details.

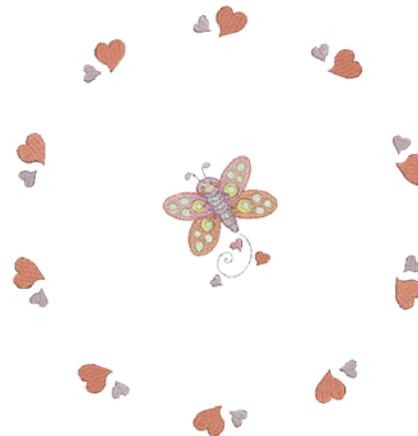


Tip When used in conjunction with the **Multi-Hooping** toolset, you can place multiple hoops around a single design. See [Creating multiple hoopings](#) for details.

Creating circular layouts

- Use General > Insert Embroidery to import embroidery design files into the current design.
- Use Layout > Auto Center to Work Area to automatically move selected object/s to the center of the work area.
- Use Layout > Layout around Circular Work Area to create copies (specified by number of repeats) of selected object/s around a circular work area.
- 2 Use Context > Number of Copies to specify the number of copies, including the selection. Select an even number to activate Mirror Alternate.
- Use Context > Mirror Alternate to mirror alternating copies to form symmetrical pairs for a kaleidoscope look. Set Number of Copies to an even number.
- 6 Use Context > Work Area Margin to specify a margin (in mm) between the edge of work area and designs.

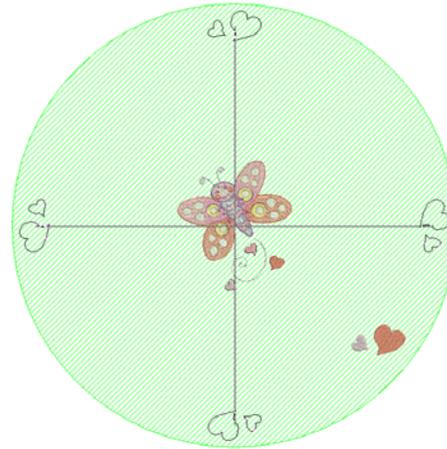
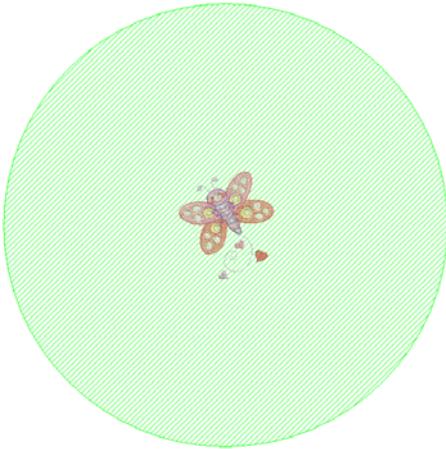
Create large embroidery layouts using **Layout** tools together with selected design/s and/or object/s. The tools listed above are the ones you will need for circular layouts.



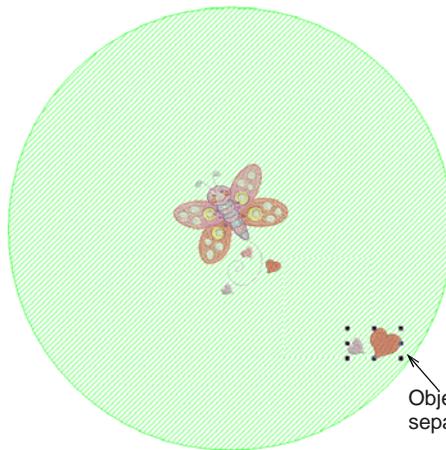
To create a circular layout

- ▶ Define your work area according to its application – e.g. as a layout for a tablecloth. See [Defining work areas](#) for details.

- ▶ Insert a design and/or select a design/s or object/s already on-screen. See [Inserting designs](#) for details.
- ▶ Click **Lay out to Circular Work Area**. Wireframe copies are mirrored about vertical and horizontal axes.

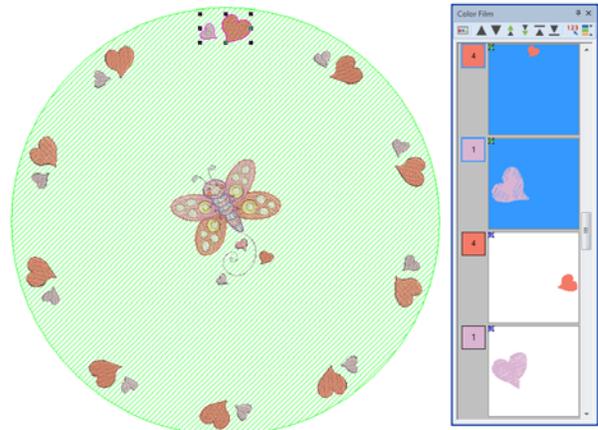


- ▶ Resize as necessary. Optionally, use the **Auto Center to Work Area** tool to move selected object/s to the center of the work area. Press **Enter** to confirm.
- ▶ Insert further objects as needed. Move to the desired position in the work area. Use arrow keys to nudge into position.
- ▶ Use the **Context** toolbar to control the duplicates:
 - ▶ Set the number of copies to make.
 - ▶ If you are creating an even number of duplicates, use **Mirror Alternate** to mirror alternating copies as preferred.
 - ▶ Use **Work Area Margin** to specify a margin (in mm) between the edge of the work area and the duplicates.
- ▶ Press **Esc** to cancel or **Enter** to confirm.
- ▶ Check the design layout in the **Color Film**. Manually resequence colors where necessary. See [Sequencing embroidery objects](#) for details.



Objects grouped for separate stitchout

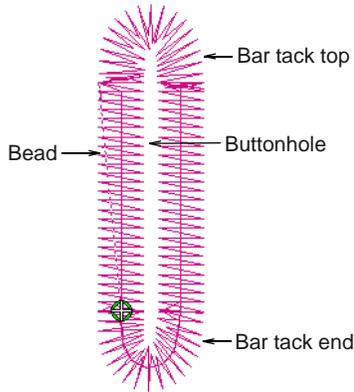
- ▶ Before you copy the design to the work area, you need to decide whether to merge color blocks:
 - ▶ If you want the selected objects to sew out in separate hoopings, make sure they are grouped before proceeding.
 - ▶ Alternatively, leave the objects ungrouped, and they will be color-optimized for a single stitchout – i.e. color-block by color-block.



Tip When used in conjunction with the **Multi-Hooping** toolset, you can place multiple hoops around a single design. See [Creating multiple hoopings](#) for details.

Creating buttonholes

BERNINA Embroidery Software allows you to insert preset buttonholes. You can specify their size and merge them into a design. Buttonholes are usually formed with satin column stitches bordering a slit that is approximately the length of the button diameter. The satin stitch border protects the slit from fraying. The buttonhole consists of a bead of satin stitches with a bar tack.



Adding buttonholes

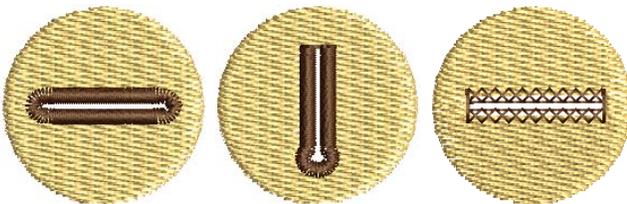


Use Digitize > Buttonhole to digitize a single buttonhole with all necessary stitching.



Use Cutwork > Cut Buttonhole Slit to generate a cutting line for selected buttonholes.

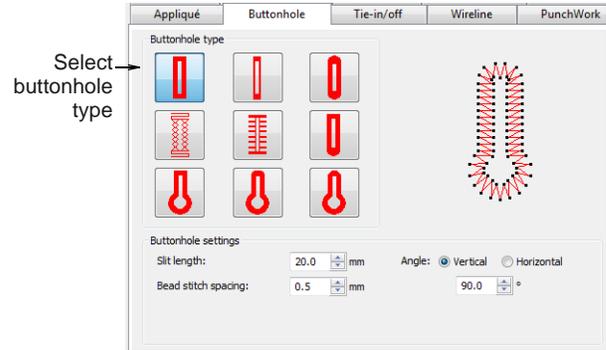
Add buttonholes to a design.



To add buttonholes

- 1 Open or create a design requiring buttonholes.
- 2 Right-click the **Buttonhole** tool.

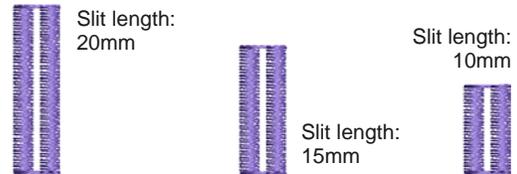
The **Object Properties > Buttonhole** tab opens.



- 3 Select a buttonhole type and preset stitch values as preferred.



- ▶ Adjust **Slit length** according the button size you intend to use.

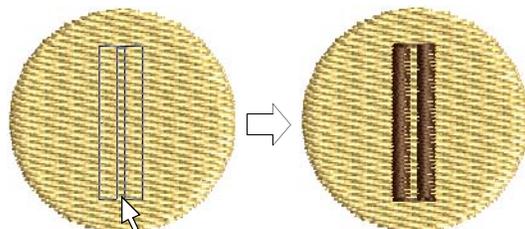


- ▶ Adjust buttonhole density with the **Bead stitch spacing** field.



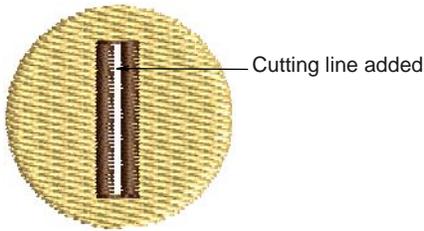
- 4 Select the **Buttonhole** tool.

A buttonhole outline appears attached to the mouse pointer.



- 5 Click to place the buttonhole.
- 6 Repeat to add more buttonholes.

- 7 Press **Esc** to finish.
- 8 Optionally, use the **Cut Buttonhole Slit** tool under the **Cutwork** toolbox to generate a cutting line for selected buttonholes.



Tip If a buttonhole has been placed over other objects, some of the underlying stitches could unravel after the slit has been cut. To prevent this, objects under the buttonhole can be reshaped so that their boundaries line up along buttonhole slit. See [Reshaping & Editing Objects](#) for details.

Creating a line of buttonholes



Use **Digitize > Buttonholes** to digitize a line of buttonholes with all necessary stitching.

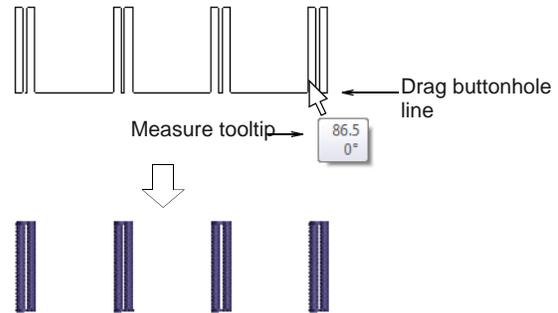


Use **Cutwork > Cut Buttonhole Slit** to generate a cutting line for selected buttonholes.

Add a line of evenly spaced buttonholes to a design with the **Add Buttonholes** command.



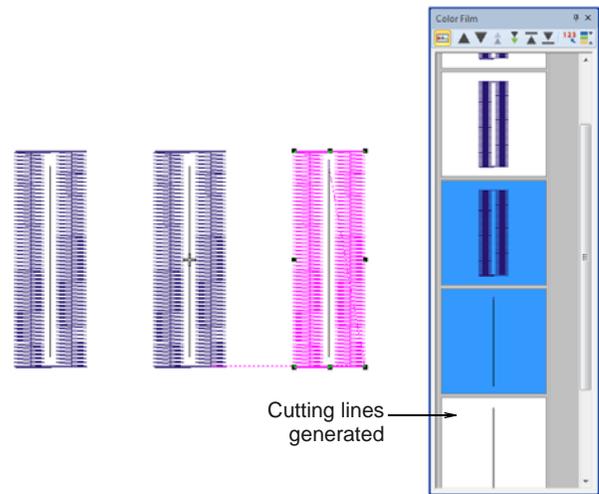
- 3 Enter the number of the buttonholes your design requires and click **OK**.
- 4 Click to place the first buttonhole and drag a line – horizontal or vertical – to the last buttonhole position.



- 5 Use the measure tooltip as a guide and click to complete.

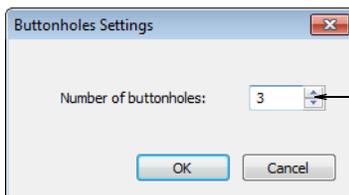
Buttonholes are generated according to current settings in the **Object Properties** dialog.

- 6 Optionally, use the **Cut Buttonhole Slit** tool under the **Cutwork** toolbox to generate a cutting line for selected buttonholes.



To create a line of buttonholes

- 1 Open or create a design requiring buttonholes.
 - 2 Select the **Buttonholes** tool.
- The **Buttonholes Settings** dialog opens.



Enter number of buttonholes required

Adjusting buttonholes

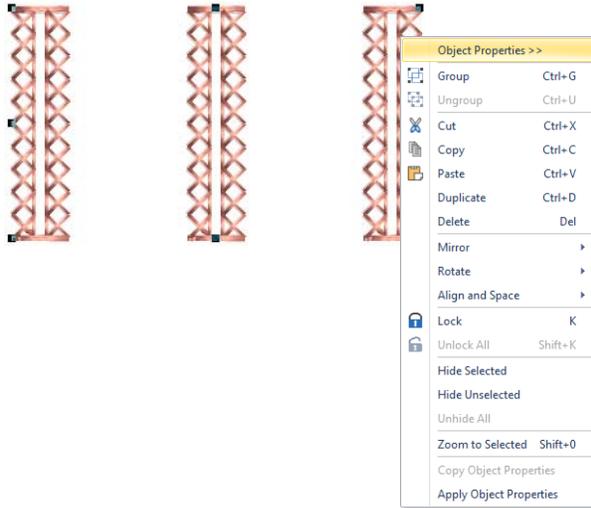


Use **General > Object Properties** to change buttonhole types.

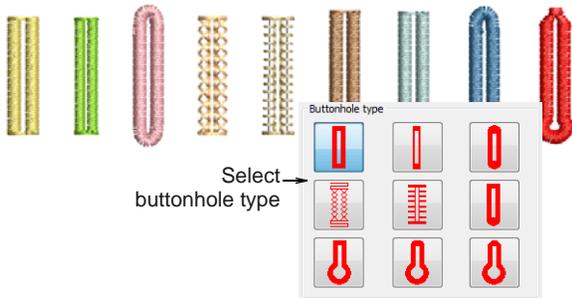
Buttonhole types can be changed at any time. They are simply properties of a buttonhole object. Other properties include 'slit length' as well as stitch spacings.

To adjust buttonholes

- ▶ Select the buttonholes to adjust and right-click.



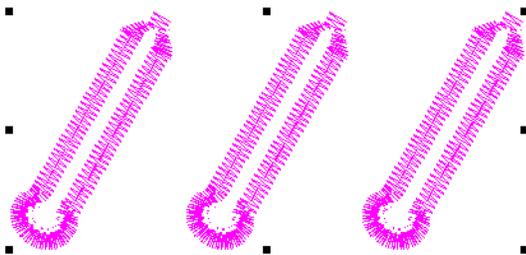
- ▶ Select **Object Properties**. The **Buttonhole** tab opens.
- ▶ Change buttonhole type as preferred.



- ▶ Adjust slit length and bead density as necessary.

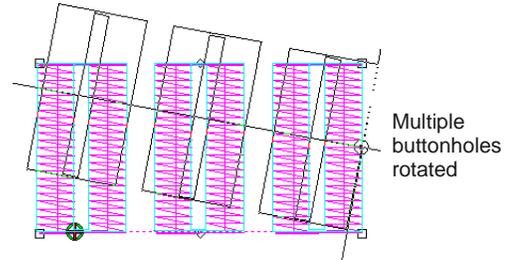


- ▶ Adjust orientation with the **Angle** settings.

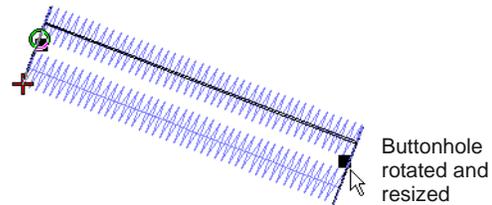


- ▶ Any of the following techniques will also work:

- ▶ **Select Object** tool to rotate one or more buttonholes together. See also **Rotating objects**.



- ▶ **Reshape Object** tool to rotate single buttonholes. See **Reshaping objects** for details.



- ▶ **Rotate 45° CCW/CW** tool to rotate one or more buttonholes. See also **Rotating objects**.
- ▶ **Mirror Y** and **Mirror X** tools. See also **Mirroring objects**.

CHAPTER 18

RESHAPING & EDITING OBJECTS

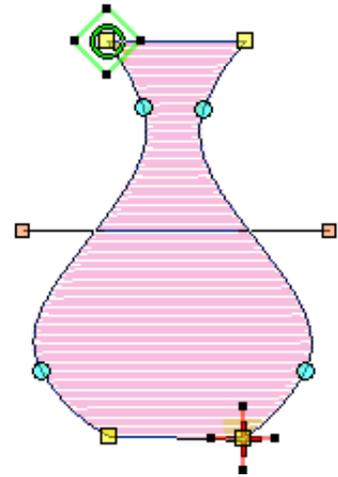
BERNINA Embroidery Software lets you modify object shapes, stitch angles and entry and exit points by means of reshape nodes. The Reshape Object tool is one of the most frequently used.

BERNINA Embroidery Software also allows you to cut filled objects into smaller fragments. This is important where changes in stitch direction are necessary.

Sometimes, you may need to remove underlying layers of stitching. This helps to reduce the stitch count and prevent a build-up of stitches where they are not needed.

BERNINA Embroidery Software also provides special tools for cutting holes in objects as well as filling holes in objects. You can also easily generate new outlines and offset objects based on existing objects.

This section describes how to reshape objects with reshape nodes. It also covers adjusting stitch angles – including multiple stitch angles – as well as changing entry and exit points. It also discusses cutting objects and removing underlying stitching, as well as adding holes to existing objects, filling holes, and generating outlines.



Reshaping objects

In BERNINA Embroidery Software you reshape objects by selecting them with the **Reshape Object** tool and moving, adding or deleting reshape nodes on the outline. With some objects, you can also change reshape nodes from corner points to curves. Reshaping operations do not affect stitch angles.



Tip Before modifying any design, a good practice is to save a copy under a new name and keep the original in case you want to discard your changes and start again.

Selecting reshape nodes



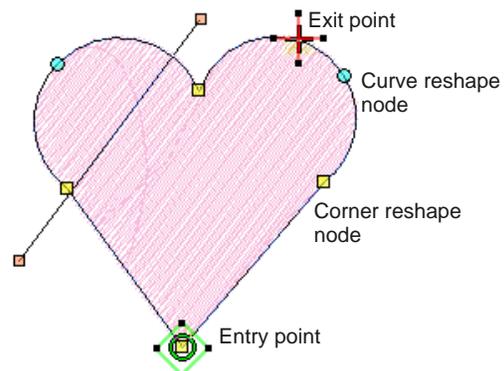
Click Transform > Reshape Object to view the reshape nodes of a selected object.

Reshape nodes can be selected individually or together, for repositioning or modification.

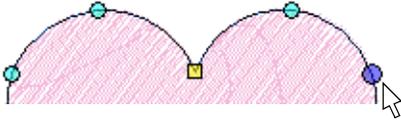
To reshape nodes

- ▶ Select an object and click the **Reshape Object** icon.

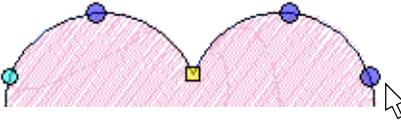
Reshape nodes appear around the object.



- ▶ Click to select a single reshape node.



- ▶ Holding down **Ctrl**, click to select multiple reshape nodes.

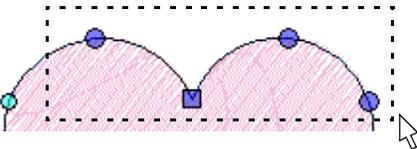


- ▶ Holding down **Shift** key, click to select a range of reshape nodes.



Tip Left-clicking or right-clicking in closed shapes reverses the direction of the selection.

- ▶ Click and drag a **selection marquee** around a group of reshape nodes to select.



Reshaping objects using reshape nodes



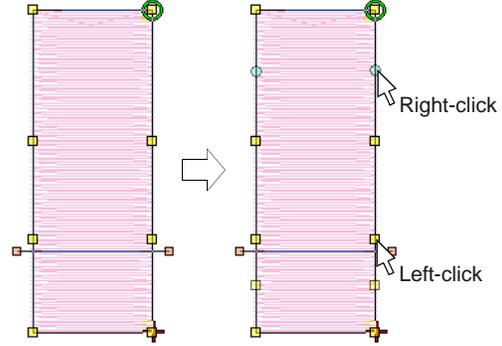
Click Transform > Reshape Object to reshape selected objects.

Change object shapes with the **Reshape Object** tool. Use it to add, delete, or move reshape nodes on the object outline. For some objects, you can also change between corner and curve points.

To reshape objects using reshape nodes

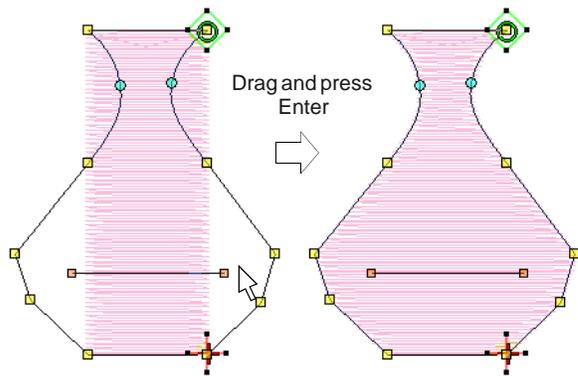
- 1 Select the object to reshape.
- 2 Click the **Reshape Object** icon.
Reshape nodes appear around the object.
- 3 To add extra reshape nodes on the outline:
 - ▶ Left-click to add a corner point.

- ▶ Right-click to add a curve point.



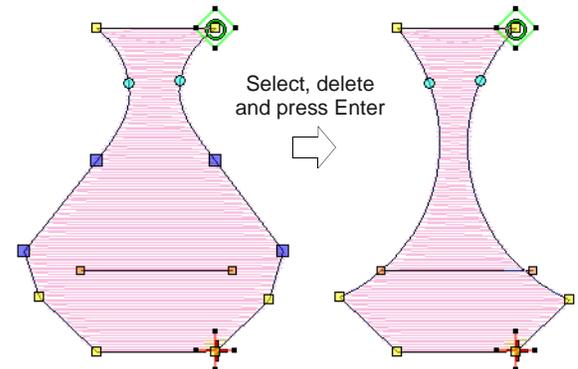
- 4 Select reshape nodes as required. See [Selecting reshape nodes](#) for details.

- 5 Adjust the position of selected reshape nodes by dragging them along the outline as required and press **Enter**.



Tip Use the arrow keys to 'nudge' selected reshape nodes.

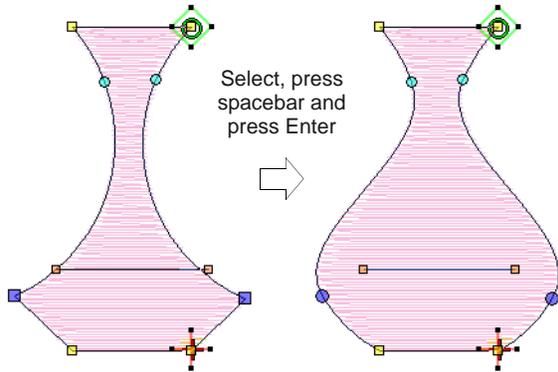
- 6 Press **Delete** to delete unwanted reshape nodes and press **Enter**.



- 7 Press **Spacebar** to toggle between selected corner and curve reshape nodes and press **Enter**.



Tip If you make a mistake, press **Esc** to remove the changes, press **Esc** again to exit **Reshape Object** tool.



Note You can also adjust **stitch angles** as required, as well as change entry and **exit points**. See **Modifying stitch angles** and **Adjusting entry & exit points** for details.

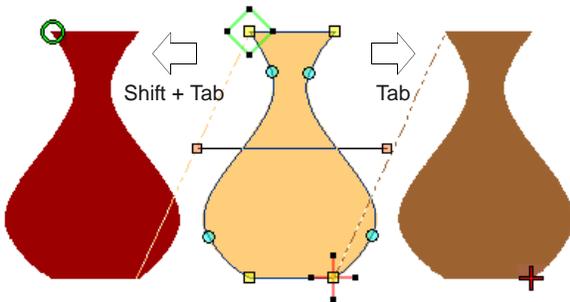
8 Press **Esc** to finish.

Reshaping next or previous objects

When editing an object in **Reshape** mode, use the **Tab** key to quickly jump between objects. See also **Deselecting & deleting objects**.

To reshape next or previous objects

- ▶ Press the **Tab** key to accept all changes to an object and jump to the **next** object in the stitching sequence.



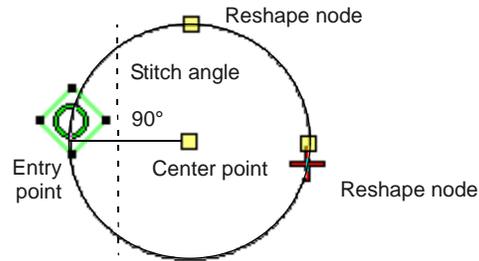
- ▶ Pressing **Shift + Tab** causes all changes to the object to be accepted and the **previous** object in the stitching sequence to be selected for reshaping.

Reshaping circle objects



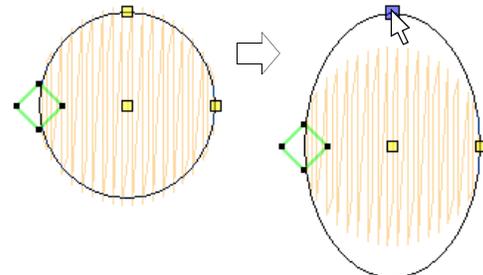
Click **Transform > Reshape Object** to reshape circle objects.

For objects created with the **Circle** tool, you reshape using the existing reshape nodes only. You cannot add, change or delete reshape nodes in these objects. You can change Circle objects from circles to ovals using the **Reshape Object** tool. Circle objects have two reshape nodes (used to change the radius and orientation of the object), a center point (used to reposition it), and a stitch entry point.

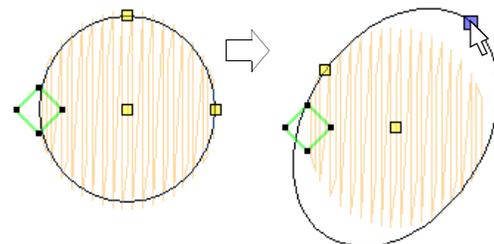


To reshape circle objects

- 1 Select a Circle object and click the **Reshape Object** icon. Reshape nodes appear around the object.
- 2 To move a circle, click the reshape node in the circle's center, and drag it to a new position.
- 3 Click a reshape node on the circumference of the circle, and drag it to reshape the outline.
 - ▶ To reshape without changing the orientation, use the reshape node at the top of the object.



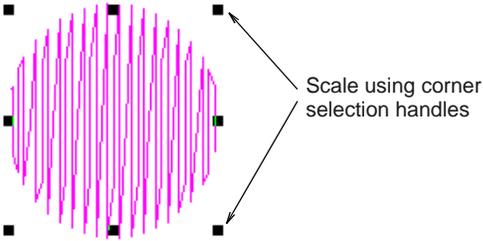
- ▶ To reshape and spin the object around its center point, use the reshape node at the side.



- 4 Press **Enter** to apply the changes, then **Esc** to finish.



Tip To scale a circle without changing it to an oval, select it with the **Select Object** tool, and use the corner selection handles to scale it.



Smoothing curves

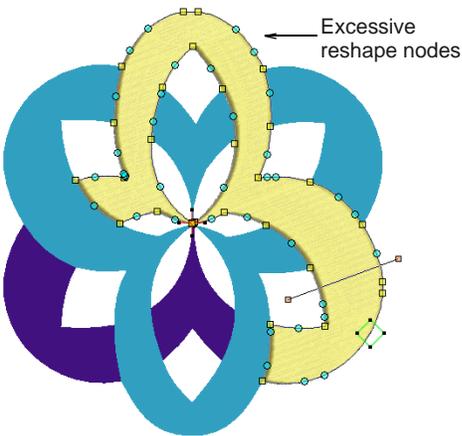


Click Transform > Reshape Object in combination with Edit > Smooth Curves to remove unnecessary reshape nodes from embroidery objects.

Like **vector objects**, **embroidery objects** contain reshape nodes on their outlines. On shapes where the angle changes constantly, the software may insert hundreds of reshape nodes, making reshaping difficult. The **Smooth Curves** command lets you apply curve 'smoothing' to embroidery objects.

To smooth curves

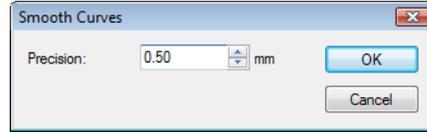
- 1 Select the object (or objects) to smooth.



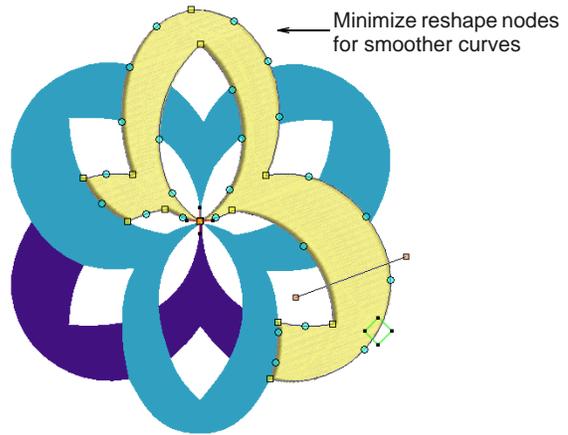
Note You can only smooth objects that have been ungrouped and selected. However, you can select multiple objects.

- 2 Click the **Reshape Object** icon. Reshape nodes display around the outline.
- 3 Select **Edit > Smooth Curves**.

The **Smooth Curves** dialog opens.



- 4 In the **Precision** field, enter the smoothing precision value. This value controls how closely the smoothed outline follows the original. The larger the precision value, the fewer the reshape nodes.
- 5 Click **OK**.



Modifying stitch angles

Stitch angle adjustments depend on the type of object you are working with. With filled objects you can set a stitch angle for the entire object. Alternatively, you can add multiple stitch angles with the **Add Stitch Angles** tool. You can also adjust the stitch angle using the **Reshape Object** tool.



Note You can change the stitch angle of Circle objects by moving the stitch entry point.

Setting nominal stitch angles

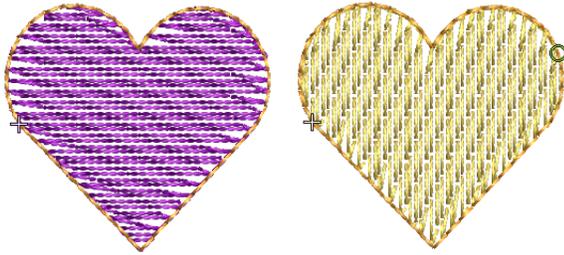


Use Edit > Add Stitch Angles to add stitch angles to closed objects with or without holes. Right-click for settings.



Use Edit > Remove Stitch Angles to remove stitch angles from closed objects with turning stitches.

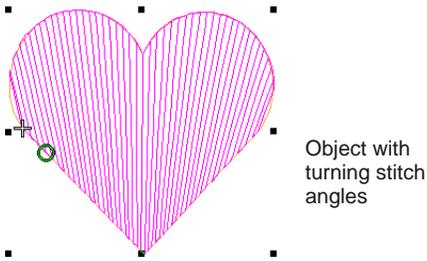
You can change the nominal stitch angles of filled objects using **object properties**.



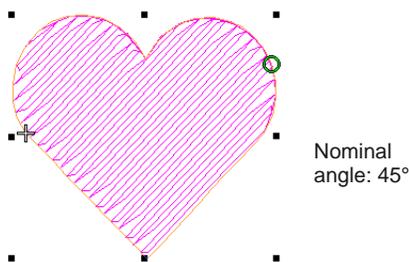
Note Whenever **Remove Stitch Angles** is applied to selected objects with turning stitch angles, the resultant object takes a single, nominal stitch angle.

To set the nominal stitch angle

1 Select an closed object with or without **turning stitches**.



2 If necessary, click the **Remove Stitch Angles** tool to return it to the current nominal stitch angle.

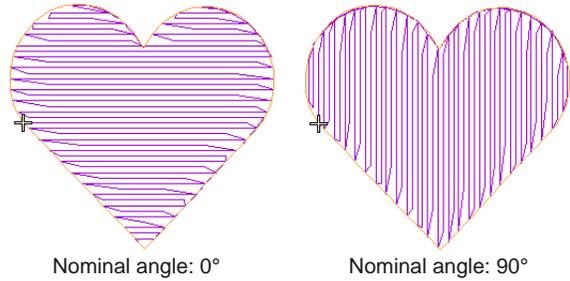


3 Right-click the **Add Stitch Angles** icon.
 Alternatively, double-click or right-click the object itself.
 The **Object Properties** dialog opens.



4 Select the **Stitch Angle** tab if not already selected.

5 In the **Angle** field, enter the required stitch angle.



6 Click **Apply**.

Adding and removing stitch angles

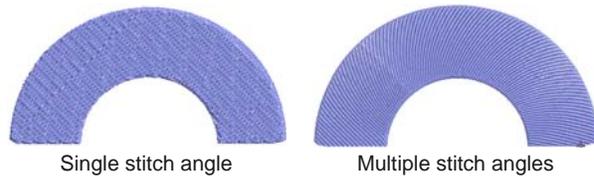


Use Edit > Add Stitch Angles to add stitch angles to closed objects with or without holes. Right-click for settings.



Use Edit > Remove Stitch Angles to remove stitch angles from closed objects with turning stitches.

The stitch angles of filled objects are all modified in the same way. Multiple stitch angles can be added or subtracted with the **Stitch Angles** tools.



In BERNINA Embroidery Software, the **Add Stitch Angles** tool can be applied to closed objects with:

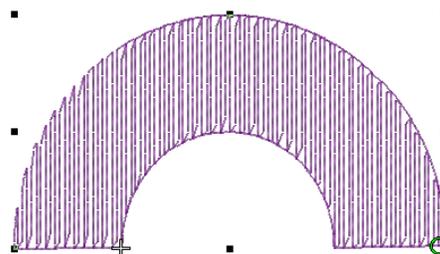
- ▶ turning stitch angles
- ▶ a single stitch angle, with or without hole(s).



Tip With the **Reshape** tool, you can add individual reshape nodes, modifying the shape **without** affecting the stitch angles. See **Reshaping objects using reshape nodes** for details.

To add or remove stitch angles

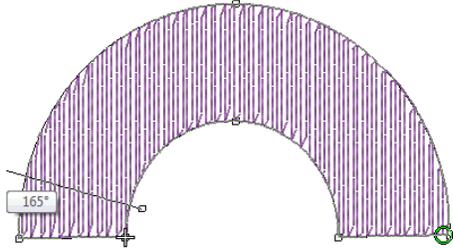
1 Select a closed object with or without **turning stitches**.





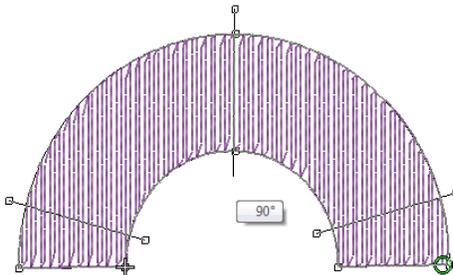
Note If a **Stitch Angles** tool is applied to an object with a **Star Fill** or **Wave Fill** effect, the effect is removed.

- If necessary, click the **Remove Stitch Angles** tool to return it to the current nominal stitch angle.
- Click the **Add Stitch Angles** icon.
You are prompted to enter stitch angles.



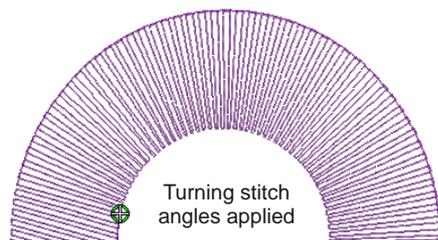
Tip If you press **Enter** without entering stitch angle lines after the **Add Stitch Angles** tool is activated, stitch angle line/s are automatically created. You either press **Enter** again to accept the angle lines or **Spacebar** to discard them so a single stitch angle is applied.

- Digitize stitch angles – Points 1 and 2 – so that they intersect two sides of the object. Make sure that they do not intersect each other.

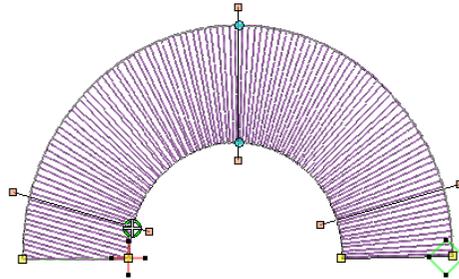


Caution New stitch lines should not intersect existing stitch lines or an error message displays. Press **Backspace** to delete.

- Enter as many stitch angles as required to create a turning fill effect.
- Press **Enter** to apply changes, then **Esc** to finish.
The object is re-stitched with the new angles.



Tip Use the **Reshape Object** tool to adjust reshape nodes as required. See [Adjusting stitch angles](#) for details.

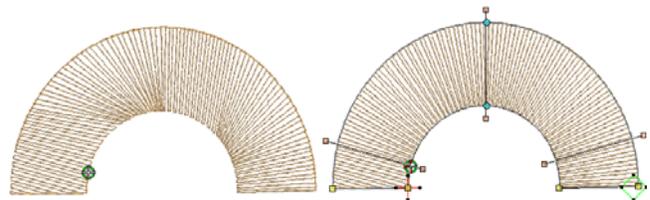


Adjusting stitch angles

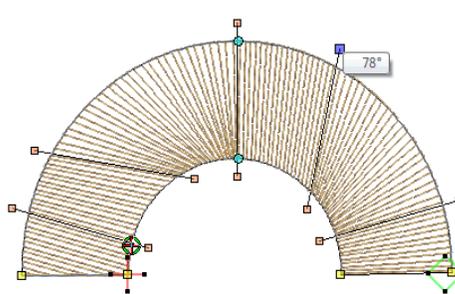


Click **Transform > Reshape Object** to adjust the multiple stitch angles of a selected object.

You can change stitch angles of filled objects using the **Reshape Object** tool.



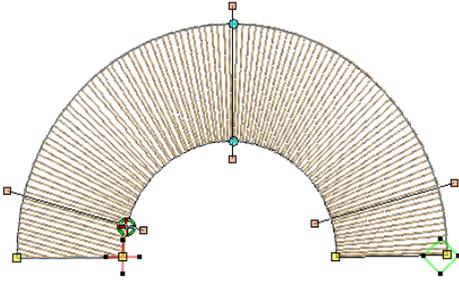
To adjust stitch angles

- Select the filled object.
 - Click the **Reshape Object** icon.
Reshape nodes appear including stitch angle lines.
- 
- Select stitch angle nodes and press **Delete** to remove stitch angles.

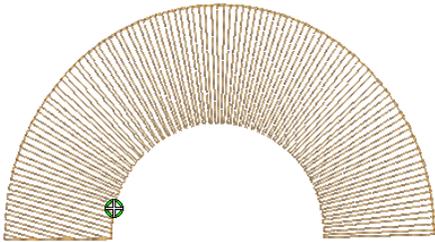


Tip When you move the mouse pointer over the stitch angle point, a tooltip displays the stitch angle of the selected object.

- Click and drag lines as required.



- Press **Enter** to apply the changes, then **Esc** to finish.
The object is re-stitched with the new angles.



Tip To set a precise stitch angle, use object properties. See [Setting nominal stitch angles](#) for details.

Adjusting entry & exit points



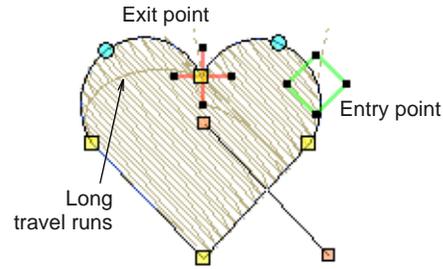
Click Transform > Reshape Object to adjust the entry and exit points of a selected object.

The default **Closest Join** method automatically calculates the closest join between objects while **digitizing** – no need to think about object entry and exit points. The **Settings > Options > General** tab lets you deactivate the setting if so required. When deactivated, all newly digitized objects are joined by the **As Digitized** method. This means you are prompted to enter entry and exit points as you digitize. You can change these at any time with the **Reshape Object** tool. See also [Setting other general options](#).

To adjust entry & exit points

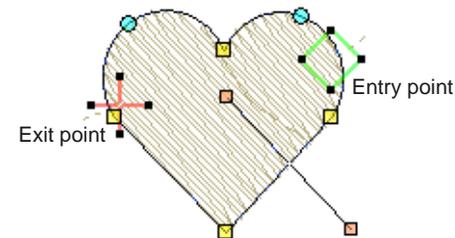
- Select the object.
- Click the **Reshape Object** icon.

Reshape nodes appear, including entry and exit points.

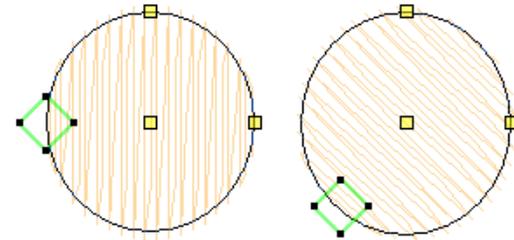


Note In Circle objects, only the entry point appears.

- Select the entry or exit point as required, and drag it to a different position on the object outline.
- Press **Enter** to apply the changes, then **Esc** to finish.



Note In Circle objects, the stitch angle is perpendicular to the line connecting the entry point to the circle center. Thus, changing the stitch entry point in a Circle object changes its stitch angle.



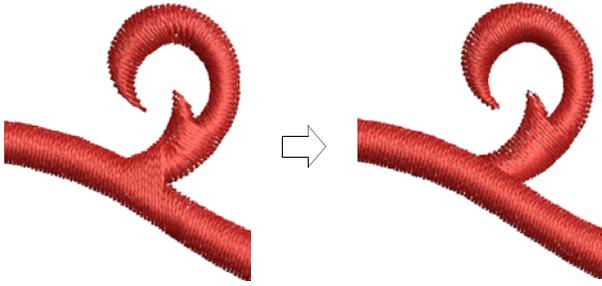
Splitting objects



Click Edit > Knife to cut objects along a digitized line, preserving stitch settings and colors in resulting objects.

The **Knife** tool is used to manually cut filled objects into smaller fragments. This is important where changes in stitch direction are necessary. Cut objects

are generated with stitching – parallel or turning – appropriate to their shape.



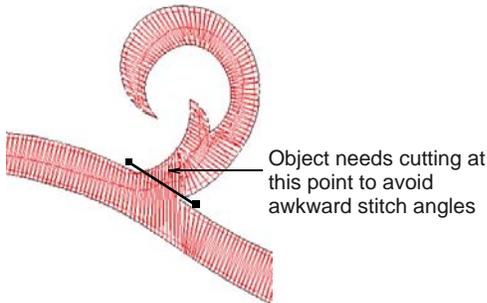
The **Knife** tool has two modes of operation:

- ▶ It will only cut selected objects when there is something in selection.
- ▶ It will cut **all** objects under the knife when there is nothing selected.

To split shapes manually

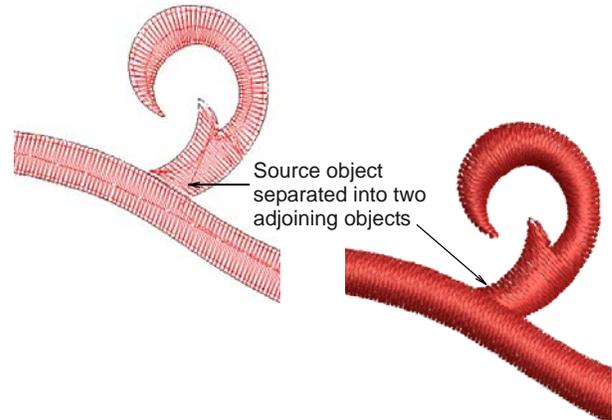
- 1 Select an object for cutting – e.g. letter, closed object, or line.
- 2 Select the **Knife** tool.

The cursor changes to a knife icon. You are prompted to enter point 1.



- 3 Digitize a cutting line – left-click for corner points, right-click for curve points – and press **Enter**.
By default BERNINA Embroidery Software reorders fragments into a closest-join sequence that

preserves the source object's entry and exit points.



Note The **Knife** tool cuts object outlines and **not** the stitches. The system then regenerates the stitches inside the new shape that is created.

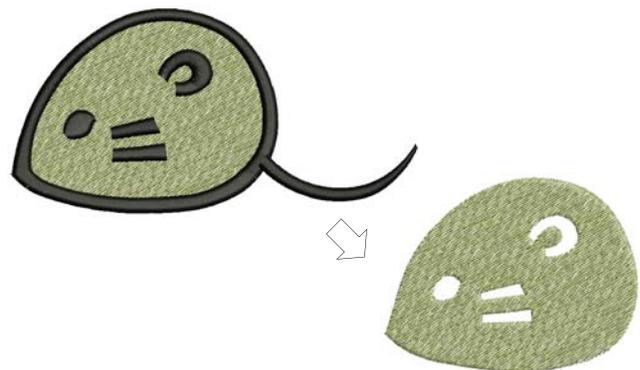
- 4 Manually adjust object overlaps using the **Reshape Object** tool.

Removing underlying stitching



Use Edit > Remove Overlaps to remove unwanted stitching underlying objects or lettering.

Use the **Remove Overlaps** tool to remove underlying layers of stitching. This helps to reduce the stitch count and prevent a build-up of stitches where they are not needed. A cutting overlap is preserved between 'cut' objects and their 'cutters' in order to prevent gaps forming. This can be adjusted for different fabric types.



Valid cutters

Various **embroidery objects** can be used as cutters if not too small and with a stitch spacing of 1.00 mm or less. Examples include:

- ▶ Objects with Satin, Step or Fancy Fill fills

- ▶ Satin outlines
- ▶ Auto Appliqué objects with Satin cover stitching
- ▶ Lettering objects.

‘Cuttable’ objects

‘Cuttable’ objects include:

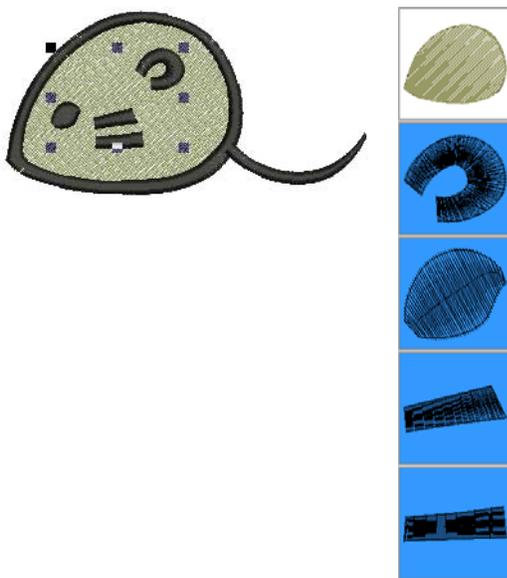
- ▶ Filled objects
- ▶ Auto Appliqué objects
- ▶ Outline objects.

Lettering and Buttonhole objects cannot be cut in **Remove Overlaps** operations although they can both be used as cutters. See also [Creating buttonholes](#).

Stitches underlying see-through fills are not removed. These include fills such as Pattern Fill, Blackwork Fill, Candlewicking Fill, Lacework Fill, Gradient Fill, or stitches with more than 1.00 mm stitch spacing. Also any stitches underlying narrow sections of objects are not removed.

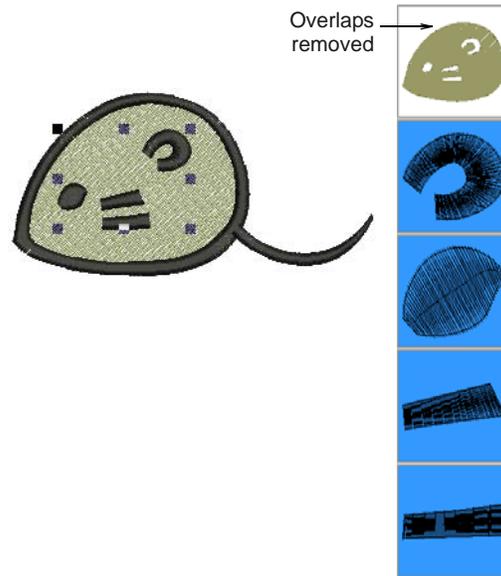
To remove underlying stitching

- 1 Select one or more ‘cutters’.

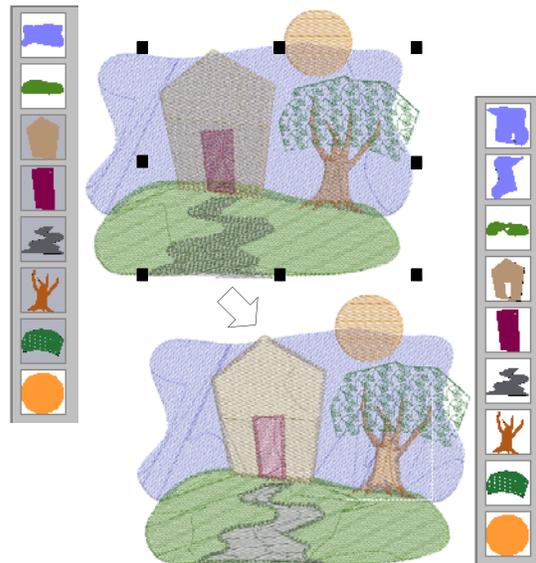


- 2 Click the **Remove Overlaps** icon or select **Arrange > Remove Overlaps**.

Stitching overlaps are removed according to the current setting. To change the setting, see [Setting overlap removal options](#).



Note Multiple cutters can be simultaneously selected as part of a single cutting operation.



In the example above, note that:

- ▶ The sky object has been broken in two.
- ▶ The door and path have caused the removal of stitches in the house and hill objects.
- ▶ The tree stem and sky underlying the leaf object are preserved since Pattern Fill is not a valid cutter.
- ▶ The section of sky where the orange moon overlaps remains unchanged since the moon is not selected at the start of the operation.

Adding & filling holes

BERNINA Embroidery Software provides special tools for cutting holes in objects as well as filling holes in objects.



Adding & removing holes



Use Edit > Add Holes to cut holes in filled objects.

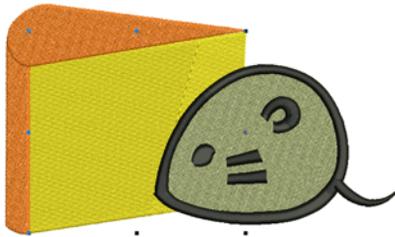


Use Edit > Remove Holes to remove holes from selected objects.

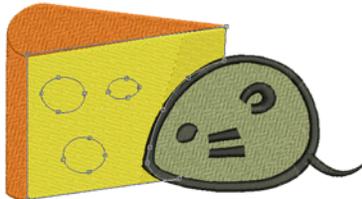
With BERNINA Embroidery Software you can cut holes in selected closed objects with a single stitch angle using the **Add Holes** tool. It can only be used with objects created with the **Closed Object** tool. The complementary **Remove Holes** tool allows you to remove unwanted holes in closed objects.

To add or remove holes

- 1 Select the object to modify.



- 2 Click the **Add Holes** icon.
Reference points display around the object outline.
- 3 Digitize additional boundaries for the object. Press **Enter** after each boundary.



- 4 Press **Enter**.



Note To remove boundaries from a closed object, select it and click **Remove Holes**.

Filling holes



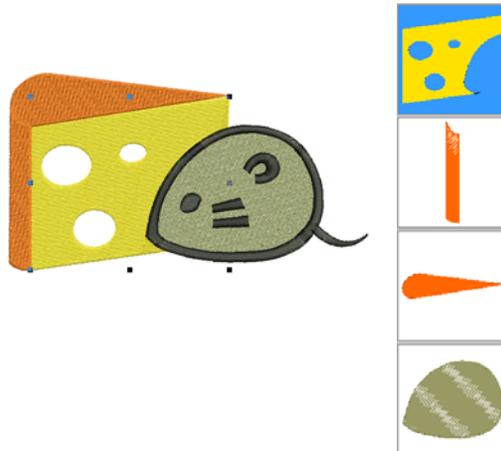
Use Edit > Fill Holes to fill holes in selected objects with current stitch type.

The **Fill Holes** tool fills holes in single closed objects containing holes. These can be removed altogether or new objects created.

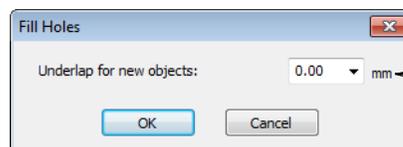


To fill holes in objects

- 1 Select a source object.

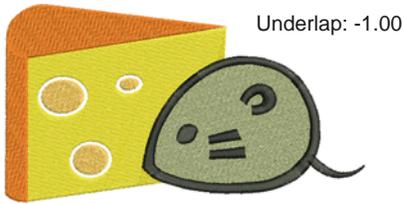


- 2 Click the **Fill Holes** icon.
The **Fill Holes** dialog opens.



Adjust underlap value as required

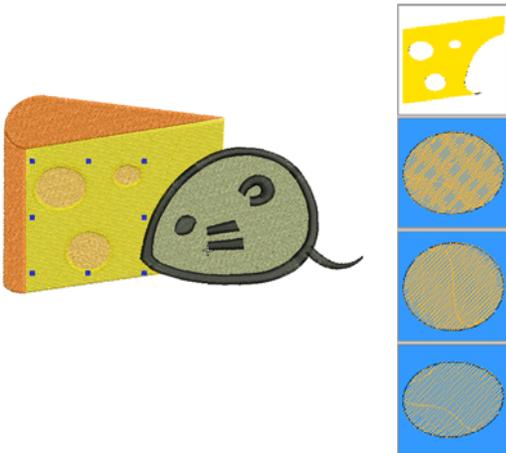
3 Adjust the **Underlap** value as desired.



- ▶ To cover holes exactly, accept the default value of **0.00**.
- ▶ To overlap the filled holes and the original object, enter a positive offset – e.g. **1.00**. Overlapping the objects prevents gaps appearing.
- ▶ To leave a gap between the filled holes and the original object, enter a negative offset – e.g. **-1.00**.

4 Click **OK**.

All newly created objects are filled with the current fill stitch settings, stitch angle and thread color. Each new object is an independent object and is placed immediately after the source object in the stitch sequence.



Creating outlines & offsets



Use **Edit > Outlines & Offsets** to create outlines and offsets of any type for any filled embroidery object.

BERNINA Embroidery Software provides tools for quickly generating new outlines and offset objects based on existing objects. Use the **Outlines & Offsets** tool to highlight details – e.g. small satin objects – or create seamless borders. Auto-outline

designs in any outline stitch. Any closed shape can be used.

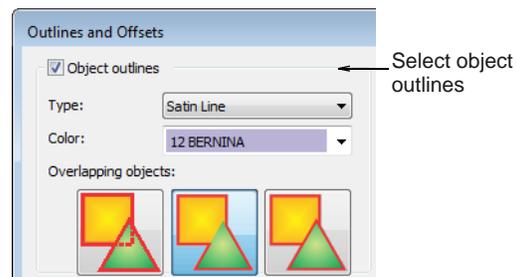


To create outlines

1 Select the embroidery object/s or design to outline.



2 Select the **Outlines & Offsets** tool. The **Outlines & Offsets** dialog opens.



3 Tick **Object Outlines** and choose an outline type.

The **Type** droplist includes the full range – Single Run, Triple Run, etc.

4 Choose your outline color. The **Color** droplist defaults to the current color in the color palette.

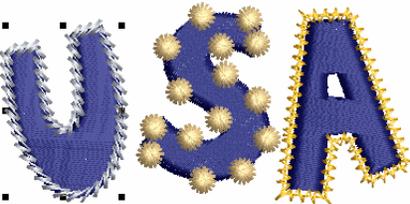
5 Choose an option for handling overlapping objects:

Outline type	Notes
 Individual	All generated outlines are full outlines.
 Common	Intersecting outlines are combined into a single outline.
 Trimmed	Overlapped portions are trimmed by overlapping objects.

6 Click **OK** to apply. The software generates an outline around the source object/s and inserts them immediately afterwards in the stitching sequence.

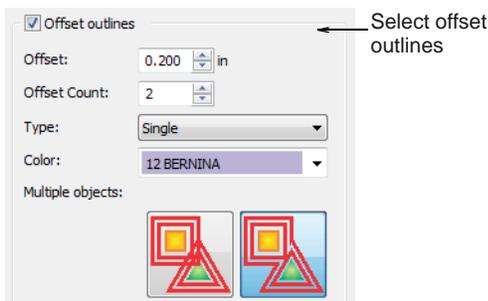


Note Generated outlines are independent objects and can be further modified as desired. Change colors, stitch types, and settings as desired.



To create offsets

- 1 Select the source object/s if not already selected.
- 2 Tick **Offset Outlines**.



- 3 Select an outline color and stitch type.
- 4 In the **Offset Count** field, enter the number of offsets required and an offset amount.

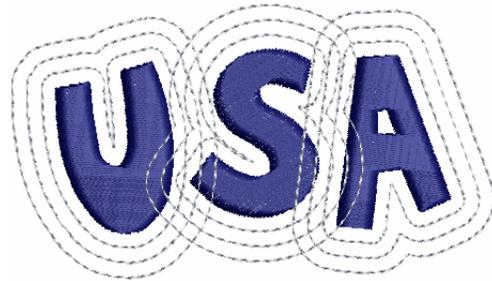
5 Choose an option for handling multiple objects:

Offset type	Notes
 Individual	All generated offsets are full outlines.
 Common	Intersecting offsets are combined into a single outline.

6 Choose an option for handling sharp corners:

Corner type	Notes
 Round	Sharp corners are always rounded.
 Sharp	Sharp corners are preserved.
 Cut	Any acute angle greater than 89° is cut.

7 Click **OK** to apply. The software generates offset objects and adds them to the end of the stitching sequence.



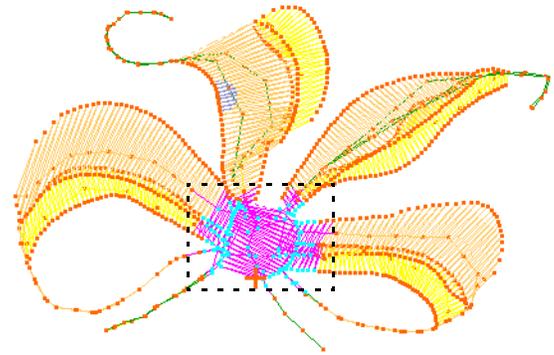
8 Optionally, use common outlines for all selected objects. Combine offsets with outlines as preferred.



CHAPTER 19

EDITING STITCHES

With BERNINA Embroidery Software designs, stitches are automatically generated from design outlines and properties. This means you can scale, transform and reshape designs without affecting stitch density or quality. However, BERNINA Embroidery Software also lets you edit individual stitches. You simply select and manipulate them like any other object. For example, you can insert stitches in an object to fill gaps, or move and delete individual or clusters of selected stitches. You may need to do this, for example, when working with 'machine files' which do not contain design outline data. Where possible, however, edit the object properties rather than individual stitches. See also [Embroidery design formats](#).



This section deals with selecting and editing stitches.

Selecting stitches

The **Stitch Edit** feature lets you select single stitches, several stitches, or a range of stitches by selecting their needle points, or dragging a **selection marquee** around them. Selected stitches are highlighted in a different color.

Selecting stitches by needle point



Click Edit > Stitch Edit to place stitch cursor at a selected insertion point.

You can select individual stitches in **Stitch Edit** mode by selecting their needle points.

To select stitches by needle point

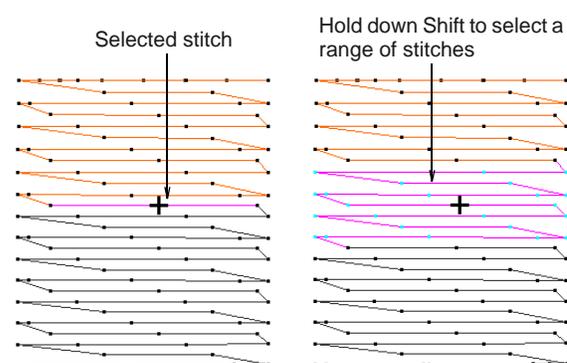
- 1 Select **Edit > Stitch Edit**. Alternatively press **E**.



Tip Zoom in and display the needle points for easier selection. See [Zooming in & out](#) and [Viewing embroidery elements](#).

- 2 Click a needle point.

The needle point and stitch colors change and the needle position marker moves to the selected stitch. All stitches after the needle position marker in the stitching sequence appear in black.



- ▶ To select a range, hold down **Shift** as you click.
- ▶ To select multiple items, hold down **Ctrl** as you click.

Selecting stitches with a selection marquee



Click Edit > Stitch Edit to place stitch cursor at a selected insertion point.

You can quickly select all stitches in a group by dragging a **selection marquee** around them.

To select stitches with a selection marquee

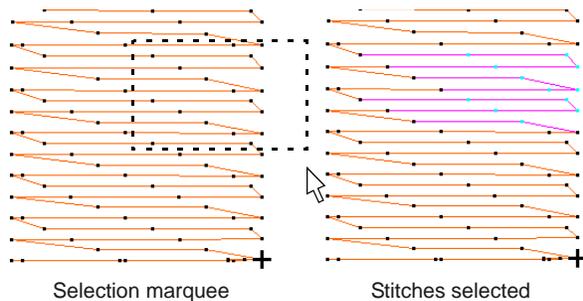
- 1 Select **Edit > Stitch Edit**. Alternatively press **E**.



Tip Zoom in and display the needle points for easier selection. See **Zooming in & out** and **Viewing embroidery elements**.

- 2 Drag a **selection marquee** around the stitches you want to select.

Stitches are selected when you release the mouse button.



Inserting stitches



Click **Edit > Stitch Edit** to place stitch cursor at a selected insertion point.

You can insert stitches in an object to fill gaps. Inserted stitches are considered part of the object rather than independent objects. They will, however, be lost if the object's stitches are regenerated. Where possible, edit the **object properties** rather than individual stitches. For example, to increase stitch density, reduce spacing rather than insert stitches.

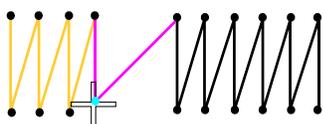
To insert stitches

- 1 Select **Edit > Stitch Edit**. Alternatively press **E**.



Tip Zoom in and display the needle points for easier selection. See **Zooming in & out** and **Viewing embroidery elements**.

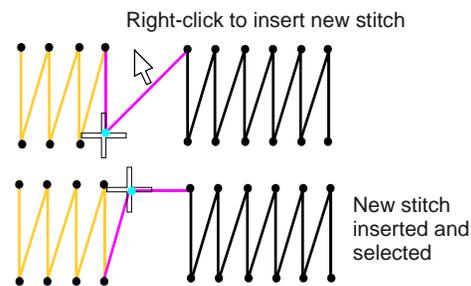
- 2 Select a needlepoint.



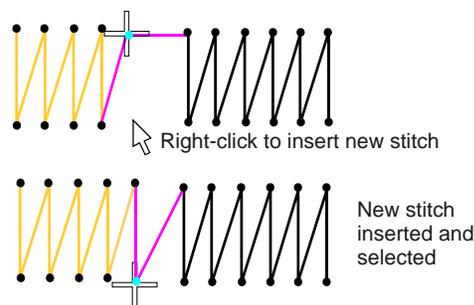
The needle point and stitch colors change and the needle position marker moves to the selected

stitch. All stitches after the needle position marker in the stitching sequence appear in black.

- 3 Move the mouse pointer where you want to insert the new stitch, and right-click.



- 4 Move the mouse to where you want to insert the next stitch, and right-click.



- 5 Continue right-clicking as required.

Moving stitches



Click **Edit > Stitch Edit** to place stitch cursor at a selected insertion point.

You can move individual or groups of selected stitches.



Caution If an object's stitches are regenerated for any reason, all stitch editing functions are lost. Where possible, reshape the object rather than move individual stitches. See **Reshaping & Editing Objects** for details.

To move stitches

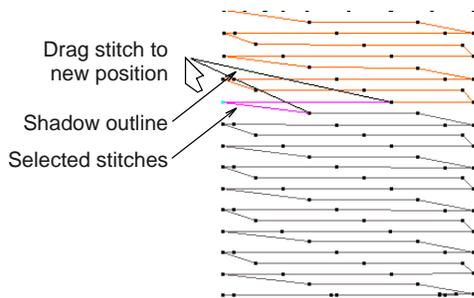
- 1 Select **Edit > Stitch Edit**. Alternatively press **E**.



Tip Zoom in and display the needle points for easier selection. See **Zooming in & out** and **Viewing embroidery elements**.

- 2 Select stitches and drag them to a new position.

The stitch shadow outline shows the new position.



3 Press **Enter**.

Deleting stitches



Click **Edit > Stitch Edit** to place stitch cursor at a selected insertion point.

You can delete individual or groups of selected stitches.



Caution If an object's stitches are regenerated for any reason, all stitch editing functions are lost. Where possible, edit the **object properties** rather than individual stitches. See [Adjusting satin stitch spacing](#) and [Preserving long stitches](#) for details.

To delete stitches

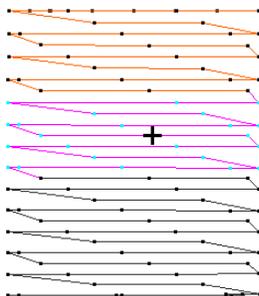
1 Select **Edit > Stitch Edit**. Alternatively press **E**.



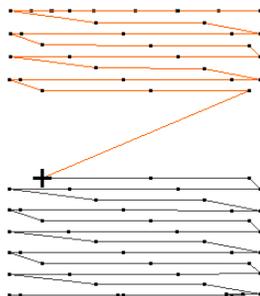
Tip Zoom in and display the needle points for easier selection. See [Zooming in & out](#) and [Viewing embroidery elements](#).

2 Select a stitch or stitches.

3 Press **Delete**.



Stitches selected



Stitches deleted

PART V

ADVANCED DIGITIZING

BERNINA Embroidery Software provides specialized productivity features as well as special effects and digitizing techniques.

Decorative stitching

This section explains how to apply the various decorative types to outlines and fills, as well as change stitch settings to obtain the best results. See [Decorative Stitching](#) for details.

Stitch effects

This section shows you how to apply artistic stitch effects to embroidery objects, and how to adjust their settings to get the best results. See [Stitch Effects](#) for details.

Stitch patterns

This section describes how to apply stitch patterns to embroidery objects, and how to adjust their settings to get the best results. See [Stitch Patterns](#) for details.

Embroidery patterns

This section describes how to insert patterns into your design, and how to adjust their settings to get the results you want. It also explains how to create your own patterns and pattern sets as well as how to create stitch patterns with carving stamps. See [Embroidery Patterns](#) for details.

Digitizing for appliqué

This section covers creating closed-object appliqué as well as partial cover appliqué. It also discusses creating open-object appliqué. See [Digitizing for Appliqué](#) for details.

Cutwork & stumpwork

This section covers tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces, specifically by means of cutwork and stumpwork. See [Cutwork & Stumpwork](#) for details.

Raised embroidery

This section covers tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces, specifically by means of quilted embroidery, needle felting, and couching. See [Raised Embroidery](#) for details.

Ancillary applications

This section provides an overview of the ancillary BERNINA Cross Stitch and BERNINA Quilter applications provided with BERNINA Embroidery Software. See [Ancillary Applications](#) for details.

CHAPTER 20

DECORATIVE STITCHING

BERNINA Embroidery Software provides a range of decorative stitches which you can use to mimic some traditional hand-worked embroidery. These include a large range of blackwork and candlewicking patterns suitable for both outlines and fills.

Lacework and stipple are two decorative fill stitches. Lacework can be used to give a lacy look to objects such as flowers.

Gradient Fill varies stitch spacing between dense and open fill, producing shading effects which are difficult to achieve manually.

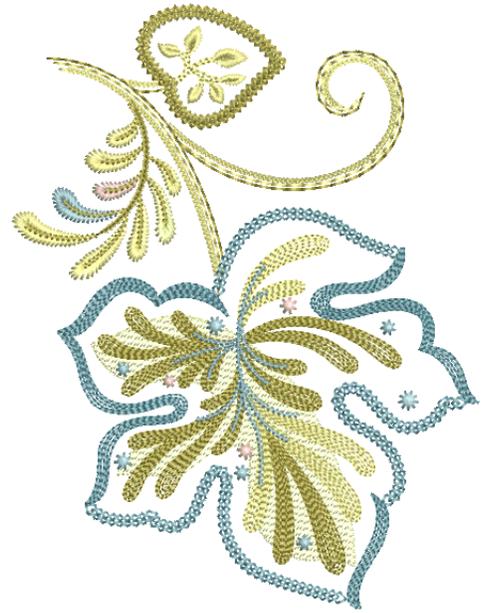
Stippling, also known as vermicelli, is a free flowing run stitch that can be used for decorative effects or to produce quilting.

Ripple and Contour fills are related stitch types which create an open fill which follows the contours of a shape. Cross

stitching is a popular technique for filling large areas with low stitch counts.

Crosses in separate objects line up precisely when using the same fabric count.

This section explains how to apply the various decorative types to outlines and fills, as well as change stitch settings to obtain the best results.



Creating craft stitches

Different stitch types suit different styles of embroidery. When you digitize an object, it uses the current stitch type for the selected digitizing method. Of course you can change stitch types at any time.



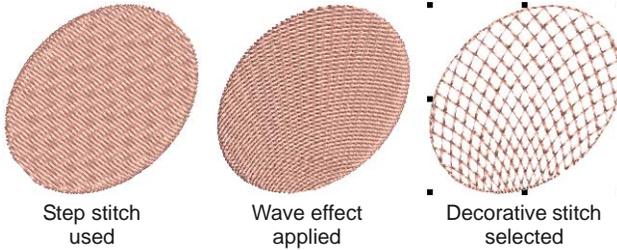
BERNINA Embroidery Software provides a range of stitches for more decorative outlines and fills. These include such stitches as blackwork, backstitch,

stemstitch, and candlewicking. Outlines and fills are generated with default stitch settings. These can be adjusted before or after digitizing via **Object Properties**. See also [Digitizing Methods](#).

Techniques for adjusting layouts are the same as for pattern fills. Stitch angles have no effect on pattern layouts. See [Creating pattern fills](#) for details.



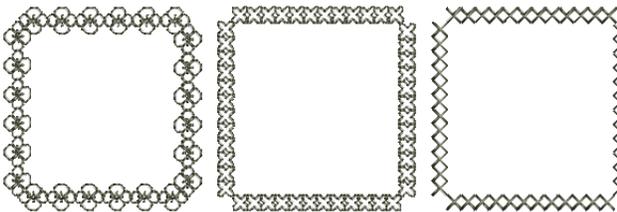
Tip Wave Fill lets you contour fill stitches along a digitized guideline. **Wave Fill** can be applied to all pattern fills. See also [Creating wave effects](#).



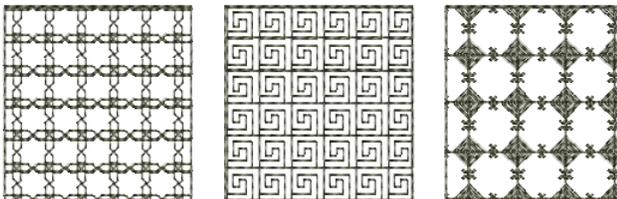
Blackwork

-  Use Stitches > Blackwork Outline to create craftstitch borders. Name derives from black silk thread traditionally used in this form of embroidery.
-  Use Stitches > Blackwork Fill to create fill for blackwork designs. Name derives from black silk thread traditionally used in this form of embroidery.

Blackwork gets its name from the black silk thread traditionally used in this form of embroidery. Early designs tend to be angular, whereas later designs use more diagonal stitches. Blackwork employs just a few simple stitches to create complex designs. It can be used to decorate articles of dress or furnishings such as hankies, table napkins, tablecloths, and doilies.



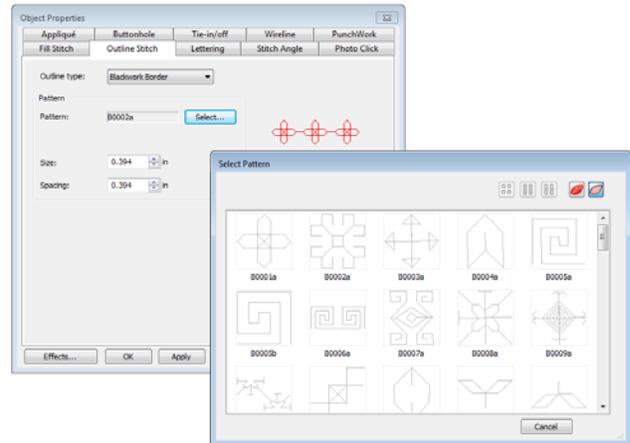
The most common blackwork fills employ simple stitches to create complex scrolling or geometric patterns. By using different blackwork fill patterns, you can create light and dark tones in a design.



Blackwork settings

Blackwork settings can be adjusted in the usual way via **Object Properties**. In essence, blackwork is a

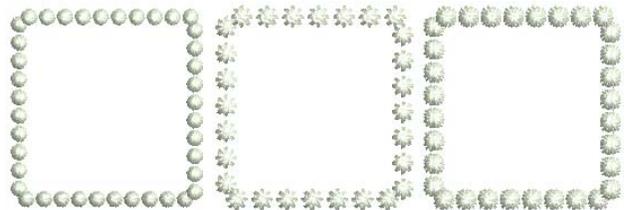
type of embroidery pattern and has the same properties. See also [Embroidery Patterns](#).



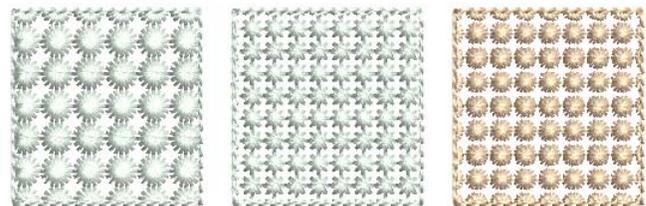
Candlewicking

-  Use Stitches > Candlewicking Outline to create ornamental craftstitch borders. Specify exact pattern size and spacing.
-  Use Stitches > Candlewicking Fill to create candlewicking fills – traditional white-on-white embroidery usually done with heavy cotton thread on white linen.

Candlewicking is a traditional white-on-white embroidery technique, usually done on white linen or cotton fabric with heavy cotton threads. Stitches used are mostly knots, both Colonial and French, as well as stemstitch. Candlewicking Outline can be used for ornate borders. You can specify the exact size of each pattern as well as spacing between them.

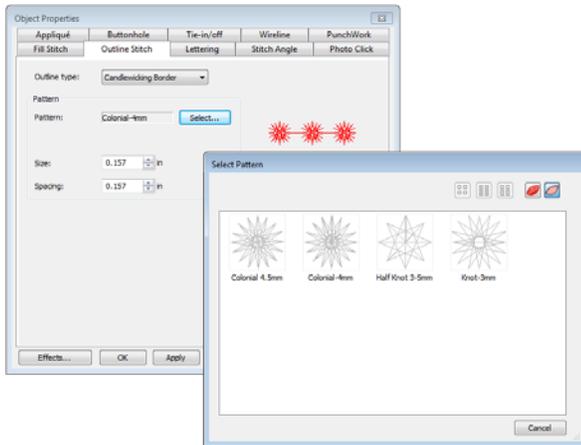


More use of color is becoming popular today. Stitches used are mostly knots, both Colonial and French, as well as stemstitch. Candlewicking can be used to embroider white bedspreads, pillows and clothing.

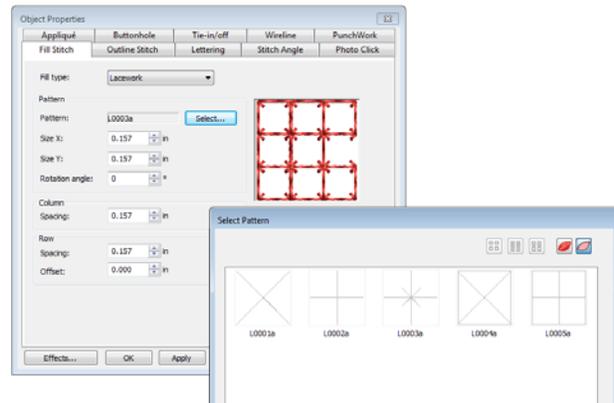


Candlewick settings

Candlewick settings can be adjusted in the usual way via **Object Properties**. Like blackwork, candlewicking is a type of embroidery pattern and has the same properties. See also [Embroidery Patterns](#).



pattern and has the same properties. See also [Embroidery Patterns](#).

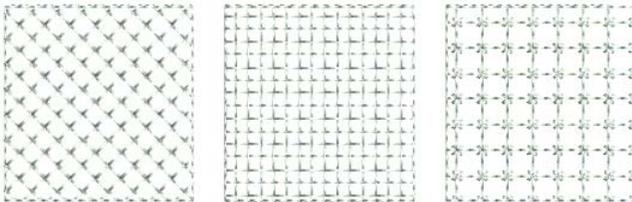


Lacework



Use Stitches > Lacework Fill to create a lacy look with open trellis-like patterns.

Lacework stitch consists of an open square trellis-like pattern which gives objects a lacy look. With Lacework fills you can adjust the layout of the preset patterns.



Lacework settings

Lacework settings can be adjusted in the usual way via **Object Properties**. Like blackwork, blackwork and candlewicking, lacework is a type of embroidery

Creating stipple fills



Use Stitches > Stipple Run Fill to create fills made up of run stitches which meander within a border.

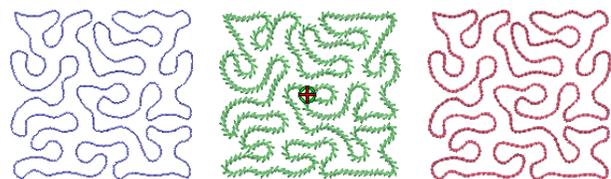


Use Stitches > Stipple Stemstitch Fill to create heavier stipple run fills with stemstitch outlines.



Use Stitches > Stipple Backstitch Fill to create heavier stipple run fills with backstitch outlines.

Stippling creates a fill made up of run stitches which meander within a border. There are three types: **Stipple Run**, **Stipple Backstitch**, and **Stipple Stemstitch**. Stippling can be applied to the same objects as **Pattern Fill** – i.e. closed objects with or without stitch angles. It can't be applied to lettering, auto appliqué or composite objects.

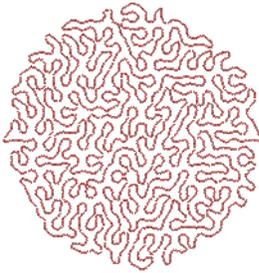


You can control stitch density in stippling objects by adjusting stitch length and loop spacing. You can reshape and scale stipple fill object outlines while preserving settings.

To create a stippling fill

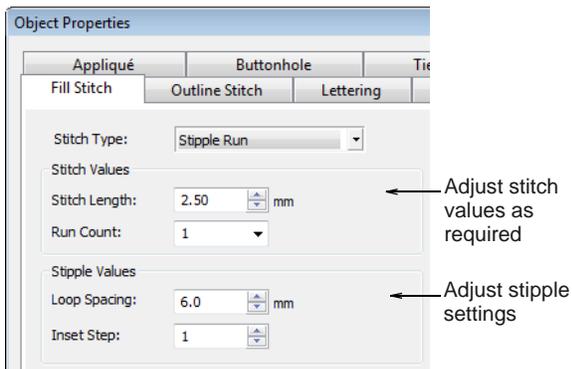
- 1 Choose a **Stipple Fill**.

- 2 Create or select a closed shape. See [Digitizing Methods](#) for details.

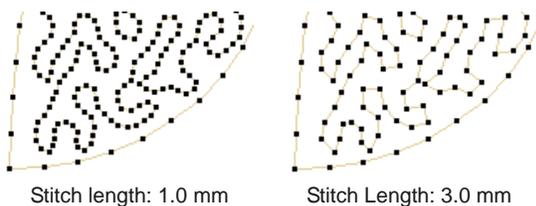


Note Stitch angle has no effect on the stichle run pattern.

- 3 To change settings, double-click or right-click the object.
The **Object Properties > Fill Stitch** dialog opens.



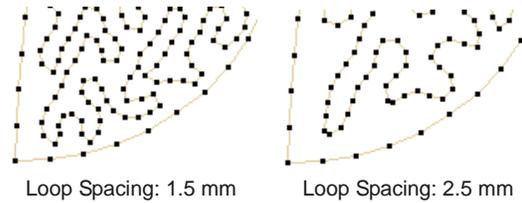
- 4 Adjust run **Stichle settings** as desired:
 - ▶ Adjust **Stitch length** for smoother or sharper curves.



- ▶ Adjust **Run count** defines the number of stitch repetitions – e.g. 1, 3, 5, 7, 9 – and hence the stichle bulk.

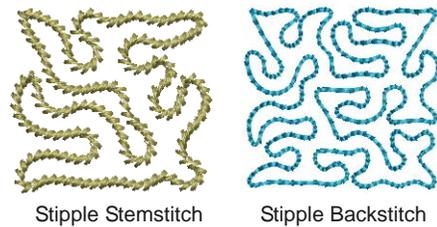
- 5 Adjust **Stichle settings** as desired:

- ▶ Adjust **Loop spacing** for tighter or more open stitching.

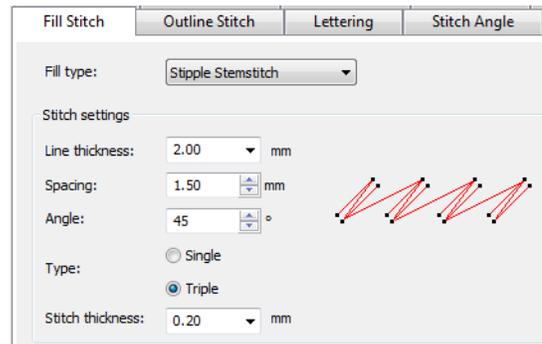


- ▶ Adjust **Inset step** to offset stichle inwards from the object outline. To leave a larger gap between the stichle and the outline, enter a larger value. Note that the stichle fill cannot extend beyond the object outline.

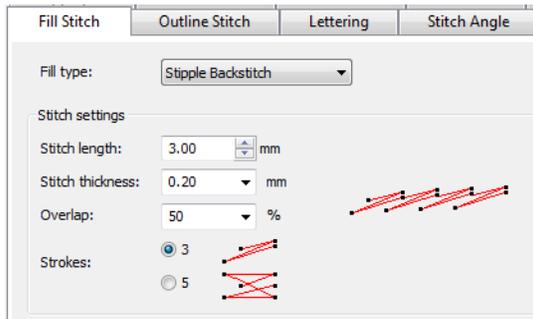
- 6 Change stichle **Stichle type** as desired. **Stichle Stemstichle** and **Stichle Backstichle** work the same way as **Stichle Run** except that they create a more ornate fill effect.



- ▶ **Stichle Stemstichle** settings are also controlled via **Object Properties**. See also [Stichle outlines](#).

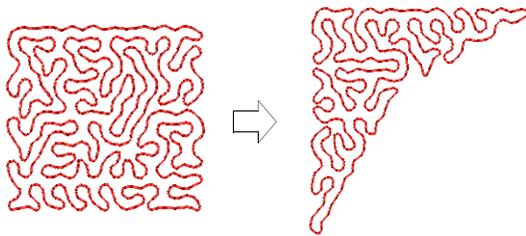


- ▶ **Stipple Backstitch** settings are also controlled via **Object Properties**. See also **Backstitch outlines**.



- 7 Click **Apply** to preview the effect or **OK** to finish and close.

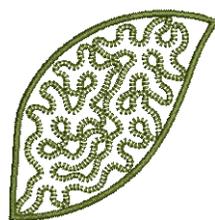
Once a stipple fill is generated, you can adjust **object properties** of the generated stipple run at any time. You can also reshape and scale stipple fill object outlines while preserving settings. See **Reshaping objects using reshape nodes** for details.



Tip The **Break Apart** command can be applied to stipple fill objects. As a result, you can edit the stipple run line directly. Apply **Pattern Run**, **Satin** and other outline stitch types as desired. See **Splitting into component objects** for details.



Stipple with Candlewicking

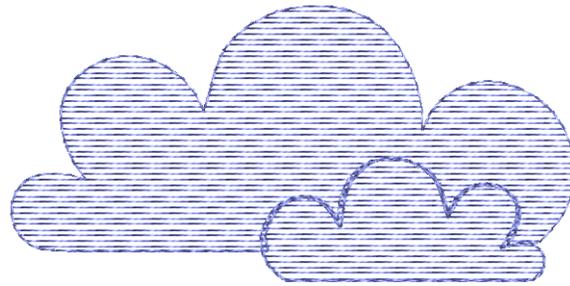


Stipple with Blanket

Creating open fills

BERNINA Embroidery Software offers various techniques for creating decorative open fills. These

can also be used for special effects and to reduce overall stitch count.



Creating gradient fills

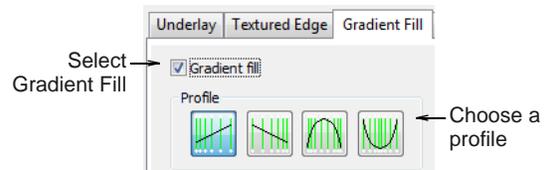
Gradient Fill varies stitch spacing between dense and open fill, producing perspective and shading effects which are difficult to achieve manually. A number of different **Gradient Fill** effects are available. When you use **Gradient Fill**, the current stitch spacing settings are ignored. However, other stitch effects will still apply.



Tip You can use **Gradient Fill** with **Step** fill to create interesting shading effects.

To create a gradient fill

- 1 Double-click or right-click a filled object. The **Object Properties > Fill Stitch** dialog opens.
- 2 Click the **Effects** button and select the **Gradient Fill** tab.



- 3 Select the **Gradient Fill** checkbox and choose a profile.

- 4 Move the slider to adjust the spacing.



- 5 Click **Apply** to preview the effect.



- 6 To prevent underlay stitching from showing through, deselect the **Effects > Underlay** checkbox. See also [Stabilizing with underlays](#).
- 7 To prevent travel runs showing through, make sure **Travel on Edges** is de-activated. See below.

Hiding travel runs

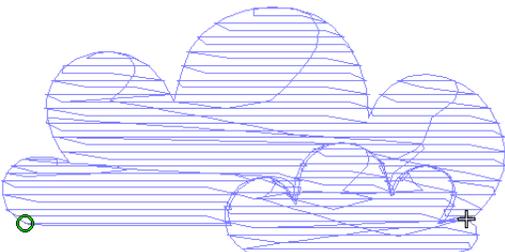
Apply **Travel on Edges** effect to force underlying travel runs to the edges of an object so that they can't be seen through open stitching. This is often used for backgrounds.



Tip Use **Travel on Edges** effect with the **Gradient Fill** or **Color Blending** effect to eliminate travel stitches inside graded **embroidery objects**. See also [Creating gradient fills](#) and [Creating color blending](#).

To hide travel runs in an open fill

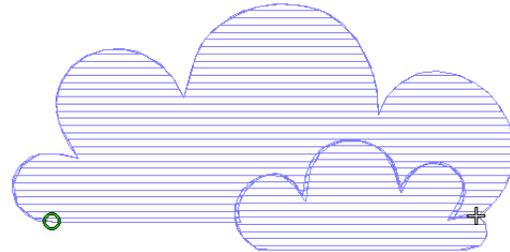
- 1 Double-click or right-click an open-fill object. The **Object Properties > Fill Stitch** dialog opens.



- 2 Click the **Effects** button and select the **Others** tab.



- 3 Select the **Travel on Edges** checkbox. Travel runs and overlapping rows are removed, and consistent row spacing is applied.



- 4 Click **Apply** to preview the effect or **OK** to finish and close.



Tip Click **Save to Template** before closing this dialog to save settings permanently. Saved settings will be applied to all new designs based on the current template. See [Properties, Fabrics & Templates](#) for details.

Creating contoured stitching

Ripple and **Contour** fills are related stitch types which create an open fill which follows the contours of a shape. **Ripple** provides a similar look to **Contour**, with a fixed number of lines and variable spacing, but spiralling out from the center of a filled object. Both can be applied to any filled object.

Creating ripple fills



Use **Stitches > Ripple Fill** to create spiral stitching from the center of any filled object.

Ripple Fill works best for 'blobby' shapes but can be applied to longer shapes. With longer shapes it may generate stitches that go outside the perimeter of the object, but this can provide for some interesting visual effects. The center of the Ripple stitch can be moved with the **Reshape Object** tool.

To create a ripple fill

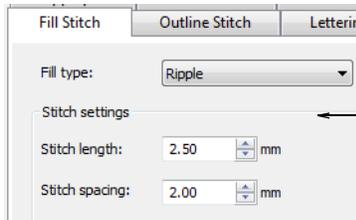
- 1 Create or select a closed shape. See [Digitizing Methods](#) for details.

2 Select **Ripple Fill**.



Note Stitch angle has no effect on the pattern layout.

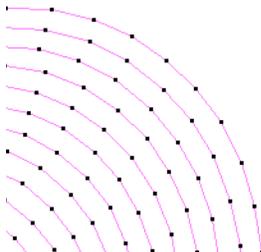
3 To change settings, double-click or right-click the object. The **Object Properties > Fill Stitch** dialog opens.



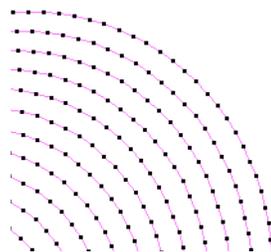
Adjust stitch settings as desired

4 Adjust ripple **Stitch settings** as desired:

- ▶ Adjust **Stitch length** for smoother or sharper curves.



Stitch length: 3.0 mm



Stitch Length: 1.0 mm

- ▶ Adjust **Stitch spacing** for denser or more open stitching.



Stitch spacing: 3mm



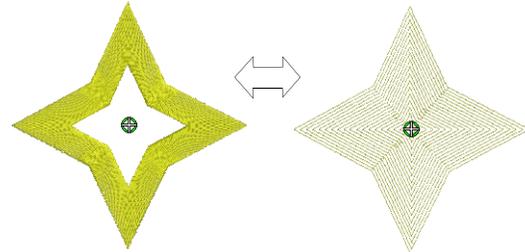
Stitch spacing: 5mm

5 Click **Apply** to preview the effect or **OK** to finish and close.

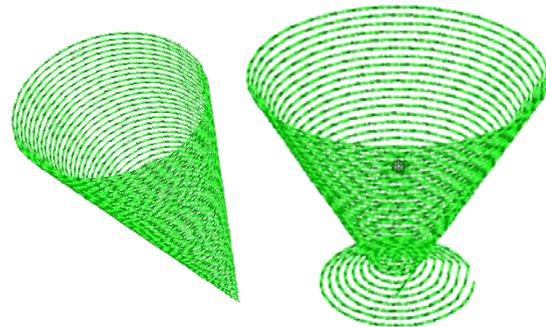
The selected settings are applied to the object.



Note If the object has a hole, this is ignored when ripple is applied but still exists when other stitch types are applied.



Tip Some interesting visual effects can be achieved by reshaping and moving the centre of the **Ripple Fill** stitch outside the object outline.

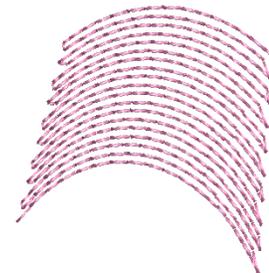


Creating contour fills



Use Stitches > Contour Fill to create stitching which follows object contours, creating a curved, light-and-shade effect.

Contour stitch provides back and forth stitching with a fixed number of lines with variable spacing depending on the object outline. It can only be applied to block digitizing objects, including **Circle** objects. Closed objects modified with the **Add Stitch Angles** tool cannot be used with **Contour** stitch.



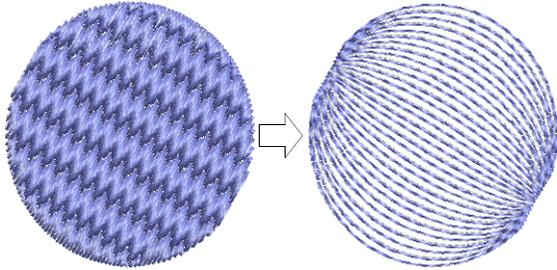
To create a contour fill

- 1 Click the **Contour Fill** icon.

The stitch type will be applied to new or selected objects based on current settings.

- 2 Create a block digitizing object and select. See [Digitizing Methods](#) for details.

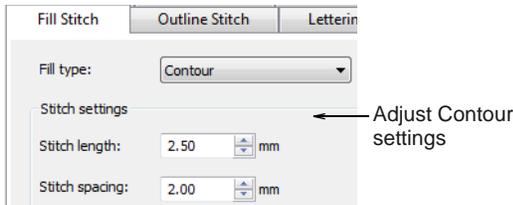
The current **Contour** settings are applied to the selected object.



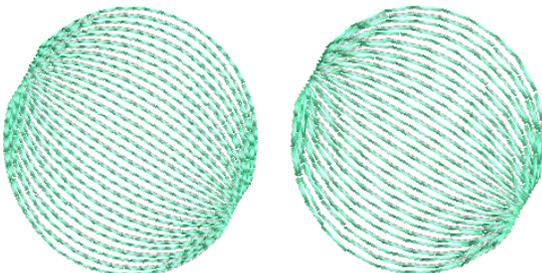
Note Stitch angle has no effect on the pattern layout.

- 3 To change settings, double-click or right-click the object.

The **Object Properties > Fill Stitch** dialog opens.



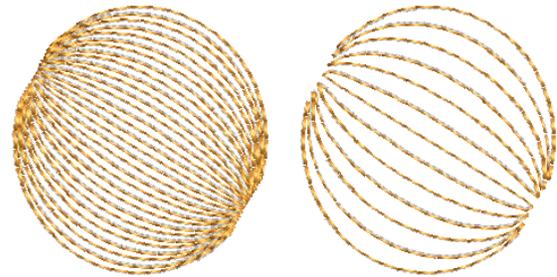
- 4 Adjust contour **Stitch Values** as desired:
 - ▶ Adjust **Stitch length** for smoother or sharper curves.



Stitch length: smaller

Stitch length: larger

- ▶ Adjust **Stitch spacing** for denser or more open stitching.



Stitch spacing: smaller

Stitch spacing: larger

- 5 Click **Apply** to preview the effect or **OK** to finish and close.

The selected settings are applied to the object.

Creating cross stitch fills



Use Stitches > Cross Stitch Fill to create open patterned fills with crosses generated to suit standard grid for entire design.

Cross stitching is a popular technique for filling large areas with low stitch counts. Cross stitch is also sometimes combined with appliqué. It is something like **Pattern Fill** but is generated differently.



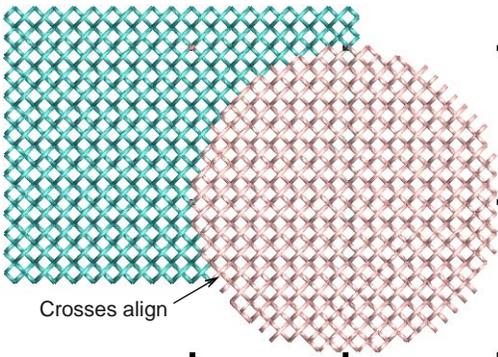
Crosses in separate objects line up precisely when using the same fabric count. This is because cross stitch fills are generated on a universal grid not object-by-object. Fractional crosses are generated at object boundaries in order to avoid gaps. Stitch angle has no effect on pattern layout. See also [Creating pattern fills](#).



Tip **Cross Stitch** fill is a stitch type in its own right but does not replace the BERNINA Cross Stitch application available from the **General** toolbar. See also [Introduction to cross stitch](#).

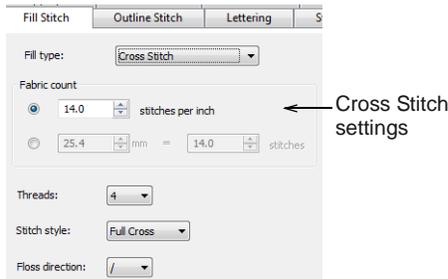
To create a cross stitch fill

- 1 Click the **Cross Stitch Fill** icon.
The stitch type will be applied to new or selected objects based on current settings.
- 2 Create closed-object/s and select. See [Digitizing Methods](#) for details.
Current cross-stitch settings are applied to the selected object. Notice how crosses in different objects align.



Note Stitch angle has no effect on the pattern layout.

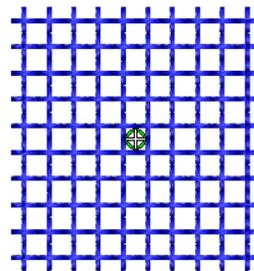
- 3 To change settings, double-click or right-click the object/s.
The **Object Properties > Fill Stitch** dialog opens.



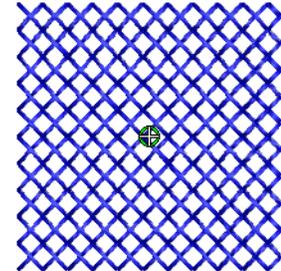
- 4 Adjust cross stitch settings as desired:

Field	Description
Fabric count	Controls the size of cross specified as a fabric count rather than cross size. Crosses in different objects align precisely if using the same cross density.
Threads	Number of times – 2, 4 or 6 – thread passes over the same cross in order to make it bulkier.
Stitch style	Full cross (X), diagonal, or upright (+).
Floss direction	Controls which way top leg of the cross – i.e. full length stitch – is directed – forward or backward for diagonal full crosses and horizontal or vertical for upright full crosses.

- 5 Click **Apply** to preview the effect or **OK** to finish and close.



Stitch style: upright cross



Stitch style: full cross



Tip The cross-stitch grid is not displayed but you can set the background grid to the cross size to get a better idea of how the grid is used to generate the crosses. Use **Snap to Grid** to ensure that your object outlines line up with the cross stitch grid. See [Setting grid options](#) for details.

CHAPTER 21

STITCH EFFECTS

BERNINA Embroidery Software provides many artistic effects to create textured and curved stitching, color blending, and warping or 'morphing' stitching effects.

Use Textured Edge to add rough edges to objects, create shading effects, or imitate fur or other fluffy textures in your design.

Star Fill generates radial turning stitching in several stitch types such as Satin and Tatami stitch.

Wave Fill lets you contour fill stitches along a digitized guideline. Stitches follow the line but maintain uniform density and needle penetration patterns.

Pattern fills can be enhanced with 3D Globe Effect. The effect can also be applied to Candlewicking and Lacework fills.

Use Color Blending to create different shading, perspective, three-dimensional and color effects by blending two colored layers in an embroidery object. The Morphing feature allows you to transform object outlines and stitches in a variety of novel and interesting ways.

This section shows you how to apply artistic stitch effects to embroidery objects, and how to adjust their settings to get the best results.



Creating textured edges



Use Effects > Textured Edge to create rough edges and shading effects, or imitate fluffy textures.

Use **Textured Edge** to add rough edges to objects, create shading effects, or imitate fur or other fluffy textures in your design. Textured Edge is applied based on current settings in the **Effects** dialog. Adjust settings to change the degree of roughness, the side of the object to which the effect is applied and the textured edge margin. You can change these settings before or after digitizing.

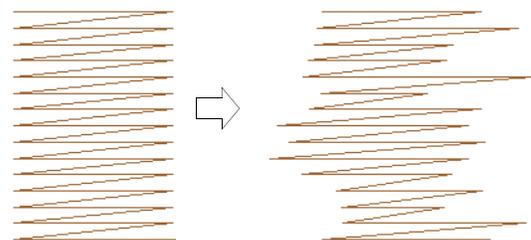
To create a textured edge

1 Click the **Textured Edge** icon.

The effect will be applied to new or selected objects based on current settings.

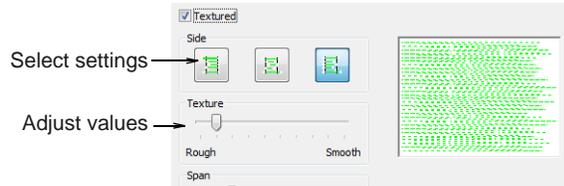
2 Create closed-object/s – circle or square – and select. See [Digitizing Methods](#) for details.

The current settings are applied to the selected object.

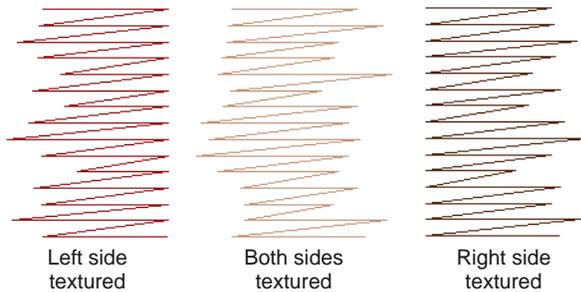


3 To change settings, right-click the **Textured Edge** icon with the object selected.

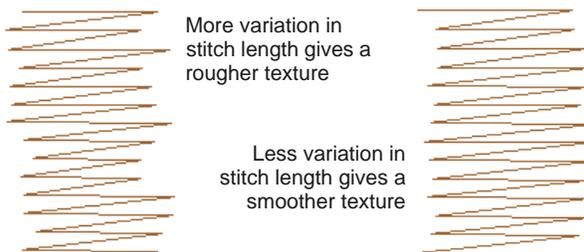
The **Effects > Textured Edge** dialog opens.



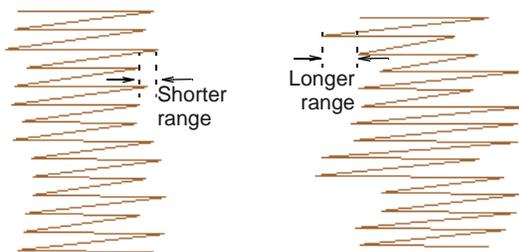
- 4 Use the buttons to choose the side of the object you want to apply the effect to.



- 5 Use the **Texture** slider to select the degree of texture – left for a rougher texture and right for a smoother texture.



- 6 Use the **Span** slider to select a stitch range in which you want the stitches to fall. Move the slider to the left for a short range and to the right for a longer range.



- 7 Click **Apply** to preview the effect or **OK** to finish and close. The stitch is regenerated with the adjusted settings.



Tip To better view the **Textured Edge** effect, press the **~** key to display needle points or use **Artistic View**.

Creating star fill effects



Use **Effects > Star Fill** to create radial turning stitching with available stitch types.



Click **Transform > Reshape Object** to view the reshape nodes of a selected object.

Star Fill generates radial turning stitching in several stitch types such as **Satin** and **Tatami** stitch. Stitches are generated from the outside edge to the geometric center. The center can be shifted.



Star Fill is applicable to several object shapes – closed, circle and rectangle – with optional holes. The effect may be on or off while digitizing. All transformations, excepting morphing effects, preserve the **Star Fill** radial stitching but transform the hole shape. Shaping operations such as **Mirror Merge** or **Remove Overlaps** preserve **Star Fill** effect.

Tips for use

Not all patterns and stitch settings or objects (size specific) are suitable for **Star Fill**. In particular, if you are using it with larger objects, use one or a combination of the following to avoid bunching at the center:

- ▶ Increase the size of the hole, move the center into an existing hole in the object, or move it outside the object altogether.
- ▶ Add **Textured Edge** to the inside.
- ▶ Use larger stitch spacing – increase by about 20%.
- ▶ Avoid patterns which add needle penetrations close to the center of the object.

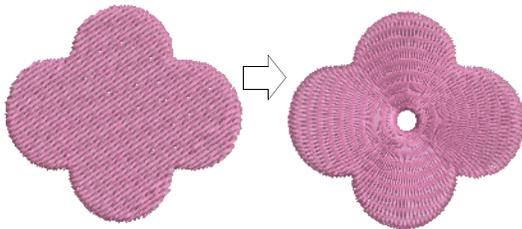
- ▶ Use **Edge Walk** underlay with smaller objects, to help reduce the number of stitches at the object center.
- ▶ For fewer problems and a better embroidery result, use an SUK or H/E embroidery needle.



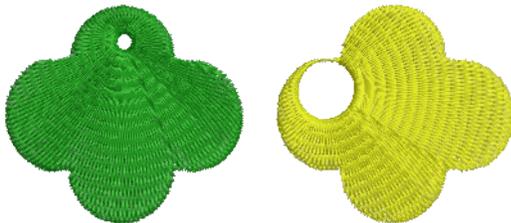
Tip For best effect, use **Star Fill** with ring shapes. The size of ring should be about 20% of the outer diameter.

To create star fill effects

- 1 Select a closed-object and click the **Star Fill** icon. The effect is applied to the selected object.



- 2 To modify the effect, select the object and click the **Reshape Object** icon. In **Reshape** mode, you can:
 - ▶ Move the center point of the radial stitching.
 - ▶ Set the size of the center hole.
 - ▶ Edit the center hole shape as for a circle/ellipse object.



Tip Unlike **Ripple** stitch, the center of **Star Fill** effect can be moved outside the shape or into an included hole to achieve a different effect, without losing the original shape.

- 3 Press **Enter** to apply, **Esc** to finish.



Tip **Star Fill** can be applied together with Satin Fill, Step Fill, and Fancy Fill. See also **Creating fancy fills**.



Star Fill with Satin Fill



Star Fill with Fancy Fill



Tip You are not able to directly edit the stitch angles automatically generated by **Star Fill** effect. However, you can apply **Break Apart** to an object with **Star Fill** effect and edit the resulting turning angle closed object. See also **Splitting into component objects**.

Creating wave effects

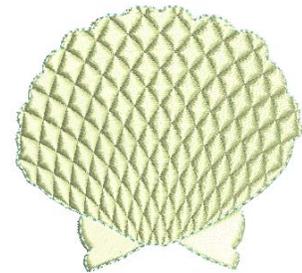
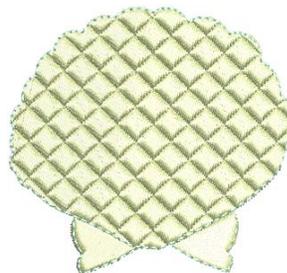


Use Effects > Wave Fill to contour stitches along a digitized guideline – stitching maintains uniform density.



Click Transform > Reshape Object to view the reshape nodes of a selected object.

Wave Fill lets you contour fill stitches along a digitized guideline. Stitches follow the line but maintain uniform density and needle penetration patterns.

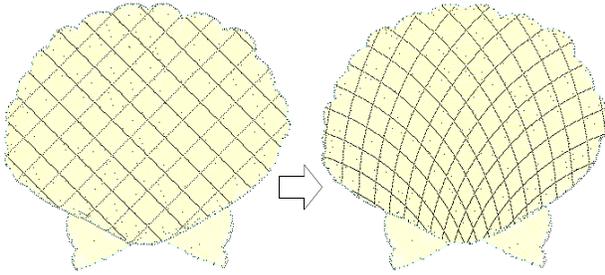


Tip Use smaller stitch lengths – e.g. 4.00 mm or less – for best results.

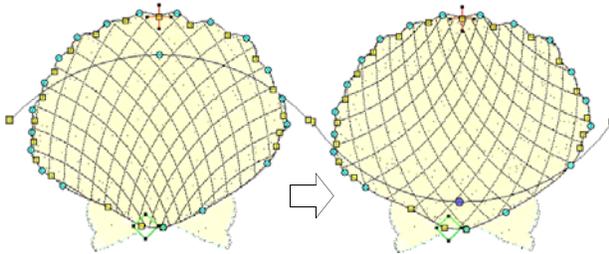
To create Wave Fill

- 1 Select a closed-object and click the **Wave Fill** icon.

The effect is applied to the selected object.



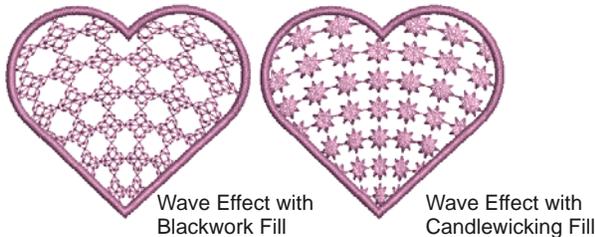
- 2 To modify the effect, select the object and click the **Reshape Object** icon.



- 3 Click and drag the curve into the required shape and press **Enter**. See [Reshaping objects](#) for details.
- 4 Press **Esc** to finish.



Tip **Wave Fill** can be applied together with **Fancy Fill**, **Pattern Fill** and some of the craft stitch types. See also [Creating fancy fills](#), [Creating pattern fills](#), and [Creating stipple fills](#).



Caution Don't alter stitch angles after applying **Wave Fill** as it can displace **Fancy Fill** patterns.

Creating 3D globe effects



Use Stitches > Pattern Fill to create decorative fill stitching. Choose from pattern library.



Use Stitches > Candlewicking Fill to create candlewicking fills – traditional white-on-white embroidery usually done with heavy cotton thread on white linen.



Use Stitches > Lacework Fill to create a lacy look with open trellis-like patterns.

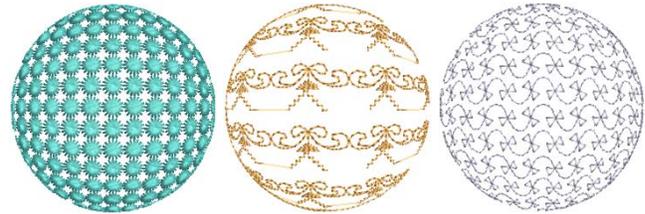


Use Effects > 3D Globe Effect to create contoured stitches to produce a 3D appearance. Choose from pattern library.



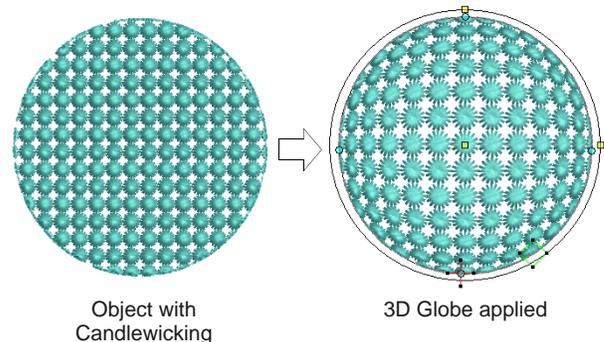
Click Transform > Reshape Object to view the reshape nodes of a selected object.

Pattern fills can be enhanced with **3D Globe Effect**. The effect can also be applied to **Candlewicking** and **Lacework** fills. It can also be applied to alternating pattern fills. You can apply the effect to an entire object, or to a specified part of the fill. The effect, however, cannot be applied to circle/ellipse objects.



To create a 3D pattern effect

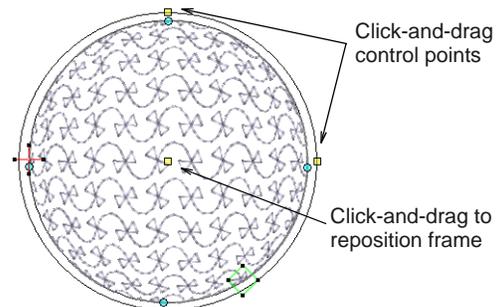
- ▶ Select a patterned fill object and click the **3D Globe Effect** icon. The effect is applied.



Object with
Candlewicking

3D Globe applied

- ▶ To make further adjustments, click **Reshape Object** with the object selected. A guide frame appears with three control points.



Click-and-drag
control points

Click-and-drag to
reposition frame

- ▶ Adjust the control points to:
 - ▶ Change frame height

- ▶ Change frame width
- ▶ Reposition frame.

Creating color blending

Use the **Color Blending** effect to create different shading, perspective, three-dimensional and color effects by blending two colored layers in an **embroidery object**. The effect is created by duplicating the object, then applying Gradient Fill and Travel on Edges to both layers, which are then grouped.



There are two different Color Blending effects:

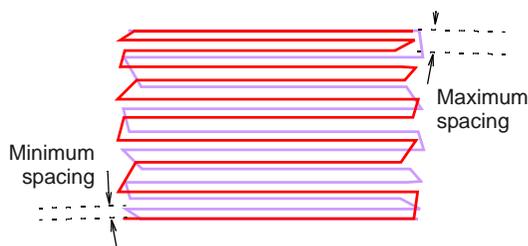
- ▶ linear stitch spacing
- ▶ curved stitch spacing.

Color Blending can be applied to objects filled with Satin, Step, or Fancy Fill stitch, or objects outlined with Satin or Blanket stitch.

Applying color blending

 Use Edit > Color Blending to create blended stitching in selected objects.

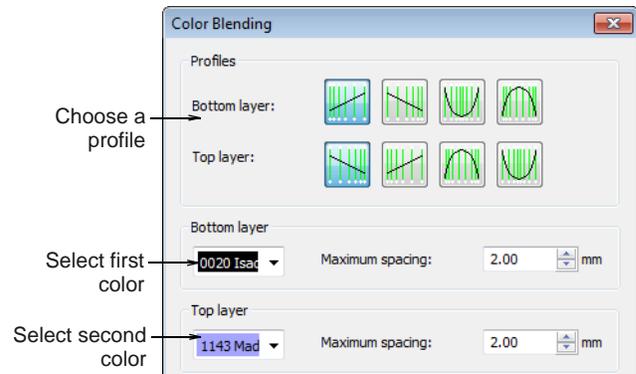
Use the **Color Blending** effect to create color blends, perspective effects and shading.



To apply color blending

- 1 Select a filled object and click the **Color Blending** icon.

The **Color Blending** dialog opens.



- 2 In the **Profiles** panel, select a spacing profile for top and bottom layers.



Bottom Layer: Profile1
Top Layer: Profile1



Bottom Layer: Profile3
Top Layer: Profile3

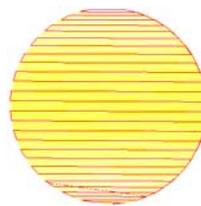
- 3 In the **Bottom Layer** panel:

- ▶ Select the color of the first layer.
- ▶ Adjust the maximum spacing value for the first layer as required.

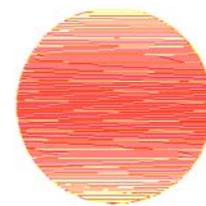
- 4 In the **Top Layer** panel:

- ▶ Select the color of the second layer.
- ▶ Adjust the maximum spacing value for the second layer as required.

- 5 Click **OK**.



Bottom Layer: Red
Top Layer: Yellow



Bottom Layer: Yellow
Top Layer: Red



Tip To prevent underlay stitching from showing through, deselect the **Effects > Underlay** checkbox. See also [Stabilizing with underlays](#).

Editing blended objects



Click Arrange > Ungroup to ungroup selected objects.



Click General > Color Film to view all color blocks and objects in a design.

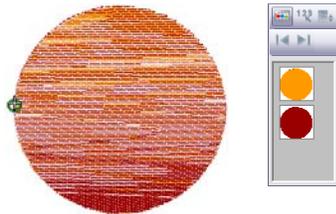
Editing a Color Blending object is limited. The two objects must first be ungrouped and the separate objects edited according to **Gradient Fill** settings. See [Creating gradient fills](#) for details.



Note If you edit a grouped object the Color Blending effect will be lost as both layers will have the same settings.

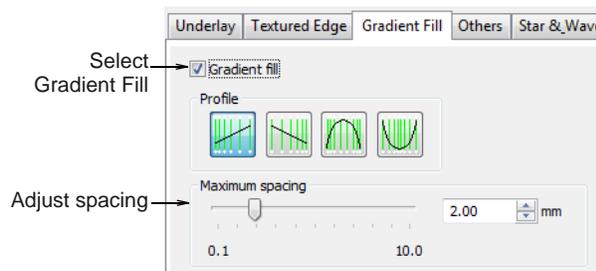
To edit blended objects

- 1 Select the blended object and ungroup it. See [Grouping & splitting objects](#) for details.



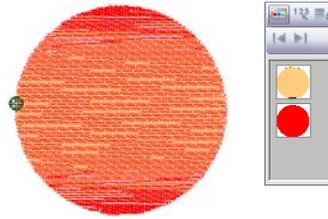
Tip Use the Color Film to view all color blocks and objects in the design. See [Viewing & selecting color blocks](#) for details.

- 2 Select one of the objects and change the color as required.
- 3 Double-click or right-click it to open the **Object Properties** dialog, click the **Effects** button, and select the **Gradient Fill** tab.



- 4 Select a profile and adjust spacing as required. See [Creating gradient fills](#) for details.
- 5 Click **Apply** to preview the effect or **OK** to finish and close.

- 6 Repeat the process for the second object and re-group the objects.

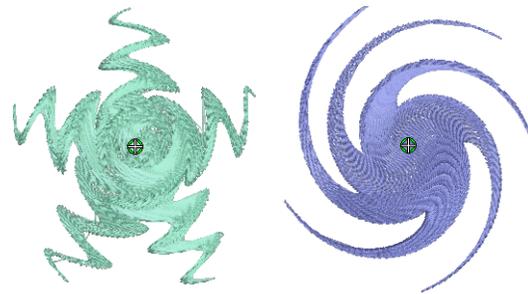


Creating morphing effects



Use General > Morphing to create transformed object outlines and stitches.

The **Morphing** feature allows you to transform object outlines and stitches in novel and interesting ways. They are additive in the sense that more than one effect can be applied to a given selection.



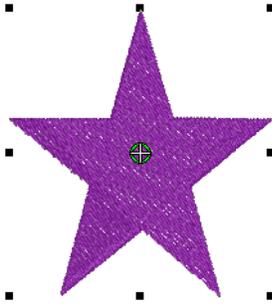
Morphing is a powerful feature but don't overdo it. Keep in mind the following points when morphing objects/designs:

- ▶ To avoid poor quality embroidery, don't use too much of the effect. Less is more when it comes to morphing.
- ▶ Use larger stitch spacing – increase it by about 20%.
- ▶ Avoid morphing Satin stitches – in some objects they become too long.
- ▶ Increase the underlay margin to avoid it projecting outside the cover stitch.

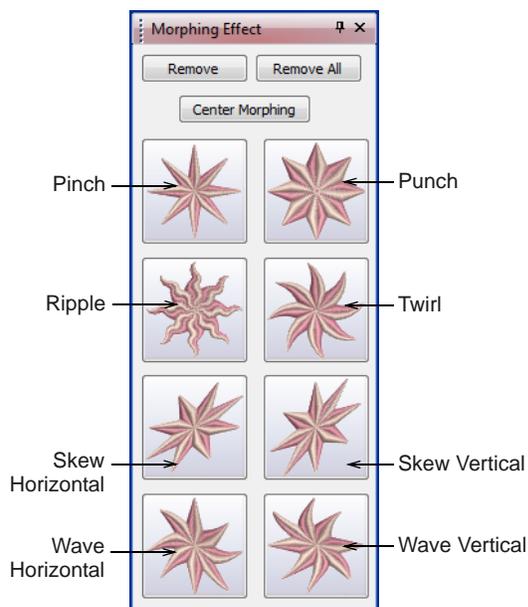
To create morphing effects

- 1 Select one or more objects.

Any object/s can have morphing effects applied.



- Click the **Morphing** icon on the **General** toolbar. The **Morphing Effect** docker opens with all morphing effect buttons enabled.



- Choose a morphing effect:



Use Pinch to pinch the object outlines and stitches together in the morphing center, while pulling outer stitches away from each other.



Use Punch to punch the object outlines and stitches away from the morphing center, while stretching the object outlines and stitches around an imaginary sphere.



Use Ripple to apply a wave pattern radiating from the morphing center, like dropping a stone into a pond.



Use Twirl to twist the object outlines and stitches around the morphing center, creating a swirling effect like a whirlpool.



Use Skew Horizontal to slant the object outlines and stitches horizontally to the left or right.



Use Skew Vertical to slant the object outlines and stitches vertically up or down.

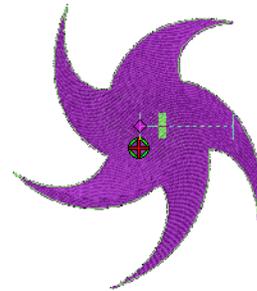


Use Wave Horizontal to move the object outlines and stitches to follow a horizontal wave pattern



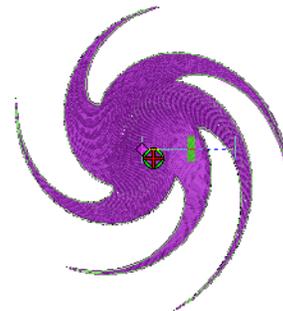
Use Wave Vertical to move the object outlines and stitches to follow a vertical wave pattern.

The selected morphing effect is applied to the current selection with the morphing center (if any) defaulting to the center of the current selection.



BERNINA Embroidery Software also does the following:

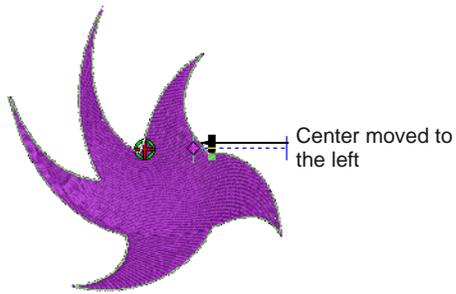
- Groups selected objects if they were not already grouped.
 - Applies the morphing effect to selected objects as a whole, using the default morphing center and current parameters.
 - Activates the **Reshape Object** tool for the resultant objects.
 - Displays the available morphing graphical controls for the selected morphing effect.
- Optionally, click the **Undo** button to undo the morphing transformation, or click and drag the available morphing controls to adjust the effect. If you drag one of sliders, the resultant object outlines display dynamically in black until the mouse button is released.



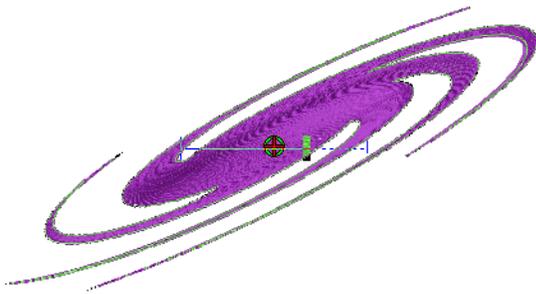
- Optionally, if available, adjust the morphing center using the **Reshape Object** tool. (Not all morphing effects have a moveable center.)

The **Center Morphing** button in the **Morphing Effect** docker is enabled when the morphing center is moved away from the center of the current selection. Clicking it causes the morphing

center to be moved back to the center of the current selection.



- 6 Apply as many effects to the current selection as desired.



- 7 Optionally, remove one or more morphing effect/s by the following means:
- ▶ The **Remove** button is enabled if the current selection has one or more morphing effects applying. Clicking it causes the last-applied morphing effect to be deleted. The previous morphing effect (if any) becomes immediately available for reshape or removal.
 - ▶ Clicking the enabled **Remove All** button causes all morphing effects to be removed from the current selection and the **Reshape** process to be stopped.

CHAPTER 22

STITCH PATTERNS

BERNINA Embroidery Software provides many artistic effects and stitch types to create stitch patterns. Based on Step Fill, pre-defined shapes create regular patterns of needle points.

Fancy Fill is a decorative fill stitch in which the needle penetrations form a tiled pattern. Sculptured Fancy Fill stitch can be applied to objects with turning stitches creating three dimensional, turning pattern effects which can't be achieved by Fancy Fill alone.

Elastic Fancy Fill is a decorative effect where the pattern follows the stitch angle and may be scaled to fit the width of the object.

You can also define a pattern of needle penetrations using a 'carving stamp' as a template. A carving stamp can be any vector and/or embroidery shape or shapes.

This section describes how to apply stitch patterns to embroidery objects, and how to adjust their settings to get the best results.



Creating fancy fills



Use Stitches > Fancy Fill to create artistic fills while keeping the appearance of solid stitching.



Use Stitches > Sculptured Fancy Fill to create 3D pattern effects with turning fills.

Fancy Fill is a decorative fill stitch where needle penetrations form a tiled pattern. Use it to fill wide and large areas with repeating patterns while keeping the appearance of a solid field of stitching. See also [Applying step fill patterns](#).

Sculptured Fancy Fill stitch is a variant of **Fancy Fill** which can be applied to objects with **turning stitches**. This creates three dimensional, turning pattern effects which can't be achieved by **Fancy Fill** alone.

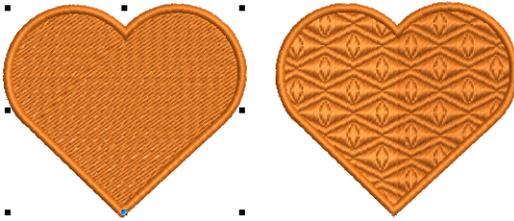


Tip The **Carving Stamp** feature allows you to define a pattern of needle penetrations using a 'carving stamp' as a template. See [Creating patterns with carving stamps](#) for details.

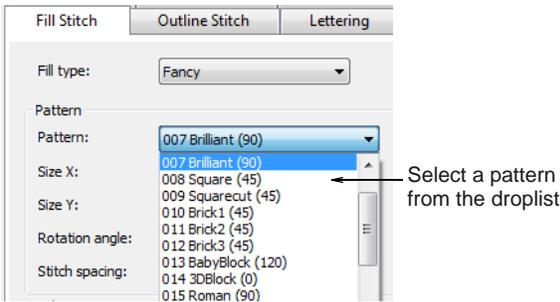


To create a fancy fill

- ▶ Select a closed object or objects.



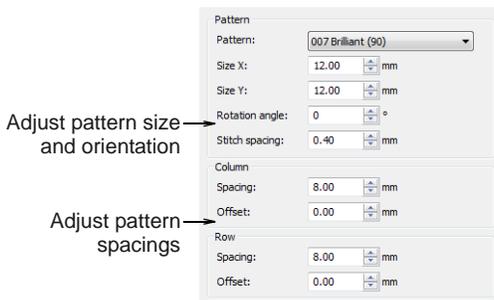
- ▶ Click the **Fancy Fill** icon. The current **Fancy Fill** settings are applied to the selected object.
- ▶ To change settings, double-click or right-click the object/s. The **Object Properties > Fill Stitch** dialog opens.



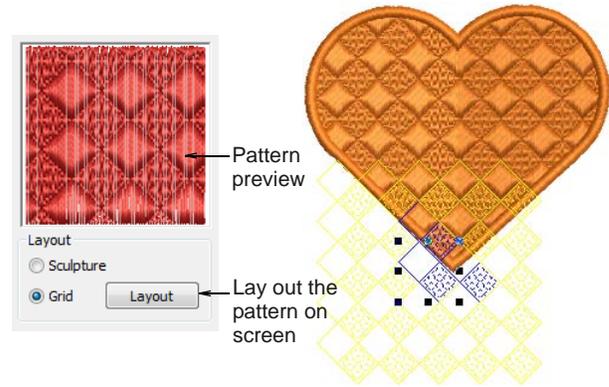
- ▶ Select a pattern from the droplist. See also [Fancy Fill Samples](#).



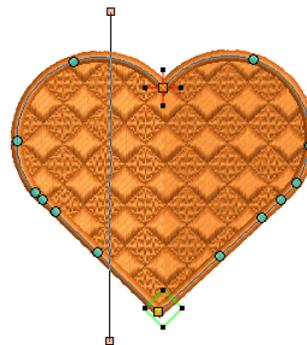
- ▶ Adjust pattern size, orientation, and spacings via the object properties. The preview panel gives you immediate visual feedback.



- ▶ Optionally, change pattern layout by adjusting settings via the **Layout** button. By default, **Grid** is selected. Techniques for adjusting pattern layout are the same as for pattern fills. See [Laying out pattern fills on-screen](#) for details.

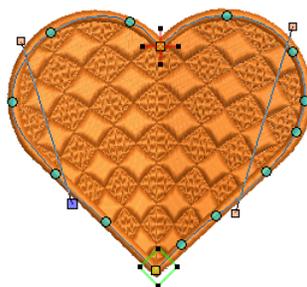


- ▶ While stitch angle has no effect on pattern layout, it does affect clarity. Adjust stitch angles with the **Reshape** tool as necessary.



- ▶ To create a turning effect, add stitch angles with the **Add Stitch Angles** tool or choose an object with turning angles. See also [Modifying stitch angles](#).

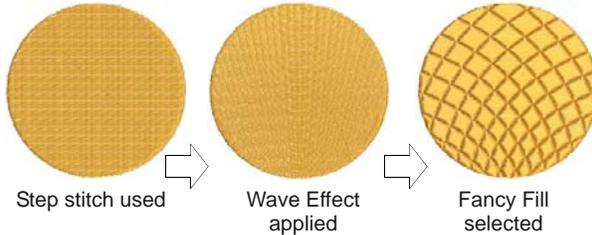
- ▶ Next choose **Sculpture** in the **Layout** panel. This has the same effect as choosing **Sculptured Fancy Fill** from the **Stitch Types** toolbar.



- ▶ Click **Apply** to preview the effect or **OK** to finish and close.



Tip Wave Fill lets you contour fill stitches along a digitized guideline. Wave Fill can be applied to Fancy Fill objects. However, you need to first apply the effect to a Step fill before converting to a Fancy Fill. See also [Creating wave effects](#).

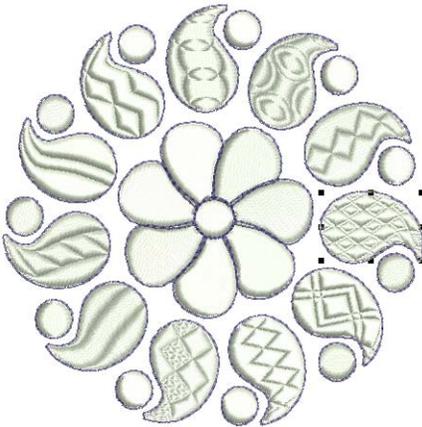


Creating elastic fancy fills



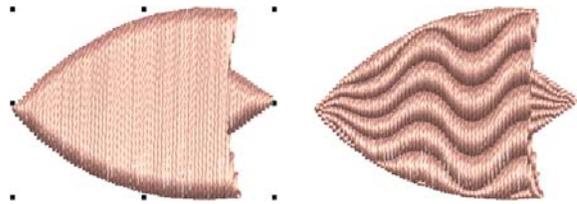
Use Effects > Elastic Fancy Fill to create fancy fill patterns that follow stitch angles and are scaled according to object width. Right-click for settings.

Elastic Fancy Fill is a decorative effect where the pattern follows the **stitch angle** and may be scaled to fit the width of the object. It is intended for use with objects with turning stitches or varying column width. You can apply **Elastic Fancy Fill** to a wide variety of object and stitch types. Use existing patterns or create your own.

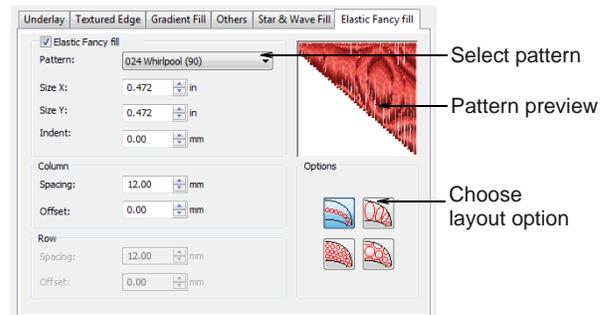


To create elastic fancy fills

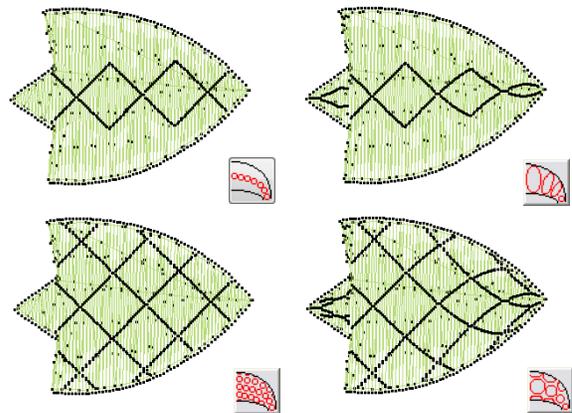
- ▶ Select an object and click the **Elastic Fancy Fill** icon.



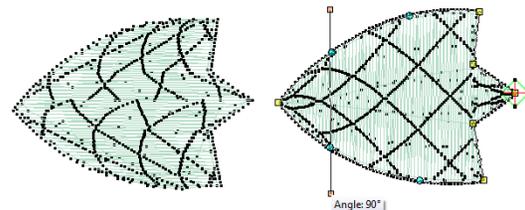
- ▶ Right-click the tool to access settings.



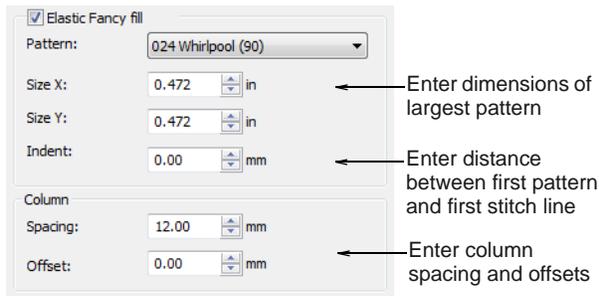
- ▶ Select a pattern from the droplist.
- ▶ Select one of four options.



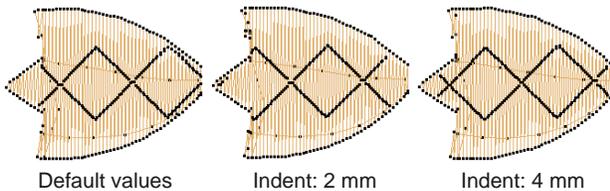
- ▶ Optionally, adjust or add stitch angles.



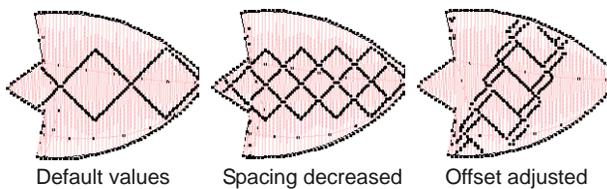
- ▶ Optionally, adjust **Elastic Fancy Fill** settings to vary size, shape indent, spacing and pattern offsets.



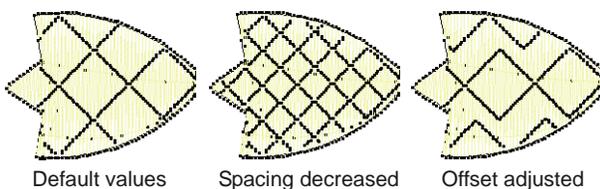
- ▶ In the **Size X** and **Size Y** fields, adjust the dimensions of the largest pattern in the effect.
- ▶ In the **Indent** field, adjust the distance between the first pattern and the first stitch line.



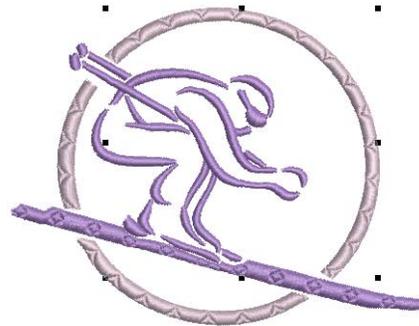
- ▶ In the **Column** panel, enter spacing and offset settings as required:



- ▶ If you selected an option that uses more than one row of patterns, the fields in the **Row** panel are available.

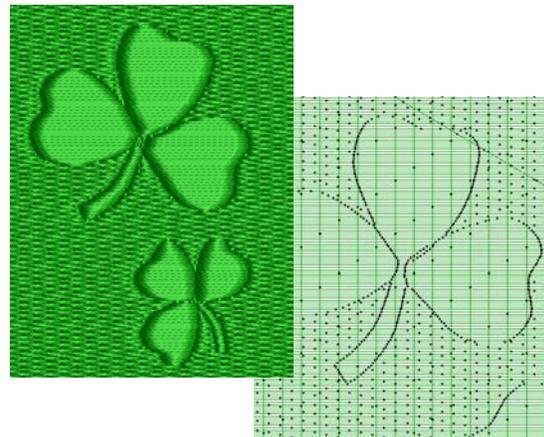


- ▶ **Elastic Fancy Fill** effects can also be added to satin outlines.



Creating patterns with carving stamps

The **Carving Stamp** feature allows you to define a pattern of needle penetrations using a 'carving stamp' as a template. A carving stamp can be any **vector** and/or embroidery shape or shapes. A needle penetration is placed wherever a stitch intersects with the vector or embroidery shape.



With the **Carving Stamp** feature, you can:

- ▶ Apply pre-defined or temporarily-selected or -digitized carving stamps to applicable objects.
- ▶ Move/rotate/scale/reshape/delete carving stamps associated with an applicable object while in **Reshape** mode.
- ▶ Create and manage your own user-defined carving stamps in a pattern library for future reference.

Selected carving stamps can be applied to outline objects with Satin stitch type, and closed objects with Satin/Step/Fancy stitch type.

Applying pre-defined patterns

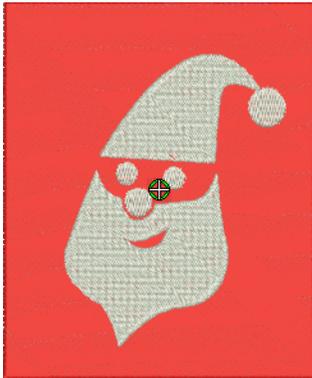


Use General > Carving Stamp to apply preset or custom patterns to create a pattern of needle penetrations.

The **Carving Stamp** docker contains four tabs: Use Pattern, Use Object, Digitize, and Appearance. The **Use Pattern** tab lets you select and apply pre-defined stamp patterns to selected applicable objects only **or** to any applicable objects if nothing is selected.

To apply pre-defined patterns

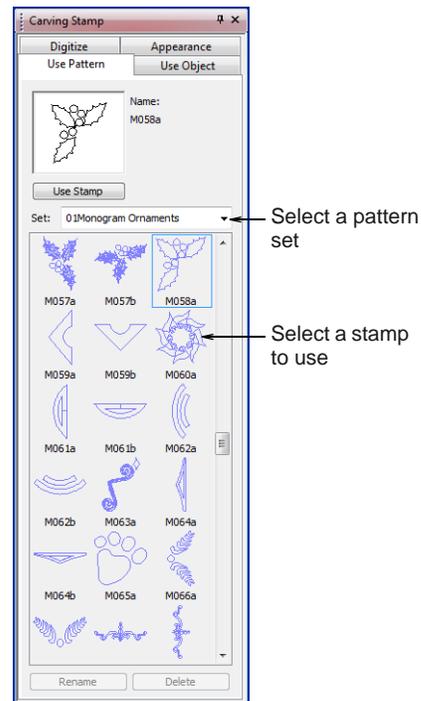
- 1 Select an **embroidery object** or not as required.



Note You can start with or without embroidery objects selected. If one or more objects is selected, stamps are **only** applied to selected objects. If no object is pre-selected, stamps can be applied to any objects.

- 2 Click the **Carving Stamp** icon.

the **Carving Stamp** dialog opens. The **Use Pattern** tab is open by default.

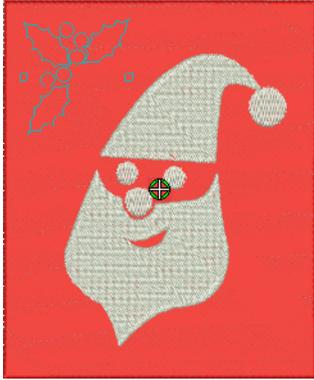


- 3 Select a pattern set from the **Set** list – e.g. 'Nature'.

The **Set** droplist contains pre-defined pattern sets as well as user-defined stamp pattern sets. See **Pattern set: Carving Stamps** for details.

- 4 Select a pre-defined stamp pattern.
A thumbnail appears in the preview panel and the **Use Stamp** button is enabled.
- 5 Click the enabled **Use Stamp** button and move the mouse pointer to the design window.
The pre-defined stamp is attached to the mouse pointer. You are prompted in the **Status Bar** to enter an anchor point.
- 6 Move the mouse pointer to the desired position over the target object/s.
 - ▶ Right-click to mirror the stamp.
 - ▶ Press **Shift** to prevent **Auto Scroll**.
- 7 Click the mouse button to fix the anchor point.

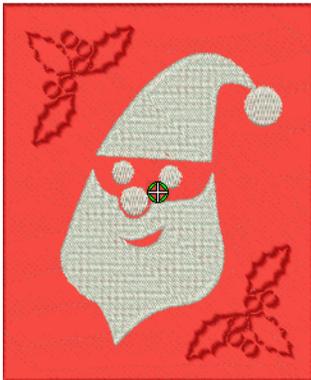
You are prompted to enter the guide point.



- 8 Swivel the pattern about the anchor point to the desired guide point position, optionally with the **Shift** key pressed.

BERNINA Embroidery Software resizes the stamp if the **Shift** key is pressed while moving the mouse pointer.

- 9 Click the mouse button.
- ▶ If you have pre-selected an object or objects, the stamp pattern is only applied to those objects, whether or not the pattern extends beyond the object borders.
 - ▶ If no objects are pre-selected, the stamp pattern is applied to any applicable underlying objects.



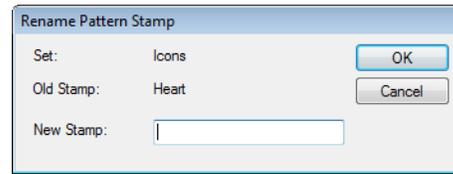
Note If there are multiple overlapping objects in the area in which the stamp is applied, the stamp is applied to every overlapping applicable object.

- 10 Repeat as many times as necessary. Press **Esc** to proceed.



Note The **Rename** and **Delete** buttons are enabled whenever a user-defined stamp pattern is selected. When the **Rename** button is clicked, the **Rename Pattern Stamp** dialog opens. Use it to

rename user-defined stamp patterns. See also [Adding stamps to a library](#).



Tip Use the **Softened Stamp** and **Raised Stamp** options on the **Appearance** tab to soften or accentuate the effect. See [Changing carving stamp appearance](#) for details.

Using objects as carving stamps



Use General > Carving Stamp to apply preset or custom patterns to create a pattern of needle penetrations.

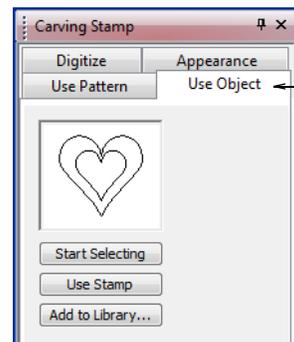
The **Carving Stamp** docker contains four tabs: Use Pattern, Use Object, Digitize, and Appearance. The **Use Object** tab allows you to select object outlines from the design window and apply them directly as stamps or save them to a library for future reference.

To use an object as a carving stamp

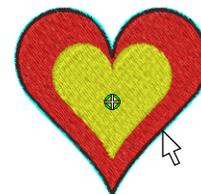
- 1 Select an **embroidery object** or not as required. You can start with or without embroidery objects selected to be used as stamps.



- 2 Click the **Carving Stamp** icon and select the **Use Object** tab.



Select Use Object tab



- 3 Click the **Start Selecting** button.

Any pre-selected objects remain selected.

- 4 Hover the mouse over any object in the design window.

The object outline is highlighted.

- ▶ Select object outlines to include in the stamp using any existing selection methods. The selected outlines appear in the preview panel.
- ▶ Deselect at any time by pressing the **Esc** key.



Tip Selectable objects can include vectors from **Artwork Canvas**. This is the only time vectors can be selected in the **Embroidery Canvas**.

- 5 Click the **Use Stamp** button to apply the selection as a carving stamp. See [Applying pre-defined patterns](#) for details.



- 6 Optionally, click the **Add to Library** button to add the selection to the library for future reference. See [Adding stamps to a library](#) for details.



Tip Use the **Softened Stamp** and **Raised Stamp** options on the **Appearance** tab to soften or accentuate the effect. See [Changing carving stamp appearance](#) for details.

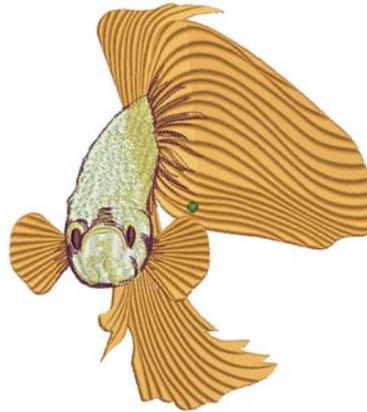
Digitizing carving stamps



Use **General > Carving Stamp** to apply preset or custom patterns to create a pattern of needle penetrations.

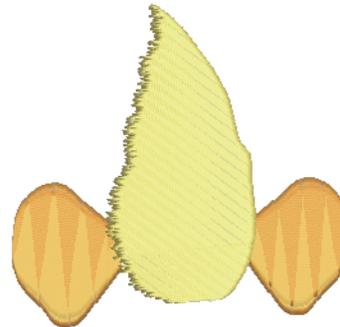
The **Carving Stamp** docker contains four tabs: **Use Pattern**, **Use Object**, **Digitize**, and **Appearance**. The **Digitize** tab allows you to digitize stamp outlines and either directly apply the digitized stamp where it was

digitized, or apply it to applicable objects in the design window.

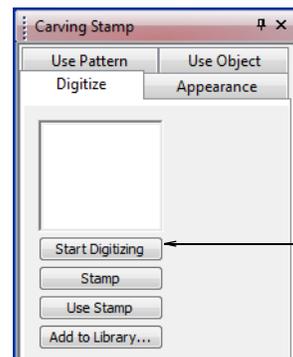


To digitize carving stamps

- 1 Select an **embroidery object** or not as required. If embroidery objects are pre-selected, digitized stamps will apply only to these objects.

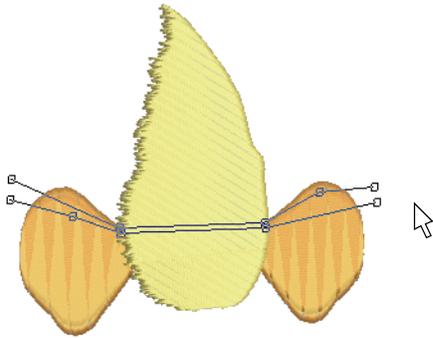


- 2 Click the **Carving Stamp** icon and select the **Digitize** tab of the dialog.

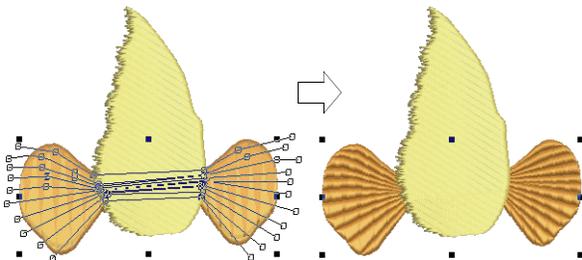


- 3 Click the **Start Digitizing** button.

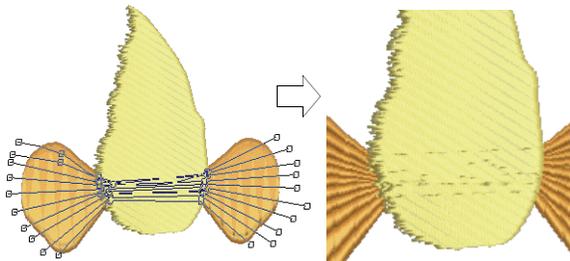
You are prompted to enter a starting point for the stamp outline.



- 4 Digitize stamp outlines:
 - ▶ Press **Enter** once to complete a boundary.
 - ▶ Press **Enter** again to finish stamp digitizing.
- 5 Click the enabled **Stamp** button.
 - ▶ Click the **Stamp** button to apply the stamp to selected applicable objects only.

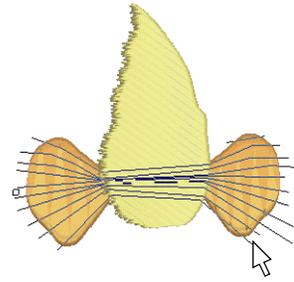


- ▶ Alternatively, use **Stamp** to apply the stamp to applicable objects with no object/s selected.



- ▶ Click the **Use Stamp** button to position the stamp. You are prompted to enter an anchor

point as with pre-defined patterns. See [Applying pre-defined patterns](#) for details.



- 6 Optionally, click the **Add to Library** button to add the selection to the library for future reference. See [Adding stamps to a library](#) for details.

Changing carving stamp appearance



Use General > Carving Stamp to apply preset or custom patterns to create a pattern of needle penetrations.

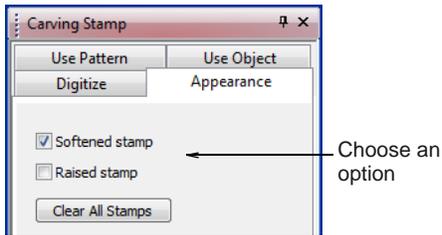
The **Carving Stamp** docker contains four tabs: Use Pattern, Use Object, Digitize, and Appearance. The **Softened Stamp** and **Raised Stamp** checkboxes and **Clear All Stamps** button in the **Appearance** tab are enabled when one or more objects with stamps are selected.

To change carving stamp appearance

- 1 Select an **embroidery object** with stamps already applying.

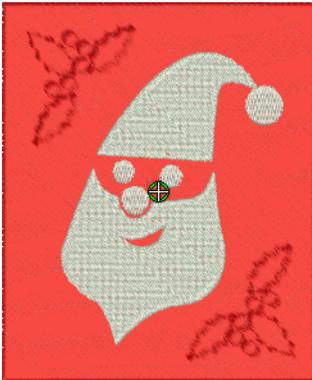


- 2 Click the **Carving Stamp** icon and select the **Appearance** tab of the dialog.



- 3 Choose an option to modify stamp appearance as desired:

- ▶ Checking the **Softened Stamp** checkbox causes any existing stamp/s to be softened.



- ▶ Checking the **Raised Stamp** checkbox cause any splits within the combined closed boundaries of a carving stamp to be removed. Self-intersecting boundaries and overlapping boundaries are combined.



Note Clicking the **Clear All Stamps** button will cause all existing stamps to be removed from selected objects.

Reshaping carving stamps

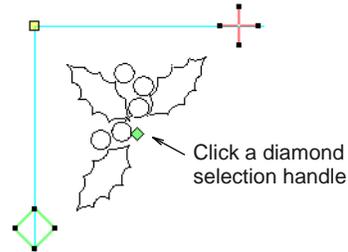
Carving stamps can be moved, rotated, scaled, reshaped, and deleted individually in **Reshape** mode. As you transform carving stamps, needle

penetrations in the underlying object are automatically updated.

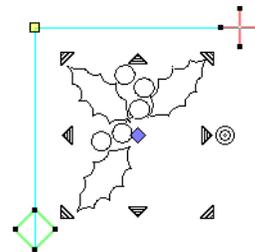
To reshape a carving stamp

- ▶ In **Reshape** mode, select an **embroidery object** with carving stamps applied.

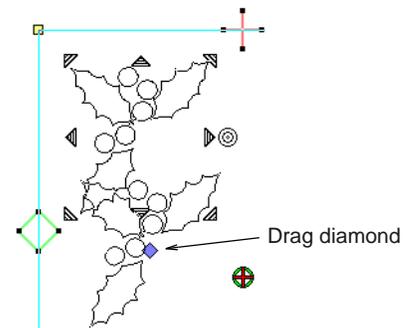
A diamond selection handle is displayed at the center of each stamp.



- ▶ Select the diamond selection handle. Another set of sizing, stretching and rotation handles appears around the stamp as shown.

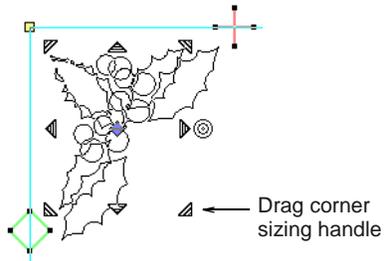


- ▶ Drag the diamond to move the stamp.

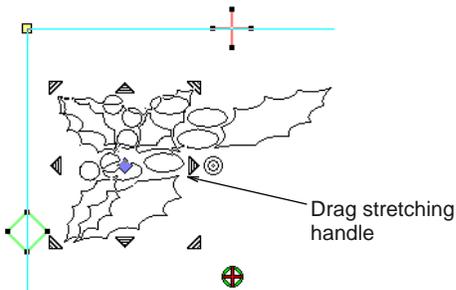


Tip Holding down the **Ctrl** key will constrain the movement to the horizontal or vertical axis.

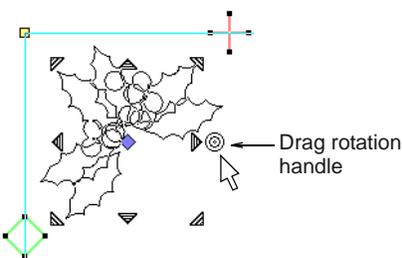
- ▶ Drag one of the corner sizing handles to scale the stamp.



- ▶ Hold **Shift** key to scale from the center.
- ▶ Hold **Ctrl** key to scale proportionally.
- ▶ Hold **Ctrl** and **Shift** keys while dragging a sizing handle to scale proportionally about the center.
- ▶ Drag one of the stretching handles to stretch the stamp.
 - ▶ Top and bottom stretching handles stretch the object vertically.
 - ▶ Left and right stretching handles will stretch the stamp horizontally.
 - ▶ Holding down the **Shift** key will stretch the stamp from the center.

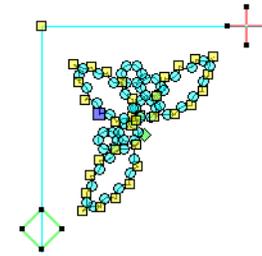


- ▶ Drag the rotation handle to rotate the stamp.



- ▶ Click the blue diamond handle to change it back into a green diamond handle with no nodes displayed.

- ▶ Click the curve of the stamp to display **control points**. Use these to reshape or delete the stamp in the same way as for other objects.



Note When an embroidery object with carving stamps is itself transformed, carving stamps are transformed accordingly.

Adding stamps to a library

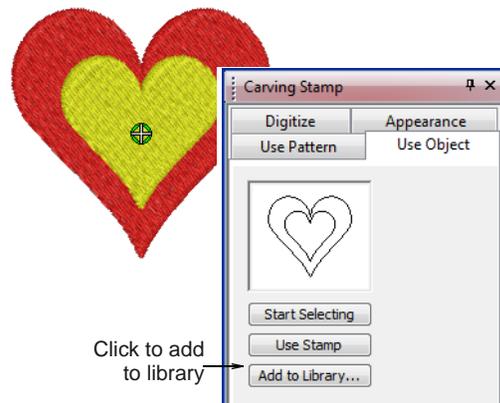


Use General > Carving Stamp to apply preset or custom patterns to create a pattern of needle penetrations.

This procedure starts when you click the enabled **Add to Library** button either on the **Use Object** tab or **Digitize** tab in the **Carving Stamp** docker.

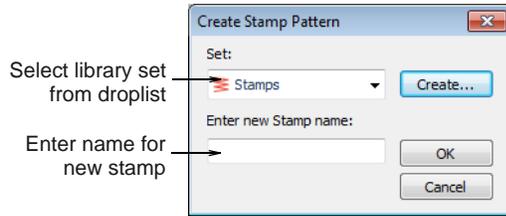
To add a stamp to a library

- 1 Select an object which you want to add to the library as a user-defined carving stamp.
 - ▶ Define your own carving stamps using the **Carving Stamp > Use Object** tab. See [Using objects as carving stamps](#) for details.
 - ▶ Digitize carving stamps on the spot using the **Carving Stamp > Digitize** tab. See [Digitizing carving stamps](#) for details.



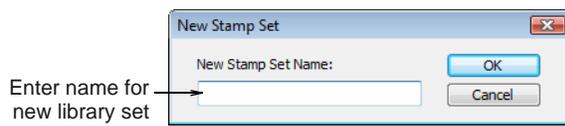
- 2 On either of these tabs, click the enabled **Add to Library** button.

The **Create Stamp Pattern** dialog opens.

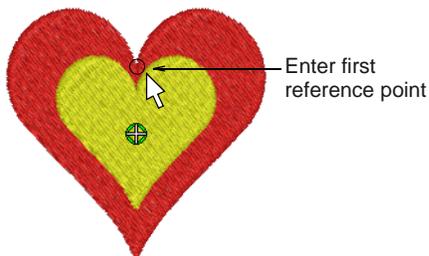


- 3 Select a set from the droplist or click the **New Set** button to create a new library.

If you chose to create a new library set, use the **New Stamp Set** dialog to create a new stamp set. The newly created stamp set is displayed in the **Set** list when the **Use Pattern** tab is selected.

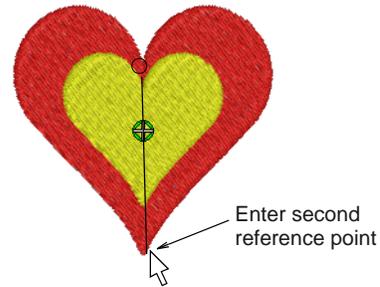


- 4 Enter a new stamp name and click **OK**.
You are prompted to digitize the first reference point in the design window.
- 5 Enter the first reference point:
 - ▶ Press **Enter** to have the reference point created automatically.
 - ▶ Move the mouse pointer to the position you want to use as the **anchor point** during manual stamp placement, and left-click.



- 6 Enter the second reference point:
 - ▶ Press **Enter** to have the reference point created automatically.

- ▶ Move the mouse pointer to the position you want to use as the **guide point** during manual stamp placement and left-click.



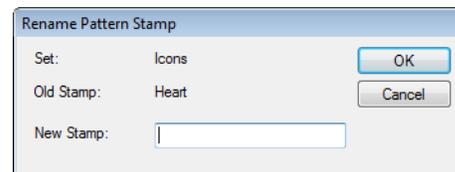
BERNINA Embroidery Software:

- ▶ creates the stamp
 - ▶ registers the reference points either automatically or manually entered
 - ▶ replaces any same name stamp with the newly created stamp
 - ▶ displays a confirmation message.
- 7 Click **OK**.

The newly created stamp is displayed in the stamp list when the **Use Pattern** tab is selected.



Note The **Rename** and **Delete** buttons are enabled in the **Use Patterns** tab whenever a user-defined stamp pattern is selected. When the **Rename** button is clicked, the **Rename Pattern Stamp** dialog opens. Use it to rename user-defined stamp patterns. See also [Applying pre-defined patterns](#).



CHAPTER 23

EMBROIDERY PATTERNS

Embroidery patterns are pre-defined design elements, such as hearts, leaves or border patterns, that can be inserted into a design.

Use the patterns provided with the software or create your own. Patterns can be scaled, rotated and mirrored in the same way as other objects. You can create patterns along a digitized line. Or you can fill shapes with rows of patterns.

This section describes how to insert patterns into your design, and how to adjust their settings to get the results you want. It also explains how to create your own patterns and pattern sets as well as how to create stitch patterns with carving stamps.



Adding pattern stamps



Use Digitize > Pattern Stamp to place individual patterns in the design. Choose from pattern library.

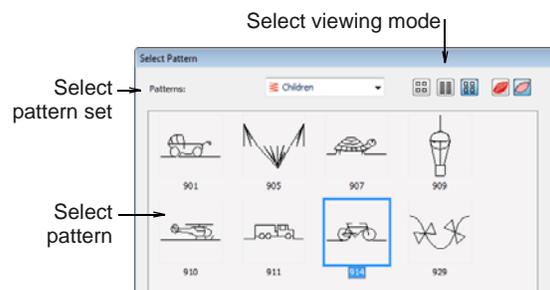
The **Pattern Stamp** feature allows you to place single patterns anywhere in the design window. You can access any pattern in any 'pattern set'. These include purpose-made Pattern Fill patterns as well as craft stitch patterns and monogramming ornaments.



To add a pattern stamp

- 1 Select **Digitize > Pattern Stamp**.

The **Select Pattern** dialog opens.



Tip Select a viewing mode – you can list patterns by picture, name, or both.

- 2 Select a pattern set from the droplist and select a pattern from the display panel.

This becomes the current pattern. See also **Pattern Stamp, Run & Fill Samples**.

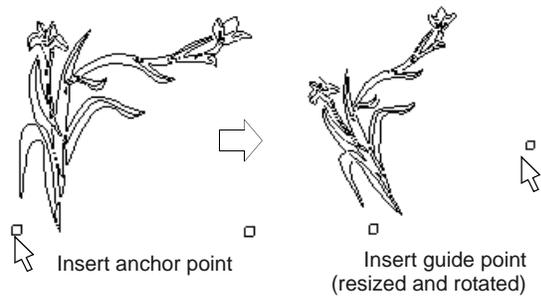
- 3 Click **OK**.

The dialog closes and the pattern appears attached to the mouse pointer.

- 4 Move the pointer to the desired position and click to mark the guide point.

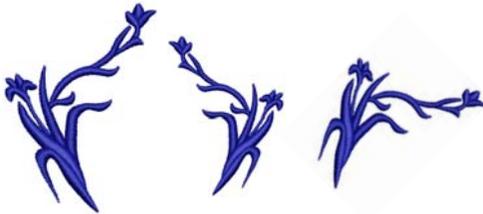
This becomes the rotating anchor point. You are prompted to place the second guide point.

- 5 Move the pointer until the pattern is orientated correctly, then click again for a guide point.



Tip You can resize the pattern on screen by holding down the **Shift** key before marking the second guide point.

- 6 Press **Enter**.
Stitches generate.
- 7 Repeat the step to insert another pattern.
You can rotate and scale patterns as you insert them.



Tip Right-click to mirror the pattern.

- 8 Press **Esc** to finish.

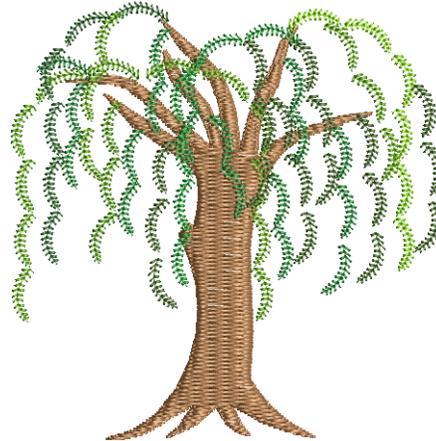


Note Each pattern is treated as a single grouped object. To edit only a section of a pattern, ungroup it first. See [Grouping & splitting objects](#) for details.

Creating pattern runs

Pattern Run Outline is a stitch type that creates pattern repeats along a digitized line. You can create decorative outlines using any pattern from the selection list. You can modify the rotation angle,

orientation and scale, and vary the space between patterns.

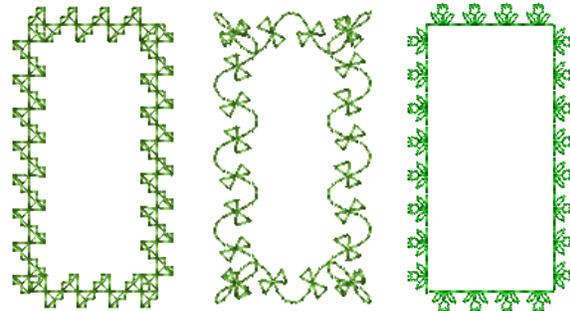


Applying pattern runs



Use **Stitches > Pattern Run Outline** to create ornamental craftstitch borders. Choose from pattern library.

Select the pattern to use in the pattern run before or after digitizing.



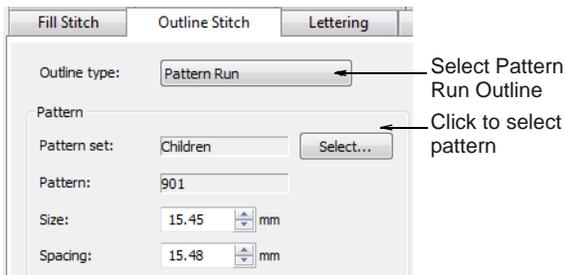
To apply a pattern run

- 1 Click the **Pattern Run Outline** icon.
The stitch type will be applied to new or selected objects based on current settings.
- 2 Digitize an outline for the run to follow. See [Digitizing Methods](#) for details.



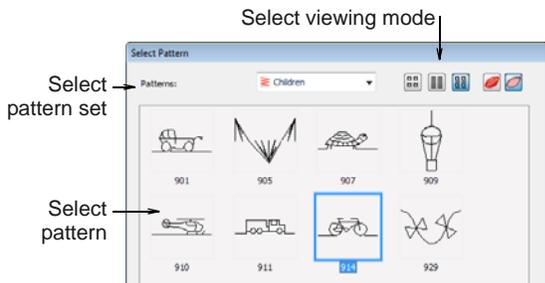
- 3 To change settings, double-click or right-click the object.

The **Object Properties > Outline Stitch** dialog opens.



- 4 If not already selected, select **Pattern Run Outline** from the **Stitch Type** list and click **Select**.

The **Select Pattern** dialog opens showing all available patterns in the current set.



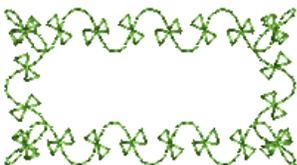
Tip Select a viewing mode – you can list patterns by picture, name, or both.

- 5 Select a pattern set from the droplist and select a pattern from the display panel. See also [Pattern Stamp, Run & Fill Samples](#).
- 6 Click **OK**.



- 7 Adjust pattern run settings. See [Adjusting pattern run settings](#) for details.
- 8 Click **Apply**.

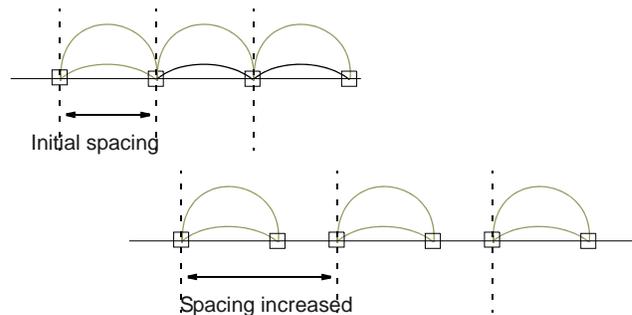
The digitized object is outlined with the selected pattern run. See also [Reshaping pattern runs](#).



Tip If the pattern run does not pick up the color you have selected in the color palette when first digitized, select the outline after digitizing, then select a color.

Adjusting pattern run settings

You can insert a pattern run at its original size and orientation, and then adjust settings later. You can also set the exact size and spacing before you insert the pattern run. Spacing is the distance between each pattern repetition. See [Applying pattern runs](#) for details.



If they do not fit the baseline exactly, BERNINA Embroidery Software adjusts the spacing to make them fit:

- ▶ If the space remaining at the end of the baseline is less than half a pattern, the extra space is spread evenly between the patterns.
- ▶ If the space is larger than half a pattern, BERNINA Embroidery Software inserts an extra pattern, and slightly overlaps the patterns to distribute them evenly along the baseline.



Tip You can reshape the baseline to achieve the exact spacing you require. See [Reshaping pattern runs](#) for details.

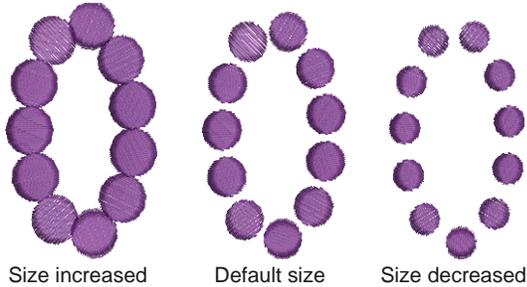
To adjust pattern run settings

- 1 Select the pattern run object.
- 2 Double-click or right-click the object.

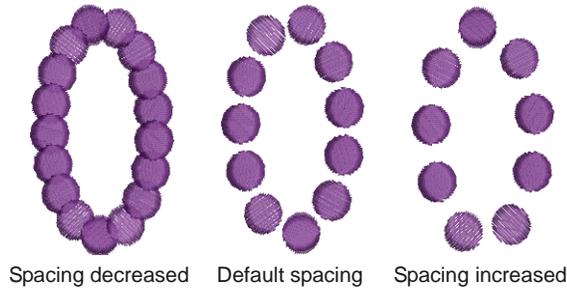
The **Object Properties > Outline Stitch** dialog displays.



- 3 Enter the pattern size in the **Size** field.



- 4 Adjust the **Spacing**.



- 5 Click **Apply**.



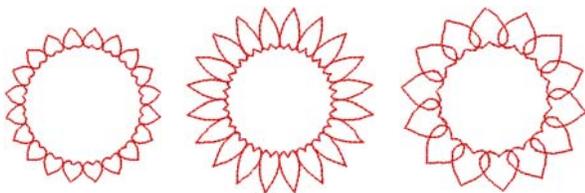
Tip You can also resize pattern runs using the selection handles. See [Scaling objects](#) for details.

Reshaping pattern runs



Click Transform > Reshape Object to view the reshape nodes of a selected object.

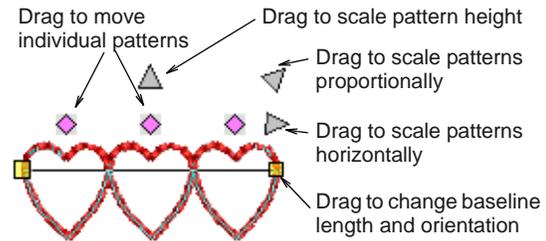
Reshape pattern runs with the **Reshape** tool in the same way as you reshape lettering objects. You can make pattern runs taller or narrower, rotate pattern runs, move individual patterns along the baseline or reshape the baseline. You can rotate, skew and mirror pattern runs just like other objects.



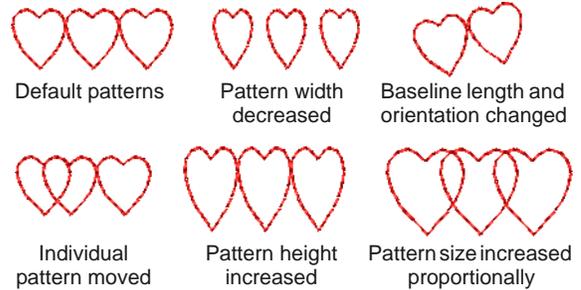
To reshape pattern runs

- 1 Select a pattern run and click the **Reshape** icon. Reshape nodes appear around the object.

- 2 Drag the reshape nodes to change the appearance of the pattern run.



- 3 Press **Esc** to finish.



Creating pattern fills

Pattern Fill is a decorative stitch used for filling closed objects. Patterns are repeated in parallel rows to fill a shape. You can design the pattern layout on-screen or by adjusting [object properties](#).



Note You can also create artistic stitch effects with craft stitches and fancy fills. See [Creating craft stitches](#) and [Creating fancy fills](#).

Adding pattern fills



Use Stitches > Pattern Fill to create decorative fill stitching. Choose from pattern library.

Use **Pattern Fill** with filled objects to create decorative fill stitching. Current values are set in the **Fill Stitch** tab of the **Object Properties** dialog. You

can select patterns, adjust settings, or change layouts at any time before or after digitizing.



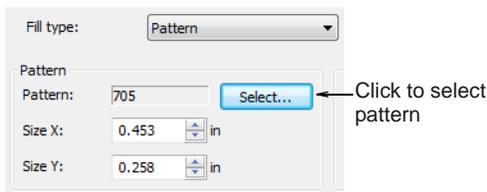
To add a pattern fill

- 1 Click the **Pattern Fill** icon.
The stitch type will be applied to new or selected objects based on current settings.
- 2 Create a closed shape and select. See **Digitizing Methods** for details.

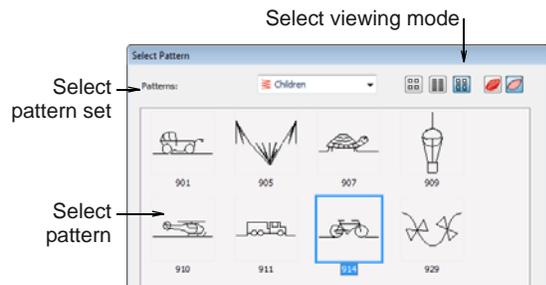


Tip If the pattern fill does not pick up the color you have selected in the color palette when first digitized, select the outline after digitizing, then select a color.

- 3 To change settings, double-click or right-click the object/s. The **Object Properties > Fill Stitch** dialog opens.



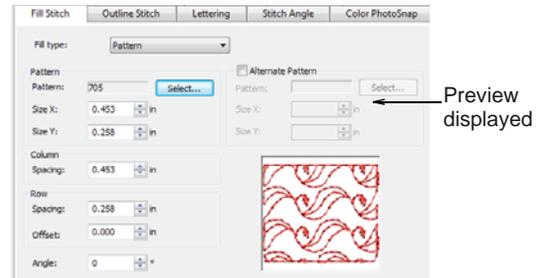
- 4 Click **Select**. The **Select Pattern** dialog opens showing all available patterns in the current set.



Tip Select a viewing mode – you can list patterns by picture, name, or both.

- 5 Select a pattern set from the droplist and a pattern from the display panel. See also **Pattern Stamp, Run & Fill Samples**.

- 6 Click **OK**.
The selected pattern is displayed in the preview panel.



- 7 Adjust pattern layout by changing settings or on-screen. See **Adjusting pattern fill settings or Laying out pattern fills on-screen**.

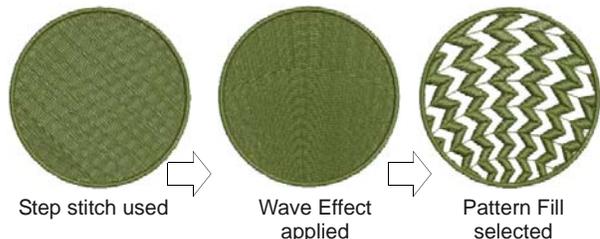


Note Stitch angle has no effect on the pattern layout.

- 8 Click **Apply**.
The digitized object is filled with the selected Pattern Fill.



Tip Wave Fill lets you contour fill stitches along a digitized guideline. Wave Fill can be applied to Pattern Fill objects. However, you need to first apply the effect to a Step fill before converting to a Pattern Fill. See also **Creating wave effects**.



Creating alternating pattern fills



Use Stitches > Pattern Fill to create decorative fill stitching. Choose from pattern library.

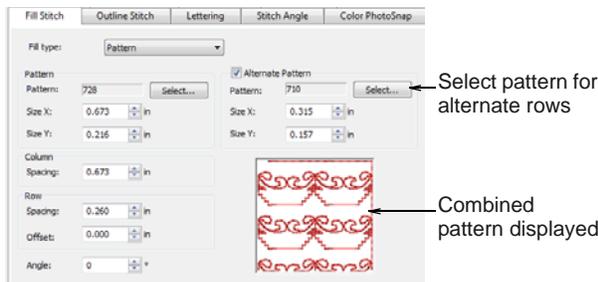
Digitize closed fill objects with **Pattern Fill** or apply it to existing objects. Select from a wide range of

patterns in the **Object Properties** dialog. You can mix and match different motifs for forward and backward rows, or use the same motif for each.

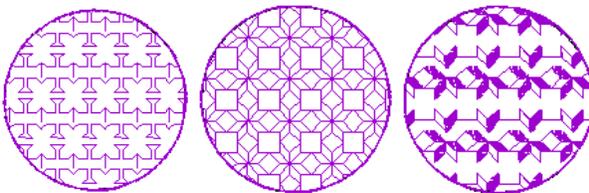


To create an alternating pattern fill

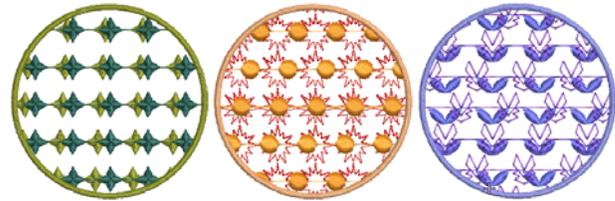
- 1 Digitize a closed object and apply a pattern fill. As soon as entry and exit points are entered, stitches are generated using current settings. **Stitch angle** has no effect on motif layout.
- 2 Double-click the object or right-click the **Pattern Fill** icon. The **Object Properties > Fill Stitch > Pattern** dialog opens.



- 3 For your primary row, click **Select** and select a pattern from the **Select Pattern** dialog. The selected pattern is displayed in the preview panel.
- 4 For you alternate row, click the **Alternate Pattern** checkbox and choose a complementary pattern. The combined patterns are displayed in the preview panel.



Tip As an alternative, you can generate layers of colored motifs by duplicating an object and selecting a different color and/or motif.

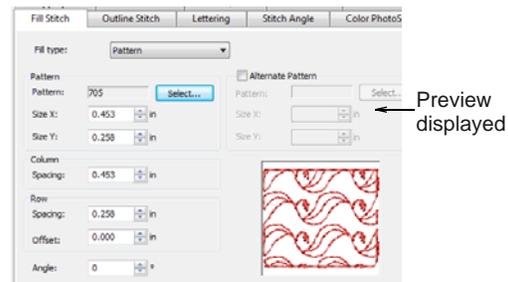


Adjusting pattern fill settings

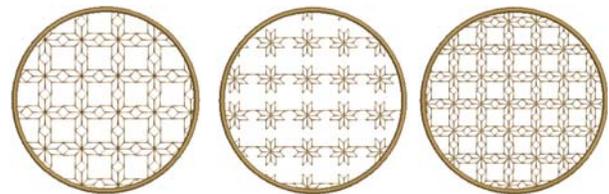
You can insert a pattern fill at its original size and orientation, and then adjust settings later. You can also set the exact size and spacing as you insert the pattern fill. Spacing is the distance between each pattern repetition. See also **Adding pattern fills**.

To adjust pattern fill settings

- 1 Double-click or right-click a pattern fill object. The **Object Properties > Fill Stitch** dialog opens with the current pattern in the preview panel.



- 2 Change the current fill pattern as required. See **Adding pattern fills** for details.
- 3 Adjust **Size X**, **Size Y**, **Column Spacing**, **Row Spacing** settings as required.



X: 12, Col Sp: 12
Y: 12, Rw Sp: 12

X: 9, Col Sp: 12
Y: 9, Rw Sp: 12

X: 9, Col Sp: 9
Y: 9, Rw Sp: 9

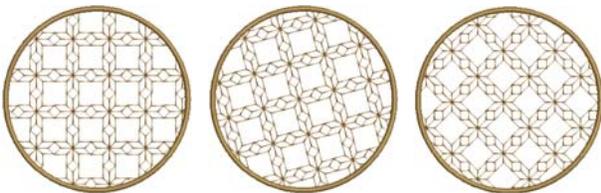
- 4 Adjust **Row Offset** as required (from -99.99mm to 99.99mm).



Row offset: 0.00 Row offset: 2.00 Row offset: 5.00

- 5 Adjust **Rotation Angle** as required (from -180° to +180°).

This field sets the current rotation angle of the fill pattern (default is zero), and defines the orientation of the entire pattern fill.



Rotation angle: 0° Rotation angle: 15° Rotation angle: 45°

- 6 Click **Apply**.

The digitized object is filled with the selected pattern fill, current settings applying.



Note If more than half a pattern is outside the boundary, it will be clipped along the boundary.

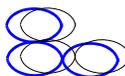
Laying out pattern fills on-screen

You lay out pattern fills on-screen by using 'guide-patterns' to scale, space, transform and offset the entire pattern fill. There are three blue guide-patterns. Other sample patterns appear in yellow. Each guide-pattern lets you change different elements of the layout. When you change a guide-pattern, all patterns in the fill change accordingly.



Tip You can also use this method to adjust the layout of **Blackwork Fill**, **Candlewicking Fill** and **Lacework**.

Use top guide-pattern to change row spacing, row offset, and to scale all patterns



Use side guide-pattern to change column spacing, and to scale all patterns

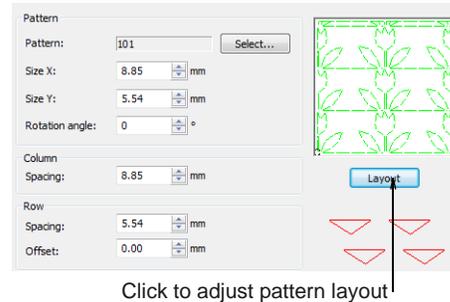
Use middle guide-pattern to move, rotate, skew, and scale all patterns



Tip Generally you define the layout of the fill before digitizing the object. If it is important to align the patterns with the object boundary, digitize the object using the current settings, and change the layout afterwards.

To lay out pattern fills on-screen

- 1 Double-click or right-click a pattern fill object. The **Object Properties > Fill Stitch** dialog opens.



Click to adjust pattern layout

- 2 Click **Layout**.

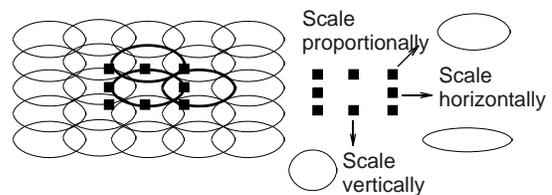
The **Object Properties** dialog temporarily closes allowing you to see and edit the layout guides. Yellow sample and blue guide-patterns appear in the design window. When you change a guide-pattern, all patterns in the fill change accordingly.



Tip Zoom in to select the correct guide-pattern.

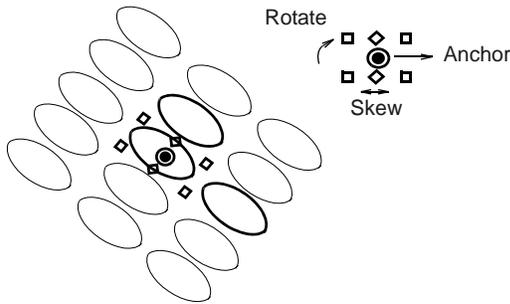
- 3 Adjust the guide-patterns to achieve the effect you require.

- ▶ **Move** patterns by selecting the middle guide-pattern and dragging it to a new position.
- ▶ **Scale** patterns by selecting a guide-pattern and resizing it using the selection handles.

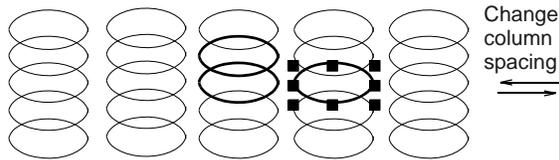


- ▶ **Rotate** patterns by clicking the middle guide twice to display the rotation handles. Click a corner handle and drag to rotate.

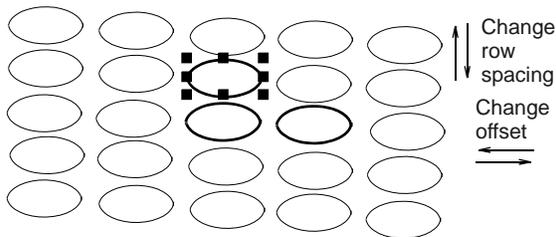
- ▶ **Skew** patterns by clicking the middle guide twice, then dragging the skew handles.



- ▶ **Change column spacing** by selecting the side guide and dragging it left or right.



- ▶ **Change row spacing** by selecting the top guide and dragging it up or down.
- ▶ **Change row offset** by selecting the top guide and dragging it left or right. Changing the offset distorts the rows.



- 4 Press **Enter** to finish.

The **Object Properties** dialog re-opens allowing you to apply any other settings. The adjusted size and layout are applied to the selected object and become the current Pattern Fill settings.

Managing patterns

BERNINA Embroidery Software provides various ways to manage your patterns including making pattern sets, saving patterns, and deleting patterns.

Saving your own patterns

The **Create Pattern** function lets you save your own patterns for future use. Store them in your own or an existing pattern set. They can be used in pattern fills or runs, or even as pattern stamps.

To save a pattern

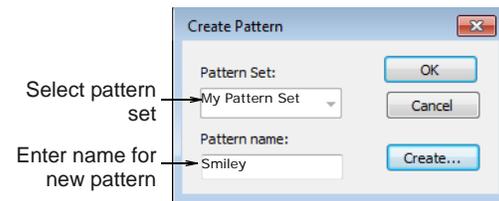
- 1 Select the **embroidery object/s** you want to save.



Tip To create objects with holes, see [Adding & filling holes](#) for details.

- 2 Select **Settings > Create Pattern**.

The **Create Pattern** dialog opens.

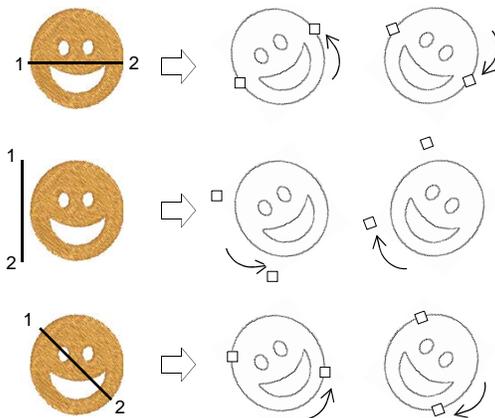


- 3 Select a pattern set from the droplist.

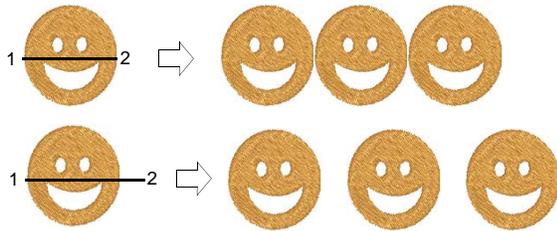


Note Choose the pattern set carefully so you remember where you have stored your patterns. See also [Creating your own pattern sets](#).

- 4 Enter a name for your new pattern.
- 5 Click **OK**.
You are prompted to digitize reference points.
- 6 Click to mark two reference points for the pattern.
These determine the default pattern orientation.



Reference points also determine default pattern spacing.



- 7 A confirmation message appears.
- 8 Click **OK**.



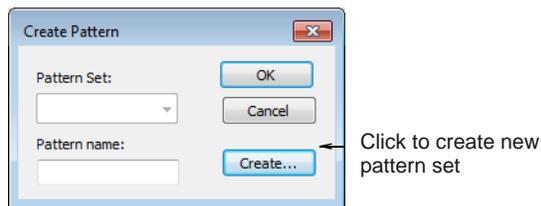
Tip Test your new pattern. See [Adding pattern stamps](#), [Creating pattern runs](#), and [Creating pattern fills](#).

Creating your own pattern sets

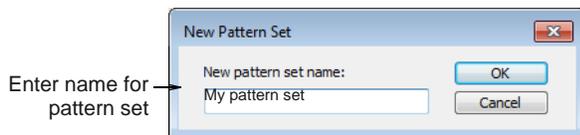
The **Create Pattern** function lets you create your own pattern sets to organize and classify your patterns.

To create your own pattern set

- 1 Select the object/s you want to save as a pattern. See [Saving your own patterns](#) for details.
- 2 Select **Settings > Create Pattern**.
The **Create Pattern** dialog opens.



- 3 Click **New Set**.
The **New Pattern Set** dialog opens.



- 4 Enter a name for the new pattern set and click **OK**.
The **Pattern Set** is ready for use.

Deleting patterns

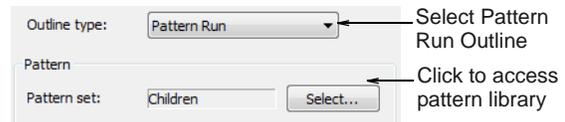


Click Object Properties (General toolbar) to delete patterns.

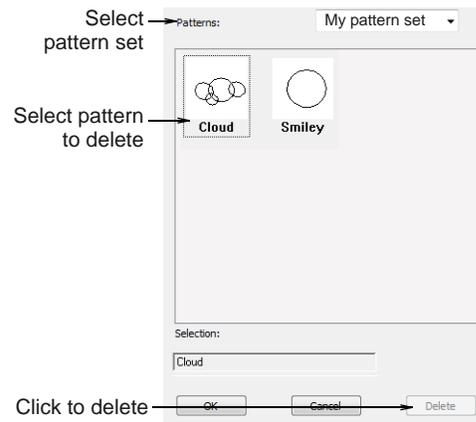
Delete any patterns you no longer want from a pattern set. You can only delete your own patterns.

To delete a pattern

- 1 Click **Object Properties** icon.
- 2 Select **Pattern Run Outline** from **Outline Stitch** tab or **Pattern Fill** from the **Fill Stitch** tab.



- 3 Click **Select**.
The **Select Pattern** dialog opens showing all available patterns in the current set.



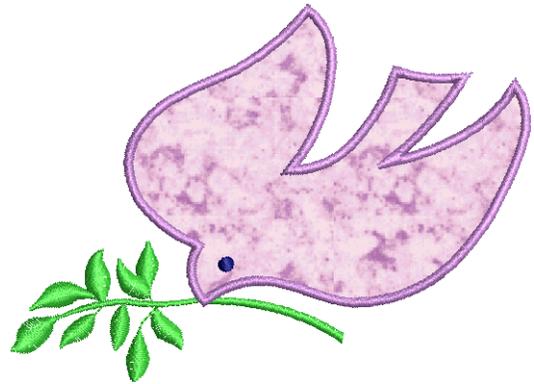
Tip Select a viewing mode – you can list patterns by picture, name, or both.

- 4 Select the pattern set you saved your pattern/s to.
- 5 Select the pattern you want to remove and click **Delete**.
A confirmation message appears.
- 6 Click **OK**.

CHAPTER 24

DIGITIZING FOR APPLIQUÉ

Appliqué is an important craft in home sewing, and the Appliqué feature provides an easy way to create quality work. Use Appliqué to generate the stitching you require for closed-object appliqué. Up to four layers of stitching – placement lines, cutting lines, tackdown and cover stitches – are generated. Using the Remove Appliqué Overlaps tool, you can create appliqué objects with partial cover stitching to create overlaps without doubling-up borders. Sometimes you require added flexibility to extend the range of



designs that can be sewn. For instance, designs containing open objects cannot be handled by Appliqué. In such cases, the special Advanced Appliqué tool allows you to generate 'open-object appliqué' from one or more source objects.

This section covers creating closed-object appliqué as well as partial cover appliqué. It also discusses creating open-object appliqué.

Creating closed-object appliqué

Use **Appliqué** to produce the stitching you require for closed-object appliqué. You digitize the border around an appliqué shape in much the same way as an closed-object **embroidery object**. You can control various settings including cover stitch type – Satin or Blanket – width, stitch spacing, as well as offset. Up to three types of 'secondary object' can be automatically generated:

- ▶ **Placement lines:** Optionally, placement lines are used to position applique fabrics or pre-cut patches on the background fabric.
- ▶ **Cutting lines:** Optionally, cutting lines form a guide when trimming the fabric of an appliqué patch 'in situ'.
- ▶ **Tackdown:** This is a zigzag or run stitch placed after placement and cutting lines, and used to fix appliqué patches to the background fabric before cover stitching is applied.



Tip You can also create appliqué objects with partial cover stitching to create overlaps without doubling-up borders. See also [Creating partial cover appliqué](#).

Creating appliqué with Appliqué



Use Digitize > Appliqué to digitize closed-object appliqué with all necessary stitching.

Use **Appliqué** to generate the stitching you require for closed-object appliqué. Up to four layers of stitching – placement line, cutting line, tackdown and cover stitch – are generated. Options determining single or multiple boundaries as well as frame-out

position are set in the **Options** dialog. See [Setting appliqué options](#) for details.



Tip When you stitch out an appliqué object, the machine stops between layers. Before you begin to stitch the appliqué, lay the fabric over the design and start the machine. When the guideline has been stitched, trim the excess appliqué material and start the machine again for the tackdown and cover stitch.

To create appliqué using Appliqué

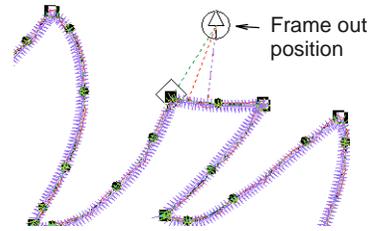
- 1 Load a picture. See [Loading vector artwork](#) for details.
- 2 Click the **Appliqué** icon in **Design** or **Artistic View**.
- 3 Digitize the appliqué outline by marking reference points around the shape.
 - ▶ Click to create a corner point.
 - ▶ Right-click to create a curve point.



Tip Follow the prompts in the **Status Bar** to help you digitize. If you make a mistake, press **Backspace** to delete the last reference point, then continue digitizing.

- 4 Press **Enter** to close the shape.
- 5 Click the outline to set the stitch entry and exit points or press **Enter** to accept the defaults.
- 6 Depending on the selected frame-out method, you may be prompted to mark the frame-out position. See [Setting appliqué options](#) for details.

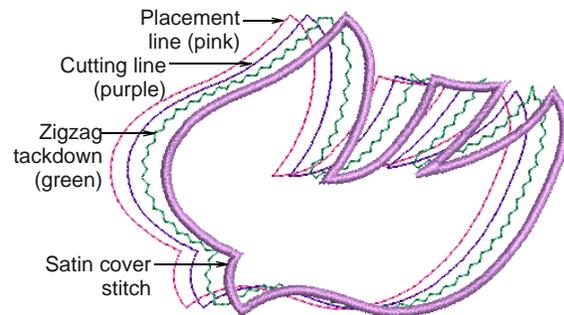
- ▶ **Automatic:** If activated, the frame-out position is determined automatically.
- ▶ **Manual:** If activated, click the point where the frame-out position is to be.



- ▶ **Place Under Cover Stitches:** If activated, the frame-out position is placed at the location of the last needle penetration before the frame-out would occur.

7 Press **Enter**.

The shape is closed and up to four layers of stitching generated – placement line, cutting line, tackdown and cover stitch – depending on current settings. See [Adjusting Appliqué settings](#) for details.



Note The **Ungroup** command is not available when an Appliqué object is selected. If you wish to access component objects, use the **Break Apart** tool. See [Splitting into component objects](#) for details.

Adjusting Appliqué settings



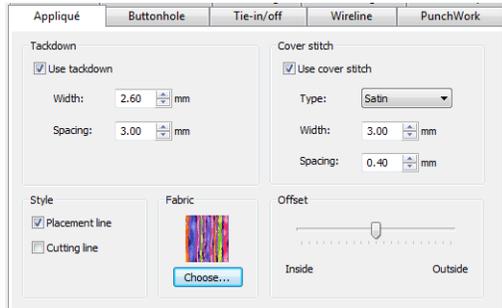
Use **General > Object Properties** to set current properties.

The cover stitch is the border around the appliqué shape. You can control various settings including cover stitch type, width, stitch spacing, as well as the offset in relation to the digitized outline.

To adjust Appliqué settings

- 1 Double-click or right-click an Appliqué object.

The **Object Properties > Appliqué** dialog opens.



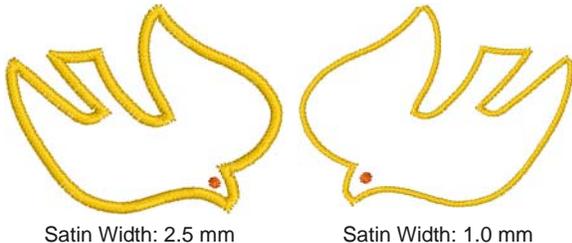
Tip To adjust settings prior to digitizing, with no objects selected, access the **Object Properties > Appliqué** dialog.

- In the **Cover stitch** panel, select the required cover stitch type – Satin or Blanket.

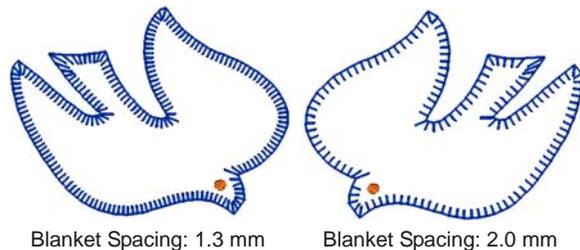


Note By default cover stitching is activated. This control allows compatibility between appliqués created in Explorations which has a 'No Border' option, and those created in BERNINA Embroidery Software.

- Adjust cover stitch width and spacing as required:
 - ▶ **Width:** Enter the width of the Satin or Blanket column.

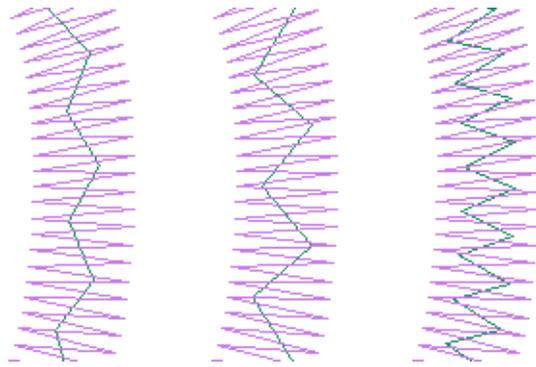


- ▶ **Spacing:** Enter the stitch spacing of the Satin or Blanket column.



- If using Satin cover stitch, select the **Use Tackdown** checkbox as required and adjust width

and spacing settings. Tackdown width cannot be greater than the cover stitch width.



Tackdown stitch width: decreased
spacing: increased

Tackdown stitch width: default
spacing: default

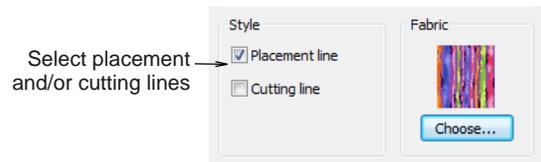
Tackdown stitch width: increased
spacing: decreased



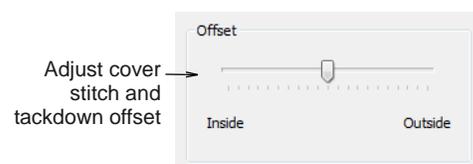
Note Tackdown stitching is not available for Blanket cover stitch.

- Select required appliqué styles.

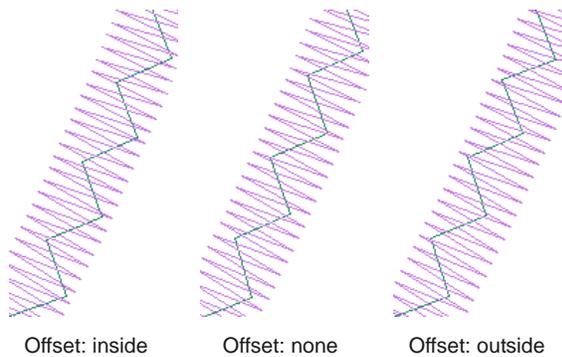
Two options are available – **Placement Line** and **Cutting Line**. Use placement lines as a guide to place pre-cut fabric patches. Use cutting lines to hold down uncut patches so that they can be cut in place.



- Use the slider to offset the cover stitch relative to – inside or outside – the placement line.



Satin defaults to none while Blanket defaults to 100% inside.



- 7 Click **Apply**.
Current settings are applied to selected objects.

Placing fabrics in Appliqué designs

 Use View > Show Appliqué Fabric to show or hide background fabric / color of any appliqué objects in the design.

The **Object Properties > Appliqué** dialog contains a **Fabric** panel which allows you to choose a fabric or plain color to assign to your appliqué patch.



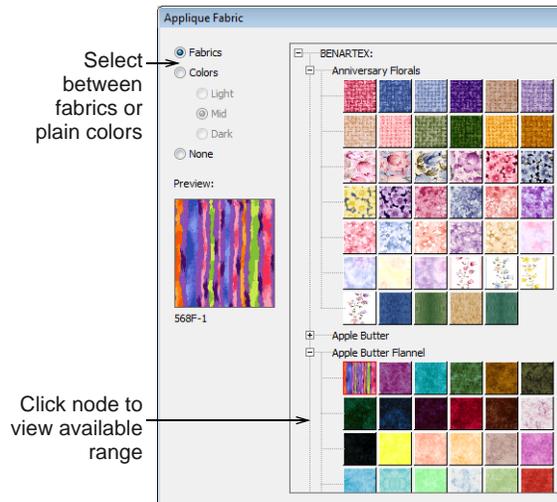
To place fabric in an Appliqué design

- 1 Double-click or right-click an appliqué object.
The **Object Properties > Appliqué** dialog opens.

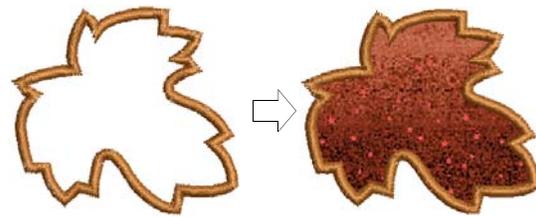


- 2 Click **Choose** to choose a fabric or plain color in the Fabric panel to assign to your appliqué patch.
The **Appliqué Fabric** dialog opens. The **Fabric/Color/None** options allow you to select

between fabrics or plain colors. By default the **Fabrics** option is selected.



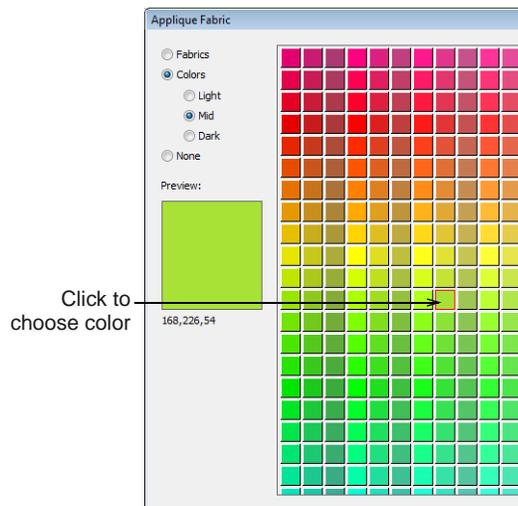
- 3 Scroll down the display panel to find a suitable category and click a node on the fabrics tree to view the available range – e.g. 'Anniversary Florals'.
- 4 Click **OK** to apply it to the selected appliqué object.



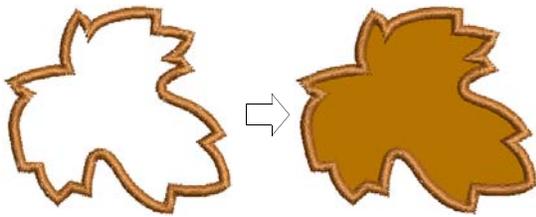
 **Note** The Benartex range is displayed as in **Patch Properties** dialog. See [Creating open-object appliqué](#) for details.

- 5 If you prefer to assign a color to your appliqué patch, select the **Color** option.

The **Appliqué Fabric** dialog updates to display a range of colors.



- 6 Select a tonal range – Light, Mid or Dark – and choose a color.



- 7 Click **OK** to close the dialog and put the fabric into the **Object Properties > Appliqué** dialog.



- 8 Click **Apply** to apply it to the selected appliqué object.



Tip Use the **Show Appliqué Fabric** toggle to turn appliqué fabrics/colors display on/off.

Creating partial cover appliqué

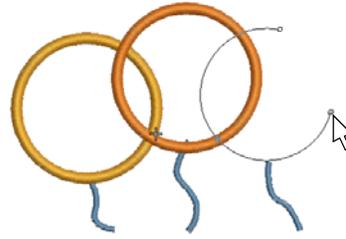


Click **Edit > Remove Appliqué Overlaps** to remove unwanted stitching from underlying appliqué objects.

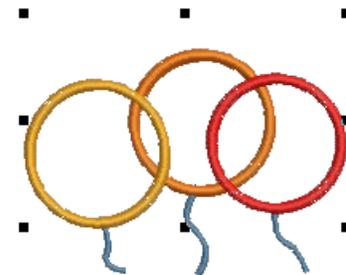
Using the **Remove Appliqué Overlaps** tool, you can create overlapping appliqué objects with partial cover stitching without doubling-up borders. The lower layers will have partial appliqué applied to them.

To create partial cover appliqué

- 1 Create appliqué shapes with **Appliqué**. See **Creating appliqué with Appliqué** for details.

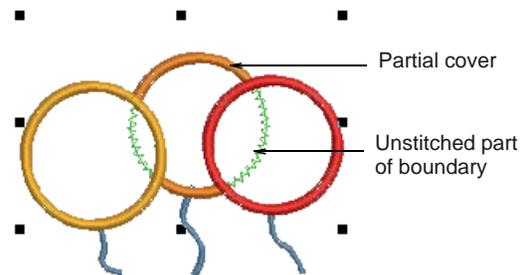


- 2 Select the appliqué objects.



- 3 Click the **Remove Appliqué Overlaps** icon.

Cover stitches are removed where objects overlap, leaving only the secondary objects – tackdown, placement and cutting lines.



Creating open-object appliqué

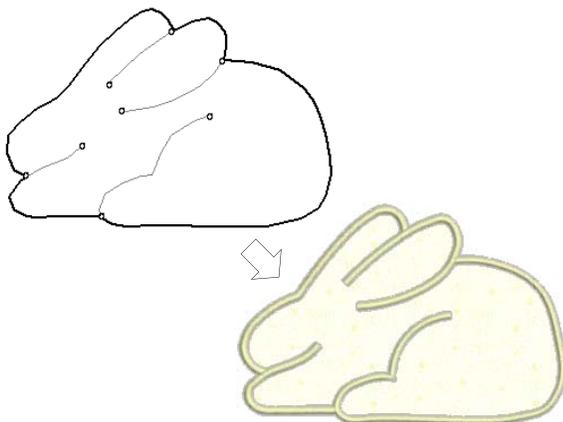
Appliqué is an important craft in home sewing, and the **Appliqué** feature provides an easy way to create high quality work. However, sometimes you require added flexibility to extend the range of designs that

can be sewn. For instance, designs containing open objects cannot be handled by **Appliqué**.



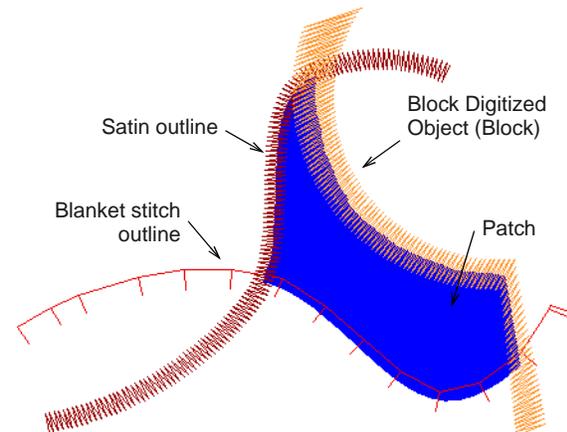
In this design, the stem in the center of the leaf must be sewn **after** the placement and cutting lines around the leaf outline but **before** the cover stitches. There may be one or two fabric areas. If there is only one patch, the stem will not require placement or tacking stitches. If there are two patches, the stem, as well as the outline, must have placement and tacking stitches.

Another problem is illustrated by the rabbit design below. The entire shape is composed of open curves whose stitching order is crucial – e.g. the left ear must be on top. The interior of the rabbit needs to be filled with fabric, even though **none** of its component curves is closed.



In both cases, you want to be able to enter the curves in as natural an order as possible **and** have the software correctly interpret where the enclosed areas are to be. To this end the special **Advanced Appliqué** tool allows you to generate 'open-object appliqué' from one or more source or 'primary' objects.

Boundaries can be defined by a mixture of objects as shown here:



Primary objects

Source or 'primary' objects used in the creation of open-object appliqué must be created and sequenced **before** the feature is applied. These objects are not affected in any way by their incorporation into open-object appliqué. Several types of source object can be used:

- ▶ Any outline stitch type – Single Run, Satin Outline, etc,
- ▶ Any closed-object filled object, or
- ▶ Any block-digitized object.

Some other object types can be used as input in combination with the above objects. These include lettering objects, auto-appliqués and even other open-object appliqués.



Note If BERNINA Embroidery Software detects more than one area, you have the option of joining them into one patch. See [Merging & unmerging patches](#) for details.

Secondary objects

Up to three types of 'secondary object' can be automatically generated:

- ▶ **Placement lines:** These are, optionally, the first appliqué layer to be stitched. Placement lines are used to position pre-cut appliqué patches on the background material.
- ▶ **Cutting lines:** Again optionally, cutting lines form a guide when trimming the fabric of an appliqué patch 'in situ'.
- ▶ **Tackdown:** This is a zigzag or run stitch placed after placement and cutting lines, and used to fix appliqué patches to the background fabric before cover stitching is applied.

Each 'boundary segment' will generate a placement line, cutting line and/or tackdown depending on current settings.



Note Secondary objects are stitched **before** primary objects and are therefore shown **beneath**. You can assign thread colors to each secondary object or let BERNINA Embroidery Software decide.

Creating open-object appliqué design



Use Digitize > Advanced Appliqué to generate open-object appliqué from one or more source objects.

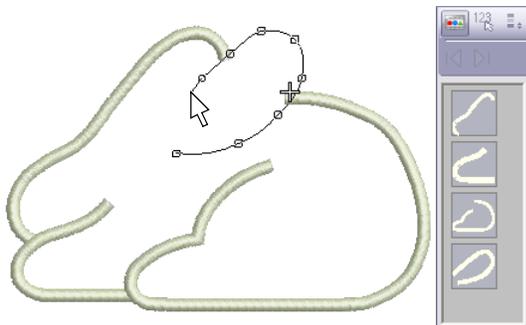
Several types of 'primary object' can be used in the creation of open-object appliqué, including any outline stitch type – Single Run, Satin Outline, etc – any filled object, or any block-digitized object. Additionally, some other objects can be used as input, including lettering objects, auto-appliqués or even other open-object appliqués.



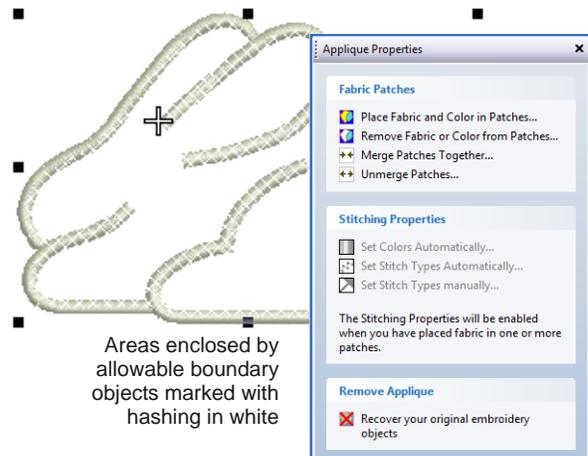
Note By default, designs are automatically grouped upon opening or insertion into another design. When you open an appliqué design after saving, you will need to ungroup it before you can access appliqué properties. See [Setting other general options](#) for details.

To create an open-object appliqué design

- 1 Create the objects you want to include in your cover stitching of the appliqué design. See [Digitizing open shapes](#) for details.



- 2 Set the stitching properties and sewing sequence of these objects.
- 3 Select all objects to be included in the open-object appliqué and click the **Advanced Appliqué** icon. BERNINA Embroidery Software determines whether a selection contains at least one allowable boundary object and whether an area has been properly enclosed. If these conditions are met, an open-object appliqué object is created and the **Appliqué Properties** dialog opens.



Note Shapes are 'corrected' when an open-object appliqué is first created. This may have the effect of removing small detail segments. However, primary objects are unaffected.

- 4 Click **Place Fabric and Color in Patches** option to add fabric or color. See [Placing fabric in patches](#) and [Placing color in patches](#) below for details.



- 5 Click **Back** when complete.
- 6 Click **Close** to close the dialog.



Tip Open-object appliqué objects can be selected and manipulated in the same way as a grouped object – i.e. they can be moved, resized, skewed or rotated, using the same clicking and drag method applying to all objects. Reshaping of open-object appliqué objects, however, is not possible. Nor is there any way to select individual objects, primary

or secondary, within open-object appliqué unless the object is first 'broken apart'. See [Splitting into component objects](#) for details.

Placing fabric in patches



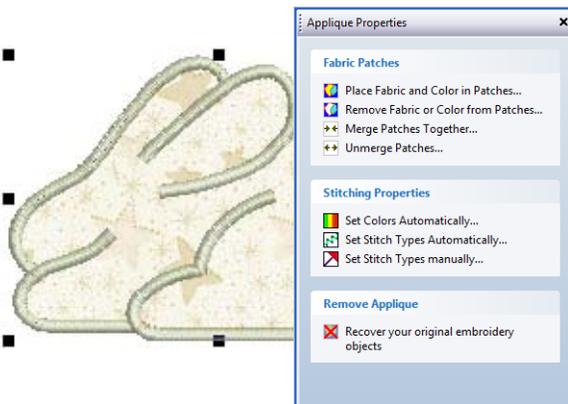
Use View > Show Appliqué Fabric to show or hide background fabric / color of any appliqué objects in the design.

You can add fabric swatches to open-object appliqué when it is first created or at any later stage.

To place fabric in patches

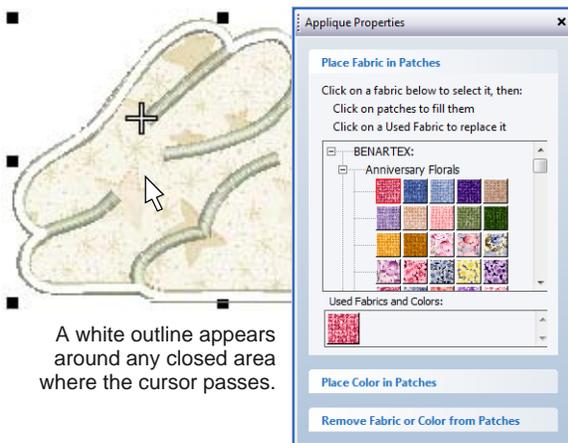
- 1 If editing an existing open-object appliqué object, double-click or right-click the object.

The **Appliqué Properties** dialog opens (or will already be open if you have just created the object).



- 2 Click the **Place Fabric and Color in Patches** option.

The dialog changes to display the **Place Fabric in Patches** panel.



A white outline appears around any closed area where the cursor passes.



Note There may already be pre-selected entries in the **Used Fabrics and Colors** palette.

- 3 Select a fabric from the fabrics tree – e.g. 'Vintage Shirtings' – or from the **Used Fabrics and Colors** palette.

- 4 Move the cursor over the design area.

A white outline appears around any closed area over which the cursor passes.

- 5 Click an area which is currently hashed or filled.

The area is filled with the chosen fabric and a swatch added to the **Used Fabrics and Colors** palette.



Note For any new patches created, secondary stitching objects are created using default stitch types and automatic stitch colors. See [Setting stitch colors](#) and [Setting stitch types](#) for details.

- 6 Select other areas as required to add more patches.

- 7 Click **Back** when complete.

- 8 Click **Close** to close the dialog.

Alternatively, click **Place Color in Patches** or **Remove Fabric from Patches** for more options. See [Placing color in patches](#) and [Removing fabric or color from patches](#) below for details.



Tip Use the **Show Appliqué Fabric** toggle to turn appliqué fabrics/colors display on/off.

Placing color in patches



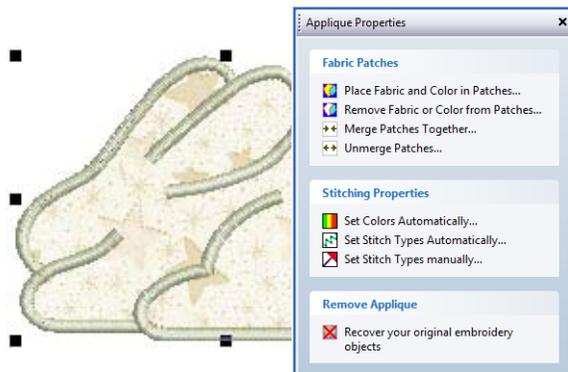
Use View > Show Appliqué Fabric to show or hide background fabric / color of any appliqué objects in the design.

You can add color, in place of fabric swatches, to open-object appliqué when it is first created or at any later stage.

To place color in patches

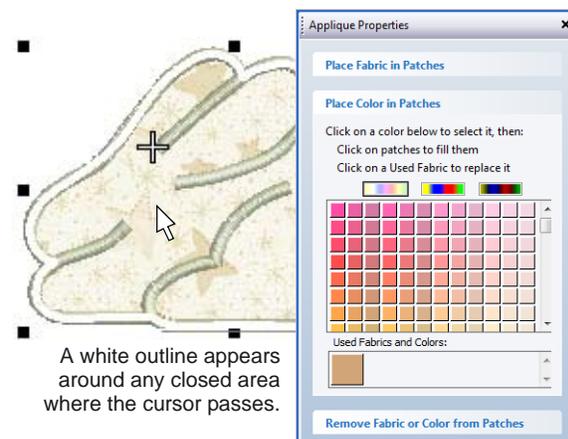
- 1 If editing an existing open-object appliqué object, double-click or right-click the object.

The **Appliqué Properties** dialog opens (or will already be open if you have just created the object).



- 2 Click the **Place Fabric and Color in Patches** option.

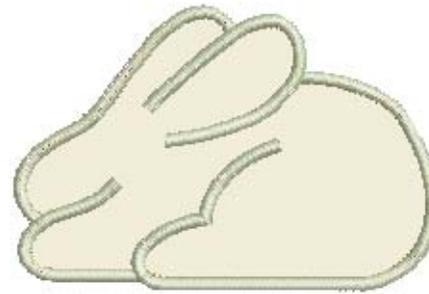
The dialog changes to display the **Place Fabric in Patches** panel. There may already be pre-selected entries in the **Used Fabrics and Colors** palette.



Note There may already be pre-selected entries in the **Used Fabrics and Colors** palette.

- 3 Select a tonal range – Light, Mid or Dark – using one of the three switches at the top of the palette.
- 4 Select a color from the palette.
- 5 Move the cursor over the design area.
A white outline appears around any closed area over which the cursor passes.
- 6 Click an outlined area which is currently hashed or filled.

The area is filled with the chosen color and a color sample added to the **Used Fabrics and Colors** palette.



Note For any new patches created, secondary stitching objects are created using the default stitch types and automatic stitch colors. See [Setting stitch colors](#) and [Setting stitch types](#) for details.

- 7 Select other areas as required to add more colors.
- 8 Click **Back** when complete.
- 9 Click **Close** to close the dialog.

Alternatively, click **Place Fabric in Patches** or **Remove Fabric from Patches** for more options. See [Placing fabric in patches](#) and [Removing fabric or color from patches](#) below for details.



Tip Use the **Show Appliqué Fabric** toggle to turn appliqué fabrics/colors display on/off.

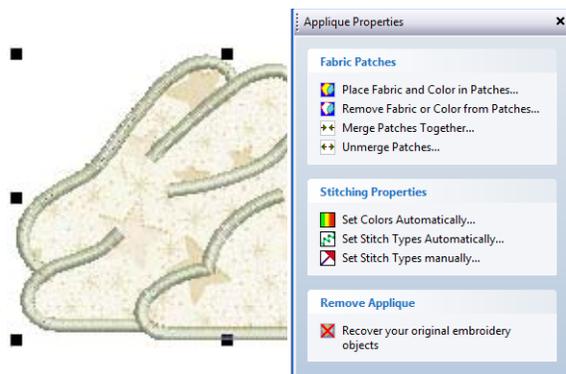
Removing fabric or color from patches

You can remove colors or fabrics from open-object appliqué at any stage.

To remove fabric or color from patches

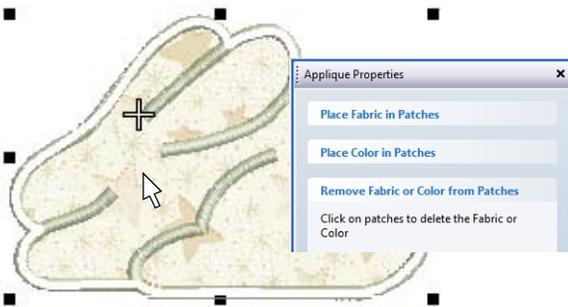
- 1 Double-click or right-click the open-object appliqué object.

The **Appliqué Properties** dialog opens.

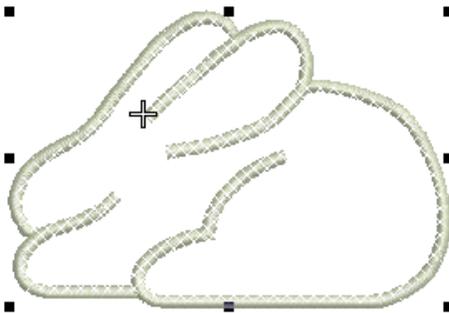


- 2 Click the **Remove Fabric from Patches** option.

The dialog changes to display the **Remove Fabric from Patches** panel.



- 3 Move the cursor over the design area. A white outline appears around any closed area over which the cursor passes.
- 4 Click an outlined area which is currently filled. The patch fabric or color is replaced with white hashing and all associated secondary objects removed.



Note The fabric or color is also removed from the **Used Fabrics and Colors** palette if this was the only instance of that fabric or color.

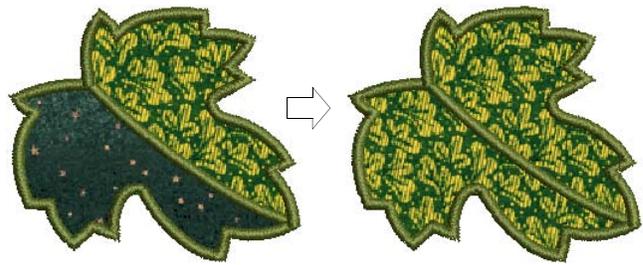
- 5 Select other areas as required to remove more patches.
- 6 Click **Back** when complete.
- 7 Click **Close** to close the dialog.

Alternatively, click **Place Fabric in Patches** or **Place Color in Patches** for more options. See [Placing fabric in patches](#) and [Placing color in patches](#) below for details.

Merging & unmerging patches

In the sample below, there may be one or two fabric areas. If there are two patches, the stem, as well as the outline, must have placement and tacking stitches. If there is only one patch, the stem will not

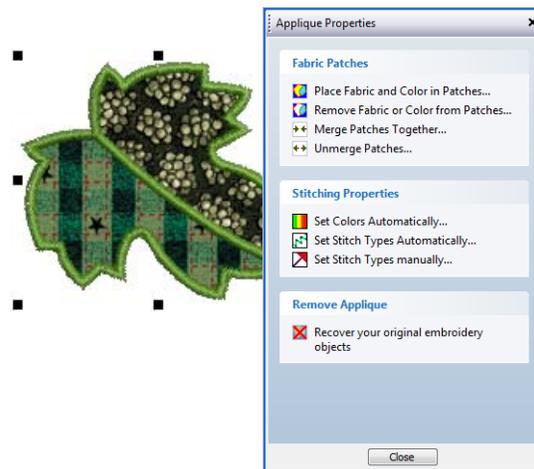
require placement or tacking stitches. In this case, the two fabric areas need to be merged into one.



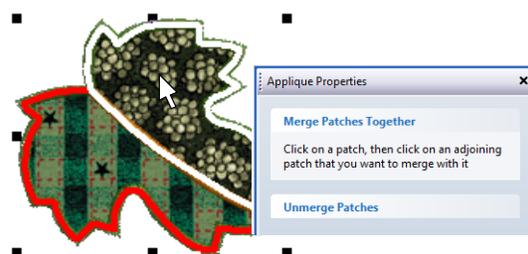
To merge and unmerge patches

- 1 Double-click or right-click the Advanced Appliqué object.

The **Appliqué Properties** dialog opens.



- 2 Select the **Merge Patches Together** option. The **Merge Patches Together** panel is displayed.

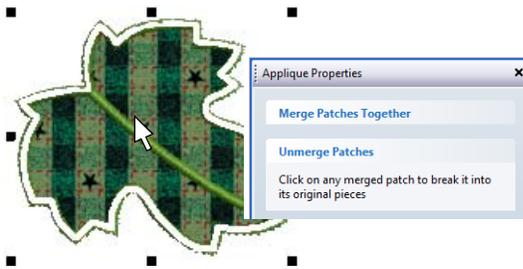


- 3 Select the patch to merge. A red line appears around its border.
- 4 Hover the cursor over the second patch. This patch may or may not be filled with fabric or color. A white line appears around its border.
- 5 Click the patch. The two patches are merged into a single patch taking the fabric or color of the first one. All

secondary stitching is removed from the boundary segments previously shared by the patches.



Tip To unmerge a merged patch, click the **Unmerge Patches** option at any stage and click a merged patch.



The merged patch is broken into its original patches, each with their current (not original) fabric or color. New secondary objects are created for shared boundaries.

- 6 Click **Back** to complete.
- 7 Click **Close** to close the dialog.



Tip Use the **Show Appliqué Fabric** toggle to turn appliqué fabrics/colors display on/off.

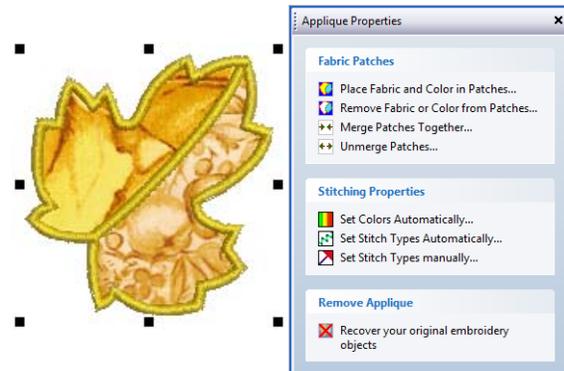
Setting stitch colors

You can either set colors automatically or manually. For any newly created open-object appliqué, secondary objects are created using the automatic stitch colors. Two options are available: **Special colors for each layer** and **Match color of cover stitching**. See also [Setting stitch types](#).

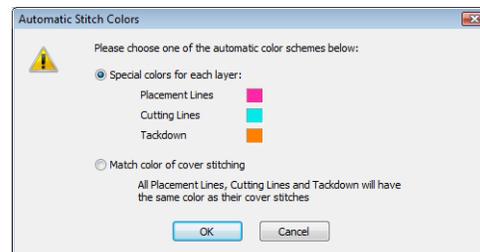
To set stitch colors

- 1 Double-click or right-click the Advanced Appliqué object.

The **Appliqué Properties** dialog opens.



- 2 Select the **Set Colors Automatically** option. The **Automatic Stitch Colors** dialog opens.



- 3 Choose an automatic color scheme from the available options:
 - ▶ **Match color of cover stitching:** If selected, all secondary objects are shown in the color of their associated primary objects.
 - ▶ **Special colors for each layer:** If selected, all secondary objects are shown and stitched in the colors displayed here (chosen for visual clarity on screen).



Note You would not normally use actual threads in the display colors but a single thread color for all secondary objects closely matching the fabric on which the appliqué is to be stitched.

- 4 Click **OK** to complete.
- 5 Click **Close** to close the dialog.

Setting stitch types

You have two options when it comes to setting stitch types to use for secondary objects: automatic or manual. To set stitch types automatically, you simply click the **Set Stitch Types Automatically** option in the **Applique Properties** dialog. Stitch types for all tackdowns are set according to the cover stitch type as follows:

- ▶ If the cover stitches are Satin Outline, Satin Fill, Step fill or Fancy Fill, the tackdown is set to Zigzag.

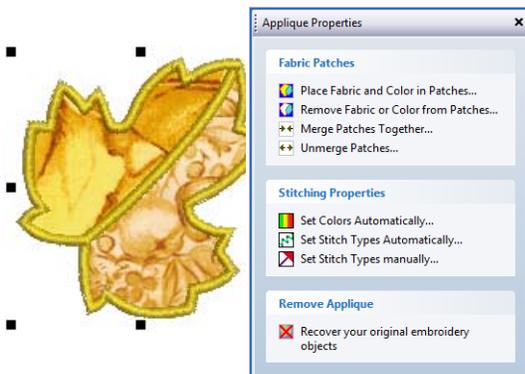
- ▶ If the cover stitches are anything else, the tackdown is set to Run stitch.

If you require greater control over stitch types used for placement lines, cutting lines, and tackdowns, use the following procedure. When you set colors manually, any change you make overrides automatically chosen colors.

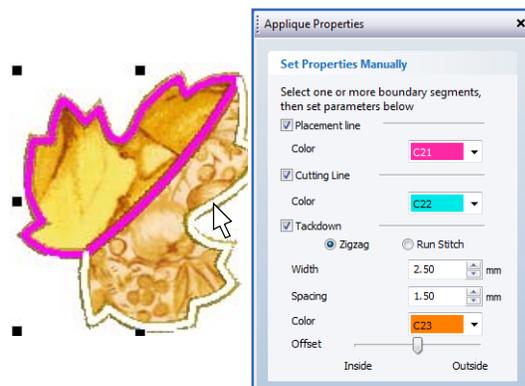
To set stitch types

- 1 Double-click or right-click the Advanced Appliqué object.

The **Appliqué Properties** dialog opens.



- 2 Select the **Set Stitch Types Manually** option. The **Set Properties Manually** panel is displayed.



- 3 To make the **Set Properties Manually** panel activated, select boundary segments as follows:

- ▶ By placing the mouse cursor over an individual boundary segment, it is highlighted in white. If you place it over a filled patch, the entire boundary of the patch is highlighted in white. If you then click the mouse, the highlighted section is selected. Selected boundary segments appear in magenta.
- ▶ By holding down the **Ctrl** key while a boundary or boundary segment is highlighted, the highlighted section is added to the selection, if not already selected, or subtracted from the selection if already selected.

- 4 Select the secondary objects you want included in your open-object appliqué:

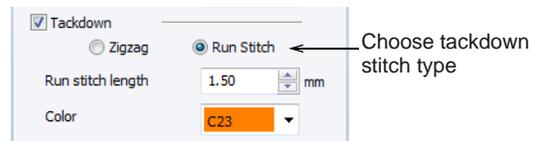
- ▶ **Placement lines:** These are, optionally, the first appliqué layer to be stitched. Placement lines are used to position pre-cut appliqué patches on the background material.
- ▶ **Cutting lines:** Again optionally, cutting lines form a guide when trimming the fabric of an appliqué patch 'in situ'.
- ▶ **Tackdown:** This is a zigzag or run stitch placed after placement and cutting lines, and used to fix appliqué patches to the background fabric before cover stitching is applied.

- 5 Set the display color for each of the secondary objects – placement lines, cutting lines, and/or tackdown – you have selected.



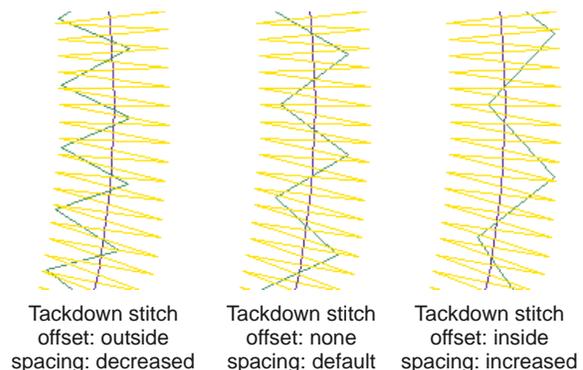
Note When you set colors manually, any change you make overrides automatically chosen colors. See [Setting stitch colors](#) for details.

- 6 If you have chosen to include tackdown stitches, select the required type:



Zigzag: This gives you control over:

- ▶ **Stitch width:** sets the column width for the Zigzag stitch.
- ▶ **Spacing:** sets the stitch spacing.
- ▶ **Color:** sets the stitch color.
- ▶ **Offset:** sets the cover stitching in relation to the secondary objects as shown:



Run Stitch: This gives you control over:

- ▶ **Stitch length:** set the stitch length to suit the digitized shape – where the object has tight curves, select a shorter stitch length; to reduce the stitch count for flatter curves, increase the stitch length.

- ▶ **Color**: sets the stitch color.
- 7 Click **Back** to return.
 - 8 Click **Close** to close the dialog.

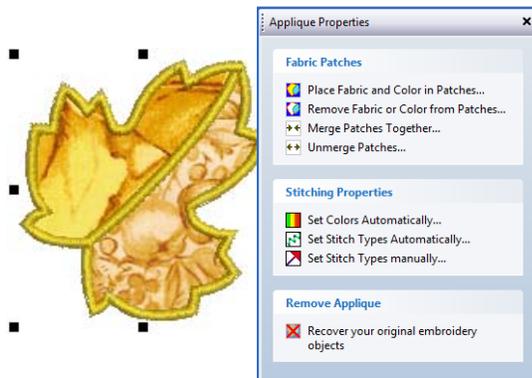
Recovering the original embroidery objects

Primary objects can be recovered at any time. BERNINA Embroidery Software will remove all secondary objects, ungroup the primary objects and return them as individual objects. See also [Splitting into component objects](#).

To recover the original embroidery objects

- 1 Double-click or right-click the Advanced Appliqué object.

The **Appliqué Properties** dialog opens.



- 2 Click the **Recover your original embroidery objects** option.

All secondary objects are removed and all primary objects ungrouped.



- 3 Click **Close** to close the dialog.



Note If the whole open-object appliqué had been resized, moved, or skewed, the primary objects are returned in this transformed state.

CHAPTER 25

CUTWORK & STUMPWORK

BERNINA Embroidery Software provides tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces.

Openwork or 'cutwork' embroidery is a delicate form of needlework which involves cutting away portions of the background fabric and binding the edges with embroidery stitching. In addition to reinforcing the edges, resulting holes may be filled with embroidery or needle lace.

Stumpwork, on the other hand, is a raised form of embroidery. It is created on one backing fabric and transferred to another, 'ground fabric'.

BERNINA Embroidery Software allows you to visualize all components of a stumpwork design in a single design window. At the same time, it lets you edit each stumpwork piece individually and output to machine.

This section covers tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces, specifically by means of cutwork and stumpwork.



Cutwork / stumpwork borders

BERNINA Embroidery Software allows you to create cutwork and stumpwork designs for use with the BERNINA CutWork Tool. Create and edit forms that can be cut out and used in cutwork and stumpwork designs. To achieve the desired results, you will need a BERNINA machine capable of embroidery and the CutWork tool which you can insert in place of the needle. You will be amazed at the gorgeous effects

you can achieve, whether on garments, accessories, or quilts.



Both cutwork and stumpwork designs are created with a common set of tools. Openwork or 'cutwork' involves cutting away portions of a backing fabric and binding the edges with embroidery stitching. Stumpwork can be made from cutwork pieces which are sewn onto the base design, usually with the addition of a wireline for extra stiffening.

Border categories

The **Cutwork Border** contains three categories of border:

Category	Use
Cut	Open or closed cutting line without any embroidery. This can be used to create a simple cut-out piece to be sewn on as stumpwork.
Stumpwork/ Piece	The user is interested in the cut-out piece. The remainder will probably be discarded. This consists of some embroidery together with the cut. Generally pieces are used for stumpwork. See also Digitizing stumpwork .
Hole	The user is primarily interested in the fabric that remains after the hole is cut. The resulting piece usually consists of some embroidery together with the cut. These border types are suitable for cutwork.

Cutwork generally involves cutting holes within fabrics, while stumpwork involves cutting out stumpwork pieces, similar to badges. For this reason, stumpwork borders will be 'pieces' rather than 'holes'.

Cutwork components

Cutwork components are generated and sequenced according to the chosen border type. Like appliqué, cutwork objects are composite, containing multiple embroidery and cutting components. They may include some or all of the following:

Component	Use
 Stabilizing runs	These are used to reduce deformation of the material prior to cutting or stitching. There may be several stabilizing runs in the one cutwork object.
 Cutting lines	As a cutting line would be unlikely to follow one of the standard cutting angles – 0°, 45°, 90° or 135° – a mix of different cutting needles is used to approximate it. The preferred mode of operation is to complete all cuts one cutting needle at a time.
 Tackdown runs	These are used to attach the stabilizer after a hole has been cut. Tackdowns are implemented as simple runs. They are not required for cutwork pieces.
 Net fills	Net fills are stitched onto the stabilizer inside a cut hole. They are created after holes are cut and stabilizers tacked down. When a fill is stitched out, the edges are covered, typically, by a satin or stemstitch line. Other stitch types are available. The stabilizer is subsequently dissolved in water so only a net of stitches is left within the hole.
 Embroidery	Depending on border type, embroidery may be used to cover the edge of the hole. Alternatively, it may run at a certain distance from the cutting line and stitch out before or after the material is cut. It is implemented as either satin, blanket, wireline, or stemstitch. Satin or wireline are typically used for stumpwork. See also Digitizing stumpwork .

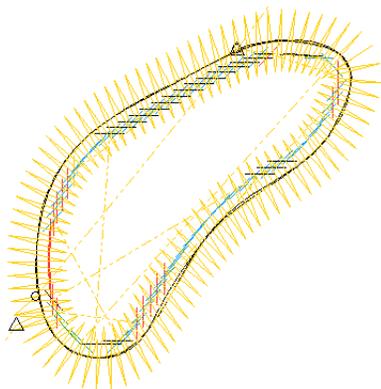


Note Unlike appliqué, cutwork objects cannot be broken into single standalone embroidery objects and cutting line components.

Border types

The chosen border type determines which components are included in the cutwork / stumpwork object. Further modifications are possible. The border

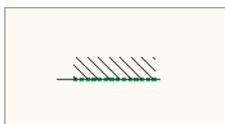
type also specifies component stitching order and spacings.



For example, the simplest border produces only cutting lines. Alternatively, the digitized outline may form the centerline of a satin line, while the cutting line is calculated with a corresponding offset.

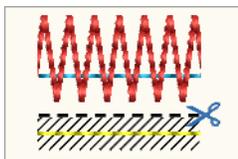
Cut

This is the simplest border type. It allows you to create a cutting line which can be run on the machine to cut out pieces for stumpwork or stand-alone work. Or it may be used in conjunction with an existing satin or other border.



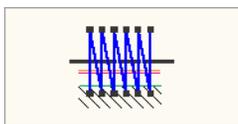
Stumpwork/Piece

This border type creates a cutout fabric piece with an embroidered border. It is recommended for use with satin cover stitch. It uses two stabilizer run passes for easier cutting.



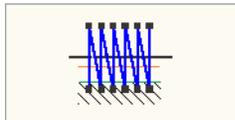
Hole-1

This border type creates a hole in fabric. A stabilizer is attached after cutting, fixed by tackdown, then final embroidery stitched out.



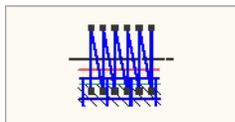
Hole-2

A variant of Hole-1, this border creates a hole in fabric with an embroidered edge but no stabilizer.



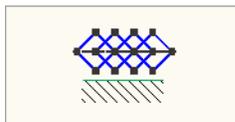
Hole-3

This border type creates a hole in fabric with a stabilizer and a net fill. The stabilizer attached after cutting, fixed by tackdown, then net fill and final embroidery stitched out.



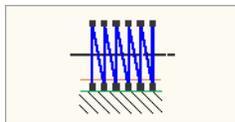
Hole-4

Hole-4 border is one of the simplest types, creating an embroidered edge followed by a hole. The cut must not damage embroidery as it is done after. The edges may look untidy as they are not covered.



Hole-5

A variant of Hole-4, this border adds a stabilizing run at the start.

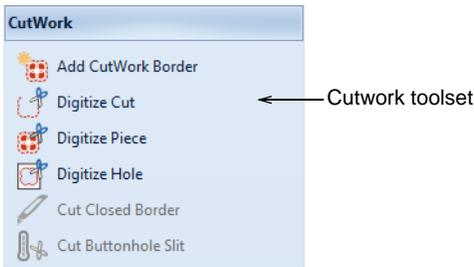


Cutwork interface

The cutwork interface has three main components – a toolbox, a docker, and object properties.

Cutwork toolbox

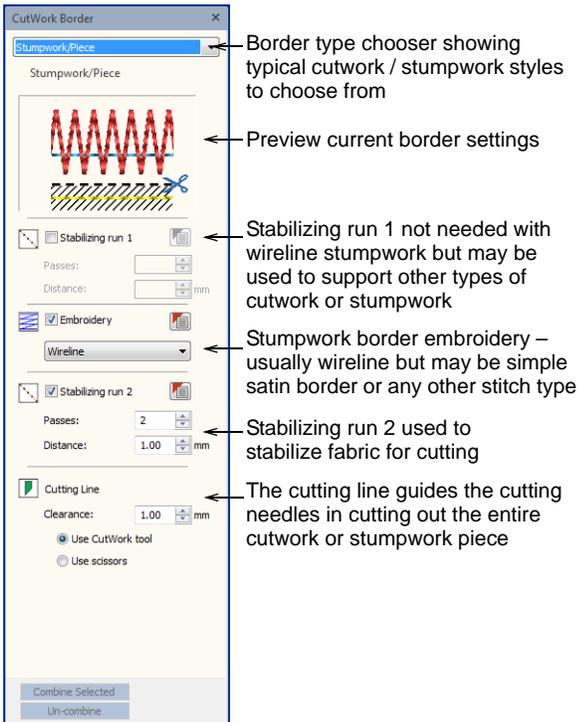
The toolbox contains all tools needed to digitize cutwork or stumpwork pieces from scratch or create from existing embroidery.



- ▶ The **Digitize** tools allows you to create cutwork objects – holes or pieces – with up to five layers of embroidery and cutting components, including stabilizing runs, tackdown runs, cuts, embroidery, and net fills.
- ▶ The **Add Cutwork Border** tool allows you to create cutwork pieces from existing objects. This is generally used for stumpwork.
- ▶ The **Cut Closed Border** tool is generally used for stumpwork pieces which include a wireline. Use this tool to cut a closed border and leave an opening for wire ends. See [Creating stumpwork with a wireline](#) for details.

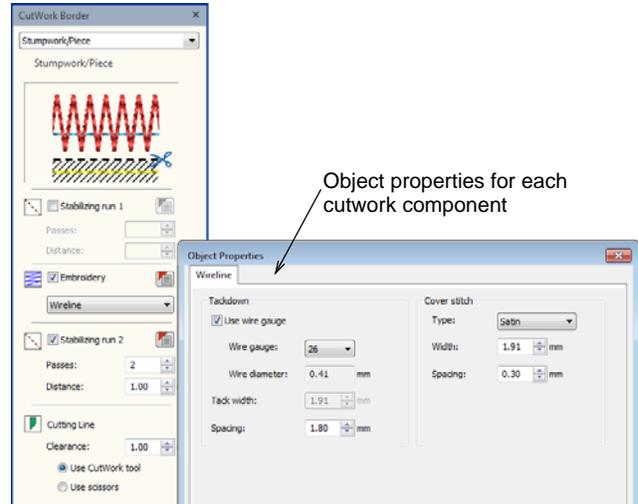
Cutwork border docker

The **Cutwork Border** docker allows you to preset options for both cutwork and stumpwork.



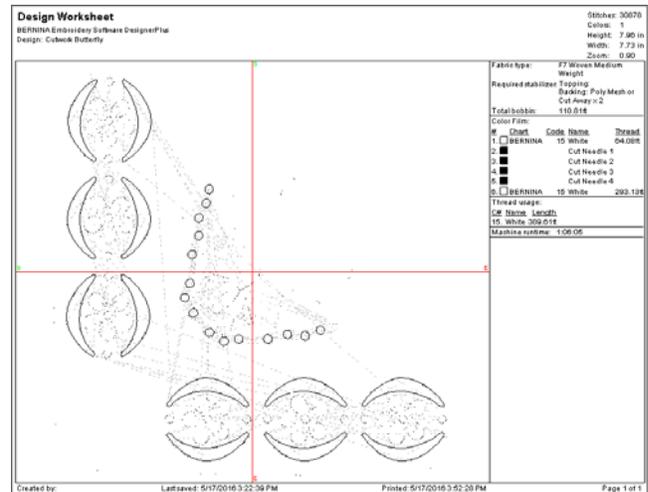
Object properties

Each component of a cutwork object has its own object properties. For example, wireline properties can be adjusted via a dedicated **Wireline** tab in the associated **Object Properties**.



Output worksheet

In addition to thread information, the design worksheet contains information about the cutting needles and the order in which they will be used on the machine. These are listed as 'Borer-1', 'Borer-2', etc.



Digitizing cutwork

Openwork or 'cutwork' embroidery is a delicate form of needlework which involves cutting away portions of the backing fabric and binding the edges with embroidery stitching. In addition to reinforcing edges,

resulting holes may be filled with embroidery or needle lace.



With a suitably equipped machine, you can eliminate most of the manual work associated with traditional cutwork. While the process is essentially the same, the design is stitched onto the fabric by machine and, by attaching cutting needles, holes or pieces are cut out. Cutting needles generally come as a set of four (4) with angles of 0°, 45°, 90° and 135°.

General procedure

Because of the number and type of cutwork components, the **Cutwork** feature is organized around 'border types'. The chosen border type determines which components are included in the cutwork object.



Most cutwork follows this production process:

- ▶ Stitch the design onto the fabric.
- ▶ Press and stiffen it with starch spray.
- ▶ Cut out the fabric between embroidered areas using sharp-pointed scissors.
- ▶ Make sure not to cut the embroidery threads.
- ▶ When finished, press the design once again.

Tightly woven fabrics such as linen, which do not fray easily, are generally preferred for cutwork. Depending on the stiffness of the fabric, stabilizers may or may not be used. Dissolving stabilizers can be used to temporarily stabilize the fabric while stitching, and then dissolved away after stitching. With the background cut away, fabric assumes a lacy appearance.

Digitizing cutwork objects



Use General > Cutwork to show or hide the Cutwork Border dockers. Use in conjunction with Cutwork toolbox.



Use Cutwork > Digitize Piece to digitize a cutout piece in hooped fabric, together with supporting embroidery. Right-click for settings.



Use Cutwork > Digitize Hole to digitize a hole in hooped fabric, together with supporting embroidery. Right-click for settings.

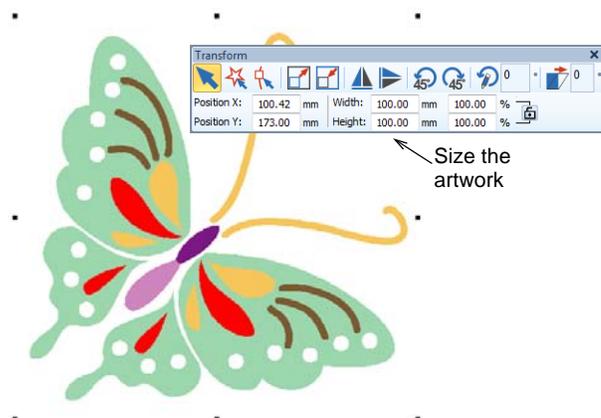


Use Cutwork > Digitize Cut to digitize a simple open or closed cut in hooped fabric. Right-click for settings.

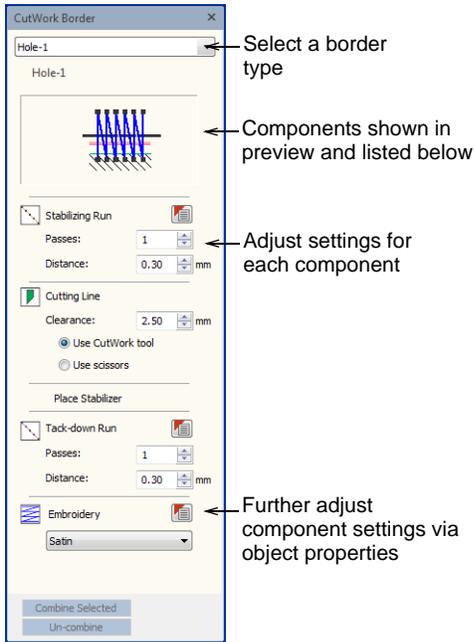
You digitize cutwork in much the same way as you digitize appliqué objects. However, you first select a border type which suits the work you are doing. If you are planning to do stumpwork, you generally create a cutwork piece first.

To digitize a cutwork object

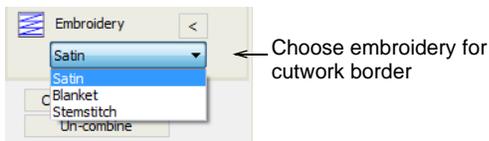
- 1 Import suitable artwork as a digitizing backdrop.



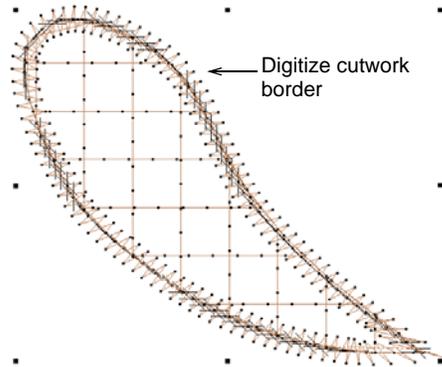
- 2 Study the artwork carefully and decide which objects comprise cutwork and which will be normal embroidery.
- 3 Size the artwork to the correct dimensions for the intended application – e.g. tablecloth.
- 4 Select a **Cutwork** tool. If you are digitizing pure cutwork rather than stumpwork, you will only be interested in the **Digitize Hole** or **Digitize Cut** tools.
- 5 Right-click to invoke the **Cutwork Border** docker.



- 6 Select a border type from the droplist. Components are listed below in order of stitchout.
- 7 Adjust settings for the chosen border type as preferred. Alternatively, settings can be adjusted after digitizing.
- 8 If you are using embroidery, choose the type from the **Embroidery** droplist and adjust settings.



- 9 Digitize cutwork as you would any closed object.

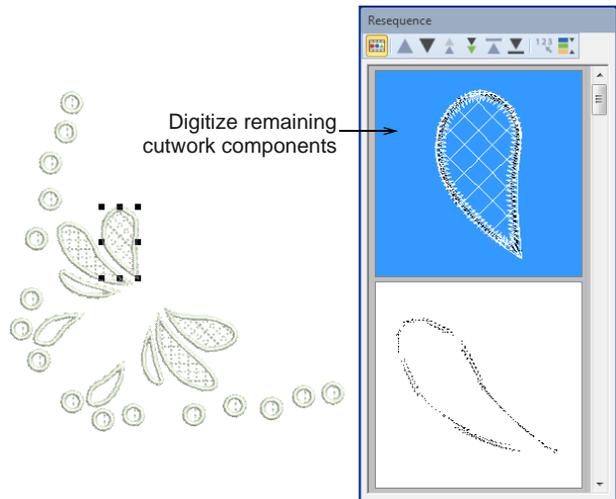


- 10 Press **Enter** to close the shape.

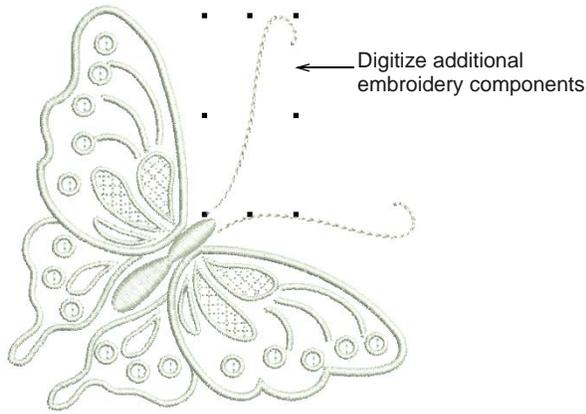
The border is generated according to chosen border type and settings. For example:

- ▶ A stabilizing run is applied first,
- ▶ The cut is made, and
- ▶ A satin line is applied to cover edges of the hole.

- 11 Digitize the remaining cutwork objects using suitable border types. See also **Border types**.



12 Digitize any additional embroidery.



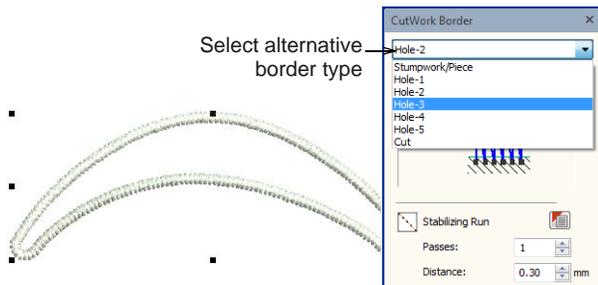
13 Resequence embroidery and cutwork objects as necessary. Usually embroidery will be stitched before cutwork. And ideally, all cutwork should be stitched together.

Changing cutwork settings

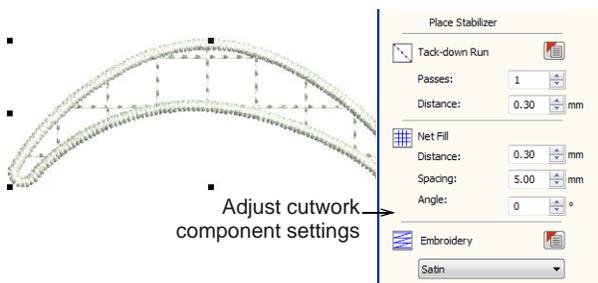
Cutwork objects are composites made up of cutwork components generated according to a chosen border type. These can be changed at any time. And, because components are embroidery objects, their properties can be accessed and changed as well.

To change cutwork settings

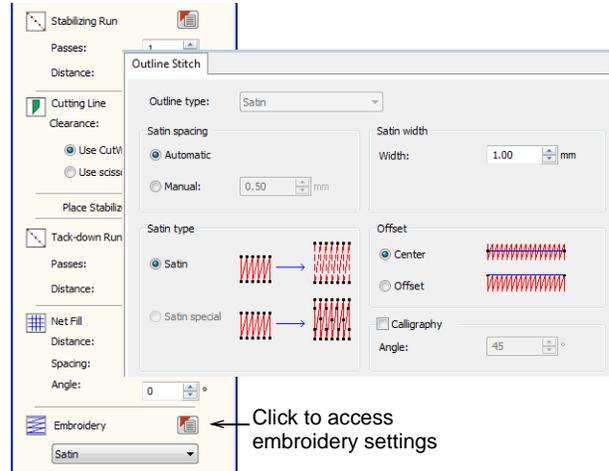
1 Select the cutwork object you want to modify.



2 To change border type, select from the **Border Type** droplist. Components are listed below in stitchout order.



- Adjust cutwork component settings – e.g. embroidery type, net fill spacing, etc. See also [Cutwork / stumpwork borders](#).
- Access further settings via the object properties button. For instance, to change satin border thickness, click the icon next to **Embroidery**.



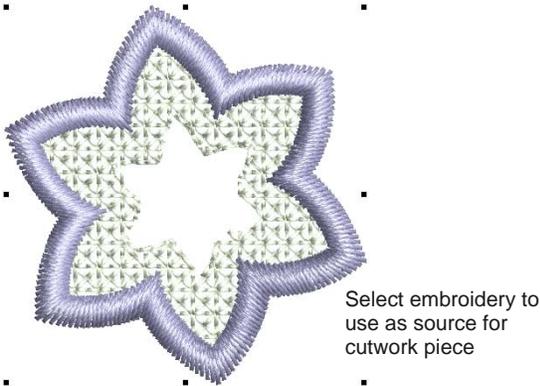
Creating cutwork pieces from existing embroidery

- Use General > Cutwork to show or hide the Cutwork Border docker. Use in conjunction with Cutwork toolbox.
- Use Cutwork > Add Cutwork Border to generate a cutwork border from selected objects.

Frequently, you want to turn existing embroidery into a cutwork piece. This may be standalone or, more commonly, intended as a sub-design in a larger design. You have two choices – either a stumpwork border, usually with a wireline, or a simple cut. In the scenario shown here, we turn an existing border into a cutwork border. See also [Digitizing stumpwork](#).

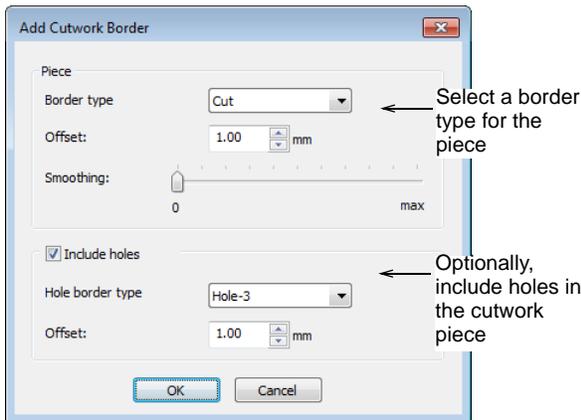
To create a cutwork piece from existing embroidery

- 1 Open an existing design or digitize required embroidery objects.



- 2 Select all objects and click the **Add Cutwork Border** icon.

The **Add Cutwork Border** dialog assumes you want to create a cutwork piece. However, if your selected object/s contain holes, you can also turn them into cutwork.



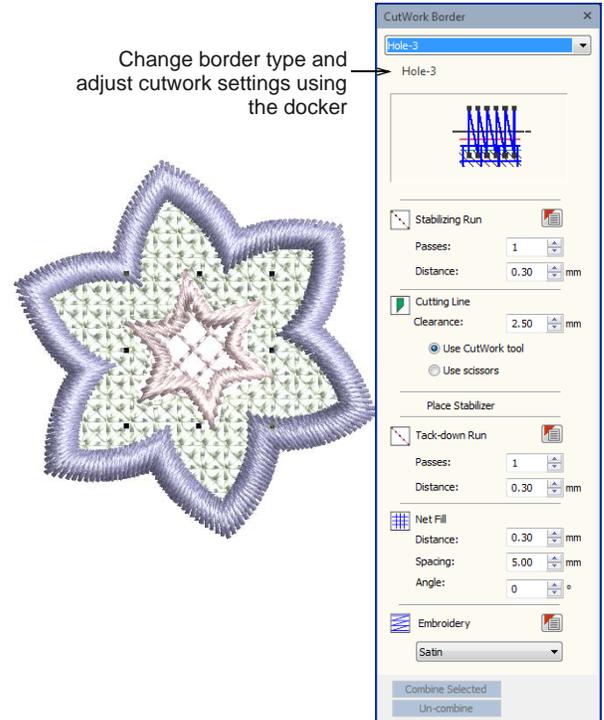
- 3 Specify the border type you want to apply:

Setting	Purpose
Border type	You have a choice of stumpwork piece or simple cut.
Offset	By default, the cutwork piece will be offset from the selected object/s by a small margin. Adjust as necessary.
Smoothing	Depending on selected shape, adjust smoothing with the slider bar. This determines how closely the generated cutwork piece follows the source.

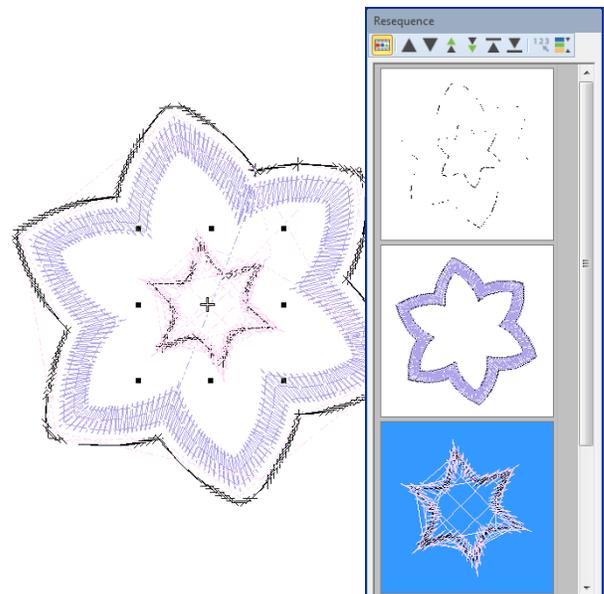
- 4 Optionally, tick **Include Holes** if you want to turn holes in your piece into cutwork.

- ▶ There are a number of hole types to choose from as well as a simple cut. See also **Border types**.
- ▶ The cutwork hole also will, by default, be offset from the originating hole. Adjust as needed.

- 5 Click **OK**. Make any additional modifications using the **Cutwork Border** docker.



- 6 Optionally, turn off **Artistic View (T)** to view cutting lines.

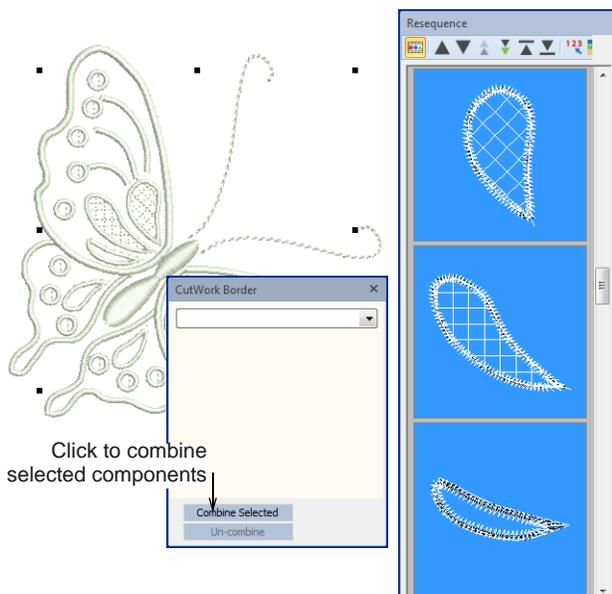




Note The resulting object can be treated as a standalone cutwork piece or it can be easily turned into stumpwork and incorporated into a larger design. See [Digitizing stumpwork](#) for details.

Combining cutwork components

There could be dozens of cutwork objects in an entire design. Components belonging to separate cutwork objects can be sequenced to minimize cutting needle changes. When you select more than one cutwork object, the **Combine Selected** button becomes available. Click to combine all cutting lines. Cutting is optimized so that the four cutting tool positions are only employed once per design.



Note In complicated designs containing mixed embroidery and multiple cutwork, it may not be possible to sequence all cutwork objects together.

Digitizing stumpwork

Stumpwork pieces are generally created on a backing fabric and transferred to another, 'ground fabric'. The cut is always done last, after the embroidery. Through the use of padding, beads, wire and/or needle lace

stitches it becomes three-dimensional in contrast to flat embroidery.



The difficulty for anyone trying to create this type of embroidery is to visualize the complete design. BERNINA Embroidery Software allows you to visualize all components of a stumpwork design in a single design window. At the same time, it lets you edit each piece and output to machine individually. See also [Outputting stumpwork designs](#).

Stumpwork scenarios

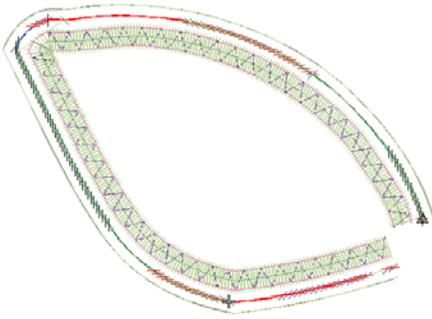
Stumpwork usually conforms to one of the following scenarios:

- ▶ Generate stumpwork piece from existing embroidery.
- ▶ Digitize stumpwork pieces from scratch with wirelines.
- ▶ Digitize additional wirelines to lend support and shape.
- ▶ Turn resulting pieces, including any additional embroidery inside the border, into stumpwork 'sub-designs'.

Typical stumpwork

Most stumpwork involves the use of wirelines to provide body and shape to the raised object. The process involves first sewing a guidetrack within which to place the wireline. Next a tackdown is used

to sew the wireline into position within the guidetrack. Finally cover stitching is added, usually satin.



Stumpwork components

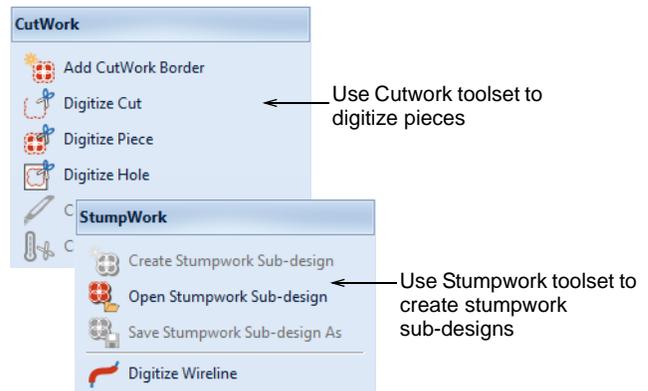
Stumpwork consists of some or all of the following digitized components. Each is separated in the stitching sequence by a machine stop.

Components	Notes
 Stabilizing run 1	This is internal to the stumpwork. It is not needed with wireline embroidery but may be required with other types. Stabilizing runs are used to reduce any deformation in the material prior to embroidery.
 Embroidered border	Typical stumpwork makes use of a wireline but other borders may be used.
Stop	If you use wireline, all necessary stitching and stops are included to allow you to place and sew the wireline.
 Stabilizing run 2	This is external to the stumpwork. This is generally used to stabilize the fabric for cutting.
Stop	Change to a cutting tool or cut stumpwork out by hand.
 Cutting line	Currently, a cutting line is automatically generated for cutting needles to follow.

Stumpwork toolset

In BERNINA Embroidery Software, stumpwork is considered a form of cutwork. It involves firstly the creation of cutwork pieces and then their transformation into stumpwork sub-designs. The two toolboxes contain all tools needed to digitize

stumpwork pieces from scratch or create from existing embroidery.



- ▶ The **Digitize Piece** tool allows you to create cutwork objects with up to five layers of embroidery and cutting components, including stabilizing runs, tackdown runs, cuts, embroidery, and net fills.
- ▶ Alternatively, the **Add Cutwork Border** tool allows you to create stumpwork pieces from existing embroidery.
- ▶ The **Stumpwork** toolset allows you to create cutwork 'sub-designs'. In effect, these are embedded designs which are displayed as part of the 'base design' but are not included in the stitchout. Instead, they are stitched out as separate components.

Production recommendations

Here are some recommendations for producing stumpwork on the machine:

- ▶ Use the 44C foot. It is transparent and is large enough to help hold the wire in place as it is tacked down.
- ▶ Use a foot control when tacking down the wire – it's easier to stop and start that way.
- ▶ Reduce to slow speed with the sliding speed control.
- ▶ After the wire is tacked down, it is ok to stitch at fast speed.
- ▶ When working with a stumpwork piece that has additional wirelines – such as a leaf with central veins – make sure the internal wires do not overlap the border.
- ▶ Alternatively, cut the internal wires slightly short. This means that stitching can continue right up to the border, thereby avoiding unwanted gaps.

Visualizing stumpwork



Use View > Show Stumpwork to show or hide any stumpwork sub-designs included in a design.

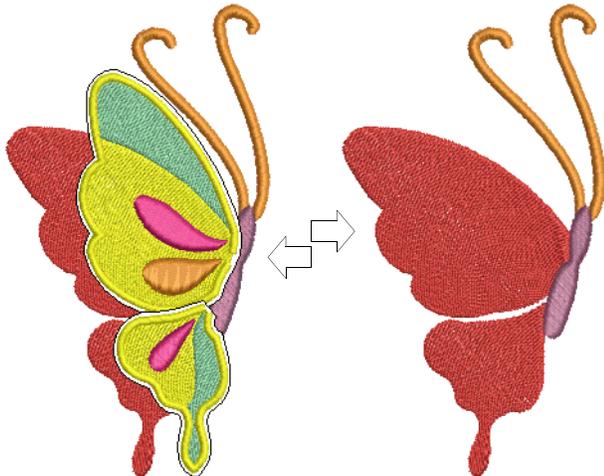


Use Stumpwork > Open Stumpwork Sub-design to view and edit the stumpwork sub-design.

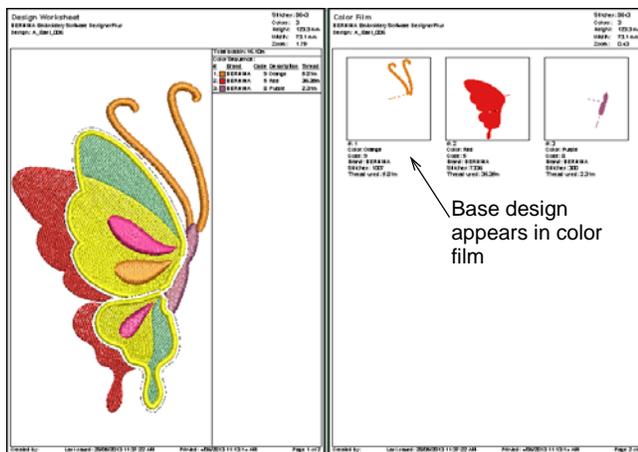


Click General > Print Preview to preview the print preview onscreen.

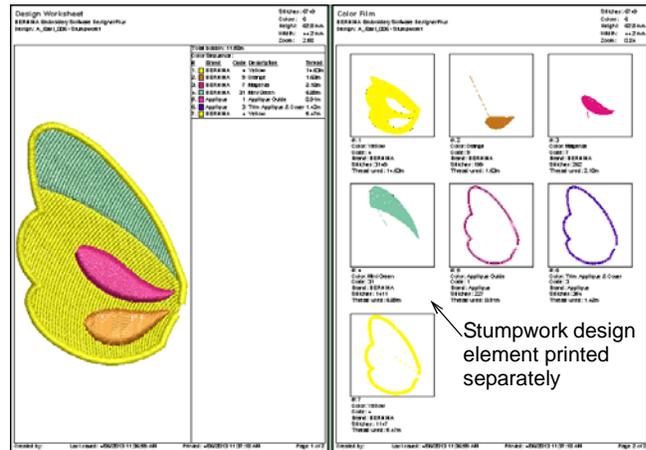
Use the **Show Stumpwork** toggle on the **View** toolbar to show or hide stumpwork objects within a design.



The worksheet preview shows the entire stumpwork design in preview but only the base design in the color film.



To print out a worksheet for the stumpwork portions of a design, open the stumpwork object in its own window and preview it there.



Tip Study the Stumpwork_Sample3 design included in the designs folder. Try stitching it out to practice the techniques involved. Check your BERNINA machine documentation.

Creating stumpwork from existing embroidery



Use General > Cutwork to show or hide the Cutwork Border docker. Use in conjunction with Cutwork toolbox.



Use View > Show Stumpwork to show or hide any stumpwork sub-designs included in a design.



Use Cutwork > Add Cutwork Border to generate a cutwork border from selected objects.



Use Cutwork > Cut Closed Border to cut a closed cutwork border and leave an opening for wire ends.



Use Stumpwork > Create Stumpwork Sub-design to create stumpwork from a selected cutwork piece.



Use Stumpwork > Open Stumpwork Sub-design to view and edit the stumpwork sub-design.

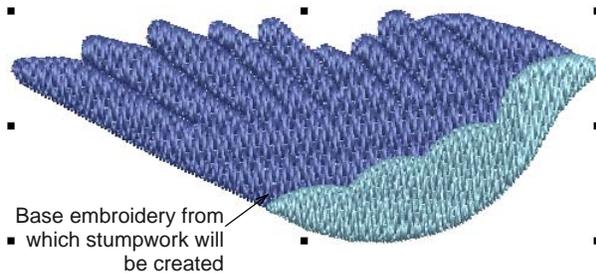
Creating stumpwork from existing embroidery is probably the most common stumpwork scenario. It usually involves a two-step process:

- ▶ Select embroidery shapes and turn them into cutwork pieces.
- ▶ Turn those cutwork pieces into stumpwork sub-designs within a larger design.

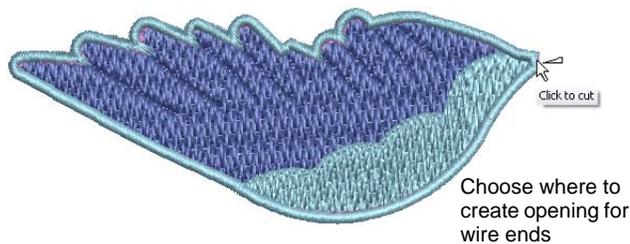
The resulting stumpwork embroidery is usually sewn out separately with wire and border. It is then cut out and sewn or attached to the base design. Required tools are shown above.

To create stumpwork from existing embroidery

- 1 Open an existing design or digitize embroidery objects as required. Add any stitch effects you want.



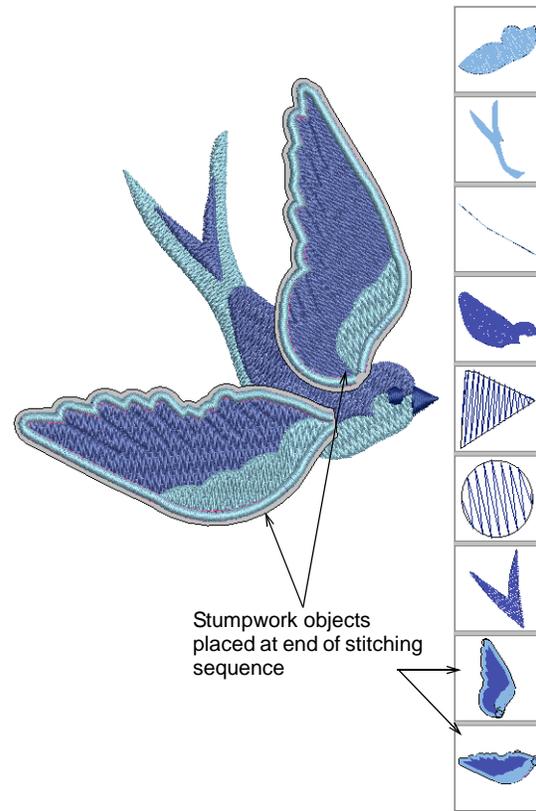
- 2 Select all objects and click **Add Cutwork Border** to create the stumpwork piece. See [Creating cutwork pieces from existing embroidery](#) for details.
- 3 Once the cutwork piece is created, select it and use the **Cut Closed Border** tool to leave an opening for wire ends. You are prompted to mark a cutting point.



- 4 Select the resulting object group and click **Create Stumpwork Sub-design**.

Selected objects are bundled into a composite stumpwork object which effectively resides on a separate 'layer' to the base design. It can be edited independently by double-clicking or clicking

Open Stumpwork Sub-design. See [Editing stumpwork](#) for details.



Tip Study the Stumpwork_Sample2 design included in the designs folder. Try stitching it out to practice the techniques involved. Check your BERNINA machine documentation.

Creating stumpwork with a wireline

-  Use General > Cutwork to show or hide the Cutwork Border docker. Use in conjunction with Cutwork toolbox.
-  Use View > Show Stumpwork to show or hide any stumpwork sub-designs included in a design.
-  Use Cutwork > Digitize Piece to digitize a cutout piece in hooped fabric, together with supporting embroidery. Right-click for settings.
-  Use Cutwork > Cut Closed Border to cut a closed cutwork border and leave an opening for wire ends.
-  Use Stumpwork > Digitize Wireline to add a stumpwork wireline to an existing piece. Right-click for settings.
-  Use Stumpwork > Create Stumpwork Sub-design to create stumpwork from a selected cutwork piece.
-  Use Stumpwork > Open Stumpwork Sub-design to view and edit the stumpwork sub-design.

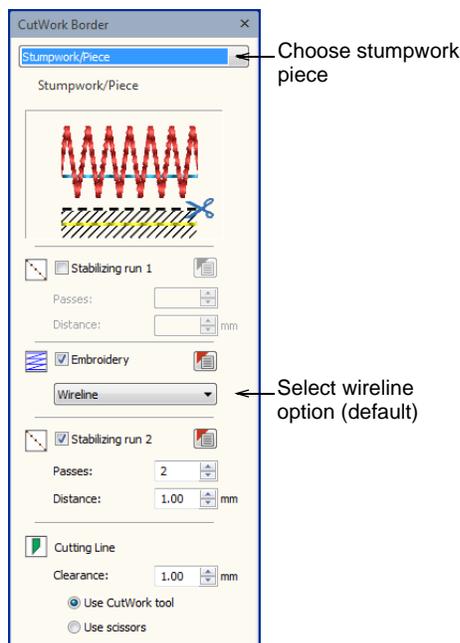


Use **Stumpwork > Save Stumpwork Sub-design As** to save a stumpwork sub-design as a separate design file.

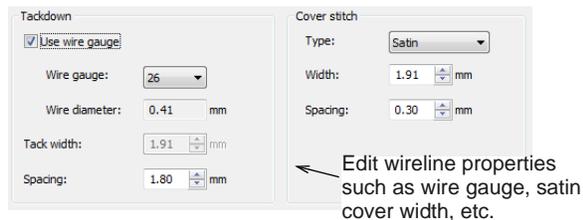
Digitizing with wire and fabric is probably the commonest scenario for creating stumpwork. This involves digitizing a simple cutwork piece and turning it into a stumpwork sub-design. This is then sewn onto a separate piece of fabric, often patterned, with the inclusion of a wire, and then cut out and attached to the base design. Required tools are listed above.

To digitize stumpwork with a wireline

- 1 Open the **Cutwork Border** docker and preset your preferences. Generally you will use a wireline. See [Cutwork / stumpwork borders](#) for details.



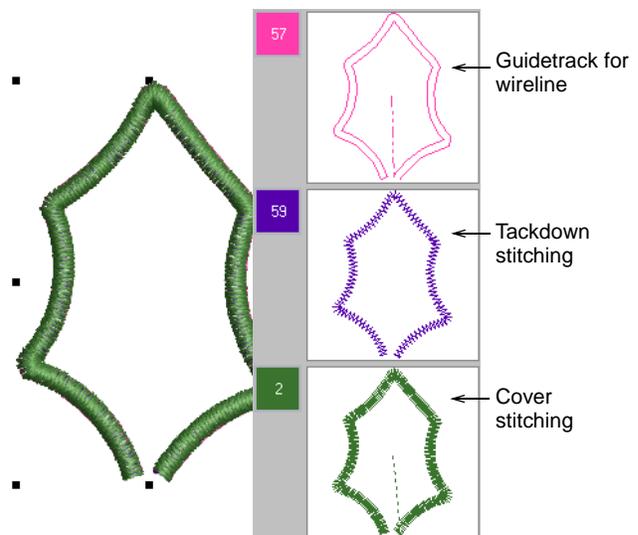
- 2 Select the **Digitize Piece** tool and make sure **Wireline** is selected as your embroidery type.
- 3 Open the object properties to adjust your wireline gauge and cover stitch settings.



If you choose **Wireline** as your embroidery type, the following properties can be set:

Setting	Notes
Tackdown stitching	The gauge of wireline you are using determines the width of guidetrack and tackdown stitching. You can choose to factor it into your cutwork properties or use the default value.
Wire gauge	The wire gauge numbers correspond to the American Wire Gauge (AWG) codes. This is a standardized wire gauge system for the diameters of round, solid, nonferrous, electrically conducting wire. The larger the AWG number or wire gauge, the smaller the physical size of the wire.
Cover stitch	Satin is the default. Alternatively, Blanket can be used. Width and spacing can be adjusted for both.

- 4 Digitize your border as you would any other closed object.
- 5 Press **Enter** to complete. A stumpwork object is generated based on the **Stumpwork Border** presets.
- 6 Select and use the **Cut Closed Border** tool to cut the border and leave an opening for wire ends. You are prompted to mark a cutting point.



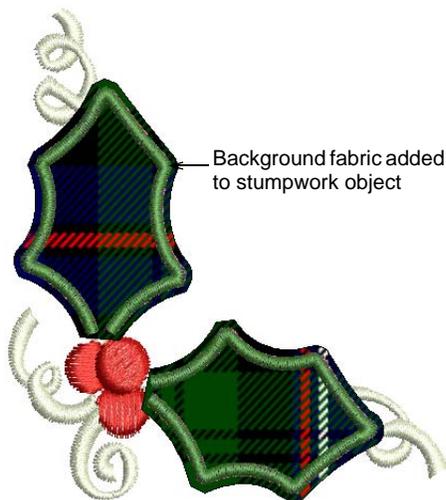
- 7 Optionally, use the **Digitize Wireline** tool to insert additional wirelines for extra support. See [Digitizing additional wirelines](#) for details.
- 8 Select the objects and click **Create Stumpwork Sub-design**.

Selected objects are bundled into a composite object which resides on a separate 'layer' to the base design. The stumpwork layer does not appear

in the **Color Film** because it is separate to the main design.

- 9 Optionally, edit your stumpwork object by double-clicking or clicking **Open Stumpwork Sub-design**.

The stumpwork object opens in a separate window where you can edit properties such as wire gauge, satin cover width and offsets, etc. Optionally, add a background indicative of the fabric you will be using. See **Editing stumpwork** for details.



Tip Study the Stumpwork_Sample1 design included in the designs folder. Try stitching it out to practice the techniques involved. Check your BERNINA machine documentation.

Creating closed stumpwork borders



Use General > Cutwork to show or hide the Cutwork Border dock. Use in conjunction with Cutwork toolbox.



Use View > Show Stumpwork to show or hide any stumpwork sub-designs included in a design.



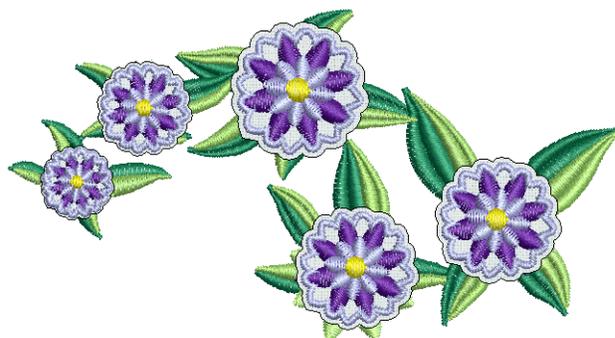
Use Cutwork > Digitize Piece to digitize a cutout piece in hooped fabric, together with supporting embroidery. Right-click for settings.



Use Stumpwork > Create Stumpwork Sub-design to create stumpwork from a selected cutwork piece.

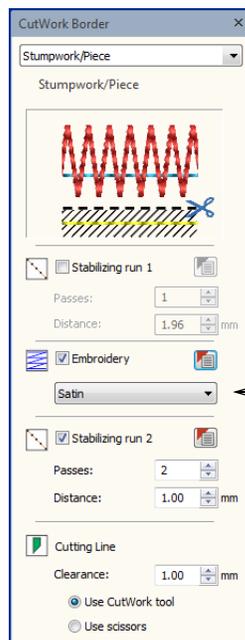
Another simple scenario for the use of stumpwork involves creating design elements within a closed border. Like open-border stumpwork, these elements, or 'sub-designs', are sewn onto a separate piece of fabric, usually patterned, but without the inclusion of

a wire. They are then cut out and attached to the base design. Required tools are listed above.



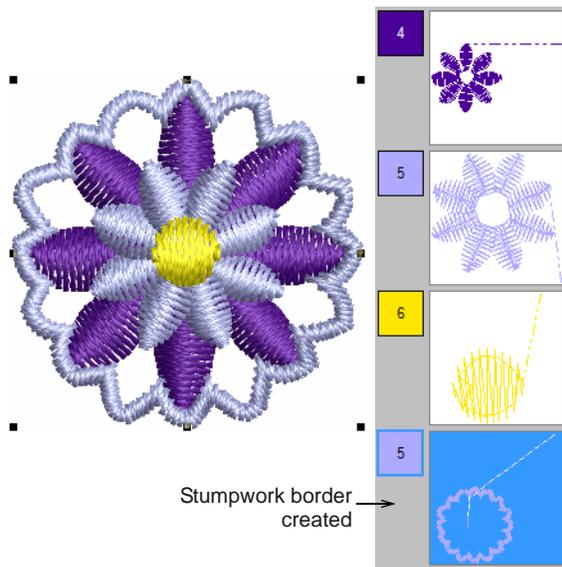
To digitize a closed stumpwork border

- 1 Use your normal embroidery tools to create a design, or take an existing design you want to modify. See also **Digitizing Methods**.
- 2 Select the **Digitize Piece** tool and adjust the embroidery type as preferred – e.g. Satin border.



Choose embroidery for the border – e.g. Satin

- 3 Digitize your border as you would any other closed object.



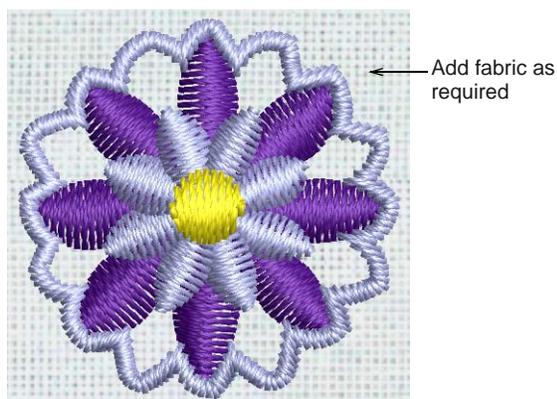
- 4 Press **Enter** to complete. A stumpwork object is generated based on the **Cutwork Border** presets. See **Cutwork interface** for details.

- 5 Select the resulting border and everything else you want included in the stumpwork sub-design, and click **Create Stumpwork Sub-design**.

Selected objects are bundled into a composite object which resides on a separate 'layer' to the base design.

- 6 Optionally, edit your stumpwork object by double-clicking or clicking **Open Stumpwork Sub-design**.

The stumpwork object opens in a separate window where you can edit its properties. Optionally, add a background indicative of the fabric you will be using. See **Editing stumpwork** for details.



- 7 Close the sub-design to return to the base design.

You will be prompted to save.



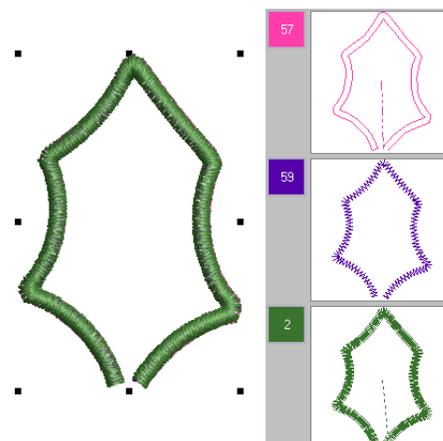
Editing stumpwork

-  Use **General > Cutwork** to show or hide the **Cutwork Border** dock. Use in conjunction with **Cutwork** toolbox.
-  Use **View > Show Stumpwork** to show or hide any stumpwork sub-designs included in a design.
-  Use **Stumpwork > Open Stumpwork Sub-design** to view and edit the stumpwork sub-design.
-  Use **Cutwork > Cut Closed Border** to cut a closed cutwork border and leave an opening for wire ends.
-  Use **Stumpwork > Digitize Wireline** to add a stumpwork wireline to an existing piece. Right-click for settings.
-  Use **Stumpwork > Save Stumpwork Sub-design As** to save a stumpwork sub-design as a separate design file.

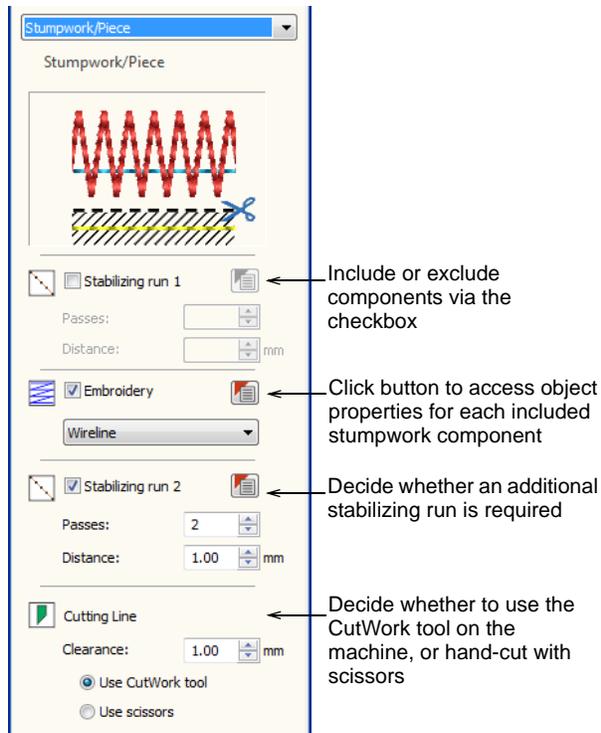
Once the **Create Stumpwork Sub-design** function has been applied, the resulting stumpwork resides on a separate 'layer' to the base design. Stumpwork pieces can be edited as standalone designs. Required tools are listed above.

To edit stumpwork

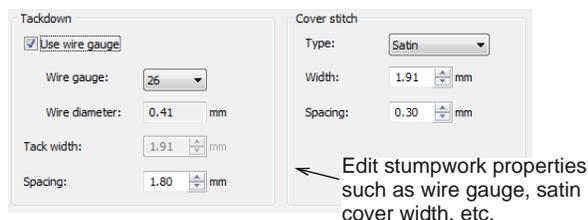
- ▶ Select the stumpwork object you want to edit.



- ▶ Double-click selection or click **Open Stumpwork Sub-design**. The stumpwork opens in a separate design tab.
- ▶ Edit borders via the **Cutwork Border** docker – e.g. add or remove stabilizing runs or cutting lines. See also **Cutwork / stumpwork borders**.

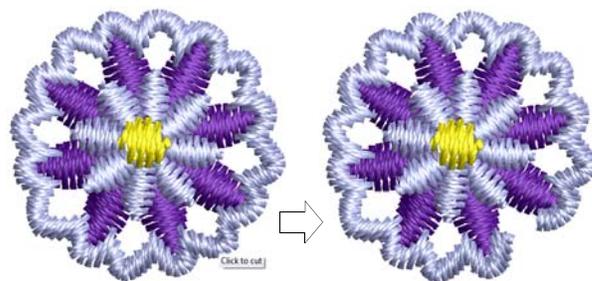


- ▶ Click the **Object Properties** icon to access additional settings for each included stumpwork component. Edit properties such as wire gauge, satin cover width and offsets.

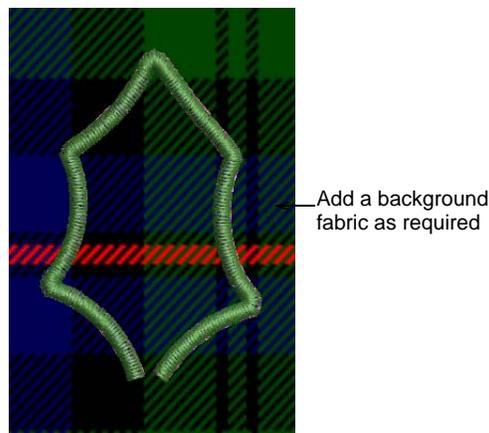


- ▶ Digitize other objects as needed. Use the **Digitize Wireline** tool to insert wirelines for extra support and shape. See **Digitizing additional wirelines** for details.

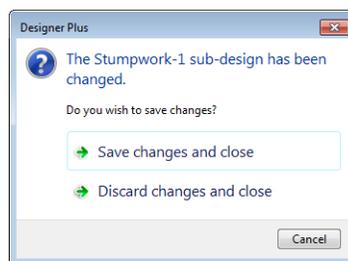
- ▶ Use the **Cut Closed Border** tool to leave an opening for wire ends.



- ▶ Sequence objects in the **Color Film** docker as necessary.
- ▶ Use the **Design > Background** command to specify a fabric type if you are creating stumpwork with fabric and wire.



- ▶ Close the design tab to return to the base design. You will be prompted as shown.



- ▶ Alternatively, click **Save Stumpwork Sub-design As** if you want to save the stumpwork piece as a separate design file.

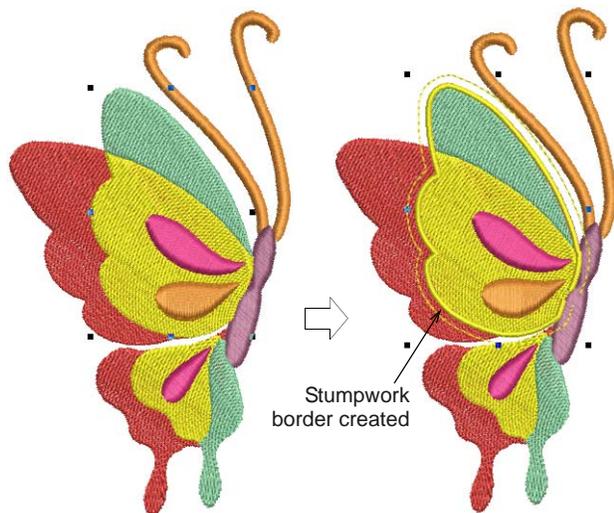
Digitizing additional wirelines

-  Use Stumpwork > Open Stumpwork Sub-design to view and edit the stumpwork sub-design.
-  Use Stumpwork > Digitize Wireline to add a stumpwork wireline to an existing piece. Right-click for settings.

For additional support, you may find that you need to add wirelines to an existing stumpwork piece. Additional wirelines provide more shape than a simple border wire.

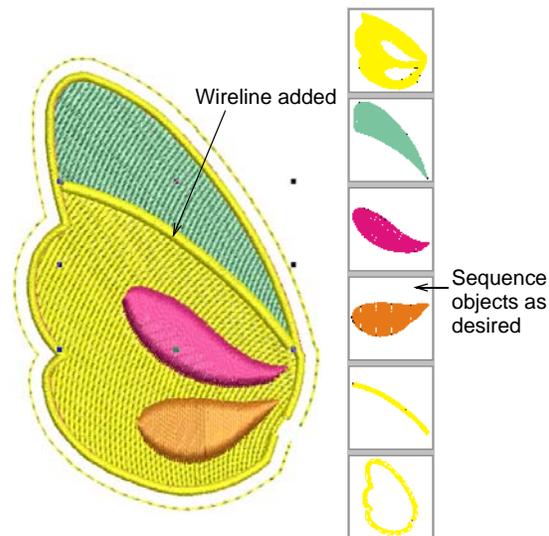
To digitize additional wirelines

- ▶ Create cutwork borders from existing embroidery or digitize manually as preferred.



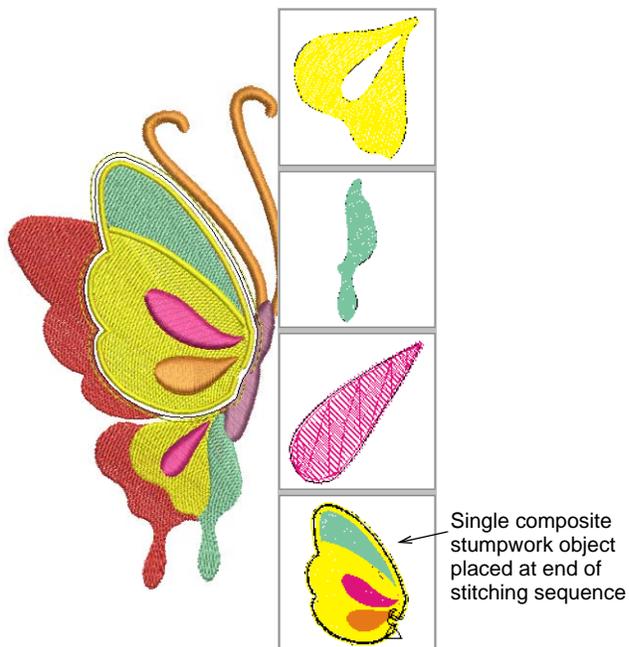
- ▶ Before turning selected objects into a stumpwork sub-design, select the **Digitize Wireline** tool and digitize additional wirelines as you would any open object.
- ▶ Alternatively, if you have already created a stumpwork sub-design, double-click or click **Open Stumpwork Sub-design**. Then select the **Digitize Wireline** tool and add wirelines to the sub-design.

The software automatically creates the wire placement tracks, wire tackdown and cover stitching.



- ▶ Sequence objects you want to include in the **Color Film** docker.
- ▶ If you haven't already done so, select all objects and click **Create Stumpwork Sub-design**.

Selected objects are bundled into a composite stumpwork object which effectively resides on a separate 'layer' to the base design.



- ▶ If you are editing a sub-design, simply close the tab, save, and return to the base design. See also [Editing stumpwork](#).

CHAPTER 26

RAISED EMBROIDERY

BERNINA Embroidery Software provides tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces.

Quilting creates dimension by stuffing or filling areas to produce a raised surface. In BERNINA Embroidery Software, the quilting feature consists of two components: Raised Satin to create 'puffy embroidery', and Trapunto Outlines to turn puffy embroidery designs into trapunto designs.

Needle felting, also called 'dry felting', is a popular fiber-arts craft that creates felt without the use of water. In BERNINA Embroidery Software, a dedicated PunchWork tool allows you to create felting objects and designs for use with the BERNINA Rotary Hook Punch.

Couching in embroidery refers to the technique of fixing a thick cord or yarn onto the fabric, usually for decorative purposes. BERNINA Embroidery Software lets you create couching designs for use with the BERNINA Free Motion Couching Foot #43.

This section covers tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces, specifically by means of quilted embroidery, needle felting, and couching.



Quilted embroidery

Quilted embroidery creates dimension by stuffing or filling areas to produce a raised surface. It employs a

technique known as 'trapunto', also referred to as 'stuffed embroidery'.



Quilting techniques

There are a number of techniques for creating trapunto designs.



Note To make sure your design is being displayed correctly 3D, particularly with **Raised Satin** in **Artistic View**, calibrate your monitor. See [Calibrating the monitor](#) for details.

Trapunto techniques

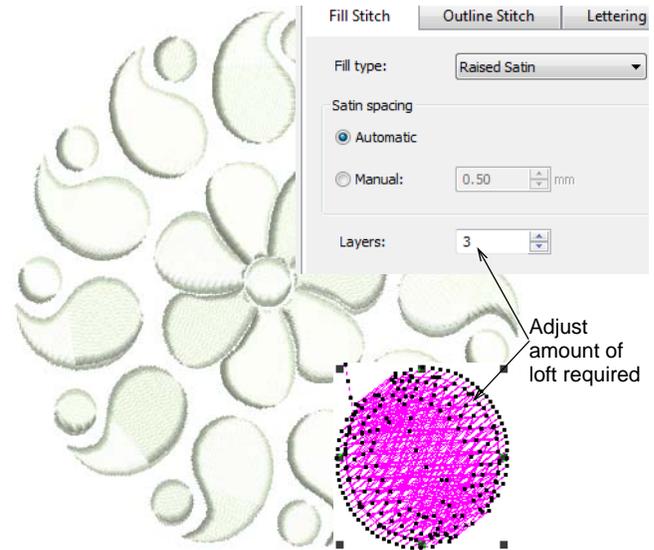
Traditional hand trapunto involves sewing two layers of fabric together with a motif outline. The underside is then slit and stuffed with yarn or cotton.

A modern technique used to create trapunto – sometimes called machine trapunto or cut-away trapunto – is to mark the design pattern on top of the quilt fabric with a water soluble marker. A layer of batting is then pinned to the underside of the fabric and two layers are stitched together. The batting is trimmed close to the stitching to create the embossed design. The quilt is then constructed by sewing the quilt top to the quilt back with another layer of batting in between.

Raised satin

Another technique is to use layers of thread instead of stuffing or batting to create dimension. The embroidery design consisting of multiple layers of satin stitching is first stitched onto **Aqua Mesh** water-soluble stabilizer. Then a top and bottom layer

of fabric are added before the final outline is stitched around the design. See also [Creating satin fills](#).



Note Recommended settings for best loft are 0.30mm manual for satin spacing with 4 layers.

Quilting in BERNINA Embroidery Software



Use Edit > Create Trapunto Outlines in conjunction with Raised Satin to create quilt stitching for a raised 'quilted' look.



Use Stitches > Raised Satin Fill to create raised embroidery designs consisting of multiple layers of satin stitching.



Use Stitches > Raised Satin Outline to create raised satin borders – can be used with trapunto for quilting effects.

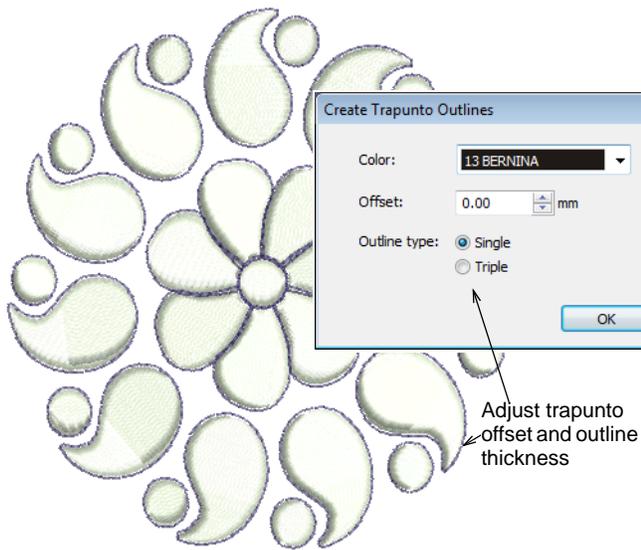
In BERNINA Embroidery Software, the quilting design work relies on two main tools:

- ▶ **Raised Satin:** This allows you to create 'puffy embroidery'. Outlines can be used for lettering and special calligraphy effects. See also [Creating freehand embroidery](#).
- ▶ **Trapunto Outlines:** This allows you to turn puffy embroidery designs into trapunto quilting designs.

The puffy embroidery component allows you to create raised embroidery consisting of multiple layers of satin stitches. This is as an alternative to stuffing with yarn or batting. The trapunto component allows you to stitch layers of fabric over the raised satin.

The **Trapunto Outlines** feature is used exclusively with **Raised Satin** to create a 'quilted' look. When activated, this feature always defaults to the next unused color so as to force the machine to stop before

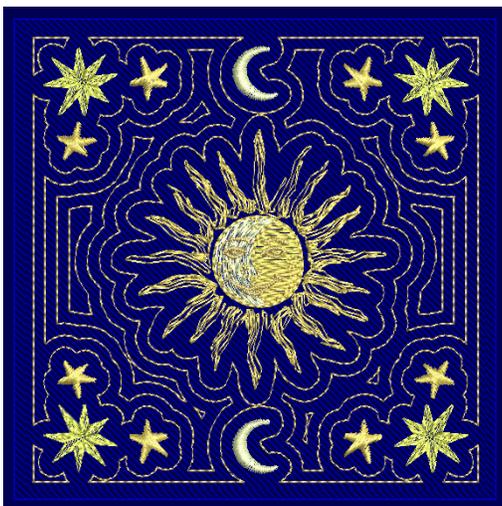
trapunto outlines are stitched. This allows you to place the covering fabric.



Tip Study the quilting design included in the designs folder. Try stitching it out to practice the techniques involved. Check your BERNINA machine documentation.

Creating quilt block layouts

Using **Layout** tools, it's a simple matter to define quilt blocks of specified size. You can then arrange elements around the block, with or without a central design element. See also [Creating quilting backgrounds](#).



Overall process

The overall process is as follows:

- ▶ Create or open a design or element that fits within one hooping.
- ▶ Define your quilt block shape and size.
- ▶ Lay out copies of the design around the work area, placed and orientated automatically.
- ▶ Define multiple hoopings for the design layout.
- ▶ Split the layout into separate stitching files.
- ▶ Include reference marks for positioning.



Note Work area has no bearing on hoop size. When used in conjunction with the **Multi-Hooping** toolset, you can place multiple hoopings around an entire work area. See [Creating multiple hoopings](#) for details.

Defining quilt blocks



Use **View > Show Quilt Block** to show or hide a quilt block defined under **Layout**.

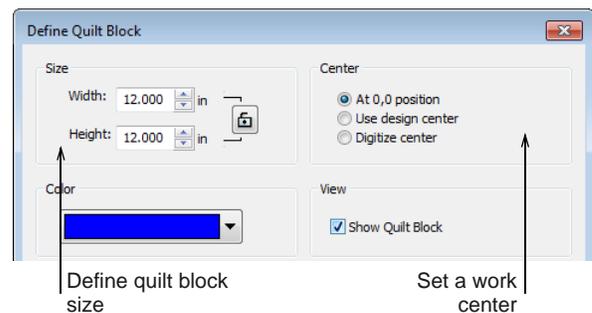


Use **Layout > Define Quilt Block** to define a quilt block of a specified size.

Before you can create a quilt block layout, you first need to define a quilt block corresponding to the patch you intend to embroider. While quilt blocks tend to be in the range of 8" x 8" to 12" x 12", the software lets you define an area up to 10' x 10'. This allows you to create a 'block' equal to the finished quilt size. You can then, for instance, create a single continuous background for the entire quilt.

To define a quilt block

- ▶ Set the measurement system via a droplist on the **General** toolbar. See [Setting measurement units](#) for details.
- ▶ Select **Define Quilt Block** to set a new quilt block.

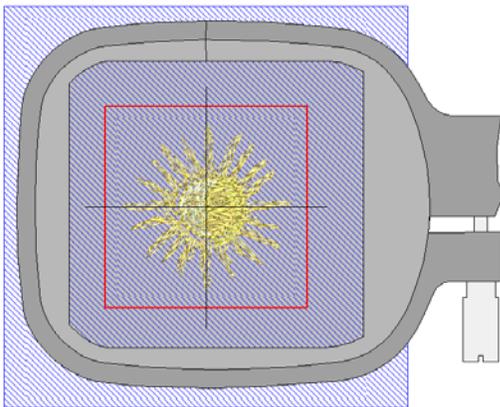


- ▶ Specify a quilt block size and color.
 - ▶ Use the lock to maintain width and height proportions in rectangular layouts.
 - ▶ The color is just for on-screen viewing. It has no effect on design output.

- ▶ Choose a centering option:

Center	Purpose
At 0,0 position	This will place the quilt block at the center of the design space. You can use the Layouts tools to locate designs in the quilt block.
Use design center	This will place the quilt block at the center of existing design extents. This ensures the design is at the center of the quilt block.
Digitize center	This allows you to digitize the center point for the quilt block anywhere in the design space. This allows the quilt block to be offset to the actual design.

- ▶ Click **OK** to confirm. If the checkbox is activated in the dialog, the quilt block will display by default. Otherwise, use the **Show Quilt Block** toggle.



Creating quilt block layouts

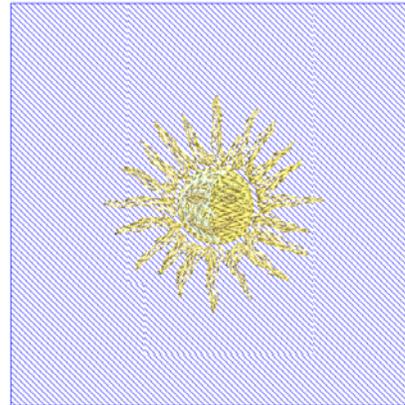
-  Use General > Insert Embroidery to import embroidery design files into the current design.
-  Use Layout > Auto Center to Quilt Block to automatically move selected object/s to the center of the quilt block.
-  Use Layout > Lay out to Quilt Block to create copies of selected object/s in each corner of the quilt block.
-  Use Context > Quilt Block Margin to specify a margin (in mm) between the edge of quilt block and designs.
-  Use Context > Copy to Center to create a copy of selected object/s at the center of the quilt block.

Create quilt block layouts using **Layout** tools together with selected design/s and/or object/s.

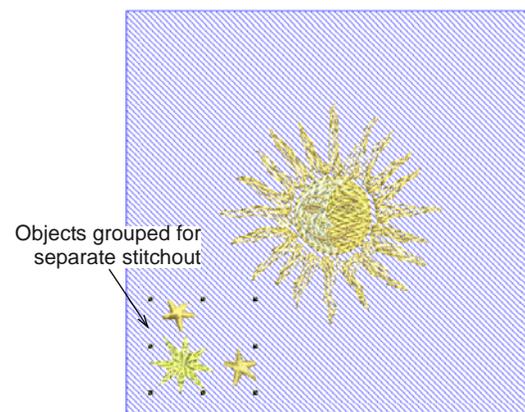
To create a quilt block layout

- ▶ Define your quilt block according to its application. See [Defining quilt blocks](#) for details.

- ▶ Insert a design and/or select a design/s or object/s already on-screen. See [Inserting designs](#) for details.

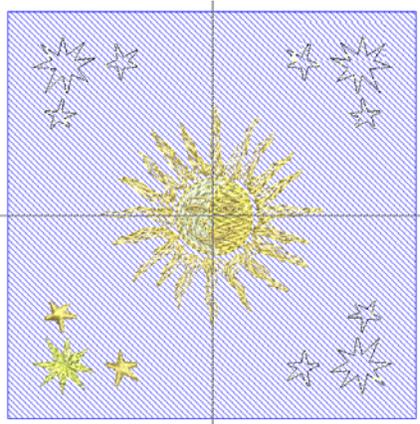


- ▶ Resize as necessary. Optionally, use the **Auto Center to Work Area** tool to move selected object/s to the center of the work area. Press **Enter** to confirm.
- ▶ Insert further objects as needed. Move to the desired position in the work area. Use arrow keys to nudge into position.

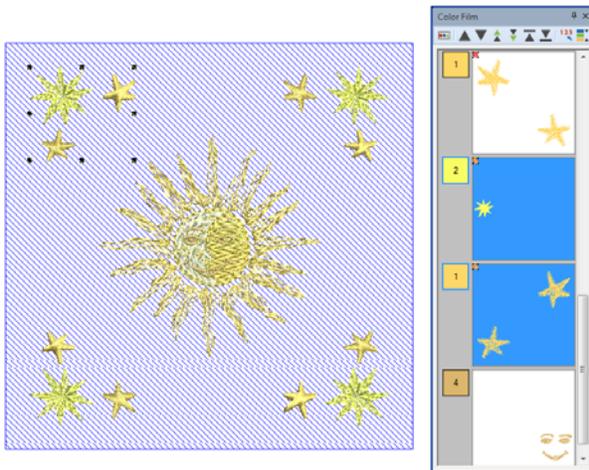


- ▶ Before you copy the design to the work area, you need to decide whether to merge color blocks:
 - ▶ If you want the selected objects to sew out in separate hoopings, make sure they are grouped before proceeding.
 - ▶ Alternatively, leave the objects ungrouped, and they will be color-optimized for a single stitchout – i.e. color block by color block.

- ▶ Click **Lay out to Quilt Block**. Wireframe copies are mirrored about vertical and horizontal axes.

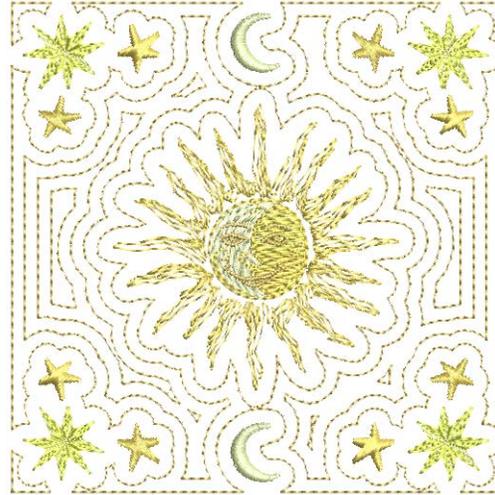


- ▶ Use the **Context** toolbar to control the duplicates:
 - ▶ Use **Quilt Block Margin** to specify a margin (in mm) between the edge of the quilt block and the duplicates.
 - ▶ Optionally, use **Copy to Center** to create a copy of selected object/s at the center of the quilt block.
- ▶ Press **Esc** to cancel or **Enter** to confirm.
- ▶ Check the design layout in the **Color Film**. Manually resequence colors where necessary. See [Sequencing embroidery objects](#) for details.



Tip When used in conjunction with the **Multi-Hooping** toolset, you can place multiple hoops around a single design. See [Creating multiple hoopings](#) for details.

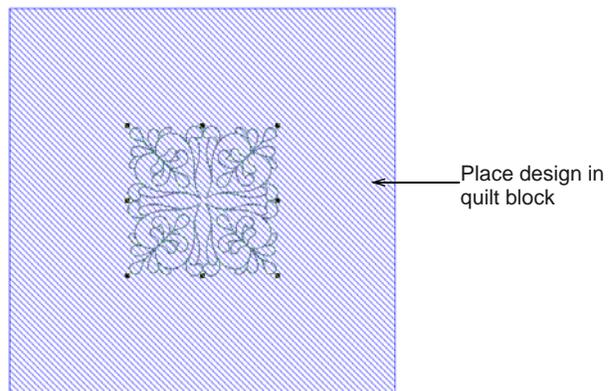
- ▶ Optionally, use the **Mirror-Merge** or/and **Quilting Background** tool to add more objects and stitching.



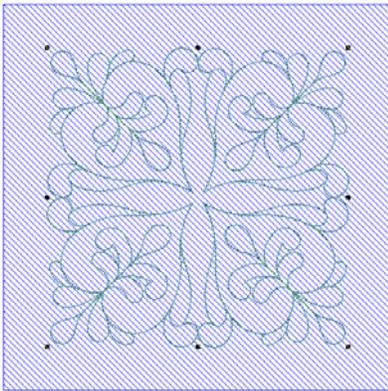
Automatic re-sizing

- Use General > Insert Embroidery to import embroidery design files into the current design.
- Use Layout > Auto Center to Quilt Block to automatically move selected object/s to the center of the quilt block.
- Use Layout > Auto Fit to Quilt Block to automatically fit selected object/s to the quilt block.

Automatic re-sizing makes it easy to maximize a design within a defined quilt block. Simply import the design and place in the defined quilt block.



Then click **Auto Fit to Quilt Block** to automatically fit the selected object/s to the defined quilt block.



Design automatically resized to fit quilt block

Creating quilting backgrounds



Use **Edit > Quilting Background** to create 'echo' quilting blocks.

The **Outline Design** tool is sometimes used to create 'echo' quilting designs. However, the **Quilting Background** feature provides a better alternative. Use it, for instance, to create stipple quilting to fill quilt blocks. Optionally add separate offset outlines around a design before background quilting.



Note When using the **Quilting Background** tool, you are limited to one quilting background per design. A quilting background cannot be applied to a second object. When creating mixed quilting, you will need to create a new design via **File > New**.

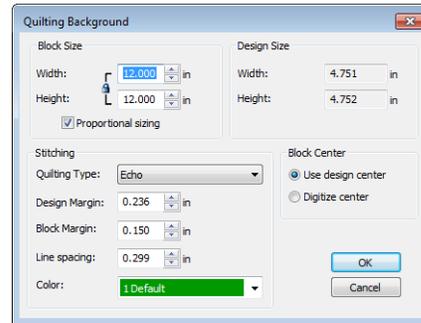
To create a quilting background

- 1 Open the design you want to include within the quilting block.

The **Quilting Background** feature is activate when the design window contains one or more embroidery objects.

- 2 Click the **Quilting Background** icon.

The **Quilting Background** dialog opens. The dialog is grouped into four functional areas: Block Size, Design Size, Stitching, and Block Center.



Note The **Design Size** panel displays height and width of the embroidery design as a reference when defining the block size.

- 3 Set the size of your quilting in the **Block Size** panel.

Height and **Width** fields define the boundary used to generate the quilt pattern. There is also a **Proportional Sizing** checkbox. When checked, the software displays a lock symbol – values change proportionally.

- 4 Use the **Stitching** panel to determine stitching characteristics:

Parameter	Description
Quilting type	Choose from a variety of quilt patterns: <ul style="list-style-type: none"> • Echo • Scroll • Stipple • Echo clipped • Scroll clipped
Design margin	Set gap between echo quilting and the design.
Block margin	Set gap between echo quilting and the block boundary.
Line spacing	Set distance between each quilting line, or loop spacing for stipple.
Color	Choose a color for generated quilting stitches from the current color palette. Default color is the last color used in the design.



Tip All spatial controls can switch between millimeters and inches, depending on the chosen

measurement system. See [Setting measurement units](#) for details.

- 5 Use the **Block Center** panel to center the design within the quilting block:

Parameter	Description
Use design center	Place the design at the center of block outline and generate the quilt pattern around it.
Digitize center	Digitize the quilting block center. Choosing this option attaches an outline of the block size with cross hairs to the cursor. Left-click to place the block center where you choose on the design, and generate the quilt pattern around it.

- 6 Click **OK** to generate stitching.



This section covers tools and techniques for expanding flat embroidery surfaces into raised or 'sculpted' surfaces, specifically by means of quilted embroidery, needle felting, and couching.

Needle felting

Needle felting, also called 'dry felting', is a popular fiber-arts craft that creates felt without the use of water. It can be created by industrial felting



Tip Optionally, add separate offset outlines around a design before background quilting. See also [Creating outlines & offsets](#).



machines, needle felting attachments like BERNINA needle-punch tool, or even hand-held tools.



The needles used in dry felting have small barbs with soft shoulders. As they penetrate the base fabric, they pull fiber or 'roving' through. Since the barbs face downwards, fibers are left behind as the needles exit. Using a single needle or small group of needles, fine details can be achieved using this technique. It is popular for 2D and 3D felted work.

BERNINA Rotary Hook Punch tool

The BERNINA 'needle-punch' tool is a cluster of three needles that are used to punch fibers through fabric. This process is normally performed as free motion sewing but can also be done in the embroidery hoop.



The tool most suitable for hoop work is the **Rotary Hook Punch** tool, since the presser foot also allows yarn, ribbon and so on to be fed through the foot

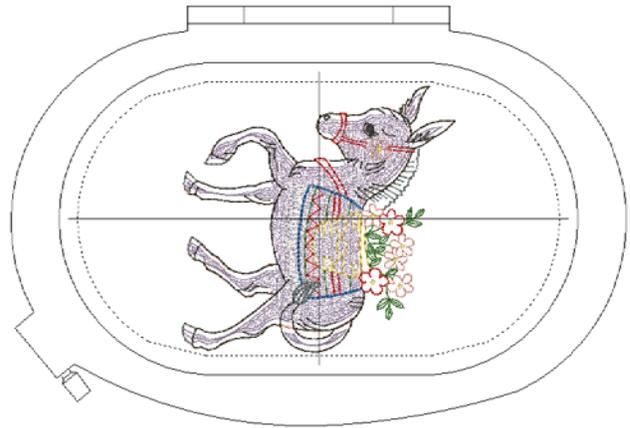
under the needles, and includes a guide as part of the accessories.

Felting with BERNINA Embroidery Software



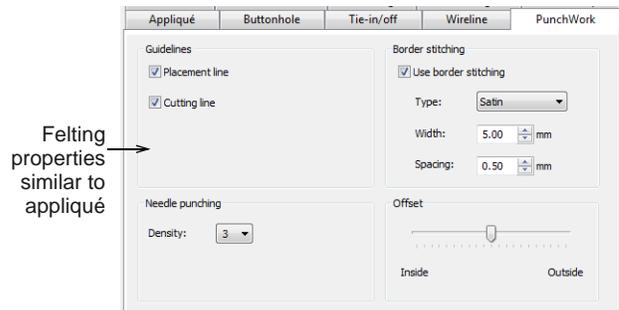
Use Digitize > PunchWork to create felting objects and designs for use with the BERNINA Rotary Hook Punch tool.

In BERNINA Embroidery Software, a dedicated **PunchWork** tool allows you to create felting objects and designs for use with the BERNINA **Rotary Hook Punch**.



PunchWork properties

The object properties for punchwork are similar to appliqué. The digitizing technique is essentially the same. See also [Creating closed-object appliqué](#).



Punchwork consists of the following components, all of which, apart from the punching itself, are optional. Each component is separated in the stitching sequence by a machine stop.

Component	Notes
Placement line	Include a guideline to assist placement of roving. Stop: Place roving evenly within placement line.
† Mandatory	

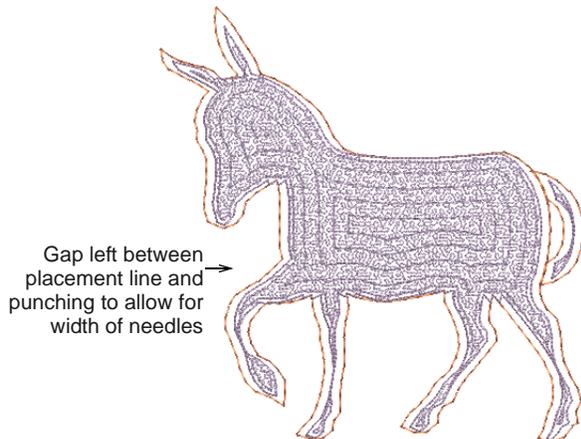
Component	Notes
Cutting line	Include a cutting line to hold down edge of the roving, and mark out the shape. Stop: Cut excess roving from around the edges. Change to punch plate and needle.
Needle punching	† Punch the felting – consists of loose tackdown and stipple stitching. Adjust density as required. Stop: Remove cutting line as required. Change back to embroidery plate and needle.
Border stitching	Include a border as desired – default is satin. Blanket stitching is also available. Set border width and stitch spacing.
Offset	Use the slider to offset borders in relation to the placement line. By default, Satin is centered, while Blanket sits inside the placement line. Adjust as required.
† Mandatory	



Tip Check fabric settings before you stitch out. If you are stitching details over felting, you may need to select a heavier fabric to compensate. See also [Changing fabrics](#).

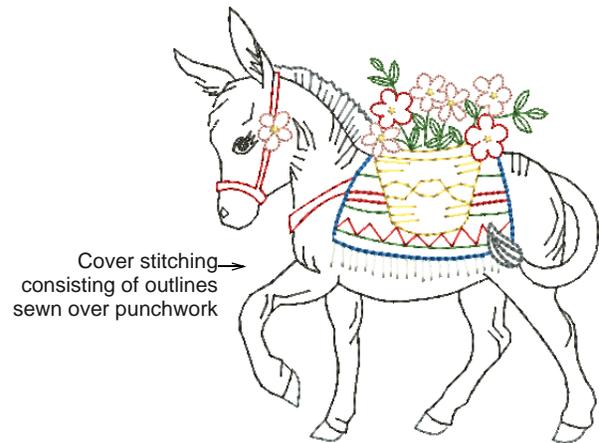
Design technique

Because you have complete control over the punchwork elements to include in your design, different approaches may be taken. The sample below includes only a placement line and felting.



Once the **roving** has been punched into position, the border stitching can be applied. In this case, border

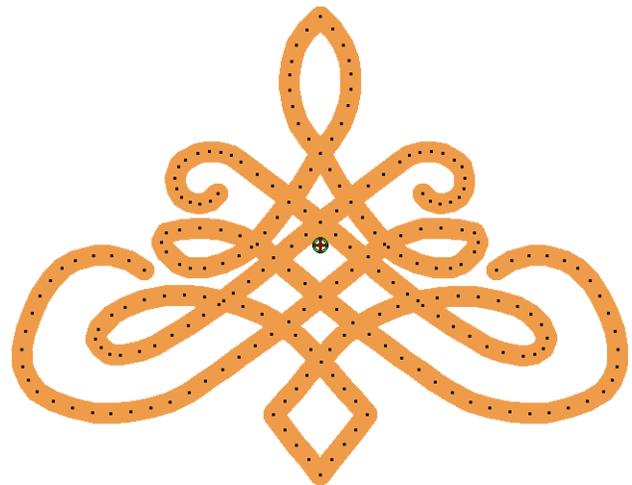
stitching has been digitized separately as run stitch outlines.



Tip Study the punchwork design included in the designs folder. Try stitching it out to practice the techniques involved. Check your BERNINA machine documentation.

Couching

Couching refers to the technique of fixing a thick cord or yarn onto a fabric, usually for decorative purposes.



Support for free-motion couching foot

BERNINA Embroidery Software allows you to create couching designs for the BERNINA Free Motion Couching Foot #43.



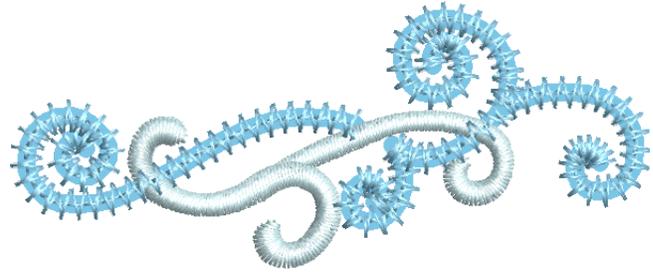
The free-motion couching foot is a specialist needle attachment for use with cords, yarn and ribbon. The cords are fed directly to the needle through a hole in the sole and can be sewn on in any direction. The tool can be used to embellish table linens, garments and bags with attractive cord decorations. The main points to keep in mind are:

- ▶ The machine stitches through the cord with straight stitching – it does not use the zigzag mechanism.
- ▶ The mechanism can be used in combination with the embroidery module for automatic cording, as well as manual free-motion cording.
- ▶ The foot can be used with cords between 1.5 - 2.0 mm diameter.
- ▶ Needle size 80 is recommended by Bernina.
- ▶ Cord must be soft enough for the sewing needle to penetrate and fasten to the fabric.
- ▶ Stitching can be done at any angle via the stitch design data.
- ▶ It is possible to stitch over areas of cord already stitched.

For more about Couching Foot # 43, see the [Bernina Website](#).

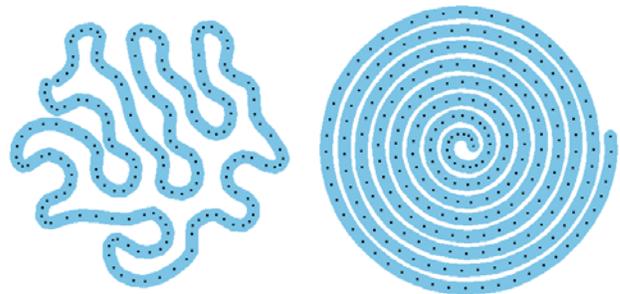
Couch stitching

Couching may be combined with existing outline stitch methods.



Couching designs are typically made up of straight running stitch outlines:

- ▶ These may cross over themselves or other objects in a continuous fashion.
- ▶ It is best to avoid long runs of overlapping cord.
- ▶ It is ok to have couching objects separated by a trim/jump.
- ▶ It is ok to have sharp corners but avoid extremes.
- ▶ It is possible to combine normal embroidery and couching in the same design.
- ▶ It is possible to create couching-only designs with no other embroidery stitching.
- ▶ It is possible to use some existing fill stitch methods for couching if you set object properties for open density with no underlay.

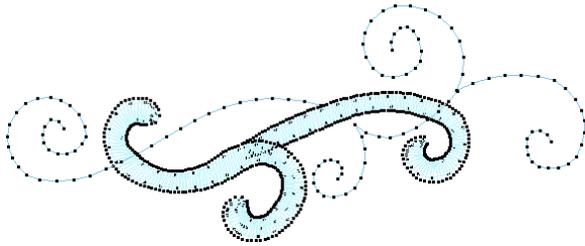


Creating couching designs

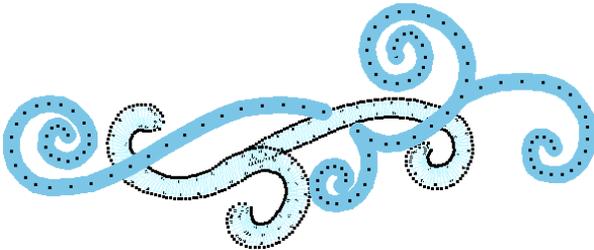
-  Use Stitches > Single Outline to create a single row of stitches along a digitized outline – used for borders or details.
-  Use Effects > Couching to add couching cord for use with the BERNINA Free Motion Couching Foot #43.
-  Click View > Show Stitches to show or hide embroidery stitching.
-  Click View > Show Needle Points to show or hide the needle points in embroidery stitching.

To create a couching design in BERNINA Embroidery Software, follow this process:

- ▶ Open or create the design you want to use.
- ▶ Create or designate the **Single Outline** stitching which is to form the couching.



- ▶ Select Single Outline objects and apply the **Couching** effect. The cord is displayed as a thick graphic line. It takes the color of the outline stitching.
- ▶ Go to stitch view and turn on needle points. See [Viewing embroidery elements](#) for details.
- ▶ Adjust needle point display colors as necessary. See also [Adjusting display colors](#).



- ▶ Avoid or minimize jumps/connectors between different couching objects in the design. Don't use jumps for automatic connectors.
- ▶ Avoid or minimize couching crossing over itself.

Add embroidery stitching to couching cord

You can optionally add embroidery stitching over top of cord which has already been stitched to the fabric, either for decorative effect, or for technical effects such as 3D padding under the stitching.

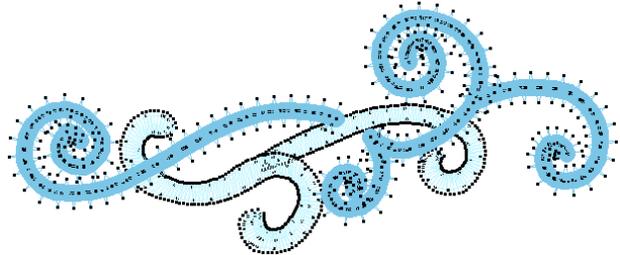


For example:

- ▶ Satin stitch for a raised 3D effect over top of couching.
- ▶ Blanket stitch or other suitable pattern run stitches to straddle the cord.
- ▶ Stemstitch outline for a light density covering.

These effects are manually created, not automatically generated, using the following technique:

- ▶ Create required couching stitching.
- ▶ Copy and paste a duplicate of the couching run stitching. Use **Break Apart** if it is a fill.
- ▶ Change the stitch type of the duplicate to a different outline stitch type.



- ▶ Ensure stitch properties are set accordingly – no underlay, correct outline width, pull comp, etc.
- ▶ Ensure start/end points don't generate unwanted travel stitching.

It is not practical to swap back and forth between couching and embroidery on an object-by-object basis. Sequence the design so that:

- ▶ Multiple couching objects are stitched all together first with the couching foot.
- ▶ Cover stitching is stitched after, again with the embroidery foot.

Producing couching on the machine

To perform couching in combination with an embroidery design...

- ▶ Create an embroidery design with stitch data to define the pattern to sew with couching.
- ▶ Stitch data from the design file stops the machine when required for couching, and tells you what action to take.
- ▶ Manually replace the embroidery foot with the couching foot when needed, and thread the cord through the foot in preparation for stitching.
- ▶ Choose an embroidery thread to stitch the cord to the fabric – either a matching color, contrasting color, or see-through thread.
- ▶ The machine stitches the design automatically, with the cord being fed through the couching foot, in shapes defined by the stitch data.
- ▶ At the end of a section of couching, the machine stops so you can trim the cord. An instruction is displayed on the machine as with appliqué.
- ▶ Manually switch the foot back to the normal embroidery foot again when couching is finished.
- ▶ Relevant production information is also recorded on the design worksheet:
 - ▶ Couching foot is required

- ▶ Cord size and color
- ▶ Length of cord required
- ▶ The stop sequence shows when to start couching, trim couching, and end couching.

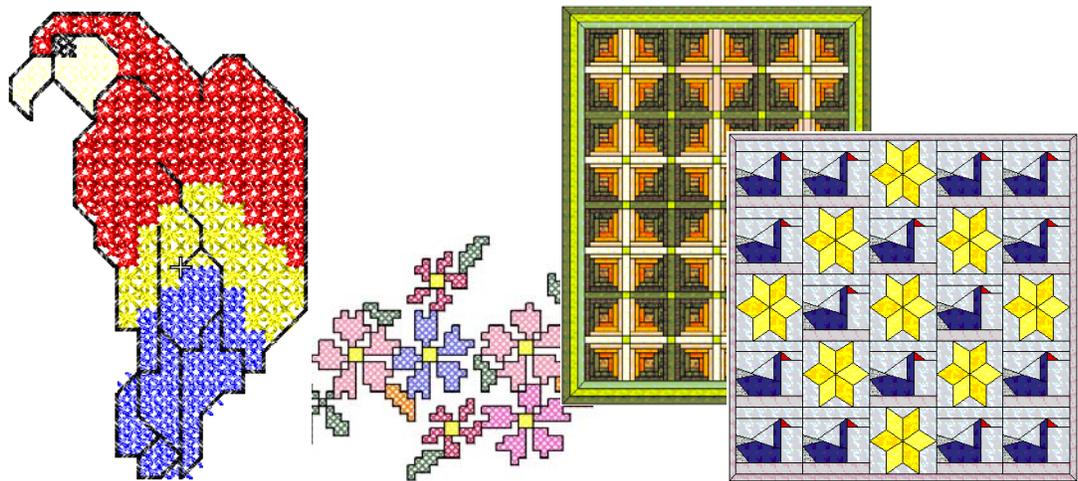


Tip Be aware of potential registration gaps between the cord and the cover stitching. You need to use good stabilizers to minimize fabric movement.

CHAPTER 27

ANCILLARY APPLICATIONS

In addition to CoreIDRAW[®], BERNINA Embroidery Software includes ancillary, standalone applications which can be launched from within **Embroidery Canvas**. The BERNINA Cross Stitch application lets you create dedicated cross stitch designs or add cross stitching to embroidery. Use BERNINA Quilter to experiment with patches and colors enabling you create beautiful, personalized quilts.



This section provides an overview of the ancillary BERNINA Cross Stitch and BERNINA Quilter applications provided with BERNINA Embroidery Software.

Introduction to cross stitch

Cross stitching is a popular technique for filling large areas with low stitch counts. It can also be used for outlines and borders. It is suitable for homeware, tablecloths, children's clothes and folk designs. Cross stitch is sometimes combined with appliqué.

Unlike machine embroidery where designs are enhanced with different stitch types, angles, and effects, in cross stitch you can only add dimension to the design with shades of colors. For this reason, most cross stitch designs use many more colors than machine embroidery.

Types of cross stitch

Cross stitches are created on a matrix of squares or 'pixels'. Any part of the square can be stitched, from

the edges to the diagonals. The full range of cross stitches is listed below.

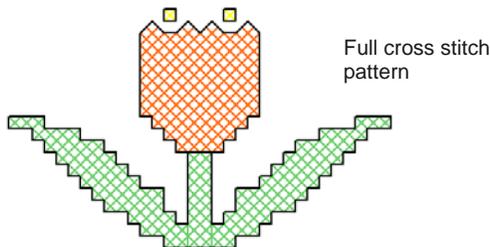
	Full Cross		Upright Cross
	Three-Quarter Cross		Double Cross
	Half Cross		Elongated Vertical Cross
	Quarter Cross		Elongated Horizontal Cross
	Mini Cross		Single Line
	French knot		

Cross stitch fills

When using cross stitch as a fill you can select from any of the cross stitch fill types.

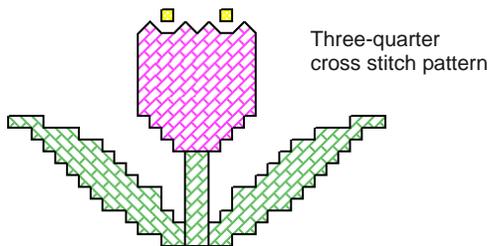
Full cross stitch

Full cross stitches are made up of two equal-length stitches that cross at the center to form an X. The overall effect of the fill depends on which stitch in the X lies underneath or on top. You can also mix and match for special effects.



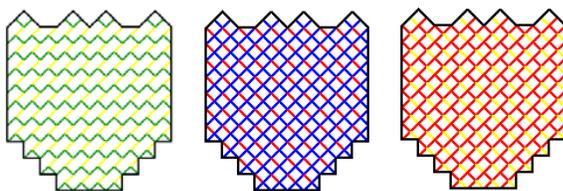
Three-quarter cross stitch

A three-quarter stitch is most often created by stitching a quarter stitch followed by a half stitch. A different effect is achieved by stitching the half stitch first and anchoring it with the quarter stitch.



Note The long arm of the three-quarter stitch can go either / or \ directions.

Frequently a quarter stitch and a three-quarter stitch of different colors share a single square. Mix and match their positions to give different effects.

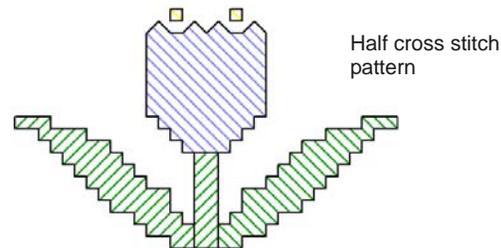


Mixtures of quarter and a three-quarter stitches

Half cross stitch

A half stitch is simply a diagonal stitch that looks like / or like \. Half stitches are usually used for shadows and background shading. The stitch can start from

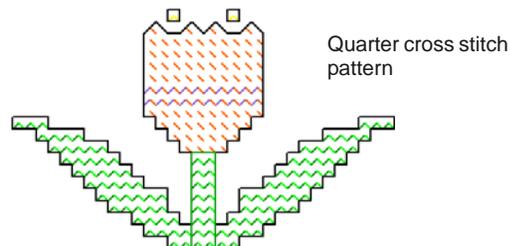
any corner. Sometimes two half stitches of different colors are used to make one full cross stitch.



Half cross can go in either direction depending on the effect you want to achieve. For example, half cross used to represent feathers would slant in the direction of the feathers themselves.

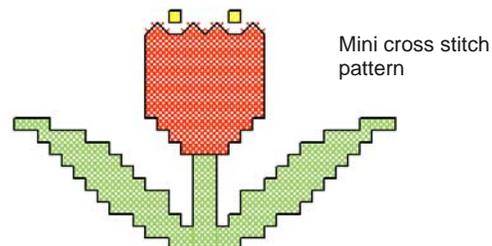
Quarter cross stitch

Quarter stitches are used to stitch more intricate patterns.



Mini cross stitch

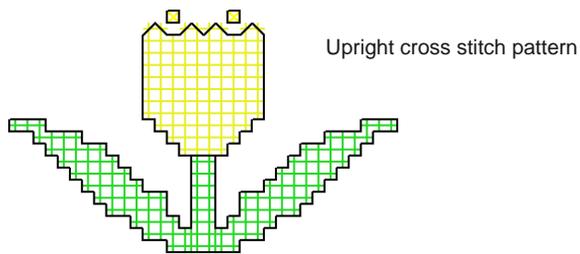
Mini cross stitches are two equal-length stitches that cross at the center to form an X but they only fill quarter of the square. Use mini cross stitch for details such as eyes or for a denser look in parts of your design.



Upright cross stitch

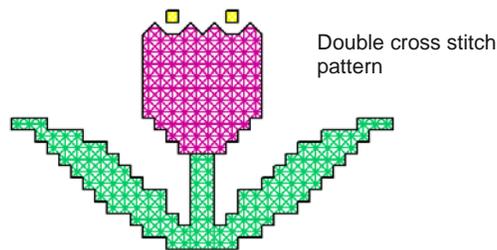
Upright cross stitches are comprised of a vertical and horizontal stitch.

The stitches can be worked diagonally across the canvas, or in a horizontal or vertical line.



Double cross stitch

Double cross stitch is two full cross stitches stitched at 90° on top of each other. A double cross stitch resembles a star. It is generally used in a scattered fashion or worked into a row to form a decorative border.



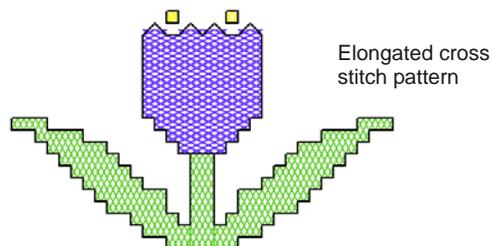
Typically the top thread of the bottom cross is the stitch which lies at 135° to the horizontal; and the top thread of the overlapping cross is the horizontal stitch.

Elongated cross stitch

Elongated cross stitch consists of two equal-length stitches that cross to form an X. There are two types:

- ▶ elongated horizontal cross stitch
- ▶ elongated vertical cross stitch.

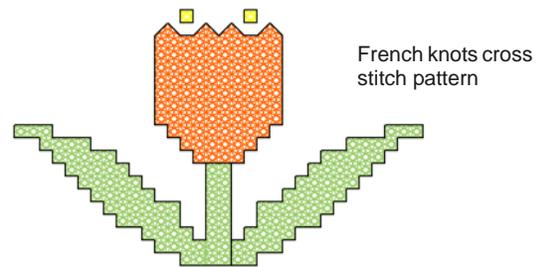
Elongated horizontal cross stitches are only half the height of normal cross stitch and elongated vertical cross stitches are only half the width of normal cross stitch.



French knots

French knots were originally a hand-stitch used to create a raised look for embellishment. They were

traditionally used in 'whitework' with very exclusive cotton and fine silk threads.



French knots can be used in combination with other cross-stitch types. Use them for eyes, door knobs, dots for flower pistils, or in place of beads used in hand-work designs – e.g. ornaments on a Christmas tree or to dot letters such as 'i'. Use them as an outline border. Try them with colorful metallic or variegated threads. French knots are better sewn in larger grids.

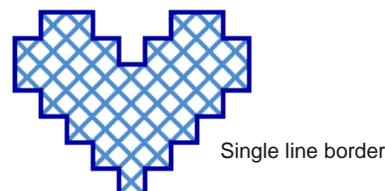
Cross stitch borders

Cross stitch can be used as an embroidery outline or border. You can also combine cross stitching with other stitch types to achieve special effects.

You can make outlines with **Single Line** or **Full Cross** stitches or a combination of both for a denser border. A **Single Line** outline is treated by the software as a border while a **Full Cross** outline is treated as a fill. This is important if you need to delete a border because a single line can be deleted as a single object while a full cross stitch border cannot.

Single line border

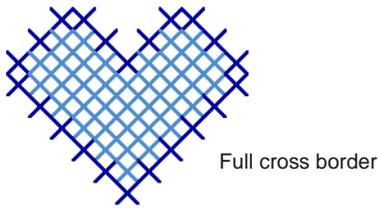
Single Line stitches are only used to create borders or add details. The single line can be placed on any side of the square. Click on the side you want to place the line. You can place a single line border on one side or all four sides of the square. The single line border can be placed in a square which already has a cross stitch in it.



Full cross border

Full crosses can also be used as a decorative outline stitch. If you use full cross as a border it will be the same cross stitch type as selected in the Fill stitch

type list. You can change this by changing the Fill stitch type.

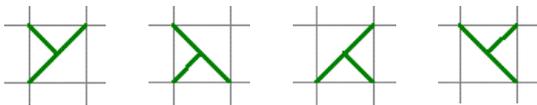


Cross stitch variations

The orientation of fractional cross stitches can be varied to create different patterning effects. You do this directly pixel-by-pixel, or by setting a fill stitch orientation. You can also combine fractional cross stitches in a variety of ways. See also [Types of cross stitch](#).

Three-quarter cross stitches

Quarter and three-quarter cross stitches can be used to create rounded edges. See also [Cross stitch fills](#).



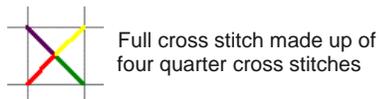
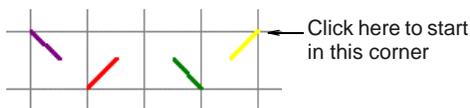
Half cross stitches

Half cross stitches can be used to give objects an 'airy' look. You can also use half cross stitches to make a full cross stitch with two colors. See also [Combination stitches](#).



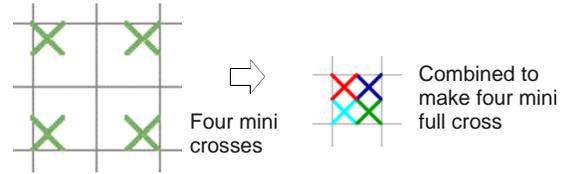
Quarter cross stitches

Quarter and three-quarter cross stitch can be used to smooth rounded edges. You can also use quarter cross stitch to make a full cross stitch with up to four colors. See also [Combination stitches](#).



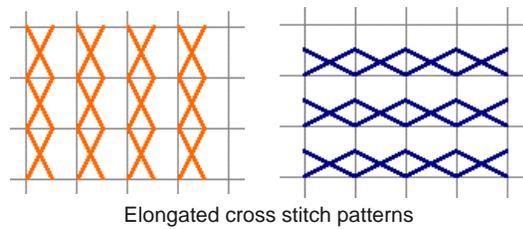
Mini cross stitches

Use mini cross stitch for details such as eyes or for a denser look in parts of your design.



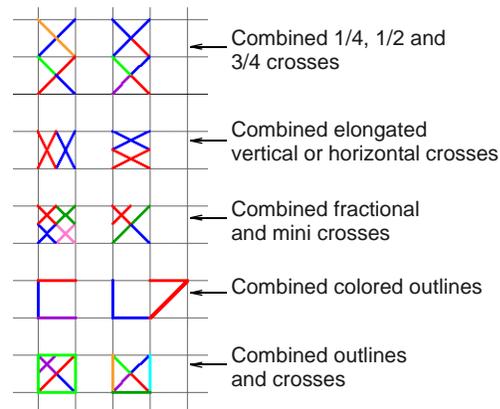
Elongated cross stitches

Vertical and horizontal elongated cross stitches are made up of two equal-length stitches that cross to form an X. They fill either the left, right, top or bottom of the square.



Combination stitches

Quarter, half and three-quarter cross stitches can be combined to make crosses comprised of multiple colors. You can also combine mini crosses, elongated vertical or horizontal crosses and outline stitches.



Launching BERNINA Cross Stitch

 Use Applications > Cross Stitch to launch BERNINA Cross Stitch from within BERNINA Embroidery Software.

Cross stitch design involves a different digitizing technique to ordinary embroidery design. For this reason, BERNINA Cross Stitch has its own design

window which you open from within BERNINA Embroidery Software.

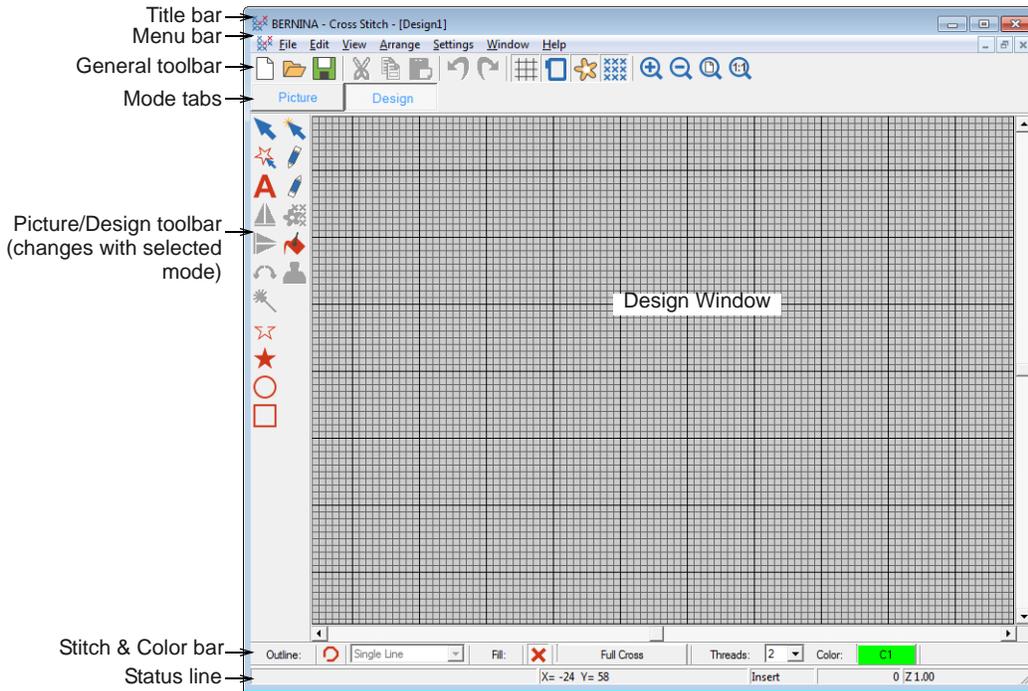
To launch BERNINA Cross Stitch

- ▶ Run BERNINA Embroidery Software.

- ▶ Go to the **Applications** toolset and select **Cross Stitch**.



BERNINA Cross Stitch opens in its own design window.



- ▶ For further information, refer to BERNINA Cross Stitch **Help**.

Introduction to patchwork & quilting

Patchwork is a popular technique for designing and sewing patches into blocks. BERNINA Quilter can be used to design patchwork quilts, either from existing designs or patterns, or from designs of your own making. Use BERNINA Quilter to experiment with patches and colors enabling you create beautiful, personalized quilts.

Blocks on a quilt can be filled with patches of either patterned or plain fabric. BERNINA Quilter includes a large selection of patchwork blocks and fabrics, but you can also scan your own and store them in a quilting library.

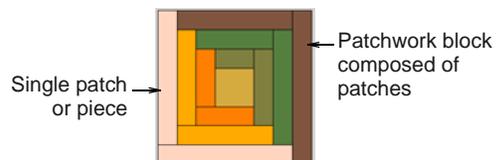
When a quilt design is complete you can print it out, showing the blocks, how they are constructed, as well as yardage, sewing and cutting details.

Patchwork quilt designs

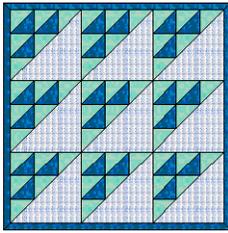
Patchwork and quilting are related and complementary techniques. BERNINA Quilter is essentially a design tool to help you put together quilts combining patchwork, embroidery, and appliqué. Use BERNINA Quilter to plan and lay out your patchwork blocks on screen, select your fabrics, and add embellishments such as appliqué and embroidery.

Patchwork

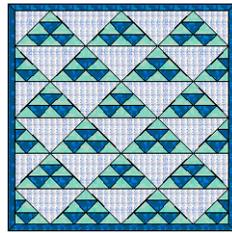
A 'patchwork block' is a collection of patches sewn together, usually forming a regular shape such as a rectangle. A 'patch' is a single piece of fabric sewn with others into a set arrangement to form a patchwork block. Sewing patches together into blocks is known as 'piecing'.



Blocks are then sewn together, either in a straight square format or as diamonds on-point.

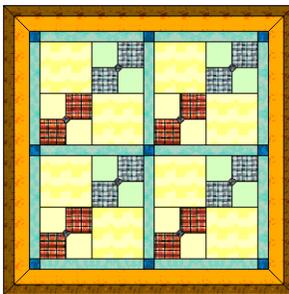


Square



On-point

Although some quilts have patchwork extending out to the edge, the majority have one or more borders. Some also have narrow strips of fabric, called 'sashing', to separate the blocks. Borders and sashes can alter the size and appearance of your quilt. They can be used to frame and soften a busy design. Borders can also be used to enlarge a quilt so that it fits a standard bed. More than one border may be used on each quilt.



With borders and sash

Many quilts use a combination of fabrics similar in color and value for the background. Patchwork patterns are created by the contrast between light, medium and dark fabrics. Contrast in color depth is critical to some designs. It is good practice to select your background color before deciding on your other design colors.

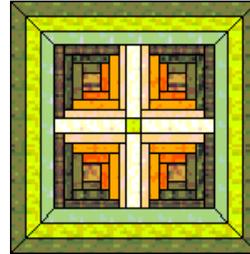


Contrast between light, medium and dark fabrics



When fabrics are placed carefully, a three dimensional illusion can be created. Solid or plain colors are placed to create bold contrasts between the patchwork

blocks. When working with a single color, select a wide range of fabrics.

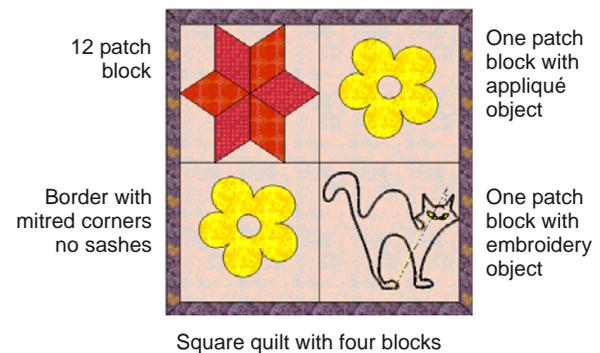


Creating 3D effects



Using a dominant color

With BERNINA Quilter you can also add appliqué and embroidered objects to the quilt.

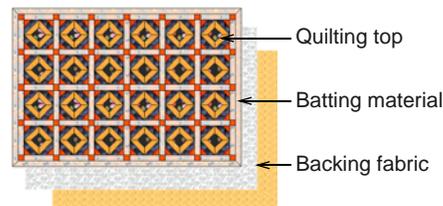


Plan your quilt by working out the overall measurements, then calculate how many blocks, borders and sashes are to be used. Decide which patchwork blocks are to be used and how you will use color. Try out various arrangements and colors until you find one that you like.

Quilting

A quilt is like a sandwich formed of three layers:

- ▶ **Quilt top:** a collection of patches sewn together, usually forming a regular shape such as a rectangle and may include borders and sashes.
- ▶ **Batting:** a layer of padded material between the front and back fabric to add thickness and substance.
- ▶ **Backing:** a layer of fabric added to the back of a quilt to encase the batting.



Quilting involves sewing decorative designs on quilts. These designs use run stitches to divide the fabric into

sections giving a pattern of raised areas. Quilting can be done either by hand, or by free motion using a sewing machine.



Tip A quilt can be a combination of patchwork and quilting using patchwork blocks pieced together with quilting stitches.

Quilt sizing

BERNINA Quilter uses inches (in) for measuring designs. Use the table to convert between imperial and metric measurements. You will find it easier to use the decimal equivalent for imperial measurements when working out quantities with a calculator.

Metric (mm)	Imperial (inch)	Decimal (inch)
3	1/8	0.125
6	1/4	0.25
9	3/8	0.375
12	1/2	0.5
16	5/8	0.625
19	3/4	0.75
22	7/8	0.875
25	1	1.0
50	2	2.0
75	3	3.0
100	4	4.0
130	5	5.0
150	6	6.0
225	9	9.0
250	10	10.0
300	12	12.0
450	18	18.0
500	20	20.0
900	36 (1 yard)	36.0
1000 (1 meter)	40	40.0

Use the table below as a rough guide to the most common quilt sizes. It will vary according to the blocks you use.

Quilt	Imperial (inches)	Metric (cm)
Baby	36-45 x 45-54	90-115 x 115-137
Cot	42-48 x 54-60	107-122 x 137-152
Single	56-64 x 84-100	142-162 x 213-254
Double	70-80 x 84-100	178-203 x 213-254
Queen	76-84 x 90-104	193-213 x 228-264

Quilt	Imperial (inches)	Metric (cm)
King	92-100 x 90-104	234-254 x 228-264
Jumbo	120-124 x 120-124	304-315 x 304-315

Launching BERNINA Quilter

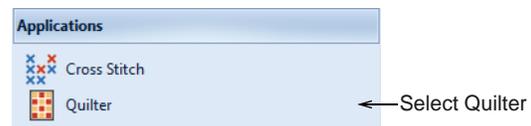


Use Applications > Quilter to launch BERNINA Quilter from within BERNINA Embroidery Software.

Launch BERNINA Quilter from within BERNINA Embroidery Software.

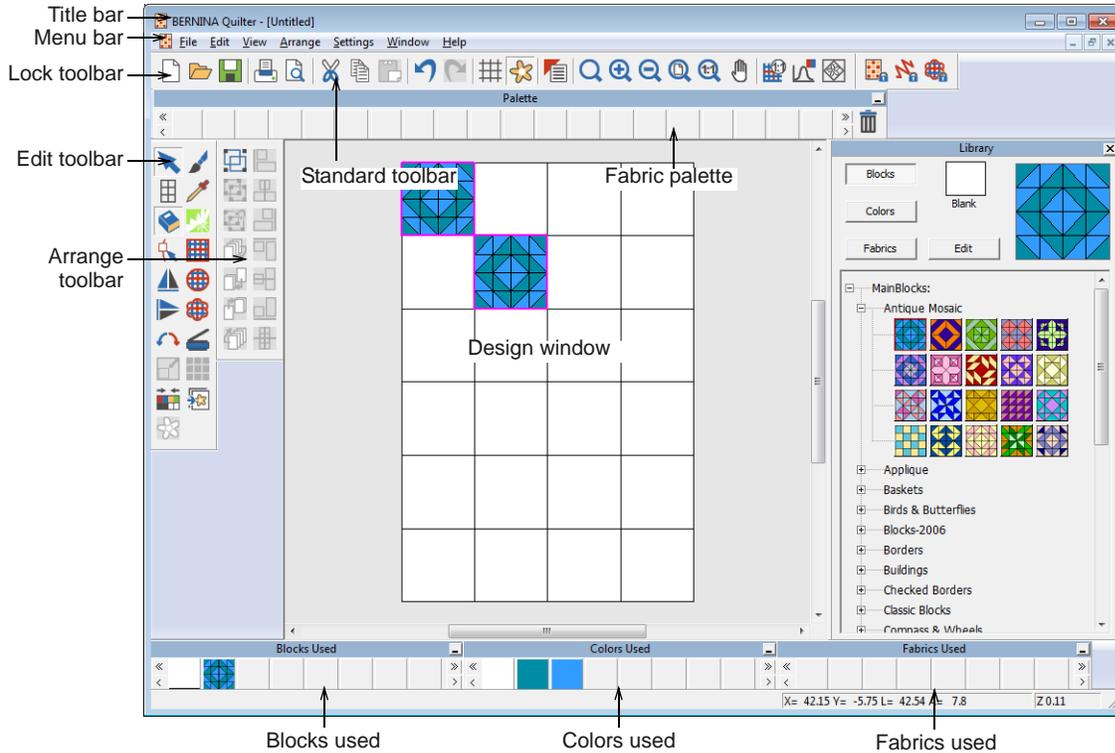
To launch BERNINA Quilter

- ▶ Run BERNINA Embroidery Software.
- ▶ Go to the **Applications** toolset and select **Quilter**.



- ▶ Alternatively, you can also launch BERNINA Quilter by pressing **Ctrl+Q**.

BERNINA Quilter opens in its own design window.



- For further information, refer to BERNINA Quilter **Help**.



Note If BERNINA Quilter does not open from BERNINA Embroidery Software, check that Internet Explorer V6 has been installed on your PC. This is a minimum requirement.

PART VI

EMBROIDERY LETTERING

Create top-quality lettering quickly and simply. BERNINA Embroidery Software provides a large range of scalable closest-join **font** styles and multi-color and fancy stitching fonts to choose from.

Lettering essentials

This section describes how to add lettering to embroidery designs. It also covers applying lettering baselines, formatting lettering and adjusting letter spacing. See [Lettering Essentials](#) for details.

Editing embroidery lettering

This section describes how to edit lettering text. It also covers scaling lettering and removing underlay from small lettering. It also deals with transforming lettering objects, adjusting individual letters, as well as reshaping baselines. See [Editing Embroidery Lettering](#) for details.

Special lettering effects

This section describes how to convert TrueType fonts to embroidery fonts. It also explains how to add special characters as well as fancy and monogram lettering to your designs. It also covers applying different stitch types to lettering objects as well as creating special effects with Elastic Lettering. See [Special Lettering Features](#) for details.

Monogramming

This section details the creation of monogram lettering with initials or with a name, how to add ornaments to monograms, and how to create ornament layouts. It also covers adding and creating your own borders. See [Monogramming](#) for details.

CHAPTER 28

LETTERING ESSENTIALS

Add embroidery lettering to designs quickly and easily, either on-screen using current settings or via object properties. Place lettering on a straight horizontal or vertical baseline, curve it around a circle or arc, or digitize your own baselines. You can apply formatting to lettering objects in the same way as a word processor, including italics, bolding, and right/left justification. Letter, word and line spacings can be determined before or after creating lettering objects and placing them in your design. See also [Embroidery Fonts](#).

This section describes how to add lettering to embroidery designs. It also covers applying lettering baselines, formatting lettering and adjusting letter spacing.



Adding lettering to embroidery designs Creating lettering on-screen

You can add lettering to a design by typing it directly on-screen. Adjust [object properties](#) to specify letter formatting before or after adding it to a design. BERNINA Embroidery Software provides an [font](#) range suitable for many applications. Select from the supplied embroidery fonts or convert TrueType or OpenType fonts.



Tip Combined with the [Satin stitch Calligraphy](#) setting, [Open Freehand](#) can be used to create embroidered calligraphy. For best results, a wider satin width and more layers than the default may be required. See also [Creating freehand embroidery](#).

Calligraphy

Thick-thin
calligraphy effect

A Use [Digitize > Lettering](#) to create embroidery lettering directly on screen.

If it is not essential to fit letters precisely to a certain area, you can type them directly on-screen. You can also modify lettering objects directly on-screen to achieve various artistic effects. Appearance and layout depend on current settings. You can change them at any time. See [Editing Embroidery Lettering](#) for details.

To create lettering on-screen

- 1 Click the **Lettering** icon.
- 2 Select a color from the **Color Palette**. See [Changing thread colors](#) for details.
- 3 Click where you want to start typing.
An I-beam appears where you clicked.

Pre | I-beam

- 4 Type the letters you want to embroider.



Tip To start a new line, press **Shift+Enter**.

- 5 Press **Enter** to complete.
Stitches are generated immediately.

Prestige



Note Appearance and layout depend on current settings in the **Object Properties > Lettering** dialog. You can change them at any time. See [Editing Embroidery Lettering](#) for details.

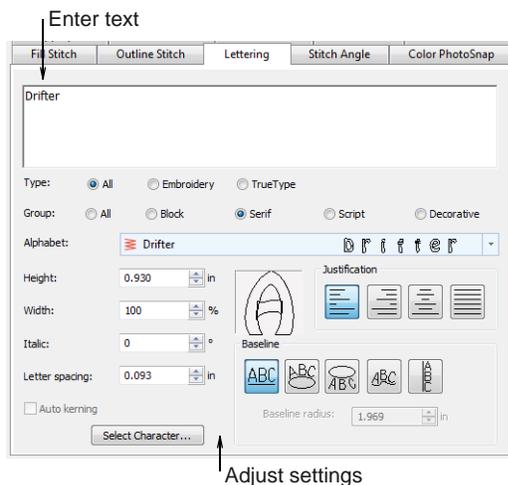
Creating lettering via dialog

A Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

You can specify letter formatting before adding it to the design. Select from the supplied embroidery fonts or convert TrueType or OpenType fonts. If you are embroidering on a child's outfit you might use a simple font like **Childs Play**. If you are embroidering on a ladies nightdress you might use an elegant script font like **Anniversary**.

To create lettering via dialog

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens.

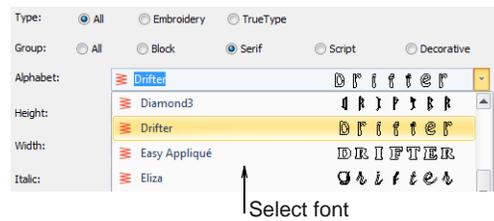


- 2 Enter the text you want to embroider in the text entry panel.
To start a new line, press **Enter**.



Tip You can insert a color change between two letters by keying a caret (^) symbol. Subsequent letters default to the next color in the palette.

- 3 Select a font from the **Alphabet** list.
 - ▶ Choose a font type – Embroidery, TrueType, or both. See also [Converting graphic fonts to embroidery](#).
 - ▶ Choose a font group – block, serif, script, or decorative. These only apply to TrueType fonts.
 - ▶ Type two (or more) characters of the font name to jump ahead in the font list.



Tip Check min/max recommendations for each font and stay within them for best results. See also [Embroidery Fonts](#).

- 4 Adjust formatting and baseline settings as required. See [Formatting lettering](#) for details.
- 5 Click **Apply**.
- 6 Click where you want to place the lettering, or mark reference points for the baseline you selected. See [Applying lettering baselines](#) for details.

Drifter



Note Letters are filled with stitches according to current stitch settings in the **Object Properties** dialog. You can change these at any time. See [Applying different stitch types & effects to lettering](#) for details.

Applying lettering baselines

Baselines determine the shape of lettering objects in a design. You can place lettering on a straight horizontal or vertical line, curve lettering around a circle or arc, or digitize your own baseline. Different reference points are needed depending on the

baseline you use. You can digitize baselines on-screen.



Baselines use default settings to determine their size, spacing and angles. BERNINA Embroidery Software gives you both interactive and precise numerical control over many baseline settings. Techniques are available to modify baseline type, length, radius and angle, as well as baseline position.



Note BERNINA Embroidery Software will remember which baseline you used last and use this one if you type letters directly on-screen.

Selecting baselines

-  Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.
-  Use Free Line (Lettering tab) to create straight horizontal baselines of no fixed or pre-determined length.
-  Use Circle CW (Lettering tab) to create clockwise baselines.
-  Use Circle CCW (Lettering tab) to create counter-clockwise baselines.
-  Use Any Shape (Lettering tab) to shape lettering around elements in a design.
-  Use Free Line Vertical (Lettering tab) to create straight vertical baselines of no fixed or pre-determined length.
-  Use Predefined (Lettering tab) to create multiple arching baselines.

Different baselines are available for use with new or selected lettering objects. Adjust baseline settings interactively or via properties.

To select baselines

- 1 Double-click or right-click a lettering object. The **Object Properties > Lettering** dialog opens.



- 2 Select a baseline.

The baseline you choose depends on the effect you want to achieve. You need to digitize different reference points depending on the type of baseline you select. Options include:

 - ▶ **Straight Horizontal:** See [Creating horizontal baselines](#) for details.
 - ▶ **Circle CW:** See [Creating circular baselines](#) for details.
 - ▶ **Circle CCW:** See [Creating circular baselines](#) for details.
 - ▶ **Any Shape:** See [Creating custom baselines](#) for details.
 - ▶ **Vertical:** See [Creating vertical baselines](#) for details.
 - ▶ **Multiple:** See [Creating custom baselines](#) for details.
- 3 Click **Apply**.

The selected baseline is applied to any selected lettering object or newly created lettering objects.



Tip Create identical baselines by duplicating or copying them in your design.

Creating horizontal baselines

-  Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.
-  Use Free Line (Lettering tab) to create straight horizontal baselines of no fixed or pre-determined length.

Free Line baselines do not have a fixed or pre-determined length. They extend as long as you keep adding letters.



To create horizontal baselines

- 1 Right-click the **Lettering** icon.

The **Object Properties > Lettering** dialog opens. See [Creating lettering via dialog](#) for details.

- 2 Enter your text in the text entry panel. See [Creating lettering via dialog](#) for details.
- 3 Select the **Free Line** icon.
- 4 Click **Apply**.
- 5 Click where you want to place the letters.

Creating vertical baselines

A Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

 Use Free Line Vertical (Lettering tab) to create straight vertical baselines of no fixed or pre-determined length.

Free Line Vertical baselines are straight, vertical baselines. They do not have a fixed length, and extend to fit the letters you enter. Line spacing is calculated horizontally while letter spacing is calculated vertically. Letters, by default, are centered along vertical lines. New lines are placed by default from left to right. Vertical baselines are effective for embroidering on sleeves, as a decorative effect, and for Asian text.

ひらがな



Tip Vertical lettering best suited to uppercase for Western languages because descenders in lowercase letters are not accommodated in the letter spacing.

To create vertical baselines

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens. See [Creating lettering via dialog](#) for details.
- 2 Enter your text in the text entry panel. See [Creating lettering via dialog](#) for details.
- 3 Select the **Free Line Vertical** icon.
- 4 Click **Apply**.
- 5 Click where you want to place the letters.

Creating circular baselines

A Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

 Use Circle CW (Lettering tab) to create clockwise baselines.

 Use Circle CCW (Lettering tab) to create counter-clockwise baselines.

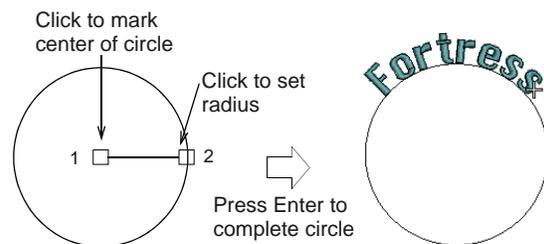
Use **Circle CW** and **Circle CCW** baselines to place letters around a full circle or ellipse in clockwise or

counter-clockwise directions. By default, letters are positioned **above** Circle CW baselines and **below** Circle CCW baselines. They are also centered by default.

Fortress
Fortress
Fortress

To create circular baselines

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens. See [Creating lettering via dialog](#) for details.
- 2 Enter your text in the text entry panel. See [Creating lettering via dialog](#) for details.
- 3 Select the **Circle CW** or **Circle CCW** icon and click **Apply**.
The **Status Bar** will prompt you.
- 4 Mark the center of the circle.



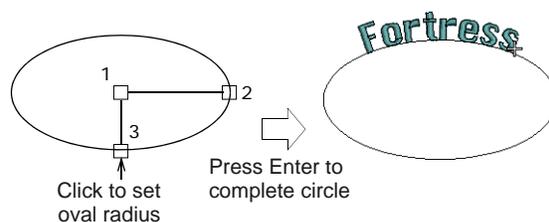
- 5 Mark a point to define the radius.
- 6 Press **Enter** to complete the circle.

Fortress Fortress

Circle CW

Circle CCW

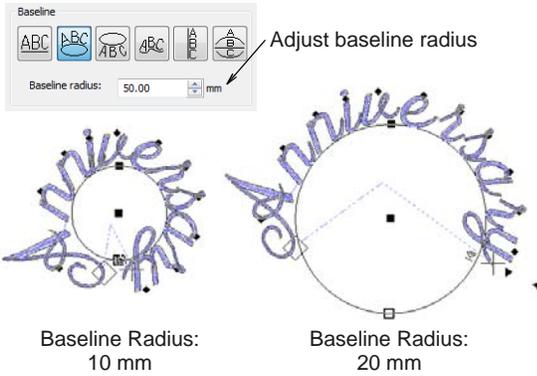
- 7 Alternatively, if you want to create an oval baseline, mark a third reference point.



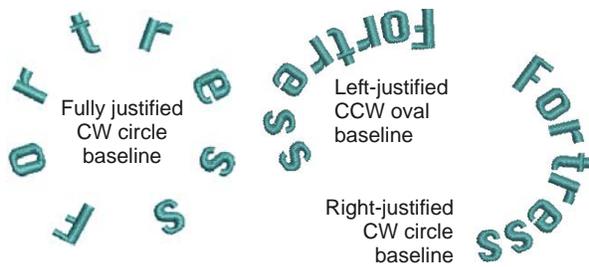
8 Press **Enter** to complete the oval.



Tip Make a circle large enough for your lettering. If it is too small, or the lettering too big, the letters will be crowded. You can, however, adjust the baseline radius in the dialog. See also [Reshaping baselines](#).



Tip Different effects can be achieved by changing the justification setting – left, right, center, full. See [Setting letter justification](#) for details.



Creating predefined baselines

- A** Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.
-  Use Predefined (Lettering dialog) to create multiple arching baselines.

Use **Predefined** baselines to arch lettering clockwise across the top, straight through the middle, and

counterclockwise around the bottom of a circle, all in one action.



To create a predefined baseline

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens. See [Creating lettering via dialog](#) for details.
 - 2 Type the text for the line around the top of the circle in the text entry panel.
 - 3 Press **Enter**.
- Childs
Play
ABCDEF

← Type in texts for each line
- 4 On the next line type the text for the line across the middle of the circle and press **Enter**.
 - 5 On the third line type the text for the line around the bottom of the circle.
 - 6 Select the **Predefined** icon.
 - 7 Click **Apply**.
 - 8 Mark the center of the circle. See [Creating circular baselines](#) for details.
 - 9 Mark a point to define the radius.



- 10 Press **Enter** for a perfect circle, or click again to form an oval and press **Enter**.

Creating custom baselines

- A** Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.
-  Use Any Shape (Lettering tab) to shape lettering around elements in a design.

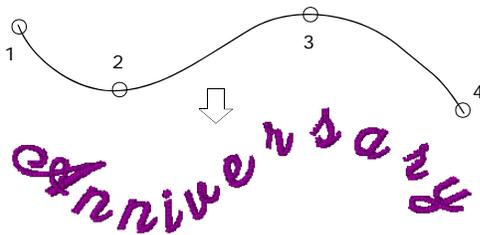
Use **Any Shape** baselines to shape lettering around elements in your design. Digitize Any Shape baselines by marking reference points to form the required line. The number of reference points and length of baseline are practically unlimited.



If the baseline has tight curves, or sharp corners, the letters may overlap. For best results, only mark curve points, and digitize lines which have shallow, gentle curves.

To create custom baselines

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens. See [Creating lettering via dialog](#) for details.
- 2 Enter your text in the text entry panel. See [Creating lettering via dialog](#) for details.
- 3 Select the **Any Shape** icon and click **Apply**.
The **Status Bar** will prompt you.
- 4 Click to mark the baseline reference points.
 - ▶ Right-click for curve points.
 - ▶ Left-click for corner points.



- 5 Press **Enter** to complete.

Formatting lettering

You can control the appearance of lettering by changing **object properties** before or after adding lettering, in the same way as other objects.

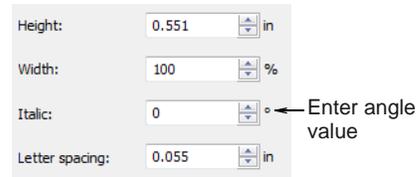
Making italic lettering

A Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

You can slant letters to the left or right for an italic effect. The default italic angle is 0° which is equivalent to no italics. The largest angle lettering can be inclined is 45°.

To make italic lettering

- 1 Double-click or right-click a lettering object.
The **Object Properties > Lettering** dialog opens.



- 2 Enter an angle in the **Italic** field.
You can enter an angle anywhere between 45° and -45°.
- 3 Click **Apply**.

The setting is applied to any selected lettering object or to newly created lettering objects.

Blackboard

Italic angle: 0°

Blackboard

Italic angle: -45°

Blackboard

Italic angle: 45°

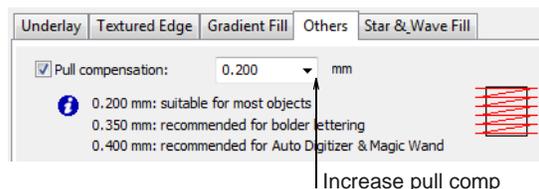
Making bold lettering

A Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

You can create the effect of bold lettering by increasing the **pull compensation** settings for selected lettering objects.

To make bold lettering

- 1 Double-click or right-click a lettering object.
The **Object Properties > Lettering** dialog opens.
- 2 Click the **Effects** button.
The **Effects** dialog opens.



- 3 Select the **Others** tab.

- 4 Select the **Pull Compensation** checkbox and increase the setting to 0.4–0.6 mm.



Caution Do not use a value of more than 0.6 mm or letters may distort.

- 5 Click **Apply**.

The setting is applied to any selected lettering object or to newly created lettering objects.



Pull comp: 0.2 mm

Pull comp: 0.6 mm

Setting letter justification

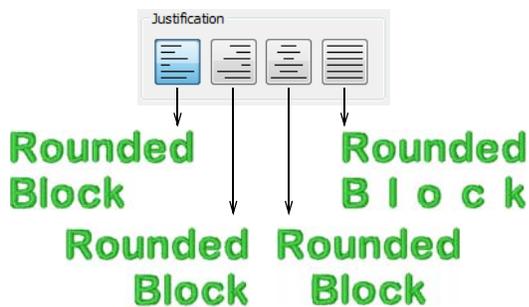


Right-click Digitize > Lettering to enter text in the dialog and adjust settings for embroidery lettering.

Justification is the way that lettering aligns itself on a baseline. You can justify lettering left or right, center it, or fully justify it. Full justification spreads the letters out to fill the length of the baseline.

To set letter justification

- 1 Double-click or right-click a lettering object. The **Object Properties > Lettering** dialog opens.
- 2 Select a justification setting – **Left**, **Right**, **Center**, or **Full Justification**.



- 3 Click **Apply**.

The setting is applied to any selected lettering object or to newly created lettering objects.

Adjusting spacings

Letter, word and line spacings can be determined before or after creating lettering objects and placing them in your design. You can edit spacing directly on-screen or via **object properties**. Letter spacing is calculated automatically according to justification –

Left Justification, Right Justification, Center Justification, or Full Justification. See also **Setting letter justification**.

Adjusting overall letter spacing on-screen

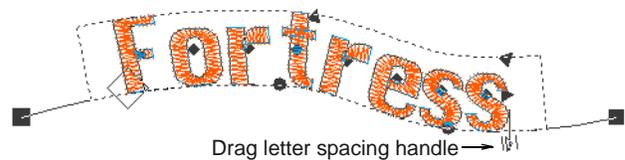


Click Transform > Reshape Object to adjust letter spacing.

The spacing between letters is calculated automatically as a percentage of the letter height. In most cases the default spacing is adequate. Sometimes, however, you may want to change the overall letter spacing.

To adjust overall letter spacing on-screen

- 1 Select the lettering object and click the **Reshape Object** icon.
- 2 Drag the triangular letter spacing handle left or right. Letters are redistributed proportionately along the baseline.



- 3 Release the mouse button to complete and press **Esc**.



Tip When a lettering is set to Full Justification, the letters are evenly distributed along the baseline. To change the spacing for fully justified lettering, simply change the length of the baseline.

Adjusting individual letter spacing on-screen



Click Transform > Reshape Object to adjust individual letter spacing.

Spacing between letters is calculated automatically as a percentage of letter height. In most cases the default spacing is adequate. Sometimes, however, spacing between certain letters may appear too large or too small, depending on the shape of neighboring letters. To compensate for this visual effect, you can move one or several selected letters closer or further apart along the baseline to improve spacing.

To adjust individual letter spacing on-screen

- 1 Select the lettering object and click the **Reshape Object** icon.



- 2 Click the diamond handle at the center of a letter.



Tip To select multiple letters, hold down **Ctrl** as you select.

- 3 Drag selected letter/s along the baseline or use arrow keys to adjust the spacing.



Tip Alternatively, to move multiple letters, right-click the diamond handle of the first letter and drag. All letters to the end of the line move as one.

- 4 Release the mouse button to complete and press **Esc**.

**Adjusting line spacing on-screen**

Click Transform > Reshape Object to adjust line spacing.

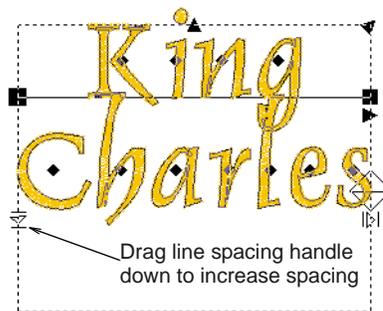
Change the space between lines in a multiple-line lettering object using the **Reshape** tool.

To adjust line spacing on-screen

- 1 Select the lettering object and click the **Reshape Object** icon.



- 2 Drag the triangular line spacing handle up or down to change line spacing.



- 3 Release the mouse button to complete and press **Esc**.

Applying auto kerning

BERNINA Embroidery Software provides automatic kerning for embroidery lettering. Kerning automatically adjusts spacing between pairs or triplets of letters. This can improve readability and appearance. Unlike character spacing, kerning is defined in the actual font.



Tip For more information about kerning, see the Windows Dev Center topic on [Justification, Kerning, and Spacing](#).

CHAPTER 29

EDITING EMBROIDERY LETTERING

BERNINA Embroidery Software gives you both interactive and precise numeric control over many attributes affecting lettering objects. You can adjust lettering objects as a whole as well as individual letters.

Lettering text can be edited directly on-screen or by means of object properties. When you first create lettering, it may be too big or small. Size can be adjusted interactively or numerically. Small, narrow letters may not require underlay, depending on their size and the fabric to be used.

Use the available tools to skew and rotate lettering objects. Adjust individual letters like any other embroidery object. Reshape letters, adjust stitch angles, and recolor letters individually. Baselines can be modified after placement directly on-screen or via object properties.

This section describes how to edit lettering text. It also covers scaling lettering and removing underlay from small lettering. It also deals with transforming lettering objects, adjusting individual letters, as well as reshaping baselines.



Editing lettering text

When you have created a lettering object, you can select it and make changes to the text directly on-screen or via **object properties**.

An I-beam appears.

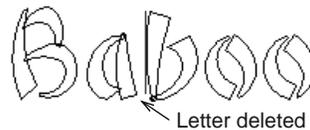


Editing lettering text on-screen

A Use Digitize > Lettering to edit lettering on-screen.

The easiest way to edit lettering is to change it directly on-screen.

2 Edit the text as required.



To edit lettering text on-screen

1 Click the **Lettering** icon and then click inside the lettering object.



Tip Press **Shift+Enter** to start a new line.

3 Press **Enter** to complete.



Editing lettering text with the Object Properties dialog

When you have created a lettering object, you can select it and make changes to it via **object properties**.

To edit lettering with the Object Properties dialog

- 1 Double-click or right-click a lettering object.
The **Object Properties > Lettering** dialog opens.



- 2 Edit the text in the text entry panel as required.
- 3 Adjust settings as required. See **Formatting lettering** for details.
- 4 Click **Apply**.

Childs Play



Note Letters are filled with stitches according to current stitch settings in the **Object Properties > Fill Stitch** dialog. You can change these at any time. See **Applying different stitch types & effects to lettering** for details.

Scaling lettering

When you first create lettering, it may be too big or too small. Size can be adjusted interactively or via object properties.

Scaling lettering with Select Object

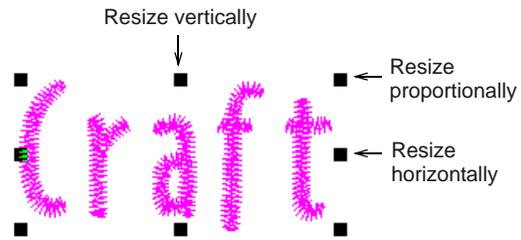


Use Transform > Select Object to scale lettering objects on-screen.

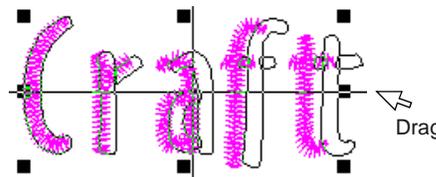
You can scale your lettering objects vertically, horizontally and proportionally with the **Select Object** tool. See also **Transforming lettering with Select Object**.

To scale lettering with Select Object

- 1 Click **Select Object** and select the lettering object.



- 2 Click and drag a handle to resize the object horizontally, vertically or proportionally.



- 3 Release the mouse to complete.

Scaling lettering with Reshape Object



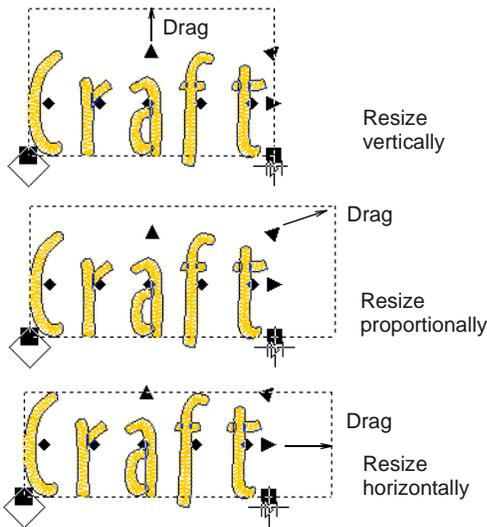
Use Transform > Reshape Object to scale lettering objects on-screen.

You can scale your lettering objects vertically, horizontally and proportionally with the **Reshape Object** tool. See also **Rotating lettering with Reshape Object**.

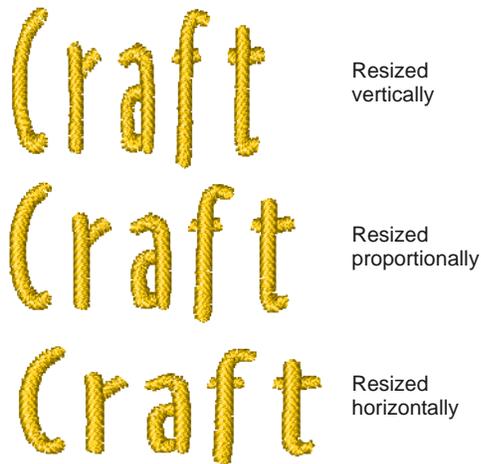
To scale lettering with Reshape Object

- 1 Select the lettering object and click the **Reshape Object** icon.

- Click and drag a dark triangular handle to scale the object horizontally, vertically or proportionally.



- Release the mouse button to complete and press **Esc**.



Adjusting letter dimensions

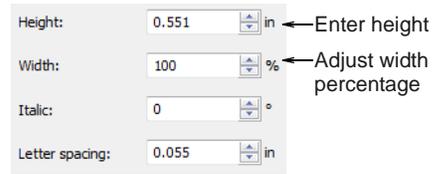
A Right-click Digitize > Lettering to adjust letter dimensions.

You can scale your lettering objects vertically, horizontally and proportionally via object properties.

To adjust letter dimensions

- Double-click or right-click a lettering object.

The **Object Properties > Lettering** dialog opens.



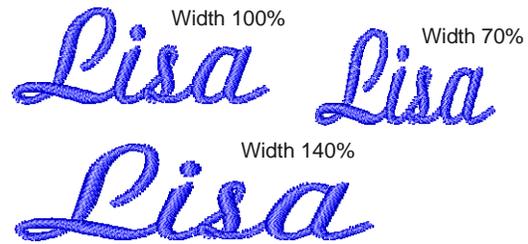
- Enter the height in the **Height** field.



Note Letter height can be between 1 mm and 200 mm. See also **Embroidery Fonts**.

- Enter the width as a percentage of height in the **Width** field.
- Click **Apply**.

The setting is applied to any selected lettering objects or to newly created lettering objects.



Tip Optionally, use the width and height controls on the **Transform** toolbar to resize selected lettering objects.

X:	-112.58	mm	W:	3in	mm	162.17	%
Y:	-53.33	mm	H:	25.38	mm	162.17	%

Check position of selection



Removing underlay from small lettering

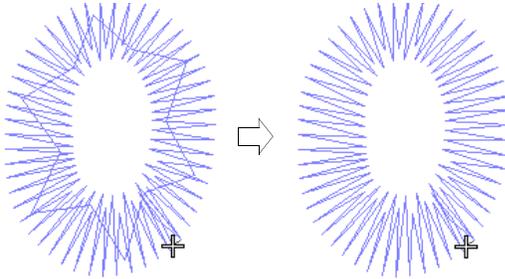


Use **Effects > Auto Underlay** to strengthen and stabilize objects with underlay stitching.

The quality of most lettering can be improved with an underlay using the same methods as for other **embroidery objects**. Small, narrow letters, however, may not require underlay, depending on their size and the fabric to be used. See also **Stabilizing with underlays**.

To remove underlay from small lettering

- 1 Select the lettering object.
- 2 Click the **Auto Underlay** icon.
The underlay is removed.



Transforming lettering objects

Use the available tools to skew and rotate lettering objects. See also [Scaling lettering](#).



Transforming lettering with Select Object

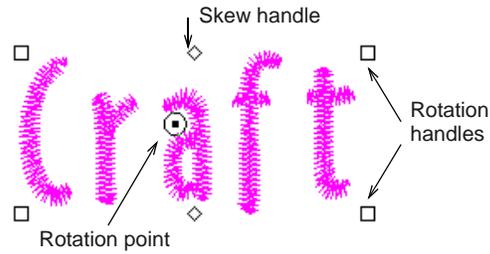
 Use Transform > Select Object to scale lettering objects on-screen.

You can transform lettering objects by manipulating **control points** on-screen with the **Select Object** tool. See also [Scaling lettering with Select Object](#).

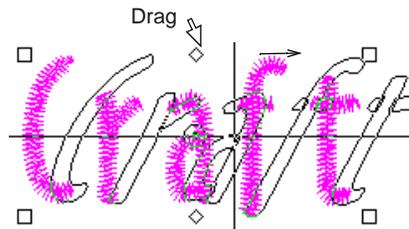
To transform lettering with Select Object

- 1 Click **Select Object** and select the lettering object.
Selection handles appear – these let you scale the object. See [Scaling lettering with Select Object](#) for details.
- 2 Click the lettering object again.

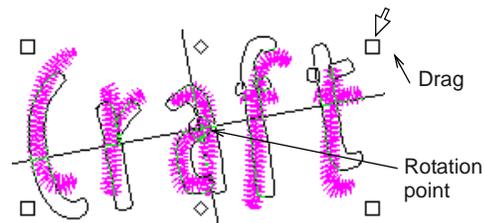
Another set of selection handles appears – these let you rotate and skew the object.



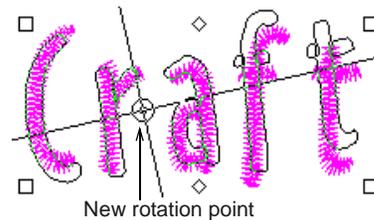
- 3 Click and drag one of the diamond-shaped handles to skew the lettering object horizontally.



- 4 Click and drag one of the hollow square handles to rotate the object.



Tip Drag the rotation point itself to a new location as required.



- 5 Release the mouse to complete.

Rotating lettering with Reshape Object

 Use Transform > Reshape Object to rotate lettering objects on-screen.

You can rotate lettering objects by manipulating control points on-screen. See also [Scaling lettering with Select Object](#).

To rotate lettering with Reshape Object

- 1 Select the lettering object and click the **Reshape Object** icon.
Control points appear around the lettering object.



- 2 Click and drag a solid square handle to rotate the lettering object.

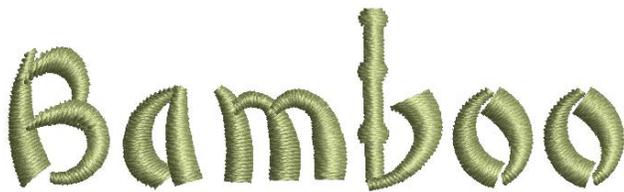


- 3 Release the mouse button to complete and press **Esc**.



Adjusting individual letters

As well as **scaling** and rotating lettering objects, the **Reshape Object** tool is used to manipulate individual letters. You can reposition letters in relation to each other, scale, rotate and skew them. You can also reshape individual letters, adjust stitch angles, and recolor them individually.



Repositioning letters on screen

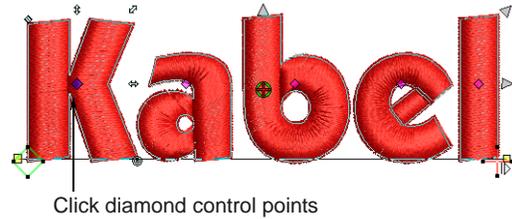


Use Transform > Reshape Object to reposition individual letters on screen.

You can reposition individual letters in a lettering object using the **Reshape Object** tool.

To reposition letters on screen

- 1 Select the lettering object.
- 2 Click **Reshape Object**.
- 3 Click the diamond control point in the centre of the letter.



Tip To select multiple or a range of letters, hold down **Ctrl** or **Shift** as you select.

- 4 Click-and-drag the letter to the new position:
 - ▶ To move the letter horizontally, drag it along the **baseline**.
 - ▶ To move the letter vertically, hold down **Shift** as you drag.
 - ▶ To move the letter freely, hold down **Ctrl** as you drag.



- 5 Release the mouse to complete and press **Esc**.



Transforming letters on screen



Use Transform > Reshape Object to transform individual letters on screen.

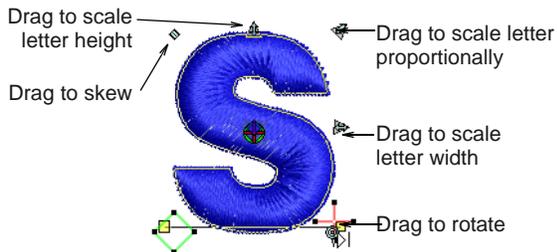
You can transform individual letters by manipulating **control points** on screen with the **Reshape Object** tool.

To transform letters on screen

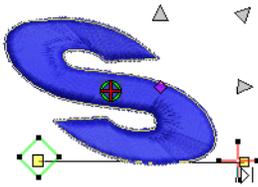
- 1 Select the lettering object and click **Reshape Object**.



- 2 Click the diamond control point of a letter. Another set of reshape nodes appear around the letter.



- 3 Click-and-drag a reshape node around the letter to transform it.



- 4 Press **Esc** to finish.



Reshaping letters on screen

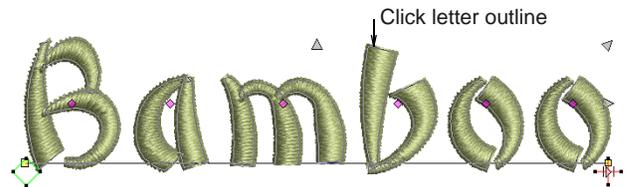


Use Transform > Reshape Object to reshape individual letters.

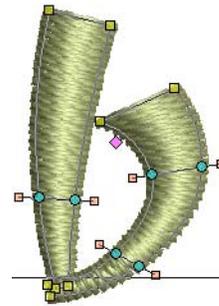
Create special lettering effects by reshaping letter outlines with the **Reshape Object** tool.

To reshape letters on screen

- 1 Select the lettering object and click the **Reshape Object** icon.

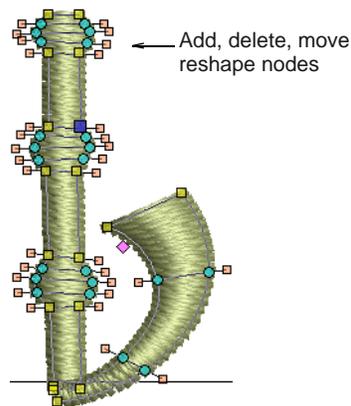


- 2 Click the letter outline. Reshape nodes appear around it.

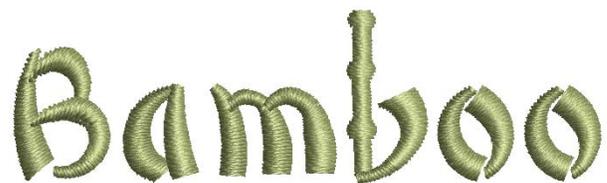


- 3 Zoom in the letter for precise reshaping. See [Zooming in & out](#) for details.

- 4 Reshape the letter by adding, deleting, changing or moving reshape nodes. See [Reshaping objects using reshape nodes](#) for details.



- 5 Press **Esc** and zoom out to view the results.

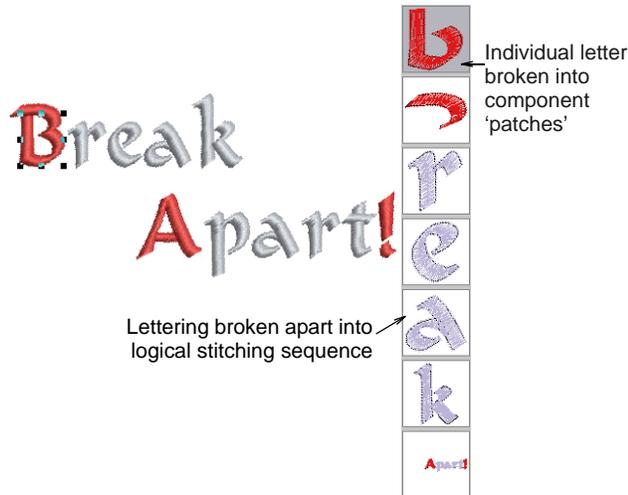


Breaking apart lettering for editing



Use Edit > Break Apart to split monograms, appliqués, lettering, and blackwork runs into component objects.

Applying the **Break Apart** function to a lettering object breaks it into a logical stitching sequence while maintaining lettering object characteristics. Object properties can be edited separately for single lines, single words, or even single characters. Stitching sequence is maintained. See also [Splitting into component objects](#).



Sequence logic is as follows:

- ▶ Multi-line lettering can be broken into separate objects per line
- ▶ Individual lines can be broken into separate objects per word
- ▶ Words can be broken into separate objects per letter.
- ▶ Letters can be broken into their individual embroidery patches. Lettering properties are lost but properties of each patch can be individually modified.



Tip An exception for single-line (multi-word) objects is the case of the center-out stitching sequence. Such objects are broken apart directly into single-letter objects. The stitching sequence is thereby preserved.

Adding stitch angles to letters

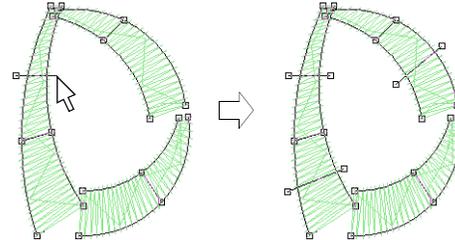


Use Edit > Add Stitch Angles to set different stitch angles for selected letters.

Set different stitch angles within letters with the **Stitch Angle** icon. Each segment of the letter can have a different stitch angle.

To add stitch angles to letters

- 1 Select a lettering object.
- 2 Click the **Add Stitch Angles** icon.
You are prompted to enter **angle point 1**.
- 3 Digitize stitch angles so that they intersect two sides of the object.



Note Make sure that the stitch angles do not intersect each other.

- 4 Press **Enter**.
Stitches are regenerated with the new angles.

Deleting stitch angles of letters

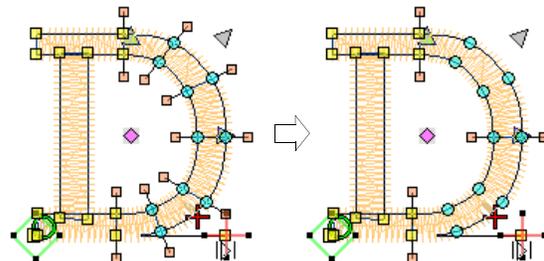


Use Transform > Reshape Object to delete individual stitch angles in lettering objects.

Delete individual stitch angles in lettering objects with the **Reshape Object** icon.

To delete stitch angles of letters

- 1 Select the lettering object and click the **Reshape Object** icon.
- 2 Click the diamond handle at the center of a letter.
- 3 Click the letter outline.
Reshape nodes appear around it.
- 4 Select and delete reshape nodes as required.



Note Lettering outlines are preserved after any angle deletion.

Recoloring letters

A Use Digitize > Lettering to recolor letters.

BERNINA Embroidery Software lets you change the color of individual letters within a lettering object.



Tip You can also insert a color change between two letters by keying a caret (^) symbol. Subsequent letters default to the next color in the palette. See [Creating lettering via dialog](#) for details.

To recolor letters

- 1 Click the **Lettering** icon and then click inside the lettering object. An I-beam appears.



- 2 Select a letter(s) by dragging the cursor over the letter(s).



- 3 Click a color on the color palette.
- 4 Press **Enter** to confirm changes.



Reshaping baselines

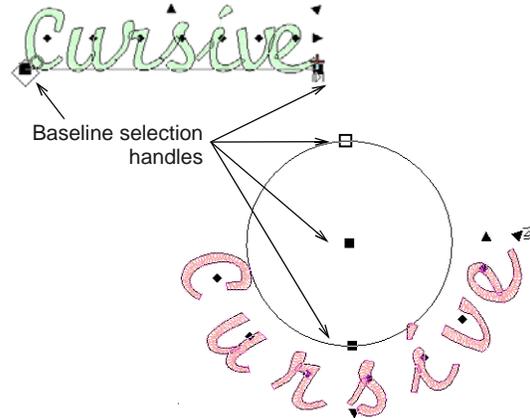
 Use Transform > Reshape Object to reshape lettering baselines.

Baselines can be adjusted on-screen after they have been placed in your design. Reshape straight baselines to place them on an angle. For **Vertical** baselines, you can also change baseline length and letter spacing. Reshape **Circle** and baselines to change curve depth, justification point and baseline length. Reshape **Any Shape** baselines by moving, changing, adding or deleting reshape nodes along the baseline. See also [Applying lettering baselines](#).

To reshape a baseline

- ▶ Select the lettering object and click the **Reshape Object** icon.

Different **control points** display for different types of baseline.

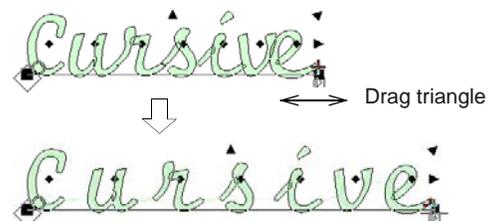


Tip The large diamond and cross represent start and end points. You may need to move them to access baseline selection handles. They will reposition themselves automatically based on changes you make.

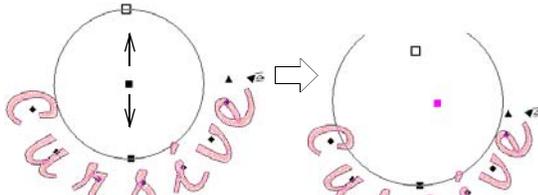
- ▶ To change the angle of a straight or vertical baseline, click and drag one of the large solid squares.



- ▶ To adjust the baseline length, click and drag the open triangle handle. Letter spacing adjusts accordingly.

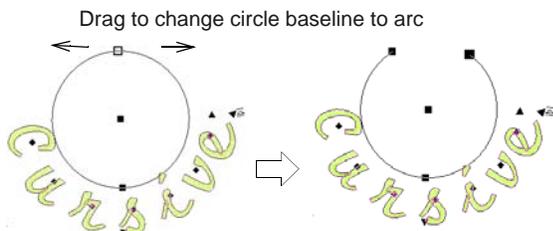


- ▶ To reshape lettering with a circular baseline, drag the handle at the circle center to adjust the radius.



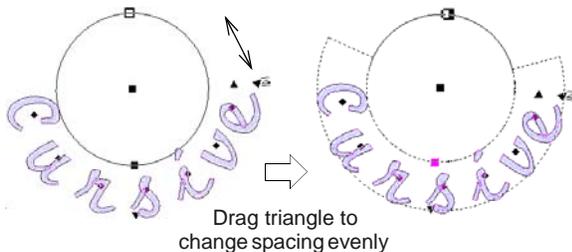
Drag up or down to change radius of circle

- ▶ On a circular baseline, there are actually two selection handles at the circumference of the circle, one on top of the other. Drag them apart to create an arc.



Drag to change circle baseline to arc

- ▶ To change letter spacing evenly around a circular baseline, click and drag the triangle.



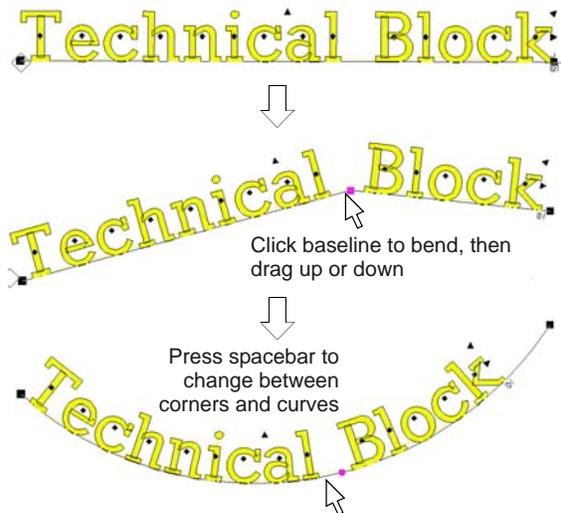
Drag triangle to change spacing evenly



Tip The exact letter positions depend on the justification – Left Justification, Right Justification, Center Justification, or Full Justification. If the baseline becomes too short, letter spacing is reduced, and letters may overlap. See [Setting letter justification](#) for details.

- ▶ To adjust Any Shape baselines, add, delete, change or move reshape nodes on the base line

like any embroidery object. See [Reshaping objects using reshape nodes](#) for details.

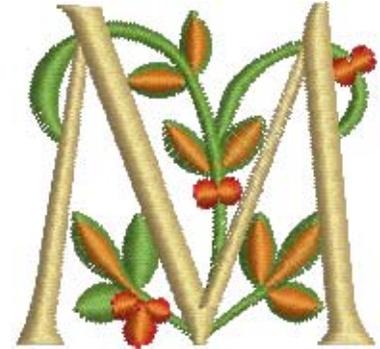


- ▶ Press **Esc** to finish.

CHAPTER 30

SPECIAL LETTERING FEATURES

All TrueType or OpenType fonts installed on your computer are also available to you when placing lettering in your designs. BERNINA Embroidery Software lets you add special characters to your lettering which do not appear on the keyboard. BERNINA Embroidery Software also provides a number of special fonts for fancy lettering as well as monogramming. Like all embroidery objects, each lettering object has its own properties. You can adjust these before or after creating lettering objects. BERNINA Embroidery Software also gives you precise control over the stitch angles of individual letters. Apply Elastic Lettering effects to lettering objects to make them bulge or arch, stretch or compress.



This section describes how to convert TrueType fonts to embroidery fonts. It also explains how to add special characters as well as fancy and monogram lettering to your designs. It also covers applying different stitch types to lettering objects as well as creating special effects with Elastic Lettering.

Converting graphic fonts to embroidery

In addition to the professional **embroidery fonts** included with the software, BERNINA Embroidery Software provides various techniques for converting any installed TrueType and OpenType font on your system to embroidery.

Broadway

小塚ゴシックプロ

TRAJAN PRO



Note Not all TrueType fonts are suitable for including in embroidery designs. Experiment with the ones you like and try different stitch settings.

Converting text to embroidery



Use Canvas > Convert Artwork to Embroidery to convert text to satin embroidery lettering with turning stitching.

The **Convert** tool converts selected CorelDRAW® text objects to:

- ▶ Satin embroidery lettering with turning stitching if the text is not enveloped and does not have an outline, or
- ▶ Non-lettering if the text is enveloped and has an outline.

To convert text to embroidery

- 1 Select **Artwork Canvas** mode.

Calibri

- 2 Select one or more text objects and click the **Convert** tool.

BERNINA Embroidery Software automatically switches to **Embroidery Canvas**. Source objects are removed from the design.

Once converted to an embroidery font, you can apply whatever font you prefer.



Tip You can also use the **Convert** tool with ordinary **vector objects**. See also **Converting vector artwork**.



Note If the selection contains both text fitted to a path and a drawing object, only the text will be converted to embroidery. The solution is to convert everything to curves before conversion.

Converting fonts to embroidery

A Right-click Digitize > Lettering to convert TrueType fonts to embroidery fonts via the dialog.

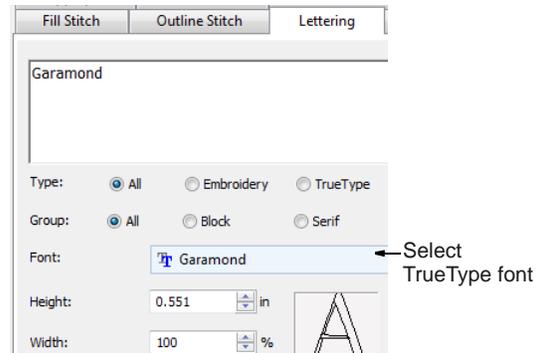
MS Windows® comes with a collection of TrueType and OpenType fonts installed and there are others available from various sources, including CorelDRAW® Essentials X6. All these fonts are available to you when placing lettering in your designs.



Tip Install new fonts using **My Computer > Control Panel**. Double-click the **Fonts** folder then select **File > Install New Font**. Before you can use the new fonts, you need to restart your computer and then BERNINA Embroidery Software will display the new fonts in the **Alphabet** list.

To convert a font to embroidery

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens.



- 2 Select a font from the **Alphabet** list.
Any TrueType or OpenType fonts installed on your computer are listed.
- 3 Enter the text you want to embroider in the text entry panel.
- 4 Click **Apply**.
- 5 Click on-screen where you want to place the letters.
The text is stitched using the selected font.



Tip Not all TrueType fonts are suitable for including in embroidery designs. Experiment with the ones you like and try different stitch settings.

Adding special characters

In BERNINA Embroidery Software, you can add special characters and symbols directly through the **Select Symbols** dialog or by means of the MS Windows® **Character Map**.

Selecting special characters

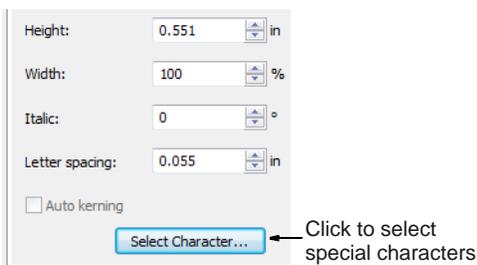
A Right-click Digitize > Lettering to select special characters via the dialog.

You can quickly add special characters and symbols to your lettering designs. If you know the keyboard shortcut for a symbol, add it to your lettering by entering the combination on-screen or in the **Object Properties > Lettering** dialog.



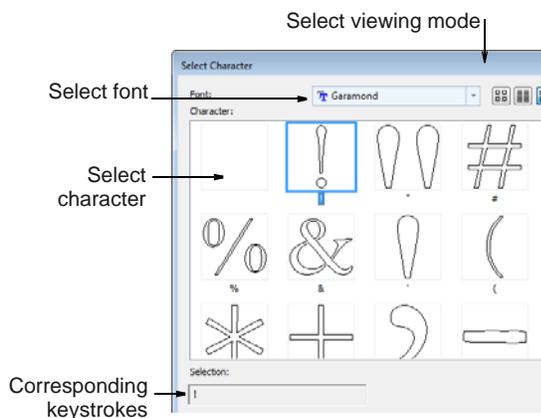
To select special characters

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens.



Tip If you know the **Alt** key code for the special character you require, you can key it directly into the text entry field. The Character Map gives you codes for all characters. See [Using the Character Map](#) for details.

- 2 Click **Select Character**.
The **Select Character** dialog opens.



Tip Select a viewing mode – you can list fonts by picture, character, or both.

- 3 Select a font from the **Font** list.
- 4 Select the character(s) you want to use.

Tip When you select a character, a keystroke appears in the **Selection** field. This indicates the key combination required to type the character directly on-screen. For example, **'m'** means press the **m** key while **'M'** means press **Shift+M**.

- 5 Click **OK**.
The selected characters are displayed in the text entry panel.
- 6 Click **Apply**.



Using the Character Map

Use the MS Windows® **Character Map** to provide quick access to common symbols and letters. The Character Map is usually installed as part of the MS Windows® setup. See your MS Windows® documentation for more details.

Tip You can create special characters in each **font** by holding down the **Alt** key on your keyboard and typing **0** (zero), its code, using the numbers on the keypad. For example, to type **è** with the code **232**, type **Alt+0232**. The character will appear when you release the **Alt** key. The Character Map gives you codes for all characters.

To use the Character Map

- 1 Open the MS Windows® Character Map.
By default, you will find it under **Start > Programs > Accessories > System Tools > Character Map**.



Alt key combination

- 2 Double-click a character, or select it and press **Select**.

The character appears in the **Characters to copy** box.



Note The equivalent **Alt** key combination is shown at the bottom of the dialog. This can be used to key the character directly on screen.

- 3 Click **Copy** to copy the character to the clipboard.
- 4 Paste it into the text entry panel by pressing **Ctrl+V**.
- 5 Click **Apply**.
Continue creating the lettering object in the normal way.

Using special fonts

BERNINA Embroidery Software provides a number of special **fonts** for fancy lettering as well as monogramming. See also **Embroidery Fonts**.

Adding fancy lettering

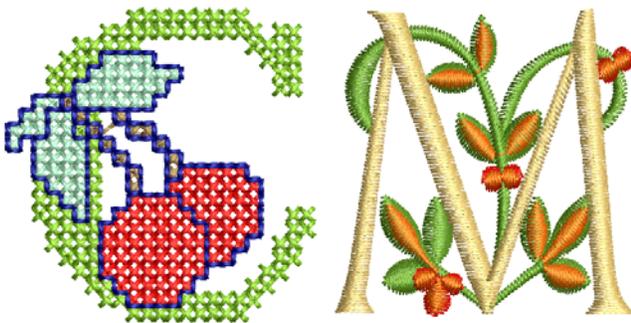


Right-click Digitize > Lettering to add fancy lettering via the dialog.



Use Edit > Break Apart to split monograms, appliqués, lettering, and blackwork runs into component objects.

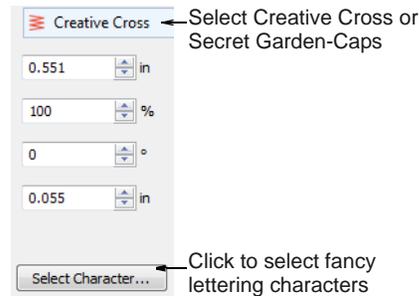
BERNINA Embroidery Software includes a number of fancy fonts such as **Creative Cross** and **Secret Garden-Caps**. These fonts include multiple colors and miniature designs. In effect, each letter is a self-contained design. This presents a few challenges when it comes to coloring and sequencing.



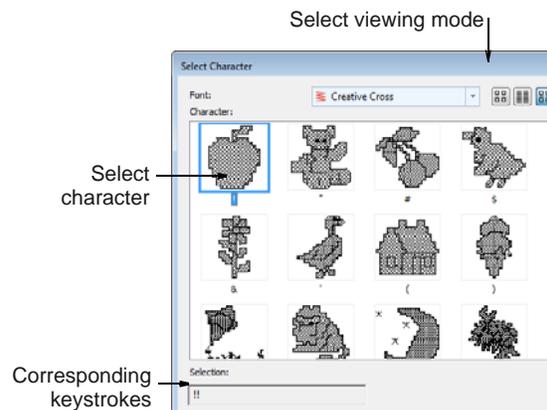
To add fancy lettering

- 1 Right-click the **Lettering** icon.

The **Object Properties > Lettering** dialog opens.

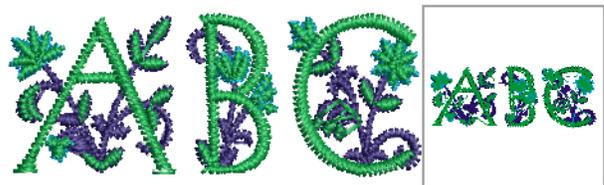


- 2 Select one of the included special fonts from the **Alphabet** list – e.g. 'Creative Cross' or 'Secret Garden-Caps'.
- 3 Optionally, use the **Select Character** button to preview and select special characters.



Tip When you select a character, a corresponding keystroke appears in the **Selection** field. You can use this to type the character directly on-screen once the font is selected.

- 4 Click **Apply** and click a starting point on-screen. Colors will default to the initial colors in the **Color Palette**. The letters will appear as a single lettering object in the **Color Film**.

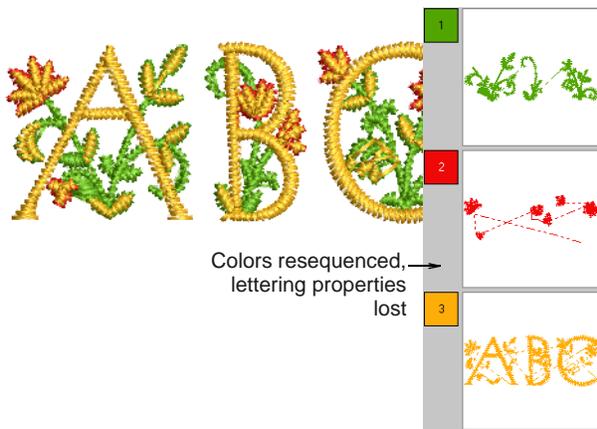


- 5 Place and size the lettering object as desired. Don't worry about colors for the moment.
- 6 Optionally, in order to change colors, assign them via the **Design Properties > Thread Colors** dialog. See **Matching threads** for details.

Notice in the **Color Film** object list, each letter is sewn out separately. This involves many color changes.



- Optionally, use the **Break Apart** tool to split the lettering object into its components. See [Breaking apart lettering for editing](#) for details. These can then be recolored and resequenced as desired. However, note that lettering properties are lost.



Adding flair script lettering

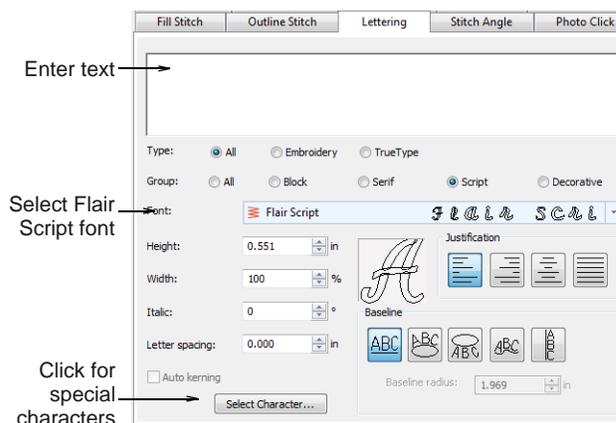
A Right-click Digitize > Lettering to add flair script lettering via the dialog.

Flair script is a special font which allows you to add decorative flairs to the end of text objects, mimicking flamboyant handwriting flourishes.

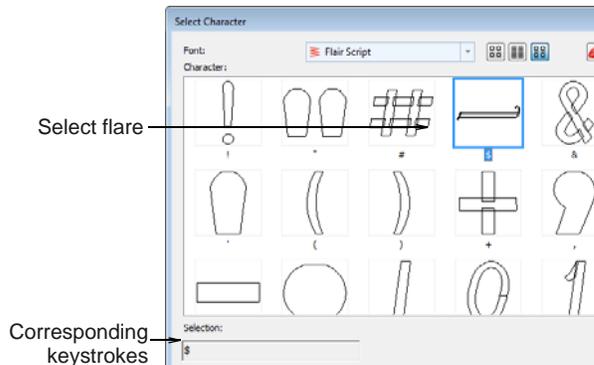


To add flair script lettering

- Right-click the **Lettering** icon. The **Object Details > Lettering** dialog opens.



- Select **Flair Script** from the **Font** list.
- Enter the text you want to embroider in the text entry panel.
- Click **Select Character**. The **Select Character** dialog opens.



- Select the flare character(s) you want to use. Scroll down for more options. See also [Selecting special characters](#).

- 6 Click **OK** to close the dialog.
The selected characters are displayed in the text entry panel.
- 7 Adjust lettering as required. See [Adding lettering to embroidery designs](#) for details.
- 8 Click **OK**.
- 9 Click where you want to place the lettering, or mark reference points for the selected **baseline**.
- 10 Press **Enter**.



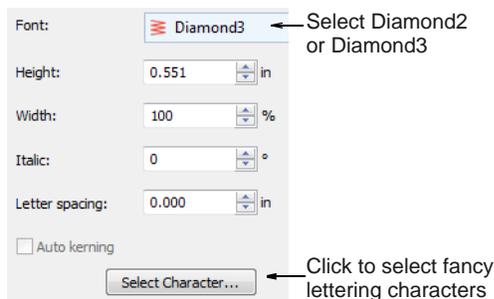
Tip Experiment with different flare characters to obtain the look you want.

Adding monogram lettering

In addition to the dedicated **Monogramming** feature, BERNINA Embroidery Software allows you to create monogramming designs using special monogram **fonts**. Use Diamond2 for 2-letter monograms and Diamond3 for 3-letter monograms. See also [Monogramming](#).

To add monogram lettering

- 1 Right-click the **Lettering** icon.
The **Object Properties > Lettering** dialog opens.

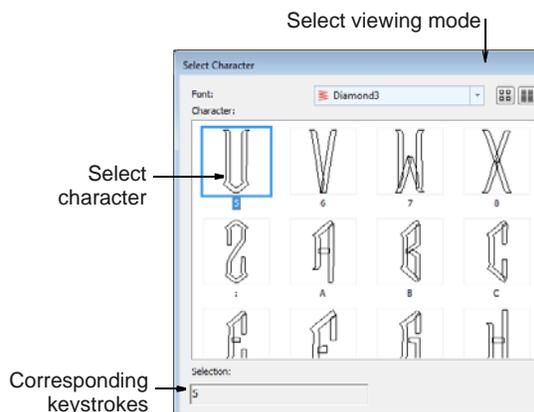


- 2 Select the desired monogram font:
 - ▶ **Diamond2** for a two-letter monogram: Diamond2 is a special font which includes two versions of each letter for left and right

positions, plus a border and flourish for two-letter designs. See also [Embroidery Fonts](#).

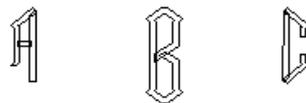
- ▶ Use **Diamond3** for a three-letter monogram: Diamond3 is a special font which includes three versions of each letter for left, center and right positions, plus a border and flourish for 3-letter designs.
- 3 Click **Select Character**.
The **Select Character** dialog opens.

Tip Select a viewing mode – you can list fonts by picture, character, or both.



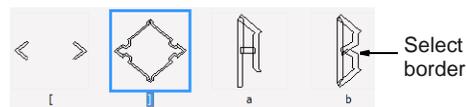
Tip When you select a character, a keystroke appears in the **Selection** field. This indicates the key combination required to type the character directly on-screen. For example, 'm' means press the **m** key while '**M**' means press **Shift+M**.

- 4 Select a left letter.
- Note** When selecting letters, make sure the letter orientation is correct. For example, Diamond3 has three sets of each letter, one for the left side, one for the middle and one for the right side.



- 5 Select the middle letter, if using Diamond3.
- 6 Select the right letter.

- 7 Select a border if required.



- 8 Click **OK**.
The selected characters are displayed in the text entry panel.

9 Click **Apply**.Diamond3
monogramDiamond2
monogram

Tip If you want the letters in your monogram to be different styles, create each letter separately.

Applying different stitch types & effects to lettering

By default, lettering objects are filled with satin stitching. You can apply other fill stitch types, such as **Step** or **Fancy**, as with any other **embroidery object**.



Adjusting Satin stitch settings for lettering

By default, lettering objects are filled with satin stitch. You can fill lettering shapes with **Special Satin** stitching as well as the regular satin stitch. It is particularly suitable for filling large, irregular lettering shapes that are too large for satin stitch. See **Creating satin fills** for details.



Where a letter is narrow, stitches are tight, thus requiring fewer stitches to cover the fabric. Where a column is very narrow, stitches need to be less dense because too many needle penetrations can damage the fabric. See also **Adjusting satin stitch spacing**.

Nightowl
Automatic Spacing

Nightowl
Manual Spacing



Note For larger lettering objects, various techniques are available for controlling long stitches. See **Preserving long stitches** for details. See also **Splitting long stitches in satin fills**.

Applying Raised Satin to lettering

Raised Satin can be applied to lettering with or without trapunto outlines to create raised lettering. See also **Quilted embroidery**.



Applying Step stitch settings to lettering

You can fill lettering shapes with Step stitch. It is particularly suitable for filling large, irregular lettering

shapes. Adjust stitch density and pattern as desired. See [Creating step stitch fills](#) for details.

Drifter
Drifter

Applying Fancy stitch settings to lettering

You can fill lettering shapes with **Fancy** stitching as well as the regular satin stitch. It is particularly suitable for filling large, irregular lettering shapes that are too large for satin stitch. The density is determined by the stitch spacing setting. See also [Creating fancy fills](#).

Drifter
Drifter

Creating 'elastic lettering' effects

Apply **Elastic Lettering** effects to lettering objects to make them bulge or arch, stretch or compress. You can create slant or pennant lettering with straight Elastic Lettering. You can create bulges and arches

with curved elastic lettering. Elastic Lettering can be used with any baseline.



Caution If you get an 'Out of Memory' error on your A200 or A730 embroidery machine, there are two possible workarounds:

- ▶ Select the lettering object and click the **Break Apart** tool before sending the design. This will turn lettering into embroidery patches – i.e. no longer a lettering object. See [Splitting into component objects](#) for details.
- ▶ Save as EXP and send to the machine as an EXP file.

Distorting lettering objects

Four types of **Elastic Lettering** effect are available – **Straight**, **Curved**, **Perspective** and **Diamond**.

To distort lettering objects

- 1 Select the lettering object you want to distort.
- 2 Select **Edit > Elastic Lettering**.
- 3 Select an elastic type from among the following alternatives:



Straight

Curved



Perspective

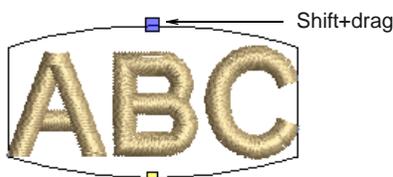
Diamond

Different handles display around the object outline depending on the **Elastic Lettering** type.

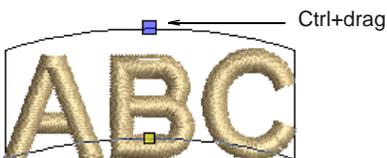


4 Drag a handle to reshape the object:

- ▶ To move two handles in opposite directions, hold the **Shift** key down while dragging a handle.



- ▶ To move the handles in the same direction, hold down the **Ctrl** key while dragging a handle.



5 Press **Enter** to complete.

Editing lettering in Elastic Lettering

A Click Digitize > Lettering to edit letters in envelopes on-screen.

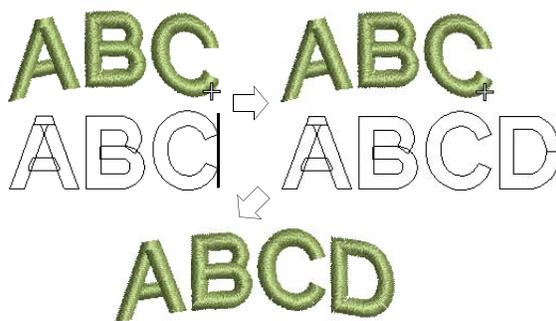
You can edit lettering in Elastic Lettering on-screen in the same way as normal lettering. When you click inside the lettering, a duplicate displays below the envelope.

To edit lettering in Elastic Lettering

1 Click the **Lettering** icon then click inside the lettering object.

Duplicate letters appear below the selected shape in their original form. The cursor changes to an I-beam and appears after the last letter.

2 Click inside the duplicate lettering object and edit text as required.



3 Press **Enter** to complete.

The lettering in the Elastic Lettering is updated.

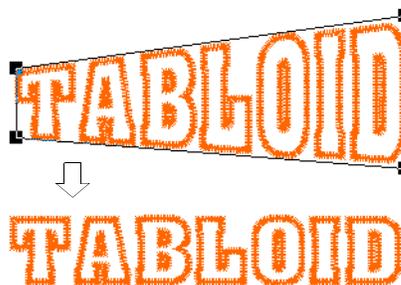
Removing Elastic Lettering

Return an object to its original shape by removing the Elastic Lettering.

To remove Elastic Lettering

- ▶ Select the lettering object.
- ▶ Select **Edit > Elastic Lettering > None**.

The **Elastic Lettering** is removed and the letters return to their original shape.



CHAPTER 31

MONOGRAMMING

A monogram is a design composed of one or more letters, typically the initials of a name, used as an identifying mark. The Monogramming feature offers a simple way to create personalized monograms using a selection of pre-defined monogramming styles, border shapes and ornaments, together with a set of tools to help you place these elements in creative and decorative ways.

This section details the creation of monogram lettering with initials or with a name, how to add ornaments to monograms, and how to create ornament layouts. It also covers adding and creating your own borders.



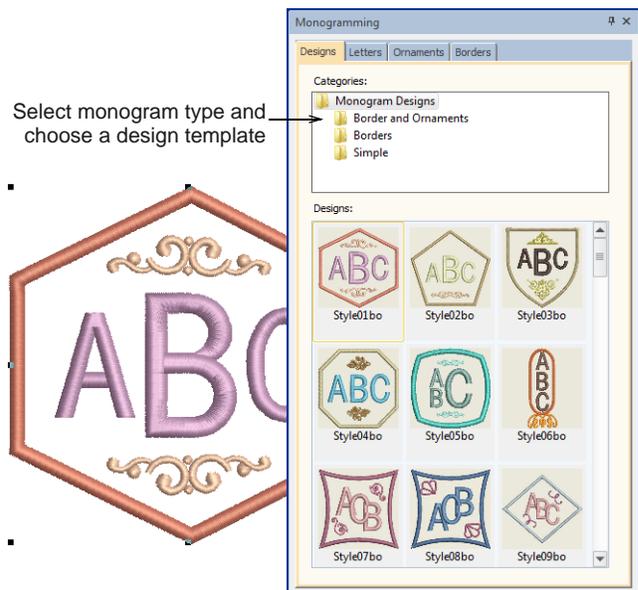
Monogram designs



Use Digitize > Monogramming to create personalized monograms using a selection of pre-defined monogramming styles, border shapes and ornaments.

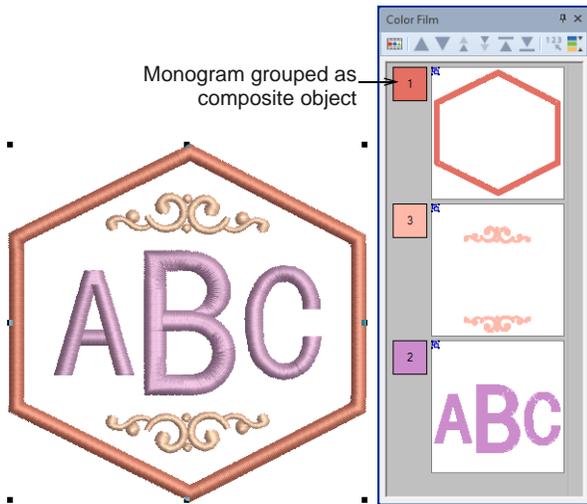
You build monograms using the **Monogramming** docker. The simplest way to get started is to select a base design from the new **Designs** tab. This tab gives you a selection of design templates ranging from lettering only, with borders, or with ornaments. Select

one as a starting point and then modify by means of the other tabs.

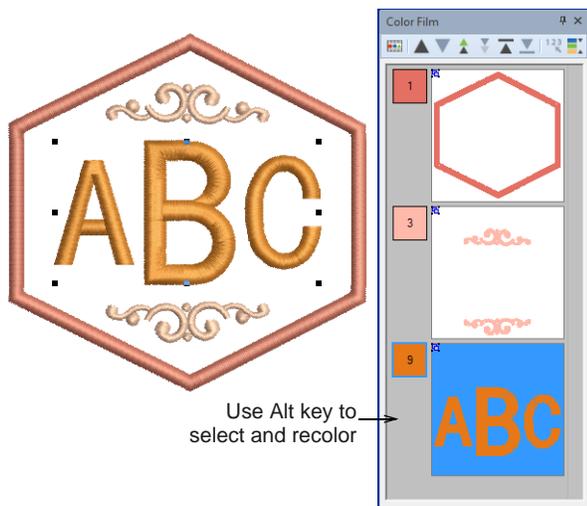


Note that the monogramming design is grouped in the **Color Film** docker. It is treated as a single, composite object. It can only be edited via the **Monogramming** docker. It cannot be ungrouped but it can be broken

apart into its components. See also [Breaking apart lettering for editing](#).



However, if all you want to do is recolor monogram elements, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.



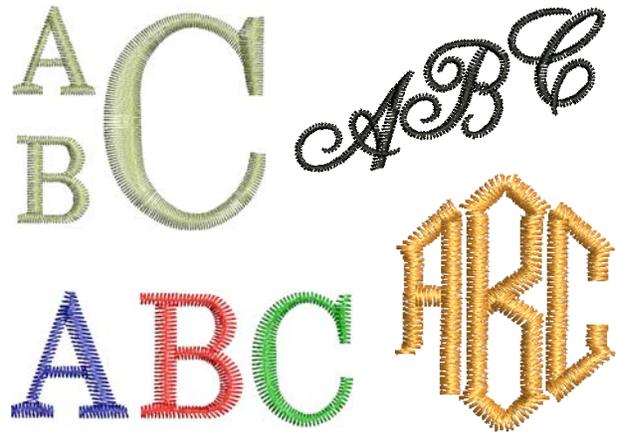
Monogram lettering



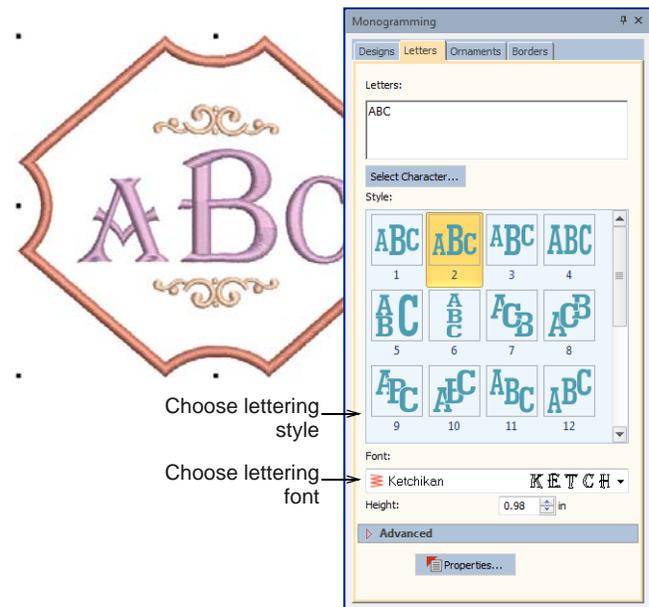
Use Digitize > Monogramming to create personalized monograms using a selection of pre-defined monogramming styles, border shapes and ornaments.

The **Letters** tab of the **Monogramming** dock allows you to create personalized monograms with initials, including special characters and symbols, or unlimited lines of characters. Any number of initials

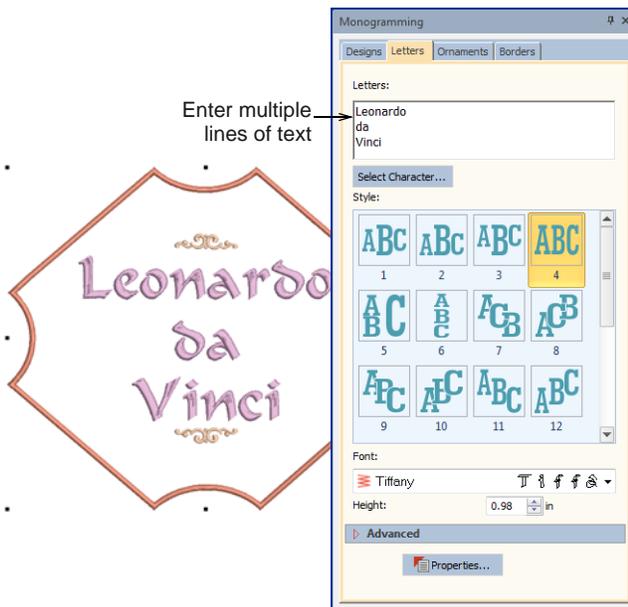
can be entered into your monogramming design, including special characters and symbols.



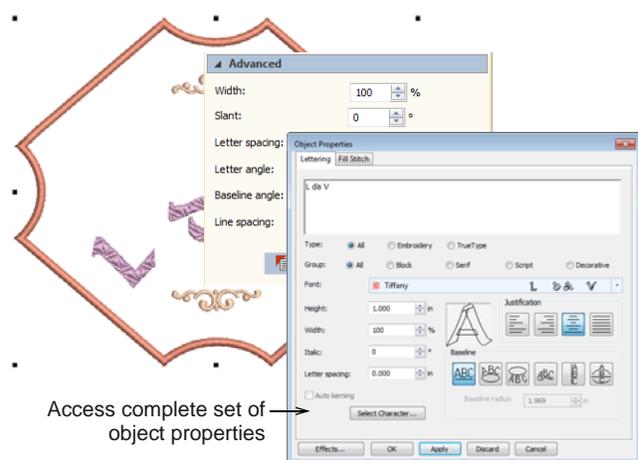
The **Letters** tab provides similar options to the **Lettering** tab of the **Object Properties** dock. If you are using one of the template designs, the easiest way to adapt it is to apply a different style. Change initials as required and choose from any number of native embroidery fonts or any TrueType font installed on your system. In addition, this tab also provides a selection of styles to choose from.



In place of single letters, the same tab allows you to enter multiple lines of text.

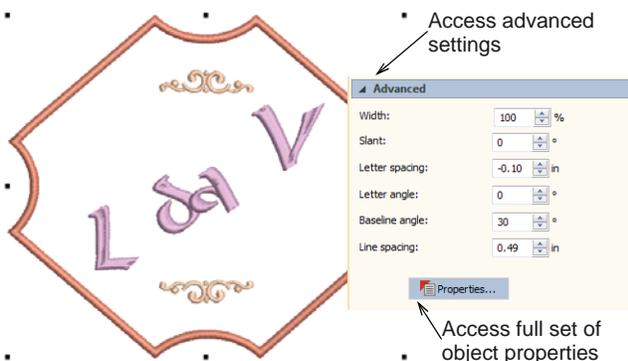


lettering. All settings can, however, be controlled via the **Object Properties** dialog.



Monogram ornaments

If a selected style doesn't quite give you what you are looking for, open the **Advanced** panel to access more settings. Use these to adjust letter width, spacing, etc. Adjust letter rotation and baseline angle. These allow you to rotate individual letters or the entire baseline.



Click **Properties** to make any further adjustments – e.g. stitch type. The default values for monogram lettering are different from those for conventional

Use Digitize > Monogramming to create personalized monograms using a selection of pre-defined monogramming styles, border shapes and ornaments.

Ornaments can be added to a monogram either from motif patterns or from any design file. You have a choice of:

- ▶ Adding ornament motif patterns or designs
- ▶ Creating single ornament layouts
- ▶ Creating multi-ornament layouts.

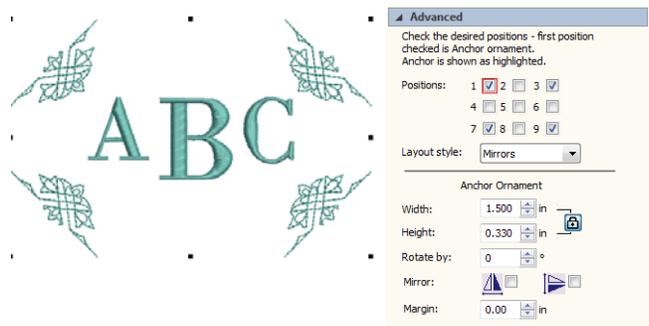
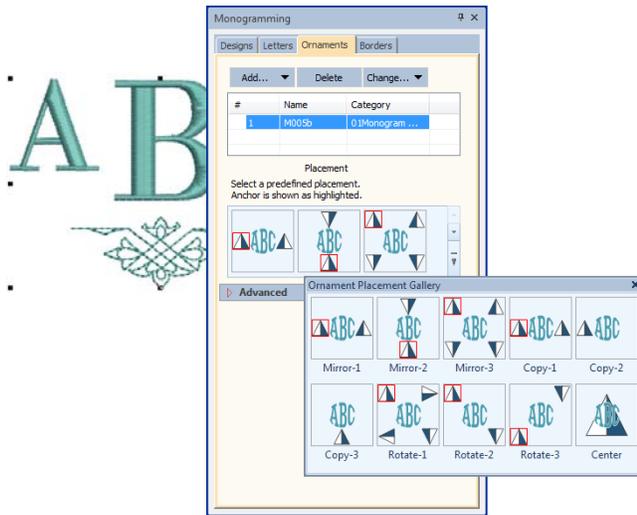


Modifying ornaments

If you are using a template design or adapting another monogram, it is a simple matter to change the ornament to a different type or configuration. Use

the buttons at the top of the **Ornaments** tab to add, delete, or change ornaments.

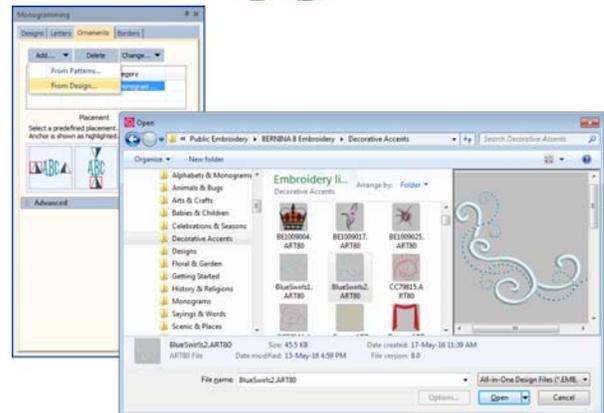
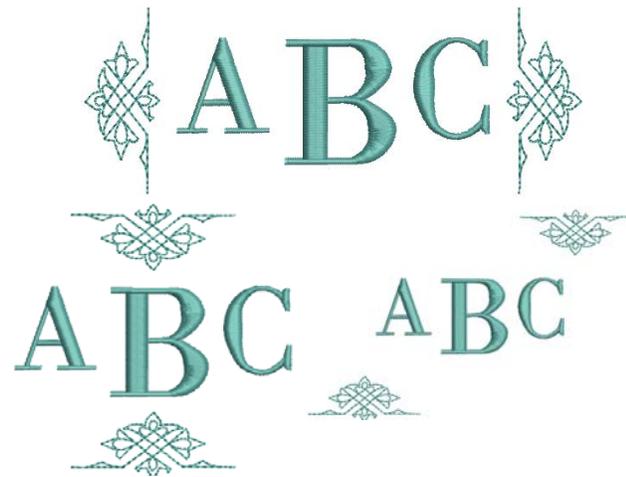
These settings give you precise control over ornament placement, size, rotation, orientation, and margin.



Choose from a range of preset placement patterns, including **Mirrors**, **Duplicates**, and **Cycle**. Note that the pyramid icon indicates not only the placement but also the orientation of the pattern in both horizontal and vertical planes.

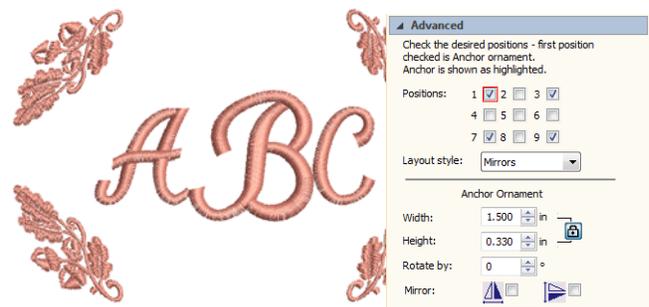
Adding ornaments

You can add up to ten ornament sets to a monogram design and change them at any time. Any available pattern set can be used. A set of ornamental designs is also available. These are stored in their own **Decorative Accents** folder.



If the preset pattern gallery doesn't quite give you what you are looking for, open the **Advanced** panel.

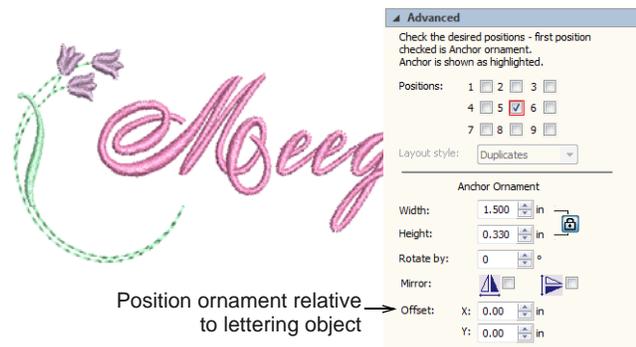
Use the checkboxes to add up to eight instances of a selected ornament. These are arranged according to ornament placements relative to the lettering. Excluding position #5, any combination of checkboxes can be used.



The first selected serves as the 'anchor' position (highlighted in red). All other ornaments are sized, rotated and mirrored in relation to it. Use the **Width** and **Height** fields to change ornament dimensions. The **Lock Aspect Ratio** toggle forces width and height to maintain their proportions. Use the **Margin** setting to offset ornaments from the lettering.

Creating single ornament layouts

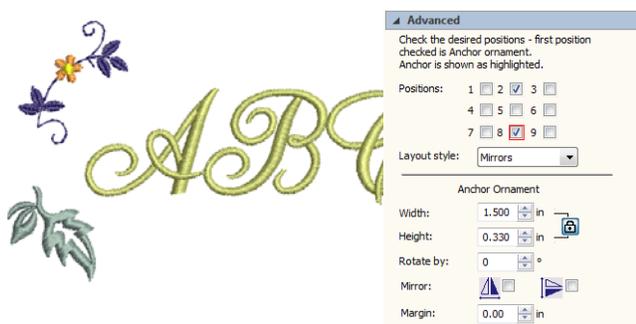
Use **Position #5** to insert an ornament as a standalone element within a set. All other checkboxes are unchecked automatically. **Width**, **Height**, and **Rotate By** fields and **Mirror** checkboxes remain available, and **Offset** controls replace the **Margin** control.



Use the **X** and **Y** fields in the **Offset** panel to position the ornament horizontally or vertically relative to the lettering object. These settings specify the position of the ornament center relative to the center of the lettering object.

Multi-ornament layouts

You can add up to eight instances of a selected ornament to your monogram. Any combination of ornaments and ornament positions can be used. Add the ornament sets you want and assign placements to each one.



Remember, if you want to recolor monogram elements, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.

Monogram borders



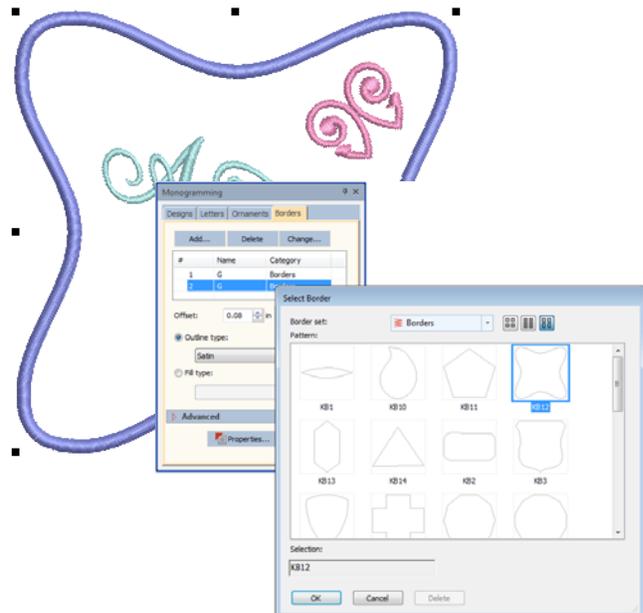
Use **Digitize > Monogramming** to create personalized monograms using a selection of pre-defined monogramming styles, border shapes and ornaments.

You can add up to four borders of the same shape to a monogram design.



Changing borders

If you are using one of the template designs, it is a simple matter to change borders. Use the **Change** button on the **Borders** tab to select from one of the many available.

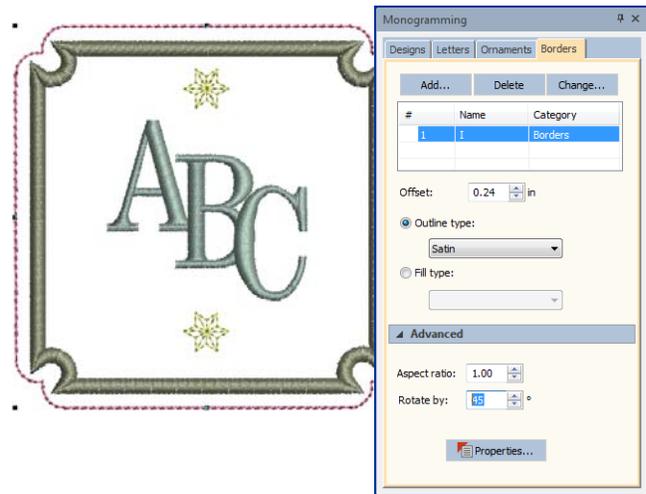


Adjusting border shape & offset

Use the **Aspect Ratio** settings to adjust height and width proportions.

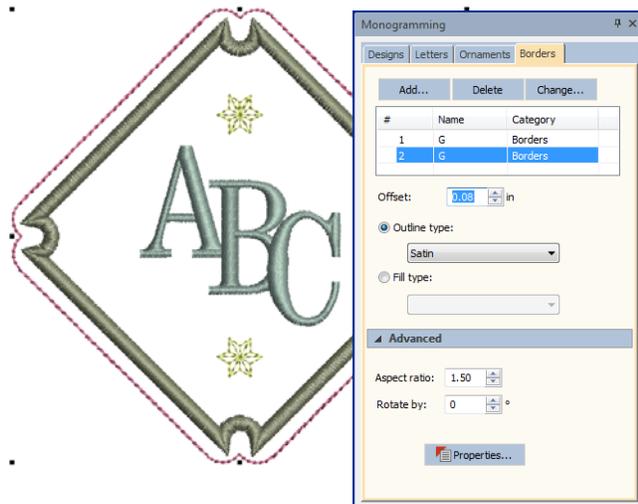


Use the **Rotate** field to re-orientate the border as desired.

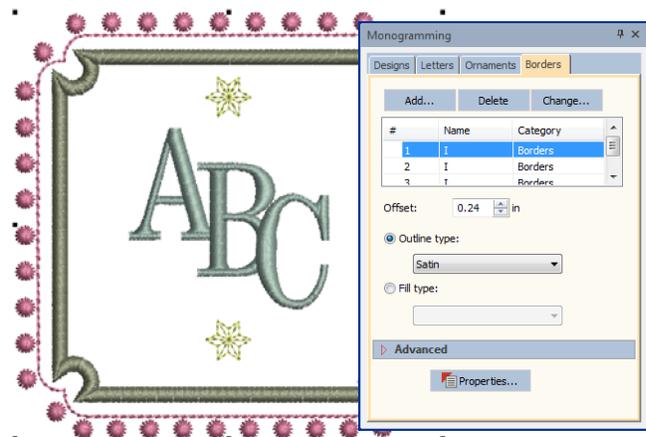


Adding multiple borders

Use the **Offset** field to fine-tune margins between lettering and border, and between border and border.

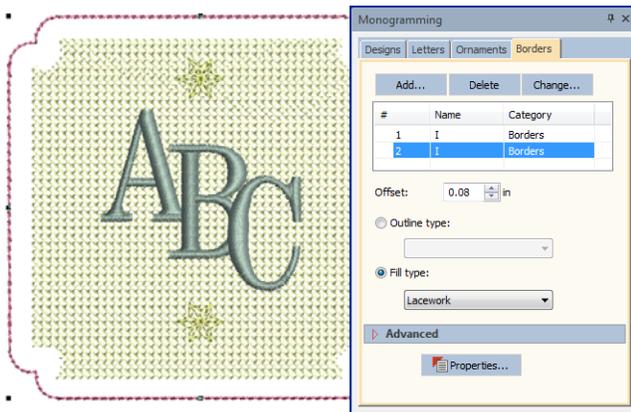


Add up to four borders to the selected monogram. Use the **Offset** field to adjust margins between multiple borders. The software lets you enter a negative offset. This allows you to create multiple overlapping borders.



Use the **Stitch Type** buttons to change to line or fill stitch type for selected borders. Satin Line is the default stitch type. All line and fill stitch types

available in the software can be used as borders. Click the Properties button to make further adjustments.



Remember, if you want to recolor monogram elements, you can select them individually without breaking apart the monogram. Simply hold down **Alt** and click the object.

Custom borders

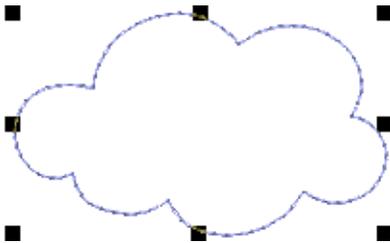
The **Add Border** dialog offers a list of pre-defined border shapes. You can also create your own to add to the library. These can be saved to the default 'Borders' set or one of your own creation. Borders must be closed and, by default, Satin is always used as the default border stitch type. This can be changed once the border is selected in the **Monogramming** dialog.



Tip Like borders, you can create your own ornament patterns for use in monograms using the **Create Pattern** tool. See [Managing patterns](#) for details.

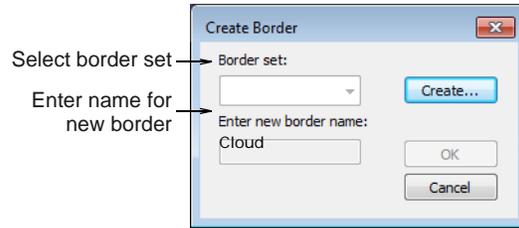
To create your own border

- 1 Select the closed embroidery object you want to save as a border.

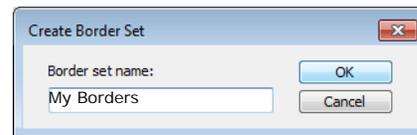


- 2 Select **Settings > Create Border**.

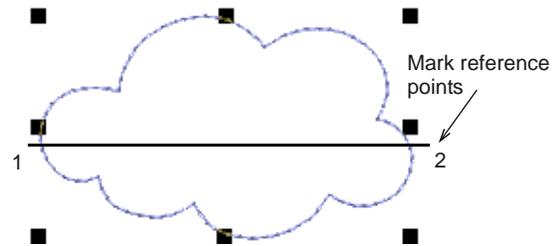
The **Create Border** dialog opens.



- 3 Select a border set from the list. Optionally, click **Create** to define a new border set. Enter a name and click **OK**.



- 4 Enter a name for your new border and click **OK**. You are prompted to digitize the start and end points of the border.
- 5 Click to mark two reference points on the border. Reference points set the standard orientation of the border.



- 6 Click **OK**. The new border is saved to the border set and a confirmation message displayed.

PART VII

DESIGN PROCESSING & OUTPUT

At some stage you will actually want to output your designs to printer, machine, or storage device. For this, you will need an understanding of the different print options, embroidery file types and the storage media available.

Hooping designs

This section describes how to choose and display hoops in BERNINA Embroidery Software. It covers creating and modifying custom hoops. It also deals with hooping large designs. See [Hooping Designs](#) for details.

Outputting designs

This section describes how to print worksheets, appliqué patterns, color films, and thread charts. It also covers stitching out designs, both singly and as multi-hooped designs. See [Outputting Designs](#) for details.

Machine files

This section describes how to select conversion options for opening and saving different stitch and outline design formats. It also deals with storing designs to design card. See [Working with Machine Files](#) for details.

CHAPTER 32

HOOPING DESIGNS

Fabrics must be hooped before stitching out on the machine. BERNINA Embroidery Software allows you to select from a wide range of standard factory-supplied hoops. If your project contains a large design or a number of smaller designs, you may need to use multiple hoopings. If you have a hoop which does not appear in the list, you can define a custom hoop from scratch or based on a standard hoop. See also [Displaying the hoop](#).



This section describes how to choose and display hoops in BERNINA Embroidery Software. It covers creating and modifying custom hoops. It also deals with hooping large designs.

Hooping concepts

There are four main cases when hooping designs in BERNINA Embroidery Software:

- ▶ A single design that fits within a single hoop.
- ▶ A single design that fits within a single hoop, but which is repeated continuously.
- ▶ Large work-piece layouts involving multiple designs each requiring its own hooping.

- ▶ Large single designs that will not fit within a single hoop and require multiple hoopings.

With each hooping, there is generally only one important reference point – the center of the hoop. This is particularly so where machines automatically center the design. When designs are located on a large work piece, like a table cloth, design extents and geometric center become important for positioning.

Single designs in single hoopings

As a beginner, you will generally use designs that fit entirely within the available hoops for your particular

machine. You will mostly use default settings both in the software and the machine. The hoop center becomes the reference point for all designs you do in this manner. This technique provides the basis for all other techniques you will use. See [Stitching out single designs](#) for details.



Continuous embroidery

Continuous embroidery consists of a single design, repeated continuously, that fits within a single hoop.

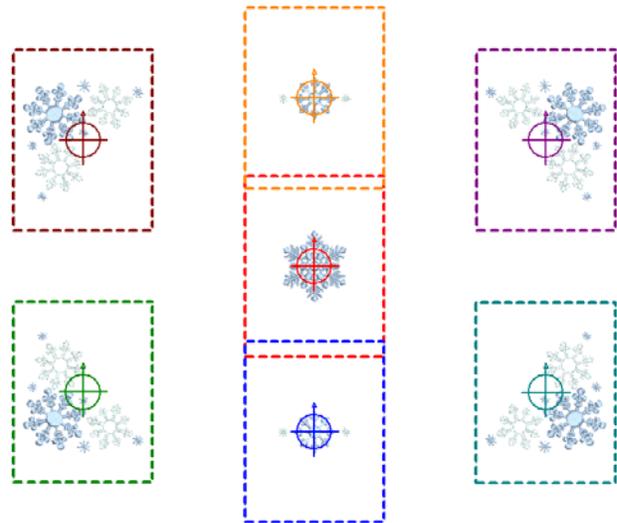


In BERNINA Embroidery Software, continuous embroidery can be achieved in one of two ways:

- ▶ Automatic continuous embroidery consists of multiple design repeats combined with multi-hooping to create output files with automatic registration marks. See [Automatic continuous embroidery](#) for details.
- ▶ Manual continuous embroidery consists of a single design with manually inserted basting stitch markers or graphic markers at start and end of design for alignment. See [Manual continuous embroidery](#) for details.

Single hoop work-piece layouts

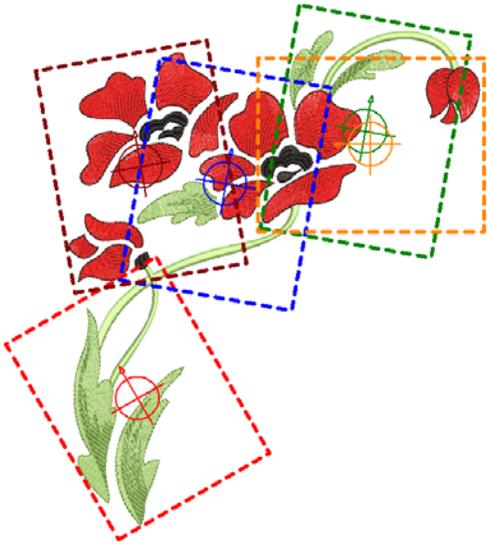
As an intermediate user, you may want to create design layouts on large work pieces. Each design will still fit in a single hoop but there may be multiple designs in the layout. Each hooping has its own reference point that is used with the hoop template to accurately place the design at the correct orientation. As there is only one design per hooping, there is no need for secondary placement points. The main benefit of this technique is that the complete layout can be accommodated within a single design file with the work piece as reference and all components included. See [Stitching out work-piece layouts](#) for details.



Multi-hooped designs

If your design is too large or involves a large work area, you have the option of splitting it into multiple hoopings. The **Multi-Hooping** toolset lets you strategically position hoops until you obtain the least

number of hoopings necessary to accommodate the whole design layout.



Each hooping contains an object or group of objects that can be stitched out on their own. Hoopings are stitched consecutively to form the whole design. They can be sent directly to machine or saved to file. See [Creating multiple hoopings](#) for details.

Selecting hoops

Whenever you create a new design, a single hoop representing the embroidery hoop you connect to your embroidery machine appears by default in the design window. A range of hoop sizes is available for supported machine types. You can change hoop orientation on screen for ease of [digitizing](#).

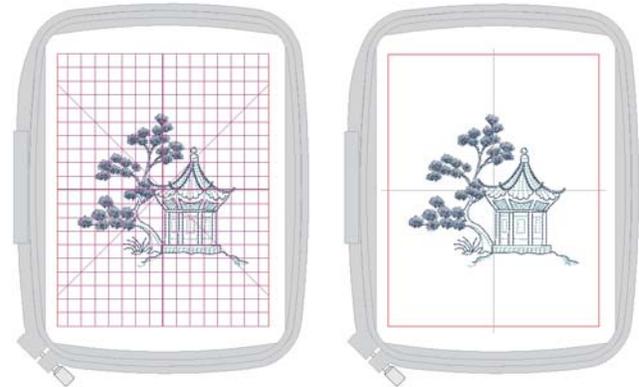
Hoops & templates

When it comes to stitching out, it is important to align the fabric squarely in the hoop, with even pressure on all sides, and fabric patterns and weaves running perpendicular to the hoop. Otherwise, fabric bias allows stretch. This can distort stitching and result in puckering. Each hoop contains vertical and horizontal

centering marks on the frames. These help with aligning both the fabric and the design.



Bernina hoops also come with a clear plastic template overlay. These include alignment lines, with tiny holes which allow you to create positioning marks. Positioning templates for all Bernina hoops are included in BERNINA Embroidery Software. Hoop templates can be toggled on or off independently of the hoop itself.



The software also lets you specify which foot you are using with your selected hoop. It then adapts the allowable sewing area accordingly.



Embroidery foot # 15



Embroidery foot # 26

Uses...

- ▶ Templates are displayed with alignment and registration guide markings. This allows you to align the design in the hoop on screen, relative to the markings.

- ▶ Templates are printed with alignment and registration markings. This allows you to cut out the printed design and align it in the hoop with the physical template.

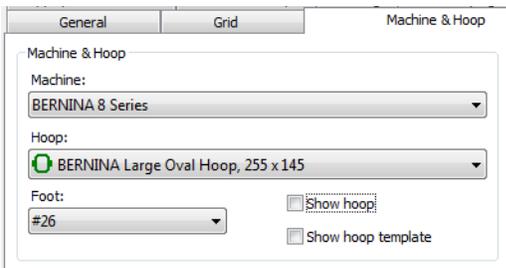
Changing hoops

-  Click View > Show Hoop to show or hide hoop. Right-click for settings.
-  Click View > Show Hoop Template to show or hide hoop template.

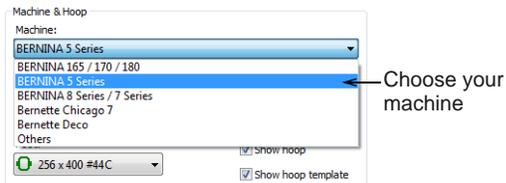
From the range of hoop sizes available, select the smallest hoop which will accommodate your design. This will hold the fabric tight while stitching. When you choose a new hoop, it becomes the 'current' hoop until changed in the present or a future session.

To change hoops

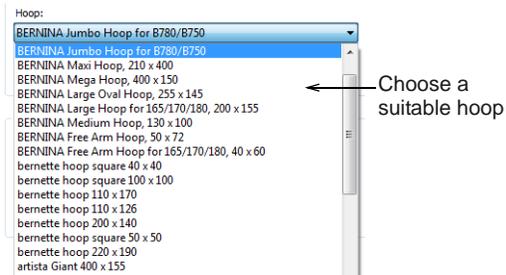
- ▶ Right-click the **Show Hoop** icon. The **Options > Machine & Hoop** dialog opens.



- ▶ Choose your machine. The hoop list is filtered to display compatible hoops.

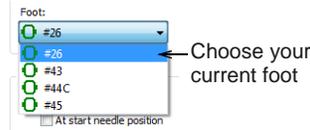


- ▶ Select a hoop to suit your current design.



Note In the hoop droplist, factory hoops are shown with a green, rounded-rectangle icon, while custom hoops are shown with a grey, circular icon.

- ▶ Select the foot you are currently using. This will affect the stitchable area within the hoop.



- ▶ Use the checkboxes to toggle on/off hoop display or the hoop template. The template may be used to help position your design within the hoop.



- ▶ Alternatively, use the **View** toolbar toggles to turn on/off hoop and/or hoop template.



Tip You can include the hoop template in the design worksheet, together with alignment and registration guide markings. This allows you to cut out the printed design and align it within the hoop. Use the template markings to align it to physical hoop template. See [Printing multi-hooped designs](#) for details.

Centering hoops

-  Click View > Show Hoop to show or hide hoop. Right-click to change hoop settings.

By default, BERNINA Embroidery Software ensures that your design is always centered in the hoop. However, you can use the manual option to lock the hoop position. This means it won't automatically center while you are digitizing. If you are creating a single hooping, however, always turn on auto-centering to check that the design will fit within the selected hoop.



Note Some embroidery machines will always center the design. You can set your software to match the exact behavior of the machine.

To set the hoop center

- ▶ Select **Settings > Options** and select the **Hoop** tab or right-click the **Show Hoop** icon. The **Options > Machine & Hoop** dialog opens.



- ▶ In the **Position** panel, specify how you want the hoop centered:

Option	Purpose
Automatic centering	The hoop always centers itself around the design center.
At start needle position	The hoop centers itself around the start needle point. If using this option, you should turn off the 'Maintain Automatically' option in Auto Start & End. See also Setting automatic start & end points .
Manual	Allows manual placement of the design anywhere in the hoop. Only suitable for machines which allow off-centering of designs within the hoop.
Set hoop center	Allows an arbitrary hoop center to be created by digitizing a point in the design window.

- ▶ Click **OK**.
- ▶ If you have selected **Set Hoop Center**, click a point in the design window where you want to center the hoop.



Automatic centering

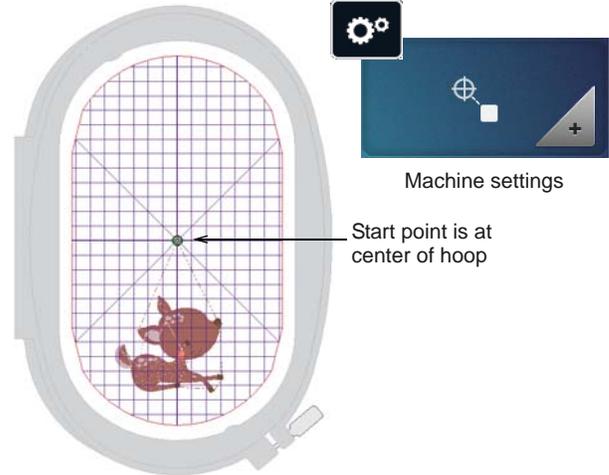


Manual

- ▶ If you want to off-center the design, turn off **Maintain Automatically**. You might do this to set up continuous designs or for special placements such as pockets. Use this with machines that allow

you to maintain start and end connectors. See also [Stitching out embroidery on garments](#).

- ▶ With machines that always start in the center of the hoop, make sure automatic centering is set to the start needle position. See also [Setting automatic start & end points](#).

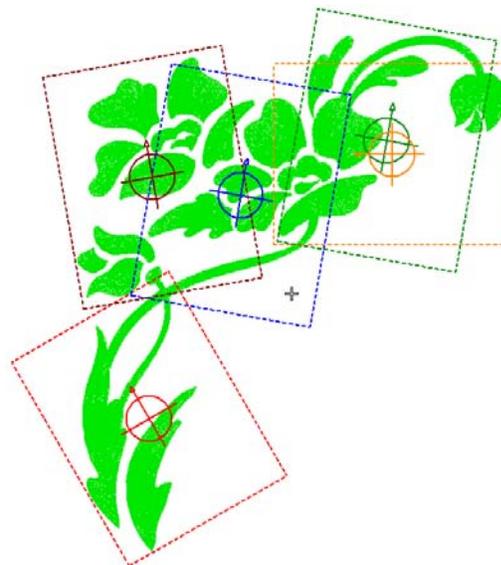


Machine settings

Start point is at center of hoop

Creating multiple hoopings

BERNINA Embroidery Software allows you to specify multiple hoopings manually or automatically. Manual hooping is generally better than automatic, except for simple designs. However, it does require greater understanding of both design and production processes.



Note When a large design requires multiple hoopings, it is important to establish the stitching order so that objects in the foreground are sewn after those in the background. This is normal practice for

any design. See [Combining & Sequencing Objects](#) for details.

Multi-hooping concepts

The goal of multi-hooping is to:

- ▶ Accommodate a design within a minimum number of hoopings.
- ▶ Maximize overlaps between successive hoopings.
- ▶ Hoop the design within the maximum registration mark margin.
- ▶ Set splitting lines, in overlapping areas, where an object cannot be accommodated within a single hooping.



Note 'Hooping' is not the same thing as 'hoop position' – you can have more hoopings than hoop positions but you can never have less. In other words, a single hoop position may involve more than one hooping in order to preserve the design sequence.

Multi-hooping rules

When BERNINA Embroidery Software calculates multiple hoopings, it attempts to include whole objects within sequential hoopings. Where one object overlaps another, the **overlapped** object must be stitched before the **overlapping** object. Thus:

- ▶ Hoopings should be placed as near as possible to the order of the actual design object sequence.
- ▶ Each successive hooping overlaps a previously stitched hooping.



Note For any design that requires multi-hooping, use the largest hoop available for the specific machine model.

Multi-hooping characteristics

Multi-hooping in BERNINA Embroidery Software includes the following characteristics:

- ▶ Designs are automatically split on objects. This provides better stitching results.
- ▶ Registration marks are created.
 - ▶ No need to manually digitize marks.
 - ▶ Automatically recalculated if hoop positions change.
 - ▶ Automatic registration marks are not a permanent part of the design.
- ▶ Objects that are too large for any individual hoop can be manually split. Splitting is done without additional needle penetrations, thus maintaining object appearance.
- ▶ Underlay is automatically recalculated for split objects in order to provide better stabilization.

- ▶ Designs can be saved with all hoops as a single 'master' multi-hooping design.
- ▶ Registration marks can be turned off if you want to digitize your own.

Calculation time

The time to calculate design hoopings depends more on the number of objects and hoop positions than stitch count. Designs converted from EXP, PES, HUS, etc, will in general result in a larger number of objects than a native BERNINA Embroidery Software design. Hence, these designs will take longer to calculate. However, even with pure ART files, if the design is complex, large, and contains many hoop positions, calculation can take time.

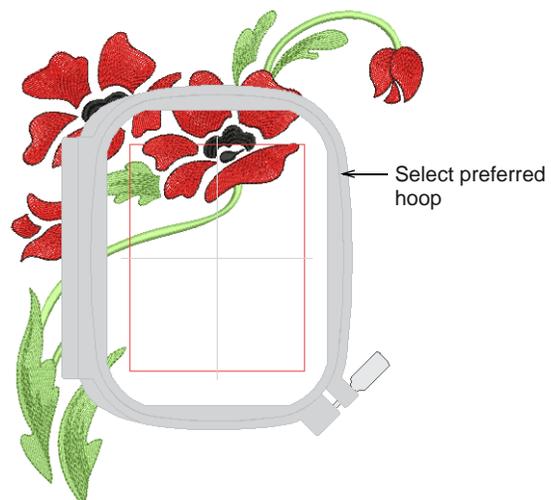
Creating automatic multi-hoopings

-  Click View > Show Hoop to show or hide hoop. Right-click to change hoop settings.
-  Use Multi-Hooping > Automatically Add Hoops to add hoop positions automatically.
-  Use Multi-Hooping > Multi-Hooping Options to check your hooping settings.
-  Use Multi-Hooping > Preview Hoopings to preview hoop positions in the Hooping Sequence dock.

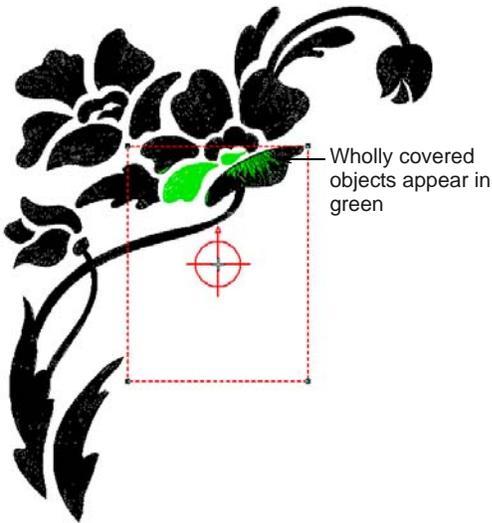
The easiest way to work out hoop positions is with the **Automatically Add Hoops** tool. Bear in mind that this method uses a purely rule-based software algorithm. It works best with simple designs.

To create automatic multiple hoopings

- ▶ Choose the hoop you want to use. Since a given stitchout can use only one size of hoop, you need to choose a hoop that will cover the **largest** object in the design. See [Changing hoops](#) for details.



- ▶ Switch to **Multi-Hooping** mode. When you click **Multi-Hooping** on the toolbox, covered objects – those that fit wholly within a hoop – display as green stitches. Uncovered objects – those that do **not** fit – display as black stitches.

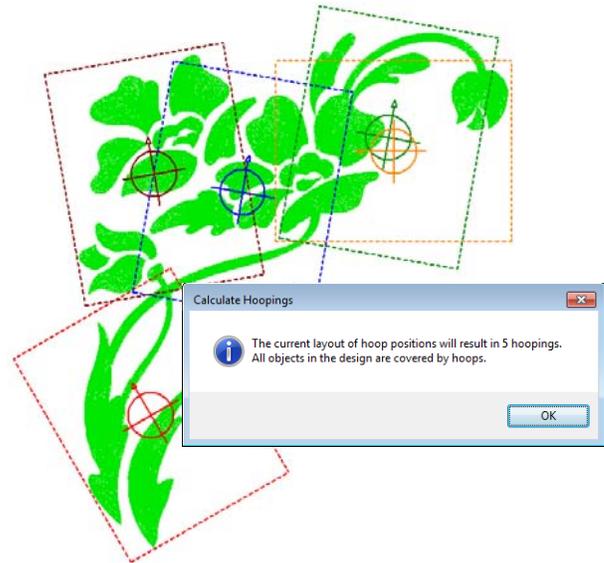


Note No embroidery object can be selected or manipulated in **Multi-Hooping** mode.

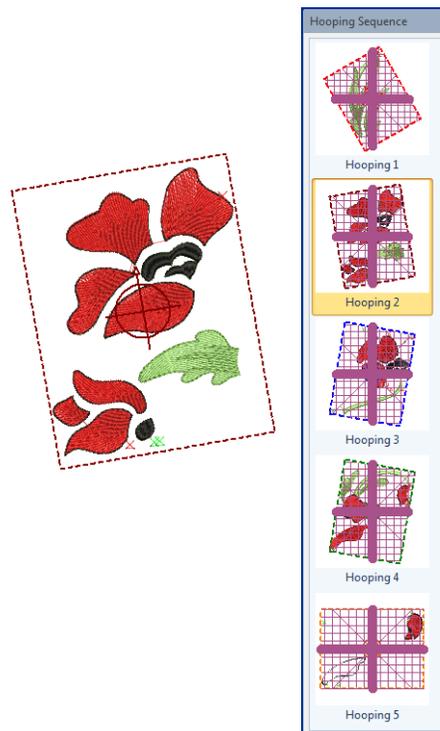
- ▶ Check hoop settings via the **Options** command. Change hoops if you need to. Make sure the **Foot** setting reflects the foot you are using. This will affect the available sewing area within the hoop.



- ▶ Use the **Automatically Add Hoops** tools to add hoop positions automatically. These are calculated according to the object sequence.



- ▶ Use the **Preview Hoopings** tool to preview hoop positions in the **Hooping Sequence** docker. Click and hold to isolate the hooping in the design window.



- ▶ The software always attempts to include whole objects within sequential hoopings. Where this is not possible, it will split objects between hoopings. Although split lines are only visible in **Multi-Hooping**, they are maintained when

switching to other modes. They do not affect object integrity. See also [Splitting objects between hoopings](#).

- ▶ If the same hoop position is repeated in the hooping sequence, the hooping label will indicate this. Moving a hoop slightly to include objects shown can reduce repeat hoopings.
- ▶ Each hooping contains an object or group of objects that can be stitched out in a single hooping. These are stitched consecutively to form the whole design.
- ▶ You are now ready to save the design to one or more files or send it to machine. See [Outputting multi-hooped designs](#) for details.



Tip Print a copy of the design showing the hoop positions to help you stitch it in the correct hooping order. See [Printing multi-hooped designs](#) for details.

Outputting registration marks



Use Multi-Hooping > Multi-Hooping Options to check your hooping settings.



Use Multi-Hooping > Preview Hoopings to preview hoop positions in the Hooping Sequence docker.

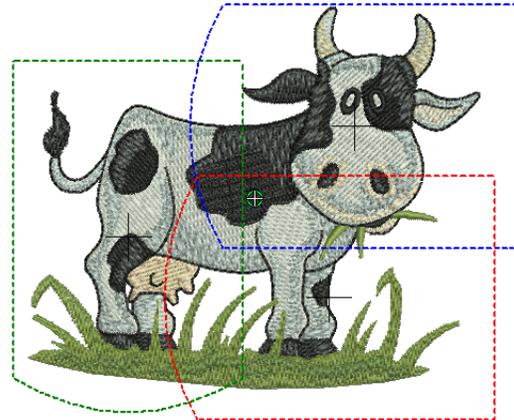
In order to correctly align consecutive hoopings during stitchout, you can include registration marks for each hooping. Two sets of marks are generated in overlapping areas of each consecutive hooping. One set appears as the final stitches of the preceding hooping. The next set is included as the first of the subsequent hooping. These stitches do not form part of the design and are not saved with the design file. However, they are added during output and are viewable in the hooping preview and worksheet.



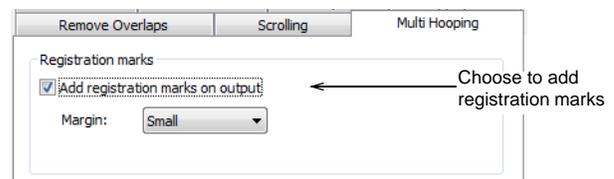
Tip Correct alignment of multi-hooped designs requires some practice. Third-party training programs are available on the internet which demonstrate correct technique. Most recommend using a sticky-back tear-away stabilizer, heavy enough so that the registration marks do not tear the stabilizer. Use pins through the registration marks of one hooping to align the corresponding marks of the next hooping.

To output registration marks

- ▶ Open or create the large design or design layout you want to sew out. See also [Creating design layouts](#).

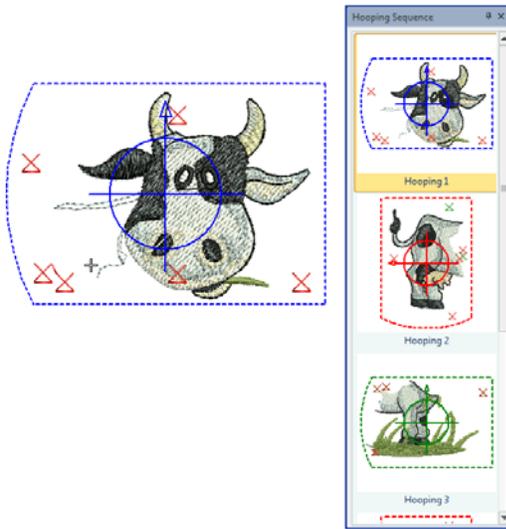


- ▶ Click the **Options** icon and select the **Multi-Hooping** tab.

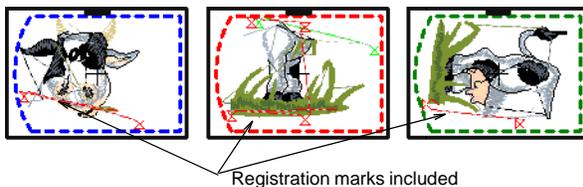


- ▶ Choose the **Add registration marks on output** option.
- ▶ Adjust the margin settings as required.
The larger the margin, the greater the distance between the registration mark and the maximum embroidery area of the hoop. This makes it easier to align but there may be some trade-off in precision.
- ▶ Use the **Preview Hoopings** tool to check that registration marks have been added. Click and hold to isolate the hooping in the design window.

Red marks indicate the end of a hooping, green, the start of the next.



- ▶ Registration marks are also shown in the hooping list in **Print Preview**. See **Outputting multi-hooped designs** for details.



- ▶ As registration marks are not a permanent part of the design, they cannot be moved. By adjusting hoop positions and using **Calculate Hoopings**, you can vary where registration marks are placed in overlapping hoop positions.
- ▶ During production, align the last-stitched registration marks with the marks on the stabilizer, and smooth the fabric onto the sticky back. To assist, stick sewing pins through the center of the registration marks.
- ▶ Always try to place hoopings as near as possible to the actual object sequence.

Manual multi-hooping

Manual hooping is generally better than automatic, but it does require greater understanding of both design and production processes.

An experienced embroiderer will generally be better able to weigh up alternatives than a purely rule-based software algorithm. This is especially so when it comes to splitting objects between different hoopings. Also, you may have definite ideas about

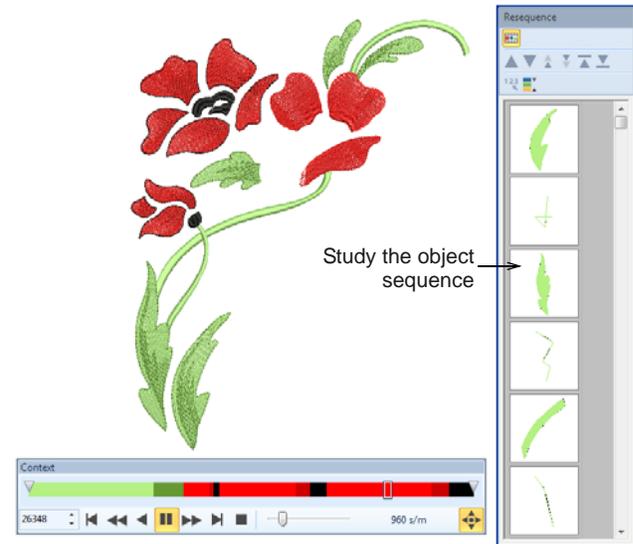
how best to position hoops to make it easier to place fabric and reduce registration errors.



Tip Manual hooping is also better when working with 'recognized' machine files. See also **Machine files**.

Checking object sequence

Knowing the object sequence helps you place hoops in the best hooping sequence. Use the **Color Film** tool to study the object sequence. See also **Viewing & selecting color blocks**.



Another useful tool is **Stitch Player**. When you run it, you are aiming to make sure that any split objects are split between **adjacent** hoopings – both in terms of position and hoop placement – and that the object starts stitching in the earlier hooping. See also **Simulating design stitchouts**.

Adjusting object sequence

While correct hoop placements reduce the number of calculated hoopings, sometimes the object sequence may not be ideal. You may find that the only way to reduce the number of hoopings is to re-sequence the design itself. Bear in mind the following:

- ▶ Stock designs which have been created for a single hoop are generally sequenced to minimize the number of color changes.
- ▶ Enlarging a stock design to the point where it requires multiple hoopings may require adjustments to the object sequence.
- ▶ Since a given stitchout can use only one size of hoop, choose a hoop that will cover the **largest** object in the design.

Creating manual multi-hoopings

-  Use Multi-Hooping > Add Hoop to add a new hooping to a multi-hooping layout.
-  Use Multi-Hooping > Delete Hoop to remove selected hoop from hooping layout.
-  Use Multi-Hooping > Add Hoop Left/Right to place a new hooping to left or right of the selected hoop. A 10mm overlap is allowed between sewing fields.
-  Use Multi-Hooping > Add N Hoops Around to generate 4/8 hoopings around a selected hoop. A 10mm overlap is allowed between sewing fields.
-  Use Multi-Hooping > Add Splitting Line to digitize one or more guides in a multi-hoop layout to split objects between hoopings.
-  Use Multi-Hooping > Calculate Hoopings to calculate hoopings resulting from current layout.

BERNINA Embroidery Software provides a dedicated set of tools which for creating multiple hoopings manually. Use these if you cannot achieve the result you want with the automatic method.

To create manual multiple hoopings

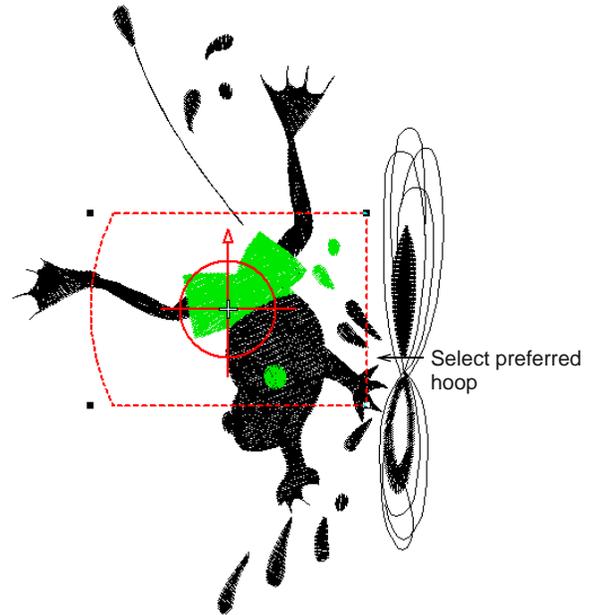
- ▶ Choose the hoop you want to use. Select the foot you are currently using. This will affect the stitchable area within the hoop. See [Changing hoops](#) for details.



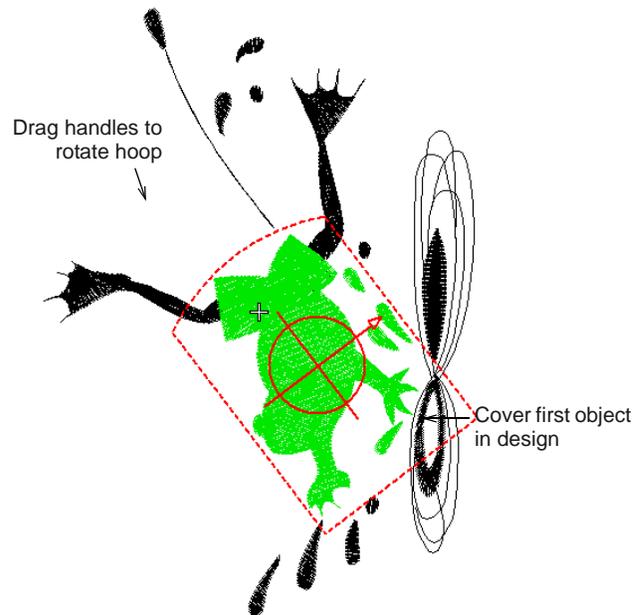
Tip Since a given stitchout can use only one size of hoop, you need to choose a hoop that will cover the **largest** object in the design.

- ▶ Switch to **Multi-Hooping** mode. When you click **Multi-Hooping** on the toolbox, covered objects – those that fit wholly within a hoop – display as

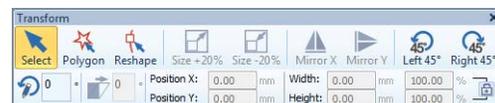
green stitches. Uncovered objects – those that do **not** fit – display as black stitches.



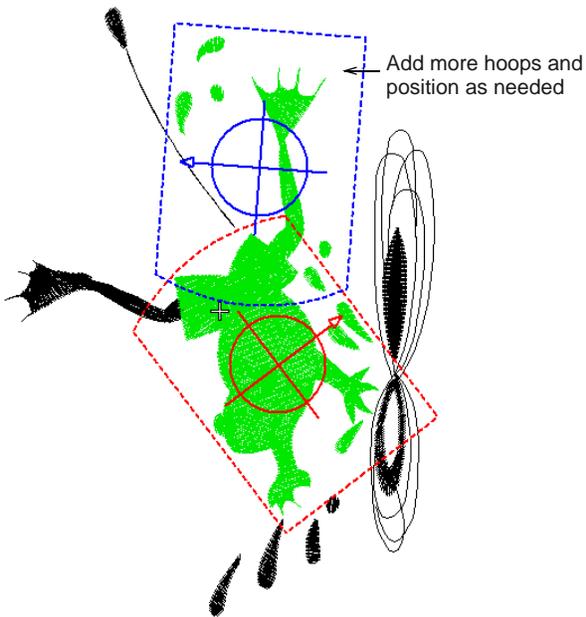
- ▶ Select the hoop outline, and drag it till it covers the first object in the design.



- ▶ Click the hoop again and use the rotation handles to orientate it as necessary. Alternatively, use the rotation controls on the **Transform** toolbar to rotate the hoop by increments.

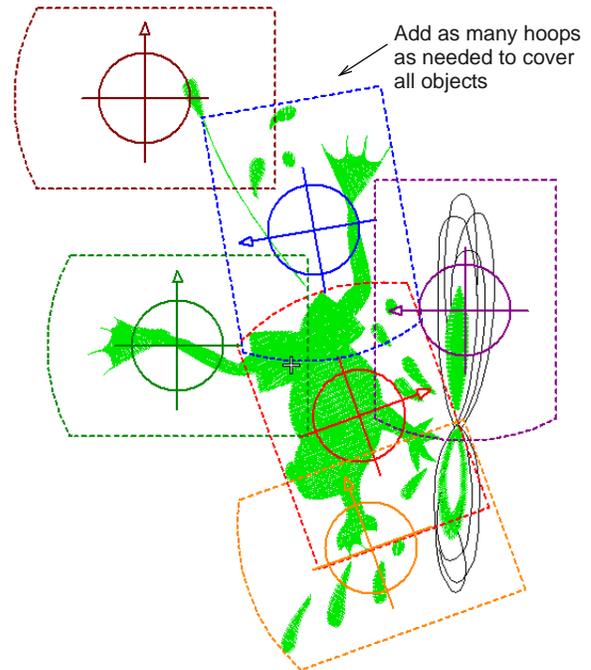


- ▶ Use the **Add Hoop** tools to add one or more hoop positions. Aim to reflect the stitching sequence.
- ▶ Nudge selected hoops into position using the arrow keys.



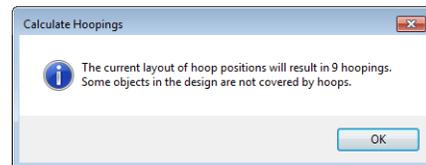
Note As soon as a hoop is moved or joined by others, automatic centering is deactivated, meaning that it no longer centers itself automatically around objects in the design. If you remove all hoops in a design and create a new one, automatic centering is re-activated.

- ▶ Re-position and rotate additional hoops until they completely cover all objects in the design.

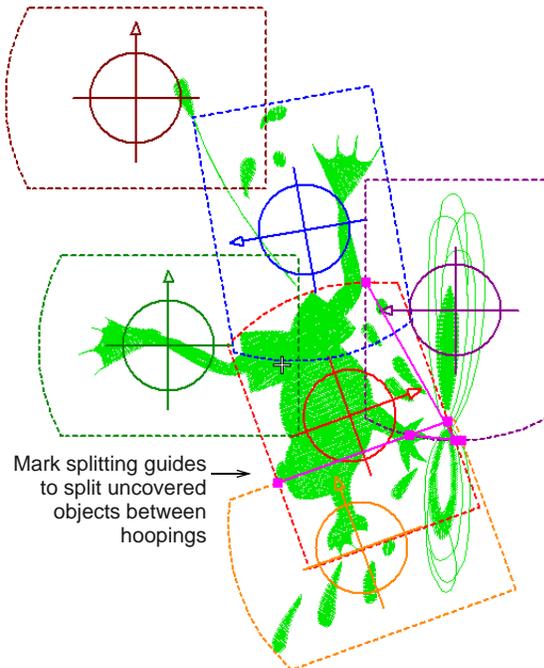


- ▶ Finally, click the **Calculate Hoopings** icon to evaluate the hoopings that will result from the current hoop layout.

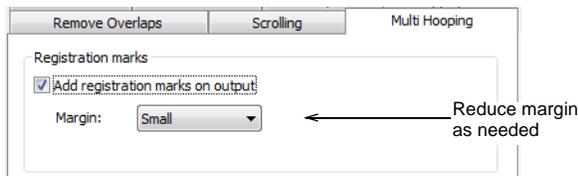
While a design may be entirely covered by separate hoop positions, some objects may remain uncovered. The confirmation message will tell you and uncovered objects will appear in black.



- ▶ Use the **Add Splitting Line** tool to split objects that would not otherwise fit within a hooping. See [Splitting objects between hoopings](#) for details.



- ▶ Optionally, add registration marks via the **Options > Multi-Hooping** tab. See [Creating automatic multi-hoopings](#) for details.
- ▶ Use the **Preview Hoopings** tool to check that registration marks have been added. If they haven't been added, it means there's insufficient overlap between hoopings. You can either increase the overlap by repositioning. Or reduce the margin for registration marks.



- ▶ You are now ready to save the design to one or more files or send it to machine. See [Outputting multi-hooped designs](#) for details.



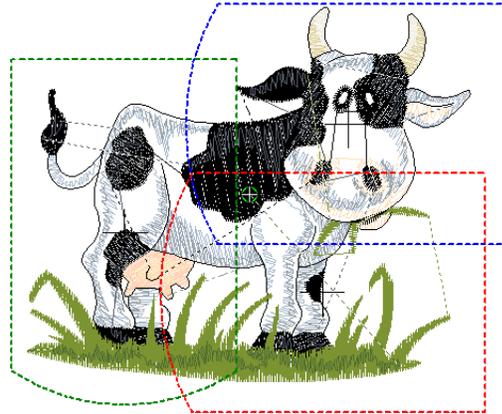
Tip Print a copy of the design showing the hoop positions to help you stitch it in the correct hooping order. See [Printing multi-hooped designs](#) for details.

Splitting objects between hoopings



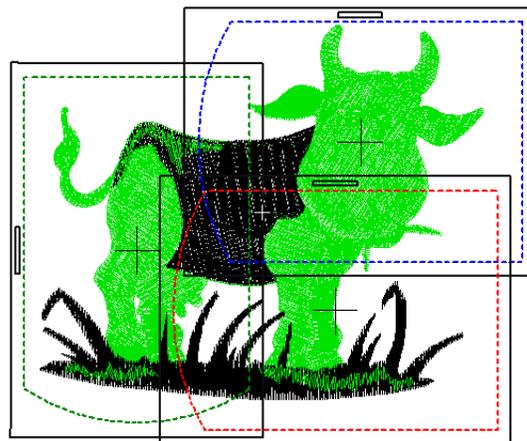
Use Multi-Hooping > Add Splitting Line to split objects between hoopings in multi-hoop layouts. Digitize guides over uncovered parts of a design.

The **Add Splitting Line** tool allows you to split objects that would not otherwise fit within a hooping. In effect, it allows you to digitize one or more split lines in a multi-hooped design prior to outputting to file, machine or memory card. Although split lines are only visible in **Multi-Hooping**, they are maintained when switching to other modes. Split lines do not affect object integrity and you can still reshape and transform split objects as before.

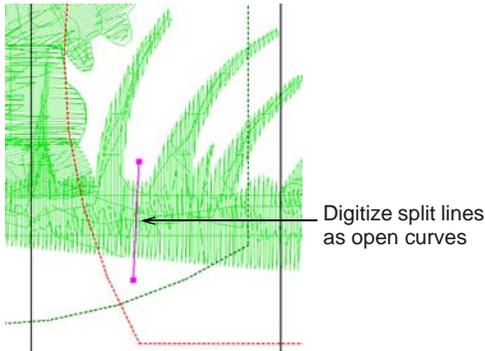


To split objects between hoopings

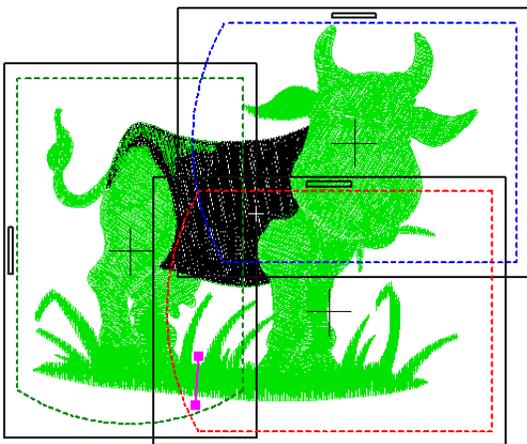
- ▶ Manually create your multiple hoopings. See [Creating manual multi-hoopings](#) for details. While a design may be entirely covered by separate hoop positions, some objects may remain uncovered. Uncovered stitching appears in black.



- ▶ Select the **Add Splitting Line** tool. You are prompted to enter a split line.

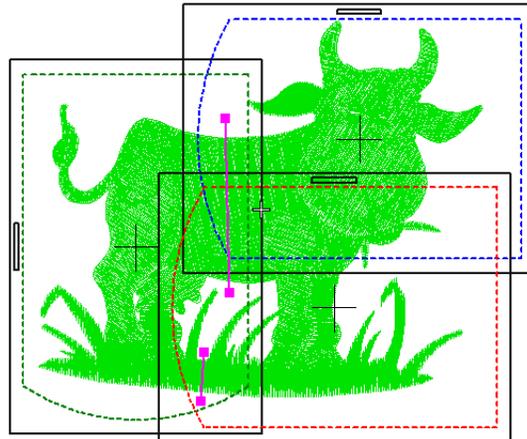


- ▶ Digitize split lines just as you would open curve objects, using right-clicks for curves and left-clicks for corner points.

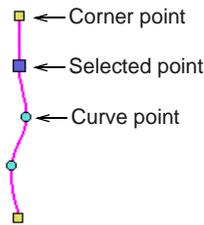


- ▶ As long as splits occur within the sewing field of overlapping hooping, the resultant 'split objects' become covered and are displayed in green.
- ▶ Objects integrity is maintained but they will be split on output. The resulting objects will preserve their original object type, stitch angle, parameters and color.

- ▶ Repeat as necessary or press **Enter** to complete.



- ▶ Split lines can be reshaped using the **Reshape** tool.



Adding manual reference markers



Use Digitize > Basting Stitch Marker to insert a reference marker at any angle and position.

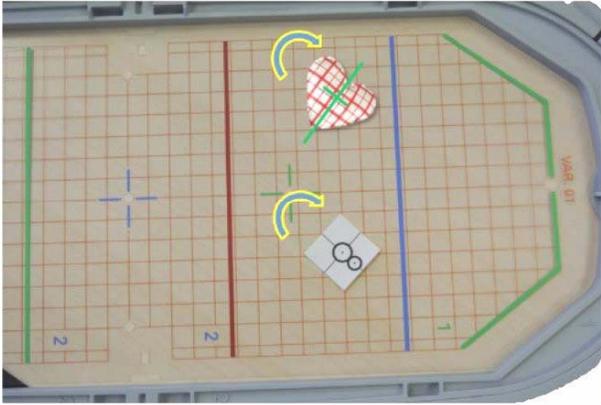


Use Digitize > Insert Graphic Marker to insert a graphic marker representing adhesive stickers attached to the fabric to indicate location and orientation.

Reference markers are sometimes needed for continuous embroidery and possibly work-piece layouts. BERNINA Embroidery Software includes two types of reference marker:

- ▶ Graphic reference markers representing the different styles of positioning stickers available in the market.

- ▶ Basting stitch markers of various shapes and sizes.



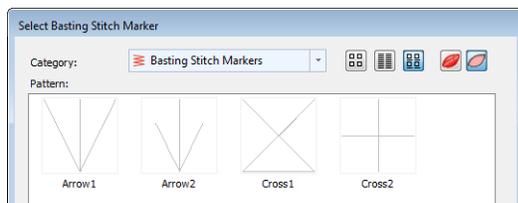
You can select and manually place reference markers in a design at any angle and position. The process for using each in a single hoop design is outlined below.

Tips...

- ▶ Stitch reference marks first to help align a fabric in the hoop.
- ▶ Sequence them to the start of the design.
- ▶ Attach physical adhesive stickers to the fabric to indicate hoop location and orientation.
- ▶ Use basting stitch reference markers to match these stickers.

To add basting stitch markers

- 1 Use the **Basting Stitch Marker** tool to insert the basting stitch marker and place it before the embroidery design so it stitches first. Various sizes and shapes are available.



- 2 Insert the design. Group if not already grouped.
- 3 Select it together with the basting stitch and align the centers.
- 4 Group the basting stitch with the embroidery.
- 5 Position and rotate as needed in the design.
- 6 Print the design layout template and use a physical position marker sticker at the same location and orientation as the basting stitch marker
- 7 Send the design to machine. The basting stitch marker will stitch first.
- 8 Move the start needle position to the center of the sticker on the work piece.

- 9 Start stitching the basting stitch marker to confirm the location and orientation. Adjust as needed.

- 10 Stitch the design.

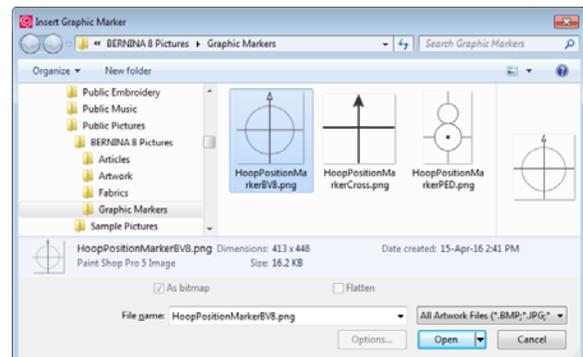


Tip If you want to manually create a multi-hoop design or continuous embroidery design with a single design, optionally insert basting stitch markers or bitmap markers at the end of the design.

Note that for multi-hooped designs, registration marks are automatically generated when turned on.

To add graphic reference markers

- ▶ Group the embroidery design if not already grouped.
- ▶ Use the **Insert Graphic Marker** tool to insert markers.



- ▶ Select both and use align centers.
- ▶ Group the graphic and the embroidery.
- ▶ Position and rotate as needed in the design.
- ▶ Print the graphic with the design in **Print Options**.
- ▶ Print the design layout template and use a physical position marker sticker at the same location and orientation as the position marker graphic.
- ▶ Send the design to machine.
- ▶ Move the start needle position to the center of the physical sticker.
- ▶ Stitch the design.

Creating custom hoops

If you are using a hoop size that is not in the hoop list, you can define your own and save it for later use.

Custom hoop types

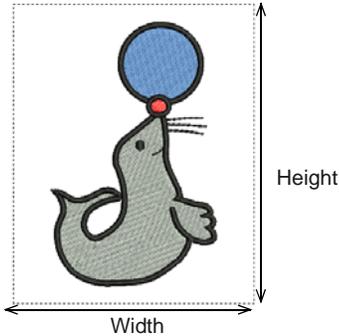


Click View > Show Hoop to show or hide hoop.
Right-click to change hoop settings.

You can create or edit four basic types of hoop – rectangular, oval, sliding and 3-position.

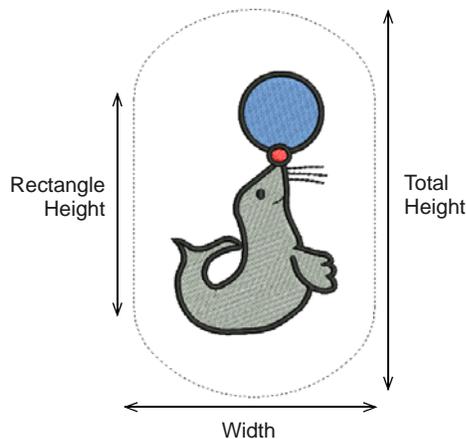
Rectangular hoops

Set height and width according to the dimensions of the hoop you are using.



Oval hoops

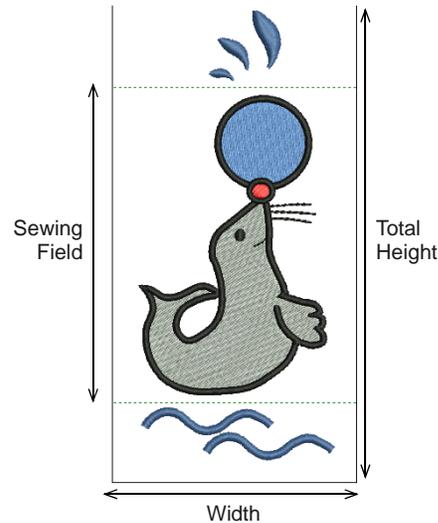
Set heights and width of the oval according to the dimensions of the hoop you are using.



Sliding hoops

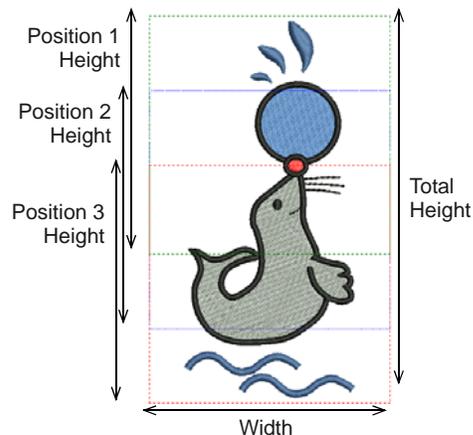
Sliding hoops are special hoops with adjustable frames to accommodate unusual size designs. Set

height and width of the hoop as well as the sewing field within.



3-position hoops

3-position hoops allow large designs to be split manually and stitched without the usual registration problems. Unlike sliding hoops, the sewing fields are in fixed positions with known dimensions, making it easy to register objects stitched in each position. In the software, they are displayed as three dotted rectangles. The top rectangle is green, the middle, blue and the bottom, red. Define your own 3-position hoop according to the dimensions of the hoop you are using.

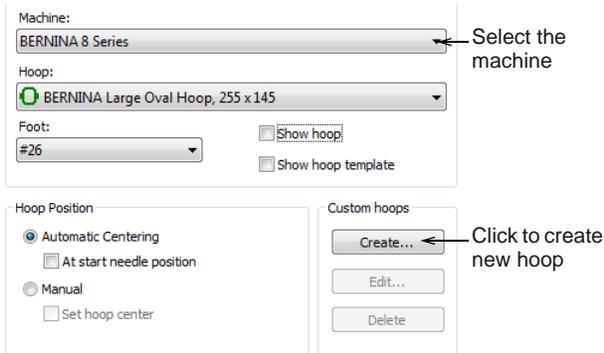


Creating custom hoops

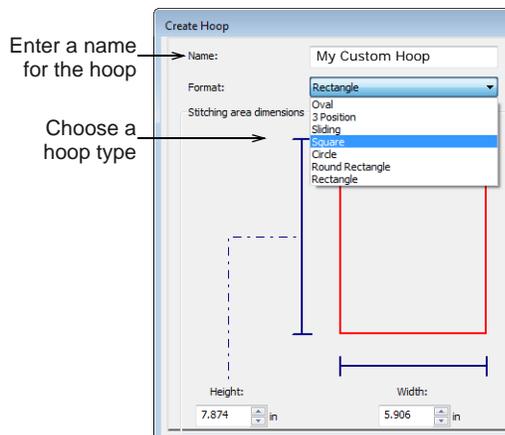
The method for defining your own hoops – rectangular, oval, sliding or 3-position – is essentially the same. The only thing that changes is the number of dimensions needed for each hoop type.

To create a custom hoop

- 1 Right-click the **Show Hoop** icon or select **View > Hoop**. The **Options > Machine & Hoop** dialog opens.



- 2 Select the machine you are working with. Alternatively, use machine **Others** if you want general availability.
- 3 Click **Create**.



- 4 Enter a name for your custom hoop.
- 5 Choose the type of hoop you want to work with.
- 6 Define the dimensions of the selected hoop type:
 - ▶ Rectangular: enter **Height** and **Width**.
 - ▶ Oval: enter **Rectangle Height**, **Total Height** and **Width**.
 - ▶ Sliding: enter **Sewing Field**, **Total Height** and **Width**.
 - ▶ 3-position hoop: enter **Total Height**, heights for **Position 1**, **2** and **3**, followed by hoop **Width**.



Tip It is best to enter the total height of the hoop first. If the sewing field is larger than the default total height, the size will default to a smaller size.

- 7 Click the **Save Hoop** button.

The custom hoop is now available for use in the **Options > Hoop** tab.

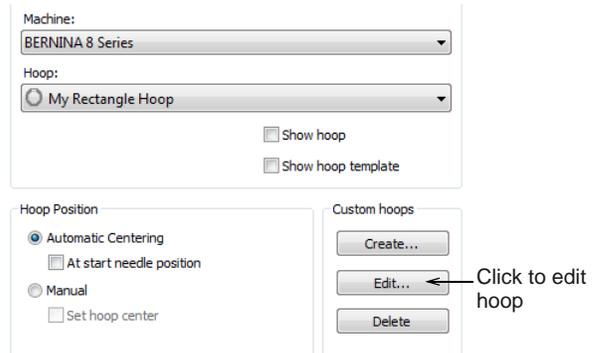
Editing hoops

Click **View > Show Hoop** to show or hide hoop. Right-click to change hoop settings.

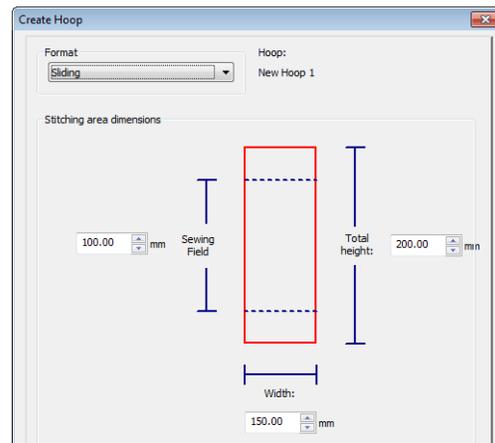
You can edit and delete custom hoops as necessary.

To edit a hoop

- ▶ Right-click the **Show Hoop** icon or select **View > Hoop**. The **Options > Hoop** dialog opens.



- ▶ In the **Hoop** list, select the custom hoop. Only custom hoops can be modified.
- ▶ Click **Edit**. The **Create** dialog opens.



- ▶ Enter new dimensions.
- ▶ Alternatively, click **Delete Hoop**. The hoop is removed permanently.
- ▶ Click **Save Hoop** to save any changes.

Positioning & production techniques

To facilitate the accurate positioning of designs in more complex cases, BERNINA Embroidery Software uses a combination of:

- ▶ Design layout templates
- ▶ Design worksheets with printed location markers
- ▶ Positioning markers – either stickers or basting stitches
- ▶ Hoop templates.

Where the final output requires multiple hoopings, positioning and alignment of multiple hoopings at sewing time, or repeats of the same design, can be tricky. It takes practice to obtain accurate alignment where a design requires re-hooping.

As an advanced user, you may want to produce designs larger than any available hoop. This could be a single large design or a continuous embroidery design with repeating patterns. Continuous embroidery is similar to the 'endless embroidery' function available on some machines.

Stitching out single designs

As a beginner, you will generally use designs that fit entirely within the available hoops for your particular machine. You will mostly use default settings both in the software and the machine. The hoop center becomes the reference point for all designs you do in this manner. This technique provides the basis for all other techniques you will use.

To stitch out a single design

- 1 Insert or open a design.
 - ▶ The hoop automatically centers around design extents, as it does on BERNINA machines.



- ▶ Using the hoop template instead of the grid, you can ensure that the hoop center always

aligns with the hoop template grid as the hoop centers around the design.



- 2 Optionally, adjust the design size or change hoops to suit the design. See [Changing hoops](#) for details.
- 3 Print a design worksheet. The worksheet can include the hoop position marker. See [Printing designs](#) for details.
- 4 Send the design to machine. The design is automatically centered on the BERNINA machine. See [Stitching out designs](#) for details.
- 5 Fix the design worksheet to the fabric.
- 6 Hoop the fabric. Align the worksheet hoop position marker with the hoop template centerlines.

Align worksheet hoop position marker with hoop template centerlines

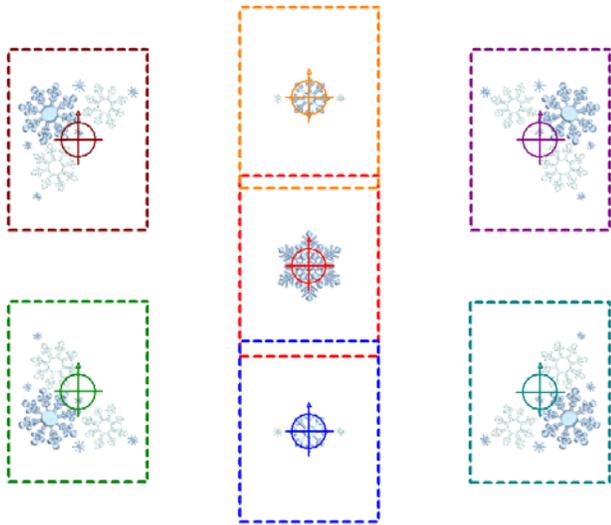


- 7 Start the machine. The needle will move to the hoop center. See also [Centering hoops](#).
- 8 Stitch out the design.

Stitching out work-piece layouts

As an intermediate user, you may want to create design layouts on large work pieces. Each design will still fit in a single hoop but there may be multiple designs in the layout. Each hooping has its own reference point that is used with the hoop template to accurately place the design at the correct orientation. As there is only one design per hooping, there is no need for secondary placement points. The main

benefit of this technique is that the complete layout can be accommodated within a single design file with the work piece as reference and all components included.



To stitch out a work-piece layout

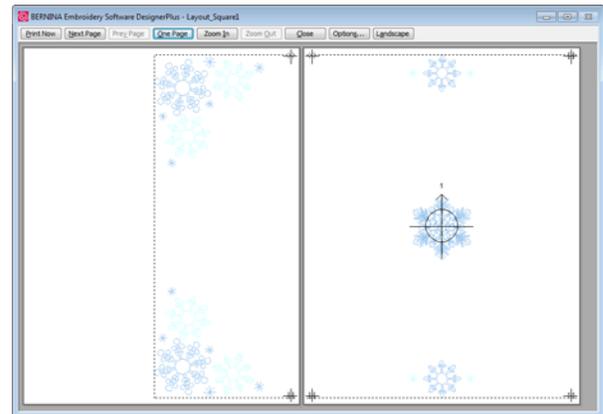
- 1 Insert or open a design. The hoop automatically centers around design extents, as it does on BERNINA machines.
- 2 Optionally, adjust design size or change the hoop to suit the design. See also [Scaling objects](#).
- 3 Create a design layout by combining designs and design elements.
 - ▶ There are various features within the software for creating geometric design layouts quickly and easily – Mirror-Merge, Layouts, etc. See also [Design Layouts](#).
 - ▶ Alternatively, place designs manually.
 - ▶ Optionally, include a background for a garment or large work piece. See also [Visualizing finished articles](#).
- 4 Use multi-hooping in order to automatically place hoops for each design location. You can use the automatic feature to generate hoopings even in large layouts. See [Creating multiple hoopings](#) for details.



Note With work-piece layouts, you don't need to include registration marks, but you do need the hoop position markers for each hoop location. This will show the position and orientation of each design in the layout.

- 5 Print out the layout template with the design worksheet. Large layouts can be printed on small format printers and then pieced together. This establishes all hoops in the correct spatial

relationship. See also [Printing multi-hooped designs](#).



- 6 Piece together the design worksheet to show the entire layout. The worksheet shows the hoop position marker. Each hoop position marker has a number indicating the hooping sequence.
- 7 Send the design to machine. The design is automatically centered in the BERNINA machine. See also [Sending multi-hooped designs to machine](#).
- 8 Fix the layout template to the work piece. Optionally, remove the non-stitched sections of the design worksheet to make the work piece easier to work with.
- 9 Hoop the work piece using the printed design layout template and hoop template. Align the worksheet hoop position marker with the hoop template centerlines.
- 10 Once hooped, remove the layout template and stitch the design component for that hooping.
 - ▶ The hoop location number is included on the hoop position marker.
 - ▶ When sent to machine, designs have the hoop location number added to the design layout file name.
- 11 Stitch out the design.
- 12 Locate the next hoop in the sequence and repeat.

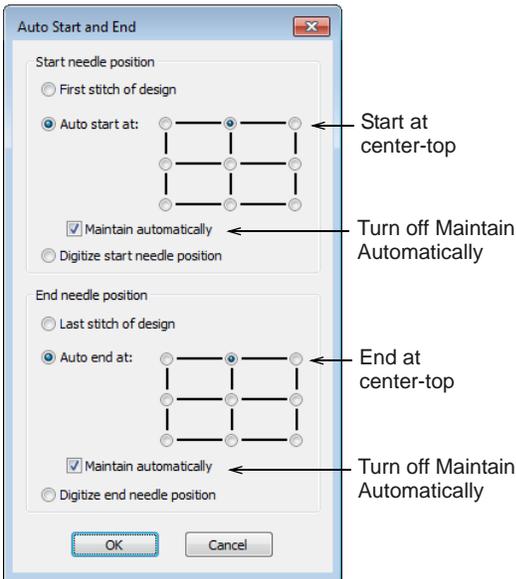
Stitching out embroidery on garments

Sometimes, you want to stitch out at specific locations for garments, caps and other wearables. For example, take the case where you want to stitch a monogram design at the top of a shirt pocket. Use this with machines that allow you to maintain start and end connectors.

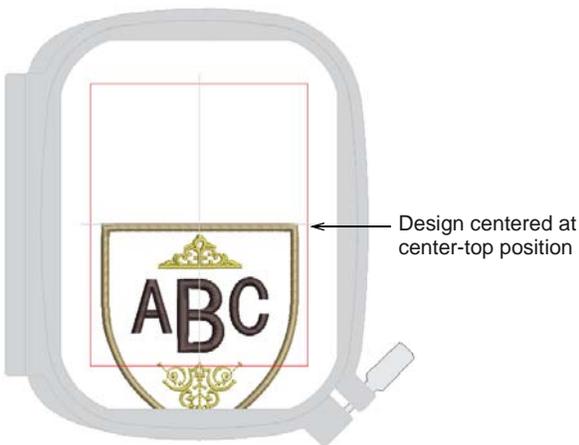
To stitch out embroidery on a garment

- 1 Open a blank design.

- Set the start and end points to center-top. This helps when placing a monogram on a shirt pocket. See also [Setting automatic start & end points](#).



- Turn off **Maintain Automatically** so start and end is always fixed to this point in the hoop.
- Using the **Lettering** toolbox, create a lettering or monogram design. Notice that the hoop center moves to the top center of the lettering. See also [Monogramming](#).



- Optionally, include a background for the garment you are using. See [Visualizing finished articles](#) for details.
- Optionally print the design worksheet. The worksheet shows the hoop position marker on the design at the location on-screen. See also [Previewing & printing worksheets](#).
- Send the design to machine. The design is positioned in the same location as shown on screen as uses the start and end connectors to locate the design from the center of the hoop.

- Hoop the garment using the hoop template vertical centerline to locate the center of the pocket and place the horizontal centerline 10mm down from the top of the pocket.
- Stitch out the design. The machine will start the design at the hoop center.

Automatic continuous embroidery

Automatic continuous embroidery consists of the following elements:

- Multiple design repeats in a single file using automatic layout features.
- Multi-hooping to create the output files with automatic registration marks.

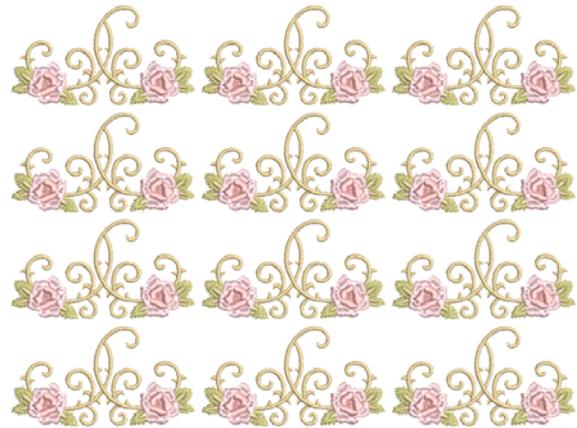
To create automatic continuous embroidery

- Insert or open your source design.
- Create your design repeats.



Tip Use the **Array** and **Reflect** tools to automatically generate continuous embroidery designs. See [Mirroring objects](#) for details.

- Set the number of columns and rows required for the finished item.



- Open the **Multi-Hooping** toolbox and use automatic hooping to cover all objects in the design. See [Creating automatic multi-hoopings](#) for details.
Hoops should be placed with at least a 3cm overlap for good registration mark generation.
- Send the multi-hoop design to machine. See [Sending multi-hooped designs to machine](#) for details.

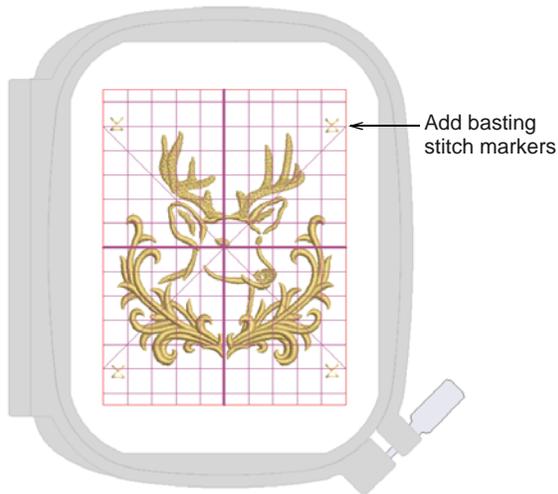
Manual continuous embroidery

Manual continuous embroidery consists of the following elements:

- ▶ Single design in file.
- ▶ Manually inserted basting stitch markers or graphic markers at start and end of design for alignment.
- ▶ Manually repeated design on the machine using manual reference markers to align each hooping.

To create manual continuous embroidery

- 1 Insert or open your source design.
- 2 Move the design into the required position in the hoop. Start and end connectors are fixed to the center of the hoop.
- 3 Optionally, adjust design size or change the hoop to suit the design.
- 4 Use the **Basting Stitch Marker** command to insert basting stitch markers – two near the top at either side of the design, and two near the bottom at either side of the design. See [Adding manual reference markers](#) for details.



- 5 Align the associated basting stitch marker with the bottom left-hand corner of the design extents:
 - ▶ Select the bottom left-hand basting stitch marker.
 - ▶ Using the **Ctrl** key, select the design.
 - ▶ Click **Arrange > Align > Bottom** followed by **Arrange > Align > Left**.
- 6 Repeat for each of the other basting stitch markers and place them in each corner.
- 7 Select the two basting stitch markers at the top. Using the **Color Film**, move them to the start of the design. Make sure the two bottom-most basting stitch markers are sequenced at the end of the design.
- 8 Print a design worksheet. The worksheet shows the hoop position marker. Each hoop position marker has a number indicating the hooping

sequence. See also [Previewing & printing worksheets](#).

- 9 Send the design to machine. The design is positioned at the same location as shown on screen. It uses start and end connectors to locate the design from the center of the hoop. The machine will start stitching at the hoop center. See [Stitching out designs](#) for details.
- 10 Fix the design worksheet to the fabric in the required position for the first part of the endless embroidery.
- 11 Hoop the fabric. Align the worksheet hoop position marker with the hoop template centerlines.
- 12 Step past the first two basting stitch markers as these are only needed for second and subsequent designs. Stitch out the design.
- 13 Hoop a piece of sticky-back stabilizer for the second hooping.
- 14 Stitch the first two basting stitch markers on the stabilizer.
- 15 Place the fabric on the sticky stabilizer lining up the basting stitch markers on the fabric with those stitched on the stabilizer. Press the fabric into place.
- 16 Stitch the next repeat of the design.
- 17 Repeat the process until all repeats are complete.

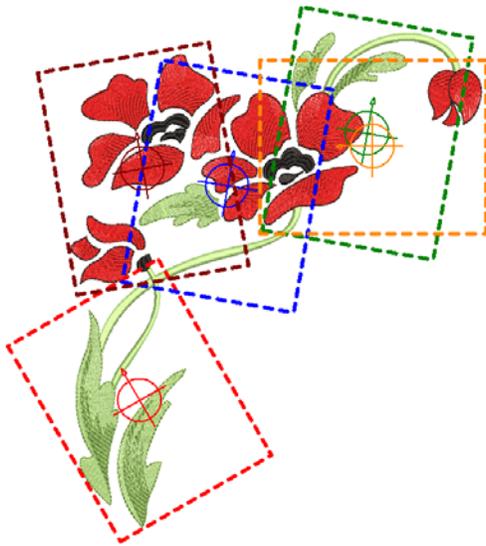


Tip Inserting graphics for the physical reference markers could be substituted for the basting stitch markers. These can be aligned to the center of the design and the design and reference marker rotated as needed.

Stitching out multi-hoop designs

If your design is too large or involves a large work area, you have the option of splitting it into multiple hoopings. The **Multi-Hooping** toolset lets you strategically position hoops until you obtain the least

number of hoopings necessary to accommodate the whole design layout.



Each hooping contains an object or group of objects that can be stitched out on their own. Hoopings are stitched consecutively to form the whole design. They can be sent directly to machine or saved to file.

To stitch out a multi-hoop design

- 1 Create a large design combining many design elements.
- 2 Add hoops via **Multi-Hooping** to cover each design element in the layout. You can use the automatic feature to generate hoopings even in large layouts. See [Creating multiple hoopings](#) for details.
- 3 Optionally, include a background for the garment you are using. See [Visualizing finished articles](#) for details.
- 4 Print out the layout template from the software. Large layouts can be printed on small format printers and then pieced together. This establishes all hoops in the correct spatial relationship.
- 5 Fix the template to the garment. Remove the unnecessary pieces of the layout to isolate the individual hoopings.
- 6 Hoop the fabric (or garment) and stitch out the first hooping. Registration marks are stitched last. Use the hoop position marker to locate and rotate the garment using the physical hoop template.
- 7 Un-hoop the fabric.
- 8 Hoop a piece of sticky backed stabilizer and remove the protective paper.
- 9 Stitch the registration marks at the start of the next hooping onto the stabilizer.
- 10 Align the last-stitched registration marks with the marks on the stabilizer, and smooth the fabric onto

the sticky back. To assist, stick sewing pins through the center of the registration marks.

11 Stitch the next hooping.

12 Repeat until the design is complete.

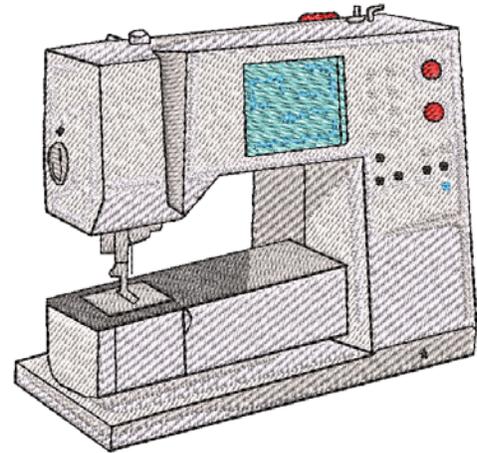
CHAPTER 33

WORKING WITH MACHINE FILES

By default BERNINA Embroidery Software saves designs to its native 'ART' file format. This format contains all information necessary both for stitching a design and for later modification.

However, BERNINA Embroidery Software can also open and save designs in native as well as non-native machine file formats as well. When opening machine files, BERNINA Embroidery Software converts stitch data to outlines so you can modify them using the editing features.

When you send designs directly to machine, they will be lost when the machine is turned off. Apart from saving to hard disk, floppy disk or archiving to CD, you can also preserve designs by writing them to embroidery machine memory, design card, or USB memory stick.



Note If you intend to stitch a design immediately, send it directly to the machine. See [Stitching out designs](#) for details.

This section describes how to select conversion options for opening and saving different stitch and outline design formats. It also deals with storing designs to design card.

Embroidery design formats

BERNINA Embroidery Software opens and saves pure ART format designs as well as a number of non-native formats. Other format designs which can be read into BERNINA Embroidery Software are generally 'stitch-based'. This means they were not created object-by-object but stitch-by-stitch. When you open other formats into BERNINA Embroidery Software, the software reads the data and, depending on your settings, attempts to determine object outlines and properties so that you can modify the designs like native ones.

ART files

Native ART designs, called 'ART Grade A', contain a complete set of design information in a single file –

object outlines and properties, actual stitches, thread colors, a picture icon and comments. There are three other grades of ART file, depending on how the ART file was created – Grade B is more reliable than Grade C, but not as good as Grade A format, and Grade D is the least reliable. It goes without saying that only ART Grade A files provide 100% perfect scaling and transformation.

File source	Description
Art Grade A 	Pure ART file created in BERNINA Embroidery Software-based software. These files contain pure ART objects, outlines and stitches.

File source	Description
Art Grade B 	Designs read from outline format such as GNC and saved in ART format. Such designs cannot be read directly in BERNINA Embroidery Software but once converted to ART in other software, BERNINA Embroidery Software reads them as Grade B designs.
Art Grade C	Designs read from machine files – SEW, PCS, PES, etc – where stitches have been converted to objects. See Opening machine files for details.
Art Grade D	Designs read from machine files – SEW, PCS, PES, etc – where stitches have NOT been converted to objects. See Opening machine files for details.

All files saved in ART format are automatically compressed when saved, and decompressed when re-opened. This reduces the storage space required, and makes it possible to save large files to floppy disk, or send them as email attachments.



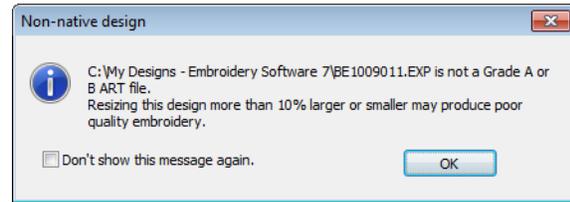
Tip For information about the source of a design file, refer to the **Open** dialog or the **Design Properties** dialog. See [Viewing design information](#) for details. See also [Opening designs](#).

Machine files

Different embroidery machines understand different languages. Each has its own control commands for the various machine functions. Before you can stitch a design, it must be in a format which can be interpreted by the machine. Stitch or 'expanded' designs are low-level formats for direct use by embroidery machines. They contain only stitch coordinates and machine functions. They are generally created 'on the fly' when sending designs to machine. They can also be output to embroidery disk or design card.

When read into BERNINA Embroidery Software, machine files do not contain object information such as outlines or stitch types, but present the design as a collection of 'stitch blocks'. Stitch blocks are created wherever colors change or trims are detected in the design. Machine files are generally not suited to modification because stitches are not regenerated.

You will be warned if the design you are opening should not be scaled.



Tip You can make this warning display when opening designs by selecting **Help > Show Design Warning**.

Comparison of embroidery and machine files

BERNINA Embroidery Software uses the native ART embroidery file format which combines the advantages of both outlines and calculated stitches. The table below shows the type of data found in ART files compared with machine files.

Included in file	Machine files	ART files
Object properties	No	Yes
Stitch data	No	Yes
Stitch types	No	Yes
Includes stitch coordinates	Yes	Yes
Thread colors	Some	Yes
Comments	No	Yes
Pull compensation settings	No	Yes
Auto spacing settings	No	Yes

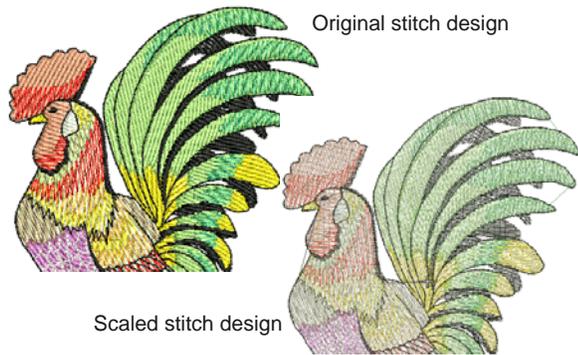
Converting machine files

When you scale a pure ART design, you change the number of stitches needed to fill the shape. BERNINA Embroidery Software recalculates and redraws all stitches automatically. This is called 'stitch processing' and it ensures that the design you see on-screen appears as it will be stitched. While stitch designs are generally not suited to modification, BERNINA Embroidery Software can interpret object outlines, stitch types and spacing from stitch data with some success. When you open a machine file, it is converted by default to a Grade C ART file. Converted designs can be scaled and stitches recalculated.

Opening without conversion

You can choose to open machine files **without** conversion. Designs opened in this way can be output for stitching in other formats. Or you can edit stitches and add new elements. There is nothing to stop you scaling machine format designs which have been opened without object conversion. However, because the stitch count does not change, the density

increases or decreases with the design size. Thus you should not scale stitch designs by more than $\pm 10\%$ or some areas may be too thickly or too thinly covered.



Note With or without object conversion, machine files can be still saved in ART format once they are opened in BERNINA Embroidery Software.

Recalculating converted machine files

When an ART design is created by opening a machine file with stitch processing, the original stitches are maintained until you change them. You can guarantee that the design will stitch as originally made. However, if you scale the design or do anything which forces stitches to be recalculated from new estimated outlines, there may be significant differences from the original stitches.

Grade	Source	Open method	Contains
A	ART	Open normally	Outlines and stitches
B	non-native outline file saved as ART	Open normally	Converted outlines and stitches
C	EXP or DST file saved as ART	Open with object conversion on	Estimated outlines and converted stitches
D	EXP or DST file saved as ART	Open with object conversion off	No outlines and individual stitches

Supported embroidery file formats

BERNINA Embroidery Software supports the following embroidery file formats:

Format	File	Grade	Read	Write
BERNINA All-in-One Vx	ARTx0	A	●	●
BERNINA All-in-One V4/V3	ART	^	A	●
BERNINA A730/A200	ART	*	A	●
OESD All-in-One	ART42	A	●	●
Janome/Elna All-in-One	JAN	A	●	
Wilcom All-in-One Designs	EMB	A	●	●
Wilcom All-in-One Designs e3	EMB	†	A	●
artista Cross Stitch	ARX	‡	D	●
BERNINA Template V8.0	AMT80	¥	A	●
BERNINA Template V7.0	AMT70	A	●	●

^ V1 and V2 ART no longer supported for write

* A730/A200 files can be read directly by some BERNINA machines

‡ While not an embroidery file format, ARX is native to BERNINA and can be read by BERNINA Embroidery Software

† Use this format if opening into Wilcom e3 software.

¥ AMT50 and AMT60 no longer supported for write.

Supported machine file formats

BERNINA Embroidery Software supports the following machine file formats:

Format	File	Grade	Read	Write
BERNINA A730/A200	ART	*	A	●
BERNINA USB stick	EXP			●
Janome / Elna / Kenmore	SEW	C	●	●
Elna Xpressive	EMD	C	●	●
Deco, Brother, Babylock	PEC	C	●	●
Deco, Brother, Babylock	PES	C	●	●
Husqvarna Viking / Pfaff	VP3	C	●	●
Husqvarna Viking / Pfaff	VIP	C	●	●
Husqvarna / Viking	SHV	^	C	●
Husqvarna / Viking	HUS	C	●	●
Pfaff	PCS	C	●	●
Pfaff	PCD	C	●	●
Pfaff	PCQ	C	●	●

* A730/A200 files can be read directly by some BERNINA machines

^ Save back as SHV but not convert to SHV

Format	File	Grade	Read	Write
Pfaff	PCM	C	●	●
Singer	XXX	C	●	●
Poem, Huskygram, Singer EU	CSD	C	●	●
Melco	EXP	C	●	●
Tajima	DST	C	●	●
Great Notions	GNC	C	●	

* A730/A200 files can be read directly by some BERNINA machines

^ Save back as SHV but not convert to SHV

Other formats

BERNINA Embroidery Software supports the following artista file formats:

Format	File	Grade	Read	Write
artista Cross Stitch	ARX	‡ D	●	●
artista Quilter	ARQ	† D	●	●

‡ Cross Stitch application only † Quilter application only



Note BERNINA Embroidery Software will convert designs to non-native home formats which are current at the time of development. Later releases of other-brand software may not produce compatible formats of the same file types.

Device selection

Whether outputting designs or reading designs, you interact with devices via the **Device Selection** dialog.



If you plug a USB stick into your PC, you will see four enabled icons shown above. The other two buttons

are enabled once you connect to machine. The dialog is the interface to the following functions.

Device	Description
	Use this to: <ul style="list-style-type: none"> Write designs in EXP format to USB stick Read designs EXP designs from USB stick.
	Use this to load the design to machine ready for stitching.
	Use this to: <ul style="list-style-type: none"> Write design to machine, or USB stick plugged into machine Read designs from machine, or USB stick plugged into machine.
	Use this to: <ul style="list-style-type: none"> Write EXP design to memory card for deco 330/bernette 340 deco, or USB stick for bernette 340 deco Read EXP design from memory card for deco 330/bernette 340 deco, or USB stick for bernette 340 deco.
	Use this to: <ul style="list-style-type: none"> Write EXP design to artista 165 to artista 185 or serial Reader/Writer Box Read EXP from artista 165 to artista 185 or serial Reader/Writer Box.
	Use this to: <ul style="list-style-type: none"> Write design in artista 200/730(ART V4) format to USB stick Read artista 200/730(ART V4) design from USB stick.

Exporting & opening machine files

BERNINA Embroidery Software can open supported machine files stored on your PC from a variety of sources – hard disk, floppy disk, USB memory stick, or CD ROM. Once opened, they can be checked or edited before sending to machine for stitchout or storage. Similarly, the software can export to any supported machine file format for transfer to embroidery machine. See also [Supported machine file formats](#).

Exporting machine files

BERNINA Embroidery Software designs can be exported to native EXP machine format as well as a number of non-native formats.

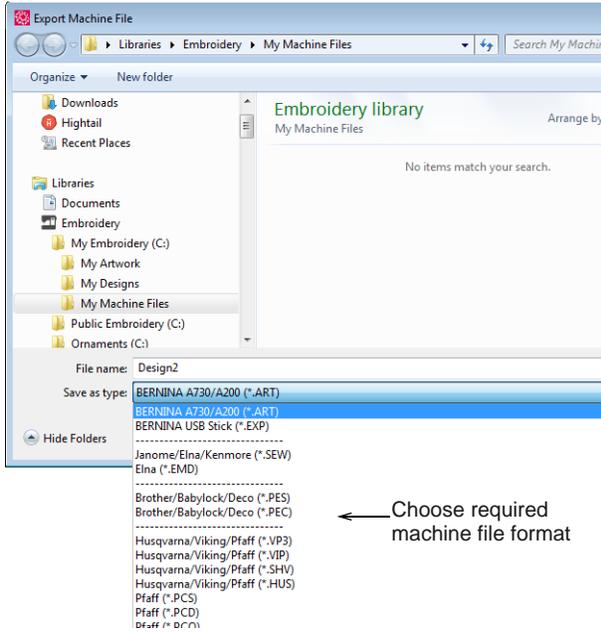


Note The **Save As** dialog saves only original file formats such as ART to the **My Designs** library folder.

The **Export Machine File** dialog saves machine (EXP) and all other file formats (PES, etc) to the **My Machine Files** library folder.

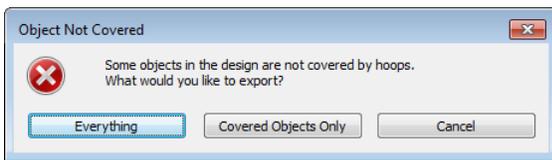
To export a machine file

- 1 Open the design you want to export to machine.
- 2 Select **File > Export Machine File**.



- 3 Choose a machine file format. Typically you will be using BERNINA All-in-One V4 ART files or BERNINA USB Stick EXP files.
- 4 Change file name as required, choose a destination folder, and click **Save**.

If the system detects that not all objects are covered by hoop positions, you are prompted. See **Hooping Designs** for details.



Note You can also write designs directly to your embroidery machine memory or BERNINA design card. See **Stitching out designs** for details.

Opening machine files



Use General > Open to open an existing design.

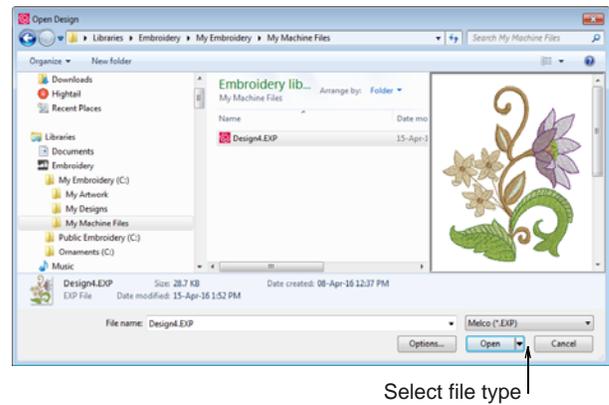
Machine files are converted to outlines and objects by default upon opening. The design is converted to a Grade C ART file. Converted designs can be scaled

and stitches recalculated. While processing is effective for most stitch designs, it cannot produce the same level of quality as original outlines and may not handle some fancy stitches.

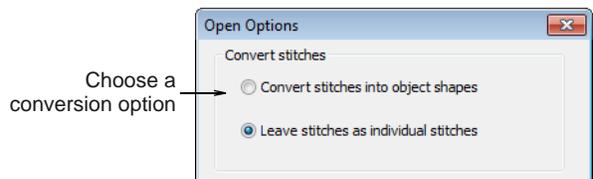
Occasionally you may want to turn off stitch processing. By opening a machine file **without** object conversion, you can output the design without change, edit individual stitches, and perform minor scaling and transforming actions without losing the original stitch information. When you open machine files without object conversion, the design is converted to a Grade D ART file.

To open a machine file

- 1 Click the **Open** icon to open from your hard disk or USB stick.



- 2 Select a folder and select a machine format from the **Files of type** list and select a file to open. See **Supported machine file formats** for details.
- 3 Click **Options**. The **Open Options** dialog opens.



- 4 Select a conversion option and click **OK**.
- 5 Click **Open**. Depending on the conversion option:
 - ▶ The design is processed and converted to objects with fill or outline stitch properties as well as general properties. If an object is not recognized, it has general properties only.

- ▶ The design opens as a collection of stitches with only general properties.



Tip To ensure object outlines, stitch types, stitch density and colors are correct, it is always a good idea to check and edit designs after conversion.

Reading designs from machine

You can read designs into BERNINA Embroidery Software from a variety of sources, both on your computer and embroidery machine. Once opened, they can be checked or edited before saving to hard disk, or sending to machine for stitchout or storage. When reading designs from machine, three options are available:

- ▶ **Embroidery machine:** Most machines allow designs to be stored to and read from machine memory. This is like having a built-in design card.
- ▶ **Design card:** Designs can also be stored on a design card attached to your embroidery machine (or Embroidery Card Reader/Writer Box).



- ▶ **USB memory stick:** Designs can also be read from a USB memory stick attached to your machine. See also [Writing designs to machine](#).



Note USB memory sticks can also be attached directly to your PC and designs read into BERNINA Embroidery Software. See [Exporting & opening machine files](#) for details.

To read designs from machine

- 1 Open a new, blank file.
- 2 If you intend to read designs from card or USB stick, insert the storage device in the machine (or Embroidery Card Reader/Writer Box).



Note For connection details, see the instructions which came with your Embroidery Card Reader/Writer Box.

- 3 Select **File > Card/Machine Read**.

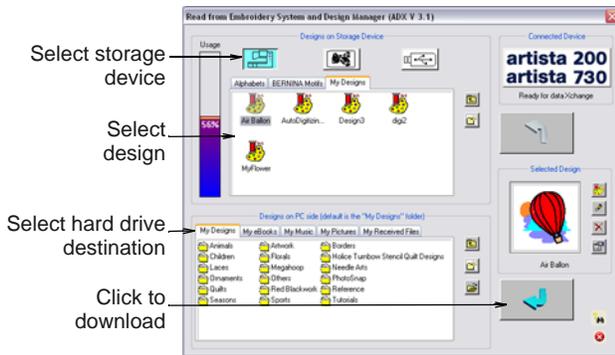
If this is the first time you have downloaded a design after turning on the machine or reader box, the **Device Selection** dialog opens.



- 4 Select an embroidery machine or reader box, as well as COM port if prompted to do so. See also [Device selection](#).
- 5 Click **OK**.

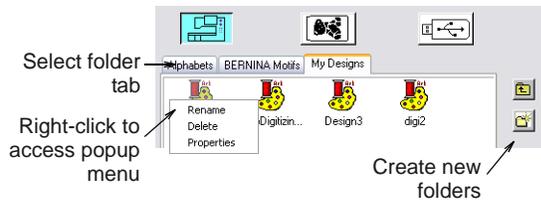
If the machine connection is working, the **Write to Embroidery System** dialog opens. The name and thumbnail image are displayed.

The **Read from Embroidery System and Design Manager** dialog opens.



- 6 Select the required storage source by clicking the corresponding button – embroidery machine, design card, or USB memory stick.

When you select a button, all folders and designs currently stored on the device are displayed.



Tip Right-click the design icon to access a popup menu – use it to rename, delete, or view design properties.

- 7 Click a folder tab (if more than one) and/or folder to locate the design.

Tip Use the icons on the right of the display panel to create new folders or navigate the folder structure.

- 8 Select the design. A preview image is displayed in the **Selected Design** panel.



- 9 Use the display panel buttons as required to:
 - ▶ Open the design directly into BERNINA Embroidery Software for editing.
 - ▶ Rename the design.

- ▶ Delete the design.
- ▶ Access design properties.



- 10 Select a destination folder on the hard disk where the design is to be stored.



- 11 Click the **Download** arrow button to read the design and save to hard disk.

Note You can write designs of the appropriate format from hard disk to the storage device using the **Upload** arrow button.



Writing designs to machine

- Use General > Write to Card/Machine to write (save) design to BERNINA design card or BERNINA embroidery machine.
- Click View > Show Stitches to toggle stitch view on/off.

If you intend to stitch designs only when the machine is connected to your computer, store them on your PC hard disk. However, you can also use the **Write to Card/Machine** command to save designs for later use, independent of your PC. Designs from any storage device – embroidery machine, design card, or USB memory stick – can then be stitched out as many times as you like. This eliminates the need for the PC

to be connected to the machine during stitchout. See your BERNINA embroidery machine documentation for details.

To write designs to machine

- 1 Open the design and turn off **Artistic View**. See **Opening designs** for details.



Note The machine (or external Embroidery Card Reader/Writer Box) must be switched on before you insert the card, otherwise designs will not display or be loaded to the machine.

- 2 If you intend to write the design to card or to USB stick, insert the storage device in the machine (or Embroidery Card Reader/Writer Box).

For connection details, see the instructions which came with your Embroidery Card Reader/Writer Box.

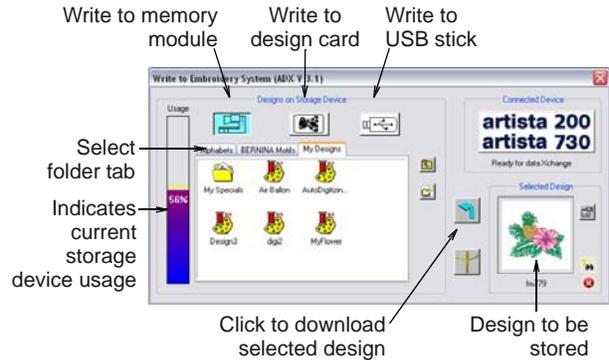
- 3 Click the **Write to Card/Machine** icon.

If this is the first time you have downloaded a design after turning on the machine or reader box, the **Device Selection** dialog opens.



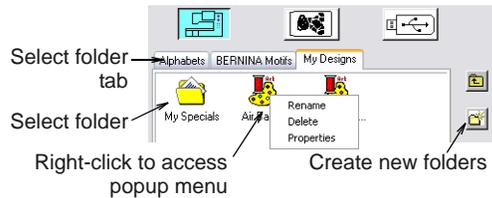
- 4 Select an embroidery machine or reader box, as well as COM port if prompted to do so. See also **Device selection**.
- 5 Click **OK**.

If the machine connection is working, the **Write to Embroidery System** dialog opens. The name and thumbnail image are displayed.



- 6 Select the required storage device by clicking the corresponding button – embroidery machine, design card, or USB memory stick.

When you select a button, all folders and designs currently stored on the device are displayed.



- 7 Click a folder tab (if more than one) and/or folder to select where the design is to be saved.



Tip Use the icons on the right of the display panel to create new folders or navigate the folder structure. Right-click the design icon to access a popup menu – use it to rename, delete, or view design properties.



Caution Make sure the needle arm on your machine is up before downloading designs.

- 8 Click the **Download** arrow button to write the design.

The machine touch screen goes blank while the download takes place. Once the design is saved to the selected device, you can stitch it at any time without a PC connected to your machine. See your

BERNINA embroidery machine documentation for details.

Writing designs directly to USB stick



Use **General > Write to Card/Machine** to write (save) design to BERNINA design card or BERNINA embroidery machine.



Click **View > Show Stitches** to toggle stitch view on/off.

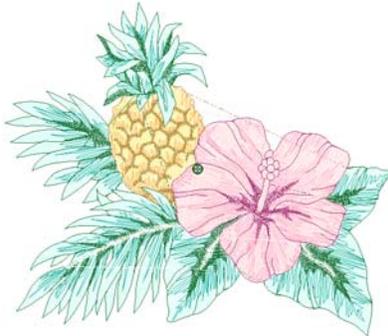
Designs can be saved to a dedicated BERNINA or OESD USB memory stick attached directly to your PC. While you can copy designs directly from your hard disk to memory stick via MS Windows® Explorer, you should do so via BERNINA Embroidery Software. While saving the design, BERNINA Embroidery Software automatically converts it to the correct format for stitchout.



Note Other types of memory stick can be used but they are not recognized automatically by the software.

To write a design directly to USB stick

- 1 Open the design and turn off **Artistic View**. See [Opening designs](#) for details.



- 2 Insert a BERNINA or OESD USB memory stick directly into a USB port on your PC.
- 3 Click the **Write to Card/Machine** icon.
If this is the first time you have downloaded a design after turning on the machine or reader box,

the **Device Selection** dialog opens. See also [Device selection](#).



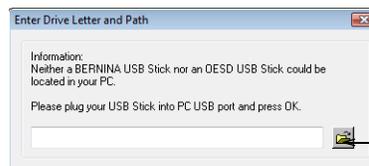
Tip If you are already connected to an embroidery system, click the **Connected Device** button in the **Write to Embroidery System** dialog in order to access the **Device Selection** dialog. See also [Writing designs to machine](#).



Click to access the Bernina Device Selection dialog

- 4 Select the appropriate **BERNINA USB Stick** option for the embroidery system that will be used to stitch out the design and click **OK**.

If you have inserted a memory stick other than BERNINA or OESD, the **Enter Drive Letter and Path** dialog opens prompting you for the device location.



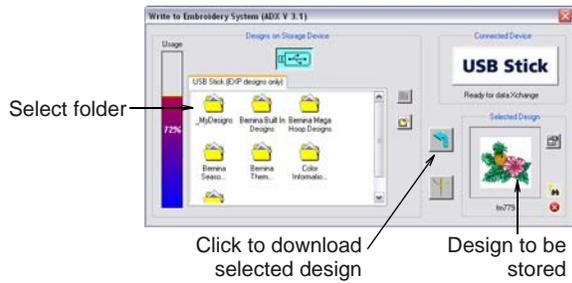
Click to browse for the USB device

- 5 Browse for the device location on your PC as required.

If the machine connection is working, the **Write to Embroidery System** dialog opens. The name and the preview of your design are displayed. Folders

and designs currently saved on the device are also displayed.

2 Select File > Export Machine File.



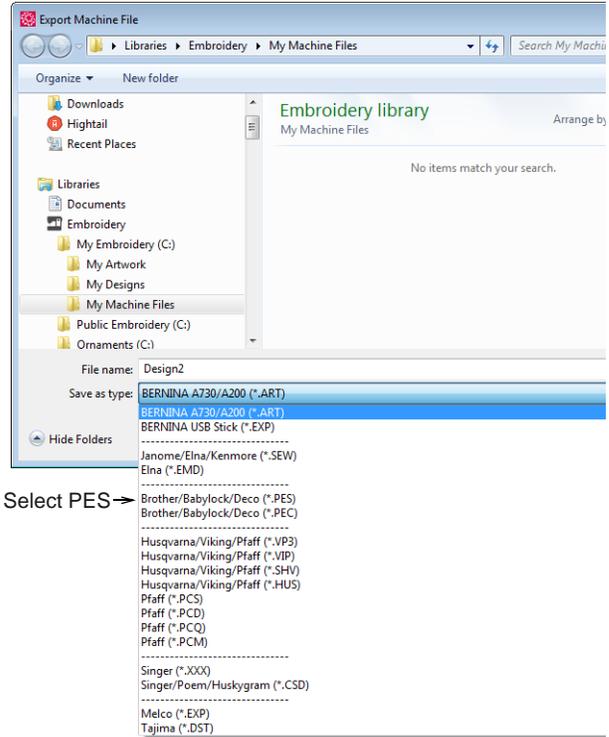
6 Select the location the design is to be stored.



Tip Use the icons on the right of the display panel to create new folders or move up a level in the folder structure. Right-click design files already stored to access a popup menu – use it to rename, delete, or view design properties.

7 Click the Download arrow button to write the design to the memory stick.

While saving the design, BERNINA Embroidery Software automatically converts it to the correct format for stitchout. See the relevant BERNINA Embroidery Software documentation for details of how to stitch out from a USB memory stick.



3 Choose PES as the file type.

The **PES Save Options** dialog opens.

Saving designs in PES format

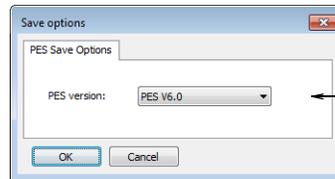
PES is a Brother machine file format which involves different combinations of hoop size and file version. Use the following procedure when saving PES designs.

To save a design in PES format

1 Open the file you want to export and select a suitable Brother hoop. See [Selecting hoops](#) for details.



Note You will be warned if the design does not fit the hoop.



4 Select the PES version you require from the droplist and click Save.

The **Export Machine File** dialog saves machine (EXP) and all other file formats (PES, etc) to the **My Machine Files** library folder.

CHAPTER 34

OUTPUTTING DESIGNS

You can output embroidery designs in a variety of ways – by printing as worksheets, as appliqué patterns, color films, or as thread charts. BERNINA Embroidery Software also allows you to save your designs as images for use with fabric and garment applications. You can also send them directly to machine for stitching. When working with designs that are larger than the available physical hoop, you can split them into parts, each containing an object or group of objects. The software automatically calculates which files are to be sent and shows you how they will look.



This section describes how to print worksheets, appliqué patterns, color films, and thread charts. It also covers stitching out designs, both singly and as multi-hooped designs.

Printing designs

You can create a hard copy of your designs using default or custom printer options. Preview designs before printing. Set print options to display the information you require. If you are using a color printer, you can print in **Artistic View**. Even print thread charts as a shopping reference when purchasing threads.

Your design displays as it will be printed. Large designs may be displayed over a number of pages if printed at actual size.

Previewing & printing worksheets



Use General > Print Preview to preview a design before printing.

Use **Print Preview** to view stitching information. Use it to check the sewing sequence before you stitch out your design. You can create a hard copy of your designs using default or custom printer options.

To preview and print a worksheet

- ▶ Click the **Print Preview** icon.



- ▶ Use the **Preview** buttons as required:

Field	Description
Next Page	View the next page.
Prev Page	View the previous page.
Two Page	Display two pages in the Preview Window.
Portrait / Landscape	Toggle design display between landscape and portrait views.
Zoom In / Out	Use to examine portions of the design or to read production information.

- ▶ Click **Options** to set any **Print Options**. See [Setting worksheet options](#) for details.
- ▶ Click **Print Now** to proceed with printing. The MS Windows® **Print** dialog opens allowing you to choose a printer and adjust any other print settings you require. See also [Setting worksheet options](#).

Setting worksheet options



Use General > Print to print active design using current settings.

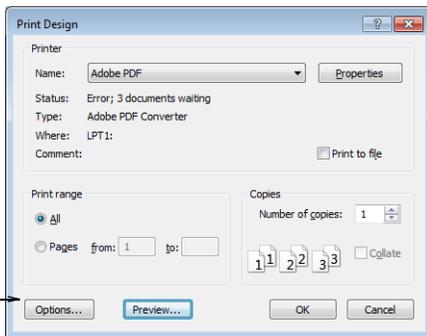


Use General > Print Preview to preview a design before printing.

Print options give you precise control over your design printout. Different worksheet configurations are available for different purposes – design worksheet, color sequence, appliqué pattern, as well as hooping sequence. Each configuration can be further customized.

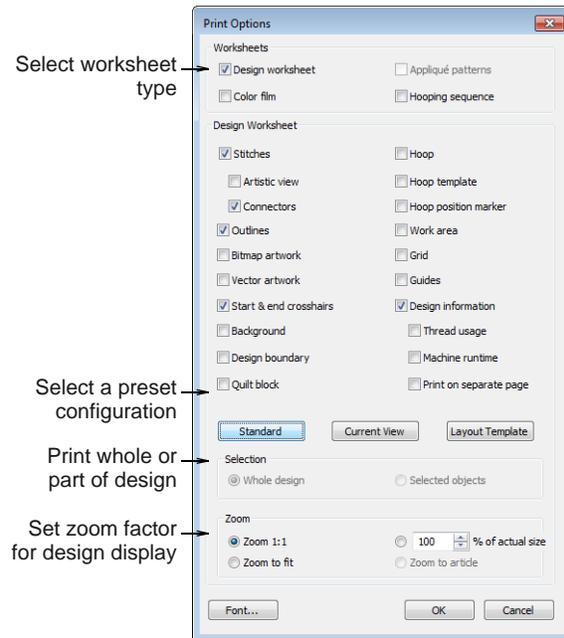
To set worksheet options

- ▶ Optionally, print the whole design or selected objects only. If the latter, select the objects before accessing the **Print Options** dialog.
- ▶ Select **File > Print**.
- ▶ Click the **Print** icon or the **Print Preview** icon. Both dialogs provide an **Options** button.



- ▶ Click **Options** to further configure print options.

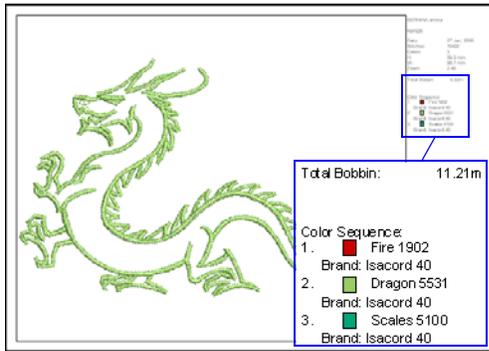
The default worksheet type is the 'design worksheet'.



- ▶ Select a worksheet type:

Type	Purpose
Design worksheet	Print all production-related information, such as bobbin length, design size, garment fabric, etc, is provided.
Appliqué patterns	Print appliqué patterns – cutter information – isolated from the design. These can be used as a guide to cutting out fabric pieces. See also Digitizing for Appliqué .
Color film	Print a list of colors and objects used in the design, together with stitch information for each color layer. See also Sequencing embroidery objects .
Hooping sequence	If there is more than one hooping in the design, this option displays hoopings in their correct sequence. See also Creating multiple hoopings .

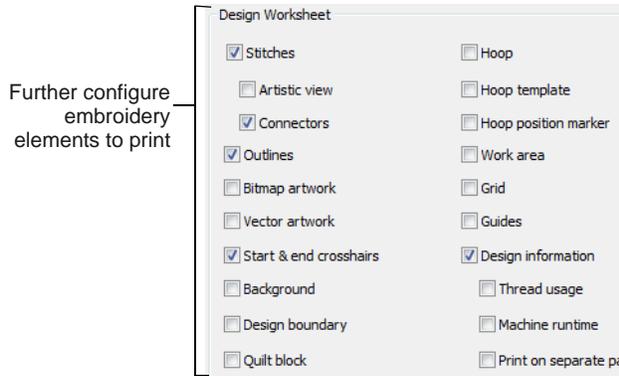
- ▶ Select checkbox if you want to print the design as a design worksheet.



- ▶ If you have selected 'design worksheet', three presets are available:

Preset	Purpose
Standard	Reset worksheet options to default values.
Current view	Display the design as it appears in the design window.
Layout template	Show the design at actual size (1:1) with object outlines only (no stitches).

- ▶ Click **Options** to further configure print options. The default worksheet type is the 'design worksheet'.

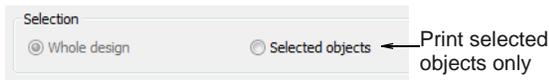


- ▶ Further configure design worksheet options as necessary:

Option	Purpose
Stitches	Display design as stitches with or without Artistic View. In stitch view, connectors may also be shown. Use them as a guide when you save to multiple files for multi-hooped positioning.
Outlines	In stitch view, outlines helps delineate shapes. Alternatively, turn off stitches and print outlines alone.
Artwork	Choose to include bitmap or vector artwork in the printout.

Option	Purpose
Start & end crosshairs	The start/end needle position is included in the printout. See also Setting automatic start & end points .
Background	Include design background if set – for instance, to indicate fabric appearance or position on garment. See also Setting backgrounds .
Design boundary	Display design bounding rectangle and reference marks similar to the machine display. This means start and end point positions can be easily identified. When designs are located on a large work piece, like a table cloth, design extents and geometric center become important for positioning.
Quilt block	
Hoop	It may be important to include the hoop in the printout for positioning purposes. Alternatively, use the hoop position marker to align the needle and orientate the hoop.
Hoop template	Printing the hoop template allows you to cut out the printed design and align it within the hoop. Use the template markings to align it to physical hoop template.
Hoop position marker	This indicates the hoop center and orientation for more accurate hoopings.
Work area	This lets you arrange multi-hoopings on an item or fabric to be sewn. It should be printed together with hoop position markers. See also Creating design layouts .
Grid / guides	These may be used to help align the hoop template lines. See also Setting grid options .
Design Information	Optionally, tick Design Information to include production information in the printout:
Information	Purpose
Thread usage	Helps you determine length of threads required and assemble prior to production. Thread usage appears below the color sequence list.
Machine runtime	Estimated machine runtime based on current machine type. See also Changing hoops .
Print on separate page	Print all design information on a separate page for easy reference. For instance, a multi-hooped design may include many color changes, requiring a dedicated page to display.

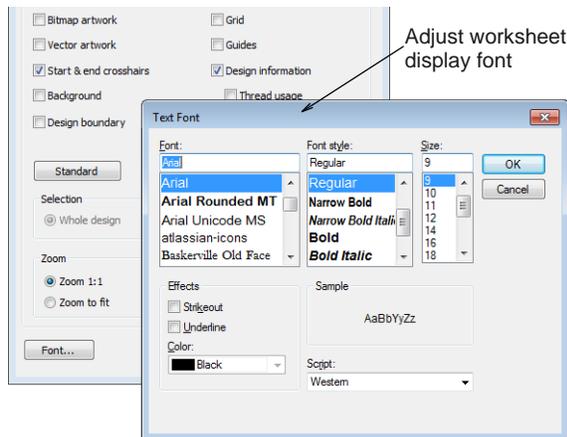
- Optionally, print the whole design or selected objects only. Only enabled if there is already a selection in the design window.



- Select a sizing option to view the design on the worksheet:

Type	Purpose
Zoom 1:1	Choose this (the default) if you want to see the design in real size.
Zoom to fit	Use this if you want to see the design using all the available space on the worksheet.
% of actual size	Use this if you want a larger printout at a known relative size – e.g. twice the original (200%).
Zoom to article	Use this if you want to visualize design placement on an actual article or garment.

- Optionally, click the **Font** button to adjust worksheet display font.



Tip While the cloth setting marking is supported in JEF and SEW files, outlines are not. Since JEF and SEW are machine file formats, they only contain stitch data, no outlines. The workaround is to display JEF and SEW files with stitches and cloth setter marking turned on.

Printing appliqué patterns

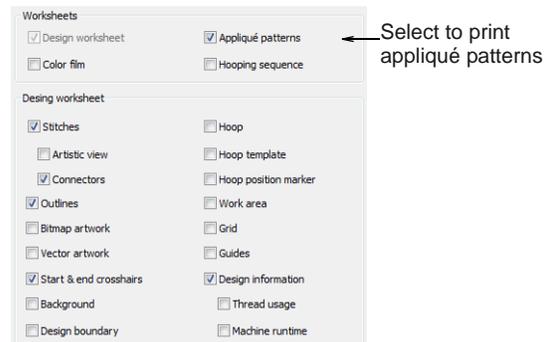


Use General > Print Preview to preview a design before printing.

Print a copy of the appliqué pattern to use to cut out the fabric pieces. Each appliqué pattern piece is numbered according to the stitching sequence.

To print an appliqué pattern

- Click the **Print Preview** icon.
- Click **Options**. The **Print Options** dialog opens.

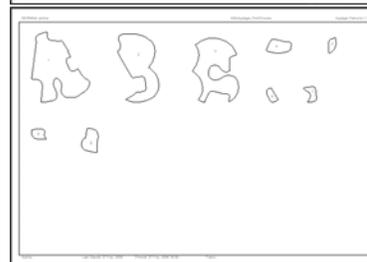


- Select the **Appliqué Patterns** checkbox.
- Click **OK**.

Each appliqué pattern piece is numbered according to the stitching sequence.



Appliqué Assembly page



Appliqué Patterns page



Note If the **Zoom 1:1** option is selected, both an assembled appliqué layout and individual patterns in the actual size are created on separate pages. If the **Zoom to fit** or **% of Actual** options are selected, the assembled appliqué layout is created in the selected size, but individual patterns are still printed in the actual size on separate pages.

- Click **Print**.

Printing color sequence

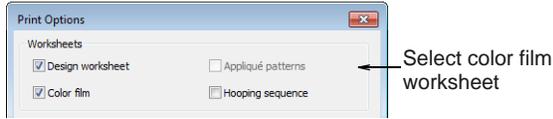


Use General > Print Preview to preview a design before printing.

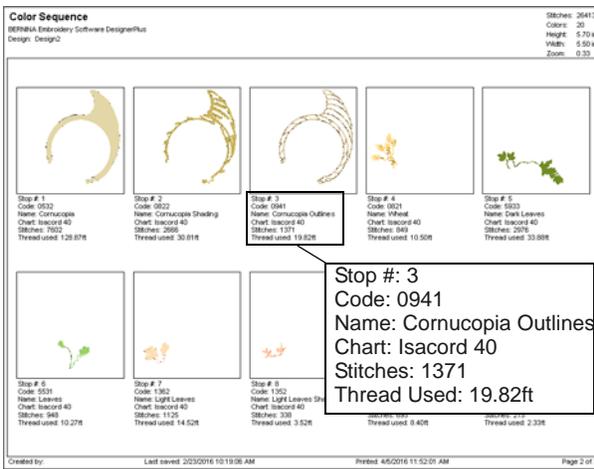
The **Color Film** option lets you include a list of color layers in the current design, together with color and stitch information for each layer.

To print the color sequence

- 1 Click the **Print Preview** icon.
- 2 Click **Options**. The **Print Options** dialog opens.



- 3 Select **Color Film** with or without the design worksheet.
- 4 Click **OK**.



The following information is included:

Field	Description
Stop	Number in the stitching sequence.
Code	Thread code for ease of ordering.
Name	Color name listed in the associated thread chart.
Chart	Thread brand – e.g. Isacord 40.
Stitches	Total stitch count for individual color layer.
Thread used	Total stitch length of the individual color layer in the measurement unit currently set for the system – e.g. 'meters'.

- 5 Click **Print**.

Printing multi-hooped designs

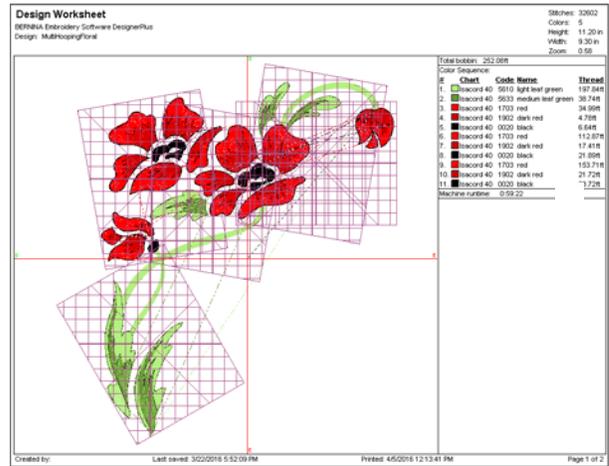
If there is more than one hooping in the design, you have the option of printing hoops in multi-hooping view in their correct color sequence. See also **Creating multiple hoopings**.

To print a multi-hooped design

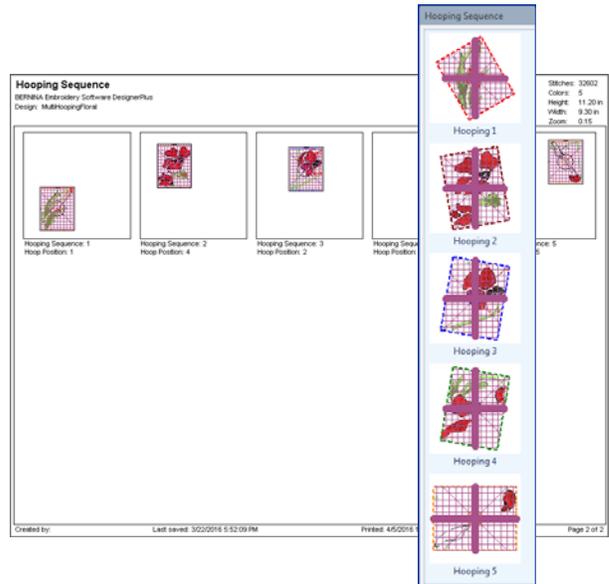
- 1 Click the **Print Preview** icon.
- 2 Click **Options**. The **Print Options** dialog opens.



- 3 Select **Hooping Sequence** with or without the design worksheet.
- 4 Click **OK**.



The following information is included showing the objects in each hooping.



Note The information displayed here is the same as the information displayed in the **Hooping Sequence** docker. See **Creating automatic multi-hoopings** for details.

- 5 Click **Print**.

Printing thread charts

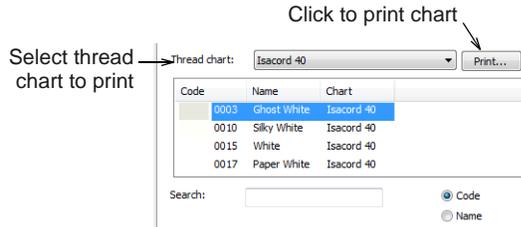


Use Color Palette > Thread Colors to search for and match threads from different charts, and assign for use. Right-click to access Design Properties > Thread Colors summary tab.

The **Thread Colors > Print** option allows you to print the thread list in the current thread chart as a shopping reference when purchasing threads.

To print a thread chart

- 1 Right-click the **Thread Colors** icon.
The **Design Properties > Thread Colors** dialog opens.



- 2 Select a thread chart from the **Thread Chart** list.
- 3 Click the **Print** button.

A **Print Preview** page opens displaying a printed form of the selected thread chart in the current sorting order.

	Code	Brand	Description	Memo
<input type="checkbox"/>	0010	Isacord 40	Silky White	
<input type="checkbox"/>	0015	Isacord 40	White	
<input type="checkbox"/>	0017	Isacord 40	Paper White	
<input type="checkbox"/>	0020	Isacord 40	Black	
<input type="checkbox"/>	0101	Isacord 40	Eggshell	
<input type="checkbox"/>	0105	Isacord 40	NEW 2008	
<input type="checkbox"/>	0108	Isacord 40	Cobblestone	
<input type="checkbox"/>	0111	Isacord 40	White	
<input type="checkbox"/>	0112	Isacord 40	Leaf-White	
<input type="checkbox"/>	0124	Isacord 40	Fieldstone	
<input type="checkbox"/>	0131	Isacord 40	Smoke	
<input type="checkbox"/>	0132	Isacord 40	Dark Pewter	

This printable thread chart includes the thread chart name, code, brand, and description.

- 4 Click **Print Now** to proceed with printing.
The MS Windows® **Print** dialog opens allowing you to choose a printer and adjust any other print settings you require.
- 5 Use the tick boxes in the printed document to mark off any threads you want to purchase. There is also a **Memo** field for notes.
- 6 Click **Print**.

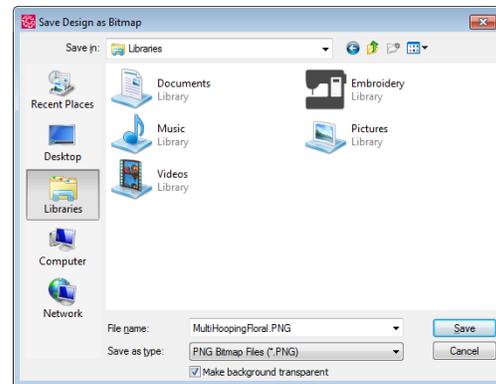
Saving designs as bitmap

The **Save Design as Image** command allows you to save design images for use with your fabric and garment application. The resulting image is exactly as it appears on screen, including connectors, stitch cursor, grid, as well as any **backdrop**. The hoop, however, does not appear in the image file even if it intersects objects within the design.

To save a design as an image

- ▶ Switch to **Embroidery Canvas**.
- ▶ With the design still open in the design window, select **File > Save Design as Bitmap**.

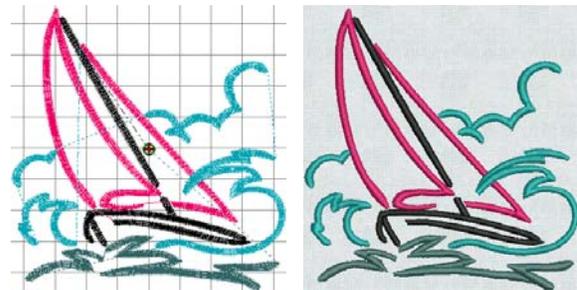
The **Save Design as Bitmap** dialog opens. By default, PNG is the selected file type.



- ▶ Optionally, deselect the **Make Background Transparent** option as required.

This option is only available with PNG. When checked, the grid and background are excluded from the saved image and only design objects appear.

- ▶ Click **Save**. The design is saved as an image file.



Note Zoom factor has no bearing on the image file which is always saved at 1:1 (real size).

Stitching out designs



Use General > Write to Card/Machine to write (save) design to BERNINA design card or BERNINA embroidery machine.

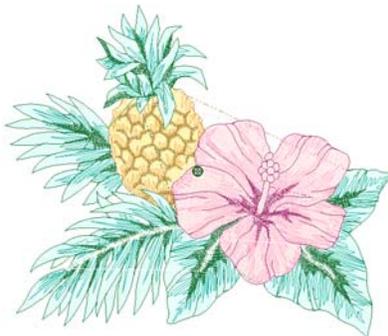
Use **Write to Card/Machine** to send a design directly to your BERNINA embroidery machine. See also [Writing designs to machine](#).



Tip Check the color sequence before you stitch a design. Use **Print Preview** to view stitching information. See [Previewing & printing worksheets](#) for details.

To stitch out a design

- 1 Switch to **Embroidery Canvas**.



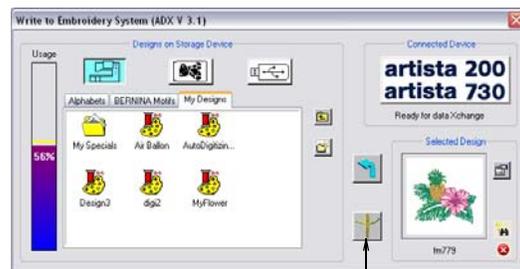
- 2 Check that the design fits the hoop. Use the smallest hoop possible. See [Changing hoops](#) for details.
- 3 Click the **Write to Card/Machine** icon.

If this is the first time you have downloaded a design after turning on the machine or Reader box, the **Bernina Device Selection** dialog opens.



- 4 Select an embroidery machine type and COM port if prompted to do so. See also [Device selection](#).
- 5 Click **OK**.

If the machine connection is working, the **Write to Embroidery System** dialog opens. The name and the thumbnail of your design are displayed.



- 6 Click **Stitch out Selected Design**.

The **Writing file(s) to device** dialog displays, followed by a confirmation message. The design is sent to your embroidery machine ready for stitching.



Note When you send designs directly to machine, they will be lost when the machine is turned off. Apart from saving to hard disk, floppy disk or archiving to CD, you can also preserve designs by writing them to a variety of storage devices. Saved designs can then be retrieved for editing. See also [Working with Machine Files](#).

Outputting multi-hooped designs

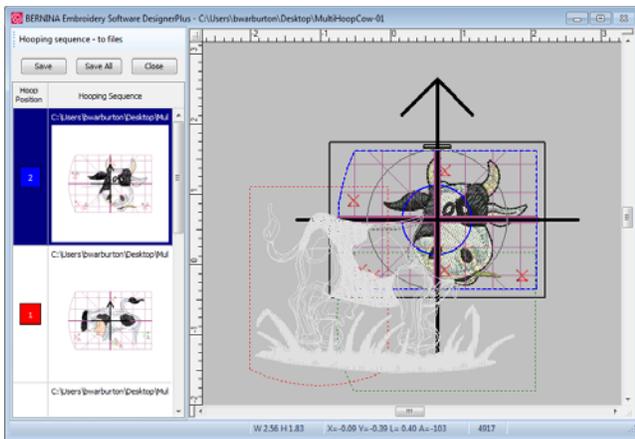
When working with designs that are larger than the available physical hoop, you can split them into parts

in **Multi-Hooping**, each containing an object or group of objects. When a multi-hooped design is output, each part is stitched separately after the fabric has been re-hooped. See also **Creating multiple hoopings**.

The following commands are all available in **Multi-Hooping**:

- ▶ Save As
- ▶ Write to Card/Machine
- ▶ Card/Machine Write

When any of these commands is invoked, multi-hoopings and split lines are applied. **Hooping Sequence** mode is activated, showing the separate hoopings. In the case of the **Save As** command, however, **Hooping Sequence** mode is only activated if you choose to export split files. See also **Printing multi-hooped designs**.



Sending multi-hooped designs to machine



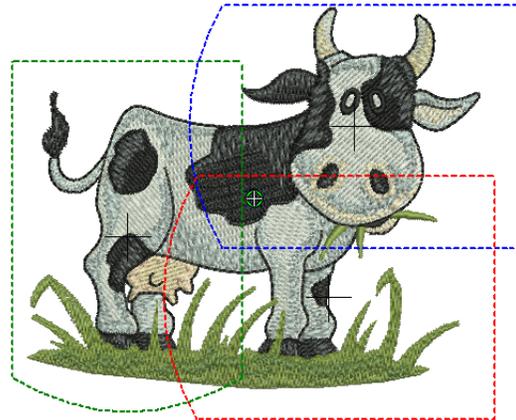
Use General > Write to Card/Machine to write (save) design to BERNINA design card or BERNINA embroidery machine.

With a multi-hooped design, you can send one or more machine files to sewing machine or memory card. The software automatically calculates which files are to be sent and shows you how they will look.

To send a multi-hooped design to machine

- 1 Switch to **Multi-Hooping** and create your multi-hooped design. See also **Creating multiple hoopings**.

- 2 Ensure that the embroidery machine or reader box have been correctly attached.



- 3 Click the **Write to Card/Machine** icon.

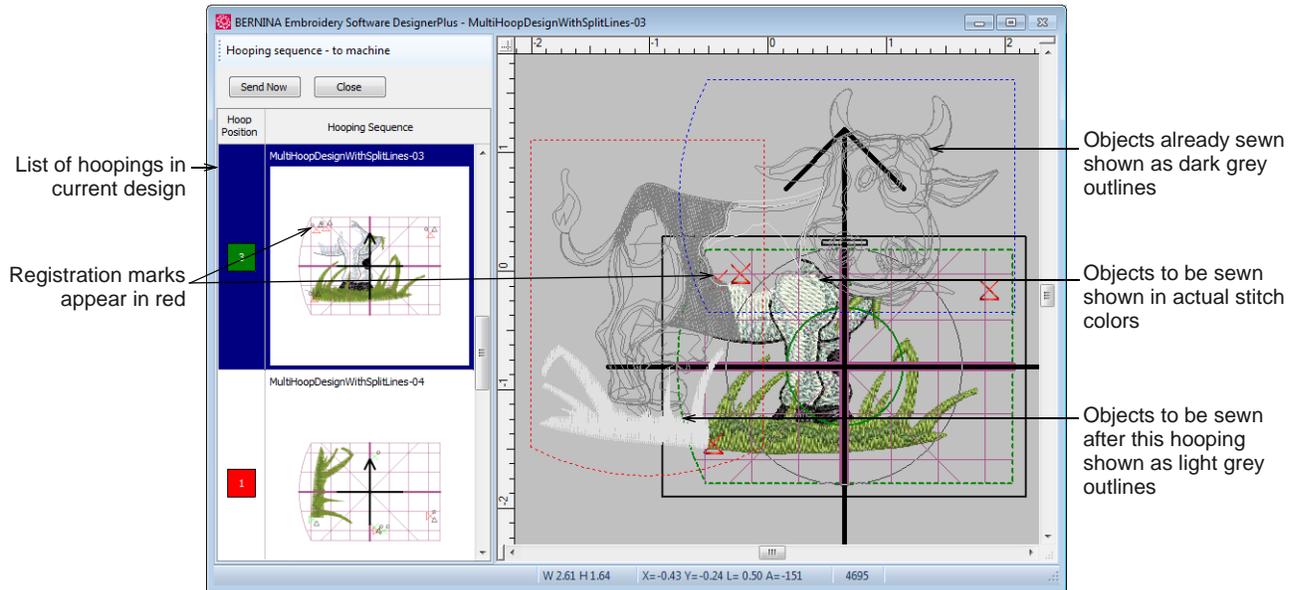
The system checks whether there is only one hoop in the design and if all objects are covered.

- ▶ If some objects are uncovered, you are asked whether you want to continue or otherwise.



- ▶ If there is more than one hoop, the system checks that all objects are covered. All hoopings needed to stitch the design are displayed in **Hooping Sequence** mode. This

displays a list of all hoopings required to stitch the design.



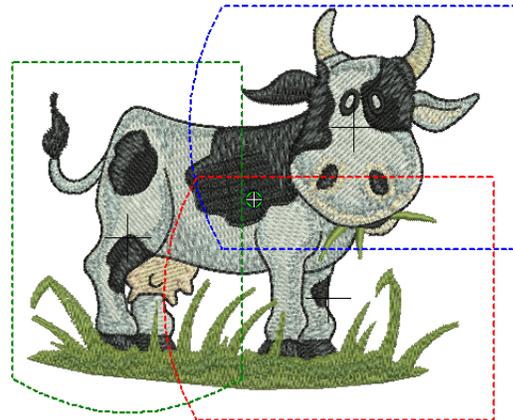
Note Fabric in covered appliqué is hidden, leaving stitchable items only. Registration marks are shown if activated. See **Outputting registration marks** for details.

- 4 Select any hooping in the list. Objects within the selected hooping are shown in their actual stitch colors.
- 5 Click the **Send Now** button. The system outputs a file containing everything to be stitched within the current hooping.
- 6 Repeat this process as many times as necessary to send all hoopings.
- 7 Click **Close** to end.

Exporting multi-hooped designs

If more than one hooping is needed to cover your design, you may split it into separate files for each

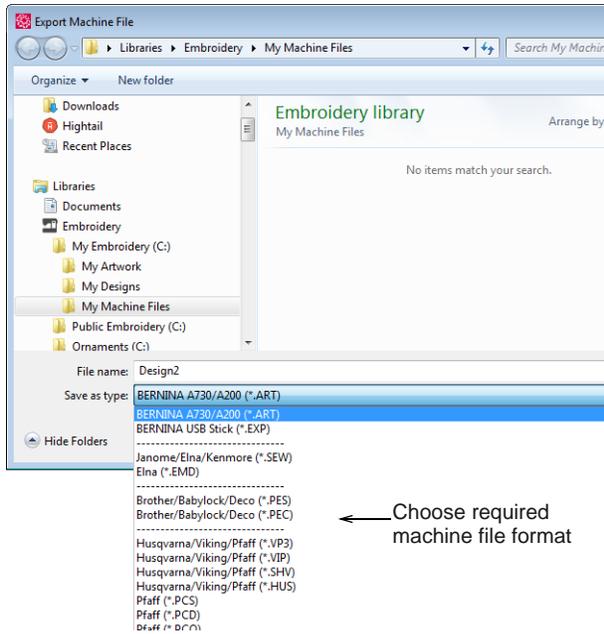
one. You will need to do this when exporting machine files.



Note The **Save As** dialog saves only original file formats such as ART to the **My Designs** library folder. The **Export Machine File** dialog saves machine (EXP) and all other file formats (PES, etc) to the **My Machine Files** library folder.

To export a multi-hooped design

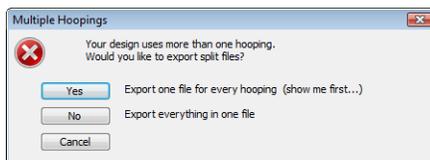
- 1 Switch to **Multi-Hooping** and create your multi-hooped design. See **Creating multiple hoopings** for details.
- 2 Select **File > Export Machine File**.



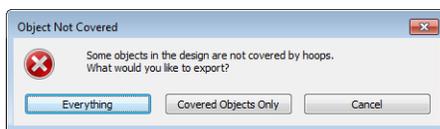
- 3 Choose a machine file format. Typically you will be using BERNINA All-in-One V4 ART files or BERNINA USB Stick EXP files.

- 4 Change file name as required, choose a destination folder, and click **Save**.

- ▶ If more than one hoop position is detected, you are prompted to split the design into multiple files, or export everything to a single file.

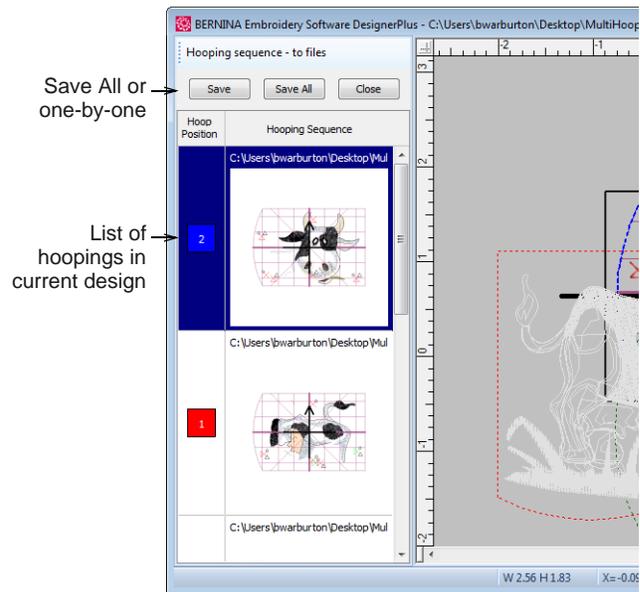


- ▶ If the system detects that not all objects are covered by hoop positions, you are prompted.

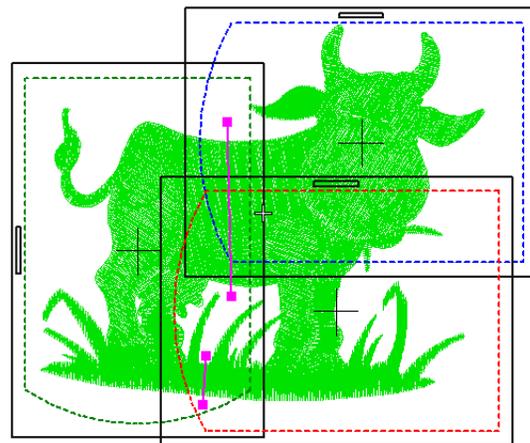


- 5 Click **Yes** to export a file for every hooping. All hoopings needed to stitch the design are calculated. Any split lines are applied and calculated hoopings shown in the **Hooping**

Sequence dialog. See also **Splitting objects between hoopings**.



- 6 Select a hooping and click **Save** or click **Save All**. Hoopings are named consecutively and saved to the chosen file format.



Outputting stumpwork designs

Stumpwork designs, like any other design in your embroidery software, are saved to native ART file format. The ART format contains a complete set of design information in a single 'all-in-one' file – object outlines and properties, actual stitches and machine functions, thread colors, a picture icon and comments. It also includes all stumpwork elements in addition to the base design. When it comes time to output the design, however, it is necessary to create separate machine files for the machine.

Exporting base design



Use **View > Show Stumpwork** to show or hide any stumpwork sub-designs included in a design.

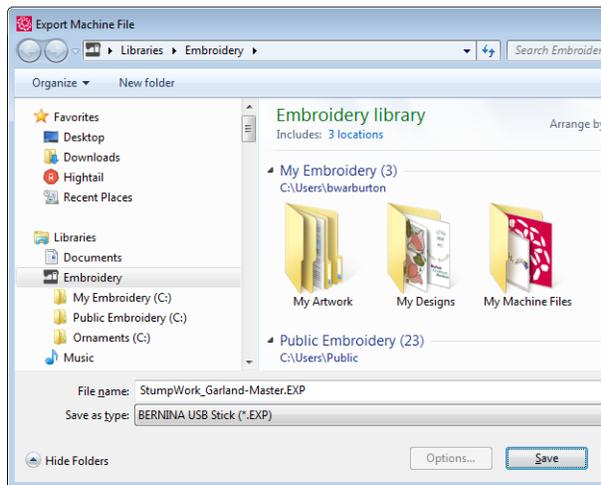
It doesn't really matter which order you export the design elements, but it's logical to start with the base design.

To export the base design

- 1 Open the stumpwork design file you want to output.

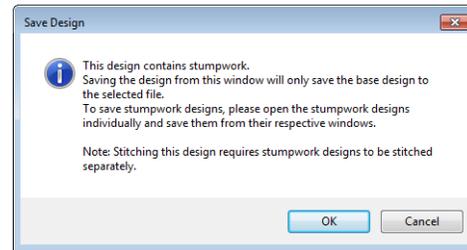


- 2 Use the **Show Stumpwork** option to selectively view stumpwork elements together with the base design.
- 3 Select **File > Export Machine File**.



- 4 Choose the machine file you want and save it out. The warning message you receive will tell you

everything you need to know about exporting stumpwork.



- 5 If you then open the exported machine file, you will only see the base design without accompanying stumpwork pieces.

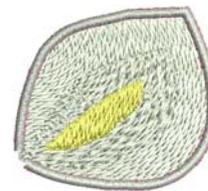


Exporting stumpwork pieces

If a design such as the one shown here, includes repeating stumpwork elements, there is no need to output each one to machine file.

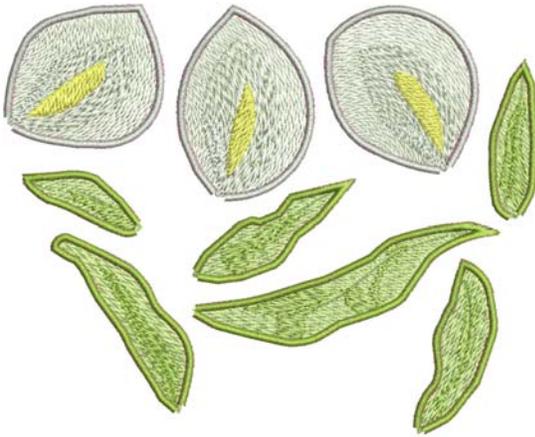
To export the stumpwork pieces

- 1 Choose a single instance of the stumpwork element and open it as a sub-design.



- 2 Again use the **Export Design** function to output the stumpwork piece as a machine file.

- 3 Repeat the same action for each unique stumpwork piece making up the design.



- 4 Each piece can be output as many times to machine as necessary to assemble the final design.



Tip For maximum efficiency, you may want to copy all stumpwork sub-designs into a single design and stitch them out together in one hooping.

Print a worksheet



Use General > Print Preview to preview a design before printing.

Finally, it's a good idea to output a design worksheet to accompany your machine files. You will refer to this when assembling the final stumpwork design. See [Printing designs](#) for details.

Design Worksheet		Stitches: 4963	
BERNINA Embroidery Software DesignPlus		Color: 4	
Design: Stumpwork_ChairandMaster		Height: 3.85 in	
		WxH: 3.44 in	
		Zoom: 1.03	
3D Embroidery This design was based on design FFF91_AKT10 (from ART Design Index) Fabric type: F7 Woven Medium Weight Required stabilizer: Topping Backing: Poly Mesh or Cut Away Tension: 1.2 Total stitches: 21,378			
Color Sequence:			
#	Chart	Color Name	Thread
1	Background	0142 Ribbon Under Side	4,028
2	Background	0140 Flower Green	47,578
3	Background	0101 Lark	13,508
4	Background	3650 Ribbon and Liv Light	3,378
Shading:			
Machine runtime: 0:09:49			
Created by: _____		Printed: 4/6/2016 3:33:10 PM	
Last saved: 4/6/2016 3:18:01 PM		Page 1 of 1	

PART VIII

QUICK REFERENCE



QUICK REFERENCE

BERNINA Embroidery Software integrates with CorelDRAW® Essentials X6 into a single application. This Quick Reference details commands and tools available in the **Embroidery Canvas** and **Multi-Hooping**.

Operating modes

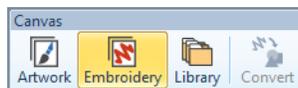
BERNINA Embroidery Software has one workspace or 'design window' but you interact with it in different modes or 'canvases': **Artwork Canvas**, **Embroidery Canvas**. These are accessed via the **Canvas** toolbar.

Embroidery Canvas



Use Canvas > Embroidery Canvas to digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.

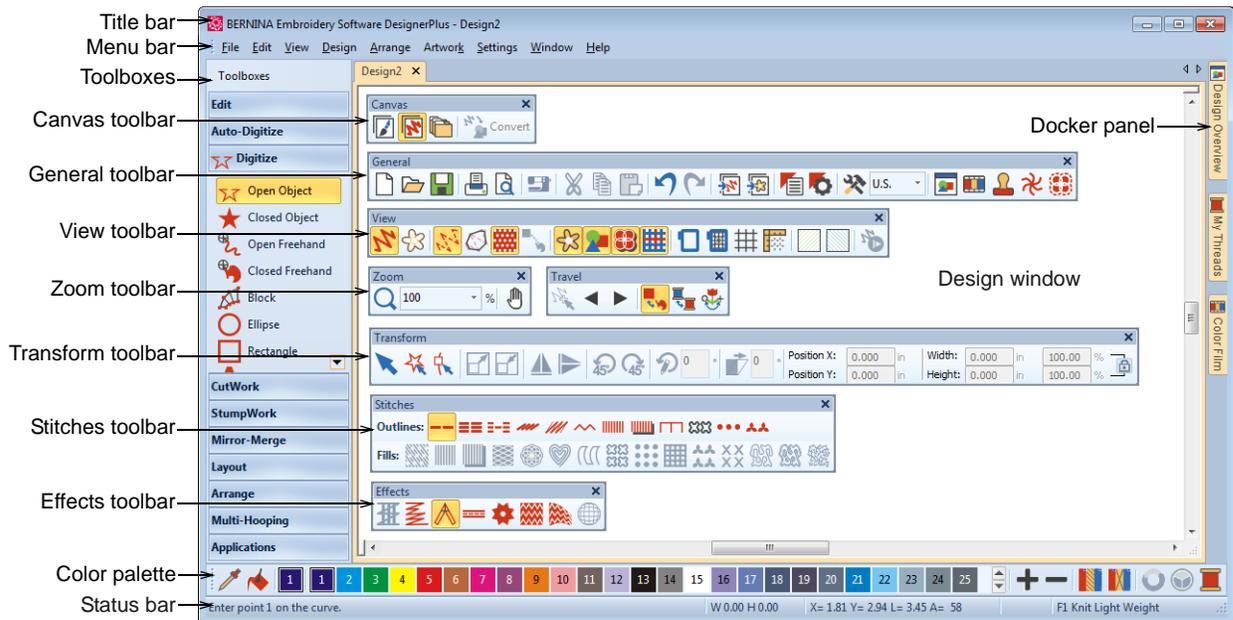
The **Embroidery Canvas** allows you to create, edit, and output embroidery designs using the embroidery digitizing toolset. The screen image below displays an exploded view of **all** toolbars in the BERNINA DesignerPlus **Embroidery Canvas**.



Embroidery Canvas

Digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.

Press <F1> for more help

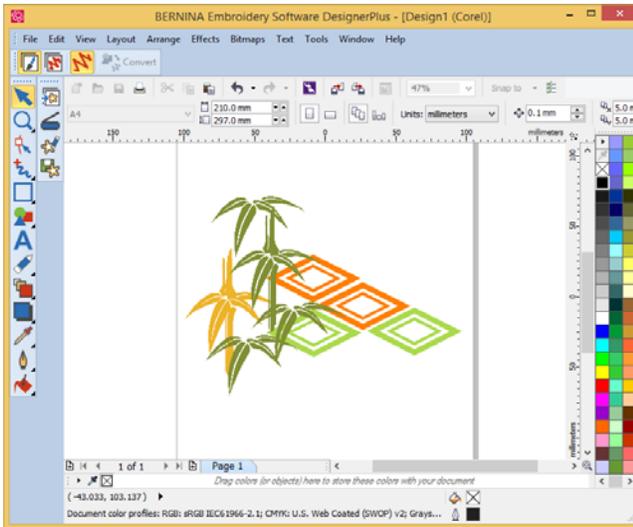


Artwork Canvas



Use Canvas > Artwork Canvas to import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.

The **Artwork Canvas** allows you to create and edit bitmap and vector artwork using the CorelDRAW® Essentials X6 toolset. Below is a screen image of the **Artwork Canvas** workspace. This includes the entire suite of CorelDRAW® drawing tools which offer many techniques for drafting outlines and shapes onscreen.



In addition, **Artwork Canvas** provides capabilities to convert **vectors** and vector text directly to embroidery. You can use **Artwork Canvas** to insert or paste third-party vector graphics such as clipart for use in embroidery designs. Alternatively, insert, paste or scan **bitmap** artwork for use as digitizing templates or 'backdrops'.



Note For a full description of the CorelDRAW® tools available in Artwork Canvas, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics mode Help** menu.

Embroidery Canvas menu bar

The **Embroidery Canvas** menu bar contains the pull-down menus described below.



Note Standard MS Windows® **Alt** key shortcuts apply. Use the **Alt** key with the letter underlined in the menu. To cancel an operation, press **Esc** twice.

File menu

New	Open new blank design.
New from Template	Create new design from template.
Open Design	Open an existing design.
Open Recent Design	Select file from most recently used.
Close	Close current design.
Save	Save current design.
Save As	Save current design with a different name, location or format.
Save as Template	Save current design as a design template for future use.
Export Machine File	
Print	Print active design using current settings.
Print Preview	View design worksheet. Print worksheet from this window.
Read from Card / Machine	Read (open) design from BERNINA Embroidery Software Design Card or BERNINA embroidery machine.
Write to Card / Machine	Write (save) design to BERNINA design card or BERNINA embroidery machine.
Insert Embroidery	Import embroidery design files into the current design.
Insert Artwork	Import vector or bitmap artwork into current design as a backdrop for manual or automatic digitizing.
Scan Artwork	Scan images directly into BERNINA Embroidery Software.
Save Design As Bitmap	Save design images in Stitch View or Artistic View. The resulting image is exactly as it appears in the design window.
Exit	Close all open designs and exit BERNINA Embroidery Software.

Edit menu

Undo / Redo	Cancel last command or series of commands, or re-apply.
Cut / Copy	Cut or copy selection and place on Clipboard.
Paste	Paste contents of Clipboard into design window.
Duplicate	Duplicate selection without placing it on clipboard.
Duplicate with Offset	Duplicate a cloned object at the same offset from its source object.
Delete	Delete selection without placing it on clipboard.

Select All	Select all objects in design.	Zoom > Zoom to Article	View entire product in design window.
Deselect All	Deselect all selected objects in design.	Zoom > Zoom to Hoop	Display entire hoop in design window.
Close Curve with ... Line	Close an open outline with a straight or curved line.	Pan	Drag to pan across the design at high zoom factors. Shortcut <P> also available.
Smooth Curves	Apply curve 'smoothing' to selected objects.	Previous View	Return to previous view. Shortcuts <V> and <F5> also available.
Elastic Lettering	Apply special effects to lettering objects to make them bulge or arch, stretch or compress.	Center Current Stitch	Center currently selected stitch in design window. Shortcuts <C> and <F6> also available.
Adjust Stitch Spacing		Measure	Measure distances on screen. Shortcut <M> also available.
View menu		Stitch Player	Redraw design slowly to check stitching sequence. Shortcut <Shift> + <R> also available.
Artistic View	Show / hide artistic view.	Hide Colors	Show only selected colors in design.
Dim Artwork	Dim backdrops to show stitches more clearly when digitizing.	View all Colors	Show all colors after activating View by Color.
Show >	Access same design viewing commands as available on View toolbar.	Refresh Screen	Refresh screen display. Shortcut <R> also available.
Show Hoop	Show / hide hoop display. Right-click for settings.	Design menu	
Show Hoop Template		Design Properties	Show design information such as size or number of stitches, and add comments to print on worksheet.
Show Grid	Show / hide workspace grid.	Thread Colors	Search for and match threads from different charts, and assign for use.
Show Rulers & Guides	Show / hide workspace rulers and guides.	Auto Start & End	Set start and end points in design.
Show Work Area	Show / hide work area defined under Layout.	Fabric	Adjust fabric types and settings.
Show Quilt Block	Show / hide quilt block defined under Layout.	Background	Select background fabrics and colors.
Zoom > Zoom	Zoom in/out of workspace and zoom in on bounded areas to full window size. Shortcut also available.	Stitch Sequence	Automatically arrange stitch sequence to minimize hoopings, color changes and trims.
Zoom > Zoom 1:1	Show design at actual size. Shortcut <1> also available.	Arrange menu	
Zoom > Zoom Factor	Display design as percentage of actual size. Shortcuts <F> and <F3> also available.	Group	Combine multiple objects into one selectable object grouping. Shortcut <Ctrl+G> also available.
Zoom > Zoom In 1.25x		Ungroup	Split object grouping into component objects. Shortcut <Ctrl+U> also available.
Zoom > Zoom Out 1.25x		Lock / Unlock All	Lock and unlock objects to protect them during digitizing or editing. Shortcut keys <K> and <Shift+K> also available.
Zoom > Zoom In 2X	Display design at 200% current view. Shortcut <Z> also available.	Sequence >	Access same object sequencing commands as available on Color Film toolbar. See Color Film toolbar for details.
Zoom > Zoom Out 2X	Display design at 50% current view. Shortcuts <Shift+Z> and <F10> also available.	Align >	Access same object alignment commands as available on Arrange toolset. See Arrange toolset for details.
Zoom > Zoom to Fit	Display whole design in design window. Shortcut <0> also available.	Space Evenly	Same functions as the Arrange toolset.
Zoom > Zoom to Selected	Zoom into selected object. Shortcut <Shift+0> also available.		

Artwork menu

Insert Artwork	Same as File > Insert Artwork.
Adjust	Adjust image lightness and contrast.
Touch Up	Open a third-party paint program to edit selected bitmap artwork.
Crop	Crop bitmap artwork for use with auto-digitizing.
Bitmap Artwork Preparation	Reduce number of colors, remove image 'noise', and sharpen outlines in scanned artwork.

Settings menu

Object Properties	Same functions as the General toolbar.
Effects	Same functions as the General toolbar.
Options	Adjust settings for display window.
Manage Fabrics	
Calibrate Screen	Calibrate screen for accurate display.
Scanner Setup	Set scanner options.
Create Pattern	Save your own patterns for future use in pattern fills or runs, or even as pattern stamps.
Create Border	Save your own borders for future use with monogram designs.

Window menu

Tile Horizontal/Vertical	Split open design tab in a horizontally or vertically 'tiled' (non-overlapping) fashion.
Remove Tiling	
Dockers	Show / hide dockers to optimize working area. See also General toolbar .
Toolbars	Show/hide toolbars to optimize working area.
(Title of Open Window)	Choose from a list of open windows titles in the order in which they are stacked.

Help menu

Help Topics	List onscreen help topics.
Reference Manual	Onscreen documentation in Adobe Acrobat PDF format. Note: depending on your product level, documentation components may vary.
Release Notes	
About	Show BERNINA Embroidery Software version information.
Show Design Warning	Displays a warning when opening a design that should not be scaled.

Bernina International Home Page	Open BERNINA® International web site.
Bernina of America Home Page	Open BERNINA® of America web site.
Embroidery Design Studio	
BERNINA Embroidery Design Studio	
Embroidery Online	Open Embroidery Online web site.

Embroidery Canvas toolbars

The **Embroidery Canvas** workspace contains the toolbars described below. Not all tools are relevant to all levels of product.

Canvas toolbar

There are three operating modes in BERNINA Embroidery Software accessible via the **Canvas** toolbar.

	Artwork Canvas	Import, edit or create vector artwork as a backdrop for embroidery digitizing, manual or automatic.
	Embroidery Canvas	Digitize and edit embroidery designs. Display embroidery as well as artwork. View designs realistically in 3D simulation.
	Embroidery Library	Open the Embroidery Library window.
	Show Embroidery	Show / hide any embroidery components.
	Convert	Convert Embroidery to Artwork: Convert selected embroidery objects to vector artwork.
	Convert	Convert Artwork to Embroidery: Convert selected vector or bitmap artwork to fill or outline stitches.



Note For a full description of the CorelDRAW® Essentials X6 tools, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics** mode **Help** menu.

General toolbar

This toolbar includes tools for opening and outputting designs, accessing design properties, and opening and closing docker windows.

	New Blank Design	Open new blank design.
	Open Design	Open an existing design.
	Save Design	Save current design.
	Print	Print active design using current settings.
	Print Preview	View design worksheet. Print worksheet from this window.
	Write to Card / Machine	Write (save) design to BERNINA design card or BERNINA embroidery machine.
	Cut	Same as Edit > Cut.
	Copy	Same as Edit > Copy.
	Paste	Same as Edit > Paste.
	Undo	Same as Edit > Undo.
	Redo	Same as Edit > Redo.
	Insert Embroidery	Same as File > Insert Embroidery.
	Insert Artwork	Same as File > Insert Artwork.
	Object Properties	Access properties of selected embroidery objects or preset with nothing selected.
	Effects	Apply stitch effects to selected embroidery objects or preset with nothing selected.
	Options	Access workspace options such as grid, hoop, and scroll settings.
		Change measurement units within software without changing operating system settings.
	Overview Window	Show / hide Overview Window docker. Use to zoom and pan thumbnail of current design.
	Color Film	Show / hide Color Film docker. Use it to resequence objects and color blocks in the design.
	Carving Stamp	Show / hide Carving Stamp docker. Use preset or custom patterns to create a pattern of needle penetrations.

	Morphing Effect	Show / hide Morphing Effect docker. Create transformed object outlines and stitches.
	CutWork Border	Show / hide the CutWork Border docker. Use in conjunction with CutWork and StumpWork toolboxes.

View toolbar

This toolbar brings together tools for design visualization. See also [Viewing Designs](#).

	Show Artistic View	Show / hide simulation of stitched embroidery.
	Dim Artwork	Dim backdrops to show stitches more clearly when digitizing.
	Show Stitches	Show / hide embroidery stitching.
	Show Outlines	Show / hide object outlines. Turn off stitches to view outlines only.
	Show Needle Points	Show / hide the needle points in embroidery stitching.
	Show Connectors	Show / hide connecting stitches between embroidery objects.
	Show Bitmap Artwork	Show / hide any bitmap artwork included in the design.
	Show Vector Artwork	Show / hide any vector artwork included in the design such as CorelDRAW® clipart.
	Show StumpWork	Show / hide any stumpwork sub-designs included in the design.
	Show Appliqué Fabric	Show / hide background fabric / color of any appliqué objects in the design.
	Show Hoop	Show / hide hoop. Right-click for settings.
	Show Hoop Template	Show / hide hoop template. Right-click for settings.
	Show Grid	Show / hide workspace grid. Right-click for settings.
	Show Rulers & Guides	Show / hide workspace rulers and guides. Right-click for settings.
	Show Work Area	Same as View > Show Work Area
	Show Quilt Block	Same as View > Show Quilt Block.
	Stitch Player	Simulate embroidery design stitchout onscreen in either stitch or artistic view.

Color palette

This toolbar displays a palette of thread colors together with tools for selecting, applying, and cycling through colors. See also [Thread Colors & Charts](#).

	Color Picker	Pick up a color from an existing object and make it current.
	Apply Current Color	Apply the currently selected palette color to embroidery objects.
	Current Color	Shows the currently selected palette color.
	Add Palette Color	Add a color slot to the end of the palette.
	Remove Palette Color	Removed an unused color slot from the end of the palette.
	Hide Unused Colors	Show / hide all unused colors in the palette.
	Remove Unused Colors	Remove all unused colors from the palette.
	Cycle Used Colors	Cycle through combinations of used colors. Right- or left-click.
	Color Wheel	Access Color Wheel to test combinations of related colors.
	Change Design Color	Search for and match threads from different charts, and assign for use.

Stitches toolbar

This toolbar provides a range of basic outline and fill stitch types as well as those of a more artistic or decorative kind. It also includes stitch effects which can be additionally applied. Left-click icons to select stitch type. Right-click to access properties. See also [Outline & Fill Stitching](#).

Outlines

	Single Outline	Create a single row of stitches along a digitized outline – used for borders or details.
	Triple Outline	Create a thicker outline by repeating each stitch three times – use for heavier borders or details.
	Sculpture Outline	Create a tick-thin outline alternating single and triple stitches for a hand-stitched look.
	Backstitch Outline	Create traditional backstitch borders – old, adaptable stitch type used for delicate outlines.
	Stemstitch Outline	Create traditional stemstitch borders or details such as stems and vines.
	Satin Outline	Create thicker borders or columns of even thickness.

 **Raised Satin Outline** Create raised satin borders – can be used with trapunto for quilting effects.

 **Zigzag Outline** Create narrow, open borders with a 'zigzag' effect.

 **Blanket Outline** Create narrow, open borders with a 'comb' effect.

 **Blackwork Outline** Create ornamental craftstitch borders. Name derives from black silk thread traditionally used in this form of embroidery.

 **Candlewicking Outline** Create ornamental craftstitch borders. Specify exact pattern size and spacing.

 **Pattern Run Outline** Create ornamental craftstitch borders. Choose from pattern library.

Fills

 **Step Fill** Create stitch fills for larger, irregular shapes.

 **Satin Fill** Create stitch fills for narrow shapes.

 **Raised Satin Fill** Create raised surfaces – can be applied to lettering or used with trapunto for quilting effects.

 **Fancy Fill** Create artistic fills while keeping the appearance of solid stitching.

 **Sculptured Fancy Fill** Create 3D pattern effects with turning fills.

 **Ripple Fill** Create spiral stitching from the center of any filled object.

 **Contour Fill** Create stitching which follows object contours, creating a curved, light-and-shade effect.

 **Blackwork Fill** Create fill for blackwork designs. Name derives from black silk thread traditionally used in this form of embroidery.

 **Candlewicking Fill** Create candlewicking fills – traditional white-on-white embroidery usually done with heavy cotton thread on white linen.

 **Lacework Fill** Create a lacey look with open trellis-like patterns.

 **Pattern Fill** Create decorative fill stitching. Choose from pattern library.

 **Cross Stitch Fill** Create open patterned fills with crosses generated to suit standard grid for entire design.

 **Stipple Run Fill** Create fills made up of run stitches which meander within a border.

 Stipple Stemstitch Fill Create heavier stipple run fills with stemstitch outlines.

 Stipple Backstitch Fill Create heavier stipple run fills with backstitch outlines.

Effects toolbar

This toolbar contains tools used to create many artistic effects to create textured and curved stitching, color blending, and warping or 'morphing' stitching effects. See also [Stitch Quality](#) and [Stitch Effects](#).

 Underlay Strengthen and stabilize objects with underlay stitching.

 Textured Edge Create rough edges and shading effects, or imitate fluffy textures.

 Automatic Corners Toggle mitre or cap corners in line objects with sharp turns. Can be turned on/off object-by-object.

 Couching Add couching cord for use with the BERNINA Free Motion Couching Foot #43.

 Star Fill Create radial turning stitching with available stitch types. Stitches are generated from outside to geometric center. Center can be shifted.

 Wave Fill Create contoured stitches along a digitized guideline – stitching maintains uniform density.

 Elastic Fancy Fill Create fancy fill patterns that follow stitch angles and are scaled according to object width. Right-click for settings.

 3D Globe Effect Create contoured stitches to produce a 3D appearance. Choose from pattern library.

Transform toolbar

This toolbar contains all the tools you need to select, reshape, scale, and mirror embroidery designs in **Embroidery Canvas** mode. See also [Design Layouts](#).

 Select Object Click to select objects or drag a selection marquee to enclose.

 Polygon Select Select irregular areas or shapes – click reference points to demarcate.

 Reshape Object Reshape selected embroidery and lettering objects.

 Size +20% Increase/reduce size of selected object/s in 20% increments. Stitches are automatically recalculated.

 Size -20%

 Mirror X Flip selected object/s in horizontal or vertical planes.

 Mirror Y

 Rotate Left 45° Rotate selected objects in 45° increments to right or left.

 Rotate Right 45°

 Rotate selected objects by specified amount – positive or negative – in degrees.

 Skew selected objects by specified amount – positive or negative – in degrees.

X: mm
Y: mm
Enter specific settings for precise positioning of selected objects. Use in conjunction with Rulers & Guides.

W: mm % 
H: mm %

Scale objects or whole designs by a precise width or height, or a percentage factor. Use Aspect Ratio lock to maintain proportions.

Travel toolbar

This toolbar contains tools for checking a design's stitching sequence by 'traveling' through it by stitches, colors or objects. See also [Viewing stitch sequence](#).

 Select While Traveling Toggle on to select stitches, objects, or colors while traveling through a design.

 Travel Backward Travel backwards through a design.

 Travel Forward Travel forwards through a design.

 Jump by Object Travel to the previous or next object in the design. Use in conjunction with Forward/Back buttons.

 Jump by Color Travel to the previous or next color block in the design. Use in conjunction with Forward/Back buttons.

 Jump to Start/End Travel to the start or end of the design. Use in conjunction with Forward/Back buttons.

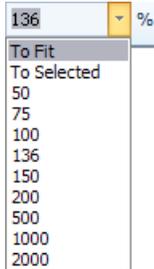
Zoom toolbar

This toolbar includes tools for zooming and panning designs. Other zoom presets are available via the **View** menu. See also [Zooming & panning](#).



Zoom

Left-click to zoom in, right-click to zoom out, or drag a 'zoom box'. Shortcut also available.



Zoom Factor: select a preset zoom scale from the droplist or key in your own zoom scale and press Enter.



Pan

Drag to pan across the design at high zoom factors. Shortcut <P> also available.

Embroidery Canvas toolboxes

The **Embroidery Canvas** workspace contains a **Toolbox** permanently docked on the left of the workspace. The **Toolbox** contains a series of 'toolsets' organized as follows.

Manage Design toolset

The built-in **Embroidery Library** provides an efficient way to view and manage embroidery designs. It recognizes all design file formats used by the software. The library also makes it easy to search, sort and browse all embroidery designs on your system. See also [Managing Designs](#).



New from Selected

Create new design(s) based on the design(s) selected in the embroidery library.



Open Selected

Open design(s) selected in the embroidery library.



Convert Selected Designs

Convert the design selected in the embroidery library into different machine file types.



Stitch Selected Design

Stitch the design selected in the Embroidery Library



Print Selected

Print designs selected in the embroidery library.



Print Selected to catalog

Print selected designs to a catalog.



Export Designs List

Export a text or CSV file containing a list of the visible design files and their properties.



Find Embroidery Designs

Search the computer for folders containing embroidery to add to the library.



Add Folder to Library

Add an existing folder to the Embroidery Library. This enables faster searching and filtering of the folder.



Remove Folder from Library

Remove a folder from the Embroidery Library. This only removes the link to the folder from within the library. It does not actually delete the files in the folder from storage.

Edit toolset

This toolset contains all tools you need to edit embroidery designs in **Embroidery Canvas** mode.



Add Holes

Cut holes in filled objects.



Remove Holes

Remove holes from selected objects.



Add Stitch Angles

Add stitch angles to closed objects with or without holes. Right-click for settings.



Remove Stitch Angles

Remove stitch angles from closed objects with turning stitches.



Double Run

Reinforce outlines, stitching it in the opposite direction.



Blackwork Run

Automatically sequence selected outlines for efficient stitchout.



Color Blending

Create blended stitching in selected objects.



Fill Holes

Fill holes in selected objects with current stitch type.



Outlines & Offsets

Create outlines and offsets of any type for any filled embroidery object.



Quilting Background

Create 'echo' quilting blocks.



Create Trapunto Outlines

Use in conjunction with raised satin to create stitching for a raised 'quilted' look.



Break Apart

Split monograms, appliqué, lettering, and blackwork runs into component objects for editing.



Remove Overlaps

Remove unwanted stitching underlying objects or lettering.



Remove Appliqué Overlaps

Remove unwanted stitching from underlying appliqué objects.



Knife

Cut objects along a digitized line, preserving stitch settings and colors in resulting objects.



Stitch Edit

Place the stitch cursor at a selected insertion point.

Auto-Digitize toolset

This toolset contains all tools required for auto-digitizing artwork in **Embroidery Canvas** mode. See also [Automatic Digitizing](#).

	Insert Artwork	Same as File > Insert Artwork.
	Adjust	Same as Artwork > Adjust.
	Crop Background	Open Crop toolbar to crop bitmap artwork for use with auto-digitizing.
	Touch Up	Edit images in a third-party graphics application.
	Color PhotoStitch	Automatically turn photographs and other bitmap artwork into multi-colored embroidery.
	PhotoSnap	Automatically create rows of Satin and Contour stitches of varying spacing in current color from photographs and other bitmap artwork. The effect resembles the output of a line printer.
	Auto-Digitize	Automatically digitize prepared bitmap artwork.
	Instant Auto-Digitize	Automatically digitize bitmap artwork instantly.
	Magic Wand	Automatically digitize filled areas in vector or bitmap artwork.
	Magic Wand Block Digitizing	Digitize narrow column artwork shapes with satin stitch.
	Magic Wand Fill without Holes	Digitize large artwork shapes with Step, ignoring any holes within.
	Magic Wand Centerline	Digitize centerlines in artwork with Outline stitches.
	Set Matching Method	Use to assign image colors to the color palette for manual thread matching, or automatically match them to the current color palette or current thread chart.

Digitize toolset

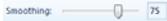
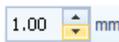
This toolset contains all tools required for manually digitizing embroidery designs in **Embroidery Canvas** mode. Right-click to access properties. See also [Digitizing Methods](#).

	Open Object	Digitize open embroidery objects.
	Closed Object	Digitize closed embroidery objects.
	Open Freehand	Draw embroidery outlines onscreen in the current stitch type.

	Closed Freehand	Draw closed embroidery objects onscreen in the current stitch type – outline or fill.
	Block	Digitize columns with turning stitches.
	Ellipse	Digitize ellipse or circle embroidery objects.
	Rectangle	Digitize rectangle or square embroidery objects. Press <Ctrl> to constrain.
	Lettering	Create embroidery lettering directly on screen.
	Monogramming	Create personalized monograms using a selection of pre-defined styles, border shapes and ornaments.
	Appliqué	Digitize closed-object appliqué with all necessary stitching.
	Advanced Appliqué	Generate open-object appliqué from one or more source objects.
	Buttonhole	Digitize a single buttonhole with all necessary stitching.
	Buttonholes	Digitize a line of buttonholes with all necessary stitching.
	PunchWork	Digitize PunchWork designs for use with the BERNINA Rotary Hook Punch tool.
	Pattern Stamp	Place individual patterns in the design. Choose from pattern library.
	Basting Stitch Maker	Insert a reference marker at any angle and position.
	Insert Graphic Marker	Insert a graphic marker representing adhesive stickers attached to the fabric to indicate location and orientation.

Freehand settings

When **Freehand** tools are activated, the **Freehand Settings** toolbar appears.

	Use the Smoothing control to specify, as a percentage, how closely the smoothed outline follows the original.
	Use Show Guide to toggle freehand digitizing guide cursor – provides more control over 'freehand' drawing than the default pointer.
	Use the Guide Inner Circle Radius control to define size of center circle of freehand digitizing guide.
	Use the Number of Guide Circles control to set number of circles in the freehand cursor – if the inner circle radius is 2mm, each additional guide circle is offset by 2mm.

CutWork toolset

The **CutWork** toolset is available from the **Toolbox**. It contains all the tools necessary to digitize cutwork holes and pieces from scratch. See also [Digitizing cutwork](#).

	Add Cutwork Border	Generate a cutwork border from selected objects.
	Digitize Cut	Digitize a simple open or closed cut in hooped fabric. Right-click for settings.
	Digitize Piece	Digitize a cutout piece in hooped fabric, together with supporting embroidery. Right-click for settings.
	Digitize Hole	Digitize a hole in hooped fabric, together with supporting embroidery. Right-click for settings.
	Cut Closed Border	Cut a closed cutwork border and leave an opening for wire ends.
	Cut Buttonhole Slit	Generate a cutting line for selected buttonholes.

StumpWork toolset

The **StumpWork** toolset is available from the **Toolbox**. It contains all the tools necessary to digitize stumpwork from scratch or create stumpwork from existing objects. See also [Digitizing stumpwork](#).

	Create Stumpwork Sub-design	Create stumpwork sub-design from selected objects which include embroidery within a stumpwork border.
	Open StumpWork Sub-design	View and edit selected stumpwork sub-design.
	Save Stumpwork Sub-design As	Save stumpwork sub-design as a separate design file.
	Digitize Wireline	Create a wireline using a digitized outline and current settings.

Mirror-Merge toolset

This toolset contains all tools required to duplicate and transform selected **embroidery objects** in vertical and horizontal planes. See also [Mirroring objects](#).

	Mirror-Merge Horizontal	Duplicate & mirror horizontally and merge overlapping objects (optional).
	Mirror-Merge Vertical	Duplicate & mirror vertically and merge overlapping objects (optional).
	Mirror-Merge Horizontal / Vertical	Duplicate & mirror selected objects around a center point.
	Array	Duplicate designs, such as badges, automatically re-sequencing color blocks for efficient multiple design stitchouts.



Reflect

Duplicate and mirror objects or designs. Use to create decorative borders.



Wreath

Duplicate selected objects around a central axis. Specify duplicates in Mirror-Merge Settings toolbar.



Enter number of wreath points. Enter even number to activate Kaleidoscope.

Layout toolset

The **Layout** toolset allows you to arrange multiple embroidery designs or design elements on a fabric, garment, or item such as tablecloth. See also [Creating design layouts](#).



Layout to Rectanglar Work Area Corners

Automatically create copies of any selected object/s in each corner of the layout work area.



Layout Around Circular Work Area

Automatically create copies of selected object/s (specified by number of repeats) around the center of the work area.



Auto Center to Work Area

Automatically move selected object/s to center of the work area.



Define Work Area

Open the Layout Work Area dialog to define either a rectangular or round work area of a specified size.



Layout to Rectanglar Quilt Block Corners

Automatically create copies of any selected object/s in each corner of the layout quilt block.



Auto Center to Quilt Block

Automatically move selected object/s to center of the quilt block.



Auto Fit to Quilt Block

Automatically fit selected object/s to the quilt block.



Define Quilt Block

Open the Layout Quilt Block dialog to define quilt block of a specified size and a specified center.

Arrange toolset

This toolset contains all tools you need to precisely align, distribute and mirror objects in **Embroidery Canvas** mode. See also [Arranging objects](#).



Group

Combine multiple objects into one selectable object grouping.



Ungroup

Split object grouping into component objects.



Lock

Lock selected object/s into position for protection.



Unlock All

Unlock all locked object/s to remove protection.



Align Left

Left-align selected objects.

	Align Centers Vertically	Vertically align centers of selected objects.
	Align Right	Right-align selected objects.
	Align Top	Align tops of selected objects.
	Align Centers Horizontally	Horizontally align centers of selected objects.
	Align Bottom	Align bottoms of selected objects.
	Align Centers	Align centers of selected objects.
	Space Evenly Across	Evenly distribute three or more selected objects horizontally.
	Space Evenly Down	Evenly distribute three or more selected objects vertically.

Multi-Hooping toolset

This toolset is available under the **Multi-Hooping** toolbox. See [Creating multiple hoopings](#) for details.

	Select a Hoop	Show hoop properties.
	Automatically Add Hoops	Add hoops automatically to cover the entire design.
	Add Splitting Line	Digitize one or more guides in a multi-hoop layout to split objects between hoopings.
	Preview Hoopings	Preview hoopings.
	Calculate Hoopings	Calculate hoopings resulting from current layout.
	Multi Hooping Options	Access workspace options for multi-hooping.
	Add Hoop	Add a new hooping to a multi-hooping layout.
	Delete Hoop	Remove selected hoop from hooping layout.
	Add Hoop Right	Place a new hooping to right of selected hoop. Allows a 10mm overlap between sewing fields.
	Add Hoop Left	Place a new hooping to left of selected hoop. Allows a 10mm overlap between sewing fields.
	Add Hoop Down	Place a new hooping to below the selected hoop. Allows a 10mm overlap between sewing fields.
	Add Hoop Up	Place a new hooping above selected hoop. Allows a 10mm overlap between sewing fields.

	Add 4 Hoops Around	Generate 4/8 hoopings around a selected hoop's perimeter. Allow a 10mm overlap between sewing field.
	Add 8 Hoops Around	

Applications toolset

In addition to CoreIDRAW®, BERNINA Embroidery Software includes a number of ancillary applications which can be launched from the **Applications** toolset.

	Cross Stitch	Launch BERNINA Cross Stitch from within BERNINA Embroidery Software.
	Quilter	Launch BERNINA Quilter from within BERNINA Embroidery Software.

Color Film toolbar

This toolbar is available in **Embroidery Canvas** mode.

	Show Objects	View individual objects in order of stitching sequence. Drag and drop object icons to resequence.
	Back / Forward 1 Object	Move selection back / forward one object in the stitching sequence.
	Back / Forward 1 Color	Move selection back / forward one color in the stitching sequence.
	Move to Start / End	Move selection to start / end of stitching sequence.
	Sequence by Selects	Resequence objects in order of selection.
	Sequence by Color	Resequence all blocks of like color. (To maintain separate color blocks, use Color Film.)

KEYBOARD SHORTCUTS

You select commands in BERNINA Embroidery Software as other MS Windows® applications – from menus or toolbars. Keyboard shortcuts are available for frequently used commands.

Key combinations

To use a keyboard shortcut, or key combination, you press a modifier key together with a character key. For example, pressing the **Ctrl** (Control) key with the 'c' key copies whatever is currently selected – text, graphics, etc – to the Clipboard. This is also known as the **Ctrl+C** key combination, or keyboard shortcut.

Windows to Mac conversion

Key combinations are slightly different from Mac to PC. If you know and use keyboard shortcuts regularly in Windows, you will need to retrain your fingers slightly. For the most part, a Control + Key in Windows translates to a Command + Key in Mac OS. Most favorites should work by just making this switch. Here is a basic breakdown of keyboard equivalence:

Windows	Mac
Control (Ctrl)	Command (most of the time); Control
Alt	Option
Windows / Start	Command / Apple
Backspace	Backspace
Delete	Delete
Shift	Shift
Enter	Enter
Return	Return



Note Standard MS Windows® **Alt** key shortcuts apply. Use the **Alt** key with the letter underlined in the menu. To cancel an operation, press **Esc** twice.

General functions

To	Press
Cancel command	Esc
Exit the program	Alt + F4
Open existing design	Ctrl + O
Print design	Ctrl + P

To	Press
Save design	Ctrl + S
Start new design	Ctrl + N

View designs

To	Press	Or
Center current stitch	C	F6
Measure	M	
Refresh screen	R	F4
Show needle points	. (period or full stop)	
Show previous view	V	F5
Show selected objects only	Shift + S	
Zoom to fit	0 (zero)	F2
Show/hide connectors	Shift + C	
Show/hide picture	D	
Show/hide vectors	Shift + D	
Pan	P	
Turn on/off Artistic View	T	
Zoom (box)	B then	F8
Zoom factor	F	F3
Zoom in 2x	Z	
Zoom out 2x	Shift + Z	F10
Zoom to 1:1 scale (100%)	1	
Vertical scroll	Alt + 	
Horizontal scroll	Ctrl + 	

Select objects

To	Press
Activate Select Object tool	O
Add next object to selection	Ctrl + Tab
Add previous object to selection	Ctrl + Shift + Tab
Deselect all objects	Esc or X
Select a range of objects	Shift +
Select all objects	Ctrl + A
Select multiple objects	Ctrl +
Select next object	Tab

To	Press
Select object underneath	2 +
Select previous object	Shift + Tab

Edit designs

To	Press
Delete the last input point	* ←Bksp
Finish digitizing an object	* Enter or Spacebar
Turn underlay on/off	U
Display the lettering dialog	A
Redo command	Ctrl + Y
Undo command	Ctrl + Z
Cut selection	Ctrl + X
Copy selection	Ctrl + C
Paste selection	Ctrl + V
Duplicate selection	Ctrl + D
Clone selection	
Reinforce outline (Double Run)	Ctrl + B
Delete selection	Delete

* BERNINA DesignerPlus only

View stitching sequence

To travel	Press	
	Keyb'rd	Keypad*
1 segment backward	Ctrl + ←	
1 segment forward	Ctrl + →	
1 stitch backward	† ←	4
1 stitch forward	† →	6
10 stitches backward	† ↑	8
10 stitches forward	† ↓	2
100 stitches backward		-
100 stitches forward		+
Activate Stitch Player	Shift + R	
To next color	PageDown	9
To next object	Ctrl + T	
To next selected object	Tab	
To previous color	PageUp	3
To previous object	Shift + T	
To previous selected object	Shift + Tab	
To the end of a design	End	1
To the start of a design	Home	7

* Num Lock OFF † Select Object tool OFF

Digitizing & lettering

To	Press
Activate Double Run	Ctrl + B
Delete the last input point	* ←Bksp
Finish digitizing an object	* Enter or Spacebar
Turn underlay on/off	U
Display the lettering dialog	A

* BERNINA DesignerPlus only

Manipulate objects and stitches

To	Press or click
Nudge selected designs	↑ ↓ ← →
Move an object horizontally or vertically	+ Ctrl Drag the object
Maintain an object's proportions while resizing	† Shift + Drag corner handle
Reshape selected object	H
Change reshape node type	+ Space Select reshape node and press spacebar
Group selected objects	Ctrl + G
Ungroup selected objects	Ctrl + U
Regroup ungrouped objects	* Ctrl + R
Lock selected objects	K
Unlock selected objects	Shift + K
Bring object to front	* Shift + PageUp
Bring object forward	* PageUp
Send object to back	* Shift + PageDown
Send object backward	* PageDown
Activate Stitch edit	E

† Use Alt+Drag with BERNINA Quilter * BERNINA Quilter only

System shortcuts

Here is a list of commonly-used Windows keyboard shortcuts and their Mac equivalents.

Action	Windows	Mac
Backwards delete	Backspace	Delete
Capture entire screen to Clipboard	Print Screen	Command + Control + Shift + 3
Capture frontmost window	Alt + Print Screen	Command + Shift + 3
Close current window	Control + W	Command + W
Copy a file/folder	Control + drag icon	Option + drag icon

Action	Windows	Mac
Copy to Clipboard	Control + C	Command + C
Create an alias or shortcut	Right mouse click and select Create Shortcut	Command + L
Cut to Clipboard	Control + X	Command + X
Exit a dialog box without changes	Escape	Escape
Find/Search	Control + F	Command + F
Force quit a frozen application	Control + Alt + Delete	Command + Option + Escape
Forward delete	Delete	Delete (For Mac notebooks, press the Function (fn) and Delete key)
Get item info or properties	Alt + Enter	Command + I
Logout current user	Windows + L	Command + Shift + Q
Maximize window	Control + F10	None
Minimize windows	Windows + M	Command + M
New folder	Control + N	Command + Shift + N
Open file	Control + O	Command + O
Paste Clipboard	Control + V	Command + V
Print	Control + P	Command + P
Quit / close a program	Alt + F4	Command + Q
Rename a file / folder	Select item + F2	Select item + Enter
Save file	Control + S	Command + S
Select all items	Control + A	Command + A
Select more than one item in a list (non contiguous)	Control + click on each item	Command + click on each item
Send items to trash / recycle bin	Delete	Command + Delete
Send / receive email	Control + K	Command + K
Shut down	Windows + U + U	Command + Option + Control + Eject
Switch to next window	Control + F6	Command + ~ (tilde)
Switch to previous window	Control + Shift + F6	Command + Shift + ~ (tilde)
Toggle through open applications	Alt + Tab	Command + Tab
Type special characters	Alt + key	Option + key

Action	Windows	Mac
Undo	Control-Z	Command-

Mac environment on virtual machines

If you are running BERNINA Embroidery Software in a Mac environment on a virtual machine (VM), you may find that shortcuts don't work as expected.

Lion uses more shortcuts than Snow Leopard, especially for **LaunchPad** and **Mission Control**. The latter has **Ctrl** arrow left and **Ctrl** arrow right assigned by default. With **Parallels** preferences / keyboard / Enable Mac OS X system shortcuts checked, the above combinations trigger Mission Control functions even from inside the VM. That's what the preference item is for. To avoid this, you can go two ways:

- ▶ Disable the checkbox in Parallels preferences. This is the easy way, but you lose all system keys at once within the VM); or
- ▶ Remove the assignment of those two shortcuts in Mac OS X system preferences / keyboard / keyboard shortcuts.

Just chose Mission Control on the left side, then you can see the two items on the right side. Uncheck them, and you are fine inside the Windows VM. There's no sacrifice unless you want to use the shortcuts for Mission Control.

Since Mission Control only makes real fun with gestures enabled, most people with gesture-capable machines won't need the shortcuts. You could even assign other shortcuts to Mission Control if you liked.

There may also be an issue with the **Shift** key in Parallels. Try the following: Click on 'Virtual Machine'. Configure and enable the option 'Optimize Modifier key for games'.

PART IX

APPENDICES, GLOSSARY & INDEX



APPENDIX A

TROUBLESHOOTING

This appendix provides help for solving problems in BERNINA Embroidery Software. It includes procedures for checking your system's requirements and settings, reverting to original values, and testing disks and connections. It also describes how to log errors, and lists causes for common error messages and problems.



Solving problems in BERNINA Embroidery Software

If you encounter a problem, refer to the following sources for help:

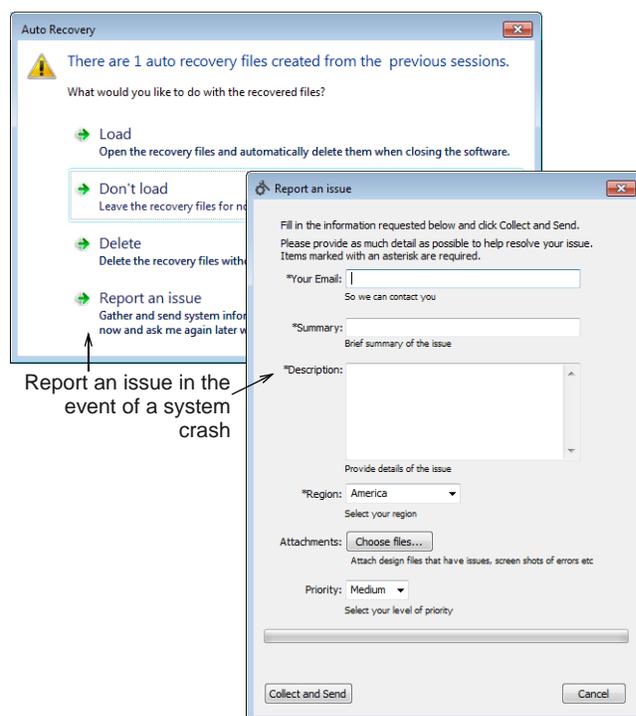
- ▶ BERNINA Embroidery Software Reference Manual – select **Help > Reference Manual** (or printed version)
- ▶ BERNINA Embroidery Software Online Help – select **Help > Help Topics**
- ▶ MS Windows® Online Help – select **Start > Help**
- ▶ MS Windows® manual
- ▶ Documentation supplied with your hardware.

Getting help

If you are unable to solve a problem, you should contact your dealer. Before seeking help, check that your PC meets the system requirements and **General problems** section in this chapter.

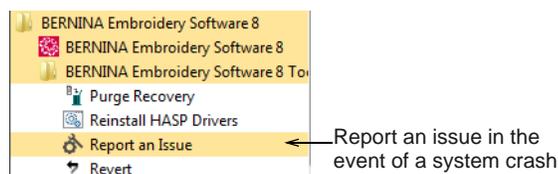
Issue reporting

BERNINA Embroidery Software provides a built-in mechanism to report an issue following a system crash.



Use the issue reporter to request assistance for specific issues. The reporter can also be run

independently from the BERNINA Embroidery Software program group.



few basic system checks. These include your PC specifications, your CPU/RAM specifications, as well as your available hard disk space.

System requirements

In order to run your software, you need to ensure that the following pre-requisite system requirements are met.

System checks

If you are having problems with your BERNINA Embroidery Software, it's a good idea to carry out a

check that your PC meets the system requirements. Check CPU/RAM as well as hard disk space. The table below provides minimum system requirements.

Component		Minimum	Recommended
CPU		Intel® Core 2 Duo or AMD Athlon™ 64	3GHz + Latest 64-bit (x64) multi core processor
Operating system	‡	Windows® 7 (32-bit or 64-bit Editions) with latest service packs installed.	Windows® 10 (64-bit Edition) or Windows® 8.1 (64-bit Edition), with latest service packs.
Browser		I.E. 9.0 or Later	I.E. 11.0 or Later
Memory		4 GB	8 GB or more
Hard disk size		80 GB	256 GB or More (Solid State Drive)
Free disk space	†	40 GB	60 GB or More
Graphics card		Support for Highest Color (32bit) and resolution (1366 X 768)	Support for DirectX 9 graphics with: WDDM Driver 1GB of graphics memory (non-integrated) Pixel Shader 2.0 in hardware bits per pixel Dual Monitor Capable
Monitor	¥	1366 X 768 screen resolution	Dual monitors capable of displaying 1920 X 1080 screen resolution
Mouse		USB mouse	USB mouse
USB port		Required for software installation.	
Sound card		Required for online video help.	
Internet connection		Required for product activation and registration. Internet connection may also be required during installation in order to download Windows features such as .Net Framework 3.5.	

Supported operating systems ‡

Although Windows® 7 (32-bit or 64-bit edition) is supported, we recommend updating to Windows® 10 (64-bit edition) or Windows® 8.1 (64-bit edition) with latest service packs installed. You will, however, need to uninstall any versions of CorelDRAW earlier than X6.

Free hard disk space †

BERNINA Embroidery Software occupies up to 5GB of hard disk space, depending on options installed. CorelDRAW Essentials also takes up an additional 3GB.

PC specifications

Screen resolution ¥

Some controls may be hidden on the user interface if you run your monitor at low resolutions. The physical size of your monitor will have a bearing on the optimum screen resolution. Larger fonts will exacerbate the problem. If you experience visibility issues, try adjusting both screen resolution and font size. For example, a resolution of 1366 X 768 with a font size of 100% or 125% should be acceptable.

System security

The software is shipped with a product key which can be found inside the software kit. Each product key allows your system to be uniquely identified. You will be prompted to enter the product key to register and activate the product when the software is launched the first time following installation. Please keep the product key in a secure place.



Note Each licensed copy of the software is for a single user. It entitles you to three (3) activations: two (2) on different computers, and one (1) in case of hardware failure or replacement.

Integration with CorelDRAW®

CorelDRAW® Graphics Suite is the most popular vector-based drawing package for the decorated goods industry. It features 'best-of-breed' bitmap-to-vector tracing, enhanced illustration capabilities, photo-editing together with a library of professional clipart images.

BERNINA Embroidery Software comes together with an installation of CorelDRAW® Essentials X6. The built-in CorelDRAW Graphics window includes CorelDRAW drawing tools which offer many techniques for drafting outlines and shapes on screen. Vector objects can be converted to embroidery designs. CorelDRAW® Essentials X6 and its sister product, Corel PHOTO-PAINT® Essentials X6 can also be run as standalone applications.

For a full description of the tools, refer to the electronic User Guide available via the Windows **Start > Programs** group. Alternatively, use the onscreen help available from the **Graphics mode Help** menu.



Note CorelDRAW is installed together with Windows .NET Framework. To ensure that CorelDRAW is correctly installed with your embroidery software with the correct version of .NET, make sure you install it when prompted to do so. It can take up to 20 minutes or more to install the .NET Framework on some computers.

Checking CPU/RAM specifications

Check your CPU and RAM specifications, and the version of MS Windows® you are running to ensure they meet the BERNINA Embroidery Software requirements. See [PC specifications](#) for details.

To check CPU/RAM specifications

- 1 On the MS Windows® desktop, right-click the **My Computer** icon and select **Properties**.
The **System Properties > General** dialog opens.
- 2 Check the MS Windows® version, the CPU and the amount of RAM.

Checking your hard disk space

Check that your hard disk has enough space to run BERNINA Embroidery Software effectively. See [PC specifications](#) for details.

To check your hard disk space

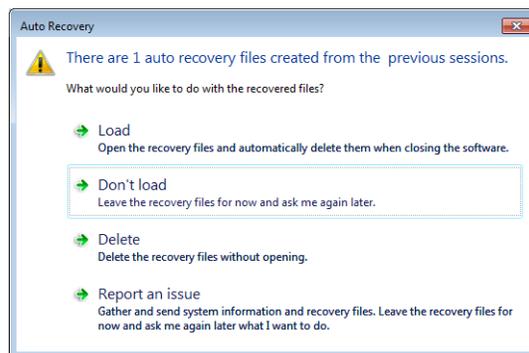
- 1 Double-click the **My Computer** icon on your MS Windows® Desktop.
The **My Computer** window opens.
- 2 Right-click the hard-disk drive icon (usually C:) and select **Properties**.
The **Properties > General** dialog opens.
This tab shows the hard-disk capacity as well as any free space. This must be greater than 40 Mb or 10% of your total hard drive space, whichever is the greater amount.

Recovering from hardware or software failure

If your software crashes due to a hardware or software failure, recovery files are usually created. When you restart BERNINA Embroidery Software after such a failure, the design you were last working on is opened automatically or, if Auto Save was on, the backup file is retrieved.

To recover from hardware or software failure

- ▶ Open BERNINA Embroidery Software.
The **Auto Recovery** dialog will appear.



- ▶ Normally, you will want to load recovery files for the designs you were last working on.
- ▶ If a recovery file is opened, save the file to a new name with the ART extension. Once your recovery file has been saved and re-named with the ART extension, the recovery files will be automatically deleted when you close the software.
- ▶ If the design file itself has become corrupted and is causing problems, you may need to delete recovery files without opening.
- ▶ If problems persist, use the reporting function to seek assistance.

Unrecoverable errors

Problem	The system fails and displays 'unrecoverable' error.
Cause	The design you tried to open is corrupt.
Suggestion	You will be prompted next time you run the software if you want to recover. Choose to delete your files.

Deleting files with Delete Recovery

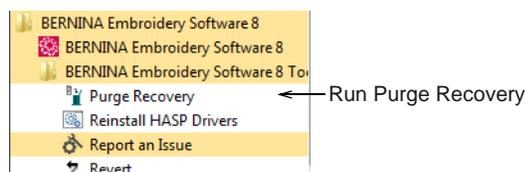
You can delete corrupt files using the **Delete Recovery** utility. **Delete Recovery** deletes files in the C:\Program Files\BERNINA\Embroidery Software 8\Recover and C:\Program Files\BERNINA\Embroidery Software 8\Backup folders. You should also periodically delete the backup files created by **Auto Save**.



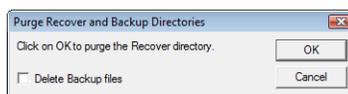
Note Some files such as MLG and DMP files can build up over time and take up disk space. You can delete them manually from MS Windows® Explorer.

To delete files with Delete Recovery

- 1 Exit BERNINA Embroidery Software.
BERNINA Embroidery Software must be closed before deleting recovery or backup files or it will NOT delete these files.
- 2 Select the **Purge Recovery** utility from the BERNINA Embroidery Software program group.



- 3 Select **Delete Backup Files** if you want to delete back up files.



- 4 Click **OK**.

If some files cannot be deleted, a message will display. Delete these files from the C:\Program Files\BERNINA\Embroidery Software 8\Recover and C:\Program Files\BERNINA\Embroidery Software 8\Backup folders manually, from MS Windows® Explorer.



Tip If the errors persist, try reverting to factory settings. See [Reverting to factory settings](#) for details.

Security driver problems

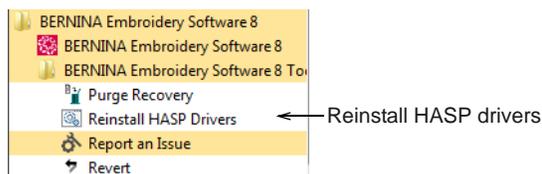
When attempting to run your software, you may encounter the following error message:

A valid license to run BERNINA Embroidery Software could not be found...

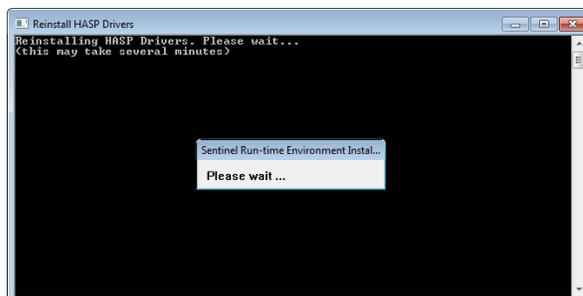
This may happen after your Windows OS has automatically updated. The solution is to reinstall the HASP driver which controls the software licensing.

To reinstall the HASP security driver

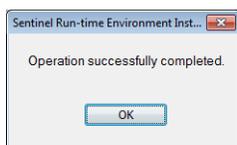
- 1 Exit BERNINA Embroidery Software.
- 2 Select the **Reinstall HASP Drivers** utility from the BERNINA Embroidery Software program group.



The following message will appear.



- 3 Let the installation procedure complete. You will see a confirmation message.



At this point, the HASP driver has been reinstalled. If the HASP error occurs again in future, repeat the process to reinstall.

General problems

The following section refers to general problems you may experience with your designs.

Inconsistent output results

Problem	Problems when sending designs to embroidery machines for stitching. Inconsistent reading and writing.
Cause	Serial or USB communications problems. Inconsistent reading and writing may be caused by wrong port settings in the operating system. Other possible causes are that machine and software versions may not be compatible. In this case, contact your dealer.
Suggestion	Change the port settings.

Missing toolbar buttons

Problem	Buttons missing from toolbars or bottom of toolbars.
Cause	Screen resolution is set too low. Virus in computer. Or, the toolbar itself may be turned off.
Suggestion	Make sure the toolbar is turned on. Go to the Window > Toolbars menu and ensure the toolbar has a tick beside it. If necessary, change the screen resolution to 1366 x 768 or higher. Run your virus checker.

Resolving Exception Access Violation errors

The error message 'Exception Access Violation' can appear when zooming, using lettering, printing or scanning, saving designs, or viewing the Color Film. This problem generally relates to the display adapter

driver and/or the display adapter itself. Try each of the following solutions in sequence.

Exception access violation at startup

Problem	An 'Exception Access Violation' error message appears when starting BERNINA Embroidery Software.
Cause	A corrupt design file in the RECOVER folder or a corrupt ..\Program Files\BERNINA\Embroidery Software 8\RES\defaults.dfl file.
Suggestion	<ul style="list-style-type: none"> Run the Revert utility via the BERNINA Embroidery Software program group. Only if that doesn't work, delete any files in the ... \Program Files\BERNINA\Embroidery Software 8\RECOVER folder. If BERNINA Embroidery Software still will not start, use MS Windows® Explorer to copy the default ... \BIN\defaults.dfl file to the ... \RES folder, overriding the corrupt defaults.dfl file. This will reset BERNINA Embroidery Software to 'new installation'.

Other exception setting violations

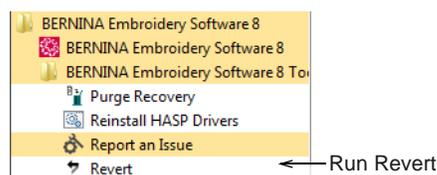
Problem	An 'Exception Access Violation' error message appears when zooming, using lettering, printing or scanning, saving designs, or viewing the Color Film.
Cause	This problem generally relates to the display adapter driver and/or the display adapter itself.
Suggestion	Make sure you have the latest display drivers for your display adaptor. Go the manufacturer's website.

Reverting to factory settings

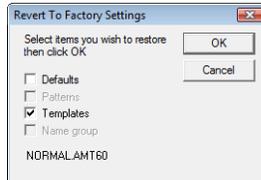
If you have made changes to the default settings in your software and you want to revert to factory settings, use the **Revert** utility.

To revert to factory settings

- 1 Exit BERNINA Embroidery Software.
- 2 Select the **Revert** utility from the BERNINA Embroidery Software program group.



The **Revert to Factory Settings** dialog opens.



- 3 Select the items you want restored to factory defaults.



Note Reverting to the original settings removes any changes you have made to styles, templates and hardware settings.

- 4 Click **OK**.

The selected items are restored to factory settings.



Note There is no confirmation message.

APPENDIX B

EMBROIDERY FONTS

The table below includes all fonts that are standard with your BERNINA Embroidery Software. Categories include:

- ▶ 3D fonts
- ▶ Appliqué fonts
- ▶ Block fonts
- ▶ Cyrillic fonts
- ▶ Fancy fonts
- ▶ Hebrew fonts
- ▶ Japanese fonts
- ▶ Monogram fonts
- ▶ Outline fonts
- ▶ Run stitch fonts
- ▶ Script fonts
- ▶ Serif fonts
- ▶ Small fonts
- ▶ Special fonts

Minimum and maximum sizes

For the best results when stitching, do not exceed the maximum or minimum recommended sizes. Note, however, that recommended heights refer to UPPER CASE letters. Most embroidery alphabets are digitized from an original TrueType Font (TTF), some of which have lower-case letters – e.g. *a* and *c* – which are about 70% the height of a capital letter. As a result, these letters may be too small to embroider neatly at minimum sizes. You may need to increase the size of the lower-case characters to suit the embroidery. See also [Adding lettering to embroidery designs](#).

TrueType Font

Embroidery Letters

Special characters

You can create special characters in each font by holding down the **Alt** key on your keyboard and typing **0** (zero), its code, using the numbers on the keypad.

For example, to type **ê** with the code **234**, type **Alt+0234**. The accented letter will appear when you release the **Alt** key. See also [Adding special characters](#).



Note Not **all** characters are available in **all** fonts.

Join method

The lettering stitch method is preset to give the best results for each alphabet. Options include:

Join	Purpose
Bottom join BJ	Letters are joined along the baseline. Use it when stitching on towelling – joins are hidden in the pile.
Closest join CJ	Letters are joined at the closest point. Use it to minimize trims.
As digitized AD	Letters are joined the same way they were originally digitized. Use it with alphabets combining different fill stitch types or special effects.

Font table

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
3D fonts						
3D Brush Script	<i>ABCDEFGH abcdefg 0123456789</i>	0.8	20	2.4	60	AD
3D Comica	ABCDEFGH abcdef 0123456789	0.8	20	2.0	50	AD
3D Commonwealth	<i>ABCDEFGH abcdef 123456789</i>	0.8	20	2.0	50	AD
3D Drummon	ABCDEFGH abcdef 123456789	0.8	20	2.4	60	AD
3D Emphatic	ABCDEFGH abcdef 0123456789	0.8	20	3.2	80	AD
3D Futurism	ABCDEFGH IJKLMNOP	0.8	20	1.2	30	AD

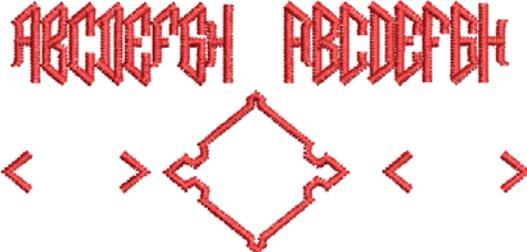
Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
3D Futuro	ABCDEF abcdef 0123456789	0.8	20	2.0	50	AD
Impact 3D	ABCDEF abcdef 1234567890	0.8	20	2.4	60	AD
3D London	ABCDEF abcdef 123456789	0.8	20	2.4	60	AD
3D Monoglyceride	ABCDEF abcdef 0123456789	0.8	20	2.4	60	AD
3D Sofachrome	ABCDEF !"#\$% 0123456789	5.5	14	0.8	20	AD
Appliqué fonts						
Varsity Appliqué-CAPS	ABCDEF !"#\$% 0123456789	1.0	25	3.2	80	AD
Easy Appliqué	ABCDEF 0123456789	1.2	30	4.0	100	AD
Block fonts						
Fortress	ABCDEF abcdef 0123456789	0.25	6	1.6	40	BJ
Lazer	ABCDEF !"#\$% 0123456789	0.24	6	2.0	50	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
London	ABCDEF abcdef 0123456789	0.3	8	2.0	50	BJ
Microgramma	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Monoglyceride	ABCDEF abcdef 0123456789	0.4	10	2.4	60	CJ
Monoglyceride Bold	ABCDEF abcdef 123456789	0.4	10	2.4	60	CJ
Prestige	ABCDEF abcdef 0123456789	0.2	6	2.3	60	CJ
Rounded Block	ABCDEF abcdef 0123456789	0.8	20	1.4	35	CJ
Scanner	ABCDEF abcdef 0123456789	0.3	7	1.6	40	BJ
Sofachrome	ABCDEF 0123456789	0.6	15	1.2	30	CJ
Swiss Block	ABCDEF abcdef 0123456789	0.25	6	2.4	60	BJ
Technical Block	ABCDEF abcdef 0123456789	0.3	8	2.0	50	BJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Varsity Block-CAPS	ABCDEF !"#\$% 0123456789	0.2	6	1.3	35	BJ
Veranda	ABCDEF abcdef 0123456789	0.25	6	2.4	60	CJ
Cyrillic fonts						
Greek	ΑΒΧΔΕΦ αβχδεφ 0123456789	0.3	8	2.0	50	CJ
Greek Ionic	ΑΒΓΔΕΖ αβγδεζ 0123456789	0.4	10	2.4	60	CJ
Jikharev	<i>АБЦДЕФ абцдеф</i> <i>0123456789</i>	0.3	8	2.0	50	CJ
Russian Textbook	АБЦДЕФ абцдеф 0123456789	0.3	8	1.8	45	CJ
Fancy fonts						
Alice	ABCDEF abcdef 0123456789	0.3	8	2.0	50	CJ
Bamboo	ABCDEF abcdef 0123456789	0.3	8	1.6	40	BJ
Castle	ABCDEF abcdef 0123456789	0.25	6	2.0	50	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Childs Play		0.5	13	1.2	30	BJ
Christopher		0.3	8	1.2	30	BJ
Croissant		0.25	6	2.0	50	CJ
Craft		0.4	10	2.0	50	BJ
Drifter		0.25	6	1.6	40	BJ
Erica		0.6	15	2.2	55	CJ
Felt Tip		0.4	10	2.0	50	CJ
Flourish Light		0.6	15	2.0	50	AD
Guinevere		0.5	13	2.0	50	BJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Ketchikan	ABCDEF !"#\$% 0123456789	0.3	8	1.2	30	CJ
Kindergarten Block	ABCDEF !"#\$%& 1234567890	0.4	10	3.6	90	CJ
Mandarin	ABCDEF 0123456789	0.3	8	2.0	50	CJ
Olde English	A B C D E F a b c d e f 0123456789	0.4	10	2.0	50	CJ
Tiffany	ABCDEF abcdef 0123456789	0.3	7	1.4	35	BJ
Victoria	ABCDEF abcdef 0123456789	0.3	7	1.0	25	CJ
Hebrew fonts						
HEBREW2	לכריטחזוהדגבא 1234567890	0.3	8	1.5	40	CJ
Hebrew David	והדגבא והדגבא 0123456789	0.3	7	1.5	40	BJ
Japanese fonts						
Hiragana	ちごぞじいば ちこそしいは わぬふあうえおやゆよ	0.5	13	2.0	50	BJ

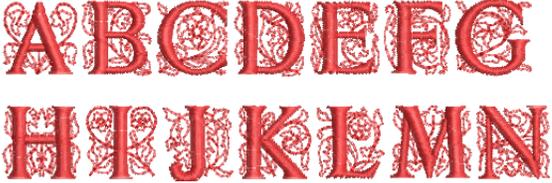
Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Katakana	チゴゾジイバ チコソシイハ ワヌフアウエオヤユヨ	0.5	13	2.0	50	BJ
Heisei Kaisho	平成楷書 あいうえおアイウエオ	0.32	8	2.7	70	CJ
Heisei Gyosho	平成行書 あいうえおアイウエオ	0.32	8	2.7	70	CJ
Monogram fonts						
Diamond2		0.7	18	4.0	100	BJ
Diamond3		0.7	18	4.0	100	BJ
Outline fonts						
Broadsheet		1.2	30	3.0	75	BJ
Dexter Normal		0.4	9	2.0	50	CJ
Neon-CAPS		0.7	18	3.0	75	BJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Tabloid		1.2	30	3.0	75	BJ
Turncoat		0.7	20	3.1	80	BJ
Run stitch fonts						
Quilting Text		0.2	5	1.0	25	AD
Run Cardigan		0.2	5	0.5	12	CJ
Run Freehand		0.2	5	0.5	12	CJ
Run Liberty		0.2	5	0.5	12	CJ
Run Murray Hill		0.2	5	0.5	12	CJ
Script fonts						
Abby Script		0.4	10	2.0	50	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Anniversary	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.5	12	4.0	100	CJ
Cursive	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	7	2.4	60	CJ
Eliza	<i>A B C D E F abcdef</i> <i>0123456789</i>	0.7	20	3.1	80	CJ
Empress	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.5	13	2.4	60	CJ
Energy	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	8	2.4	60	CJ
Hand of Sean	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	8	2.0	50	CJ
Island	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	8	2.0	50	CJ
Lisa	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.5	12	2.0	75	CJ
Meegan	<i>A B C D E F abcdef</i> <i>1234567890</i>	0.6	15	2.1	55	CJ
Nightowl	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.25	6	2.0	50	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Racer	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	8	1.4	35	CJ
Speedy	<i>ABCDEF abcdef</i> <i>0123456789</i>	0.3	8	1.2	30	CJ
Zurich	<i>ABCDEF abcdef</i> <i>1234567890</i>	0.3	8	2.3	60	BJ
Serif fonts						
Blackboard	ABCDEF abcdef 0123456789	0.3	8	2.0	50	BJ
Bodoni	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ
Centurion	ABCDEF abcdef 0123456789	0.5	13	2.4	60	CJ
Chicago	ABCDEF abcdef 0123456789	0.25	6	3.0	75	CJ
King Charles	ABCDEF abcdef 0123456789	0.3	8	2.0	50	BJ
Medley	ABCDEF abcdef 1234567890	0.3	7	1.6	40	BJ
Times Small	ABCDEF abcdef 0123456789	0.3	7	2.0	50	CJ

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Small fonts						
Helvetica Small		0.2	4	0.3	7	CJ
Micro Block		0.2	4	0.3	8	CJ
Roman-Small		0.2	4	0.25	6	AD
Sm HighTower		0.2	4	0.25	6	CJ
Special fonts						
Border-CAPS		0.5	13	1.5	38	AD
Creative Cross		1.2	30	4.0	100	AD
Flair Script		0.75	10	3.2	80	CJ
Secret Garden - CAPS		1.5	38	3.5	90	AD

Font	Sample	Recommended sizes				Join method
		Min		Max		
		in.	mm	in.	mm	
Phoebe Curls		0.6	15	1.4	35	AD

APPENDIX C

FANCY FILL SAMPLES

The Fancy fill patterns shown in this appendix are a sample of those included with your BERNINA Embroidery Software program. For actual Fancy fill patterns and instructions on how to use them, see [Creating fancy fills](#).

ID & Angle	Fancy Fill	ID & Angle	Fancy Fill
001 Diamond (90)		012 Brick3 (45)	
002 Emerald (90)		013 BabyBlock (120)	
003 Ruby (90)		014 3DBlock (0)	
004 Sapphire (90)		015 Roman (90)	
005 Topaz (90)		016 Capri (45)	
006 Jewel (90)		017 Frame (45)	
007 Brilliant (90)		018 Quilt1 (45)	
008 Square (45)		019 Quilt2 (45)	
009 Squarecut (45)		020 Quilt3 (45)	
010 Brick1 (45)		021 Circle (90)	
011 Brick2 (45)		022 Wattle (90)	

ID & Angle	Fancy Fill
023 Oval (90)	
024 Whirlpool (90)	
025 Dance (90)	
026 Heart (90)	
027 Heart2 (90)	
028 Valentine (90)	
029 Scallop (90)	
030 Shell (90)	
031 Smile (90)	
032 Flower (90)	
033 Ribbon (30)	
034 Sunny (90)	
035 Shine (90)	
036 Star (90)	
037 Stardust (90)	

ID & Angle	Fancy Fill
038 Honey-comb (90)	
039 Beeswax (30)	
040 Wave (90)	
041 Dunes (0)	
042 Chevron (90)	
043 Chevron2 (90)	
044 Chevron3 (90)	
045 Wedge (90)	
046 Crazy (90)	
047 Arrow (20)	
048 Weave (48)	
049 Weave2 (90)	
050 Stream (90)	
051 Bowtie (0)	
052 Chain (90)	

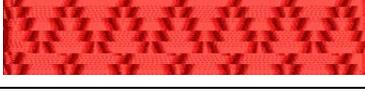
ID & Angle	Fancy Fill
053 Glitter (90)	
054 Cross (45)	
055 Double-cross (90)	
056 Galaxy (90)	
057 Ring (90)	
058 Ramble (90)	
059 Florastar (90)	
060 Stripes (90)	
061 Letter A (90)	
062 Letter B (45)	
063 Letter C (90)	
064 Letter D (45)	
065 Letter E (45)	
066 Letter F (45)	
067 Letter G (45)	

ID & Angle	Fancy Fill
068 Letter H (45)	
069 Letter I (45)	
070 Letter J (45)	
071 Letter K (30)	
072 Letter L (45)	
073 Letter M (45)	
074 Letter N (45)	
075 Letter O (30)	
076 Letter P (45)	
077 Letter Q (30)	
078 Letter R (45)	
079 Letter S (45)	
080 Letter T (45)	
081 Letter U (45)	
082 Letter V (45)	

ID & Angle	Fancy Fill
083 Letter W (45)	
084 Letter X (90)	
085 Letter Y (30)	
086 Letter Z (30)	
087 Paver (90)	
088 Picasso (135)	
089 Ziggy (0)	
090 Spirali (90)	
091 Manchu (45)	
092 Grilles (45)	
093 Wooden Lattice (82)	
094 Han Line (45)	
095 Dart (10)	
096 T-frame (45)	
097 Double-arm (87)	

ID & Angle	Fancy Fill
098 Knuckled frame (45)	
099 Tile (0)	
100 Alarm Tile (83)	
101 Turtle-back (79)	
102 Stepped Wave (45)	
103 Crayon (0)	
104 Diamond Inlay (0)	
105 Corduroy (0)	
106 Diamond Punch (0)	
107 Inlay Print (0)	
108 Snowflake (0)	
109 Inlay Maze (45)	
110 Quilt Diamond 1 (0)	
111 Quilt Diamond 2 (0)	
112 Quilt Diamond 3 (0)	

ID & Angle	Fancy Fill
113 Zig-Zag Inlay (0)	
114 Shell Inlay (0)	
115 Music 1 (0)	
116 Music 2 (0)	
117 Four Square (45)	
118 Symbol 1 (45)	
119 Symbol 2 (50)	
120 Symbol 3 (82)	
121 Wave 2 (0)	
122 Wave 3 (0)	
123 Honey-comb 2 (45)	
124 Rope (0)	
125 Tree (142)	
126 Wings (135)	
127 Leaf (0)	

ID & Angle	Fancy Fill
128 Star (18)	
129 Web (0)	
130 Tear Drop (0)	
131 2-way zig-zag (87)	
132 Quilt Square 1 (45)	
133 Quilt Square 2 (0)	
134 Quilt Square 3 (0)	
135 Quilt Square 4 (0)	
136 Quilt Square 5 (45)	
137 Quilt Square 6 (18)	
138 Cloud Band 1 (25)	
139 Cloud Bands 2 (0)	
140 Cloud Bands 3 (0)	
141 Arrow 2 (0)	
142 Rusty Ice (0)	

ID & Angle	Fancy Fill
143 Ice Rays (0)	
144 Dynasty (0)	
145 Windwheel (0)	
146 Tea Tray (0)	
147 Cash Bars (45)	
148 Chengtu (0)	
149 Chihli (86)	
150 Ming (135)	
151 Arrowhead (89)	
152 Basket2 (40)	
153 Bird (90)	
154 Blocks2 (0)	
155 Chain (90)	
157 Circle (0)	
158 Cube (48)	

ID & Angle	Fancy Fill
159 Ellipse (0)	
160 Flame (90)	
161 Jem (90)	
162 Leaf (0)	
163 Melody (0)	
164 Metal (0)	
165 Passage (0)	
166 Piccolo (0)	
167 Roma (0)	
168 Rope (10)	
169 Seville (0)	
170 Star5 (10)	
172 Tick (0)	
173 Tile1 (135)	
174 Tile3 (0)	

ID & Angle	Fancy Fill
175 Vine (0)	
176 Wave2 (90)	
177 Wave3 (90)	
178 Whirl (90)	
179 Wild (48)	
180 Xmastree (48)	

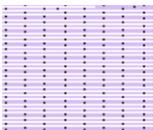
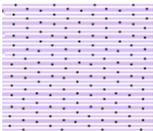
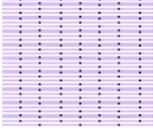
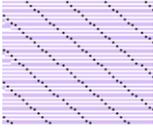
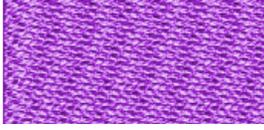
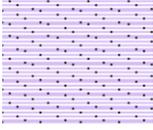
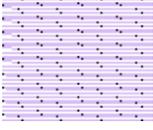
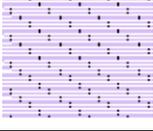
APPENDIX D

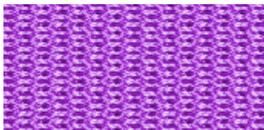
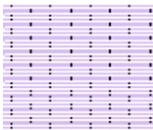
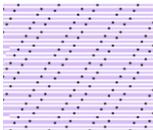
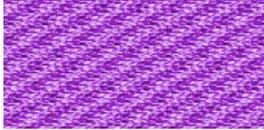
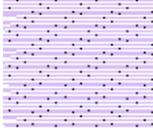
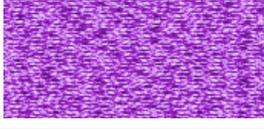
STEP FILL SAMPLES

The Step fill patterns shown in this appendix are a sample of those included with your BERNINA® Embroidery Software program. For actual Step fills and instructions on how to use them, see [Creating step stitch fills](#).



Note Make sure you apply the correct stitch angle to each Step fill. The following samples have been digitized with a stitch angle of 0°. Experiment with different stitch angles to get new effects.

No.	Stitch sample	Preview
1		
2		
3		
4		
5		
6		
7		

No.	Stitch sample	Preview
8		
9		
10		
11		
12		
13		
14		

No.	Stitch sample	Preview
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

No.	Stitch sample	Preview
26		
27		
28		
29		
30		

APPENDIX E

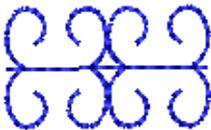
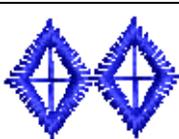
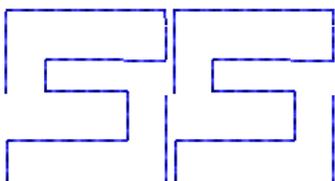
PATTERN STAMP, RUN & FILL SAMPLES

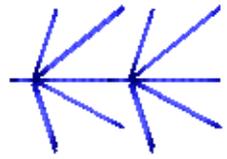
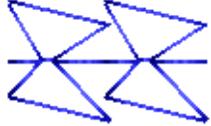
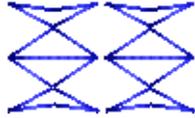
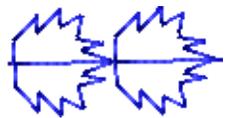
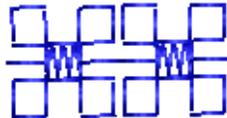
Below are samples of the Pattern Stamps, Runs and Fills included with your BERNINA Embroidery Software. See also [Embroidery Patterns](#).

Pattern set: BerninaV5

Name	Pattern
NP005-01	
NP005-02	
NP005-03	
NP005-04	
NP005-05	
NP005-06	
NP005-07	
NP005-08	
NP005-09	
NP005-10	

Name	Pattern
NP005-11	
NP005-12	
NP005-13	
NP005-14	
NP005-15	
NP005-16	
NP005-17	
NP005-18	
NP005-19	

Name	Pattern
NP005-20	
NP005-21	
NP005-22	
NP005-23	
NP005-24	
NP005-25	
NP005-26	
NP005-27	
NP005-28	
NP005-29	
NP005-30	
NP005-31	
NP005-32	
NP005-33	
NP005-34	

Name	Pattern
NP005-35	
NP005-36	
NP005-37	
NP005-38	
NP005-39	
NP005-40	
NP005-41	
NP005-42	
NP005-43	
NP005-44	
NP005-45	

Name	Pattern
NP005-46	
NP005-47	
NP005-48	
NP005-49	
NP005-50	

Pattern set: Children

Name	Pattern
901	
905	
907	
909	
910	
911	
914	

Name	Pattern
929	

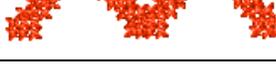
Pattern set: Corners

Name	Pattern
Cnr001	
Cnr002	
Cnr003	
Cnr004	
Cnr005	
Cnr006	
Cnr007	

Name	Pattern
Cnr008	
Cnr009	
Cnr010	
Cnr011	
Cnr012	
Cnr013	
Cnr014	
Cnr015	
Cnr016	
Cnr017	

Name	Pattern
Cnr018	
Cnr019	
Cnr020	

Pattern set: Cross

Name	Pattern
301	
302	
303	
305	
309	
311	
313	
b301	
b302	

Name	Pattern
b303	
b304	
b305	
b306	
b307	
b308	
b309	
b310	

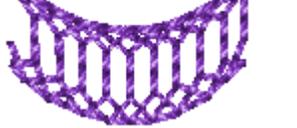
Pattern set: Embellishment

Name	Pattern
601	
605	
608	
610	
612	

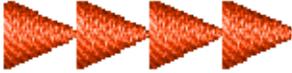
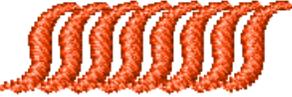
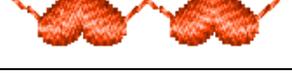
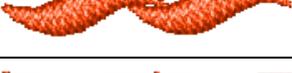
Name	Pattern
614	
618	
623	
629	
637	
641	
644	
648	
653	

Pattern set: Heirloom

Name	Pattern
705	
706	
709	
710	
711	
717	

Name	Pattern
718	
719	
724	
726	
728	
732	
733	
738	
a701	
a702	
a703	
a704	
a705	
a706	

Pattern set: Home Dec

Name	Pattern
401	
402	
403	
405	
406	
407	
409	
411	
412	
413	
414	
415	
416	
417	
422	

Name	Pattern
424	
425	
426	
427	
429	
430	
431	
a401	
a402	
a403	
a404	
a405	
a406	
a407	

Name	Pattern
a408	
a409	

Pattern set: Misc

Name	Pattern
10	
11	
12	
13	
21	
29	
Star	
3wave	
Heart	
Wedge	
Blanket	
Feather	

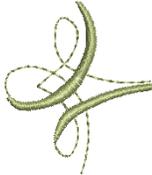
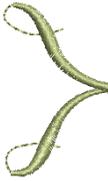
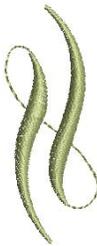
Name	Pattern
Pinstit	

Pattern set: Monogram Ornaments

Name	Pattern
M001a	
M001b	M001a pattern oriented horizontally and mirrored
M002a	
M002b	M002a pattern oriented horizontally
M003a	
M004a	
M004b	M004a pattern oriented horizontally
M005a	
M005b	M005a pattern oriented horizontally and mirrored

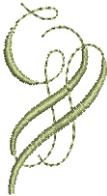
Name	Pattern
M006a	
M006b	M006a pattern oriented horizontally
M007a	
M008a	
M008b	M008a pattern oriented vertically
M009a	
M009b	M009a pattern oriented horizontally
M010a	
M010b	M010a pattern oriented horizontally
M011a	
M011b	M011a pattern oriented horizontally
M012a	
M012b	M012a pattern oriented horizontally

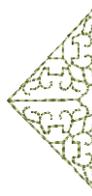
Name	Pattern
M013a	
M013b	M013a pattern oriented horizontally
M014a	
M014b	M014a pattern oriented vertically and mirrored
M015a	
M015b	M015a pattern oriented horizontally
M016a	
M016b	M016a pattern oriented horizontally
M017a	
M018a	
M018b	M018a pattern oriented vertically
M019a	
M019b	M019a pattern oriented horizontally

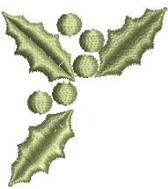
Name	Pattern
M020a	
M020b	M020a pattern oriented horizontally
M021a	
M021b	M021a pattern oriented horizontally
M022a	
M022b	M022a pattern oriented diagonally
M023a	
M023b	M023a pattern oriented horizontally
M024a	
M024b	M024a pattern oriented diagonally
M024c	M024a pattern oriented horizontally
M025a	
M025b	M025a pattern oriented horizontally

Name	Pattern
M026a	
M026b	M026a pattern oriented horizontally
M027a	
M027b	M027a pattern oriented vertically
M028a	
M028b	M028a pattern oriented diagonally
M029a	
M029b	M029a pattern oriented horizontally
M030a	
M030b	M030a pattern oriented horizontally
M031a	
M031b	M031a pattern oriented horizontally
M032a	
M032b	M032a pattern oriented horizontally

Name	Pattern
M033a	
M033b	M033a pattern oriented horizontally
M034a	
M034b	M034a pattern oriented vertically
M035a	
M035b	M035a pattern oriented horizontally
M036a	
M036b	M036a pattern oriented horizontally
M037a	
M037b	M037a pattern oriented horizontally
M038a	
M038b	M038a pattern oriented horizontally

Name	Pattern
M039a	
M039b	M039a pattern oriented horizontally
M040a	
M040b	M040a pattern oriented horizontally
M041a	
M041b	M041a pattern oriented horizontally
M042a	
M042b	M042a pattern oriented vertically
M042c	M042a pattern oriented diagonally
M043a	
M043b	
M043c	M043a pattern oriented horizontally
M044a	
M044b	M044a pattern oriented vertically

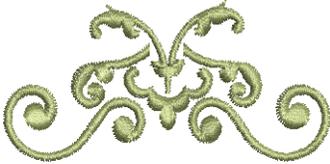
Name	Pattern
M045a	
M045b	M045a pattern oriented horizontally
M046a	
M046b	M046a pattern oriented horizontally
M047a	
M047b	M047a pattern oriented horizontally
M048a	
M048b	M048a pattern oriented horizontally
M049a	
M049b	M049a pattern oriented horizontally
M050a	
M050b	M050a pattern oriented horizontally
M051a	
M051b	M051a pattern oriented diagonally

Name	Pattern
M052a	
M053a	
M054a	
M055a	
M055b	M055a pattern oriented vertically
M056a	
M057a	
M057b	M057a pattern oriented diagonally and mirrored
M058a	
M059a	
M059b	M059a pattern oriented horizontally
M060a	
M061a	
M061b	M061a pattern oriented horizontally
M062a	
M062b	M062a pattern oriented horizontally

Name	Pattern
M063a	
M064a	
M064b	M064a pattern oriented horizontally
M065a	
M066a	
M066b	M066a pattern oriented horizontally
M067a	
M067b	M067a pattern oriented vertically
M068a	
M069a	
M069b	M069a pattern oriented vertically
M070a	
M071a	
M071b	M071a pattern oriented vertically

Name	Pattern
M072a	
M072b	M072a pattern oriented horizontally
M072c	M072a pattern oriented diagonally
M073a	
M073b	M073a pattern oriented vertically
M073c	M073a pattern bigger sized
M073d	
M073e	M073d pattern oriented vertically
M073f	
M073g	M073f pattern oriented horizontally
M073h	
M073i	M073h pattern oriented horizontally
M073j	
M073k	M073j pattern oriented diagonally
M073l	M073j pattern oriented vertically
M074a	
M074b	M074a pattern oriented horizontally
M074a	M074a pattern oriented vertically

Name	Pattern
M074g	
M075a	
M075b	
M075c	M075b pattern mirrored
M075d	M075b pattern oriented vertically
M076a	
M076b	M076a pattern oriented vertically
M077a	
M077b	M077a pattern oriented vertically
M078a	
M078b	M078a pattern smaller sized
M078c	M078a pattern oriented vertically
M079a	
M079b	M079a pattern smaller sized
M079c	M079a pattern oriented vertically
M080a	
M080b	M080a pattern smaller sized
M080c	M080a pattern oriented vertically
M081a	
M081b	M081a pattern smaller sized
M081c	M081a pattern oriented vertically
M082a	
M082b	M082a pattern oriented vertically

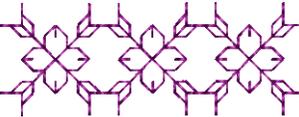
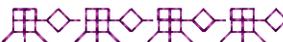
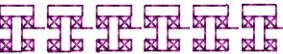
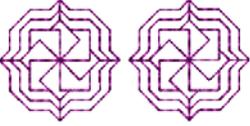
Name	Pattern
M083a	
M083b	M083a pattern oriented vertically
M084a	
M084b	M084a pattern oriented vertically
M085a	
M085b	M085a pattern smaller sized
M085c	M085b pattern oriented vertically
M086a	
M086b	M086a pattern oriented vertically
M087a	
M087b	M087a pattern smaller sized
M087c	M087b pattern oriented vertically
M088a	
M088b	M088a pattern oriented horizontally
M088c	M088a pattern oriented diagonally
M089a	
M089b	M088a pattern oriented vertically
M089c	

Name	Pattern
M090a	
M090b	M090a pattern oriented horizontally
M090c	M090a pattern oriented diagonally
M090d	
M090e	M090d pattern oriented vertically
M091a	
M091b	M091a pattern oriented vertically
M091c	M091a pattern oriented diagonally
M092a	
M092b	M092a pattern oriented vertically
M092c	
M092d	M092e pattern mirrored vertically and horizontally
M092e	M092e pattern mirrored horizontally
M093a	
M093b	M093a pattern oriented vertically
M093c	
M093d	M093c pattern oriented diagonally
M093e	M093c pattern oriented vertically
M093f	
M094a	
M094b	M094a pattern oriented vertically
M094c	M094a pattern oriented diagonally

Name	Pattern
M095a	
M095b	
M096a	
M096b	M096a pattern oriented vertically
M096c	
M096d	
M097a	
M097b	M097a pattern oriented vertically
M097c	
M097d	M097c pattern oriented horizontally
M097e	M097c pattern oriented diagonally
M098a	
M098b	M098a pattern oriented vertically
M098c	
M098d	M098c pattern oriented vertically
M099a	
M099b	M099a pattern oriented right
M099c	M099a pattern oriented downwards
M099d	M099a pattern oriented left
M099e	M099a pattern oriented diagonally

Name	Pattern
M0100a	
M0100b	M0100a pattern bigger sized

Pattern set: NP004a

Name	Pattern
K0001a	
K0002a	
K0003a	
K0004a	
K0005a	
K0006a	
K0007a	
K0008a	
K0009a	
K0010a	
K0011a	
K0012a	

Name	Pattern
K0013a	
K0014a	
K0015a	
K0016a	
K0017a	
K0018a	
K0019a	
K0020a	
K0021a	
K0022a	
K0023a	
K0024a	
K0025a	
K0026a	
K0027a	
A200026	
A200150	
A200446	
A200602	

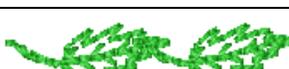
Name	Pattern
A200606	
A200609	
A200615	
A200749	

Pattern set: NP005a

Name	Pattern
151a	
151b	
152a	
437a	
660a	
663a	
701a	
1023a	
1024a	
1026a	

Name	Pattern
1027a	

Pattern set: Nature

Name	Pattern
101	
102	
103	
106	
111	
112	
113	
114	
115	
117	
118	
119	
124	

Name	Pattern
129	
135	
136	

Pattern set: Quilting

Name	Pattern
327	
328	
330	
332	
333	
334	
336	
337	
338	
339	
340	
342	

Name	Pattern
343	
a301	
a302	
a303	
a304	
a305	
a306	
a307	
a308	
a309	
a310	
a311	
a312	
a313	
a314	
a315	
a316	

Pattern set: Satin-Quilt

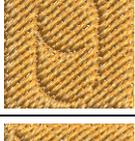
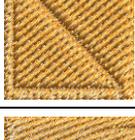
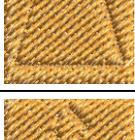
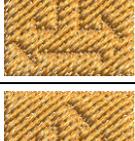
Name	Pattern
501	
503	
506	
507	
508	
509	
511	
512	
513	
514	
515	

Pattern set: Carving Stamps

Name	Pattern
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

Name	Pattern
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	

Name	Pattern
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	

Name	Pattern
V	
W	
X	
Y	
Z	
Cylinder	
Triangle	
Ring_Half	
Trapezoid	
Arrow_3_Way	
Arrow_4_Way	

Name	Pattern
Arrow_Block	
Ring_Ellipse	
Parallelogram	
Page	
Tear	
Arrow_4_Way_Block	
Arrow_Right_Angle	
Arrow_Double_Block	
Arrow	
Cross	
Flash	

Name	Pattern
Flame	
Heart	
Banned	
Smiley	
Arrow_Double_Right_Angle	
Polygon	

APPENDIX F

CRAFT STITCH PATTERN SAMPLES

The Craft Stitch patterns shown in this appendix are a sample of those included with your BERNINA Embroidery Software program. For actual Craft Stitches and instructions on how to use them, see [Creating craft stitches](#).

Blackwork patterns

Blackwork gets its name from the black silk thread traditionally used in this form of embroidery. Blackwork patterns can be used either as borders, as fills, or even pattern stamps. The most common blackwork fills employ simple stitches to create complex scrolling or geometric patterns. See [Blackwork](#) for details.

ID	Sample
B0001a	
B0002a	
B0003a	
B0004a	
B0005a	

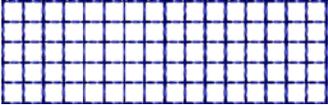
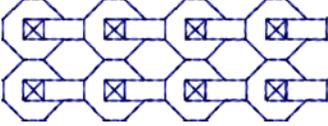
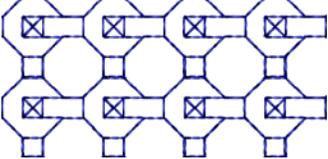
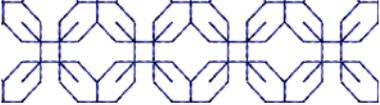
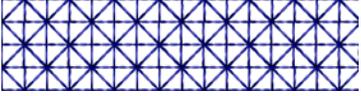
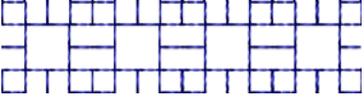
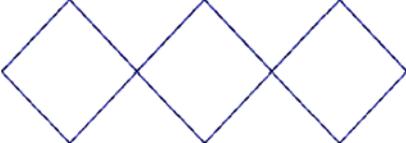
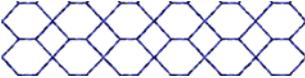
ID	Sample
B0005b	
B0006a	
B0007a	
B0008a	
B0009a	
B0010a	

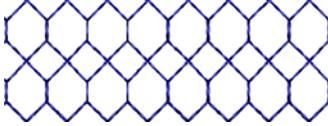
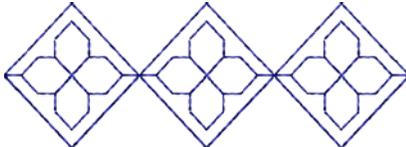
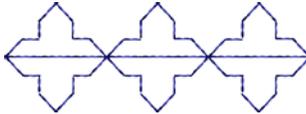
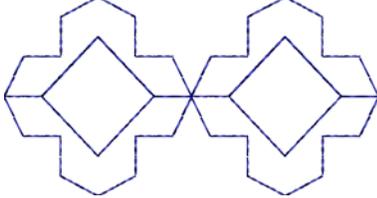
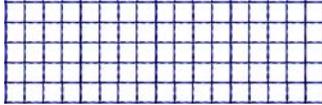
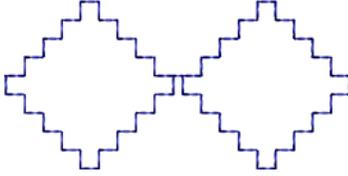
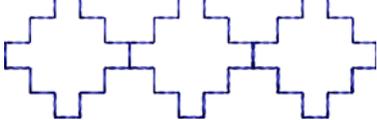
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B0013a	
B0013b	
B0014a	
B0015a	
B0016a	
B0017a	
B0018a	
B0019a	
B0020a	
B0021a	

ID	Sample
B0022a	
B0023a	
B0024a	
B0025a	
B0026a	
B0027a	
B0028a	
B0029a	
B0030a	

ID	Sample
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B0032a	
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B0036a	
B0037a	
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B0042a	
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B0047a	
B0048a	
B0048b	
B0049a	
B0050a	

ID	Sample
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B0052a	
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B0054a	
B0055a	
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B0057a	
B0058a	
B0059a	
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ID	Sample
B0075a	

Candlewicking patterns

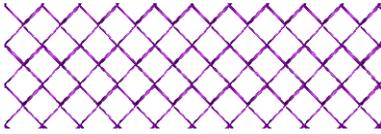
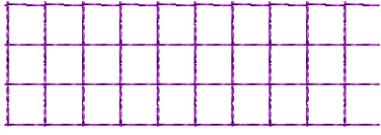
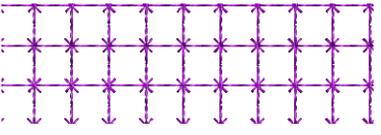
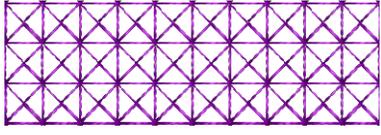
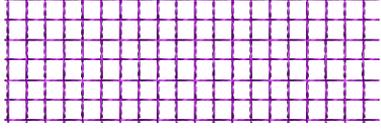
Candlewicking is a traditional white-on-white embroidery technique, usually done on white linen or cotton fabric with heavy cotton threads. Candlewicking patterns can be used either as borders, as fills, or even pattern stamps. See [Candlewicking](#) for details.

ID	Pattern
Knot-3mm	
Colonial-4mm	
Colonial-4.5mm	
Half Knot	

Lacework patterns

Lacework stitch consists of an open square trellis-like pattern which gives objects a lacey look. Lacework

can only be applied to filled objects with a single stitch angle. See [Lacework](#) for details.

ID	Pattern
L0001a	
L0002a	
L0003a	
L0004a	
L0005a	

Glossary

Active window: The active window is one to which the next command or action will apply. If a window is 'active', its title bar changes color to differentiate it visually from other open windows.

Anchor point: A fixed point used when rotating, scaling, skewing or mirroring a design.

Anti-aliasing: A software technique similar to dithering which is used to soften hard outlines where color blocks intersect. It produces smoother outlines by 'blurring' the pixels where colors join.

Appliqué: Decoration or trimming cut from one piece of fabric and stitched to another to add dimension and texture. Designs with appliqué can be more economical than embroidery alone, if appliqué occupies a significant amount of the design, thereby lowering stitch count.

Appliqué cutter: A device that can cut fabric along a line, somewhat like old pen plotters. It requires a vector file as input. In MS Windows they can be set up as a type of printer device.

ARQ: BERNINA Quilter format.

ART: BERNINA Embroidery Software format.

Artistic View: A realistic, 'three dimensional' preview of a stitched embroidery design.

Artwork: Bitmap or vector graphic used as a backdrop for digitizing. See also [Bitmap image](#) and [Vector graphic](#).

Image Preparation: See [Image preparation](#).

ARX: BERNINA Embroidery Software Cross Stitch format.

Auto Appliqué: Auto Appliqué is an embroidery object associated with an appliqué which provides

automatic stitching to place it, tack it down, and cover its edges.

Auto Center: Auto Center automatically centers the start and end points of a design.

Automatic digitizing: Digitize complete images automatically. Auto-Digitize automatically converts artwork to embroidery objects and generates stitches.

Auto Jump: Preserves long stitches in an object by splitting them into a series of jumps. This prevents the machine from inserting unwanted needle penetrations when the maximum frame movement is exceeded.

Auto Scroll: The Auto Scroll feature automatically scrolls the screen while you are digitizing.

Auto-sequencing: The Auto-sequencing feature lets you digitize like objects – e.g. the fingers of a hand – without having to think about the most efficient stitching sequence and joins.

Auto Spacing: Auto Spacing only affects Satin stitch. It adjusts stitch spacing according to column width.

Automatic color change: Ability of multi-needle embroidery machine to follow a command to change to a specified needle with a different thread color.

Automatic pull compensation: Embroidery stitches pull the fabric inwards where the needle penetrates. This can cause the fabric to pucker, and gaps to appear in the embroidery. Automatic pull compensation counters this effect by 'overstitching' outlines of filled shapes on the sides where the needle penetrates. This means the design can be optimized for different fabrics. See [Pull compensation](#).

Back appliqué: A fabric piece used behind a design where the

front fabric will be cut away to reveal the fabric beneath it.

Backdrop: An electronic image used as a guide for digitizing designs on-screen. Two types are used – vector or bitmap. Insert them from various file sources, or copy and paste them via the Windows clipboard.

Background: BERNINA Embroidery Software lets you change the background color of the design window to match the color of your fabric. Or you can select a background fabric for more realistic previews and presentations. The background is saved with the colorway.

Backing: Also known as 'stabilizers', backings are woven or non-woven materials placed beneath the item or fabric being embroidered for stability and support. The more stitches a design has, the heavier the backing required. Backings are available in various weights and types such as cut-away, tear-away and wash-away (soluble). Professional embroiderers use tear-away stabilizers for woven fabrics and cut-away stabilizers for knits. See [Topping](#).

Backstitch: Backstitch is an input method which can be used for delicate outlines. This stitch follows intricate curves well. It is also the term used for every second row of stitches in a Tatami fill. See also [Standard backstitch](#), [Borderline backstitch](#), and [Diagonal backstitch](#).

Backup: The copying of files onto floppy disk or other storage media in order to duplicate and secure data. Usually two copies are made and kept separately.

Baseline: The notional line on which the letters of a font sit. Only descenders extend below it. Baselines determine the shape of lettering objects in a design. Place

it on straight horizontal or vertical lines, curve it around a circle or arc, or digitize your own baselines.

Baseline Angle: The baseline angle determines the absolute angle of the baseline relative to the horizontal axis. You use it to align letters to a significant part of the design.

Basting stitch: A long even stitch (generally between 6 and 12 mm in length), that is meant to be removed after use. It can be used to fix the fabric to the stabilizer, identify the extents of the design, or be used as registration marks.

Batting: A layer of padded material between the front and back fabric to add thickness and substance.

Bitmap: An electronic image made up of dots or 'pixels', in contrast to vector 'outlines'. Typically created in paint programs, bitmaps have file extensions such as BMP, JPG, GIF, TIF and PCX. When enlarged or scaled down, vector graphics preserve image quality while bitmap images generally cause problems of pixilation and image degradation. See also [Pixel](#).

Blackwork: Blackwork gets its name from the black silk thread traditionally used in this form of embroidery. It can be used to decorate articles such as hankies, table napkins, table clothes, and doilies.

Blanket stitch: Widely used for tacking down appliqués as a decorative border. The stitches form a comb pattern.

Block: The basic unit of a quilt top.

BMP: Windows bitmap image format. See also [Bitmap](#).

Bobbin: Spool or reel that holds the bobbin thread, which helps form stitches on the underside of the fabric.

Bobbin embroidery: Designs worked with the fabric hooped facedown and the specialty thread or ribbon wound onto the bobbin.

Most effective for simple designs such as leaves and vines, or special effects with threads too heavy to be threaded through the needle.

Bonding: Permanently joining two fabrics together with a bonding agent. Heat sealing.

Border: Single closed-curve object which can be optionally added to a monogram. Also, a strip of fabric that is joined to an inner quilt to enhance it.

Bounding box: The dotted rectangle that appears when you select a range of items.

Candlewicking: A traditional white-on-white embroidery technique, usually done on white linen or cotton fabric with heavy cotton threads.

Cascade: A way of arranging open windows on the desktop so that they overlap each other, with the title bar of each window remaining visible.

Checkbox: A small square box that appears in a dialog box and that can be selected or cleared. When selected, a tick or a cross appears. A checkbox represents an option that you can set.

Click: Press and release the left mouse button. See also [Right-click](#).

Click-and-drag: Click to select, hold down the left mouse button, move the cursor and release.

Clipboard: A temporary storage area in PC memory for what was last cut or copied. Images on the clipboard can be pasted into designs any number of times.

Close button: Used to close a window or an application. In MS Windows, it appears as a small box with an 'X' in it at the top-right of the title bar.

Closed Object: Input method, used to digitize large and complex shapes. Allows holes to be designated at the same time the object outline is digitized. The object is thus digitized as one fill area, instead of being broken down into multiple sections. Objects so

created are known as Closed Object objects.

Color depth: Color depth, also called 'pixel depth', refers to the amount of color information available to each pixel in an image. An image with a color depth of 1-bit can display only two colors. As the color depth increases, more colors are available – 16 Colors (4 bit), 256 Colors (8 bit), High Color (16 bit), True Color (24 bit).

Color palette: The color palette contains a selection of thread colors tailored for each design. This color scheme, or 'colorway', represents the actual thread colors in which a design will be stitched. See also [Thread chart](#).

Color Reduction: See [Image preparation](#) for details.

Colorways: Colorways are multiple color schemes for the same design. They are made up of colors defined in 'color books' which may be created in Wilcom BERNINA Embroidery Software or similar design program, or may be selected from a patent color system such as Chromatone or Pantone.

Column: Narrow, long, curving shape.

COM port: A standard serial port used as a connection point for peripherals. Other ports may be present if the appropriate internal option cards have been installed. The computer must be informed which port is being used by which peripheral – e.g. COM1, COM2, etc.

Command: An instruction issued to the software in order to carry out an action. It may be as simple as 'paste an object' or as complex as 'regenerate stitches'. It is usually activated via a menu item, toolbar icon, or command button in a dialog.

Command button: A button in a dialog which executes or cancels the selected action. Two common command buttons are Cancel and OK.

Condensed file: See [Outline file](#) for details.

Configuration: The size and type of computer hardware. Can also be used to mean the options provided with your software.

Confirmation message: A message displayed by the software asking you if you are sure you want to proceed – e.g. when you want to delete a design.

Connector stitches: Connector stitches link objects in a design. They can be run stitches or jumps. You can use automatic settings to generate connectors, trims and tie-offs, or add them manually.

Connectors: Hardware devices to connect cables to ports. If the connection is male, the port is female, and vice versa. The wiring configuration of each device is determined by its function.

Copy: To place a copy of a selection onto the clipboard. See also [Duplicate](#).

Continuous embroidery: The repeating of a single design in order to create a large work piece that is bigger than a single hoop. The design may be repeated in X, Y, or both axes.

Control points: Control points are used to modify object shapes, stitch angles and entry and exit points. You can change the shape of an object by moving, adding or deleting control points on the outline. For most objects, you can also change control points from corner points to curves.

Contour stitch: Contour is a curved fill stitch type – stitches follow the contours of a shape, creating a curved, light and shade effect. It only works on columnar shapes. There are two types – Standard and Spiral – both of which can be applied to Input A, Input B, Input C or Ring objects. Standard Contour can also be applied to Circle objects.

Copyright: A right granted by the government or by international agreement giving the owner the

exclusive privilege to publish and sell artistic work during the life of the creator plus 50 years.

Corner points: In standard digitizing, corner points indicate where a curve changes direction. The user digitizes a line segment with two consecutive corner points. The run and turning fill stitch generation algorithms interpret corner points as subdividing the curve, and so always generate a stitch penetration at corner points.

Cover stitch: Cover stitch is the border around an appliqué shape. You can control various settings including cover stitch type – Satin or Blanket – width, stitch spacing, as well as the offset.

Conversion software: Programs that read information, other than from a card, and translate it from one sewing machine format to another.

Converter box: A converter box acts like a translator from one memory card format to another, via computer. They translate designs from memory cards in other formats or from a hard drive, disk, or CD and write the design to a blank card.

CPU: Central Processing Unit.

Cross stitch: Two stitches that cross at the center to form an X. Laid in rows or within a box shape to form geometric designs. Creates a handmade appearance.

Current property settings: Current property settings override the template defaults. Unless you deliberately change them, these take the default values. You generally change them to save time when digitizing. For example, you may preset Tatami stitch spacing to use a specific density for all new Tatami objects you create. See also [Object properties](#).

Curve smoothing: Curve smoothing is used to filter out 'mouse jaggies' generated by freehand techniques and to convert the generated path into a relatively smooth curve. Advanced curve smoothing typically works on

an entire outline, and includes corner detection to better approximate the intended curve.

Custom designs: Designs created by digitizing artwork or manipulating existing patterns.

Cut: An editing function. To remove a selection from a design. The cut selection is stored in memory (on the 'clipboard') and can be pasted into the same or different design.

Cutting line: A second line of run stitches that forms a guide when trimming the fabric of an appliqué patch.

Default object properties: See [Default values](#) for details.

Default values: Pre-defined settings which determine object properties such as stitch spacing, as well as certain system settings. These are stored in the design template. They are automatically applied to any newly created objects. They remain 'current' unless you override them with new settings. See also [Current property settings](#).

Defects: See [Stitching defects](#) for details.

Density: See [Stitch density](#) or [Thread density](#).

Design: A 'design' is a file in the native embroidery format – e.g. ART, JAN, ART – of embroidery digitizing software. The design source may be a machine format design. The design contains stitching information such as fabric type in addition to stitched shapes.

Design card: Disk containing computerized embroidery designs read by the embroidery machine's computer.

Design elements: The decorative design components that make up a monogram (including ornaments and borders).

Design file: See [File](#) for details.

Design layout template: The design printed as outlines with optional positioning markers, grids, guides and design extents

printed at 1:1 scale. When printed for large work pieces indicates the location and orientation of each individual hoop.

Design object: See [Object](#) for details.

Design properties: Designs themselves have properties, some of which can be modified, others not. The most important design property is its source – Native Design, Imported Outlines, Processed Stitches, or Imported Stitches. Other properties include the software version number, stitch count, and so on. Colorways too are properties of the whole design.

Design sequence: See [Stitching sequence](#) for details.

Design source: While embroidery files are broadly classified as 'outline' (condensed) or 'stitch' (expanded), BERNINA Embroidery Software internally tags files as belonging to one of four types—Native Design, Imported Outlines, Processed Stitches, or Imported Stitches. See also [Design properties](#).

Design template: See [Template](#) for details.

Design window: The design window is where designs are displayed for viewing and modification.

Design worksheet: See [Worksheet](#) for details.

Desktop: MS Windows terminology for the screen background on which program icons are displayed.

Destination folder: The folder (directory) where you intend to copy or move one or more files.

Detail: An outline, a border, a pickout run, or a small area of the design you want to be stitched out last when using Auto-Digitize.

Dialog: An on-screen box that either requests or provides information. Many dialogs present options to choose among before a command is carried out. Some dialogs present warnings or explain

why a command cannot be completed.

Digitizing: Process of encoding a design. Artwork is converted into a series of 'embroidery objects' to be read and manipulated by a specialist CAD/CAM application. Before outputting to embroidery machine, it is converted into 'stitch data'.

Digitizing tool: Digitizing tools, sometimes referred to as 'input methods', are similar to drawing tools except that the end result is an embroidery object rather than a vector object. Different digitizing tools are suited to creating different shapes or design elements.

Disk: See [Floppy disk](#) for details.

Disk drive: Computers usually have three types of disk drive: a hard disk (or fixed disk) which usually supports the mass storage of information and applications, a floppy disk drive, and a CD ROM drive.

Display: A screen used to display the output of a computer. Also known as the monitor.

Dithering: A software technique which combines existing colors in a checkerboard arrangement of pixels. It is typically used to simulate colors that are missing from an image palette. A type of optical illusion created by placing two pixels of different color next to each other. The human eye automatically resolves the two colors into a third color.

Dongle: A security hardware device required to run protected software. Some are attached to a parallel port, others to a USB port.

Dots Per Inch (DPI): A measurement of screen or printer resolution; the number of dots in a line of 1".

Double-click: Click the left mouse button twice without moving the mouse. Double-clicking carries out actions such as opening a program from an icon.

Download: The process of transferring a copy of a file from a remote computer or the internet to a computer or other device such as an embroidery machine.

Drag: An operation of the mouse. Holding the (left) mouse button while moving the mouse. Typically used for moving something on the screen.

Dropdown list : A single-line dialog box control that opens to display a list of choices.

Duplicate: When an object is duplicated, it is not copied to the clipboard. This leaves the clipboard free for you to cut or copy other objects.

Editing: Changing aspects of a design via a computerized editing program. Most programs allow you to scale designs up or down, edit stitch-by-stitch or block-by-block, merge lettering with the design, move aspects of the design around, combine designs and insert or edit machine commands.

Elastic Lettering: Special effects applied to lettering objects to make them bulge, stretch or compress.

Emblem: Embroidered design with a finished edge, applied to a garment after stitching, commonly an insignia of identification. Also known as a 'crest' or 'patch'.

Embroidery: Decorative stitching on fabric. Generally involves non-lettering designs, but can also include lettering and/or monograms. Evidence of embroidery exists during the reign on Egyptian pharaohs, in the writings of Homer and from the Crusaders of the 12th century. Has evolved from hand-work to manual sewing machines and from hand-loom and Schifflli machines with hundreds of needles to high-speed, computerized multihead machines.

Embroidery object: See [Object](#) for details.

Embroidery thread: See [Thread](#) for details.

Endless embroidery: See [Continuous embroidery](#) for details.

EMF: Enhanced Metafile vector graphic format.

Entry point: The entry point is the point where the thread enters the embroidery object. This should coincide with the exit point of the preceding object.

Exit: To leave a current window or application.

Exit point: The exit point is the point where thread leaves the embroidery object. This should coincide with the entry point of the next object.

EXP: Stitch or 'expanded' file format native to Melco machines.

Extension: See [File extension](#) for details.

Fabric: Fabrics have many properties, the main one being elasticity or 'fabric stretch'. Surface texture, if present, is another property that requires different underlay types. The system can automatically compensate for the pull-push effect of different fabrics. Push, warping, and shearing are reduced by suitable underlay for the stitch type and fabric.

Fabric stretch: Embroidery stitches pull the fabric inwards where the needle penetrates. This can cause the fabric to pucker, and gaps to appear in the embroidery. Use automatic pull compensation to counter this effect by 'overstitching' outlines of filled shapes.

Facing: See [Topping](#) for details.

Factory settings: These are the initial system settings as installed. They are a standard known setting that you can return to. Some customers want to create custom settings tailored to the exact fabric they are using most frequently. The 'My Fabric' settings are those retained in the design and can be saved to the template file.

Fancy Fill: A decorative fill stitch which can be applied to various object types where needle

penetrations form a tiled pattern. Different preset patterns are available for use.

File: A named collection of specifically related information stored on a disk. Designs that have been saved are stored as files.

File extension: The dot and three letters at the end of a filename such as '.BMP'. The extension identifies the file as a certain type, readable by certain applications.

Filename: The name of a file, including the extension, e.g. Cat.BMP.

Fill stitch: Series of running stitches commonly used to cover large areas. Different fill patterns can be created by altering the angle, length and repeat sequence of the stitches. Also known as Gefelect stitch.

Finishing: Processes done after embroidery is completed. Includes trimming loose threads, cutting or tearing away excess backing, removing facing or topping, cleaning any stains, pressing or steaming to remove wrinkles or hoop marks and packaging for sale or shipment.

Flagging: Up and down motion of fabric under action of the needle, so named because of its resemblance to a waving flag. Often caused by improper framing of goods. Flagging may result in poor registration, unsatisfactory stitch formation and birdnesting.

Floppy disk: A flexible disk permanently sealed in a square plastic jacket – e.g. HD/DD 3.5" floppy disk. Used for information storage 'off-line' for security and/or infrequently used data. Also used for transferring punched embroidery design (machine file) data from computer to embroidery machine.

Folder: A collection of files and subfolders that are stored together on a disk. Part of structure for organizing files on a disk.

Font: A set of characters of the same design or style including letters, numbers and typographical symbols. Also called 'alphabet' even if it includes non-letter characters. See also [Lettering](#).

Free motion machine embroidery: See [Thread painting](#) for details.

French knot: A stitch featuring a raised knotted center.

Fringe: Threads that are cut and hang loosely from the edge of a design.

Gradient Fill: artistic stitch effect that gradually varies stitch spacing between dense and open fill along an embroidery object, producing shading and color effects which are difficult to achieve manually.

Graphics application: Software application that creates or allows you to edit bitmap images and/or vector graphics. Vector graphics can be scaled with no loss of sharpness. Examples of vector editing programs are Adobe Illustrator, MacroMedia Freehand and CorelDRAW®. See also [Paint package](#) and [Drawing package](#).

Grayscale: A grayscale picture is made up of 254 different shades of gray, plus solid black and solid white for a total of 256 different tones. Black and white photographs are grayscale.

Grid: Grid lines provide visual cues to help you accurately place a design. When you start the software for the first time, grid lines appear by default.

Guide run: Series of stitches used to align embroideries in multi-hooping situations or to assist in fabric placement for appliqué. It is the first appliqué layer stitched and is used to position the appliqué fabric on the background material. See also [Appliqué](#).

Handle: See [Selection Handle](#).

Hard disk: A device for mass information storage. Usually the disk is fixed inside the system unit, and a second hard disk can be

added. When you store information on the hard disk it will remain there until you delete it. As it has a finite capacity, file management is required.

Hardware: Computer componentry, including monitor, keyboard, digitizing tablet, printer, scanner, sewing machine, etc.

Heirloom embroidery:

Embroidered goods designed to be passed down from generation to generation.

Hoop position marker: This indicates the hoop center and orientation. For multi-hooping, it also includes the hooping sequence number.

Hoop template: The physical clear plastic insert for the embroidery hoop. These generally have a 1 cm grid with highlighted crosshairs for the embroidery center as well as some additional alignment lines at 45° through the center point.

I-beam: One shape taken by the PC pointer, it indicates that text can be input at the point selected. The shape is like the capital letter 'I'.

Icon: Miniature picture used in the screen display instead of, or as well as, text. The file list can be displayed as icons with the filenames underneath; the toolboxes which appear in the left of the screen are composed of icons.

Image preparation: Cleaning up scanned images as input to embroidery digitizing. This may involve any one or a combination of the following techniques: reducing the number of colors, adding or emphasizing outlines, removing noise, dithering or anti-aliasing, eliminating unnecessary detail, cropping sections or eliminating backgrounds.

Input method: See [Digitizing tool](#) for details.

JPG: JPEG file interchange bitmap image format.

Jump: A frame or hoop movement without a needle

penetration, commonly used to get from one point in a design to another.

Justification: The position of lettering on the embroidery baseline.

Lacework: Lacework involves the use of threads to produce overall embroidery of full-length fabrics. Most often used to embellish women's apparel and home fashions. It is the most widely used application for Schifflli machines.

Letters: Initials or name making up a monogram. Letters of an alphabet or font.

Lettering: Embroidery using letters or words. Lettering commonly called 'keyboard lettering' may be created from pre-defined font styles or fonts, allowing variance of size, height, spacing, density and other characteristics.

Line art: A drawing with only two colors – usually black and white.

List box: A single-line dialog that opens to display a list of choices.

Lockstitch: Commonly referred to as a lock-down or tack-down stitch, a lockstitch is formed by three or four consecutive stitches of at least a 10-point movement. It should be used at the end of all columns, fills and at the end of any element in your design where jump stitches will follow, such as color changes or the end of a design. May be stitched in a triangle, star or in a straight line. Lock stitch is also the name of the type of stitch formed by the hook and needle of home sewing machines, as well as computerized embroidery machines.

Logo: Name, symbol or trademark of a company or organization. Short for logotype.

Looping: Loops on the surface of embroidery generally caused by poor top tension or tension problems. Typically occurs when polyester top thread has been improperly tensioned.

Machine file: Machine or 'stitch' files are low-level formats for direct use by embroidery machines. They contain only stitch coordinates and machine functions. Machine files are generally not suited to scaling because stitches are not regenerated during rescaling. See also [Outline file](#).

Magic Wand: Technique for creating embroidery designs by automatically digitizing color blocks in electronic images.

Max/Min stitch length: The minimum and maximum stitch lengths allowable in a design determine the outside limits as measured between needle penetration points. They are governed by the minimum and maximum frame movements that the machine can make.

Maximize button: For Windows, the small box in the center of the group of three at the right of the title bar. Click the Maximize button to enlarge a window to its maximum size.

Memory: The place in the computer's system unit that stores information while you are working with it. If you exit without saving information in memory, it will be lost.

Menu bar: The menu bar contains dropdown menus of commands. Some of the same commands are available on the toolbar.

Menu chart: The menu chart provided with the software lets you select commands directly from the digitizing tablet using the puck. You need to 'register' it before use.

Minimize button: For Windows, the small box to the left of the group of three at the right of the title bar. Click the Minimize button to reduce a window to its minimum size.

Modal dialog: A dialog which, while open, prevents the user from selecting any control or object outside it. Changes made to settings inside the dialog are not effective until it is closed.

Modeless dialog: A dialog which, while open, allows the user to select objects freely. Controls in the dialog change to conform to the values of selected objects, or show relevant system information when no object is selected. Changes made to settings in the dialog may be applied while it remains open. Other dialogs and commands may be opened and used while the modeless dialog remains open.

Modem: Unit to telegraphically send computer information from one computer to another.

Monogram: Embroidered design composed of one or more letters, usually the initials of a name. Can also consist of borders or designs to mark ownership of items such as clothing, caps, handkerchiefs, etc.

Multi-appliqué: A type of appliqué object composed of more than one piece of fabric and bordered by various types of embroidery objects.

Native file format: A design saved in the original format of the application you are working with is said to be the 'native' file format. It can also refer to the machine file format required by a specific embroidery machine. When saved to another format, it is known as a non-native format.

Needle: Small, slender piece of steel with a hole for thread and a point for piercing fabric. A machine needle differs from a handwork needle; the machine needle's eye is found at its pointed end. Machine embroidery needles come with sharp points for piercing heavy, tightly woven fabric; ball points which glide between fibers of knit; and variety of specialty points, such as wedge points, which are used for leather.

Needle points: You can view needle points in a design to check density or, for instance, to select stitches for editing.

Needle felting: Needle felting, also called 'dry felting', is a popular fiber-arts craft that creates felt without the use of water. The

needles which are used in industrial felting machines, or needle felting attachments like BERNINA needle-punch tool, or even hand-held tools, have little barbs with soft shoulders. As these needles penetrate the layers of fabric and yarn, they pull fiber through. Since the barbs face downwards, they do not pull the fibres out as the needles exit. Using a single needle or a small group of needles, fine details can be achieved using this technique. It is popular for 2D and 3D felted work.

Noise filtering: Noise filtering means restoring the solid color blocks of original artwork in scanned images. This is achieved by merging different shades into one solid color. Noise filtering is important for automatic digitizing because it makes it easier for the software to identify solid color blocks which become embroidery objects in the resulting design. It also cleans up blurred or mottled areas of color.

NORMAL template: Default template. See also [Template](#).

Object: In embroidery design terms, an object is an individual 'element' of a design. An object has many properties, such as its size, color, sequence in the design, stitch type and values, including the rules for stitching. See also [Vector object](#).

Object outline: See [Outline file](#) for details.

Object properties: All embroidery objects in BERNINA Embroidery Software contain defining settings or 'values'. The values stored with an object become its 'properties'. All objects have certain properties in common such as size and position. There are other, more specific properties of objects which depend on the object type.

Object type: An object has a type, shape, thread type and color, stitching settings and a position in the stitching order. The object type may or may not determine the

intended final appearance of the stitching.

Ornament: A grouped embroidery design which may consist of one or more objects of any type and one or more colors. Ornaments may be placed in up to eight positions around letters, or centered behind letters.

Outline file: Outline or 'condensed' files are high-level formats which contain object outlines, object properties and stitch data. When you open an outline file in BERNINA Embroidery Software, corresponding stitch types, input methods and effects are applied. Outline files can be scaled, transformed and reshaped without affecting stitch density or quality. See also [Machine file](#).

Outline stitch: Stitch such as Run or Satin used to outline an embroidery object.

Overview window: Use the Overview window to view a thumbnail of the design. The window is updated whenever you make a change, and can be used to zoom in or pan across the design window.

Paint package: Software application that creates or allows you to edit image files. You can create lines and filled areas as well as edit the image pixel-by-pixel using paintbrushes, erasers and spraypaint tools. Examples of image editing programs are Adobe Photoshop, Jasc PaintShop Pro and Corel

PHOTO-PAINT® Essentials X6. See also [Graphics application](#).

Pan: Use Pan to view parts of a design which are not currently visible in the design window.

Parallel port: A connection on a computer, usually LPT1, where you plug in the cable for a parallel printer and/or a dongle. Parallel ports are used to connect some embroidery machines. They are named LPT1, LPT2, etc. When you set up a parallel machine connection, select the parallel port and the required protocol, and

complete the machine setup procedure.

Paste: To insert an object, which has previously been placed on the clipboard by cutting or copying selected objects, into a design. You can paste from the clipboard as many times as you like.

Patch: The fabric piece use in appliqué.

Patchwork: The composite of pieces sewn together to form a large piece, such as a quilt.

Patchwork block: A collection of patches sewn together, usually forming a regular shape such as a rectangle. These are then sewn together to make a quilt.

Pattern Fill: Pattern Fill is a decorative fill stitch with which you can fill Closed Object objects. You can also create special or three dimensional effects.

Pattern Run Outline: Patterns which are linked together along a digitized line. You can create decorative outlines using any pattern from the list.

PCX: PC Paintbrush bitmap image format.

PDF: Portable Document Format. Used to view the Online Manual in Acrobat Reader.

Pencil rub: Low-cost way of producing an embroidery design sample. Consists literally of a piece of tracing paper placed over a stitchout and rubbed lightly with a pencil to produce an impression of the embroidery.

Peripheral: Any device connected to a computer which is to some degree controlled by the computer – e.g. an embroidery machine or printer.

PhotoSnap: Technique for creating embroidery designs directly from photographs and other grayscale bitmap images. PhotoSnap designs consist of rows of Satin or Contour stitches of varying spacing. The effect resembles the output of a line printer.

Pixel: A dot. For example, dots of light that make up the picture on a computer screen. The more pixels there are in a given area – that is, the smaller and closer together they are – the higher the resolution.

Pixilation: An effect which occurs when a bitmap image is enlarged so that the individual pixels are obvious to the eye.

Placement line: The first appliqué layer stitched – placement lines are used to position appliqué fabric on background material. See also **Appliqué**.

PNG: Portable Network Graphics vector graphic format.

Pointer: A part of the screen display, the pointer can take various shapes. It is moved by moving the mouse and can be used to point to anything on the screen to make selections and indicate points for input. It also indicates when the computer is working and no input is possible.

Point: Unit of measurement, with 10 points equal to 1 mm.

Port: A connection on a computer where you plug in the cable that carries data to another device. Ports which are used to attach peripherals have names like COM1 or LPT1 so that you can specify where the peripherals are attached.

Position: The Position indicator shows position of the design (X, Y) in the design window.

Print Preview: Use to preview design and design information before printing a Production Worksheet. The design is displayed as it will be printed.

Production worksheet: The production worksheet is the link between the designer and the embroidery machine operator. It contains a design preview as well as essential production information, including the design size, the color sequence and any special instructions.

Program: A computer program or 'application' is generally used for a particular kind of work, such as word processing or database management.

Properties: See **Object properties** for details.

Protocol: The communications protocol depends on the connection type between the computer and the embroidery machine. This will be one of: standard serial, parallel, serial to parallel converted (DCi), or interface card.

Puckering: Result of the fabric being gathered by the stitches. Many possible causes include incorrect density, loose hooping, lack of backing, incorrect tension or dull needle.

Pull compensation: Digitizing technique that takes into account the distortion of a design that will occur because of the interaction of thread with fabric. 'Push and pull' will cause a circle digitized perfectly round to sew with the sides pushed out, resulting in an egg shape. Generally, it is necessary to extend horizontal elements and reduce vertical elements. See also **Automatic pull compensation**.

Push-Pull: When any stitch is sewn into fabric, the tension in the thread between needle penetrations can build up and result in a 'push-pull' effect. This can cause distortions in your sewn designs, poor stitch registration and even the bunching of the fabric. The degree of distortion can be affected by the following factors: stitch density, fabric type, underlay, backing type, thread type and garment orientation. See also **Stitch-Pull**.

Quilting: In general, the process of making a quilt; in specific, the stitching of patterns into the quilt layers to add strength and decoration to the quilt - top, batting and backing -- to form decorative patterns on the surface of the quilt and to hold the layers together.

RAM: Random Access Memory, computer chip maintaining memory.

Read: To open a design which has been written on a design card or to an embroidery machine.

Redraw: The screen display is refreshed. This is useful when parts of the display have become obscured in the course of editing. See also [Slow Redraw](#).

Refresh: See [Redraw](#) for details.

Resequence: You can change the position of a selected object by cutting it, then pasting it somewhere else in the stitching sequence, or by using the Resequence command. You can also resequence objects by color or using the Color Film.

Resizing: See [Scaling](#) for details.

Resolution: Resolution determines the number of dots per inch (dpi) used to create an image. The higher the value, the clearer the image, but the more storage space required. A resolution of 75 dpi generally produces good results.

RGB: RGB stands for red, green, and blue. It is the system used by computer monitors to create color.

Right-click: To press and release the right mouse button. See also [Click](#).

Rotation handles: When you select an object, selection handles display at its extremities. If you click the object again, rotation and skew handles appear around the object. Rotation handles appear at the corners of the object and an anchor point displays at the object's center. Skew handles are diamond-shaped and appear at the center-top and bottom of the object. See also [Selection handles](#).

Roving: Fibers that have been carded and combed, but not spun. The term is most commonly heard in the phrase 'wool roving', but roving can be made out of any kind of fiber or a mix of fibers.

Run stitch: Run stitch (also called Walk stitch) places a single row of stitches along a digitized line. The needle penetrations are placed in consecutive order. Run is generally used for stitching outlines and connector stitches. Run stitch length can be set to automatically vary in order to follow tight curves.

Satin Special: Satin Special only affects Satin stitch. When applied, it breaks any long Satin stitches into shorter ones. It also distributes needle penetrations in a random pattern so that they do not form a line in the middle of the shape. Used primarily to prevent long stitches in wide columns, it can also be used as an alternative to Tatami fill. Satin Special looks more Satin-like and works well with turning stitches, creating soft lines and a little more depth.

Satin stitch: Type of fill stitch. Formed by closely arranged zigzag stitches, it can be stitched at any angle and with varying lengths. The thread is laid across a shape with a zigzag sewing action where two stitches form a column. Hence it is only suitable for small or narrow shapes. As the stitches are almost parallel, Satin provides good coverage. It is often used for lettering, outlining, and details. Because there are generally no needle penetrations breaking up the fill, Satin stitch creates a glossy effect.

Save: To store (design) information in a file. Each time you save a design, you replace the previous version using the filename. You should save your design frequently.

Scalability: Ability to enlarge or reduce a design. In expanded format, most scaling is limited to 10 to 20%, because the stitch count remains constant despite final design size. In condensed formats, on the other hand, scale changes may be more dramatic, because stitch count and density may be varied.

Scaling: Ability to enlarge or reduce a design in size. In stitch or

'expanded' format, most scaling is limited to $\pm 10\%$ because the stitch count remains constant despite final design size. In outline or 'condensed' formats, scale changes may be more dramatic because stitch count and density are recalculated.

Scanner: A device that converts physical images into digital form so that they can be stored and manipulated by computer. Scanning allows you to take scanned images as a basis for embroidery design.

Screen calibration: You need to calibrate your monitor so that designs at 1:1 scale appear at real size. Do this when you first install BERNINA Embroidery Software, whenever you change your monitor, or adjust your monitor's horizontal or vertical controls.

Screen resolution: See [Pixel](#) for details.

Scroll bar: The bar at the bottom and right edge of a window whose contents are not entirely visible. Each scroll bar contains a small box, called a scroll box, and two scroll arrows to allow different types of scrolling.

Security code: Options in BERNINA Embroidery Software are controlled by a security device installed on the computer. Security access codes entered into the software are sent to this security device. Each security device has a unique serial number and identity code.

Security Device: See [Dongle](#) for details.

Select: To highlight an object or group of objects for the purpose of editing. Only selected items can be edited.

Selection handles: Eight small squares that appear symmetrically at the corners and edges of a selected object. Use them to position and resize objects. See also [Rotation handles](#).

Selection marquee: The dotted rectangle that appears when you

select a range of items. See also [Bounding box](#).

Sequence: See [Stitching sequence](#) for details.

Serial port: A connection point on a computer where you plug a serial communications device such as a modem. PC serial COM ports are male connectors, and can be either 9-pin or 25-pin. They are named COM1, COM2, COM3, etc. The number of available ports limits the number of devices you can connect. If additional ports are required, you can add them. Multi-port serial cards can also be used.

Serial Port Setup: Here you can adjust Baud, Data Bits, Stop Bits, Parity values. These settings must be identical to those of the embroidery machine. The type of handshaking must match the type of cable you are using.

Short stitch: Digitizing technique that places shorter stitches in curves and corners to avoid an unnecessarily bulky build-up or stitches.

Shortcut key: A key stroke or a series of keystrokes you can use to perform a task instead of using the mouse. For example, Ctrl+C actions the Copy command.

Sizing handles: See [Selection handles](#) for details.

Skew handles: See [Rotation handles](#) for details.

Slow Redraw: Use to redraw your design slowly. Slow Redraw lets you view the stitching and color sequence of a design in slow motion.

Software: Programs, such as MS Windows and BERNINA Embroidery Software, which run your computer.

Specialty fill: A fill stitch capability that produces a fill with a 'relief' or ornament within the fill-stitch area – e.g. Pattern Fill.

Specialty threads: Threads designed for effects such as shine, glitter, iridescence or thickness.

The threads often are made from synthetic materials including rayon, mercerized cotton, metallics and textured nylon.

Status bar: Provides information about the whole design: number of stitches, position of the design (X, Y), number of colors (C), number of stops (S), etc.

Stemstitch: A detail stitch that can be used to outline items or fill in areas. It is used for stems and vines with other decorative stitches, or as an outline for Satin or Stipple fills.

Step stitch: Series of parallel stitches commonly used to cover large areas. Different step patterns can be created by altering the angle, the length and repeat sequence of the stitches.

Stippling: A method of creating a fill made of run stitches which meander around within a border. Often used in quilting.

Stitch: A stitch is one needle penetration; also used to refer to the thread laid down from one needle penetration to the next.

Stitch angle: The stitch angle is the angle the overall stitching follows within a shape. The shape may have a fixed stitch angle – e.g. 45° to the horizontal – or multiple stitch angles.

Stitch bunching: Standard stitch spacing is calculated at the outside edge of a shape. With sharp curves, spacing which provides adequate coverage on the outside edge may cause bunching along the inside edge. This may cause thread breakage when stitching out.

Stitch count: Stitch count refers to the number of stitches in a design. In BERNINA Embroidery Software one stitch is considered one machine revolution. See also [Design properties](#).

Stitch density: The number of stitches per given area (or stitch lines per distance in a fill).

Stitch editing: Digitizing feature that allows one or more stitches in a pattern to be deleted or altered.

Stitch length: The distance between two needle penetration points. For maximum stitch length, the length is measured according to the X and Y co-ordinates, whichever is greater. Run stitch length can be set to automatically vary in order to follow tight curves. See also [Max/Min stitch length](#).

Stitch-Pull: When any stitch is sewn into fabric the tension in the thread between needle penetrations can build up and result in Stitch-Pull. Stitch-Pull can cause distortions in your sewn designs, poor stitch registration and even the bunching up of fabric. The amount of Stitch-Pull that results in your design can be affected by the following factors: Stitch Density, Fabric Type, Underlay, Backing Type, Thread Type and Garment Orientation. See also [Push-Pull](#).

Stitch type: Three basic stitch types are available with lockstitch machines – Run, Satin and Tatami (Weave). BERNINA Embroidery Software provides many variants of these.

Stitch spacing: Spacing between two consecutive needle penetrations on the same side of a column. The smaller the value, the greater the stitch density. For more open stitching, use larger values.

Stitching defects: Stitching defects may appear in the form of gaps between filled areas, fabric show-through and thread breaks. These are often caused by incorrect stitching settings – e.g. setting pull compensation too small for the fabric stretchiness.

Stitching sequence: The embroidery objects in a design form a stitching sequence. Initially, objects are stitched in the order in which they were created. You can change the position of a selected object by cutting it, then pasting it somewhere else in the sequence, or by using the Resequencing command. You can also

resequence objects by color or with the Color Film.

Stock designs: Embroidery designs readily available on disk or proprietary embroidery card. Digitized embroidery designs that are commercially available for general use by embroiderers.

System requirements: What your computer's hardware and software, operating together, can support. System requirements are printed on software packages, design disk cards and packs, CDs and other computer accessories. You need to know what your system can and cannot support, as sometimes a system is not capable of handling new software without adding memory or disk space.

Tackdown: Zigzag stitch, placed after placement and cutting lines, and used to fix appliqué patches to the background fabric before cover stitching is applied.

Tatami stitch: Series of run stitches, commonly used to cover large, irregular shapes. Stitches are laid in rows traversing back and forth across the shape. These can be parallel or slightly turning. Different fill patterns can be created by varying the stitch length, angle or sequence. Also known as Weave stitch.

Template: Special files used to store styles and default property settings. Use templates when digitizing frequently-used design types to save time re-adjusting the current property settings.

Tension: Tautness of thread when forming stitches. Top thread tension, as well as bobbin thread tension, need to be correctly set. Proper thread tension is achieved when about one third of the thread showing on the underside of the fabric on a column stitch is bobbin thread.

Textured Edge: Use Textured Edge to create rough edges, to create shading effects, or to imitate fur or other fluffy textures in your design.

Thread: Fine cord or natural or synthetic material made from two or more filaments twisted together and used for stitching. Machine embroidery threads come in rayon (high sheen), cotton (duller finish), polyester (strong and colorfast), metallics (synthetic core wrapped with metal foil or thin slivers of metal foil) and acrylic (sheen similar to rayon).

Thread chart: Thread charts are lists of pre-defined thread colors. They may be based on commercially available thread charts, or charts you define yourself. You can copy colors between different thread charts to create your own charts from existing colors. See also [Color palette](#).

Thread code: Code is the identification number of a thread color in a brand.

Thread painting: The technique of forming designs on an embroidery machine by simultaneously running the machine and using a freehand motion with the fabric secured in an embroidery hoop, allowing the needle to 'draw' on the fabric surface.

Thread density: Different thread density systems are used by different thread manufacturers. Density A is normal embroidery thread (density 120/2, or 40). Density B is thicker, Density C is finer, and Density D is very fine.

Thread thickness: See [Thread density](#) for details.

Thread type: Embroidery thread varies in thickness. Types are A, B, C and D. Stitch density should be set according to the thread type. See also [Thread thickness](#).

Tie-ins: Tie-in stitches are inserted at the start of objects to prevent stitches from unraveling. They are inserted inside the shape on the second stitch. You generally use them when the previous connector is trimmed.

Tie-offs: Tie-offs are generally placed before trims to prevent

stitches from unraveling. You can adjust connector settings to automatically add tie-offs under certain conditions, or add them manually. You can also include trim functions so machines with trimmers cut the thread automatically.

Title bar: The horizontal bar located at the top of a window and containing the title of the window. On many windows, the title bar also contains the Control menu box and Maximize and Minimize buttons.

Toolbar: Toolbars provide quick and easy access to BERNINA Embroidery Software commands. Click a toolbar button to activate a command or, where applicable, right-click to view and adjust its settings.

Topping: Material hooped or placed on top of fabrics that have definable nap or surface texture, such as corduroy and terry cloth, prior to embroidery. The topping compacts the wale or nap and holds the stitches above it. It includes a variety of substances, such as plastic wrap, water-soluble plastic 'foil' and open-weave fabric that has been chemically treated to disintegrate with the application of heat. Also known as 'facing'.

Travel on Edges: In BERNINA Embroidery Software, Travel on Edges effect forces travel runs to the edges of objects so they do not show through open or loose stitching.

Travel run: Travel runs are typically used to connect segments of complex shapes. They can also connect adjacent objects. Because runs are not trimmed, they may be visible in the final embroidery. For this reason, they are less commonly used as connectors between objects than jumps. If objects are adjacent and connectors will be hidden, they can be used.

Traveling: You generally check a design's stitching sequence by 'traveling' through it by stitches, segments, functions or objects.

Trims functions: If you are using a machine with an automatic trimmer, the trim code causes the thread to be cut after a tie-off. In the software, trims are represented by a triangle with a small circle at the point where stitching starts again. The trimmed connector appears as a dotted line. You can adjust connector settings to automatically add trims, or add them yourself.

Trimmers: Devices built into an embroidery machine to automatically trim or cut remaining thread when the design jumps from one area to another or performs a color change.

Trimming: Action of cutting loose thread, removing backing, etc, from the final embroidered product.

TrueType Font: Digital font technology designed by Apple Computer and now used by both Apple and Microsoft in their operating systems.

Turning stitches: Embroidery objects can be filled with parallel or turning stitching. Turning stitches are columns of stitches which turn to follow the path defined by the object outline. By contrast, parallel stitching traverses the shape in one direction only – e.g. at 90° to the horizontal, 45°, or whatever is set. Objects can be created with turning stitching already applying, or multiple stitch angles can be added later. Turning stitches are best used with designs containing complicated, turning shapes such as trees, animals, or large filled areas. Turns generally occur at points where a shape changes significantly in direction or width.

TWAIN: Industry standard which allows devices (such as scanners) to communicate directly with design and layout programs. Both device and program must be TWAIN-compliant. This lets you use any TWAIN-compliant scanner with your software.

Underlay: Stitches sewn before other design elements to help stabilize fabrics. The stitching

action that will attach the backing to the fabric being embroidered. It also supports the top embroidery for a more lofty, dimensional look. Underlay stitches are made up of a series of single run stitches, usually with a very short stitch length, and are digitized manually or placed automatically under the column (satin) or fill stitch areas of your embroidery design.

Underlay margin: The distance between an object outline and the edge of the underlay. Increase this margin to prevent underlay stitches from extending outside the cover stitches.

USB port: Universal Serial Bus Connector, a connection on a computer where you plug in the dongle.

Values: The actual settings – letters and numbers – that you enter into dialogs. See also [Object properties](#).

Variable sizing: Ability to scale a design to different sizes.

Vector graphic: Any image displayed and stored mathematically as lines. Vector 'objects' include rectangles, ellipses, curves, polygon stars, complex stars and perfect-shape objects created in graphics applications such as CoreIDRAW®. Unlike raster images, vector graphics contain geometric shapes and lines that combine to form the image. Vector graphics are scalable without distortion, and usually form small files. See also [Bitmap image](#).

Vector object: Vector objects are derived from vector graphics and can be created in BERNINA Embroidery Software or imported. In BERNINA Embroidery Software they can be converted to and from embroidery objects. You can set general properties such as size and position, and arrange and transform them in the same way as other objects. See also [Bitmap](#).

Wave Effect: With Wave Effect you can curve Closed Fill stitches along a digitized line to create

flowing stitch effects. The stitches follow the digitized line but maintain uniform density and needle penetration patterns.

Weave stitch: See [Tatami stitch](#) for details.

Weight: When referring to T-shirts, the three standard weight divisions are mid-weight/value, heavyweight/premium, and super heavyweight.

WMF: Windows Metafile vector format.

Work piece: A rectangular or circular reference piece displayed in the software that can represent a table cloth, pillow case, table runner and so on.

Worksheet: The design worksheet containing information about the whole design, including thread colors, amount of thread used, design size, hoop used and so on.

Write: To send design information to an embroidery disk, design card or embroidery machine for immediate stitchout or storage.

X/Y coordinates: The horizontal (X) and vertical (Y) distances on a graph or computer screen. Use X values to measure width, and Y values to measure height.

Zigzag stitch: Zigzag stitch is similar to Satin but is generally used where fewer stitches are required. The needle penetrates each side of the column, laying the thread across in an open zigzag pattern. The density is determined by the stitch spacing setting. The settings for Zigzag fill stitches are stored separately from Zigzag and Double Zigzag underlay settings.

Zigzag underlay: Zigzag and Double Zigzag underlay stitching is used to support wide columns.

Zoom factor: The scale at which the design is currently displayed.

INDEX

Numerics

3D effects, creating 259
3D Globe Effect tool 188

A

Absolute 59
Add Folders to Library tool 38
Add Holes tool 169
Add Hoop
 Add N Hoops Around tool 307
 Right tool 307
 tool 307
Add Palette Color tool 78
Add Splitting Line tool 307, 309
Add Stitch Angles tool 163, 164
Add Thread dialog 84
Adjust Image tool 130
Adjust Stitch Spacing dialog 96
Advanced Appliqué tool 219
Align
 Bottom tool 146
 Centers Horizontally tool 146
 Centers tool 146
 Centers Vertically tool 146
 Left tool 146
 Right tool 146
 Top tool 146
fonts
 See also lettering
AMT templates 92
anchor points, rotation 148
angles, **see** stitch angles
anti-aliasing 110
Any Shape option 266, 268
Applications
 Cross Stitch 31, 258
 Quilter 31, 261
appliqué 17
 adding to quilts 259
 adjusting cover stitch settings 214, 332
 Appliqué
 tool 213
 Appliqué Fabric dialog 216
 closed-objects 213
 cover stitch values 214, 332
 offsetting cover stitches 214
 open-object 217
 partial cover 217

 setting options 57
 splitting 139
Appliqué & PunchWork tab 57
appliqué fabric, show 45
Appliqué Properties dialog
 Merge Patches Together 222
 Place Fabric and Color in
 Patches 220
 Place Fabric in Patches 220
 Recover your original embroidery
 objects 225
 Remove Fabric from Patches 221
 Set Colors Automatically 223
 Set Stitch Types Manually 224
Apply closest join while digitizing 59
Apply Current Color tool 78
Arrange toolset
 Align Bottom 146
 Align Centers 146
 Align Centers Horizontally 146
 Align Centers Vertically 146
 Align Left 146
 Align Right 146
 Align Top 146
 Group 137
 Lock 138
 Ungroup 138, 190
 Unlock All 138
Array tool 151
articles, visualize 10, 47
artistic stitch effects, create 14
artistic view 40
artwork
 anti-aliased images 110
 automatic conversion 14
 bitmap images 109
 browse 39
 dim 45
 dithered images 110
 loading 113, 114
 prepare 15
 preparing for automatic
 digitizing 118, 120, 121
 scanned images 110
 scanning 110
 show 45
 sources 15
 vector drawings 109
Artwork Canvas
 mode 22, 113–116
 tool 343
Artwork Preparation tool 244

Artwork toolbar
 Save Artwork 116
 Scan Bitmap 113
As Digitized method 71, 74
Auto Center
 to Quilt Block tool 246, 247
 to Work Area tool 154, 155
Auto Fit to Quilt Block tool 247
Auto Jump, applying 105
auto kerning 271
auto scroll options 56
Auto Underlay tool 97–99, 274
Auto-Digitize Embroidery dialog 125
Auto-Digitize tool 125, 127
Auto-Digitize toolset
 Adjust Image 130
 Auto-Digitize 125, 127
 Color PhotoStitch 130
 Crop Background 115
 Insert Artwork 129
 Instant Auto-Digitize 125
 Magic Wand 128
 Magic Wand Block Digitizing 128
 Magic Wand Centerline 128
 Magic Wand Fill without Holes 128
 Matching Method 128
 PhotoSnap 131
 Touch Up 115, 130
automatic
 backup 58
 pull compensation 99
 save 58
 sequencing 142
 start and end 95
 stitch splitting 67
 underlay 97
Automatic Corners tool 104
automatic digitizing 14, 125, 128
 adjusting fill stitch settings 127
 cleaning up images 118
 color reduction 119
 creating embroidery designs 125, 127
 cropping images 115
 image preparation tools 119
 noise filtering 119
 outline sharpening 119
 preparing images 118
 preparing non-outlined images 120
 preparing outlined images 121
Automatic Stitch Colors dialog 223
Automatically Add Hoops tool 303

B

backdrops 45
 inserting bitmap images 113, 114
 loading 113, 114
 saving as separate files 116
 scanning 113
 using as template 108

Background and Display Colors dialog 46, 47

backgrounds 45
 scanning 113
 select 46

backing 260

Backstitch
 Outline tool 64
 outlines 64
 settings 64
 stitch length 64

backup files 359

baselines
 circular lettering 267
 custom baseline lettering 268
 horizontal lettering 266
 lettering 11, 266
 multiple baseline lettering 268
 reshaping 279
 selecting 266
 vertical lettering 267

basics
 saving designs 26
 starting 20
 using commands 49, 50

batting 260

Bernina Device Selection dialog 324–327, 335

Bitmap Artwork Preparation dialog 120, 122, 125

bitmap images
 anti-aliasing 110
 automatic digitizing 109
 dithered 110
 file types 113, 114
 inserting 113, 114
 saving separately 116
 scanned 110
 scanning 113
 show 45
 supported file formats 109

Blackwork
 changing patterns 177
 Fill tool 177
 Outline tool 177

Blackwork Run
 break apart 139
 tool 103

Blanket Outline tool 62

block digitizing 73
 with Block Digitizing tool 73
 with multiple angles 73

Block tool 70, 73

block, patchwork 259

bold lettering, making 269

borders
 craft stitches 17
 creating 170
 patchwork 259

boring, display color 48

Break Apart tool 139, 278, 284

buttonhole
 add 157
 types 158

Buttonholes 18
 Buttonhole tool 157
 creating a line 158
 Settings dialog 158
 tool 158

C

Calculate Hoopings
 dialog 303, 307
 tool 307

Calibrate Screen dialog 5

Calligraphy setting 63, 66, 76

Candlewicking
 Fill tool 177, 188
 Outline tool 177

Canvas toolbar
 Artwork Canvas 22, 113–116, 123, 343
 Convert Artwork to Embroidery 124, 281
 Convert Embroidery to Artwork 124
 Embroidery Canvas 23, 113, 120, 121, 123, 342
 Embroidery Library 23
 Show Embroidery 22

Cap corner 105

Carving Stamp docker
 Appearance 200
 Digitize 199, 202
 Use Object 198
 Use Pattern 197

Carving Stamp tool 197–202

carving stamps
 adding to library 202
 changing appearance 200
 creating stitch patterns 196
 digitizing 199
 pre-defined 197
 reshaping 201
 using objects 198

centering object, with cross-hair cursor 145

Character Map dialog 283

Circle
 CCW option 266, 267
 CW option 266, 267

circle baselines 267

circle objects, reshaping 162

clipart, browse 39

cloning objects 137

Closed Freehand tool 75, 76

Closed Object tool 70, 73

closed-object appliqué 213

Closest Join 74

Closest Join method 71

color
 place in patches 220
 reduction 119
 remove from patches 221

Color Blending
 applying 189
 dialog 189
 selecting types 190
 setting values 190
 spacing values 190
 tool 189

Color Film
 docker 53, 140
 printing 332
 resequencing objects 140
 selecting color blocks 53
 tool 53, 140–??, 190

Color Film toolbar
 Optimize Color Changes 142
 Sequence by Selects 143
 Show Individual Objects 53
 Show Objects 140

Color Palette toolbar
 Add Palette Color 78
 Apply Current Color 78
 Color Picker 78
 Color Wheel 79
 Cycle Used Colors 79
 Thread Colors 81, 82

Color PhotoStitch dialog 130

Color PhotoStitch tool 130

Color Picker tool 78

color printer 18

Color Wheel
 dialog 79
 tool 79

colors
 changing 79
 changing borer display 48
 changing grid display 48
 changing object outlines 48
 changing stitch display 48
 changing thread colors 78
 display colors 48
 modifying thread values 84
 removing from thread charts 83
 resequencing by 143
 selecting for an object 78
 traveling by 44

columns, turning stitching 73

combining
 designs 13, 140
 objects 135

commands

- selecting 49, 50
 - toolbars 24
 - composite objects, splitting 139
 - connectors
 - Auto Jump 105
 - jumps 101
 - show 40
 - stitches used to move between objects 100
 - tie-ins 101
 - travel runs 101
 - Context
 - Copy to Center 246
 - Mirror Alternate 155
 - Number of Copies 155
 - Quilt Block Margin 246
 - Work Area Margin 154, 155
 - Contour Fill tool 182
 - control points 70
 - selecting 160
 - using to reshape objects 161
 - conversion
 - bitmap artwork 14
 - photographs 15
 - photos to designs 131
 - tools 124
 - vector artwork 14
 - Convert
 - Artwork to Embroidery tool 124, 281
 - Embroidery to Artwork tool 124
 - Convert Selected Designs tool 35
 - coordinates, setting 145
 - Copy to Center tool 246
 - Copy tool 136
 - copying
 - cloning objects 137
 - duplicating objects 136
 - objects 136
 - corner stitching, control 104
 - Couching tool 252
 - cover stitches
 - offsetting 214
 - setting values 214, 332
 - craft stitches
 - borders & fills 17
 - ripple fills 181
 - Create
 - Border dialog 296
 - Fabric dialog 90
 - Hoop dialog 313
 - Pattern dialog 212
 - Stamp Pattern dialog 202
 - Thread Chart dialog 84
 - Create Border Set dialog 296
 - Create Pattern dialog 211
 - Create Stumpwork Sub-design tool 236, 237, 239
 - creating
 - lettering on-screen 264
 - monograms 286
 - textured edges 185
 - textures with Fancy fill 193
 - Crop Background tool 115
 - Cross Stitch
 - application 31, 258
 - Fill tool 183
 - cross stitch 17
 - borders 257
 - combination stitches 258
 - double cross 257
 - elongated cross 257
 - fills 183, 256
 - French knot 257
 - full cross 256
 - half cross 256
 - mini-cross 256
 - quarter cross 256
 - three-quarter 256
 - types 255
 - upright cross 256
 - variations 258
 - cross-hair cursor 145
 - current
 - object properties 86
 - object properties, changing 86
 - curved lines, making 70
 - curves, smoothing 163
 - custom
 - baselines, creating 268
 - templates
 - selecting 26
 - custom hoops
 - creating 311
 - editing 313
 - cut and paste
 - objects 136
 - resequencing 140
 - Cut Buttonhole Slit tool 157, 158
 - Cut Closed Border tool 236, 237, 240
 - cut holes in objects 169
 - Cut tool 140
 - cutters, remove overlaps 167
 - cutting lines
 - appliqué 213
 - open-object appliqué 218
 - Cutwork toolbox
 - Cut Buttonhole Slit 157, 158
 - Cut Closed Border 236–240
 - Digitize Piece 230, 232, 236, 237, 239
 - Cycle Used Colors tool 79
- D**
-
- decorative flairs, lettering 12
 - default object properties 86
 - Define
 - Quilt Block tool 245
 - Work Area dialog 154
 - Work Area tool 153
 - Define Quilt Block dialog 245
 - Delete Hoop tool 307
 - delete recovery 360
 - deleting
 - colors from thread charts 83
 - objects 136
 - patterns 212
 - templates 94
 - densities, adjusting 96
 - design colors, changing 79
 - design dimensions, check 10
 - design elements
 - combine 13
 - reshape 13
 - sequence 16
 - transform 13
 - design information
 - viewing 48
 - viewing in Windows Explorer 49, 50
 - design information, view 48
 - Design Properties dialog 48
 - Thread Color 47
 - Thread Colors 82–84, 334
 - designs
 - adding lettering 264
 - combining 140
 - creating new 25
 - opening 25
 - opening multiple 25
 - previewing 50, 329
 - print preview 329
 - printing 329
 - resequencing 140
 - saving 26
 - saving as images 334
 - saving multi-hooped 337
 - sending to machine 334
 - stabilizing with underlay 97
 - starting 25
 - stitching 334
 - writing to design cards 325
 - device selection 322
 - dialogs
 - Add Thread 84
 - Adjust Stitch Spacing 96
 - Applique Fabric 216
 - Appliqué Properties > Merge Patches Together 222
 - Appliqué Properties > Place Fabric and Color in Patches 220
 - Appliqué Properties > Recover your original embroidery objects 225
 - Appliqué Properties > Remove Fabric from Patches 221
 - Appliqué Properties > Set Colors Automatically 223
 - Appliqué Properties > Set Stitch Types Manually 224
 - Auto-Digitize Embroidery 125
 - Automatic Stitch Colors 223

- Background and Display Colors 46, 47
- Bernina Device Selection 324, 326, 327, 335
- Bitmap Artwork Preparation 120, 122, 125
- Buttonholes Settings 158
- Calculate Hoopings 303, 307
- Calibrate Screen 5
- Charactor Map 283
- Color 47
- Color Blending 189
- Color PhotoStitch 130
- Color Wheel 79
- Create Border 296
- Create Border Set 296
- Create Fabric 90
- Create Hoop 313
- Create Pattern 211, 212
- Create Stamp Pattern 202
- Create Thread Chart 84
- Define Quilt Block 245
- Define Work Area 154
- Design Properties 47, 48
- Design Properties > Thread Colors 334
- Edit Thread 83
- Effects 30
- Effects > Gradient Fill 180, 190
- Effects > Others 105, 181, 269
- Effects > Star & Wave Fill 187
- Effects > Underlay 99
- Effects > Textured Edge 185
- Enter Drive Letter and Path 327
- Export 116
- Fabric 90
- Fabric Settings 91–92
- Fill Holes 169
- Guide Position 28
- Hide Colors 41
- Import 114
- Manage Fabrics 90
- Manage Thread Charts 83
- Matching Method 128, 130
- Multiple Hoopings 337
- New from Template 26
- New Pattern Set 212
- New Stamp Set 202
- Object Not Covered 336, 337
- Object Properites > Fill Stitch > Pattern Fill 208, 209
- Object Properites > Outline Stitch > Pattern Run 205, 206
- Object Properties 30, 87
- Object Properties > Appliqué 214, 216
- Object Properties > Buttonhole 157
- Object Properties > Fill Stitch > Blackwork 177
- Object Properties > Fill Stitch > Candlewicking Fill 178
- Object Properties > Fill Stitch > Contour 182
- Object Properties > Fill Stitch > Cross Stitch 184
- Object Properties > Fill Stitch > Fancy 194
- Object Properties > Fill Stitch > Lacework 178
- Object Properties > Fill Stitch > Pattern Fill 208–210, 212
- Object Properties > Fill Stitch > PhotoSatin 130, 132
- Object Properties > Fill Stitch > Raised Satin 244
- Object Properties > Fill Stitch > Ripple 181
- Object Properties > Fill Stitch > Satin 67
- Object Properties > Fill Stitch > Sculptured Fancy 194
- Object Properties > Fill Stitch > Step 68, 69
- Object Properties > Fill Stitch > Stipple Backstitch 178
- Object Properties > Fill Stitch > Stipple Run 178
- Object Properties > Fill Stitch > Stipple Stemstitch 178
- Object Properties > Lettering 265–270, 273, 274, 282–286
- Object Properties > Outline Stitch > Blacket 63
- Object Properties > Outline Stitch > Blackwork 177
- Object Properties > Outline Stitch > Candlewicking 178
- Object Properties > Outline Stitch > Pattern Run 205–206, 212
- Object Properties > Outline Stitch > Raised Satin 67, 244
- Object Properties > Outline Stitch > Satin 65
- Object Properties > Outline Stitch > Sculpture Run 62
- Object Properties > Outline Stitch > Single 62
- Object Properties > Outline Stitch > Stemstitch 64
- Object Properties > Outline Stitch > Stipple Backstitch 64
- Object Properties > Outline Stitch > Triple 62
- Object Properties > Outline Stitch > Zigzag 63
- Object Properties > PhotoSnap 130, 132
- Object Properties > PunchWork 250
- Object Properties > Stitch Angle 164
- Object Properties > Tie-In/Off 102
- Open Design 25
- Open Options 323
- Optimize Color Changes 142
- Options 55–59, 301–313
- Outlines & Offsets 170, 171
- PES Save Options 328
- Print Catalog Options 37
- Print Design 37, 330
- Print Options 330–333
- Print Preview 329
- Quilting Background 248
- Rename Thread Chart 83
- Revert to Factory Settings 94
- Save As 26
- Save as Template 92
- Save Design as Bitmap 334
- Save Hoop As 313
- Save To Template 87
- Select Character 283–286
- Select Pattern 204–208, 212
- Select Source 4
- Sequence By Color 143
- Smooth Curves 163
- Start and End 96
- Stitch Player 45
- Thread Charts 81
- Write to Embroidery System 324–327, 335
- Zoom Factor 43
- diamonds, on-point 259
- Digitize Piece tool 230–239
- Digitize toolset
 - Advanced Appliqué 219
 - Auto Applique 213
 - Block 70, 73
 - Buttonhole 157
 - Buttonholes 158
 - Closed Freehand tool 75, 76
 - Closed Object 70, 73
 - Ellipse 70, 71
 - Freehand Draw Embroidery - Open Object 75, 76
 - Lettering 264–270, 272–279, 282–289
 - Monogramming 290–294
 - Open Freehand tool 75, 76
 - Open Object 70, 72
 - Partial Applique 217
 - Pattern Stamp 204
 - PunchWork 250
 - Rectangle 70, 71
- Digitize Wireline tool 237, 240, 241
- digitizing
 - automatic 125
 - closed shapes using Closed Object tool 73
 - columns 73
 - essentials 60
 - lines with Open Object 72
 - manually 60
 - methods, Open Object tool 72

- selecting a digitizing tool 70
 - tools 70
 - Dim Artwork tool 45
 - display
 - adapters, checking 361
 - changing display colors 48
 - Display dialog 47
 - distorting lettering, using Elastic Lettering 288
 - dithering 110
 - dockers
 - Carving Stamp > Appearance 200
 - Carving Stamp > Digitize 199, 202
 - Carving Stamp > Use Object 198
 - Carving Stamp > Use Pattern 197
 - Color Film 53, 140
 - Hooping Sequence 333
 - Monogramming > Borders 294
 - Monogramming > Designs 290
 - Monogramming > Letters 291
 - Monogramming > Ornaments 292
 - Morphing Effect 190
 - My Threads 81
 - Overview Window 42
 - Rename Pattern Stamp 197
 - StumpWork Border 240
 - Double cross stitch 257
 - Double Run tool 103
 - Double Zigzag, setting values 99
 - downloading, designs to cards 325
 - drawings, [see also](#) backdrops
 - duplicate objects 13, 136
- E**

- Edit Thread dialog 83
 - Edit toolset
 - Add Holes 169
 - Add Stitch Angles 163, 164
 - Artwork Preparation 244
 - Blackwork Run 103
 - Break Apart 139, 278, 284
 - Color Blending 189
 - Double Run 103
 - Fill Holes 169
 - Outlines & Offsets 170
 - Quilting Background 248
 - Remove Holes 169
 - Remove Overlaps 167
 - Remove Stitch Angles 163, 164
 - Stitch Angles 278
 - Stitch Edit 172–174
 - editing stitches 173
 - deleting stitches 174
 - inserting stitches 173
 - moving stitches 173
 - effects
 - Auto Jump 105
 - automatic corners 104
 - Color Blending 189
 - Effects tool 30, 97
 - star fill 186
 - Textured Edge 185
 - Travel on Edges 180
 - Effects dialog 30
 - Gradient Fill 180, 190
 - Others 105, 181, 269
 - Star & Wave Fill 187
 - Textured Edge 185
 - Underlay 97–99
 - Effects toolbar
 - 3D Globe Effect 188
 - Auto Underlay 97–99, 274
 - Automatic Corners 104
 - Couching 252
 - Elastic Fancy Fill 195
 - Star Fill 186
 - Textured Edge 185
 - Wave Fill 187
 - Elastic Fancy Fill tool 195
 - Elastic Lettering
 - distorting lettering 288
 - editing lettering 289
 - removing 289
 - Ellipse tool 70, 71
 - Elongated cross stitch 257
 - embroidery
 - adding to quilts 259
 - converting to vectors 124
 - create 15
 - objects 15
 - objects, conversion to vectors 123
 - Embroidery Canvas mode 23, 113, 120, 121, 342
 - embroidery design formats 319
 - embroidery elements, view 40
 - embroidery lettering
 - converting font 282
 - converting text 281
 - Embroidery Library mode 23
 - embroidery machines
 - connections 4
 - setting up 4
 - End Needle Position 96
 - end point, setting automatically 95
 - Enter Drive Letter and Path dialog 327
 - entry point, changing 166
 - errors, unrecoverable 360
 - Exception Access Violation, resolving errors 361
 - excess stitching, remove 13
 - exit point, changing 166
 - EXP format 322
 - Export Design List tool 37, 349
 - Export dialog 116
- F**

- Fabric
- G**

- dialog 90
 - Fabric Settings
 - Lettering 92
 - Satin 91
 - Stabilizer 92
 - Step/Fancy Fill 91
 - fabrics
 - change 10
 - light, medium and dark 259
 - managing 90
 - placing in Auto Appliqué 216
 - placing in patches 220
 - removing from patches 221
 - stretch compensation 99
 - Fancy Fill tool 193
 - fancy fonts 12
 - files
 - backup 359
 - combining designs 140
 - PES files 328
 - Fill Holes
 - dialog 169
 - tool 169
 - fill stitches
 - adjusting settings 127
 - block digitizing 73
 - types 68
 - fills
 - adding stitch angles 164
 - contour 182
 - craft stitch 17
 - cross stitch 183, 256
 - ripple 181
 - star fill 186
 - stippling 178
 - stitch types 68
 - Find Embroidery Designs tool 38
 - find threads 82
 - flair script 12, 285
 - folk design 17
 - fonts
 - convert to embroidery 282
 - flair script 285
 - formats, embroidery design 319
 - frame movement, Auto Jump 105
 - Free Line
 - option 266
 - Vertical option 266–268
 - Free Line option 266
 - freehand embroidery 74
 - freehand lines
 - creating 75
 - smoothing 76
 - Freehand Settings toolbar 75, 76
 - French knot cross stitch 257
 - Full cross stitch 256
- G**

- gaps, offsetting filled holes 169

- garment, visualize design 10
 garments, visualize 47
 general options, setting 58
 General toolbar
 Carving Stamp 197–202
 Color Film 53, 140–??, 190
 Copy 136
 Cut 140
 Effects 30, 97
 Insert Artwork 113, 114, 120, 121, 125, 128, 131
 Insert Embroidery 135, 154, 155, 246, 247
 Morphing 190
 New Blank Design 26
 Object Properties 30, 69, 86, 87, 99–102, 158, 212, 214
 Open 323
 Open Design 25
 Options 55–59
 Overview Window 42
 Paste 136, 140
 Print 330
 Print Preview 50, 236, 329, 330, 332, 340
 Redo 24
 Save Design 26
 StumpWork Border 230–240
 Undo 24
 Write to Machine 325–327, 334, 336
 generating stitches 25
 global changes 10
 good
 artwork 15
 embroidery, rules 9
 gradient fills
 adjusting settings 180
 applying 180
 setting values 180
 spacing values 180
 graphics
 digitizing with vectors 123
 packages, linking to 115
 grid
 changing display color 48
 displaying 27
 setting options 55
 Group designs on open and insert 59
 Group tool 137
 guide patterns, Pattern Fill 210
 Guide Position dialog 28
- H**

 Half cross stitch 256
 handles, **see** selection handles
 hard disk space, checking 359
 hardware
 recovering from failure 359
- setting up display monitor 5
 setting up scanner 4
 Hide Colors dialog 41
 Hide object properties 59
 holes
 add holes 169
 fill holes 169
 hoop centers, setting 301
 hooped designs
 outputting 335
 sending to machine 336
 Hooping Sequence docker 333
 hoops
 changing 301
 changing display 27
 choosing 10
 creating custom hoops 311
 displaying 27
 editing custom hoops 313
 hiding on screen 27
 options, setting 56
 print hooping sequence 333
 selecting 300
 showing on screen 27
 horizontal baselines, creating 266
- I**

 image preparation
 cropping 115
 preparing non-outlined images 120
 images
 cleaning up 118
 color reduction 119
 cropping 115
 editing 115
 inserting bitmaps 113, 114
 loading 113, 114
 noise filtering 119
 non-outlined 120
 outline sharpening 119
 outlined vs non-outlined 118
 preparation tools 119
 preparing for automatic digitizing 120, 121
 saving bitmaps separately 116
 saving designs as 334
 scanning bitmaps 113
 sharpening/scanning 112
 Import dialog 114
 individual letters, adjusting 276
 information, design 48
 Insert Artwork tool 113, 114, 120, 121, 125–131
 Insert Embroidery tool 135, 154, 155, 246, 247
 inserting
 bitmap images 113, 114
 one design into another 140
 installing, printers 4
- Instant Auto-Digitize tool 125
 italic lettering
 making 269
- J**

 Jump
 by Color tool 44
 by Object tool 44
 to Start/End tool 44
 jumps
 as connectors 101
 Auto Jump 105
 setting Jump Length 105
 justification, setting lettering 270
- K**

 kaleidoscope effects, create 13
 keyboard shortcuts 353
- L**

 Lacework Fill tool 178, 188
 Lay out
 around Circular Work Area tool 155
 to Quilt Block tool 246
 to Rectangular Work Area tool 154
 layers, remove stitching layers 167
 Layout
 Auto Center to Quilt Block 246, 247
 Auto Center to Work Area 154, 155
 Auto Fit to Quilt Block 247
 Lay out around Circular Work Area 155
 Lay out to Quilt Block 246
 Lay out to Rectangular Work Area 154
 Layout toolset
 Define Quilt Block 245
 Define Work Area 153
 layouts
 creating 154, 155, 246
 Pattern Fills 210
 length
 Backstitch 64
 jumps 105
 preserving long stitches 105
 Zigzag and Double Zigzag stitches 99
 lettering
 adding to designs 264
 adjusting individual letter spacing 270
 adjusting on-screen 270
 adjusting overall spacing 270
 adjusting Satin stitch settings 287
 adjusting spacing 270
 adjusting spacing on-screen 270

- advanced 12
 - applying baselines 265
 - As Digitized Join method 364
 - auto kerning 271
 - Bottom Join method 364
 - changing line spacing 271
 - Character Map 283
 - circle baselines 267
 - Closest Join method 364
 - converting font to embroidery 282
 - converting text to embroidery 281
 - creating monograms 286
 - creating on-screen 264
 - creating with the Lettering dialog 265
 - custom baselines 268
 - deleting stitch angles 278
 - elastic effect 13
 - entering on-screen 264
 - entering via dialog 265
 - fancy fonts 12
 - fancy lettering 284
 - horizontal baselines 266
 - letter justification 270
 - making bold 269
 - making italic 269
 - monograms 12
 - moving letters along baseline 271
 - multiple baselines 268
 - reshaping baseline 279
 - resizing 273
 - rotating with Reshape Object 275
 - scaling 273
 - scaling with Reshape Object 273
 - scaling with Select Object 273
 - selecting symbols 282
 - size 11
 - special characters 282
 - special characters and symbols 282
 - splitting 139
 - switching off underlay 274
 - symbols 282
 - transforming 275
 - transforming with Reshape Object tool 276
 - transforming with Select Object 275
 - vertical baselines 267
 - See also** baselines
 - See also** fonts
 - lettering designs
 - create 11
 - output 11
 - transforming 275
 - Lettering tool 264–270, 272–279, 282–289
 - letters
 - adjusting 276
 - adjusting individually 276
 - adjusting spacing 270
 - changing colors 279
 - height, adjusting 274
 - reshaping 277
 - spacing, adjusting 270
 - width, adjusting 274
 - line spacing, adjusting lettering 271
 - lines, digitizing with Open Object 72
 - Lock tool 138
- M**
-
- Machine & Hoop tab 27, 56
 - machines
 - selecting 27
 - send design 10
 - send multi-hooped designs 336
 - stitch out designs 334
 - Magic Wand
 - Block Digitizing tool 128
 - Centerline tool 128
 - Fill without Holes tool 128
 - tool 128
 - Manage Designs toolset
 - Add Folders to Library 38
 - Convert Selected Designs 35
 - Export Design List 37, 349
 - Find Embroidery Designs 38
 - New From Selected 34
 - Open Selected 34
 - Print Selected 36
 - Print Selected to Catalog 36
 - Remove Folder from Library 38
 - Stitch Selected Design 35
 - Manage Fabrics dialog 90
 - Manage Thread Charts dialog 83
 - manipulating designs, using Color Film 53
 - margins, setting for underlays 99
 - Match All 81
 - Matching Method dialog 128, 130
 - Matching Method tool 128
 - measure distance on-screen 29
 - Mini cross stitch 256
 - Mirror
 - X tool 149
 - Y tool 149
 - Mirror Alternate tool 152, 155
 - mirror objects 13
 - Mirror-Merge
 - Array 151
 - creating wreaths 152
 - Horizontal tool 149
 - Horizontal/Vertical tool 149
 - Mirror Alternate 152
 - mirroring objects 149
 - Reflect 151
 - Vertical tool 149
 - Wreath 152
 - Mitre corner 105
 - modifying objects
 - changing entry point 162
 - changing exit point 162
 - changing radius of Circle 162
 - grouping 137
 - mirroring 149
 - reshape 13
 - reshaping 160
 - reshaping circles 162
 - reshaping circles to ovals 162
 - rotating 148
 - scaling 146
 - skewing
 - spacing evenly 146
 - viewing by color 41
 - monitor
 - calibrate 5
 - setting up 5
 - Monogramming docker
 - Borders 294
 - Designs 290
 - Letters 291
 - Ornaments 292
 - Monogramming tools 290–294
 - monograms 12
 - creating 286
 - splitting 139
 - Morphing Effect docker 190
 - Morphing tool 190
 - motif fill
 - applying 208
 - filling shapes with 208
 - moving objects
 - nudging 145
 - positioning with X:Y coordinates 145
 - with click-and-drag 145
 - Multi Hooping tab 305
 - multi-decoration 18
 - multi-hooped designs
 - alignment marks 305
 - creating 303, 307
 - outputting 335
 - printing 333
 - saving as 337
 - sending to machine 336
 - Multi-Hooping toolset
 - Add Hoop 307
 - Add Hoop Right 307
 - Add N Hoops Around 307
 - Add Splitting Line 307, 309
 - Automatically Add Hoops 303
 - Calculate Hoopings 307
 - Delete Hoop 307
 - Multi-Hooping Options 303, 305
 - Preview Hoopings 303, 305
 - Multiple Hoopings dialog 337
 - multiple stitch angles
 - adjusting 165
 - setting 164
 - with block digitizing 73
 - My Threads docker 81

N

needle points

patterns 69

show 40

New Blank Design tool 26

new designs, creating 25

New From Selected tool 34

New from Template dialog 26

New Pattern Set dialog 212

New Stamp Set dialog 202

nodes, reshaping 161

noise filtering, automatic

digitizing 119

nominal stitch angles 163

non-outlined images 120

NORMAL template

reverting 94

using 26

nudging objects into position 145

Number of Copies tool 155

O

object connectors

stitches used to move between

objects 100

Object Not Covered dialog 336, 337

object outlines, change display

color 48

object properties

applying 86

changing defaults 87

changing for an object 87

current 86

default 86

defaults 86

lettering 11

managing 86

saving current 86

saving to a template 93

templates 92

Object Properties dialog 30, 87

Appliqué 214, 216

Buttonhole 157

Fill Stitch > Blackwork 177

Fill Stitch > Candlewicking Fill 178

Fill Stitch > Contour 182

Fill Stitch > Cross Stitch 184

Fill Stitch > Fancy 194

Fill Stitch > Lacework 178

Fill Stitch > Pattern Fill 208–210,
212

Fill Stitch > PhotoSatin 130, 132

Fill Stitch > Raised Satin 244

Fill Stitch > Ripple dialog 181

Fill Stitch > Satin 67

Fill Stitch > Sculptured Fancy 194

Fill Stitch > Step 68, 69

Fill Stitch > Stipple Backstitch 178

Fill Stitch > Stipple Run 178

Fill Stitch > Stipple Stemstitch 178

Lettering 265–270, 273, 274,

282–286

Outline Stitch > Blackwork 177

Outline Stitch > Blanket 63

Outline Stitch > Candlewicking 178

Outline Stitch > Pattern

Run 205–206, 212

Outline Stitch > Raised Satin 67,

244

Outline Stitch > Satin 65

Outline Stitch > Sculpture Run 62

Outline Stitch > Single 62

Outline Stitch > Stipple

Backstitch 64

Outline Stitch > Triple 62

Outline Stitch > Zigzag 63

Outline Stitch tab 62

PhotoSnap 130, 132

PunchWork 250

Stitch Angle 164

Object Properties tool 30, 69, 86, 87,

99–102, 158, 212, 214

object splitting 139

objects

aligning 145

applying underlay 97

changing entry and exit points 166

changing the object properties 87

cloning 137

combining 135

copying and pasting 136

digitizing for appliqué 213

duplicating 136

locking and unlocking 138

mirror merging 149

mirroring 149

reshape 13

reshaping 160

reshaping using control points 161

rotating 148

scaling 147

selecting colors 78

sequence 16

skewing 148

strengthening with underlay 97

traveling by 44

See also modifying objects

offsetting

appliqué cover stitches 214

filled holes (Complex Fill) 169

patterns on-screen 211

Satin outline 66

on-point, diamonds 259

Open

Design dialog 25

Design tool 25

tool 323

open fills

creating 180

See also color blending

Open Freehand tool 75, 76

Open Object tool 70, 72

Open Options dialog 323

Open Selected tool 34

Open StumpWork Sub-design

tool 236–241

open-ended shapes, digitizing 72

opening designs 25

open-object appliqué, creating 217

Optimize Color Changes dialog 142

Optimize Color Changes tool 142

Options dialog

Appliqué & PunchWork 57

General 58–59

Grid tab 55

Hoop 301, 302, 313

Machine & Hoop tab 27, 56

Multi Hooping 305

Remove Overlaps tab 57

Scrolling tab 56

Options tool 55–59

options, setting pointer display 59

outline sharpening, automatic

digitizing 119

Outline Stitch tab 62

outlined images

sharpening 121

vs non-outlined 118

outlines

backstitch 64

Candlewicking Border 177

changing display color 48

creating blanket stitch 62

reinforce (Blackwork Run) 103

Satin 65

selecting objects with 52

single 62

stemstitch 64

Triple 62

Outlines & Offsets

dialog 170, 171

tool 170

outlines, reinforcing 103

outlines, show 40

ovals, reshaping circles 162

overlap stitching, remove 167

overlapping

Backstitch 64

color blending 189

overstitching, compensate for fabric

stretch 99

Overview Window 42

P

Pan tool 43

Partial Applique tool 217

Paste tool 136, 140

patches

- merging/unmerging 222
 - placing color 220
 - placing fabric 220
 - patchwork 18
 - blocks 259
 - quilt designs 259
 - Pattern Fill
 - applying 207
 - filling shapes with 207
 - layout patterns 210
 - modifying layouts on-screen 210
 - settings 209
 - tool 188, 207, 208
 - Pattern Outline tool 205
 - pattern runs
 - creating 205, 211
 - reshaping 207
 - scaling 206
 - Pattern Stamp tool 204
 - patterns
 - adjusting spacing on-screen 211
 - Blackwork Border 177
 - Candlewicking Border 177
 - deleting 212
 - inserting 205
 - laying out on-screen (Pattern Fill) 210
 - making sets 211, 212
 - offsetting patterns on-screen 211
 - outline values 206
 - patchwork 259
 - pre-defined 197
 - scaling patterns on-screen 210
 - selecting 205
 - skewing patterns on-screen 211
 - using objects 198
 - perspective effects
 - Color Blending 189
 - gradient fills 180
 - PES Save Options dialog 328
 - photographs, converting to embroidery 131
 - PhotoSatin stitch type 131
 - PhotoSnap tool 131
 - pictures
 - editing 115
 - loading 113, 114
 - piecing 259
 - placement lines
 - appliqué 213
 - open-object appliqué 218
 - pointer
 - interpreting position 58
 - setting options 59
 - Polygon Select tool 52
 - position designs 13
 - preserve long stitches 105
 - preset object properties 86
 - Preview Hoopings tool 303, 305
 - previewing
 - designs 50, 329
 - printed design 329
 - primary objects, open-object
 - appliqué 218
 - Print Catalog Options dialog 37
 - Print Design dialog 37, 330
 - Print Options dialog 330–333
 - Print Preview
 - dialog 329
 - tool 50, 236, 329, 330, 332, 340
 - Print Selected to Catalog tool 36
 - Print Selected tool 36
 - Print tool 330
 - printers 4
 - installing 4
 - parallel port 4
 - setting up 4
 - printing
 - combine with embroidery 18
 - designs 329
 - problems, solving 357
 - properties
 - existing properties 86
 - lettering 11
 - of objects 30
 - pull compensation, apply 99
 - PunchWork tool 250
- Q**

- Quarter cross stitch 256
 - Quilt Block Margin tool 246
 - quilt designs 18
 - construction 260
 - opening 31, 258, 261
 - patchwork 259
 - sizes 261
 - Quilter application 31, 261
 - Quilting Background tool 248
- R**

- raised embroidery 19
 - Raised Satin
 - Fill tool 66, 244
 - Outline tool 65, 244
 - read designs from machine 324
 - recolor lettering 279
 - recover from software/hardware failure 359
 - Rectangle tool 70, 71
 - Redo tool 24
 - reference points 70
 - Reflect tool 151
 - registration marks,
 - multihooping 305
 - reinforce outlines 103
 - reinforce outlines (Blackwork Run) 103
 - Relative 59
 - Remove Folder from Library tool 38
 - Remove Holes tool 169
 - Remove Overlaps
 - options 57
 - tool 167
 - Remove Overlaps tab 57
 - Remove Stitch Angles tool 163, 164
 - Rename Pattern Stamp dialog 197
 - Rename Thread Chart dialog 83
 - resequencing
 - by color 143
 - by color using Color Film 140
 - by selection 143
 - using Color Film 140
 - using cut and paste 140
 - Reshape Object tool 115, 160–166, 186–188, 270–271, 273–279
 - reshaping
 - circles 162
 - letters 277
 - Pattern Run 207
 - selecting control points 160
 - resize
 - design 10, 13
 - lettering 273
 - Revert to Factory Settings dialog 94
 - revert to original NORMAL
 - template 94
 - Ripple Fill tool 181
 - Rotate
 - Left tool 148
 - Right tool 148
 - rotating objects 13, 148
 - by click and drag 148
 - lettering 275
 - on-screen 148
 - patterns on-screen 210
 - runs, create pattern runs 205
- S**

- sample patterns, Pattern Fill 210
 - sashes, patchwork 259
 - Satin
 - appliqué cover stitch 214, 332
 - fill 66
 - Fill tool 66
 - outline 65
 - Outline tool 65
 - outline, offsets 66
 - outline, stitch length 65
 - Special 67
 - splitting long stitches 67
 - Save
 - Artwork tool 116
 - Design as Bitmap dialog 334
 - Design tool 26
 - Hoop As dialog 313
 - Stumpwork Sub-design As
 - tool 238, 240
 - to Template dialog 87

- Save As dialog 26
- Save as Template dialog 92
- saving
 - automatic 58
 - bitmap images as separate files 116
 - designs 26
 - object properties to a template 93
- scaling
 - lettering 273
 - lettering with Reshape Object 273
 - pattern runs 206
 - patterns on-screen 210
 - See also** scaling objects
- scaling objects 146, 147
 - by click and drag 147
 - on-screen 147
- Scan Bitmap tool 113
- scanning
 - artwork 110, 113
 - color mode 111
 - resolution 111
 - setting up scanners 4
 - sharpening 112
- Scrolling tab 56
- scrolling, automatically 56
- Sculpture Outline tool 62
- Sculptured Fancy Fill tool 193
- searching, for threads 82
- secondary objects, open-object
 - appliqué 218
- Select Character dialog 283–286
- Select Object tool 51–52, 137, 138, 146, 273, 275
- Select Pattern dialog 204–208, 212
- Select Source dialog 4
- selecting
 - and inserting Pattern Runs 205
 - fill stitches 68
- selecting objects
 - by color blocks 53
 - grouping 137
 - resequencing by selection 143
 - reshape control points 160
 - selecting first and last 51
 - selecting multiple objects 51
 - selecting the next or previous object 51
 - selection marquee 52
 - using Color Film 53
 - using point and click 51
 - using to transform lettering 275
 - within groups 138
- selecting stitches 61, 172
 - range of stitches 172
 - several stitches 172
 - single stitch 172
 - using outline 173
- selection handles
 - rotating 148
 - scaling 145
- selection marquee, selecting
 - objects 52
- send design to machine 10
- sequence
 - automatic 142
 - checking 140
 - resequencing 140
 - traveling 140
- Sequence by Color
 - dialog 143
- Sequence by Selects tool 143
- sequence objects 13, 16
- sequence of hoops, printing 333
- sequence, view stitching 44
- sewing, stitch out designs 334
- shading effects
 - Color Blending 189
 - gradient fills 180
- shapes
 - block digitizing 73
 - digitizing 73
 - digitizing using block digitizing 73
- shortcut keys 353
- Show Appliqué Fabric tool 45, 216, 220
- Show Artistic View tool 40, 44
- Show Bitmap Artwork tool 45, 113, 128–131
- Show Connectors tool 41
- Show Embroidery tool 22
- Show Grid tool 27, 55
- Show Hoop Template tool 27, 301
- Show Hoop tool 27, 56, 301–311
- Show Individual Objects tool 53
- Show measure tooltip 59
- Show Needle Points tool 41, 252
- Show Objects tool 140
- Show Quilt Block tool 245
- Show Rulers and Guides tool 28
- Show Stitches tool 40, 44, 252, 325, 327
- Show StumpWork tool 235–240, 339
- Show Vector Artwork tool 45, 114
- Show Work Area tool 153
- Single Outline tool 62, 252
- Single stitch
 - adjusting length 62
 - spacing 62
- Size +20% tool 147
- skewing objects 148
 - by click and drag 149
 - patterns on-screen 211
 - with rotation handles 149
- Smooth Curves dialog 163
- smoothing freehand lines 76
- software failure, recovering 359
- Space
 - Horizontally tool 146
 - Vertically tool 146
- space, checking hard disk 359
- spacing
 - adjusting lettering on-screen 270
 - adjusting lines 271
 - adjusting stitch 96
 - Candlewicking Border 177
 - objects evenly 146
 - open spacing (color blending) 189
 - Satin outline 65
 - Stemstitch 64
 - Zigzag and Double Zigzag stitches 99
- special characters
 - selecting 282
 - selecting for lettering 282
- special effects
 - with Elastic Lettering 288
- splitting
 - using Satin Special 67
- square format 259
- stabilizing designs, with underlay 97
- star fill effects 186
- Star Fill tool 186
- Start and End dialog 96
- Start Needle Position 96
- Stemstitch
 - Outline tool 64
 - outlines 64
 - settings 64
 - stitch thickness 64
- Step
 - applying patterns 69
 - Fill tool 68
- Stipple
 - Backstitch Fill tool 178
 - Fill tool 178
 - Stemstitch Fill tool 178
- stitch angles
 - adding to fill objects 164
 - adjusting for individual letters 278
 - adjusting multiple angles 165
 - changing in circle objects 163
 - lettering, deleting 278
 - setting 163
 - Stitch Angles tool 278
- stitch densities, adjusting 96
- Stitch Edit tool 172–174
- stitch effects
 - artistic 14
 - lettering 12
- stitch length
 - adjusting 62
 - Satin outline 65
 - Stemstitch 64
- stitch patterns, with carving
 - stamps 196
- Stitch Player dialog 45
- Stitch Player tool 45
- stitch quality 9, 16
- Stitch Selected Design tool 35
- stitch sequence, view 44
- stitch spacing
 - adjusting 96

Candlewicking Border 177
 Satin outline 65
 Stemstitch 64
 stitch thickness
 Backstitch 64
 stitch types 15
 cross stitch 183
 fill 68
 Pattern Run 207
 PhotoSatin 131
 Satin 65
 Satin fill 66
 Satin outline 65
 Single 62
 Triple 62
 stitch values
 cover applique 214, 332
 stitch type 68
 stitches
 adjusting Auto Jump length 105
 appliqué cover stitches 214, 332
 changing 61
 changing display color 48
 digitizing run stitches 72
 editing 173
 generating 25
 selecting 61, 172
 stitch types 68
 Zigzag and Double Zigzag length 99
 See also inserting stitches
 See also selecting stitches
 Stitches toolbar
 Backstitch Outline 64
 Blackwork Fill 177
 Blackwork Outline 177
 Blanket Outline 62
 Candlewicking Fill 177, 188
 Candlewicking Outline 177
 Contour Fill 182
 Cross Stitch Fill 183
 Fancy Fill 193
 Lacework Fill 178, 188
 Pattern Fill 188, 207, 208
 Pattern Run Outline 205
 Raised Satin Fill 66, 244
 Raised Satin Outline 65, 244
 Ripple Fill 181
 Satin Fill 66
 Satin Outline 65
 Sculpture Outline 62
 Sculptured Fancy Fill 193
 Single Outline 62, 252
 Stemstitch Outline 64
 Step Fill 68
 Stipple Backstitch Fill 178
 Stipple Run Fill 178
 Stipple Stemstitch Fill 178
 Triple Outline 62
 Zigzag Outline 63
 stitches, show 40

stitching
 designs 334
 removing overlaps 167
 sequence checking 140
 stitchouts, simulation 45
 strengthening design with underlay 97
 stumpwork 19
 StumpWork Border
 docker 240
 tool 230–240
 StumpWork toolset
 Create Stumpwork
 Sub-design 236–239
 Digitize Wireline 237–241
 Open StumpWork
 Sub-design 236–241
 Save Stumpwork Sub-design
 As 238, 240
 symbols
 Character Map 283
 selecting 282
 selecting for lettering 282
 system preferences
 automatic backup 58
 automatic save 58

T

 tablecloths 17
 tackdown
 appliqué 213
 open-object appliqué 218
 templates
 AMT 92
 creating 92
 deleting 94
 managing 92
 modifying 93
 overview 92
 reverting to original 94
 saving object properties 93
 using 26
 text
 adjusting line spacing 271
 converting to embroidery 281
 Textured Edge tool 185
 textured fills, creating 195
 thread charts
 modifying thread values 84
 printing 334
 removing thread colors 83
 Thread Charts dialog 81
 thread charts, manage 83
 thread colors
 adjust 10
 assigning 80
 modifying thread values 84
 removing from thread charts 83
 Thread Colors tool 81, 82
 threads

finding 82
 searching for 82
 threads, matching 81
 Three-quarter cross stitch 256
 tie-ins as connectors 101
 To 37
 Touch Up tool 115, 130
 transfer paper 18
 transform lettering objects 275
 Transform toolbar
 Mirror X 149
 Mirror Y 149
 Polygon Select 52
 Reshape Object 115, 160–166,
 186–188, 270–271, 273–279
 Rotate Left 148
 Rotate Right 148
 Select Object 51–52, 137, 138, 146,
 273, 275
 Size +20% 147
 Size -20% 147
 Travel on Edges effect 180
 travel runs 101
 Travel toolbar
 Jump by Color 44
 Jump by Object 44
 Jump to Start/End 44
 traveling
 by color 44
 overview 140
 to end of design 44
 to start of design 44
 Triple Outline
 adjusting length 62
 Triple Outline tool 62
 Triple stitch, spacing 62
 troubleshooting 357
 delete recovery 360
 exception access violations 361
 general problems 361
 hardware failure 359
 inconsistent output results 361
 missing toolbar buttons 361
 reverting to factory settings 361
 software failure 359
 TWAIN scanners 4

U

 underlay
 Double Zigzag 99
 Edge Walk margins 99
 margins 99
 setting automatic underlay
 margins 99
 setting margins 99
 Step margins 99
 switching off for small lettering 274
 using to strengthen design 97
 Zigzag and Double Zigzag 99

Zigzag margins 99
 underlying stitching, remove 13
 Undo tool 24
 Ungroup tool 138, 190
 Unlock All tool 138
 unrecoverable errors 360
 Upright cross stitch 256
 USB
 embroidery machine connection 4
 users, first-time and experienced 1

V

 values
 pull compensation 99
 selecting stitch types 68
 vector graphics
 automatic digitizing 109
 converting to embroidery 124
 digitizing 123
 supported file formats 109
 vectors, show 45
 vertical baselines, creating 267
 view objects by color 41
 View toolbar
 Dim Artwork 45
 Show Appliqué Fabric 45, 216, 220
 Show Artistic View 40, 44
 Show Bitmap Artwork 45, 113,
 128–131
 Show Connectors 41
 Show Grid 27, 55
 Show Hoop 27, 56, 301–311
 Show Hoop Template 27, 301
 Show Needle Points 41, 252
 Show Quilt Block 245
 Show Rulers and Guides 28
 Show Stitches 40, 44, 252, 325, 327
 Show StumpWork 235–240, 339
 Show Vector Artwork 45, 114
 Show Work Area 153
 Stitch Player 45

W

 Wave Fill tool 187
 Windows Explorer, view design
 information 49
 Work Area Margin tool 154, 155
 worksheet, print 10
 wreaths
 create 13
 kaleidoscope effect 152
 objects as wreaths 152
 Wreath tool 152
 write designs to design cards 325
 Write to Embroidery System
 dialog 324–327, 335
 Write to Machine tool 325–327, 334,
 336

X

 X and Y coordinates, setting 145

Z

 Zigzag Outline tool 63
 Zigzag underlay, settings 99
 Zoom Factor
 dialog 43
 tool 43
 Zoom toolbar
 Zoom 1:1 43
 Zoom Factor 43